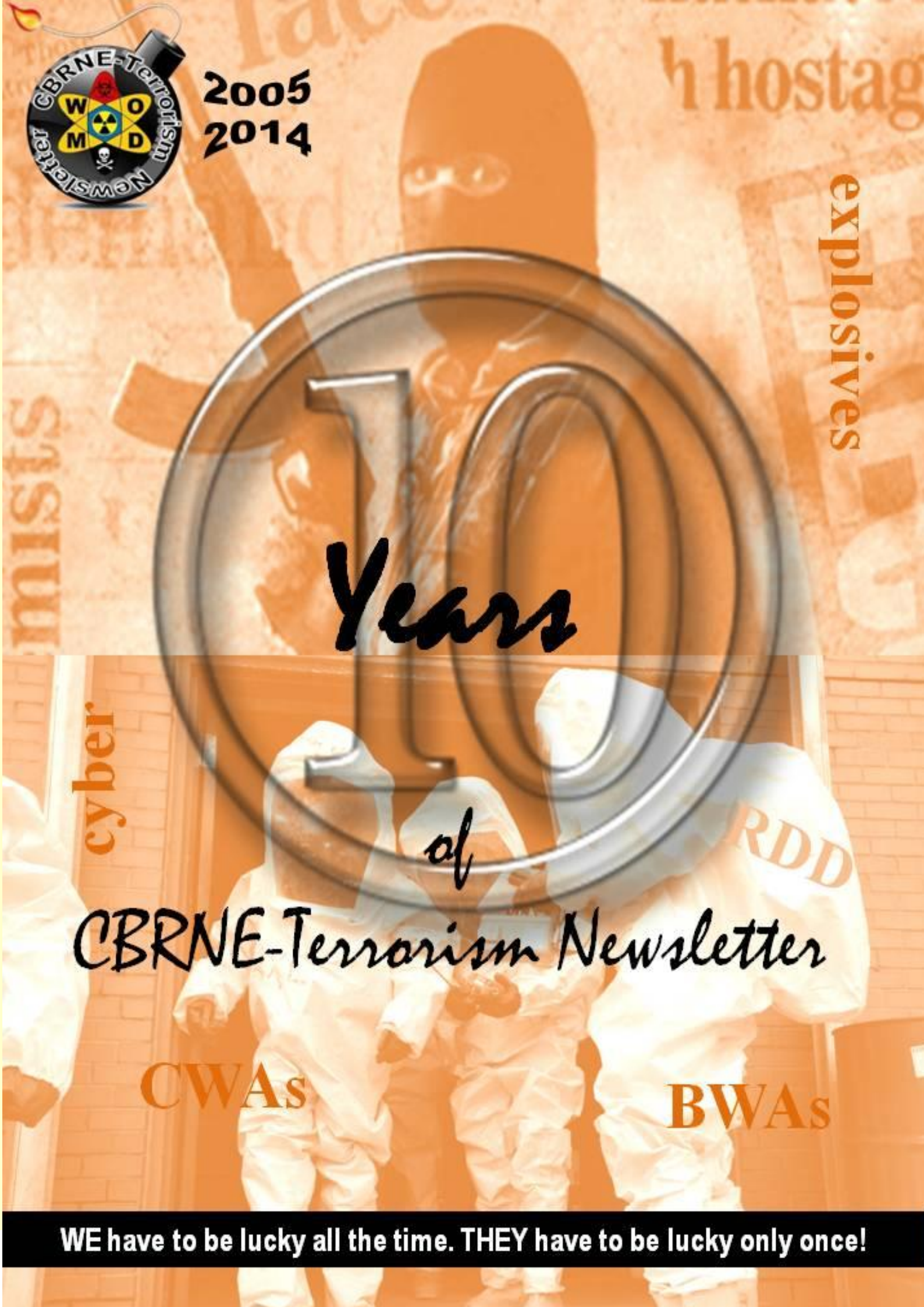

CBRNE-Terrorism Newsletter
W
O
M
D
2005
2014
10
Years
of
CBRNE-Terrorism Newsletter
explosives
cyber
CWAs
BWAs
WE have to be lucky all the time. THEY have to be lucky only once!


1
ΕΝΗΜΕΡΩΤΙΚΟ ΔΕΛΤΙΟ ΧΒΡΠ ΑΠΕΙΛΗΣ
August 2014
CBRNE
NEWSLETTERRORISM
E-Journal for CBRNE & CT First Responders
EBOLA
High
ALERT
www.cbrne-terrorism-newsletter.com
July 2014
CBRNE
NEWSLETTERRORISM
E-Journal for CBRNE & CT First Responders
The curse of...
malaysia
www.cbrne-terrorism-newsletter.com
Δελτίο CBRNE
ΧΒΡΠΕ Terrorism
Τρομοκρατίας Newsletter
How to defend against still-undefined
CBRNE-TERRORISM
Δελτίο ΧΒΡΠΕ-ΤΡΟΜΟΚΡΑΤΙΑΣ
Is Hydrocarbon Man the Next Terrorist Target?
Collection
CBRNE-TERRORISM Newsletter
Δελτίο ΧΒΡΠΕ-ΤΡΟΜΟΚΡΑΤΙΑΣ
A Quarter Century
After Chernobyl
Satellite Photos Support Testimony That Iraqi
Castor Bean Genome Published
Stuxnet
MANPADS
CBRN
TERRORISM
NEWSLETTER
Τεύχος 26
Μάιος 2007
Syria's WMDs – Are they under control?
CBRNE
Newsletter
Terrorism
www.cbrne-terrorism-newsletter.com
CBRNE-Terrorism
Newsletter
W
O
M
D
10
years

September 2014

CBRNE NEWSLETTER TERRORISM

E-Journal for CBRNE & CT First Responders

www.cbrne-terrorism-newsletter.com

CBRNE-Terrorism Newsletter – 2014©

September 2014

Website: www.cbrne-terrorism-newsletter.com

Editor-in-Chief

BG (ret) Ioannis Galatas MD, MA, MC
PhD cand
Consultant in Allergy & Clinical Immunology
Medical/Hospital CBRNE Planner
Senior Asymmetric Threats Analyst
CBRN Scientific Coordinator @ RIEAS
Athens, **Greece**

➲ **Contact e-mail:** igalatas@yahoo.com

Assistant Editor

Panagiotis Stavrakakis MEng, PhD, MBA, MSc
Hellenic Navy Capt (ret)
Athens, **Greece**

Co-Editors/Text Supervisors

1. **Steve Photiou, MD, MSc (Italy)**
2. **Dr. Sarafis Pavlos, Captain RN(ret'd), PhD, MSc (Greece)**
3. **Kiourktsoglou George, BSc, Dipl, MSc, MBA, PhD (cand) (UK)**

EDITOR

Mendor Editions S.A.

3 Selinountos Street
14231 Nea Ionia
Athens, Greece
Tel: +30 210 2723094/-5
Fax: +30 210 2723698

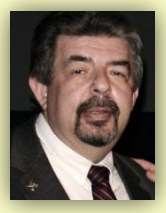
Contact e-mail: Valia Kalantzi info@mendor.gr

▶ **Cover:** Nicotiana benthamiana, the plant from which ZMapp is derived.

CBRNE-Terrorism Newsletter is:

1. Read by First Responders in more than 80 countries around the globe (below right: top-20 countries);

2. Distributed to more than 700 institutions, organizations, state agencies, think tanks, defense companies, institutions and universities.



Editorial

Brig Gen (ret'd) Ioannis Galatas, MD, MA, MC

Editor-in-Chief
CBRNE-Terrorism Newsletter

Dear Colleagues,

Soon after the 2004 Olympic Games in Athens in an effort to maintain the excellent training status of my unit (Olympic Hopital CBRN Response Unit – deployed at Army General Hospita of Athens) I started exploring ways to keep my people updated and support their interest on CBRNE operations. In that respect and despite the fact that the unit was dissolved in 2005 (for the usual reasons – the storm was over; nothing happened; it will not happen to us now etc) I started to edit an informative newsletter n Greek containing information on CBRNE issues of interest. Even when I returned to my medical duties at the hospital and subsequently posted in the Joint Military Intelligence Service as Head of the Deartment of Asymmetric Threats, I continued to publish this newsletter – now in English with a Greek summary (due to lack of time). Time went by; the newsletter changed completely to English and now 10 years after the first small issue it turned to be a big source of information distributed free of charge – the Newsletter was always a "publication of passion" – to more than 80 countries worldwide on monthly basis (as of Jan 2014). Not bad for a lonely effort and another proof that passion is the driving force for the things we do in life. I would to thank deep from heart all the colleagues that supported this efforts and all the First Responders that follow us all these years. I strongly believe that "the threat is real" and the fragality of our world might one day prove how right – regretfully – this belief is. Changing the mindset was the biggest obstacle I faced both while an active duty officer and as a retired ex service man. Unfortunately science does not have all the answers and brain transplantation is not applicable (yet)!

As you all know the two hot issues in Spetember are terrorism (IS) and Ebola virus disease affecting West Africa. Common denominator of both unfortunate conditions is the human inability to confront them effectively. And if the expected vaccine (hopefully by the end of this year) will slow or even control Ebola there is no vaccine for the "terror virus" galloping in the Middle East. Attrocities beyond human immagination are recorded and brought live into our homes on almost daily basis. Western and Middle East nations are still in planning phase and expect that their airborne antibiotics will control the disease forgeting that antibiotics are no valid for viral diseases! Europeans and Americans are shocked with beheadings of their own but not so shocked with similar decapitations and crossings of Christians in the area. Nor they started a campaign – similar to kidnapped women by Boko Haram – to support the Yezidi sex slaves raped on almost daily basis. Civilized societies are now horrified by the return of "white" jihadists in the countries of origin and they start to take measures against them

(mostly confiscation of their passports and repeal of citizenship status). Vatican, European Commision, the White House are fortified – after the threats faced (not pre-emptively). On the other hand massive illegal immigration containing both mentioned threats continues to be a huge problem for the southern European nations while EU is active only to take measures against Russia while supporting bloodshedding in Ukraine (another equally important virus close to our homes). Only recently France is rethinking the sunctions' issue and most probably others will follow. It is easy to propose measures when living in another neighborhood! And Russia might not recognize the results of the Scottish Referendum (because if "Yes" prevailed then UK should recognize New Russia as well) while central Europe is preparing for a very cold winter.

Gaza is quiet for the time being. No body can predict the next explosion of this volcanic part of the world. The good news are that iPhone 6 is now available to buy worldwide…

And in such a disturbed planet we must not forget that there are approximately 16,300 nuclear weapons located at 98 sites in 14 countries. Roughly 10,000 of these weapons are in military arsenals; the remaining weapons are retired and awaiting dismantlement. Approximately 4,000 are operationally available, and 1,800 are on high alert and ready for use on short notice.

In Greece the situation is the same: stably unstable. Politicians are playing their usual (survival) games; populace is suffering from lack of governance; laws are not enforced (recently the highest court of Greece decided that enlisted personnel's wages and pensions to be returned to 2012 levels but government [and European/international banking systems] deny to comply with this decision); progress is not visible (it seems that the tunnel we are in is veeeery long); mass illegal immigration (a suitable carrier for both viruses mentioned above) is progressing upwards; there is info that a 27yo immigrant with Greek citizenship [given in 2001] is now fighting with IS. The only pleasant surprise was the amazing findings revealed during Amphipolis excavations (still in progress) that might answer the big question: "Is this the tube of Alexander the Great" (see also a photo-collection uloaded tgether with Sept 2014 issue). But even this global event is infected with local political propaganda and virtual conflict between national and international archaeology experts. What an aggelic word we are living in!
Dealing with death and distruction for the last ten years I sometimes envy colleagues from other professions that live into their own universies and lack in depth knowledge of what is going on around us! Let us all hope that one day we might live our own peaceful university where our services would not be needed.

On behalf of our Editorial Team I would like to thank you all for the support and the long lasting relationship developed through years of contact and interaction! We will try to keep you as updated as possible and support your dangerous mission for a better and more logic tomorrow!

Finally, I would like to thank one more time a Brit friend in Houston, TX for his enormous assistance in September 2013. Something to remember for life!

The Editor-in-Chief

Ice Bucket Challenge

The **Ice Bucket Challenge**, sometimes called the **ALS Ice Bucket Challenge**, is an activity involving dumping a bucket of ice water on one's head to promote awareness of the disease amyotrophic lateral sclerosis (ALS) and encourage donations to research. It went viral throughout social media during mid 2014. In the United Kingdom, people also participate in the challenge for the Motor Neurone Disease Association.

Lady Gaga…

Cow's urine washing… (Africa)

Fashion for a cause (or business profit) … and real life …

The challenge dares nominated participants to be filmed having a bucket of ice water poured on their heads and challenging others to do the same. A common stipulation is that nominated people have 24 hours to comply or forfeit by way of a charitable financial donation.

ALS is classified as a rare disease but is the most common motor neuron disease. People of all races and ethnic backgrounds are affected. One or two out of 100,000 people develop ALS each year. Amyotrophic lateral sclerosis affects approximately 30,000 Americans. ALS cases are estimated at 1.2–4.0 per 100,000 individuals in Caucasian populations with a lower rate in other ethnic populations. ALS most commonly strikes people between 40 and 60 years of age, but younger and older people can also develop the disease. Men are affected slightly more often than women.
Source: http://en.wikipedia.org/wiki/Amyotrophic_lateral_sclerosis

Euthanasia could be option for poor, says Lithuanian health minister

Source:http://www.bioedge.org/index.php/bioethics/bioethics_article/11071

Euthanasia might be needed for poor people who cannot access palliative care, the new Lithuanian Health Minister has suggested. Rimantė Šalaševičiūtė was sworn earlier

this month, but already she has made waves by backing an open discussion of the legalisation of euthanasia.

Without making any specific proposals, she told local media that Lithuania was not a welfare state with palliative care available for all and that euthanasia might be an option for people who did not want to torment relatives with the spectacle of their suffering.

The minister has also raised the idea of euthanasia for children. She noted that this option had been approved for Belgian children after a long public debate. It was an option which might be appropriate in Lithuania as well after public debate.

Ms Šalaševičiūtė will face an uphill battle in her campaign to introduce Lithuanians to euthanasia. Many doctors and the Catholic Church oppose it. Dr Andrius Narbekovas, who is both a priest and a doctor, and a member of the Health Ministry's bioethics commission, told the media:

"The Ministry of Health should protect health and life, instead of looking for ways to take life away. It goes without saying that it is … profitable and cost effective … But a democratic society should very clearly understand that we have to take care of the sick, not kill them."

EDITOR'S COMMENT: Judging from the photo this woman should not worry about her health and own euthanasia. The only problem is that "they live among us!

'No one deserves to die at sea'

Source: http://www.independent.com.mt/mobile/2014-07-13/news/no-one-deserves-to-die-at-sea-5819301888/

The Migrant Offshore Aid Station humanitarian project starts in the next few weeks. The aim is simple: saving lives at sea. The means to do so are a bit more advanced: Phoenix 1, a 40-metre vessel with two dinghies and two helicopter drones on board, plus a seasoned crew. Director MARTIN XUEREB speaks to Neil Camilleri about the mission and how past experiences have made him passionate about the noble initiative

It all started when the "founding fathers", Chris and Regina Catrambone witnessed the tragedy in the Mediterranean with their own eyes. "Last year they were out on holiday near Lampedusa on a yacht when Regina spotted a jacket floating on the water. It was when the first of two October tragedies occurred. The skipper, a former AFM patrol boat captain, told her about his experiences related to the tragedy of migration. That is when the seed was sown. They were near Lampedusa again when Pope Francis visited and heard is appeal for help. They decided to act. That is how the Migrant Offshore Aid Station (MOAS) was born."

According to the project director, Brigadier (Ret'd) Martin Xuereb, MOAS was not set up to try and solve the migration issue. "The subject is very complex and multi-layered. We purposely chose to be focused. Our aim is very simple. What we want is to mitigate as much as possible loss of life at sea because we feel that nobody deserves to die at sea. We have tried to find to lowest common denominator, to simplify it to almost the bare bones and make it as pure as possible. For us, what lies at the heart of all of this is life."

Brigadier Xuereb says talks on migration, integration and detention are important but MOAS will let others go into those issues, as its aims are altogether different. "We will simply focus on saving lives at sea."

An extension to existing efforts

MOAS considers itself as an extension of an effort that is already out there, namely search and rescue assets from a number of nations. "We will put ourselves and our boat at their disposal and will answer the call when it comes."

Brig. Xuereb insists, however, that the *Phoenix 1* will not be a means to transport migrants to any port. "We will not simply pick up people and take them from place A to place B. We are not a ferry boat for migrants. What we do is a bit wider in scope."

The crew of the *Phoenix 1*could assist vessels in distress in a number of different ways. "The people on board might require water, food or blankets. They might require a paramedic on board. The great majority of interventions that we will have will probably not result in an actual transfer of people from one boat to the other."

'Phoenix 1' will be deployed in the Maltese SAR zone

Brigadier Xuereb says MOAS boasts a seasoned crew and cutting-edge technology. "We have a 40-metre boat with RHIBs (Rigid Hull Inflatable Boats) and two remotely piloted rotary drones, provided and manned by an Austrian company. We will have supplies on board, such as food, water and life jackets, paramedics and a professional crew, most of whom are no strangers to SAR operations."

The *Phoenix* will sail out to international waters but will work inside the Maltese Search and Rescue area, spanning some 250,000 square kilometres. "As such we will be contacting Malta's Rescue Coordination Centre when we encounter a vessel of interest but that does not mean that Malta has to save these persons itself, it only has to coordinate the rescue operation, as per its legal obligations," says Brigadier Xuereb, who points out that most rescues by Italy's *Mare Nostrum* mission are carried out in Malta's SAR area.

"We will be both reactive and proactive. We will react to calls for assistance by Rescue Coordination Centres (RCCs). RCCs usually take stock of the

number of available assets when effecting a rescue and the nearest ships are dispatched to the scene. We will be at their disposal, an extra asset for them, if you will."
If they are called into the action, the *Phoenix* will launch its two drones and steam towards the area. The crew will then act according to the different situations that may arise. "If some of them require medical assistance our paramedics will provide it. If some need medical evacuation we will inform RCC and things will move along just like any other rescue. It is also possible that what is required is to simply give life jackets, or water food and blankets."
The *Phoenix* will also be patrolling the seas and scanning a wide area with its two drones, which can fly for six to eight hours. Their

operators will be glued to the feed monitors, scanning the waves for anything unusual.
The vessel is expected to head out to sea in the coming weeks, after pre-deployment training, including trials with the drones are carried out.
After that, this year's mission will determine the project's future. "We have to see whether there will be a *Phoenix 2* next year and more in the years to come. We also hope that the MOAS concept is exported to other parts of the world."

'I hope we will not be needed'

On being asked about his expectations for the summer, Brigadier Xuereb says that, ideally, MOAS would not be needed. "That would mean that no one is dying out at sea. We are, however, a bit more realistic than that. There are more than 50 million displaced people worldwide and everyone knows what is happening in Syria, Iraq and in the Horn of Africa. We are not trying to solve the immigration problem. Not that we think that this is not important, but this is not our raison d'être – our reason for being. Our aim is to save lives at sea, whether it is a migrant, a fisherman or a boat owner."
As director of MOAS, Martin Xuereb will probably not be going out to sea on the *Phoenix*. "My role is more of a facilitator, helping turn this idea into something real. I am part of a large group of people, many of whom are already working 24/7 on the project." The Brigadier says the tough decisions will be taken by the on-scene commanders, the captain, and an operations officer on board.

'Some experiences mark you for life'

Brig. Xuereb says his military experience is definitely a factor he can bring to the table, but he is also part of the project because he wholeheartedly believes in it. "I am totally committed to the cause. You have to be passionate about this kind of work. For me, MOAS is not a job; it is much more than that."

Brigadier Martin Xuereb served as Commander of the AFM from 2010 to 2013

Brigadier Xuereb says there are a number of

factors leading to his interest in the subject. His pre-AFM sociology background is one of them. His experiences as an army officer are also a contributing factor. "There are instances that mark you for life. When you see an eight-year-old girl in a body bag and look into her eyes, you realise that the last thoughts running through her mind were

'This is it, I am going to die'. These experiences never go away. I am sure it is the same with many AFM members when they see the lifeless body of a child floating on the water. "For us, if we can save just one person it is already enough. Even if giving a bottle of water to someone means that they are not going to dehydrate, then it is fine. We do not want to be on the front page of *Newsweek*. We just want to help."

Rescuers do not play with people's lives

Asked whether he was ever in conflict with his job as a former AFM chief, Brigadier Xuereb insisted that rescuers do not play with people's lives. "I am convinced that this happened in the past, when I was commander, at the present time, and it will still happen in the future. When there is imminent danger of loss of life you do not play with that. I am convinced that these things do not happen. When there is a search and rescue operation we do not distinguish between a migrant, a fisherman or a yacht owner. For me they are all the same, they are a person in need of saving. Rescuers do not make that distinction. When there are persons in danger, people will act."

When asked if politicians could interfere in rescue operations, particularly in migration issues, Brigadier Xuereb said this is why MOAS is very focused on what it does. "MOAS is focused on saving lives. Other NGOs talk of integration and migration, but we do not go into that. That discussion is very important but we choose not to go into it and just focus on saving lives at sea, because if lives are lost, then all the talk is useless and for nothing. We only have one life."

3 COMMENTS

Louise Vella says:
13 July 2014 16:11

I understand that the illegal immigrants that are picked up will be disembarked either in Calabria, Mrs Catrambone's point of origin, or the USA, as Mr Catrambone is a US national.

EDITOR'S COMMENT: Initially looks good! But two questions come to mind: (1) What is behind this big investment – and perhaps many to follow? Only good souls of good people? (2) One of the comments (above) does not get an answer in the article. What would be the next step after rescuing the poor people at high seas?

Rotherham sex abuse scandal: 1,400 children exploited by Asian gangs while authorities turned a blind eye

By Martin Evans (Crime Correspondent – The Guardian)
Source: http://www.telegraph.co.uk/news/uknews/crime/11057647/Rotherham-sex-abuse-scandal-1400-children-exploited-by-Asian-gangs-while-authorities-turned-a-blind-eye.html

August 26 – **More than 1,400 children were sexually abused over a 16 year period by gangs of paedophiles after police and council bosses turned a blind eye for fear of being labelled racist, a damning report has concluded.**

Senior officials were responsible for "blatant" failures that saw victims, some as young as 11, being treated with contempt and categorised as

being "out of control" or simply ignored when they asked for help.

In some cases, parents who tried to rescue their children from abusers were themselves arrested. Police officers even dismissed the rape of children by saying that sex had been consensual.

The Muslim takeover of the taxi trade put taxes off limits.

In one incident a taxi driver accosted a 13-year-old girl. She refused to do what he asked and reported the incident to her parents who managed to identify the driver and follow him.

They contacted the police and gave them his details, however officers did not attend until later and no action was taken.

It later emerged that the driver had been arrested the previous week for a similar incident in Bradford.

Such was the fear of using taxis in Rotherham that when questioned a group of young people from the town said they avoided using them if possible.

Downing Street on Tuesday night described the failure to halt the abuse in Rotherham, South Yorkshire, as "appalling".

Following the publication of the report, the leader of Rotherham council, Roger Stone, resigned, but no other council employees will face disciplinary proceedings after it was claimed that there was not enough evidence to take action.

There were calls for Shaun Wright, the Police and Crime Commissioner for South Yorkshire (pictured above, left), to step down after it emerged that he was the councillor with responsibility for children's services in Rotherham for part of the period covered by the report.

Details of the appalling depravity in the town and the systemic failures that allowed it to continue were laid out in a report published by Professor Alexis Jay, the former chief inspector of social work in Scotland. Victims were gang raped, while others were groomed and trafficked across northern England by groups of mainly Asian men.

When children attempted to expose the abuse, they were threatened with guns, warned that their loved ones would be raped and, in one case, doused in petrol and told they would be burnt alive.

Prof Jay wrote: "No one knows the true scale of child sexual exploitation in Rotherham over the years. Our conservative estimate is that approximately 1,400 children were sexually exploited over the full inquiry period, from 1997 to 2013.

"It is hard to describe the appalling nature of the abuse that child victims suffered. They were raped by multiple perpetrators, trafficked to other towns and cities in the north of England, abducted, beaten, and intimidated."

She added: "There were examples of children who had been doused in petrol and threatened with being set alight, threatened with guns, made to witness brutally violent rapes and threatened they would be next if they told anyone."

The report pinned the blame squarely on failings within the leadership of South Yorkshire Police and Rotherham council.

Prof Jay said: "Within social care, the scale and seriousness of the problem was underplayed by

senior managers. At an operational level, the police gave no priority to child sex exploitation, regarding many child victims with contempt and failing to act on their abuse as a crime."

It emerged that there had been three previous reports into the problem which had been suppressed or ignored by officials, either because they did not like or did not believe the findings.

Tuesday's report concluded that by far the majority of perpetrators were Asian men, and said council officials had been unwilling to address the issue for fear of being labelled racist.

The report stated: "Some councillors seemed to think it was a one-off problem, which they hoped would go away. Several staff described their nervousness about identifying the ethnic origins of perpetrators for fear of being thought racist; others remembered clear direction from their managers not to do so."

For years, the police failed to get a grip of the problem, dismissing many of the victims as "out of control" or as "undesirables" who were not worthy of police protection.

The report was commissioned by Rotherham council following the conviction in 2010 of five men who were given lengthy jail terms after being found guilty of grooming teenage girls for sex.

Police said they are currently dealing with 32 live investigations into child sexual exploitation in Rotherham and in the past 12 months 15 people have been prosecuted or charged.

Other similar high-profile cases followed in towns and cities including Rochdale, Derby and Oxford.

A No 10 spokesman said: "The failings of local agencies exposed by this inquiry are appalling.

"We are determined that the lessons of past failures must be learned and that those who have exploited these children are brought to justice."

John Cameron, of the NSPCC, said: "This report is truly damning and highlights consistent failures to protect children from sexual abuse at the hands of predatory groups of men.

"It appears there was at a senior level a collective blindness over many years to the suffering of children who endured almost incomprehensible levels of violence and intimidation. Many of these children were already extremely vulnerable and the manner in which they were let down by agencies entrusted to protect them is appalling. It is quite astonishing that even when front-line staff raised concerns these were not acted upon so allowing devastating child sexual exploitation to go unchallenged."

Responding to the criticism levelled at the police, Chief Superintendent Jason Harwin, the district commander for Rotherham, issued an unreserved apology to all the victims of child sexual exploitation (CSE).

"We have completely overhauled the way in which we deal with child sexual exploitation and that's been recognised in the report and by Her Majesty's Inspectorate of Constabulary earlier this year," he said.

He added: "I accept that our recent successes in tackling CSE will not heal the pain of those victims who have been let down but we continue to deal with historic investigations with great success and will continue to thoroughly investigate any new evidence available to us.
"Our staff will relentlessly go wherever the evidence takes them and do everything they can with partners to identify offenders and bring them to justice."

EDITOR'S COMMENT: **More than 1,400 children were sexually abused over a 16 year period by gangs of paedophiles after police and council bosses turned a blind eye for fear of being labelled racist.** Changing of British mindset is the first step for total surrender! Send all these "little" brainless public servants (ha!) to their homes before it is too late. 1,400 CHILDREN for God's sake!!!

Google Reveals 'Project Wing,' Its Two-Year Effort to Build Delivery Drones

Source: http://www.wired.com/2014/08/google-reveals-project-wing-its-two-year-effort-to-build-delivery-drones/

Google X, the tech giant's "moonshot" lab, has spent the last two years building an aerial drone that can deliver goods across the country. The company calls the effort Project Wing.
Revealed today in a story from *The Atlantic*, the project is reminiscent of work underway at

Amazon.com. Amazon CEO and founder Jeff Bezos revealed the retailer's drone ambitions this past holiday shopping season during an appearance on the popular TV news magazine *60 Minutes*.
"Self-flying vehicles could open up entirely new approaches to moving things around—including options that are faster, cheaper, less wasteful, and more environmentally sensitive than the way we do things today," a Google spokesperson said in an email to WIRED.
According the company, the Project Wing team recently tested its drone prototypes in Australia, delivering packages to a pair of local farmers. The company said it would not agree to additional interviews about the project. "The vehicle you see in our video is more a research vehicle than an indication of a final decision or direction—as we figure out exactly what our service will deliver and where and why, we will look at a variety of vehicle options (both home-made and off-the-shelf)," the spokesperson said.
A white paper released by the company says that the Google X team first discussed the idea of building flying vehicles in 2011, and that in July 2012, Nick Roy, of the MIT Aeronautics & Astronautics program, joined the company to explore the possibilities.

Originally, the paper says, the aim was to use drones to deliver defibrillators to heart attack victims.

▶ **Read more details at *The Atlantic* article at:**
http://www.theatlantic.com/technology/archive/2014/08/inside-googles-secret-drone-delivery-program/379306/

EDITOR'S COMMENT: Many will dream of pizza sky delivery directly from the oven or humanitarian aid after a disaster! Others the forgotten laptop for an important business presentation. A small percentage will dream of delivering 1,5kg of Semtex to a not so happy recipient – the total drone's weight, including the package to be delivered, is approximately 10kg (22lb); the aircraft itself accounts for the bulk of that at 8.5kg (18.7lb).

TEXAS – Mystery of the missing tanker

Source: http://www.dailymail.co.uk/news/article-2737505/Oil-tanker-carrying-100-million-cargo-mysteriously-disappears-coast-Texas-dispute-Kurdish-oil.html

August 29 – **A tanker loaded with $100 million of crude oil that has been at the center of a dispute over Iraq's oil billions vanished off the coast of Texas on Thursday.**
The Kurdish tanker disappeared from Coast Guard radar screens following a month of legal wrangling over whether it can offload its cargo in the U.S.
As the disintegration of Iraq amid mounting violence continues, the semi-autonomous regime in Kurdistan – in the north of Iraq – is trying to cash in on Iraq's oil reserves and export its own crude.

A still image from video taken by a U.S. Coast Guard HC-144 Ocean Sentry aircraft shows the oil tanker United Kalavryta sitting in the Gulf of Mexico

Iraqi Kurdistan has exported at least eight million barrels of oil since May, energy experts told Al Arabiya News.
But the increasingly weak regime in Baghdad is trying to keep control of its oil billions and says the Kurdish regime cannot sell the oil in the U.S.

The U.S. Coast Guard's AIS ship-tracking system showed no position for the United Kalavrvta on Thursday, which was carrying one million barrels - and was 95 per cent - when it went dark.
The tanker was attempting to unload its cargo at sea, off the coast of Texas, after leaving the Turkish port of Ceyhan in June and anchoring near the U.S. port of Galveston in late July.
The U.S. Coastguard confirmed to MailOnline today that the last contact the agency had with the United Kalavyrta was when the

ship's certificate of compliance was completed on July 27.
The vessel's disappearance is now thought to be the latest development in a high-stakes dispute between Baghdad and the Kurds over the right to export oil.
Several other tankers transporting disputed oil from Iran or Kurdistan have switched off their transponders before unloading their cargo - making their movements extremely difficult to track.

A Coast Guard official told MailOnline today that the vessel might have turned off its beacon in the Gulf of Mexico, which it is not supposed to do.
The official also said it was possible the ship had traveled outside the range of the U.S. Coastguard antennas which would account for it vanishing from the AIS ship-tracking system.
Earlier this year, cutbacks in spending at the U.S. Coastguard have meant that longer-range antennas in the Gulf of Mexico have been gradually shutting down, the official said, making it harder to track ships that move further away from the shore.
U.S. Coastguard also told MailOnline on Friday that it had no plans to search areas of the Gulf where the ship had been anchored.
The agency has a HC-144 Ocean Sentry aircraft at its disposal which last took images of the oil tanker United Kalavyrta on July 25.
Only a few days ago, the partially-full Kamari tanker carrying Kurdish crude oil, disappeared from satellite tracking north of Egypt's Sinai Peninsula.
Two days later, the empty vessel reappeared near Israel.
In late July, the tanker United Emblem offloaded part of its cargo of Kurdish crude oil onto another ship in the South China Sea.
The evasive behavior is the result of Baghdad wanting to block the Kurds from exporting the oil as they believe they have the exclusive right to do so.
The Iraqi government in Baghdad has filed a lawsuit in a U.S. court to reclaim control of the United Kalavrvta cargo and block the Kurdistan Regional Government (KRG) from delivering its cargo.
The suit demonstrates that Baghdad is now stepping up their legal and diplomatic push to block Kurdistan's oil deals, which they view as smuggling.
However, the Kurds see such deals as crucial to their own dreams of independence.
On Monday, the U.S. court threw out the order saying it lacked jurisdiction to seize the tanker as it disappeared some 60 miles off their coast.
But the judge invited Iraq to re-plead its case over the cargo's rightful ownership.
The issue is expected to fuel tensions between Washington and Baghdad, as in theory, Iraq can file claims against anyone taking delivery of the oil.
A Coast Guard official said the vessel in the Gulf of Mexico might have turned off its beacon, sailed beyond antennas that monitor transponders, or perhaps some antennas might have been taken out of service.

However, dozens of vessels were visible on Thursday in the Galveston Offshore Lightering Area, where the Kurdish tanker was last seen.

OFF THE RADAR: WHAT HAPPENED WHEN THE OTHER SHIPS WENT DARK?

The tanker Kamari, which had been carrying a partial load **of crude oil from Iraqi Kurdistan** turned off

its satellite transponder on August 17, north of Egypt's Sinai.

It reappeared unladen on August 19 about 30 kilometers off the coast of Israel, ship tracking data on Reuters showed last week.

It was not possible to determine where the oil had been delivered to or who the buyer was.

A spokesman for the Kurdistan Regional Government (KRG) Ministry of Natural Resources would not comment on the tanker's temporary disappearance at the time.

Reuters reported on July 31 that tanker United Emblem, which was carrying more than **1 million barrels of Kurdish oil**, had been offloaded into another tanker in the South China Sea.

A senior executive at Marine Management Services confirmed in July that the ship-to-ship transfer

involving the United Emblem took place in a 'legitimate operation'.

The ship is 'fixed to a legitimate charterer and performing legitimate operations,' said Kostas Georgopoulos, the chartering manager at Marine Management Services

'The ship is still in international waters,' he added.

EDITOR'S COMMENT: "A Coast Guard official said the vessel in the Gulf of Mexico might have turned off its beacon, sailed beyond antennas that monitor transponders, or perhaps some antennas might have been taken out of service." **Based on this assumption:** imagine what might happen if a smaller vessel manages to disappear from screens and has a nuclear weapon on board able to produce a huge EMP following its detonation over a specific country. The long feared scenario does not look scenario anymore – to me!

Child poverty in Canada

Source1: http://www.cwp-csp.ca/wp-content/uploads/2011/07/Child-Poverty-Factsheet_CWP_FINAL.pdf
Source2: http://worstincanada.org/wp-content/uploads/2013/11/First_Call_Report_Card_2013_web_FINAL.pdf

But...

Canada delivers weapons to Kurdish forces in Iraq

Source: http://www.aa.com.tr/en/world/381187--canada-delivers-weapons-to-kurdish-forces-in-iraq

.....

Canada has pledged $21 million in 2014 as humanitarian aid to Iraq, added the Prime Minister's office.

Europe discusses Russia World Cup boycott

Source: http://www.espn.co.uk/football/sport/story/340159.html#JsQeWcyBVV4uEFmc.99

European Union officials have discussed boycotting the 2018 World Cup in Russia in retaliation for the country's military involvement in Ukraine.

There is a history of sporting boycotts between the West and Russia, in the form of the Soviet Union. The United States refused to send athletes to the 1980 Olympics in Moscow after Soviet forces invaded Afghanistan. In response, Eastern Bloc countries boycotted the 1984 Olympics in Los Angeles.

EDITOR'S COMMENT: Just another brilliant thought of those living among us! But the Russian imports' boycott is expected to cost more the 5 billion Euros to European countries! Per year!

Perhaps you already speak Greek but you do know that!
Read why:

Drama & Theater

Source: http://www.explorecrete.com/various/greek-kalaras.htm

This article is written by Dr. John Kalaras, and it is published to demonstrate that one can write a sophisticated article by using exclusively words of Greek origin:

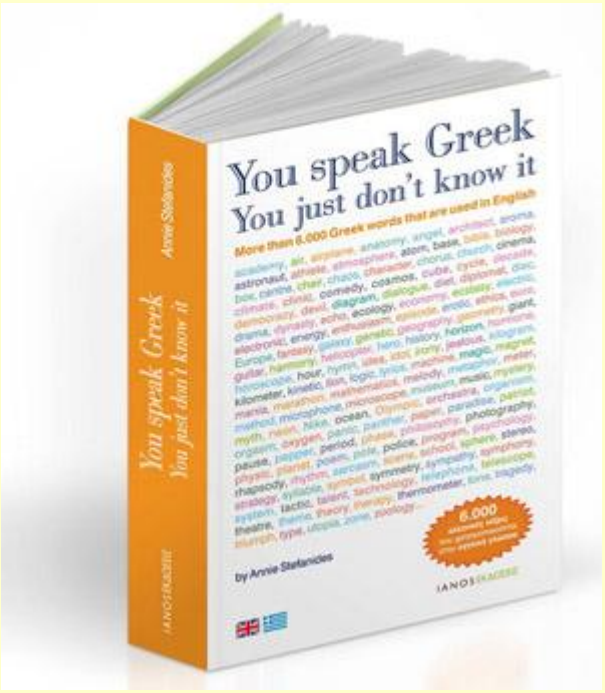
The genesis of classical drama was not symptomatic. Aneuphoria of charismatic and talented protagonists showed fantastic scenes of historic episodes. The prologue, the theme and the epilogue, comprised the trilogy of drama while synthesis, analysis and synopsis characterized the phraseology of the text. The syntax and phraseology used by scholars, academicians and philosophers in their rhetoric, had many grammatical idioms and idiosyncrasies.

The protagonists periodically used pseudonyms. Anonymity was a syndrome that characterized the theatrical atmosphere.

The panoramic fantasy, mystique, melody, aesthetics, use of cosmetic epithets are characteristics of drama.

Even through the theaters were physically gigantic, there was no need for microphones because the architecture and the acoustics would echo isometrically and crystal - clear. Many epistomologists of physics,

aerodynamics, acoustics, electronics, electromagnetics cannot analyze - explain the ideal and isometric acoustics of Hellenic theaters even today.
There were many categories of drama: classical drama, melodrama, satiric, epic, comedy, etc. The syndrome of xenophobia or dyslexia was overcome by the pathos of the actors who practiced methodically and emphatically. Acrobatics were also euphoric. There was a plethora of anecdotal themes, with which the acrobats would electrify the ecstatic audience with scenes from mythical and historical episodes.



A good book to read more!

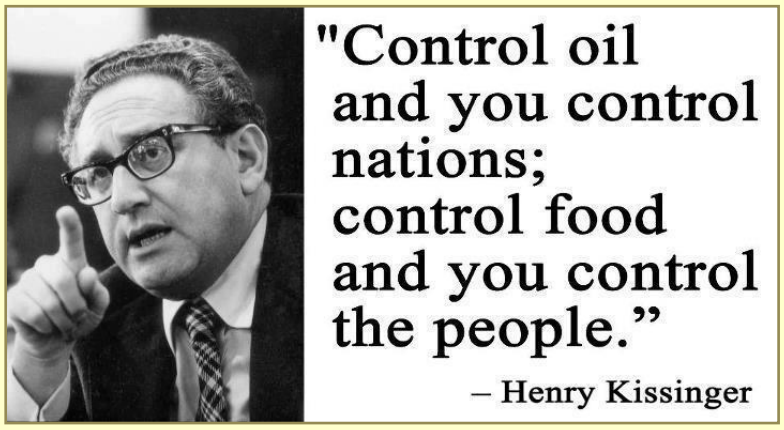
Some theatric episodes were characterized as scandalous and blasphemous. Pornography, bigamy, hemophilia, nymphomania, polyandry, polygamy and heterosexuality were dramatized in a pedagogical way so the mysticism about them would not cause phobia or anathema or taken as anomaly but through logic, dialogue and analysis skepticism and the pathetic or cryptic mystery behind them would be dispelled.
It is historically and chronologically proven that theater emphasized pedagogy, idealism and harmony. Paradoxically it also energized patriotism a phenomenon that symbolized ethnically character and phenomenal heroism.

Dr. John N. Kalaras, Ph.D. *is Global Consultant-Senior Professor at Quality Training Institute, Greater Chicago Area, USA.*

National Security Study Memorandum 200

Source: http://en.wikipedia.org/wiki/National_Security_Study_Memorandum_200

National Security Study Memorandum 200: Implications of Worldwide Population Growth for U.S. Security and Overseas Interests (NSSM200) was completed on December 10, 1974 by the United States National Security Council under the direction of Henry Kissinger.
It was adopted as official U.S. policy by President Gerald Ford in November 1975, It was originally classified, but was later declassified and obtained by researchers in the early 1990s.



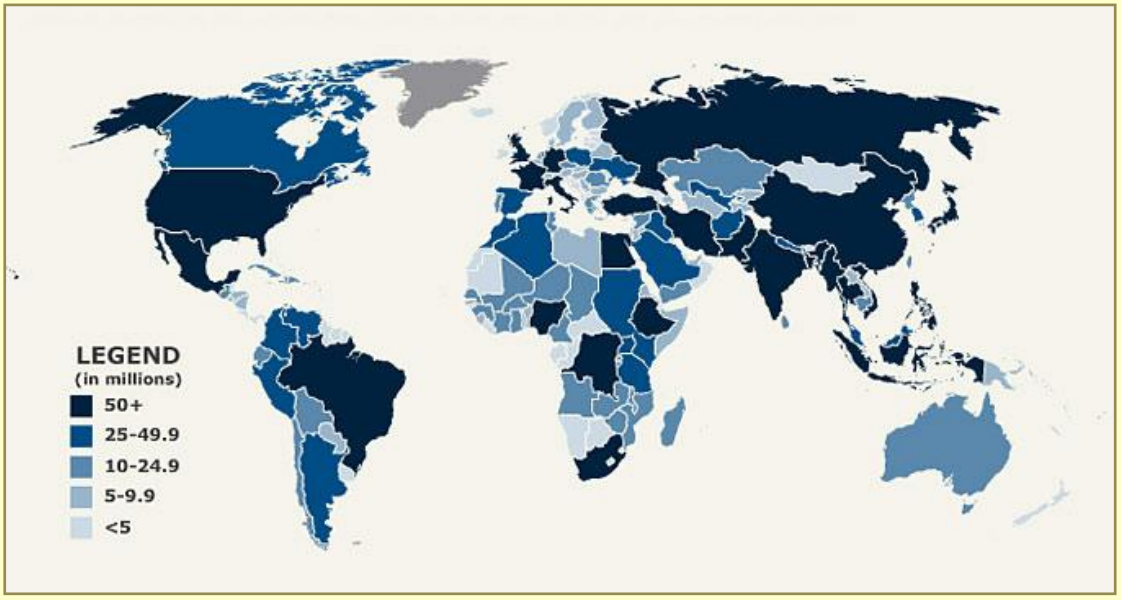
Findings

The basic thesis of the memorandum was that population growth in the least developed countries (LDCs) is a concern to U.S. national security, because it would tend to risk civil unrest and political instability in countries that had a high potential for economic development. The policy gives "paramount importance"

to population control measures and the promotion of contraception among 13 populous countries. This is to control rapid population growth which the US deems inimical to the socio-political and economic growth of these countries and to the national interests of the United States, since the "U.S. economy will require large and increasing amounts of minerals from abroad", and these countries can produce destabilizing opposition forces against the United States.
It recommends that US leadership "influence national leaders" and that "improved world-wide support for population-related efforts should be sought through increased emphasis on mass media and other population education and motivation programs by the U.N., USIA, and USAID."

Named countries

Thirteen countries are named in the report as particularly problematic with respect to U.S. security interests: India, Bangladesh, Pakistan, Indonesia, Thailand, the Philippines, Turkey,



Nigeria, Egypt, Ethiopia, Mexico, Colombia, and Brazil. These countries are projected to create 47 percent of all world population growth.

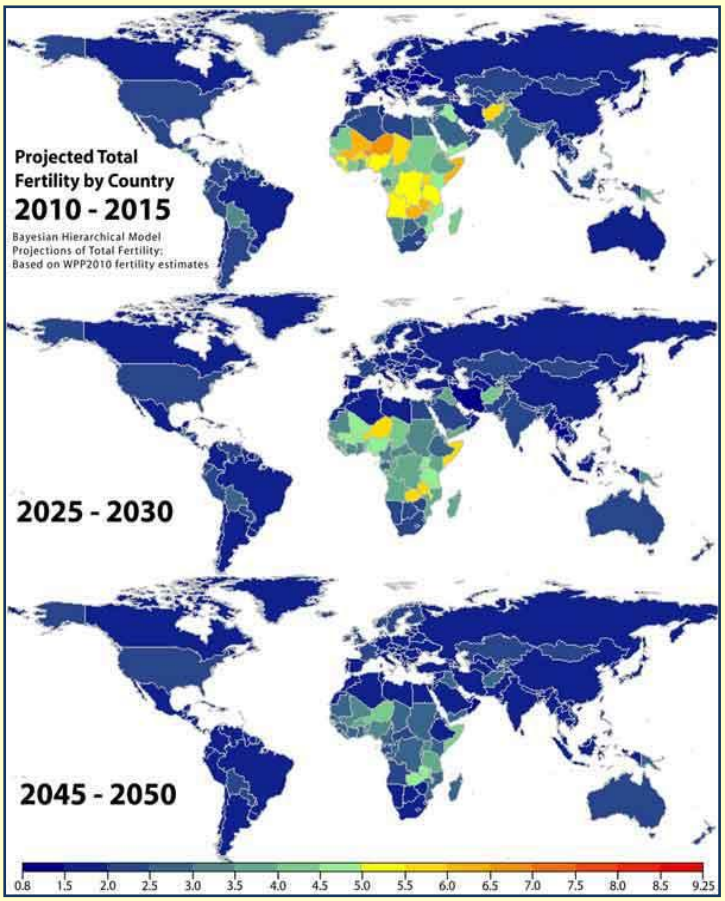
The report advocates the promotion of education and contraception and other population control measures, stating for instance that "No country has reduced its population growth without resorting to abortion".
It also raises the question of whether the U.S. should consider preferential allocation of surplus food supplies to states that are deemed constructive in use of population control measures.

Key insights

Some of the key insights of report are controversial:

"The U.S. economy will require large and increasing amounts of minerals from abroad, especially from less developed countries [see National Commission on Materials Policy, Towards a National Materials Policy: Basic Data and Issues, April 1972]. That fact gives the U.S. enhanced interest in the political, economic, and social stability of the supplying countries. Wherever a lessening of population pressures through reduced birth rates can increase the prospects for such stability, population policy becomes relevant to resource supplies and to the economic interests of the United States. . . . The location of known reserves of higher grade ores of most minerals favors increasing dependence of all industrialized regions on imports from less developed countries. The real problems of mineral supplies lie, not in basic physical sufficiency, but in the politico-economic issues of access, terms for exploration and exploitation, and division of the benefits among producers, consumers, and host country governments" [Chapter III-Minerals and Fuel].

"Whether through government action, labor conflicts, sabotage, or civil disturbance, the smooth flow of needed materials will be jeopardized. Although population pressure is obviously not the only factor involved, these types of frustrations are much less likely under conditions of slow or zero population growth" [Chapter III-Minerals and Fuel].



"Populations with a high proportion of growth. The young people, who are in much higher proportions in many LDCs, are likely to be more volatile, unstable, prone to extremes, alienation and violence than an older population. These young people can more readily be persuaded to attack the legal institutions of the government or real property of the 'establishment,' 'imperialists,' multinational corporations, or other-often foreign-influences blamed for their troubles" [Chapter V, "Implications of Population Pressures for National Security].

"We must take care that our activities should not give the appearance to the LDCs of an industrialized country policy directed against the LDCs. Caution must be taken that in any approaches in this field we support in the LDCs are ones we can support within this country. "Third World" leaders should be in the forefront and obtain the credit for successful programs. In this context it is important to demonstrate to LDC leaders that such family planning programs have worked and can work within a reasonable period of time." [Chapter I, World Demographic Trends]

The report advises, "In these sensitive relations, however, it is important in style as well as substance to avoid the appearance of coercion."

Abortion as a geopolitical strategy is mentioned several dozen times in the report with suggestive implications. These are some of the lines:

"No country has reduced its population growth without resorting to abortion."

"...under developing country conditions foresight methods not only are frequently unavailable but often fail because of ignorance, lack of preparation, misuse and non-use. Because of these latter conditions, increasing numbers of women in the developing world have been resorting to abortion..."

▶ **Read the full report at:** http://pdf.usaid.gov/pdf_docs/PCAAB500.pdf

Hillary Clinton reviews Henry Kissinger's 'World Order'

By Hillary Rodham Clinton

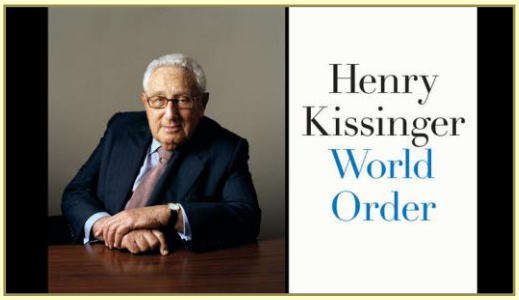
Comments 362

Source: http://www.washingtonpost.com/opinions/hillary-clinton-reviews-henry-kissingers-world-order/2014/09/04/b280c654-31ea-11e4-8f02-03c644b2d7d0_story.html

September 04 – When Americans look around the world today, we see one crisis after another. Russian aggression in Ukraine, extremism and chaos in Iraq and Syria, a deadly epidemic in West Africa, escalating territorial tensions in the East

and South China seas, a global economy that still isn't producing enough growth or shared prosperity — the liberal international order that the United States has worked for generations to build and defend seems to be under pressure from every quarter. It's no wonder so many Americans express uncertainty and even fear about our role and our future in the world.

In his new book, **"World Order,"** Henry Kissinger explains the historic scope of this



challenge. His analysis, despite some differences over specific policies, largely fits with the broad strategy behind the Obama administration's effort over the past six years to build a global architecture of security and cooperation for the 21st century.

During the Cold War, America's bipartisan commitment to protecting and expanding a community of nations devoted to freedom, market economies and cooperation eventually proved successful for us and the world. Kissinger's summary of that vision sounds pertinent today: "an inexorably expanding cooperative order of states observing common rules and norms, embracing liberal economic systems, forswearing territorial conquest, respecting national sovereignty, and adopting participatory and democratic systems of governance."

This system, advanced by U.S. military and diplomatic power and our alliances with like-minded nations, helped us defeat fascism and communism and brought enormous benefits to Americans and billions of others. Nonetheless, many people around the world today — especially millions of young people — don't know these success stories, so it becomes our responsibility to show as well as tell what American leadership looks like.

This is especially important at a time when many are wondering, as Kissinger puts it, "Are we facing a period in which forces beyond the restraints of any order determine the future?"

For me, this is a familiar question. When I walked into the State Department in January 2009, everyone knew that it was a time of dizzying changes, but no one could agree on what they all meant. Would the economic crisis bring new forms of cooperation or a return to

protectionism and discord? Would new technologies do more to help citizens hold leaders accountable or to help dictators keep tabs on dissidents? Would rising powers such as China, India and Brazil become global problem-solvers or global spoilers? Would the emerging influence of non-state actors be defined more by the threats from terrorist networks and criminal cartels, or by the contributions of courageous NGOs? Would growing global interdependence bring a new sense of solidarity or new sources of strife?

President Obama explained the overarching challenge we faced in his Nobel lecture in December 2009. After World War II, he said, "America led the world in constructing an architecture to keep the peace. . . . And yet, a decade into a new century, this old architecture is buckling under the weight of new threats."

I was proud to help the president begin reimagining and reinforcing the global order to meet the demands of an increasingly interdependent age. In the president's first term, we laid the foundation, from repaired alliances to updated international institutions to decisive action on challenges such as Iran's nuclear program and the threat from Osama bin Laden.

The crises of the second term underscore that this is a generational project that will demand a commitment from the United States and its partners for years to come.

Kissinger writes that foreign policy is not "a story with a beginning and an end," but "a process of managing and tempering ever-

recurring challenges." This calls to mind John F. Kennedy's observation that peace and progress are "based not on a sudden revolution in human nature but on a gradual evolution in human institutions . . . a process — a way of solving problems."

America, at its best, is a problem-solving nation. And our continued commitment to renovating and defending the global order will determine whether we build a future of peace, progress and prosperity in which people everywhere have the opportunity to live up to their God-given potential.

Much of "World Order" is devoted to exploring this challenge. It is vintage Kissinger, with his singular combination of breadth and acuity along with his knack for connecting headlines to trend lines — very long trend lines in this case. He ranges from the Peace of Westphalia to the pace of microprocessing, from Sun Tzu to Talleyrand to Twitter. He traces the Indian view of order back to the Hindu epics; the Muslim view to the campaigns of Muhammad; the European view to the carnage of the Thirty Years' War (which elicits a comparison to the Middle East today); the Russian view to "the hard school of the steppe, where an array of nomadic hordes contended for resources on an open terrain with few fixed borders." This long view can help us understand issues from Vladimir Putin's aggression to Iran's negotiating strategy, even as it raises the difficult question of "how divergent historic experiences and values can be shaped into a common order."

Given today's challenges, Kissinger's analyses of the Asia-Pacific and the Middle East are particularly valuable.

When it comes to Asia, he notes that all of the region's rising powers, China included, have their own visions of regional and global order, shaped by their own histories and present situations. How we contend with these divergent visions — building a cooperative relationship with China while preserving our other relationships, interests and values in a stable and prosperous region — will go a long way toward determining whether we can meet the broader global challenge.

In my book "Hard Choices," I describe the strategy President Obama and I developed for the Asia-Pacific, centered on strengthening our traditional alliances; elevating and harmonizing the alphabet soup of regional organizations, such as ASEAN (the Association of Southeast Asian Nations) and APEC (the Asia-Pacific Economic Cooperation organization); and engaging China more broadly — both bilaterally, through new venues such as the Strategic and Economic Dialogue, and multilaterally, in settings where regional pressure would encourage more constructive behavior and shared decision-making on matters from freedom of navigation to climate change to trade to human rights. Our "pivot to Asia," as it came to be known, is all about establishing a rules-based order in the region that can manage the peaceful rise of new powers and promote universal norms and values.

This kind of methodical, multilateral diplomacy is often slow and frustrating, rarely making headlines at home, but it can pay real dividends that affect the lives of millions of people. And without an effective regional order, the challenges multiply. Just look at the Middle East. "Nowhere," Kissinger observes, "is the challenge of international order more complex — in terms of both organizing regional order and ensuring the compatibility of that order with peace and stability in the rest of the world."

Kissinger is a friend, and I relied on his counsel when I served as secretary of state. He checked in with me regularly, sharing astute observations about foreign leaders and sending me written reports on his travels. Though we have often seen the world and some of our challenges quite differently, and advocated different responses now and in the past, what comes through clearly in this new book is a conviction that we, and President Obama, share: a belief in the indispensability of continued American leadership in service of a just and liberal order.

There really is no viable alternative. No other nation can bring together the necessary coalitions and provide the necessary capabilities to meet today's complex global threats. But this leadership is not a birthright; it is a responsibility that must be assumed with determination and humility by each generation.

Fortunately, the United States is uniquely positioned to lead in the 21st century. It is not just because of the enduring strength of our military or the resilience of our

economy, although both are absolutely essential. It goes deeper than that. The things that make us who we are as a nation — our diverse and open society, our devotion to human rights and democratic values — give us a singular advantage in building a future in which the forces of freedom and cooperation prevail over those of division, dictatorship and destruction.

This isn't just idealism. For an international order to take hold and last, Kissinger argues, it must relate "power to legitimacy." To that end, Kissinger, the famous realist, sounds surprisingly idealistic. Even when there are tensions between our values and other objectives, America, he reminds us, succeeds by standing up for our values, not shirking them, and leads by engaging peoples and societies, the sources of legitimacy, not governments alone. If our might helps secure the balance of power that underpins the international order, our values and principles help make it acceptable and attractive to others.

So our levers of leadership are not just about keeping our military strong and our diplomacy agile; they are about standing up for human rights, about advancing the rights and role of women and girls, about creating the space for a flourishing civil society and the conditions for broad-based development.

This strategic rationale guided my emphasis as secretary of state on using all the tools of foreign policy, even those sometimes dismissed as "soft." I called it "smart power," and I still believe it offers a blueprint for sustained American leadership in the decades ahead. We have to play to our strengths. And in an age when legitimacy is defined from the bottom up rather than the top down, America is better positioned than our more autocratic competitors.

Kissinger recognizes this as well. He understands how much the world has changed since his time in office, especially the diffusion of power and the growing influence of forces beyond national governments. International problems and solutions are increasingly centered, in ways both good and bad, on nongovernmental organizations, businesses and individual citizens. As a result, foreign policy is now as much about people as it is about states. Kissinger rightly notes that these shifts require a broader and deeper order than sufficed in the past. "Any system of world order, to be sustainable, must be accepted as just — not only by leaders, but also by citizens," he writes.

That is true abroad, and it is also true at home. Our country is at its best, and our leadership in the world is strongest, when we are united behind a common purpose and shared mission, and advancing shared prosperity and social justice at home. Sustaining America's leadership in the world depends on renewing the American dream for all our people.

In the past, we've flirted with isolationism and retreat, but always heeded the call to leadership when it was needed most. It's time for another of our great debates about what America means to the world and what the world means to America. We need to have an honest conversation together — all of us — about the costs and imperatives of global leadership, and what it really takes to keep our country safe and strong.

We have a lot to talk about. Sometimes we'll disagree. **But that's what democracy is all about.** A real national dialogue is the only way we're going to rebuild a political consensus to take on the perils and the promise of the 21st century. Henry Kissinger's book makes a compelling case for why we have to do it and how we can succeed.

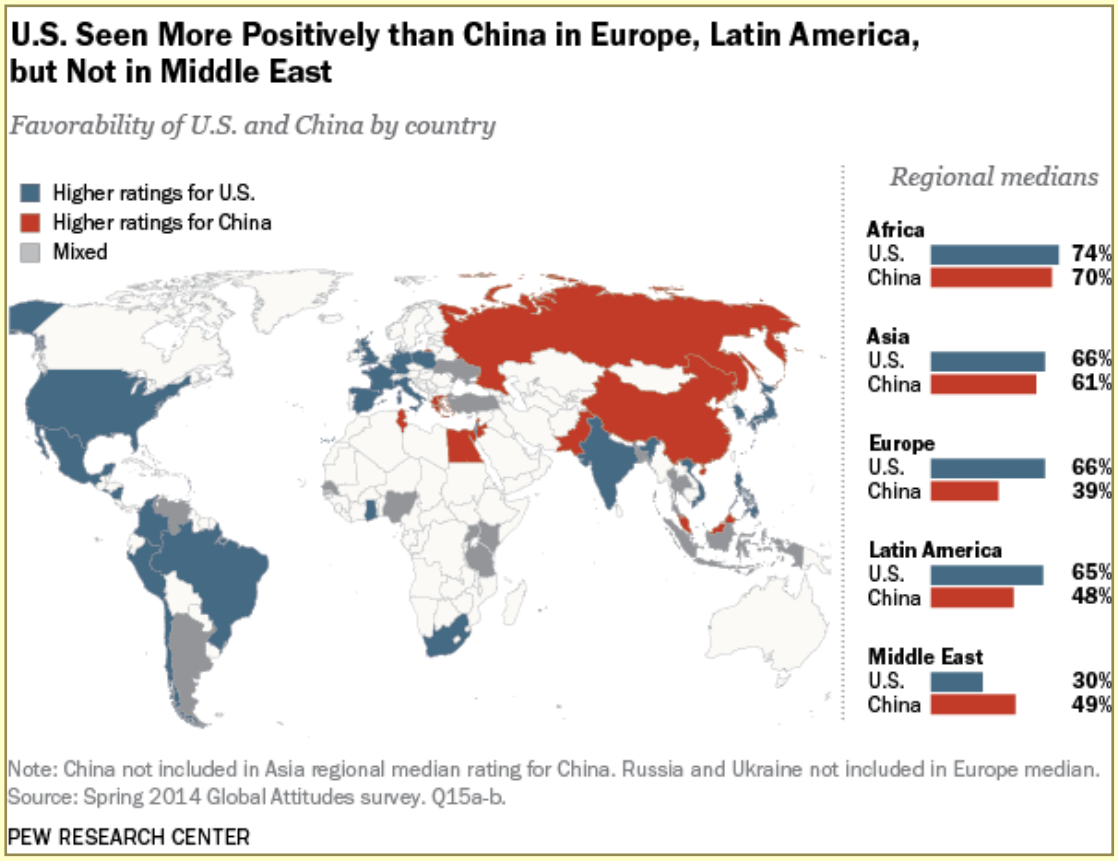
Hillary Rodham Clinton *was the 67th Secretary of State, USA.*

Instead of comment…

US vs. China: Who do you like more?

US popularity in the world is waning as China's power grows

Source: http://www.globalpost.com/dispatch/news/politics/130718/us-vs-china-who-do-you-more



A new Pew Center poll asked 37,653 people from 39 different countries their opinions on a variety of topics concerning the United States and China. The survey found the world views the United States more favorably than China, but believes China has or will soon become the world's leading power.

U.S., China Favorability

	% Favorable		
	U.S. %	China %	*Diff*
U.S.	--	37	--
Canada	64	43	*+21*
Italy	76	28	*+48*
Germany	53	28	*+25*
Poland	67	43	*+24*
Czech Rep.	58	34	*+24*
France	64	42	*+22*
Spain	62	48	*+14*
Britain	58	48	*+10*
Russia	51	62	*-11*
Greece	39	59	*-20*
MEDIAN	**58**	**43**	
Israel	83	38	*+45*
Turkey	21	27	*-6*
Lebanon	47	56	*-9*
Tunisia	42	63	*-21*
Jordan	14	40	*-26*
Egypt	16	45	*-29*
Palest. ter.	16	47	*-31*
MEDIAN	**21**	**45**	

Across the board 63 percent of respondents have a positive opinion of the United States, while only 50 percent have a positive opinion of China. Still, 47 percent of respondents believe China has or will soon overtake the United States as the world's top power. Only three nations — Japan, the Philippines and Egypt — have a majority that believes China will never overtake the United States.

The United States is most unpopular in the Middle East and almost every nation condemns the country's use of drone strikes in places like Yemen, Pakistan and Somalia.

Only Israel, the United States itself and Kenya support the strikes. Israel is the only Middle Eastern nation with a positive view of the

United States, at 83 percent. Meanwhile, every single Middle Eastern country except Israel has a positive opinion of China.
In Africa, despite huge investments from China in the last decade, more countries still view the United States more positively than China. This is especially true when comparing soft power. African countries prefer America's "way of doing business" over China's and tend to appreciate American democratic ideals.
China beats the United States in Latin America, where every country except Brazil, El Salvador and Mexico believes China has a more positive influence on society in general.
The favorability of the United States in general has been dropping since 2009. Every country of the 39 surveyed has a less favorable opinion of US President Barack Obama than they did in 2009.
China's favorability has remained largely unchanged. No country's favorability rating of China grew more than 10 points, except for Argentina and Uganda. China's strongest reviews come from South America, Pakistan, Indonesia and Malaysia.
The world disapproves of both the US and China's perceived unilateral action when forming foreign policy. The major source of negativity for the United States comes from its engagement in the Middle East, while China is most hurt in its territorial disputes in East Asia.
More nations are beginning to see China as the world's leading power. In 2008, 47 percent saw the United States as the world's leading economic power, while 20 percent thought China held the top slot. Today 41 percent say the United States, while 34 percent say China.
Despite the growing economic influence of China and the waning favorability of the United States, 70 percent of respondents believe the United States has more respect for personal freedom than China. In fact, no country had a majority that believed the United States does not respect its citizens' personal freedoms.

EDITOR'S COMMENT: The US-Turkey friction was known already. Perhaps a kind of surprise is that Greeks are pro-Chinese! (not mentioned in the article) A big shift from the traditional attitude "we belong in the West and breath under the US umbrella". It seems that in the long run of history the siblings of ancient civilizations sooner or later join together. Statistics is a devious game and results can be read and interpreted in many ways. But polls like this might deliver a meaningful message about how strong nations treat their allies and the sincerity historical bonds bear with them. **What if** Greece proceeds to a "currency swap" with China following the example of Argentina? Not much to lose given our current miserable turmoil… It would be of interest to have a similar poll entitled "*Favorability of USA vs. Russia*".

Iron Dome would not cope with Hezbollah missiles

Source: http://www.dailystar.com.lb/News/Lebanon-News/2014/Sep-06/269789-iron-dome-would-not-cope-with-hezbollah-missiles-report.ashx#axzz3CkOJwW51

September 06 – **Israel's Iron Dome Defense System would not be able to cope with Hezbollah's precision rockets in any future war, an officer in the Israeli army has said, while warning that the next conflict with the resistance group would be "very violent."**
In a report broadcast by Israel's Channel 2, **Col. Dan Goldfus** said that Israelis needed to know that a war with Hezbollah would be "a whole different story," than the recent war Israel waged on Gaza.
"We will need to move quickly and flexibly," he said.
The report said that Israel estimated that **Hezbollah had about 100,000 rockets**, with most of them hidden in south Lebanon but with long-range missiles in Beirut capable of carrying large warheads of up to 1 ton.
The **missiles in Beirut are equipped with precision guidance systems and can reach all of Israel**, which would make it difficult for the Iron Dome missile defense system to deal with them as successfully as the less sophisticated rockets used by Hamas during the Gaza war.
The report also spoke of repeated concerns that Hezbollah had dug tunnels along the border with Israel, saying residents had reported noise under their houses.

Goldfus did not rule out the possibility of Hezbollah digging tunnels, saying that the Israeli army was concerned over the matter in light of recent tunnels unearthed and later destroyed by Israel in Gaza.
In any future war, Goldfus said: **"We will have to use considerable force" to quickly prevail over the Hezbollah, "to act more decisively, more drastically."**

EDITOR'S COMMENT: It would be interesting to define "considerable force" (last sentence) although most might think that the "inevitable" is not that far away.

60 Worldwide Towns are Named Athens

Source: http://greece.greekreporter.com/2010/12/17/60-worldwide-towns-are-named-athens/#sthash.w1CRDAYE.dpuf

December 2010 – *Caption: from the first meeting in Athens of the mayors of all the cities named "Athens" all around the world.*

Not one…not even two! **Sixty towns all over the world have adopted the name Athens.** Most of them are all over the U.S.A. Georgia's Athens is the best known. It has a population of 112,000 people and is the second biggest Athens, after Greece. The third largest Athens is in Wisconsin, a small agricultural village of almost 1,000 habitats.

The Athens name has been used for cities all over the world. It's the only town that has given its name to such a large number of towns. There has been no other link or institutional relation between those towns until now.

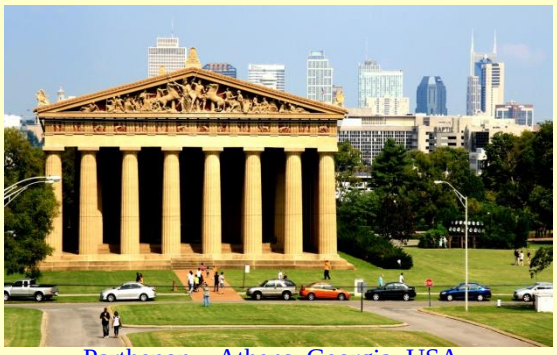
The cities that have the name of Athens are very special. They all have the honor and responsibility to be the symbol of their name and action. They should portray democratic spirit, freedom, responsibility, evolution and respect. The word Athens means a world of democracy, freedom, equality and a civilized world.

Towns named Athens:

* **Athens, Attiki, Greece** [One of the world's oldest cities, with its recorded history spanning around 3,400 years; Pop: 664,046 - urban area of Athens (Greater Athens and Greater Piraeus) extends beyond its administrative municipal (City) limits, with a population of 3,074,160 over an area of 412 km^2]

* Athens Alabama, USA [Founded: 1818; Pop: 21,000; initial name: Atheson]
* Athens Arkansas, USA
* Athens California, USA {Pop: 9,101]
* Athens Ohio, USA [Known as "College City" ; Pop: 23,832]
* Athens Georgia, USA [Founded: 1801; Pop: 192,541; First building: replica of Parthenon; main place has a statue of goddess Athena in the base of which the Ancient Athenian Youth Oath is written along with the words: Wisdom, Learning, Arts, Sports, Industry, Commerce and Agriculture – photo]
* Athens Illinois, USA [Pop: 1,778; starting point of Abraham Lincoln campaign for US Presidency]
* Athens Indiana, USA [Initial name: Hoover Station; in May 28th, 1896 renamed Athens]
* Athens Kansas, USA [Area: 102,24 km^2; Pop: 74]
* Athens Lexington Kentucky, USA
* Athens Louisiana, USA [Pop: 249]


Parthenon – Athens, Greece


Parthenon – Athens, Georgia, USA

* Athens Somerset Maine, USA [Pop: 847; 12% of which are of Greek origin]
* Athens Calhoun Michigan, USA [Pop: 1,000; crossed by Nottowa River]
* Athens Mississippi, USA
* Athens Missouri, USA [Pop: 2,362; very close to Albany]
* Athens New York, USA [Founded: 1815; Pop: 4,000; by the Hudson River]
* Athens Ohio, USA
* Athens Pennsylvania, USA
* Athens Tennessee, USA [Pop: 13,500; initial name: "Pumpkintown"]
* Athens Texas, USA [Pop: 12,710; origin of hamburgers and black beans]
* Athens Vermont, USA [Pop: 340; became nationwide known from the TV series "Extreme Makeover – Home Edition" (new home for Vitale Family)]
* Athens West Virginia, USA [Pop: 1,048; University of Concord]
* Athens Wisconsin, USA [Pop: 1,000]
* Athens Ontario, Canada [Pop: 3,086; initial name "Farmersville"; renamed in 1888 to Athens; the only city with this name in Canada; biggest Corn Festival in the world]
* Athenstedt, Saxony-Anhalt, Germany [Pop: 408; the only city with this name in Germany]
* Athens of Ayrshire – Troon, Scotland
* Athens of Cuba – Matanzas, Cuba
* Athens of Egypt- Alexandria, Egypt
* Athens of Finland – Jyväskylä, Finland
* Athens of Florida – DeLand, Florida, USA
* Athens of Indiana – Crawfordsville, Indiana, USA
* Athens of Latin America – Santo Domingo, Dominican Republic
* Athens of Minas Gerais – Juiz de Fora, Brazil
* Athens of North America – Boston, USA

* Athens of Sicily – Catania, Italy
* Athens of South America – Bogotá, Columbia
* Athens of the Bodrog – Sárospatak, Hungary
* Athens of the East – Madurai, India
* Athens of the Middle Ages – Florence, Italy
* Athens of the North – Edinburgh, Scotland
* Athens of the South – Nashville, USA
* Athens of the Southern Hemisphere – Dunedin, New Ziland
* Athens of the West (early 19th c.) – Lexington, USA
* Athens of the West – Berkeley, California, USA
* Athens on the Isar – Munich, Germany
* Athens on the Spree – Berlin, Germany
* Athens on the Torysa – Prešov, Slovakia
* Brazilian Athens – São Luís, Maranhão, Brazil
* Czech Athens – Krnov, Scotland
* Lusa Athens – Coimbra, Portugal
* Sardinian Athens – Nuoro, Italy
* Serbian Athens – Novi Sad, Serbia
* Siberian Athens – Tomsk, Russia
* Athens of the South – Tampa, Florida, USA

2014 UNICEF Report

Source: http://www.unicef.org/media/media_75893.html

September 16 – Child survival rates have increased dramatically since 1990, during which time the absolute number of under-five deaths has been slashed in half from 12.7 million to 6.3 million, according to a report released today by UNICEF.

The 2014 Committing to Child Survival: A Promise Renewed progress report, indicates that the first 28 days of a newborn's life are the most vulnerable with almost 2.8 million babies dying each year during this period. One million of them don't even live to see their second day of life.

Many of these deaths could be easily prevented with simple, cost-effective interventions before, during and immediately after birth.

Analysis points to failures in the health system during the critical time around delivery as a significant contributing factor to these unnecessary deaths. It also shows that there is considerable variation – from country to country and between rich and poor – in the take-up and quality of health services available to pregnant women and their babies.

1 million children die during their first day of life from mostly preventable causes

Key findings in this study include:

- Around half of all women do not receive the recommended minimum of four antenatal care visits during their pregnancy.
- Complications during labour and delivery are responsible for around one quarter of all neonatal deaths worldwide. In 2012, 1 in 3 babies (approximately 44 million) entered the world without adequate medical support.
- Evidence shows that initiating breastfeeding within one hour of birth reduces the risk of neonatal death by 44 per cent, yet less than half of all newborns worldwide receive the benefits of immediate breastfeeding.

- Quality of care is grossly lacking even for mothers and babies who have contact with the health system. A UNICEF analysis of 10 high mortality countries indicates that less than 10 percent of babies delivered by a skilled birth attendant went on to receive the seven required post-natal interventions, including early initiation of breastfeeding.
- Similarly, less than 10 per cent of mothers who saw a health worker during pregnancy received a core set of eight prenatal interventions.
- Those countries with some of the highest number of neonatal deaths also have a low coverage of postnatal care for mothers. Ethiopia (84,000 deaths; 7 per cent coverage); Bangladesh (77,000; 27 per cent); Nigeria (262,000; 38 per cent); Kenya (40,000; 42 per cent).
- Babies born to mothers under the age of 20 and over the age of 40 have higher mortality rates.

Additionally, the report shows that the education level and age of the mother has a significant bearing on the chances of her baby's survival. Neonatal mortality rates among mothers with no education are nearly twice as high for those with secondary schooling and above.

"The data clearly demonstrate that an infant's chances of survival increase dramatically when their mother has sustained access to quality health care during pregnancy and delivery," said Geeta Rao Gupta, UNICEF Deputy Executive Director. "We need to make sure that these services, where they exist, are fully utilised and that every contact between a mother and her health worker really counts. Special efforts must also be made to ensure that the most vulnerable are reached."

Inequality, particularly in health care access, remains high in the least developed countries: women from the richest households are almost three times as likely as those from the poorest to deliver their baby with a skilled birth attendant. Despite this, the report suggests that the equity gap in under-5 child mortality is steadily reducing. In every region, except sub-Saharan Africa, the proportion of under-five mortality among the poorest sections of society is declining faster than in the richest. More significantly, worldwide, the poor are registering greater absolute gains in child survival than their wealthier compatriots.

"It is deeply heartening that the equity gap in child survival is continuing to narrow," said Rao Gupta. "We need to harness this momentum and use it to drive forward programmes that focus resources on the poorest and marginalised households; a strategy which has the potential to save the largest number of children's lives."

Today the UN's Inter-Agency Group for Child Mortality Estimation released new data in the *Levels and Trends in Child Mortality* 2014 report.

▶ **Access the report** here.

Wojtek the Bear

Source: http://en.wikipedia.org/wiki/Wojtek_%28bear%29

Wojtek (1942–1963; usually spelled *Voytek* in English), was a Syrian brown bear cub found in Iran and adopted by soldiers of the 22nd Artillery Supply Company of the Polish II Corps. During the Battle of Monte Cassino, Wojtek helped move ammunition. The name "Wojtek" is a diminutive form of "Wojciech", an old Slavic name that is still common in Poland today and means "he who enjoys war" or "smiling warrior",

Polish soldier with Wojtek in Iran 1942.

History

In 1942, a local boy found a bear cub near Hamadan, Iran, whose mother had been shot. He sold it to Irena (Inka) Bokiewicz, a young Polish refugee walking across the

Elbruz mountains as she escaped from the Soviet Union. When he became too big she donated him to the Polish Army. As the bear was less than a year old, he initially had problems swallowing and was fed with condensed milk from an emptied vodka bottle. **The bear was subsequently fed with fruit, marmalade, honey and syrup, and was often rewarded with beer, which became his favourite drink. He also enjoyed smoking and eating cigarettes. He enjoyed wrestling and was taught to salute when greeted.** The bear became quite an attraction for soldiers and civilians alike, and soon became an unofficial mascot of all units stationed nearby. With the company he moved to Iraq and then through Syria, Palestine and Egypt.

Private Wojtek

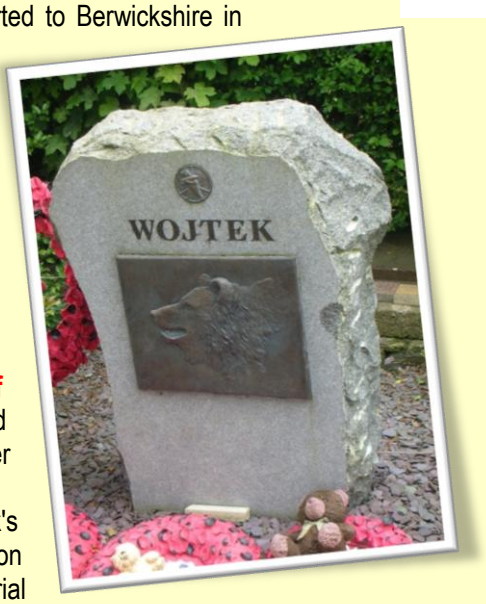
To get him on a British transport ship when the unit sailed from Egypt to fight with the British 8th Army in the Italian campaign, he was officially drafted into the Polish Army as a Private and was listed among the soldiers of the 22nd Artillery Supply Company of the Polish II Corps. Henryk Zacharewicz and Dymitr Szawlugo were assigned as his caretakers.

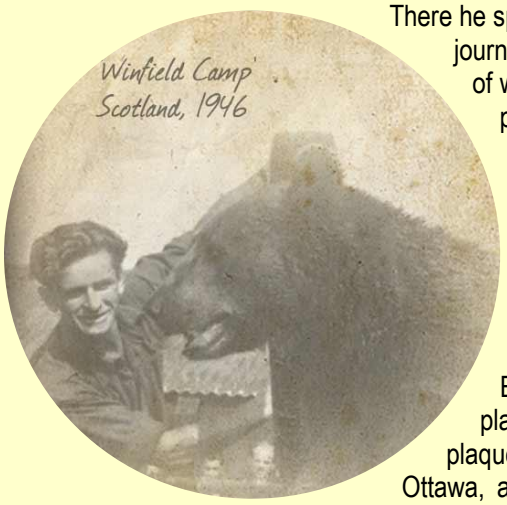
Wojtek with artillery shell - emblem of the 22nd Transport Company.

As an officially enlisted "soldier" of the company, he lived with the other men in their tents or in a special wooden crate, which was transported by truck. According to numerous accounts, during the Battle of Monte Cassino Wojtek helped by transporting ammunition – never dropping a single crate. In recognition of the bear's popularity, the HQ approved an effigy of a bear carrying an artillery shell as the official emblem of the 22nd Company (by then renamed to 22nd Transport Company).

Postwar

Following the end of World War II in 1945, the bear was transported to Berwickshire in Scotland, along with parts of the II Corps. Stationed in the village of Hutton, near Duns, Wojtek soon became popular among local civilians and the press. The Polish-Scottish Association made Wojtek one of its honorary members. Following demobilization on November 15, 1947, Wojtek was given to the Edinburgh Zoo. There he spent the rest of his days, often visited by journalists and former Polish soldiers, some of whom would toss him cigarettes, which he proceeded to eat because there was no one there to light them for him. **Wojtek died in December 1963, at the age of 22.** At the time of his death he weighed nearly 500 pounds (230 kg) and was over 6 feet (1.8 meters) tall.





Media attention contributed to Wojtek's popularity. He was a frequent guest on BBC's *Blue Peter* program. Among memorial plaques commemorating the bear-soldier are a stone tablet in Edinburgh Zoo, plaques in the Imperial War Museum and Canadian War Museum in Ottawa, as well as a sculpture by artist David Harding in the Sikorski Museum, London and a carved wooden sculpture in Weelsby Woods, Grimsby. There are proposals to erect a memorial in Edinburgh. On 25 April 2013, Kraków city council decided

to erect a statue of the bear in Park Jordana one of the city's parks. It was unveiled on 18 May 2014.
On 30 December 2011, a film, *Wojtek – The Bear That Went to War*, was broadcast on BBC2 Scotland. On 16 September 2013 the City of Edinburgh Council approved the erection of a bronze statue of Wojtek to stand in the city's Princes Street Gardens. The statue is to represent Wojtek and a Polish

Army Soldier walking in peace and unity. A 4 m (13 ft) long relief will present his journey from Egypt to Scotland alongside the Polish Army.

Scotland Is Paving The Way For Texas Independence

Source: http://texnat.org/index.php/news/tnm-news/2093-scotland-is-paving-the-way-for-texas-independence

Have you wondered why the media on this side of the pond is relatively quiet in regards to Scotland's upcoming referendum on independence? It is because those in power, sitting in lofty places, know that secession can be contagious. Look at what happened when the southern States of America began to break away. One by one, they followed. The same thing happened in the early 1990's when the Soviet bloc fell.

Most people on the streets of America have no idea that Scotland will have a chance to vote for freedom in just over a week. Of course, most probably don't know that Scotland isn't independent to

begin with. That's another story about our level of geopolitical education that we'll deal with in a future article.

Scotland's internal and external opponents of independence sound like the typical battered wife syndrome. They call their campaign "Better Together," and make claims that Scotland and the rest of the UK, comprised of England, Wales, and Northern Ireland, will both suffer if Scotland decides to make a go of self-determination. Additionally, there are a great number of Scotts who worry about what social programs and benefits will be lost rather than what will be gained through independence.

If these arguments sound familiar to anyone who has campaigned for Texas independence for any amount of time, they should. The "What will happen to my Social Security" question is being heard word for word at town hall meetings and debates across Scotland. The similarities don't stop there.

Centralists in America fear that, if Scotland votes yes, it may set a chain of events in motion that could affect many more western regions. Suddenly, the impossible seems possible. Catalonia is watching Scotland very closely. They are poised to hold a referendum on independence from Spain without the blessings of Madrid. The Spanish government claims that an independence referendum in Catalonia is illegal. Sound familiar?

A yes vote will create a paradigm shift. Texans who say "It would be nice but it won't happen," will now have to rethink that statement. It can and should happen. Texas has a much higher chance at prosperity than does Scotland or many other countries that are already independent. Independence by a western region will no longer be something that happened in the history books. It will be something that Texans can look at and relate to today. This is why it is being ignored by Washington and the mainstream press. They are hoping you don't notice.

Don't be surprised if you don't hear much about this historic, ground breaking, vote that may have repercussions across the civilized world. The Texas Nationalist Movement will be watching and ready. Our turn is coming. Our time is now!

EDITOR'S COMMENT: If Texas was an independent country it would have been the 12th largest economy worldwide! It would be of interest how the central government will deal with such a potential problem. It seems that dividing others would be not so interesting anymore comparing to be divided itself!

Public controversies about science and policy

Source: http://www.rathenau.nl/publicaties/publicatie/contested-science.html

'Research shows…' is an all-too-common turn of phrase in policy reports and political debate.These two small words instil great confidence: they imply that policy-making rests on solid grounds, that it is based on objective facts.

But opinions may be divided about the facts. The Netherlands has witnessed repeated controversies in recent years concerning the way in which policymakers use science. The controversies have concerned such divisive issues as the underground

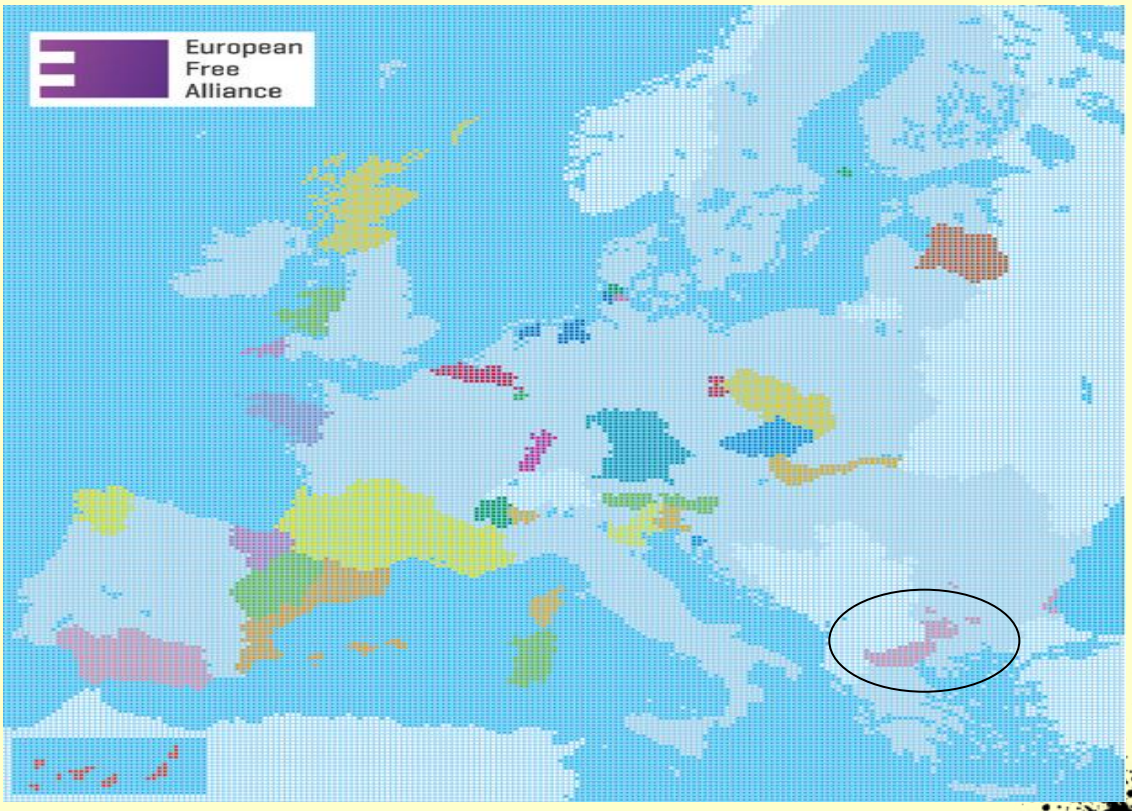
storage of carbon dioxide, exploratory drilling for shale gas, and vaccinations against cervical cancer. In the study 'Contested Science', the Rathenau Instituut looks at six recent controversies and **attempts to answer the following questions:** **In what way do policymakers call in scientific expertise? How do other parties (local residents, local authorities, civil society organisations) respond? Is there a lack of trust in science in such cases? And what lessons can we learn from the way that policymakers and scientists have dealt with public controversies?**

▶ **Read this very interesting paper at:**
http://www.rathenau.nl/uploads/tx_tferathenau/Contested_Science_Rathenau_Instituut.pdf

Just another bad joke!

But we Greeks are not laughing at all!

Source: http://www.e-f-a.org/whos-who/member-parties/



Interactive map (in black circle: "Macedonian community in Greece and Bulgaria")

Improved First Responder Ensembles Against CBRN Terrorism (IFREACT)

Source: http://www.ifreact.eu/about

IFREACT is a consortium of CBRN manufacturers, subject-matter experts and end-users tasked collaboratively with the research on, and production of, an advanced protective ensemble that will enhance the chemical, biological and radiological protection of both European first responders and the public at large.

Resent history has shown that there is no shortage of malice and intent regarding terrorist attacks within Europe. The terrorist attacks on Madrid (2004) and London (2005) demonstrate that European major cities are an effective target for terrorist groups. These cities continue to face the threat of terrorism and, in the near future, may be subject to a serious chemical, biological or radiological terrorist attack.

To adequately prepare for such an attack, IFREACT considers the development of state-of-the-art, protective clothing for European first-responders to be vital; moreover, that collective research has proven to be the most effective way of ensuring consensus, best practice, and delivery of the most advanced personal protective equipment (PPE) possible.

IFREACT takes both the danger of terrorist attacks using CBRN-means and releases other than attack, such as pandemic outbreaks, accidents and other incidents involving dangerous substances, into account in order to achieve its goal of developing innovative protective clothing for first responders.

The current technical means of first responders to handle an incident are far from ideal, as it is stated in the European Security Research Innovation Forum (ESRIF) final report of December 2009. Personal Protective Equipment (PPE) is heavy and bulky, and is a physiological burden that interferes with the operational duties of first responders. It is also a concern that current PPE is not standardized or universal.

The response capability of our first responders to CBRE-type situations, be they terrorist attacks or some other type of HAZMAT incident, is not well suited to the enormous impact

these kind of incidents often have. CBRN protective garments for first responders need to provide protection against a myriad of threats, whilst still allowing the first responder to fulfil his or her duties. Existing forms of protective clothing either do not provide the required level of protection or have other shortcomings, such as being unaffordable or very difficult to use. Having our first responders protected adequately, whilst maintaining a high standard of operability in case of a CBRE event, is of the utmost importance, as first responders are our 'first' line of defense.
Following the qualitative and quantitative evaluation of existing PPE, IFREACT has focused its research on the most emergent threats in order to best fulfill the needs of those end-users who are in the greatest need of protection from both terrorist and non-terrorist related crises.

The objectives

1. To develop a platform that allows end-users and procurement staff to best select the PPE system needed for the mission of the first responder and the expected threat.
2. To develop a PPE system that:
    a. Will address the real protection needs of conventional users, with regards to both the level of protection and its total capacity.
    b. Will provide adequate protection, while keeping the burden of the system as low as possible.
    c. Will include solutions for hand and foot protection, whilst taking safety, ergonomic and logistical aspects of the conventional user group into consideration.

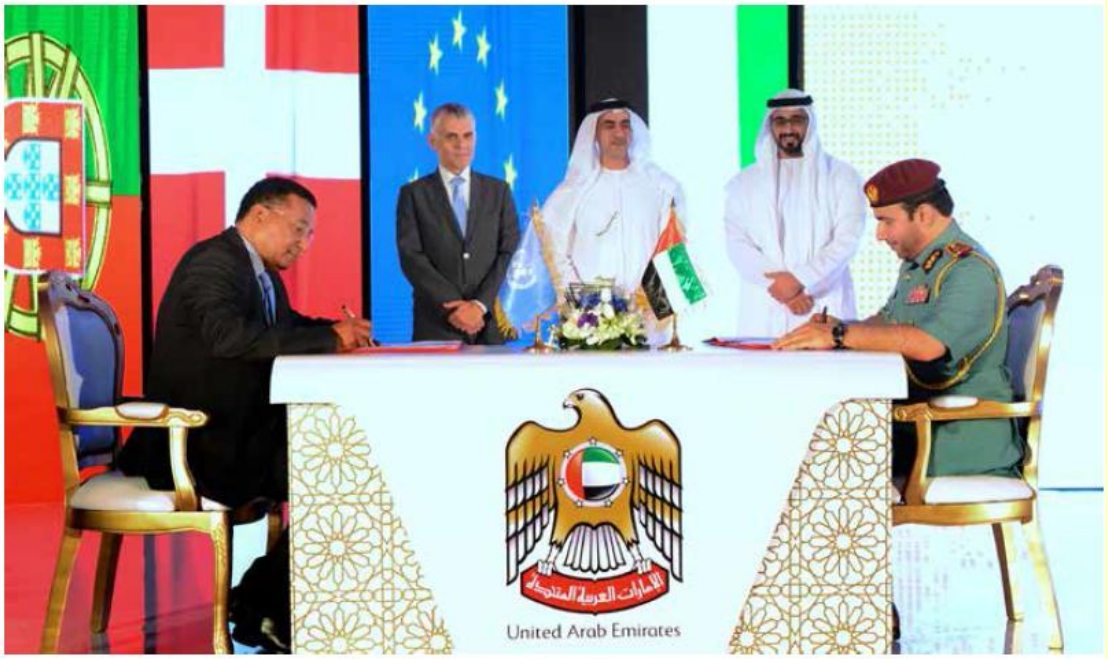
The proposed protective ensemble will incorporate next-generation skin protection, a head-up display, a bio-dosimeter, audio/voice technology, a GPS self-localization device, and an integrated Smartphone; it will also incorporate three types of respiratory protection, heightened situational awareness and agility, as well as comfortable, yet safe, protection against chemical, biological and radiological threats and hazards.
Currently the IFREACT consortium is organizing a number of workshops throughout Europe. The aim of the workshops is to get end user input for the development of innovative Personal Protective Equipment (PPE) system. This deliberate focus on end users was the reason behind the decision to invite French end user SAMU, to organize and coordinate the IFREACT proposal. It is, after all, the end users that have the urgent and vital need for a Personal Protective System that allows first responders to render assistance to victims of CBRN, bio and hazardous materials incidents, and to counter the effects of these incidents.

Inauguration of Regional Secretariat for the GCC in Abu Dhabi

Source: CBRN CoE Newsletter (Vol. 9: August 2014) (www.cbrn-coe.eu)

"The challenges we face today are nothing like challenges we have seen in the past. We are all required to succeed."
The words of His Highness Sheikh Saif bin Zayed Al Nahyan, Deputy Prime Minister and Minister of Interior of the UAE, during the opening ceremony of the latest regional secretariat of the EU CBRN Centers of Excellence.

The grand ballroom of the Jumeirah Hotel in Etihad Towers, Abu Dhabi was the venue for this grand event. The ceremony was attended by a significant num-ber of ministers, ministries' undersecretaries, Arab and foreign diplomats, in addition to representatives from GCC countries, senior Armed forces officers and VIPs.



Signature of the memorandum of understanding between Major General Ahmed Nasser Al Raisi (UAE) and Mr Jonathan Lucas (UNICRI) in the presence of His Highness. Sheikh Saif bin Zayed Al Nahyan (UAE) and Mr Maciej Popowski (EU). 18 June 2014 in Abu Dhabi, UAE.

HH Sheikh Saif went on to say that, "Today's challenges are incredibly com-plex and pressing; overcoming them re-quires unstinting and concerted efforts to ensure success".

He reiterated the UAE Government's keenness and commitment to pro-vide all the requirements of success and leadership to strengthen the preventive aspect and address chemical, biological, radioactive and nuclear (CBRN) risks with advanced scientific methods according to international best practices.

Maciej Popowski, deputy secretary general of the EU external action service (EEAS) stated in his speech that the setting up of a secretariat in Abu Dhabi, "will act as a focal

point for regional CBRN activities [...] and the inauguration is only the start of the process."
Many people felt the effects of Chernobyl and Fukushima and the recent MERS virus demonstrates that CBRN risks are not constrained to a countries borders.
"Gulf counterparts are here," Mr Popowski said. "Partners who join see that value of regional cooperation to combat risks which do not respect borders. The EU and UAE and other Gulf partners are looking at practical ways to cooperate in relation to CBRN risks. We take each other seriously as partners in this domain."
Dr. Jonathan Lucas (Director of UNICRI) delivered a speech, by which he said that the initiative involves forty-five countries working in eight regions under one umbrella.
"Even in difficult times, this re-minds us that the power to transform our world lies in dialogue, mutual trust and cooperation. "At the end of the ceremony, HH Sheikh Saif attended the signing of the agreement to establish the Regional Secretariat of the Chemical, Biological, Radiological and Nuclear (CBRN) Centers of Excellence (CoE) Risk Mitigation in Abu Dhabi. The agreement was signed by Major General Ahmed Nasser Al Raisi, Director General of Central Operations on behalf of the UAE and Dr. Jonathan Lucas, Director, UNICRI, on behalf of the Regional Secretariat of the Centers of Excellence.
The Centers of Excellence initiative is based on a voluntary, bottom-up approach responding to the interests of all the partners. The next step will include a reinforcement of regional contacts and national efforts to combat CBRN risks.
In the words of H.H. Sheikh Saif, "It is our duty to-wards our communities that have entrusted us to protect them and address the risks that threaten them. These efforts are mandatory to ensure further progress and achieve human prosperity across the globe."

Self-reliance and CBRN

Source: http://www.brandweerkennisnet.nl/@39887/zelfredzaamheid-cbrn/

▶ **Full study in Dutch is available at source's URL.**

No clear understanding currently exists in the Netherlands regarding the issue of what civilians actually do in the event of (major) CBRN incidents and whether their behaviour is fundamentally different to that displayed in 'traditional' incidents. It is also unclear whether this be haviour is effective and how this behaviour (whether or not self-reliant) correlates to the services provided by the emergency response teams. The Fire Services Advisory Council has, therefore, asked the Self-Reliance Expertise Centre from the Institute for Safety to carry out a literature study in order to obtain an overview of what is presently known about self-reliance on the part of civilians in the event of major chemical, biological, radiological or nuclear (CBRN) incidents.

The key question for the study is as follows:

To what extent do people display self-reliant behaviour in the event of major CBRN incidents and what does this mean for the aid supplied by the emergency services?

The study concerns incidents where there is a (possible) contamination of casualties with chemical, biological or radiological/nuclear agents. It concerns accidents as well as CBRN incidents which have been caused deliberately. The study focuses on the behaviour of civilians during and in the first few hours of the incident. After all, these hours are crucial

for the further emergency response. The consequences on behaviour in the longer term and psychological long-term effects are not included in the study.

Behaviour in the event of CBRN incidents

The study shows that there is a great similarity between human behaviour during CBRN incidents and during 'traditional' incidents. The similarities and differences are illustrated in the tables below.

Similar phenomena	Regular	CBRN
Denial and constraining behaviour	+	++
Fear	+	++
Panic	-	-
Own initiative/emergent groups	+	+
Altruism	+	+
Anti-social behaviour	-	-

Divergent phenomena	Regular	CBRN
Worried well/mass hysteria	-	+
Convergence	+	-
Conflict of roles	-	?

In both traditional and CBRN incidents, in the initial phase of an incident, there can be a sense of denial and adherence to existing routines (constraining behaviour), which means that contamination is only discovered at a later stage.

Although people can be more anxious during CBRN incidents than during traditional incidents, generally there is no panic and people provide an altruistic and helpful response in spite of the fact that they run a risk of becoming contaminated themselves in the process. Also in the event of CBRN incidents people prefer to seek familiarity amongst those they know than stay in government-supplied emergency lodging or reception centres. Finally, it is also apparent that in CBRN incidents most people do not wait for help from the emergency services but receive help from bystanders (emergent groups) and/or provide help themselves and, if necessary, find the nearest hospital.

A rather unique feature of CBRN incidents is the phenomenon known as the 'worried well': since contamination is often hard to ascertain, whilst they are not contaminated, many people appear to seek medical advice for peace of mind. This can be the case immediately after an incident but also continue for quite some time thereafter.

One aspect that has not been found in CBRN incidents but is found in traditional incidents is the phenomenon of convergence, the great influx to the scene of the disaster by people who want to offer their help and/or bring goods. This could be to do with the lack of a clearly cordoned off disaster/incident site so that it was unclear to potential helpers where help was needed. Also the time between the start of the contamination and its discovery may have been a factor. Another possibility is that people do not attend the incident site because of a fear of becoming contaminated themselves. The literature provides no guidance in this respect.

One aspect about which there is no clear picture in the literature is the occurrence or not of a conflict of roles amongst emergency responders. Examples exist where emergency responders abandoned their role in order to bring themselves and their nearest and dearest to safety. However, other examples tell another story entirely. Avoiding a conflict of roles is likely more difficult in CBRN incidents than in traditional incidents. Based on this exploratory literature study no clear judgement can, however, be passed in this regard.

Consequences for the emergency services

If it concerns the consequences of human behaviour for the decontamination process then it is important to take into account that most people will go to the hospital for treatment on

their own initiative. This means that the nearest hospitals can be inundated with casualties and secondary contamination of emergency responders can occur in the hospitals.
Another consequence for the emergency services is that proper attention will have to be paid to the phenomenon of the 'worried well'. As a result of the invisible nature of contamination with CBRN material people can display psychosomatic reactions and as a result place heavy demands on the emergency services (decontamination, medical treatment).

In the event of evacuation it must be borne in mind that people seek the closeness of who or what (people or surroundings) is familiar to them. Here, they prefer not to use public shelters, instead wanting to stay with family and friends or in private accommodations. As a consequence, more people can become contaminated than was initially the case.
Overall, in CBRN incidents the communication process is crucial. People will generally react rationally. In the event of invisible threats such as CBRN it is, however, important to take into account the fact that people can interpret inconsistent or vague warnings (such as presence of people in "white suits") as being the worst case scenario. Fear of CBRN can, therefore, prompt an evacuation on one's own initiative, even to far beyond the evacuation zone.

Restrictions of the study
The literature ultimately gathered reflects just one part of the spectrum of possible CBRN incidents. For instance, the literature does not contain any incidents involving an external contamination for which the decontamination units would be deployed in the Netherlands. Also the literature retrieved contains incidents abroad.
Although earlier case studies in the Netherlands for traditional incidents demonstrate that the displayed behaviour is universal and comparable with behaviour in other countries and cultures, it is in theory possible that this can be different during CBRN incidents.
The above means that the results found must be regarded with a critical eye if these are to be used in order to substantiate decisions regarding the deployment of the decontamination units.

Recommendations
The following recommendations ensue from the study for the emergency services:
1. Ensure rapid and proper communication immediately after a CBRN incident, whereby recommendations are issued about individual decontamination and the prevention of contamination by or via others.
2. Take into account an influx of contaminated persons to the nearest hospitals and to family or friends in the vicinity. Avoid secondary contamination of emergency responders by setting up a separate chain for contaminated persons. One option might be to station some of the existing decontamination units in the nearest hospitals in order to thus be able to carry out decontamination at the hospital gates.
3. Develop a triage system for CBRN incidents so as to be able to differentiate between those who are actually contaminated and those who merely think they have been contaminated in the event of high numbers of people reporting with possible contamination.

Within the context of this exploratory literature study, a few questions continue to remain open. To this end, the following recommendations have been formulated for further investigation:

Evaluation of future CBRN incidents in the Netherlands

1. In the event of future incidents involving CBRN on Dutch territory it is recommended to evaluate them thoroughly, not solely in terms of the emergency services and what action they take but also in terms of the human behaviour displayed. The topics of 'conflict of roles' and 'convergence' can be included as a special area of attention here.
2. In the context of the current study it was noted that rapid and proper communication is crucial to be able to offer an action agenda for the parties affected as quickly as possible. The best way these recommendations can be formulated and the best way that they can be issued was not looked at in any further detail in the context of this study. It is recommended to carry out further study into this.

EDITOR'S COMMENT: Although the full paper might provide more details and insights (but it is in Dutch), I would like to make a strong point here: After an explosion it is normal for those involved and able to walk or run to abandon the incident cite. In conventional incidents they might return shortly if their own people are missing or have no contact with. But in an incident (mostly "CWA") where they will realize that people are falling down even when the incident is over, victims will flee to all possible directions. If basically unharmed they will go home. If suffering even minor wounds or have clinical symptomatology then they will go to nearest hospital (if known) or to the hospital close to their residence. What is for sure is that they will NOT wait for First Responders to arrive. This is what CBRN planners should always have in mind… but usually they do not! Plans designed on ideal responses from both citizens and emergency responders will simply fail. **Plan for what people will actually do; not for what they should do!**

Are U.S. chemical facilities still open to terrorist attacks?

By Gary Ackerman, Markus Binder, and Robert Denaburg

The following is part of a series of thought pieces authored by members and friends of the START Consortium. These editorial columns reflect the opinions of the author(s), and not necessarily the opinions of the START Consortium. This series is penned by scholars who have grappled with complicated and often politicized topics, and our hope is that they will foster thoughtful reflection and discussion by professionals and students alike.

At the end of July this year, the office of Tom Coburn, ranking member of the Senate Homeland Security and Government Affairs Committee, released a report assessing efforts to secure America's chemical facilities from terrorist threats. For those who pay attention to the security of the nation's critical infrastructure, the report held many disconcerting findings. **Not the least of which was that – after eight years and $595 million dollars spent on a government program to secure chemical facilities – there have been only 39 compliance inspections of 4,011 covered facilities, a grand total of less than one tenth of one percent of facilities**.[1] Even worse, the existing security regime only applies to a portion of U.S. entities that produce, store or transport dangerously toxic chemicals. Simply put, the chemical industry in the United States may not be well-secured, a state of affairs that could be exploited by suitably motivated terrorists. More troubling, it is far from apparent that the government, or the chemical industry itself, has a clear idea of the extent to which facilities are, or are not, secure.

The technical and organizational requirements to use a chemical facility as a weapon are much lower than those associated with the development or production of traditional chemical weapons and are well within the reach of the majority of terrorist groups. Although basic security measures such as fences and security guards might be effective in deterring casual criminality, they are unlikely to constitute a

significant deterrent to determined terrorist attackers. As was illustrated by a recently completed START study, there are numerous terrorist groups that are actively interested in employing chemical weapons against civilian populations to inflict large numbers of casualties. These include international jihadists such as al-Qa'ida and its derivative organizations, apocalyptic millenarian cults, and domestic right wing extremists.[2] Actors within these movements have demonstrated a willingness and capacity to inflict mass-casualties, and have used or sought chemical agents in the past. Although there have to date been few terrorist attacks or plots entailing the use of chemical facilities in attacks, this does not mean that the threat is purely notional. START's Chemical and Biological Non-State Adversaries Database (CABNSAD) includes two particularly troubling planned facility attacks in the United States that were interdicted by authorities before they could be carried out.[3]

The first was in 1997, the so-called 'Sour-Gas Plot,' in which a group affiliated with the Ku Klux Klan intended to detonate explosives at a natural-gas processing facility in Texas in order to release large quantities of hydrogen-sulfide gas from on-site storage tanks. Their expectation was that the release would attract first-responders to the site which would allow them to rob an armored car in a nearby town without interference.[4] The second incident was a planned bomb attack at a bulk propane storage facility in Elk Grove, California, intended to capitalize on public concerns related to the end of the millennium and undermine confidence in government.[5] The plotters, a pair of extreme-right militia members, were arrested in December 2000 before they could carry out their plans. Although both of these plots involved facilities that can be classed as petrochemical in nature, there is no reason to think that a potential perpetrator would limit itself to this particular type of facility.

Beyond foiled plots, the potential for chemical facilities to cause great harm has been demonstrated on a number of occasions, most notably in the Indian city of Bhopal in 1984, where the release of a large quantity of methyl-isocyanate killed or seriously injured over 10,000 people. More recently, the West, Texas ammonia plant explosion in 2013 that caused more than 200 casualties and considerable destruction in the local community, demonstrated the substantial potential risks posed by chemical plants in the United States. In addition to the physical harm done in both of these incidents, they are significant for demonstrating that using such facilities to do harm is neither impossible, nor impractical. Irrespective of whether Bhopal was the result of deliberate action by a disgruntled employee – as many believe – or some other cause, it demonstrated clearly that under the right conditions chemical plants have the potential to release large clouds of toxic substances.

The explosion at the West Fertilizer Plant (photo) is significant not only as an example of the harm potential of chemical facilities, but also as a useful illustration of the implications of inadequate security and lax adherence to safety and security regulations. The local sheriff's department noted that the "perimeter was not fenced, and the facility had no burglar

alarms or security guards."[6] This was despite a well-publicized industrywide problem of anhydrous ammonia thefts for the illegal production of methamphetamine. There were 11 reports of burglaries and five separate ammonia leaks associated with thefts at the West plant over the period 2000 to 2012.[7] A further concern associated with the West facility is the presence, at the time of the explosion, of several hundred thousand pounds of ammonium nitrate – in breach of state and federal regulations.[8] Federal laws passed in the wake of the 1995 Oklahoma City bombing require facilities storing large amounts of ammonium nitrate to report their holdings to Federal agencies and adopt appropriate security measures. Not only did the operators of the West Fertilizer Plant not report their ammonium nitrate stockpile, it appears this significant breach went undetected by DHS until after the tragic explosion.

This brings us to how chemical facility security is regulated in the U.S. Historically, the EPA has played a role in mitigating the hazard posed by releases from chemical facilities, by requiring risk management plans from plant owners and monitoring the use of extremely dangerous chemicals.[9] But these measures were generally established with accidents in mind. In 2007, however, Congress acknowledged the singular threat posed by intentional attacks on inadequately secured chemical facilities, introducing the Chemical Facility Anti-Terrorism Standards (CFATS) program. Implemented by the Office of Infrastructure Protection (OIP) in the National Protection and Programs Directorate of DHS, CFATS operates in conjunction with a list of Chemicals of Interest (COIs) and associated threshold quantities.

CFATS employs a multi-step, arguably inefficient,[10] process to assess and regulate chemical facilities, initiated through a facility's self-reported inventory (Top Screen) of the quantity of any COIs they possess. Those facilities considered risky enough to warrant CFATS regulation subsequently submit a secondary assessment, a site plan, and are subject to a number of inspections, with complex and lengthy approval or authorization processes accompanying each step. If a facility's submission or inspection does not meet CFATS' standards, its owners are required to re-submit plans or be conditionally denied authorization or approval, slowing down the process. This would be laudable if it was really reflecting a facility's vulnerability, but industry experts have testified that CFATS standards are far from clearly enunciated,[11] which itself might be a major source of the need for resubmission and hence the major backlog in approvals..

CFATS also faces issues with facilities outside the program's jurisdiction – for example, water treatment plants are exempted – and has been accused of shifting the inherent risk of working with hazardous chemicals to other parts of the industry. One illustratively glaring loophole is that, since chemical transport does not fall under CFATS, companies can simply park railway cars filled with toxic chemicals just outside their facilities so that the quantities of chemicals inside the facilities fall below CFATS thresholds,[12] resulting in a degraded rather than upgraded security situation. Moreover, CFATS has trouble ensuring that it identifies all potential hazardous facilities due to its reliance on what is essentially a voluntary reporting process (though CFATS is authorized to request a Top Screen report from facilities – as long as it knows about them). Thus, although the regulations set out by the CFATS program were designed to mitigate the threat posed by terrorist attacks involving chemical facilities in the U.S., major gaps in its coverage remain.

Given that almost no stakeholders reject the threat outright, why has it proven so difficult to adequately secure our nation's chemical facilities? The answer lies in a trifecta of failure. The first offender has been the shortsightedness of the chemical industry itself. While begrudgingly acknowledging that there is a place for regulation in ensuring the security of chemical facilities from attack, the chemical industry – often through associations like the American Chemistry Council and the Society of Chemical Manufacturers and Affiliates – has fallen into the well-worn pattern of using its influence to water down any mandates and create loopholes in the relevant legislation, instead arguing that voluntary efforts adopted by the industry are sufficient. They seem to forget that while Dow Chemical, 3M and similar large, multinational enterprises have indeed established

commendable facility security programs, this does not necessarily extend to the thousands of smaller companies whose chemical stores might be just as attractive to terrorists. The chemical industry has been especially resistant to efforts to oblige companies to, where possible, substitute less toxic chemicals in their processes through the adoption of so-called inherently safer technology (IST), which would make the facilities less dangerous in terms of both accidental and intentional release and is viewed as a key element in making the nation safer from chemical threats.[13] Industry representatives have consistently opposed all attempts in this regard, starting as soon as then-Senator John Corzine proposed such measures in the aftermath of 9/11.

The U.S. Congress, tasked with providing the legislative framework for securing the nation, has often fallen short of its duty as well. Even after hearing from all quarters after 9/11 that threats against chemical facilities posed a significant danger to large numbers of American citizens, it took Congress a full six years to address the issue in the 2007 *Homeland Security Appropriations Act*, which established the CFATS system. Even then, as we have seen, the solution was only a partial one at best. What is perhaps more disconcerting is that what should have been a clear bipartisan issue has become the exact opposite, with any attempts in the legislature to bolster the security of chemical facilities being approached along strict party lines. This continues up to the present – note that it was the minority staff alone who published the recent scathing "Chemical Insecurity" report.

It is the Department of Homeland Security – and in particular its Office of Infrastructure Protection – however, that must shoulder much of the blame for the continued systemic uncertainties in chemical facility security. After finally being given at least some authority to regulate chemical security in 2007, its performance in implementing the CFATS program has been dismal at best. Several official reports, of which the Coburn Report is merely the latest,[14] have revealed a litany of missteps and mismanagement, including: flaws in the risk assessment methodology employed leading to inaccuracies and misclassifications of facilities; the implementing unit (the Infrastructure Security Compliance Division)'s poor training, oversight and morale; the imposition of onerous yet often superfluous reporting burdens (even relatively small facilities have had to submit up to 2,000 pages of forms);[15] and an ostensibly adversarial attitude to regulated companies – not to mention the glacially slow implementation of the CFATS process noted above. In that regard, while CFATS has improved its operational output in recent years, the most generous estimates still predict it will be three to four years before the highest-risk sites in the US are all compliant with CFATS regulation – and even then there are concerns that thoroughness could be sacrificed for rapidity, creating a false sense of security.[16]

Ineffective implementation and the lack of tangible results ultimately led to the Coburn report quite plainly stating that "CFATS is not reducing our nation's risk of a terrorist attack on domestic chemical infrastructure."[17] Indeed, the unsatisfactory implementation of the overall chemical security mission by DHS has arguably soured any enthusiasm that once may have existed within industry for enhancing security, thus fueling a vicious cycle in which necessary enhancements in chemical security face even more obdurate opposition and partisan wrangling in Congress.

What, then, can be done to remedy the situation? Starting with Congress, there has been some forward momentum on the issue – given that the existing CFATS legislation will expire in October 2014, the House passed H.R. 4007 in July, which renews the program on a permanent basis and fixes some (but by no means all) of the original legislation's shortcomings. For example, it provides for the sharing of relevant information with first responders and allows for third-party inspections to speed up the process, but still excludes facilities like wastewater treatment plants and does not mention IST. Nonetheless, we cannot throw the baby out with the bathwater and the Senate should take up and pass the House Bill without delay, since the alternative would be the dissolution in October of any federal scheme, leaving an uneven patchwork of state regulations. Foregoing a baseline federal facility security regime is far from adequate when one considers that terrorists will always tend

towards exploiting the weakest link in any security system. Under the current legislation, states would still be able to augment federal regulations and they would do well to emulate states like New Jersey, which has mandated certain best practices and required many plants to assess the feasibility of ISTs.

On the implementation side, the Office of Infrastructure Protection at DHS needs to capitalize on the funding and regulatory opportunities provided by H.R. 4007 by finally engaging in competent implementation of CFATS. This includes clear, concise guidelines for industry reporting, more robust and transparent risk assessment methodologies, and a far more collaborative (although not hostage) relationship with industry, as envisioned in the legislation. For industry's part, it needs to take advantage of the improvements in H.R. 4007 and meet DHS halfway by, for example, helping DHS identify facilities (like the West Fertilizer Plant) that fail to send in Top Screens. It can also drop its reticence to the inclusion of water treatment plants in CFATS and work with government to introduce carrots (e.g. tax-breaks) and sticks (e.g. exclusion from industry safety/security certification) to incentivize the more widespread adoption of IST. This might even create a virtuous cycle, since fewer facilities with the most toxic chemicals would lower the number of CFATS covered facilities and thus decrease the burden on DHS.

As Skip Elliott, director of hazardous materials for CSX Corp. railroads (a major transporter of chemicals) argued as far back as 1999, in the context of potential terrorist attacks, "You can't stop evil people from doing evil things."[18] But what we can do is stop them from turning our own infrastructure against us to cause mass casualties. Just as the failure of the current chemical security regime had its roots in the actions or inaction of Congress, DHS, and private industry working against each other, the solution lies in all three parties working together. While far from perfect, all parties should grab fast to the lifeline offered by H.R. 4007 and use it as a foundation for the long-overdue task of genuinely and collaboratively securing the nation's chemical infrastructure.

References are available at source's URL.

OPCW and NATO Acquire Hotzone Solutions' Chemical Warfare Simulation Agents

Source: http://www.hotzonesolutions.com/about/news/192-opcw-and-nato-acquire-hotzone-solutions-chemical-warfare-simulation-agents

Since Hotzone Solutions' chemical warfare simulation agents became available on the market, their acquisition by government agencies and national military units has shown a rapid increase.

Hotzone Solutions (HZS) takes great pride in announcing that the Organisation for the Prohibition of Chemical Weapons (OPCW) has acquired HZS' chemical warfare simulation agents for the training of future OPCW inspectors.

It takes equally great pride in announcing that the Headquarters of the North Atlantic Treaty Organization (NATO), following the training of personnel of its fire fighter unit, has decided to procure HZS' chemical warfare simulation agents for further practical training of its fire fighters.

SARIN/GB NERVE AGENT

- GB simulant is a clear, colourless, mobile fluid that spreads readily on all surfaces
- Has a miscibility with water similar to GB
- Detection paper reacts Yellow for G agents
- Field detectors such AP2C, AP4C, CAM, RAID and RAID-M/M100 respond correctly
- Persistency is consistent with GB
- The volatility at 20°C is high, creating a large air detection area

SULPHUR MUSTARD/HD (BLISTER AGENT)

- HD simulant is a transparent, yellow coloured, oily fluid that spreads readily or produces droplets on all surfaces
- It is not soluble in water and is heavier than water
- Detection paper reacts Red for HD
- Field detectors such as AP2C, AP4C, CAM, RAID and RAID-M/M100 respond correctly
- Persistency is consistent with HD
- The volatility at 20°C can be described as low
- Droplets in water cover with a grey film after some hours. Nevertheless, the inner liquid is still detected as HD using field detectors and CALID-3 detector paper.

VX (NERVE AGENT)

- VX simulant is a transparent, yellow to brown coloured, viscous oil that spreads readily on all surfaces
- It is not soluble in water
- Detection paper reacts as Dark Green for V agent
- Field detectors such AP2C, AP4C, CAM, RAID and RAID-M/M100 respond correctly
- The persistency is extremely high and consistent with VX.
- The volatility at 20°C can be described as very low

Using HZS' chemical warfare simulation agents will allow OPCW and NATO instructors to set up in-house realistic training (individual and field exercises), with a view to enhancing the ability of their personnel to achieve optimum performance in identification, detection, and sampling & analysis techniques.

EACH KIT CONTAINS:

- A 250 ml bottle of GB, HD, and VX simulant
- A 20 ml dropper bottle for GB, HD, VX simulant.
- A 10 ml demonstration Vial with GB, HD and VX.

The 20 ml dropper bottles come in a separate user kit which can be used by the trainer to place out agent samples for their responders to discover and identify. They can be easily refilled from the 250 ml stock bottles.

The 10 ml clear glass demonstration vials enable the trainer to show responders what each liquid agent is like in terms of color, density and viscosity.

The HZS simulants are non-toxic when used by professional users, easy to use, and biodegradable.

The Hotzone Solutions CW Simulant kit contains realistic new generation simulants for Sarin (GB), Mustard (HD) and VX.

These simulants have been specifically developed to match the physical properties of the real agent, including persistency kit which can be used by the trainer to place out agent samples for their responders to discover and identify. They can be easily refilled from the 250 ml stock bottles.

The 10 ml clear glass demonstration vials enable the trainer to show responders what each liquid agent is.

EU project EDEN delivers its first results

(Translated from Swedish)

Source: http://www.cbrne.umu.se/om-cbrne-centret/nyheter/nyhetsvisning//eu-projektet-eden-levererar-sina-forsta-resultat.cid238719

August 27 – Project EDEN takes big step towards the large-scale demonstration exercises planned. There, new solutions to enhance the protection of society against terrorist attacks and accidents involving dangerous substances tested. Exercises of scenarios have been designed over the summer, working closely with the end users. EDEN's focus is to find new solutions to meet the needs of end users.

The main aim of the EU funded project EDEN is to test and validate the functionality of the new innovative products that will improve society's resilience to events with CBRNE (chemical (C), biological (B), radiological and nuclear (R/N), and explosive (E) agents.

Initially, significant work has been done to understand the requirements and needs of the end users of the products and to develop the scenarios to be used in demonstration exercises.

End users affect exercise scenarios

A lively activity network has been coordinated, where end users and Eden's partners over the summer has been met to discuss how the existing gaps between the needs of end users and the available technology can be bridged. The feedbacks and recommendations of the meetings resulted in then formed the basis for the scenarios that were presented to the EDEN Advisory Board, a panel of end users with key features. These meetings have also EDEN's representatives revealing the essence of the project concept: Toolbox of Toolboxes and EDEN-store.

Influx of students in recognition

Within EDEN planned and implemented even R & D activities in collaboration with large industries, small and medium enterprises, universities, research and technology organizations. Cooperation between the parties grows through joint planning and agreed actions. The first recognition of the ideas behind the Eden project marked by the increasing number of organizations belonging to the entrepreneurial and vendor platforms that are open to companies outside the ED. There they can actively participate in the project by coming up with advice and feedback, but also by eventually validate their own products or processes in demonstration exercises.

During the summer, a couple of workshops for entrepreneurial and vendor platforms where participants got to meet some of the EDEN project manager and obtain information on the chemical, biological and radiological demonstration scenarios were held. The meetings also gave them the opportunity to introduce themselves and design their own engagement in EDEN. The platforms are still open to new entrants.

Research identifies most likely non-state chem-bio threats

Source: http://www.start.umd.edu/news/research-identifies-most-likely-non-state-chem-bio-threats

Among violent non-state actors, the threat of chemical or biological (CB) weapons pursuit and use lies heavily with violent jihadists of all stripes, according to a new START Research Brief. Jihadist actors occupied seven of the top 10 spots in a qualitative analysis; Nine of the top 10 in a quantitative analysis, and half of the top 10 in an elicitation analysis.

"The possibility that violent non-state actors, including terrorists and criminals, might employ chemical or biological weapons has understandably attracted much attention in both policy and government circles," said Gary Ackerman, Director of Special Projects at START. "This is primarily a result of credible

Summary of Analytical Approaches

Qualitative Analysis	Statistical Modeling	Elicitation
Based on review of literature, adversary profiles and analyst expertise.	*Based on historical empirical data (BAAD2; POICN, etc.).*	*Combines the judgment of multiple domain experts.*
Strengths • Incorporates past, extant and future threats. • All non-state actors. • Combination of analysis by project researchers.	**Strengths** • Allows for exploring variation in dependent variable. • Takes into account every actor in dataset (including null cases). • Statistical tests of significance and sensitivity possible. • Results / models are reproducible.	**Strengths** • Specifically oriented towards future threats. • Heterogeneous expertise (operational; technical; policy; futurist). • All non-state actors.
Limitations • Not rigorously systematic. • Potential for analyst bias.	**Limitations** • Limited time-scale of data (1998-2007). • Only includes terrorist/insurgent organizations (no criminal groups; lone actors, etc.). • Cannot make out-of-sample forecasts (i.e., limited to groups in dataset).	**Limitations** • Potential for expert bias • Relatively non-reproducible.

evidence of terrorist interest in these weapons and demonstrated terrorist willingness and capability, albeit thus far via conventional means, to inflict mass casualties."

The project, Anatomizing Chemical and Biological Non-State Adversaries, aims to improve understanding of, and more effectively identify, perpetrators and potential perpetrators of attacks employing CB agents.

The goal of the project is to enhance the capability of defense practitioners to protect the United States by including more detailed specifications of the threat component in risk assessment calculations, in addition to the already well-developed vulnerability and consequence elements.

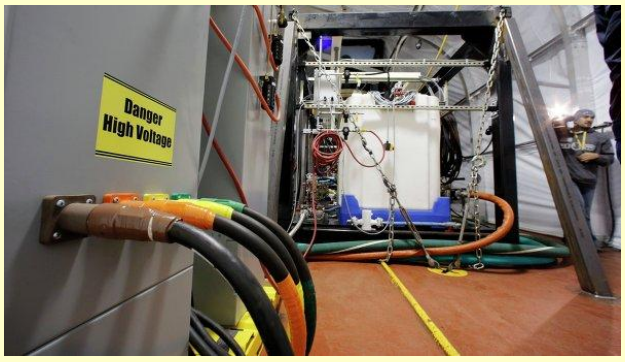
Although the project's focus was on ideologically motivated violence, the research also provides some insight into criminal use of CB materials, which can significantly impact public security.

The project is led by START Investigators Gary Ackerman, Victor Asal and Amanda White.

▶ **Read more about the project at:**
http://www.start.umd.edu/pubs/STARTResearchBrief_Anatomizing.pdf

OPCW Destroys 93% of Syrian Chemical Weapons Arsenal

Source: http://en.ria.ru/world/20140828/192431187/OPCW-Destroys-93-of-Syrian-Chemical-Weapons-Arsenal.html



August 28 – The Organization for the Prohibition of Chemical Weapons (OPCW) has destroyed 93 percent of chemical weapons agents removed from Syria, according to a report it released on Thursday.

As of 29 August 2014

	Total Amount	Amount Destroyed	Destroyed (%)
Total Category 1*	1,047 MT	1,047 MT	100%
Total Category 2**	262.8 MT	207.8 MT	79.1%
Total Chemicals (Cat. 1 and 2)	1,309.8 MT	1,254.8 MT	95.8%

* "Category 1" chemicals = All declared Priority 1 chemicals removed from Syria for destruction outside the country, plus isoproponal already destroyed in situ

** "Category 2" chemicals = All declared Priority 2 chemicals removed from Syria for destruction outside the country

"At the cut-off date of this report, 100 percent of the Category 1 chemicals and 65 percent of the Category 2 chemicals had been destroyed, representing a combined total of 93 percent, including the isopropanol previously destroyed in the Syrian Arab Republic," the paper reads.
Earlier in August, the OPCW reported it destroyed 84.3 percent of Syria's chemical weapons, including chemical precursors used for the production of sarin gas, an extremely dangerous nerve agent considered a weapon of mass destruction.

A study from the past…

J Bus Contin Emer Plan. 2012 Summer;6(1):47-54.

Is preparedness for CBRN incidents important to general practitioners in East London?

Dabrera G[1], Anyaegbu E, Addiman S, Keeling D, Ashton C, Whala S, Dunne A, Figueroa J, Lovitt C, Basnett I, Balasegaram S.
[1]South East Regional Epidemiology Unit, Health Protection Agency, London, UK. gavin.dabrera@hpa.org.uk

Abstract
General practitioners (GPs) have an important role in public health response to CBRN incidents, including disseminating information to worried patients and undertaking risk assessments of patients. The authors undertook the first known UK survey of GPs' CBRN preparedness to assess knowledge and attitudes towards CBRN preparedness among GPs in East London, in the area of the Olympic Park. A questionnaire was developed, focusing on GPs' self-preparedness for, and perceived roles in CBRN incidents, and GPs' access to resources and policies for dealing with such incidents. **Of 157 GPs, 56 responded**, although some responded collectively for their practice. The majority of respondents recognised roles for themselves in CBRN incidents, including recognition of illness, supporting decontamination, and appropriate reporting. However, 79 per cent of GPs also felt unprepared for such incidents. The most popular topic for training to address this was clinical presentation of CBRN exposures. Most practices had no policy for dealing with suspect packages and white powder incidents. Since this survey, guidance and training has been made available to local GPs. As the UK will host more events like the 2012 Olympics, preparedness for GPs will continue to be an important consideration in the UK.

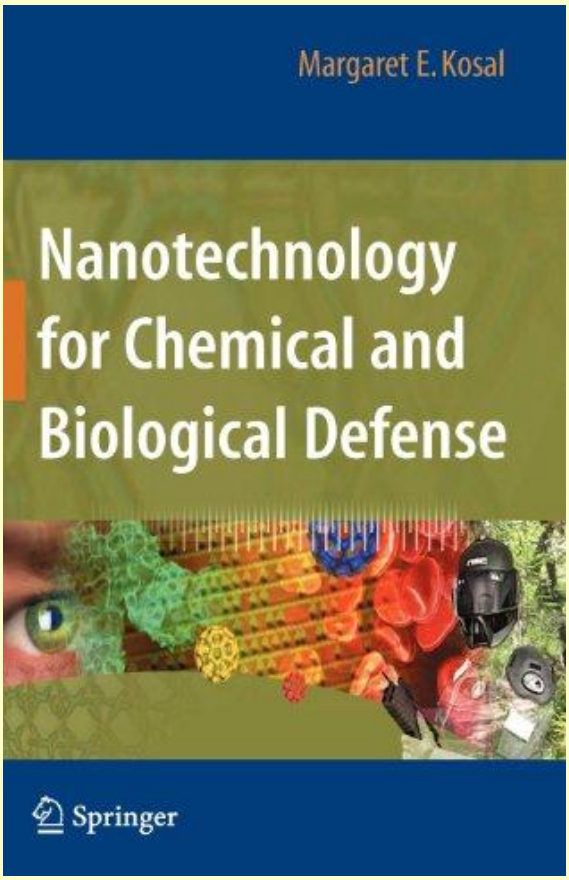
Nanotechnology in Chemical Warfare

Source: http://www.azonano.com/article.aspx?ArticleID=3205

Chemical and biological warfare has been banned by the international community. The unfortunate events of September 11, 2009, however, caused a major awakening in the US

military - they realized that they may have to fight an enemy that does not always play by the rules. The USA, and many other countries around the world, have since begun funding the development of highly advanced military technologies to tackle potential chemical threats in the future.
The Defense Science Board recently compiled a study that marked nanotechnology as one among six technology areas with high potential. The Department of Defense (DoD) is one of the largest supporters of nanotechnology research - second only to the National Science Foundation. The DoD has allocated a significant budget towards funding research in magnetics, nanoelectronics, and nanomaterials for detection and protection against biological, chemical, explosive and radiological threats.

Nanotechnology-Based Chemical Weapons
It has been noted that many aspects of nanotechnology lend themselves to creating more powerful chemical weapons. Many of the supposed risks of nanotechnology are from far-future potential developments like "grey goo" nanobots, but there is also some risk from the technology we have access to today.
The main use of current nanotechnology in chemical weapons **would be derived from the research into nano-enhanced drug delivery systems - by nanoformulating chemical agents to be absorbed by the body more readily, less potent chemicals could be used effectively. Lower volumes of toxic chemicals could also be used, removing the need for industrial-scale chemical production and opening up the possibility of attacks from parties with fewer resources, like terrorist cells**.
At the current time, this sort of technology is still advanced, and largely in research or very early market stages, so free access to it is not available. Nanotechnology research and regulation should take these possibilities into account, however, to make sure that access to potentially harmful technology is safely restricted.



Using Nanotechnology to Combat Chemical Weapons
Types of chemical warfare agents include the following:

- Choking agents
- Vesicants
- Incapacitants
- Nerve agents
- Blood agents

Nerve agents are especially dangerous as they attack the central nervous system; even minimal exposure will result in a quick and painful death. Present methods for detecting nerve agents are often ineffective in practice - for example, spectrophotometric techniques need non-aqueous solutions.
However, Jong Seung Kim, Jong Hwa Jung and coworkers in Korea have achieved a major breakthrough in using nanoparticles to make an effective system for the detection of nerve agents in water. A nerve agent receptor based on azo-pyridine was immobilized onto silica nanoparticles. The particles turn from yellow to red in a color change recognizable to the human eye on binding to the nerve agent mimic diethylchlorophosphate.

The nanoparticles do not just detect nerve agents but also destroy them. When they are treated with NaOH, the trapped toxins decompose to less harmful molecules and the nanoparticles are recycled and can be used again.

Nanosensors for Detection of Chemical Agents

Since the Gulf War, a trend that has become quite prevalent is to attempt to reduce the need for troop presence. To this end, tiny, lightweight, highly accurate nanosensors are being considered for deployment in combat. Small, mobile and economical sensors that can enable detection of enemy troop movements will enable commanders to have a comprehensive picture of the battlefield.

Nanosensors have the ability to sense the presence of single molecules of specific substances. Companies like Ibis Therapeutics and Cepheid are conducting research at the nano-scale to detect biological and chemical threats. Cepheid received a major grant from the army in 2003 to detect biothreats and other pathogens.

Chad Mirkin's Northwestern spinoff Nanosphere contracted with the U.S. Government Technical Support Working Group to use the proprietary biomolecular detection system of Nanosphere to detect biological warfare agents such as anthrax.

Charles Lieber's Harvard spinout Nanosys is looking to develop a nano-enabled sensor product within the next three years.

Researchers are also working on integrating nanosensors into lightweight and ultra-strong nanomaterials for future military uniforms at MIT's Institute of Solider Nanotechnologies.

The ISN received funding to develop a lethal, lightweight, completely integrated individual combat system. MIT is aiming at developing bullet-proof battle armor that cannot just filter out or reject toxins or chemical agents, it also weighs less than the usual 120 lbs of equipment.

Conclusion

Nanotechnology has a lot of advantages in terms of preventing biological and chemical attacks with effective sensors, and could give us the ability to effectively contain biological or chemical releases.

However, knowledge of nanotechnology developed by the chemical pharmaceutical industry to make more effective products could be used to make nanotechnology-based weapons which are easier to create, more deadly, and more insidious than conventional chemical agents.

In the future, industry and political groups must consider initiating special training programs that are directed at helping future weapon inspectors becoming capable of identifying evolving and existing nanotechnologies that may be dangerous.

U.S. Concerned Terrorists Will Seize Syrian Chemical Weapons

Source: http://www.israelnationalnews.com/News/News.aspx/184769#.VAqg52P5nrN

September 05 – U.S. Ambassador to the United Nations Samantha Power said on Thursday that the United States is concerned that **the most dangerous terrorist groups could get a hold of chemical weapons if Syria is hiding any stockpiles.**

Power spoke to reporters after the Security Council received a briefing from Sigrid Kaag, who heads the international effort to rid Syria of its chemical weapons, according to *The Associated Press (AP)*.

If President Bashar Al-Assad is hiding any stockpiles, Power said they could fall into the hands of "extremist groups who have committed some of the most vile acts in the last few days."

Syria signed up to an international plan to destroy its chemical stockpile after the outcry that followed chemical attacks by the Damascus regime in August last year that may have killed as many as 1,400 people.

U.S. President Barack Obama recently announced that Syria's declared chemical weapons stockpile was eliminated, declaring this an important achievement against the spread of dangerous weapons of mass destruction.

He also warned that Syria's government now must follow through on pledges to destroy its remaining weapons production facilities.

Obama also said concerns about omissions and discrepancies in Syria's declaration to the Organization for the Prohibition of Chemical Weapons, the group that oversaw destruction of the weapons, must be addressed.

The civil war in Syria includes, in addition to Western-backed rebel groups that are considered "moderate", also jihadist groups such as the Islamic State and the Al-Nusra Front, the leader of which has pledged allegiance to Al-Qaeda.

Yet Another CWG Shocker: Faulty Equipment in Use to Thwart Bio Terror

Source: http://www.newindianexpress.com/thesundaystandard/Yet-Another-CWG-Shocker-Faulty-Equipment-in-Use-to-Thwart-Bio-Terror/2014/09/07/article2418486.ece

September 07 – **It now seems that along with thousands of spectators, God too was watching over the Delhi Commonweath Games in 2010.** How else does one explain the fact that the entire 12-day extravaganza went off without a security hitch despite the fact that equipment procured to thwart non-weaponised terror attacks were not only not in working condition, they could only be set right after the thousands of foreign athletes and dignitaries had returned home?

In a sensational disclosure it has emerged that faulty equipment were on standby to thwart terror attacks with Chemical, Biological, Radiological and Nuclear (CBRN) materials and the faults could only be rectified 12 long days after the tournament got over.

A draft report of the Director General of Audit accessed by The Sunday Standard throws up shocking revelation related to CBRN protection extended by the National Disaster Management Authority (NDMA), which comes under the Union Home Ministry. The equipment were procured from Electronics Corporation of India Limited (ECIL) and Bharat Electronics Limited (BEL) — government owned companies — for the management of CBRN emergencies during CWG 2010. A CBRN emergency could result in potential mass casualties with long term effects. The CBRN measures are deployed due to threat from Jihadi elements capable of carrying out chemical and biological attacks using lethal agents.

"It was seen that certain practical deficiencies were reported by the National Disaster Response Force (NDRF) which was the end user of these equipment," the draft report has stated.

In its reply to the national auditor, the NDMA, however, countered the findings saying that equipment deployed during the CWG 2010 had no functional shortcomings and it effectively performed the task assigned.

However, the NDMA response was trashed by the audit saying the problems with the equipment were there even in December 2010, almost two months after the

games got over. "The reply of NDMA is factually incorrect as NDMA had required BEL and ECIL to rectify the deficiencies only in December 2010 on the observations made by DG, NDRF," the audit stated.

NDMA insisted that CBRN vehicles were not simply received and accepted, but in the public interest, certain shortcomings were pointed out to the supplier and follow up action were taken with BEL to carry the improvement. NDMA pointed out a BEL letter dated March 31, 2011 (5 months after the Games) to buttress its claim.

The draft audit note has also pointed out procedural lapses which may have led to procurement of CBRN equipment with deficiency saying that NDMA's Technical Specifications Committee (TSC) had CBRN experts on board but no member from NDRF, the end user of the equipment. It said when BEL sent the design of CBRN HAZMAT vehicle costing approximately `4 crore per unit, for approval on July 27, 2010 for approval, NDMA neither consulted the TSC nor the end user NDRF while approving the design. Draft audit note suggest that at least 4 such vehicles costing approximately `16 crore were purchased.

"The above reasons led to supply of radiation monitor for vehicle entry point, CBRN HAZMAT vehicle and Integrated CBRN surveillance vehicle with certain practical deficiencies reported by NDRF and accepted by NDMA," draft audit note further stated.

Details in the draft audit note suggest that 6 units of Integrated CBRN Monitoring System was purchased costing over `3 crore 36 lakh while two Integrated Surveillance vehicle cost over `9 crore 27 lakh.

The draft audit note also pointed out that final payments to ECIL and BEL were put on hold as they were asked to rectify the problems with the equipment. It is learnt that payment to BEL was released in October 2013 and March 2014 after it rectified the deficiencies in the CBRN vehicles. The NDMA is said to have recovered liquidated damage from the BEL for delay in supply of CBRN equipment.

As per the agreement, integrated CBRN monitoring system and integrated CBRN surveillance vehicle were to be supplied by August 16, 2010 while CBRN HAZMAT vehicles were to be supplied by August 31, 2010. But there was delay in supply of equipment of 3 to 5 weeks. Draft audit note also pointed out lack of competition in procurement and decision of NDMA to invite proposals from just two vendors.

However, NDMA contended it was done to due to shortage of time and the issue was mentioned in the Home Ministry meeting on May 6, 2010 which was chaired by the then Home Secretary G K Pillai.

Smiths Detection Explosives Identifier Shown Not to Ignite Dark Samples; Chemical Identifier Analyzes Samples in Less Than One Minute

Source:http://www.domesticpreparedness.com/Industry/Industry_Updates/Smiths_Detection_Explosives_Identifier_Shown_Not_to_Ignite_Dark_Samples;_Chemical_Identifier_Analyzes_Samples_in_Less_Than_One_Minute/

Smiths Detection is a global leader in threat detection and screening technologies for emergency responders, the military, homeland security, customs, and other security applications. Smiths takes science from the laboratory and develops it into-field based solutions for security forces, emergency responders, and military personnel, based on its deep understanding of the challenges faced by different customers. They continue to develop a range of increasingly integrated products to create complete security solutions tailored to individual requirements. Many of Smiths' technologies are ruggedized and capable of being used in extreme environments, which makes them a first choice for use in the field. **ACE-ID and HazMatID Elite are two such products.**

ACE-ID, Smiths' newest product, is a non-contact explosives and precursors identifier that uses an advanced optical platform that minimizes the risk of heating or possibly igniting dark samples during analysis. ACE-ID's Orbital Raster Scan (ORS) laser technology can identify solids and liquids directly through certain plastics and glass without making contact

with the substance, yielding rapid results in seconds, while being safer for the operator to use when compared with other analytical methods in the field. This technology is lightweight and can be operated with just one hand. Additionally, remote operation, such as integration with a robot, is also supported by a software kit.

ACE-ID explosives' detector

The **HazMatID Elite** chemical identifier effectively analyzes and identifies unknown solids and liquids in one minute or less. HazMatID Elite has the widest thermal and solar operational range of any portable chemical identifier. Its revolutionary optical engine also provides users with high-vibration immunity and resistance to mechanical disturbances seen in the field, especially during vehicle or human transport. Analysis is performed in a timely yet effective manner by placing a small amount of the unknown substance onto the diamond ATR sensor and using the integrated press to apply pressure to solid samples or by placing a single drop of a liquid into the integrated well. An optional second touch-to-sample ATR sensor is available for rapid analysis of pooled liquids and surface films, and enables robotics applications.

HazMatID liquid/solid identifier

The HazMatID Elite uses intuitive software and features a user interface that consists of a large display screen and keypad controls for effective operation in protective gear. PC-based command software provides advanced data handling capabilities which would be useful for personnel responding to a variety of calls.

Smiths Detection's products are designed to fit specific customer needs and help them maximize value and use. Smiths works very closely with customers to understand their needs so they can engineer the right tools for the customer to do their job. Consistent with their philosophy to take advanced analytical equipment out of the lab and into the field, their small, fast, lightweight and accurate systems are also easy to operate in a range of field activities, especially disaster response, thanks to user-guided prompts and intuitive software interface guides. Their handheld detectors are easily updated to address evolving threats as well. In addition, Smiths Detection offers tailored hands-on training for customers of varying skill levels.

Smiths Detection continually works with its customers to deliver the latest upgrades and enhancements to meet current requirements and anticipate future threats.

Looking for CBRN Courses?

Source: https://www.gov.uk/government/publications/defence-chemical-biological-radiological-and-nuclear-centre-dcbrnc/defence-chemical-biological-radiological-and-nuclear-centre#cbrn-courses

The **Defence Chemical Biological Radiological and Nuclear Centre (DCBRNC)** designs and runs courses that qualify individuals of all 3 services for operational, training and staff CBRN defence appointments.
DCBRNC is located at Winterbourne Gunner, about 5 km north-east of Salisbury, Wiltshire, on the southern edge of Salisbury Plain.

The Defence CBRN School is the instructional element of the DCBRNC. Its mission is to deliver the UK's tri-service CBRN Defence Training for Operations on land.

▶ **Visit the website for contact details, courses (including medical), dates, eligibility and many more!**

EDITOR'S COMMENT: Part of my Olympic Hospital CBRN Response Unit was trained there during the preparatory phase for the 2004 Olympic Games. Fantastic place, excellent facilities, realistic training, experienced instructors!

New procedures in CBRN drills?

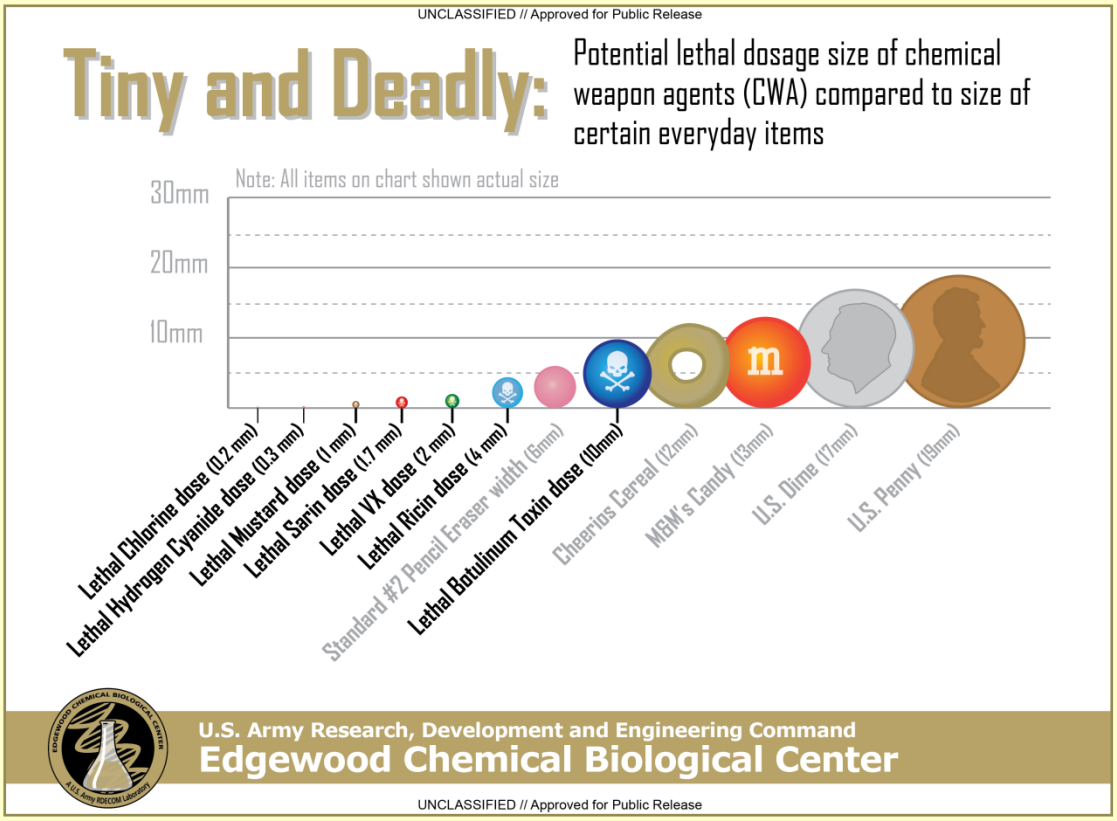
EDITOR'S COMMENT: My humble opinion: *If you cannot do it right during drills, it is questionable if you will do it the best way during real thing!* Twenty seven foreign nationals from seven countries in the Middle East were present during Exercise Red Dragon 2012 at Grainger Headquarters in Lake Forest, Ill. Do they get the right picture on how to perform decontamination? I am not so sure! Yes, I know it was only a drill…

Improved gas mask protects U.S. soldiers against lethal attacks

Source: http://www.homelandsecuritynewswire.com/dr20140918-improved-gas-mask-protects-u-s-soldiers-against-lethal-attacks

September 18 – Choking. Watering eyes. Blistering skin. Convulsions. These are all symptoms of a chemical weapons attack that can lead to imminent death. The lethality of such attacks, most recently the one in Syria in August 2013, can send tremors across the globe. For U.S. Army soldiers, however, chemical weapons present a real danger on the battlefield, and one that requires the most advanced technology to keep them safe.

Scientists and researchers at the U.S. Army Edgewood Chemical Biological Center (ECBC) have been working toward better protective equipment, including its iconic gas mask.



ECBC says that its engineers have now developed a better gas mask to meet evolving chemical and biological threats, and that the agency has fielded the next generation M50 mask to Army soldiers stationed in Japan and Korea. The Army is now in the process of fielding more than a million of these masks to all of the Armed Service branches.

"I noticed the difference between the M50 (left) and the old M40 (right) mask as soon as I put it on," said Sgt. James Tuthill, a training NCO stationed at the Marine Corps Air Station Cherry Point in North Carolina. "I train Marines to be prepared for chemical, biological and radiological hot zones, and this mask provides them with better visibility, easier breathing and greater comfort wearing it. And on top of all that, it just looks cool."

Looking cool may give the mask some style points, but its improved functionality is what enable soldiers to keep calm under pressure and execute their missions. Instead of goggles and just one filter traditionally found on its predecessor, the M40 mask, the M50 mask has a wrap-around visor and symmetrical filters on each side. It also has a silicon and butyl face piece that is flexible enough to fit all face sizes from the second to the 98th percentile of the adult population. These design enhancements make breathing 50 percent easier than the legacy M40 mask. It costs $280 to manufacture the M50 mask, its filters, a mask carrier and a decontamination kit.

The new mask has been fifteen years in the making. ECBC's Joint Service General Masks (JSGM) Team has spent more than a decade developing an advanced,

ergonomic and effective respiratory protective mask that can be used across the U.S. military for the defense of chemical agent threats.

Soldiers can now change filters in a threat environment and the single lens across the face allows for a wider area of view for binocular use or other sighting devices. With increased comfort, improved visibility and better hydration, the new mask is considered one of the most heavily tested pieces of personal protective equipment developed by the U.S. Department of Defense.

"We have been involved with every step of the design, validation, and testing and modification process. [We were also involved in] filter testing and product quality and deficiency reporting," said Akanksha Raja, ECBC systems and logistics engineer.

On 12 March, the JSGM Team traveled to Japan and Korea on a seven-week-long campaign to field masks at six different Army sites. By the end of April, more than 39,000 masks had been successfully inspected and fielded to soldiers in the region. The mask had been outfitted across the services since 2008, beginning with the Air Force, which has already received 345,448 M50 masks. The Navy has received 274,333 masks and the Marine Corps has received 131,289. **By 2019, the Army expects to have fielded 1,245,978 masks, and the campaign in Korea and Japan is just one of many that will occur.**

A typical fielding includes the team arriving onsite, where an inspection is conducted for random sampling of five percent of the inventory to ensure quality of the shipment. Masks are then staged by commands in advance of the training sessions, during which 20-25 CBRNE specialists spend four hours training the soldiers using a "train-the-trainer" style that includes instruction on how to properly use and store the mask.

M50 – the generation next

"We also authored the technical manual and after the training we remain a touch point for the soldiers to answer any questions they have about the training, usage or storage of the mask," Raja said.

ECBC's commitment to not only developing the most advanced protective gear, but training the soldiers who use it, is part of the Center's critical mission in chem-bio defense. The lethality of chemical weapons is a grave danger to the men and women serving in uniform on behalf of the country, and even the tiniest drop of agent could prove fatal. For example, a lethal dose of chlorine is only 0.2mm, which is smaller than the eye of

Abraham Lincoln on the U.S. penny.
Even as the M50 is fielded, ECBC continues to improve the most important piece of protective gear the U.S. Army has ever issued. It is currently designing a next-generation respirator that is **lighter, smaller, and has a built-in air flow from the nose cup to the eye cavity to keep the face cooler. Physiological monitors and sensors will control fan speeds for the air based on the breathing demands of the user.** The most advanced **communications technology will also be integrated into the mask.**
Keeping the end user in mind is what will keep the warfighter safe in the most challenging theater conditions. ECBC has a long-standing history of chemical weapon defense, and is leading the way on soldier protection. The expertise and state-of-the-art facilities enable ECBC to safely handle the most lethal substances for research defense purposes; it's most rewarding mission is developing gear that helps bring soldiers home.

Modern times... USA!

EDITOR'S COMMENT: (At least) In the Greek military when we salute an officer or soldier we do not salute the person but the emblem on his hat – that is the Greek Flag! I could never understand the habit of civilians (even Presidents') to salute back on bare head. And of course NEVER with a cup of coffee…

K Ebola alert as infected medic to fly home: Desperate bid to save first Briton struck by virus

Source: http://www.dailymail.co.uk/news/article-2732679/BREAKING-NEWS-Briton-living-Sierra-Leone-tests-positive-Ebola-assessed-doctors.html

August 23 – A British charity worker infected by the deadly ebola virus sweeping through West Africa is to be flown home in a desperate bid to save his life.

An isolation bed at the Royal Free Hospital in Hampstead, North London

The man, the first Briton to contract the disease outside the laboratory, will be transported by the RAF from Sierra Leone, where 392 people are known to have died of the virus this year. The evacuation will take place today or tomorrow.

The decision to fly him back was taken yesterday after a top-level meeting during which Ministers concluded there was 'no risk' that the repatriation would trigger an outbreak in the UK.

The only other Briton ever known to have contracted Ebola is former laboratory technician Geoffrey Platt, who accidentally pricked his thumb while taking a sample from an infected guinea pig at the Microbiological Research Establishment at Porton Down in Wiltshire, in November 1976.

He suffered three days of extreme weakness, diarrhea and vomiting, and a rash that covered his body – but he survived. Mr Platt then spent 40 days in quarantine.

Now 80, he said earlier this month: 'The public need to be alert and everything needs to be done to stop Ebola breaking out in Britain.'

It was confirmed yesterday that an Irish engineer who died at home after returning from working in Sierra Leone had not contracted Ebola.

Inside the UK's high-tech Ebola unit

Source: http://www.express.co.uk/life-style/health/494963/EXCLUSIVE-Inside-the-UK-s-high-tech-Ebola-unit

August 3 (article written before the case transportation – see above)

Should the killer virus strike in the UK, victims will be taken to the **country's only high security isolation unit at the 11th floor of Royal Free Hospital in Hampstead.**

Just **seven doctors** specially trained in infectious diseases and a **small team of nurses** are allowed to enter and the ward is sealed tight with automatic door locks.

There are two "isolator" beds, each in a separate room, a space that would normally hold 20 beds.

Each **£25,000 bed** is contained within an airtight tent that generates its own air supply and includes built-in suits for the medical staff to wear when attending to a patient. Whenever a bed is used it is destroyed afterwards.

The ward **also has its own laboratory** and **three large "autoclaves",** similar to pressure cookers, which safely dispose of all human waste in heat-sealed plastic bags.

The reason behind the unit is to protect health care workers from highly contagious infections such as Ebola. Everything is contained within the tent under **negative pressure** so the air is constantly added and removed

Dr Stephen Mepham, an infectious disease specialist, allowed the Sunday Express a glimpse of what would be Ground Zero in the event of an Ebola outbreak in Britain.

He said: "The reason behind the unit is to protect health care workers from highly contagious infections such as Ebola.

"Everything is contained within the tent under negative pressure so the air is constantly added and removed.

"Outside the tent, the air flows through a series of filters and is deposited outside the hospital.

"Linked to the unit is a dedicated laboratory. One of the big risks of viral haemorrhagic fever [the group of illnesses to which Ebola belongs] is that when samples go to different labs, if lab staff are not aware of the potential risks they can become infected.

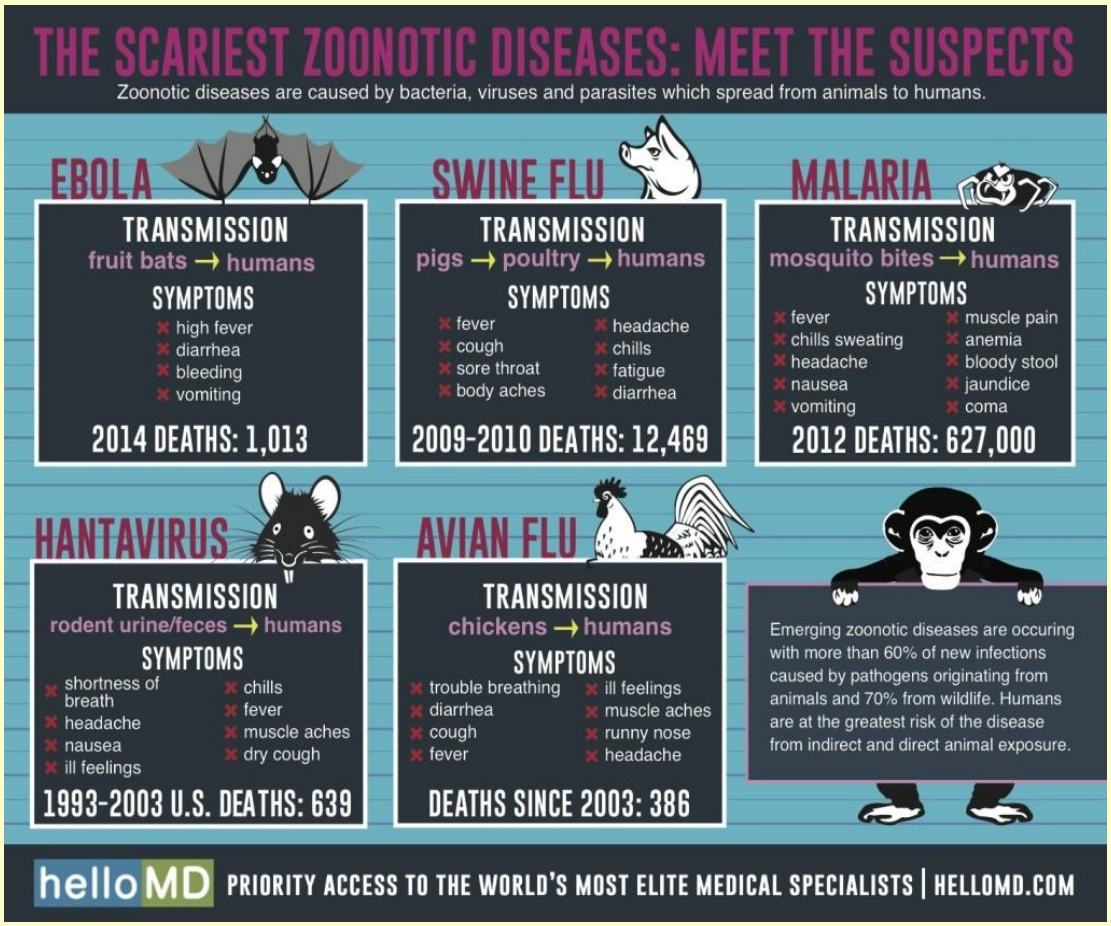
"The benefit of this laboratory is that it is small and self-contained and has all the essential pieces of equipment to hand.

"The unit also has the ability to get rid of hospital waste. We have three autoclaves on site which make safe hospital waste before it's put into the main waste stream of the hospital to be disposed of."

The dedicated physicians and nurses are in a state of constant readiness.

Zoonotic Diseases like Ebola

Source: http://www.emergencymgmt.com/emergency-blogs/disaster-zone/lessonsfromthecaliforniaquake.html



Epidemic ethics: four lessons from the current Ebola outbreak

By Ian Kerridge

Source: http://www.homelandsecuritynewswire.com/dr20140826-epidemic-ethics-four-lessons-from-the-current-ebola-outbreak

The extent of the current Ebola virus outbreak in West Africa has belatedly focused the attention of non-governmental organizations, local and Western governments, and international media. What we haven't caught up with though, is the extent to which these outbreaks and their devastating effects are predictable and preventable.

The spread of Ebola virus occurs because health infrastructure in the region is fragmented, under-resourced, or non-existent. And the therapeutic response to the illness is constrained by failure of markets to drive drug and vaccine development that would help the world's poorest people.

Resource constraints

This is the largest known Ebola virus outbreak, with more than 1,800 cases and 1,000 deaths so far. But the actual number of people affected and mortality rates are uncertain because laboratory diagnosis is limited and only severe cases are admitted to hospitals.

Apart from its longevity and extent, what distinguishes this outbreak is that, for the first time, there's a prospect of drugs and vaccines to treat and prevent the disease. But these important therapeutic milestones don't alter the fact that the outbreak will not be controlled by drugs. Rather, what's required is

strict infection control and quarantine.
Person-to-person spread of Ebola virus, by contact with blood, body fluids, or tissues of an infected person (mainly in the late stages of disease or after death) is not particularly difficult to prevent by well-established infection prevention measures that should be routine practice in any modern hospital.
Unlike influenza, for instance, Ebola virus doesn't spread by coughing or during the incubation period. So the current hospital outbreaks are related to inadequate health-care resources rather than a particularly high level of infectiousness.
Nor can we escape the fact that future outbreaks are more likely to be prevented by sociopolitical and environmental reform than vaccination. That's because identifying target populations and delivering vaccines rapidly requires infrastructure and sociopolitical stability, both of which can be difficult to ensure during an outbreak.

A moral failure

But drugs and a vaccine are being sent to the region, after a ruling from an ethics panel convened by the World Health Organization decided their use was acceptable even though they haven't been definitively shown to be safe or effective.
If anything, the vaccine and use of the drug ZMapp to treat two American missionaries, a Spanish priest, and three Liberian doctors have exposed the moral failings of scientific research, the biomedical and pharmaceutical industries and the neoliberal policies of global capitalism.
Ebola fever is not a new disease. That so little progress has been made towards developing effective remedies, and that the progress has been driven more by military imperatives than concern for affected communities, is outrageous.
Think about it this way: if Ebola virus outbreaks had occurred in New York, London, or Sydney, effective therapies surely would have been developed long ago.
The reasons for the lack of effective drugs are complex. Drug and vaccine trials in tropical regions with limited infrastructure are difficult and costly, but other barriers seem even more insurmountable.
They include subtle forms of racism (manifest in our tolerance of different burdens of illness and different responses to disease according to race) and the moral erosion that comes with distance (and "otherness"); the global failure to address the root causes of poverty, systematic inequity and political instability; and the failure of market-driven drug development or the lack of incentives for Big Pharma to develop vaccines that will only be given once or twice, or drugs for which demand is limited and unpredictable.
These drugs include not only anti-Ebola virus drugs but also new antibiotics, anti-malarials, and anti-tuberculous drugs. Indeed, malaria and tuberculosis have reportedly killed at least 300,000 and 600,000, respectively, since the start of the Ebola outbreak.
Despite these failures, there are well-established measures which, if applied promptly and adequately, should limit the extent and mitigate the effects of outbreaks. Four steps are required.

Four moves forward

The **first** is to maintain an emphasis on public-health strategies that are most likely to control the illness. And to provide affected countries with sufficient short- and long-term infrastructure support so they can work with communities to prevent and manage the outbreak.
The **second** is to accept that we must act to treat infection and reduce its spread, as the WHO has already done, by approving the fast-tracking of compassionate access to promising but still untested medications and vaccines.
In doing so, it's essential the processes for making these therapies available are fair, equitable, transparent, informed and inclusive of affected communities. Difficult decisions about prioritization that, for example, privilege health workers or exclude the elderly and terminally ill, are unlikely to be supported unless their bases are ethically justifiable.
The **third** is to review ethical and scientific standards for clinical trial design to increase flexibility in the face infectious disease emergencies. This can be done by expediting approval and commencement of drug and vaccine trials as soon as an outbreak begins, to hasten use of

new therapeutics without compromising public safety.
The **fourth** most difficult but important step is to critically examine the sociopolitical and economic conditions that create the environment for such outbreaks occur.
The likelihood of outbreaks of disease due to Ebola and other viruses that jump from animals to humans increases when people are forced, by poverty, limited sources of protein (which is provided by "bush meat"), global capitalism and neoliberal market policies, into dangerous places and practices to survive.
Unless we confront these structural problems, genuinely consider alternative policies and strategies, such as new forms of taxation and market economics in line with public health goals, pooling of intellectual property to facilitate drug and vaccine development, and different approaches to science and science funding, the problems highlighted by this outbreak will be endlessly repeated.

***Ian Kerridge** is Associate Professor in Bioethics & Director, Centre for Values and Ethics and the Law in Medicine at University of Sydney.*

Ebola patient arrives at Hamburg hospital

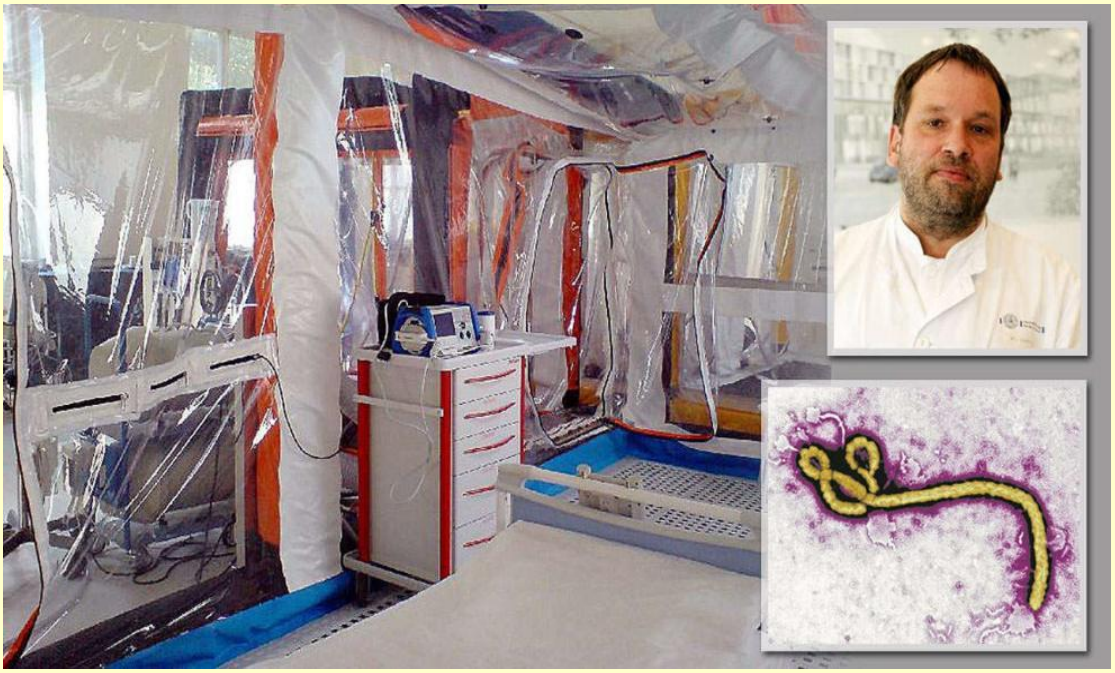
Source: http://www.thelocal.de/20140827/ebola-patient-expected-in-hamburg-who-africa

An isolation ambulance approaches the specially outfitted aircraft carrying the Ebola patient at Hamburg airport. Photo: DPA

August 27 – The World Health Organisation (WHO) epidemics expert will be treated at University Hospital Hamburg-Eppendorf (UKE), a spokesman for the Hamburg health authorities confirmed to The Local.
The specially-equipped medical jet from Sierra Leone with the patient on board landed at Hamburg Airport shortly before 11am. The Senegalese medic was then transported in a special isolation vehicle provided by the fire service.
The man was infected while

working with Ebola samples in a WHO laboratory in the stricken west African country.
The virus has infected more than 2,600 people and killed 1,427 since reemerging in west Africa this year.
Ebola has a fatality rate of up to 90 percent according to the WHO, but during the current outbreak the survival rate has been 47 percent.
It is transmitted by direct contact with blood and body fluids.

At the end of July, a medic from Sierra Leone who had contracted the disease was meant to be treated in Hamburg's UKE, but he died before he could be flown to Germany.



Corner: Stefan Schmiedel, Medical Director of the Bernhard Nocht Clinic for Tropical Medicine at the University Hospital Hamburg Eppendorf

The clinic has an isolation ward shut off behind three airlocks designed to stop contaminated material and microbes escaping.

Human asymptomatic Ebola infection and strong inflammatory response

By Leroy EM[1], Baize S, Volchkov VE, Fisher-Hoch SP, Georges-Courbot MC, Lansoud-Soukate J, Capron M, Debré P, McCormick JB, Georges AJ.
[1]Centre International de Recherches Médicales de Franceville, Gabon.
Lancet. 2000 Jun 24;355 (9222):2210-5
Source: http://www.ncbi.nlm.nih.gov/pubmed/10881895

THE LANCET

Abstract
Ebola virus is one of the most virulent pathogens, killing a very high proportion of patients within 5-7 days. Two outbreaks of fulminating haemorrhagic fever occurred in northern Gabon in 1996, with a 70% case-fatality rate. **During both outbreaks we identified some individuals in direct contact with sick patients who never developed symptoms.** We aimed to determine whether these individuals were indeed infected with Ebola virus, and how they maintained asymptomatic status.

Methods
Blood was collected from 24 close contacts of symptomatic patients. These asymptomatic individuals were sampled 2, 3, or 4 times during a 1-month period after the first exposure to symptomatic patients. Serum samples were analysed for the presence of Ebola antigens, virus-specific IgM and IgG (by ELISA and western blot), and different cytokines and chemokines. RNA was extracted from peripheral blood mononuclear cells, and reverse transcriptase-PCR assays were done to amplify RNA of Ebola virus. PCR products were then sequenced.

Findings
11 of 24 asymptomatic individuals developed both IgM and IgG responses to Ebola antigens, indicating viral infection. Western-blot analysis showed that IgG responses were directed to nucleoprotein and viral protein of 40 kDa. The glycoprotein and viral protein of 24 kDa genes showed no nucleotide differences between symptomatic and asymptomatic individuals. Asymptomatic individuals had a strong inflammatory response characterised by high circulating concentrations of cytokines and chemokines.

Interpretation
This study showed that asymptomatic, replicative Ebola infection can and does occur in human beings. The lack of genetic differences between symptomatic and asymptomatic individuals suggest **that asymptomatic Ebola infection did not result from viral mutations.** Elucidation of the factors related to the genesis of the strong inflammatory response occurring early during the infectious process in these asymptomatic individuals could increase our understanding of the disease.

Ambulances go high-tech to prevent crashes

Source: http://i-hls.com/2014/08/ambulances-go-high-tech-prevent-crashes/

In an emergency, every second counts. But driving at high speeds can compromise the safety of first responders and civilians.
There is a new device that's helping some ambulance drivers operate more safely as they work to help others. This is according to a report by CBS 2.

"Back in the early 2000s, we had a couple of severe accidents that our staff were involved in, and it became a real issue for us," explained Robert Luckritz, director of emergency medical services at Jersey City Medical Center.

The hospital took action to reduce the number of future accidents, installing a **safety device that is placed under the driver's seat** in each of their ambulances. It tracks in real time what's going on with the ambulance in terms of speed, g-force, seat belt usage, lights, sirens and other parameters.

That means drivers are alerted with beeps and other sounds when they drive too aggressively. When they drive too fast, take a turn too hard or even operate outside of other established safety guidelines, they are constantly alerted.

"We actually provide feedback to our drivers on a regular basis to let them know where it is that they stand in comparison to other drivers, and they're able to look at how many times they operate outside the parameters," Luckritz said.

Crowded intersections and high speeds are just a few of the causes that lead to an estimated 10,000 ambulance crashes every year.

"They get that adrenaline rush and they start speeding up, and what this does is it doesn't delay you responding to the emergency, it makes sure that you're operating in a safe manner," Luckritz said.

EMS crews say they welcome the feedback they receive from the technology.

"It makes it a lot safer for both us and other people out on the road," said driver Anthony Burgos.

"It's a hard balance because you want to make an appropriate response time, but it's important to keep the safety of your crew and yourself in mind," added driver Andrew Valenzuela.

Jersey City Medical Center has the only ambulance service in northern New Jersey that uses the device. The FDNY is considering adding it.

Ebola Virus Detected On The Spot By New Handheld Device

Source: http://nuviun.com/content/news/ebola-virus-detected-on-the-spot-by-new-handheld-device-

August 13 – The ongoing Ebola outbreak in West Africa has killed approximately a thousand people as of early August. The World Health Organization describes it as the worst outbreak of the dreaded disease and has declared a global public health emergency. Since a vaccine won't be ready until late 2015, experimental therapies like Mapp Pharmaceuticals' ZMapp and Tekmira's drug candidate have been used in some patients.

But for the majority of those at risk, early screening remains key in containing the spread of the disease. This has proved more difficult in this age of frequent international travel. Public health officials are using thermal scanners in airports and put medical personnel on standby to check passengers who are having symptoms. For those patients, the standard blood tests administered are enzyme-linked immunosorbent assay (ELISA) and reverse transcriptase polymerase chain reaction (PCR).

However, these tests are time-consuming, only performed by highly trained personnel and can only be done by a few major, sophisticated labs. By the time the results arrive, those who have contracted the virus may have slipped through the cracks, traveled elsewhere and have inadvertently spread the disease.

Now, a handheld device funded by the Department of Homeland Security and developed by California-based biological detection and diagnostics company PositiveID may offer the best alternative for a quicker and cheaper diagnostic test for Ebola. Using this device can be the difference between life and death for many people at risk, because it allows for early intervention at the point-of-need.

"The best way to prevent the spread of the Ebola virus throughout the world is to detect it as early and quickly as possible, at the source, and we believe our Firefly system will give us that ability," William J. Caragol, Chairman and CEO of PositiveID, said in a statement. "We are very proud of the development, design and intellectual property protection achieved to date for our Firefly system, designed to deliver rapid molecular diagnostic testing faster, cheaper and exactly where it's needed."

The **Firefly Dx** handheld device is the size of a mini laptop. At the center of the device is a cartridge with a hole through which a small blood sample is collected. The user pushes a single button to start the test, and the device gives a result within 15 minutes. Because the device is portable and easy to use, anyone with little training can use it in airports and other sites where a lab is not readily available.

The device costs $3,000 to $5,000 and the test costs $25, according to Probst. However, what they have now is just a prototype, and he says it would probably take roughly two years before the point-of-need devices can be used routinely in airports

"If you can test early on in remote locations, you can essentially quarantine that area sooner, therefore reducing the spread of [the disease]," Lyle Probst, president of PositiveID, said in an interview with KTVU in San Francisco. "Even now as people go through, some airports are scanning to see who's running a temperature and who's not and if they're running a temperature they can go and take a sample from them, but they're not going to get results for several hours."

Meanwhile, Colorado-based **Corgenix** is also developing a similar rapid-test kit for Ebola with the help of a $3 million grant from the U.S. National Institutes of Health. The home test kits would be available within three years.

These devices are among a handful of diagnostic tools being developed to quell the scourge of infectious diseases, especially those coming from developing countries. For instance, a project by Harvard's School of Engineering and Applied Sciences is also developing an **mHealth** solution in the form of a cheap, portable device that works with a cellphone for detecting malaria. As an aid to surveillance, healthcare groups like *Medecins Sans Frontieres* are using online maps and geographic information systems to track the disease.

JBAIDS System

Source: http://www.bio-surveillance.com/JBAIDS.html

JBAIDS (Joint Biological Agent Identification and Diagnostic System) is the United States DoD standard platform used to reliably identify biological warfare agents in a dual purpose role: for diagnostic applications in a clinical setting and for environmental and food sample confirmatory testing. The ruggedized JBAIDS is an open platform that analyzes 32 samples in 30 minutes and is deployed in field hospitals, mobile analytical labs, shipboard medical labs, food and water safety test centers, research labs, and other mobile scenarios.

Benefits from a Complete Product Solution

Instrument	Chemistry
32 Samples in less than 30 minutes Portable and meets MIL-STD-810E transport standards	Freeze-dried reagents; just add sample and water Validated for sensitivity and specificity
Support	**Software**
Obtain quick assistance through phone and online help desks Test proven to be accurate by the U.S. DoD	Automated qualitative analysis and text delineated exportable data Simple wizard-based user interface

The JBAIDS System Tests for the Following Pathogens	
BioThreat Targets	Vaccinia (Orthopox), Yersinia pestis (Plague, Target 2), Yersinia pestis (Plague, Target 1), Bacillus anthracis (Anthrax, Target 1), Bacillus anthracis (Anthrax, Target 2), Francisella tularensis (Tularemia), Brucella melitensis (Brucellosis), Rickettsia prowazekii (Rickettsia), Burkholderia spp. (Burkholderia), Variola (Smallpox), Coxiella burnetii (Coxiella), Training Kit (Yeast), **Ebola**, Marburg, Eastern equine encephalitis (EEE), Western equine encephalitis (WEE), Venezuelan equine encephalitis (VEE)
FDA Cleared - Infectious Disease Targets	Avian Influenza, Influenza A & B, Influenza A Subtyping
FDA Cleared - BioThreat Target	Anthrax IVD, Tularemia IVD, Plague IVD
Control Assays	DNA Inhibition Control Kit, RNA Inhibition Control Kit, DNA Extraction Control Kit , RNA Extraction Control Kit, System Operational Check Kit

FilmArray® BioSurveillance System

Source: http://biofiredefense.com/filmarray/

The FilmArray is able to identify, in a closed system, dozens of the most lethal viruses and bacteria, including emerging infectious diseases. The easy-to-use, syringe-loaded system represents the next generation in automated detection systems.

The FilmArray uses a plastic pouch with automated capabilities; including sample preparation, reverse transcription for RNA viruses, and a two-stage nested multiplex PCR process. The results are a revolutionary detection system in a lightweight, small-footprint format.

Benefits from a Complete Product Solution

Multi-Use: Used for BioThreat Detection and Pandemic BioSurveillance.

Fully Automated: Sample prep, amplification, identification, and reporting.

Single Instrument Integration: Reduce the amount of equipment and consumables.

Freeze-dried Reagents: Room temperature stable.

Easy-to-Use: Automated protocol requires limited hands-on time and training.

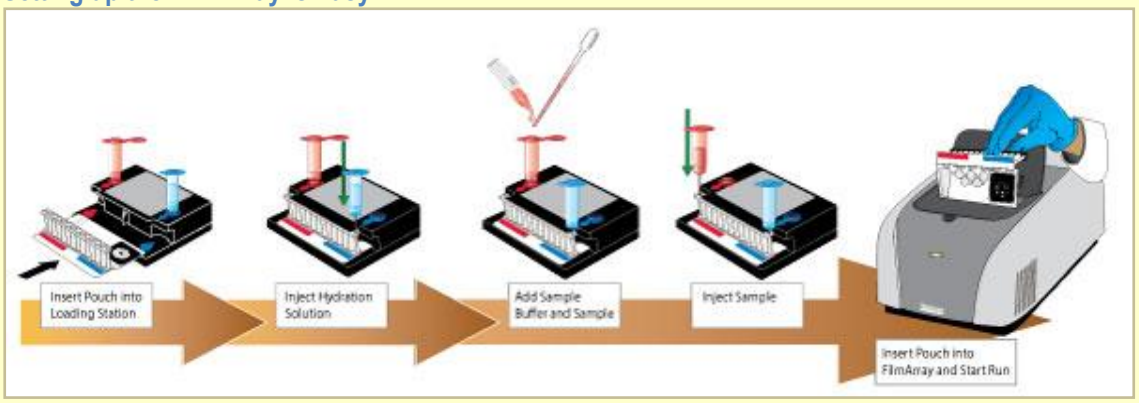
Network: Interoperable with global information grid.

Quick Test Times**: Results in 1 hour.**

More BioThreat Targets: Test 17 pathogens in one run.

More Sample Types: Integrated sample prep removes PCR inhibitors and allows BioThreat detection in challenging environmental sample types such as soil and clay.

Setting up the FilmArray is Easy



FilmArray™ Biothreat Panel

FilmArray™ Idaho Technology Inc.

www.idahotech.com

Run Summary

Sample ID:	YBG21531	Run Date:	30 Sep 2010 1:43 PM
Detected:	Bacillus anthracis, Yersinia pestis	Controls:	Passed
Equivocal:	Marburg virus		

Result Summary

✓ Detected	Bacillus anthracis
Not Detected	Clostridium botulinum
Not Detected	Brucella species
Not Detected	Burkholderia species
Not Detected	Coxiella burnetii
Not Detected	Ebola Zaire
Not Detected	EEE virus
Not Detected	Francisella tularensis
↔ Equivocal	Marburg virus
Not Detected	Orthopox genus virus
Not Detected	Ricinus communis
Not Detected	Rickettsia species
Not Detected	Rickettsia prowazekii
Not Detected	Staphylococcal enterotoxin gene
Not Detected	Variola virus
Not Detected	VEE virus
Not Detected	WEE virus
✓ Detected	Yersinia pestis

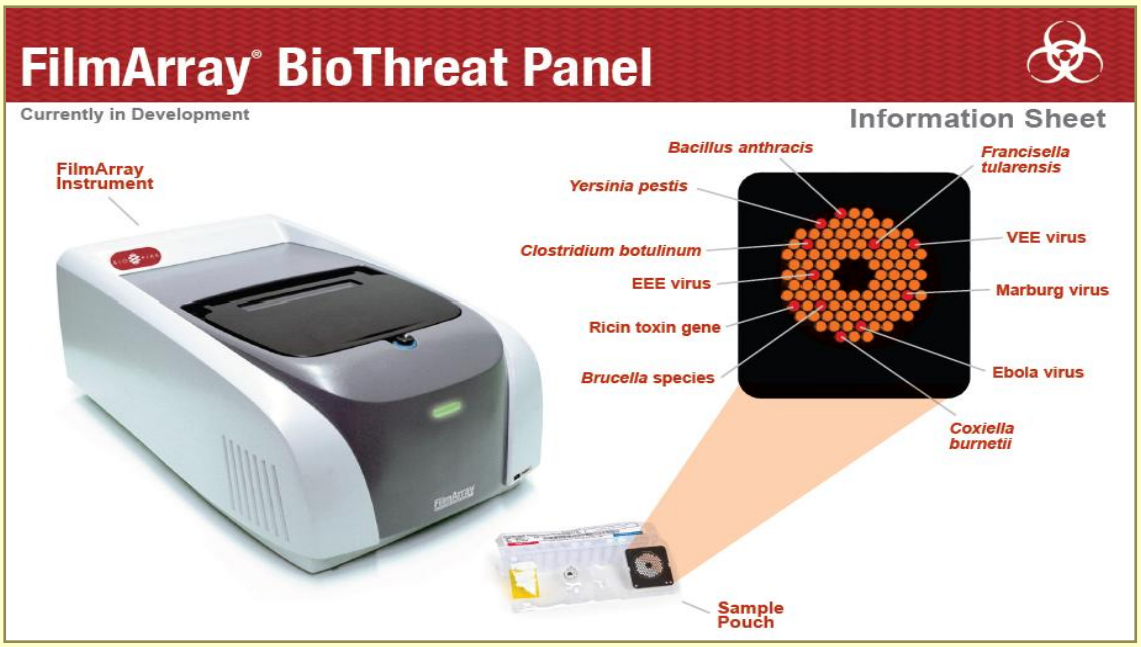
Run Details

Pouch:	Biothreat Panel v2.2	Protocol:	BT v.1 PBS
Run Status:	Completed	Operator:	U. Grant
Serial No.:	00052751	Instrument:	ITI FA "AFA14"
Lot No.:	100920B		

Fully Automated Operation

The FilmArray reagents pouch contains all the required reagents for sample preparation, reverse transcription-PCR, PCR, and detection in a freeze-dried, room temperature stable format. Prior to a run, the operator injects hydration solution and the unknown sample into the pouch. The FilmArray instrument does the rest. First, the FilmArray extracts and purifies all nucleic acids from the unknown sample. Next, the FilmArray performs a nested multiplex PCR. During the first-stage PCR, the FilmArray performs a single, large volume, massively multiplexed reaction. Last, individual singleplex second-stage PCR reactions detect the products from the first stage PCR. Using endpoint melting curve

data, the FilmArray software automatically generates a result for each target.



The Following Assays are Contained in the FilmArray BioThreat Panel

- *Bacillus anthracis, 3 Targets*
- *Brucella* melitensis, *2 Targets*
- *Burkholderia, 2 Targets*
- *Clostridium botulinum*
- *Coxiella burnetii, 2 Targets*
- *Ebola virus* (Zaire)
- *EEE virus*
- *F. tularensis, 2 Targets*
- *Marburg virus, 2 Targets*
- *Ricinus communis*
- *Rickettsia* prowazekii, *2 Targets*
- *Variola virus*
- *VEE virus, 2 Targets*
- *WEE virus*
- *Yersinia pestis, 2 Targets*
- *Orthopox virus, 2 Targets*

Two very interesting full papers on Ebola lab detection:

Paper 1: http://cid.oxfordjournals.org/content/42/11/1521.full

Paper 2: http://cvi.asm.org/content/13/4/444.full

What Does the Russian Flu Outbreak Mean in the 21st Century?

Source: http://www.homelandsecurity.org/node/1384

In November 1889, aa influenza-like-illness appeared in St. Petersburg, Russia. Soon, the "Russia Influenza" spread across Europe and the world. Research teams at Virginia Tech are using materials from the National Library of Medicine and newspaper sources to explore some of the core issues for epidemiologists concerning the speed, scope, and severity of a disease outbreak. By studying these patterns in the past, historians of

medicine can contribute to contemporary and future responses to the threat of widespread infectious diseases.

Circulating Now, the National Library of Medicine blog, highlighted their research in three posts on tracking the Russian flu that used resources from their collections.

Mapping the 1889-1890 Russian Flu – In this blog post the researchers use historical documents to look at geographical representations of the spread of the disease.

The 1889 Russian Flu in the News -This post provides insights on the social impact of disease through depictions of in illustrations in newspapers and periodicals.

A Physician's Perspective on the Russian Flu – This post examines the disease from the perspective of a contemporary physician through case histories, detailed records and treatments.

WHO: West Africa Ebola outbreak could infect 20,000 people

Source: http://www.reuters.com/article/2014/08/28/us-health-ebola-idUSKBN0GS1SU20140828

August 28 – The **Ebola epidemic in West Africa could infect over 20,000 people and spread to more countries, the U.N. health agency said** on Thursday, warning that an international effort costing almost half a billion dollars is needed to overcome the outbreak.

The World Health Organisation (WHO) announced a $490 million strategic plan to contain the epidemic over the next nine months, saying it was based on a projection that the virus could spread to 10 further countries beyond the four now affected - Guinea, Liberia, Sierra Leone and Nigeria.

With the IMF warning of economic damage from the outbreak, Nigeria reported that a doctor indirectly linked to the Liberian-American who brought the disease to the country had died of Ebola in Port Harcourt, Africa's largest energy hub.

In Britain, drugmaker GlaxoSmithKline said an experimental Ebola vaccine is being fast-tracked into human studies and it plans to produce up to 10,000 doses for emergency deployment if the results are good.

So far 3,069 cases have been reported in the outbreak but the WHO said the actual number could already be two to four times higher. "This is not a West African issue or an African issue. This is a global health security issue," WHO's Assistant Director-General Dr Bruce Aylward told reporters in Geneva.

With a **fatality rate of 52 percent**, the death toll stood at 1,552 as of Aug. 26. That is nearly as high as the total from all recorded outbreaks since Ebola was discovered in what is now Democratic Republic of Congo in 1976.

The figures do not include 13 deaths from a separate Ebola outbreak announced at the weekend in Congo, which has been identified as a different strain of the virus.

Aylward said tackling the epidemic would need thousands of local staff and 750 international experts. "It is a big operation. We are talking (about) well over 12,000 people operating over multiple geographies and high-risk circumstances. It is an expensive operation," he said.

Ebola crisis: The economic impact

By Richard Hamilton (BBC News)

Source: http://www.bbc.com/news/business-28865434

With more than 1,300 reported deaths from Ebola in West Africa, the virus continues to be an urgent health crisis, but it is also having a devastating impact on the economies of Guinea, Liberia and Sierra Leone.

"The **economy has been deflated by 30%** because of Ebola," Sierra Leone's Agriculture Minister Joseph Sam Sesay told the BBC.

He said President Ernest Bai Koroma revealed this staggering and depressing news to ministers at a special cabinet meeting. "The agricultural sector is the most impacted in terms of Ebola because the majority of the people of Sierra Leone - about 66% - are farmers," he said.

Twelve out of 13 districts in Sierra Leone are now affected by Ebola, although the epicentres are in the Eastern Province near the borders with Liberia and Guinea.

Road blocks manned by police and military are preventing the movement of farmers and labourers as well as the supply of goods.

"We are definitely expecting a devastating effect not only on labour availability and capacity but we are also talking about farms being abandoned by people running away from the epicentres and going to areas that don't have the disease," Mr Sesay added.

Food shortages

However, the chief co-ordinator for the United Nations Development Programme (UNDP), David McLachlan-Karr, thinks that the road blocks are absolutely crucial to containing the outbreak.

"A robust response to quarantining epicentres of the disease is absolutely necessary," he told the BBC.

But he admits agriculture in Sierra Leone has been brought to its knees.

"We are now coming into the planting season which means a lot of agriculture is not happening, so down the line that will create food shortages and pressures on food prices. We are starting to see a rise in inflation and pressure on the national currency as well as a shortage of foreign exchange," he said.

The UNDP has appealed for $18m (£11m) to bolster Sierra Leone's health system while the World Food Programme says the total cost of its emergency operations in Sierra Leone, Guinea and Liberia is $70m.

In Guinea and Liberia the economic predictions may be less catastrophic but they are still worrying. **The World Bank said it was expecting GDP growth in Guinea to fall from 4.5% to 3.5%.**

Economic growth in Liberia has been revised down due to the outbreak

The Liberian economy had been expected to grow by 5.9% this year but the country's Finance Minister, Amara Konneh, said this was no longer realistic due to a slowdown in the transport and services sectors and the departure of foreign workers because of Ebola.

Mining impact

The world's largest steelmaker ArcelorMittal has seen work disrupted on its iron ore mine expansion project in Yekepa in Liberia, after contractors declared "force majeure" and moved people out of the country.

Simandou, in the forests of eastern Guinea, is Africa's largest iron ore mine and infrastructure project. Vale, the world's biggest iron ore producer, was involved in Simandou until April. It evacuated six international members of staff and put the rest of the workforce in the area on leave.

Rio Tinto, the world's third largest mining company, which owns a share in Simandou, has donated $100,000 to the World Health Organization's work in the area and is also making sanitation equipment available to local people there.

Steelmakers and miners have been hit by the outbreak

A smaller British company, London Mining, has moved out some its non-essential expatriate staff from Sierra Leone, where mining has accounted for much of the country's recent growth. **According to the International Monetary Fund, Sierra Leone's output grew by 20% last year; excluding iron ore mining, it grew by 5.5%.**

But like Rio Tinto, London Mining has also donated money towards tackling the spread of Ebola, and educating local communities about the virus.

Borders closed

In Sierra Leone, commercial banks have reduced their hours of business by two hours to reduce contact with clients and the country's tourism industry has taken a severe knock - some hotels are empty and are laying off staff.

The closure of borders in West Africa and the suspension of flights are also having a detrimental effect on trade, severely limiting the ability of countries to export and import goods.

Recent examples are the closure of Cameroon's lengthy border with Nigeria and the announcement by Kenya Airways that it is suspending flights to and from Sierra Leone and Liberia.

All three West African nations are already poor countries, but the Ebola outbreak could make them even poorer. Sierra Leone and Liberia have both emerged from horrific civil wars and managed to rebuild their economies.

Liberia has been trying to revive its mining sector which before the civil war accounted for more than half its export earnings. But now there are fears that all the good work that has been achieved since those conflicts could be destroyed. There are also concerns that widespread poverty could force people to resort to criminality.

'Fundamentals'

Meanwhile some international investors are nervously watching the Ebola outbreak unfold. Dianna Games, chief executive of Johannesburg-based consultants Africa@Work, says fears about the virus could damage Africa's economic revival of recent years.

"Ebola has made a dent in the Africa Rising narrative," she told the BBC. "The stereotypes of Africa as a place of poverty and disease have started to re-emerge again."

She thinks Nigeria is the only affected country that has the health system and infrastructure to deal with Ebola. At the moment there have only been 12 confirmed cases, all of which were linked to the death of one man from Liberia in July.
In the long run, Ms Games believes history will view the 2014 Ebola outbreak as a temporary blip rather than a permanent U-turn in the continent's fortunes.
"The fundamentals pushing this Africa Renaissance are still there," she said.

Asymptomatic MERS Cases

By Amesh A. Adalja, MD, FACP, FACEP
Sources: www.upmc-cbn.org | www.UPMCHealthSecurity.org

A new study published in the *New England Journal of Medicine* sheds light on whether asymptomatic or mild cases of Middle East Respiratory Syndrome (MERS) occur. Key to controlling the spread of any infectious disease is an understanding of its transmission dynamics. **Are all infected individuals symptomatic? Does contagiousness completely coincide with symptoms? Are there mild or asymptomatic cases?** The answers to such questions are very important because they have a direct impact on the control strategies implemented.

280 Contacts Studied
In this study by Drosten et al., 26 index patients with MERS in Saudi Arabia were identified and 280 of their household contacts studied. Contacts underwent throat swab PCR testing as well as serologic testing a median of 17.5 days after symptom onset in index patients.

2% of Contacts Positive by PCR
Of the 280 contacts, 2% (7 of 280) were positive for MERS on PCR assays. Viral loads varied from below 500 copies to 80,000 copies. Mild symptoms occurred in one contact who developed pharyngitis and the highest viral load. Importantly, 2 contacts had had contact with camels, a species suspected to harbor the virus.
Separate serological studies were undertaken in a 2-step process. Serology revealed 5 additional unique possible cases of secondary transmission.

The Risk from Asymptomatic Individuals
The chief implication of this study is that a small proportion of individuals exposed to MERS cases may become silently infected with the virus. Such a phenomenon, even when it occurs on a low level, as demonstrated in this study, poses difficulties for control efforts if these individuals are able to transmit the virus to others.
When MERS cases are detected, one of the major interventions is to monitor contacts for symptoms of MERS. The existence of asymptomatic cases substantially diminishes the effectiveness of such steps, potentially allowing the virus a key opportunity for spread.

Understanding the scope of asymptomatic infections and the role they play in the epidemiology of MERS will be important to optimizing control of this virus.

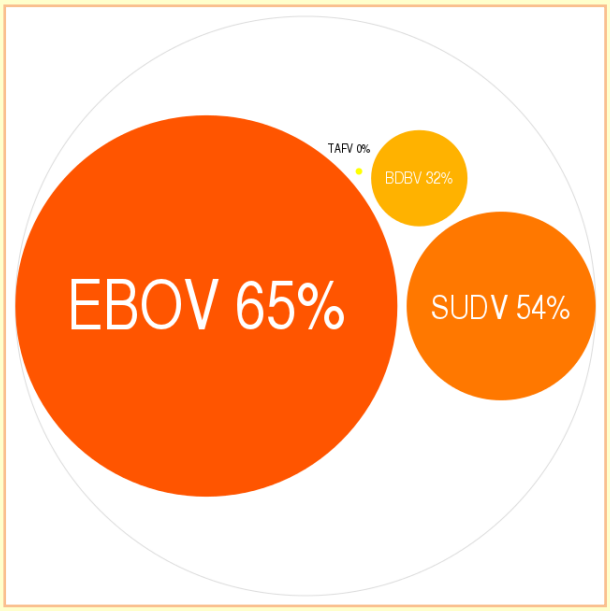
Reference
Drosten C, Meyer B, Muller MA, et al. Transmission of MERS-Coronavirus in household contacts. *N Engl J Med* 2014;371:828-835.

Potential therapy for the Sudan strain of Ebola may contain some future outbreaks

Source: http://www.homelandsecuritynewswire.com/dr20140829-potential-therapy-for-the-sudan-strain-of-ebola-may-contain-some-future-outbreaks

Ebola is a rare but deadly disease that exists as five strains, none of which have approved therapies. One of the most lethal strains is the Sudan Ebolavirus (SUDV). **Although not the strain currently devastating West**

Africa, SUDV has caused widespread illness, even as recently as 2012. In a new study appearing in the journal *ACS Chemical Biology*, researchers now report a possible therapy that could someday help treat patients infected with SUDV.



VIRULENCE PER SPECIES. Circles are virus species. Size is number of disease cases. Color is virulence, the case fatality rate from 0% yellow to red 100%. Species: BDBV, Bundibugyo virus; EBOV, Ebola virus; SUDV, Sudan virus; TAFV, Taï Forest virus. (Data: WHO)

An ACS release reports that John Dye, Sachdev Sidhu, Jonathan Lai, and colleagues explain that about 50-90 percent of Ebola patients die after experiencing the typical symptoms of the disease, which include fever, muscle aches, vomiting, and bleeding. Of the five known Ebola viruses, the Zaire (EBOV) and SUDV strains are the most deadly and cause the most recurring outbreaks. Many studies have focused on EBOV, the culprit of the current epidemic, but much less attention has been placed on SUDV until now. To develop a therapy for SUDV, this research team turned to an antibody that Dye's group previously reported. The team's antibody was directed against SUDV and was made in mice. **But the human immune system could potentially recognize that antibody as foreign** and ultimately get rid of it, preventing the antibody from treating the disease.

To avoid this situation, they wanted to make a "humanized" version of the antibody.

In the newly published work, the team put the Ebola-specific part of the mouse antibody onto a human antibody scaffold and made some changes to this molecule. They identified two versions that were able to fend off SUDV in laboratory tests on cells and in specially bred mice. "These antibodies represent strong immunotherapeutic candidates for the treatment of SUDV infection," say the researchers.

This research, however, is not expected to help with the current Ebola outbreak that, as of mid-August, has killed at least 1,200 people. This is because antibodies that kill off one strain of the virus have not worked against other strains. The U.S. Food and Drug Administration — which has not yet approved any Ebola therapies — did allow two U.S. aid workers infected during the current outbreak to be treated with an experimental drug, which is a cocktail of antibodies specifically targeting EBOV.

— Read more in Gang Chen et al., "Synthetic Antibodies with a Human Framework that Protect Mice from Lethal Sudan Ebolavirus Challenge," ACS Chemical Biology *(20 August 2014)*

Ebola drug Zmapp is 100% effective at treating monkeys with the deadly disease

Source: http://www.dailymail.co.uk/health/article-2737912/Ebola-drug-Zmapp-100-effective-treating-monkeys-deadly-disease-scientists-declare.html

Hopes of a breakthrough in the fight against Ebola have been raised by the 100 per cent successful treatment of monkeys with the deadly disease.

The experimental drug ZMapp cured the animals even when administered five days after infection, while they were displaying severe symptoms.
All 18 rhesus macaques made a complete recovery, in contrast to three other untreated monkeys that quickly fell seriously ill and died.

Nicotiana benthamiana, the plant from which ZMapp is derived. New research shows the experimental drug ZMapp cured the monkeys even when administered five days after infection

ZMapp is a blend of three laboratory-made antibodies designed to neutralise the virus.
Two U.S. doctors given the drug after they were infected with Ebola while working in Liberia subsequently recovered.
But it is not known whether they were saved by the drug or just lucky. About 45 per cent of those infected in the current outbreak have survived without treatment.
At least two other patients treated with ZMapp have died, possibly because help got to them too late.
The new research, published in a special report on Nature journal's website, provides hard evidence that the drug works and can be highly effective.
A team of scientists led by Dr Gary Kobinger, from the Public Health Agency of Canada, wrote: 'ZMapp exceeds the efficacy of any other therapeutics described so far, and results warrant further development of this cocktail for clinical use ...
'We hope that initial safety testing in humans will be undertaken soon, preferably within the next few months, to enable the compassionate use of ZMapp as soon as possible.'
The news follows a warning from the World Health Organisation (WHO) that the Ebola outbreak in West Africa could eventually claim more than 20,000 victims.
Ebola, belonging to the family of 'filoviruses',

ranks alongside Marburg virus as one of the world's deadliest infections. Fatality rates in previous outbreaks have been as high as 90 per cent.
It kills by overwhelming the immune system and sending the body into shock as blood pressure drops to dangerous levels.
Currently there are is no approved vaccine or post-exposure treatment. Management of the Ebola outbreak in Africa has been confined to palliative care and physical attempts to prevent transmission.
The development of ZMapp and its success in treating advanced stages of Ebola infection was described as a 'monumental achievement' by Professor Thomas Geisbert, from the University of Texas, writing in Nature.
He added: 'The next crucial step will be to formally assess its safety and effectiveness. Testing the latter is clearly difficult, because intentional infection of human subjects in clinical trials is not possible.'
The treated monkeys were exposed to a lethal level of Ebola virus before receiving three doses of ZMapp starting three, four and five days after infection.
The treatment reversed Ebola symptoms including excessive

bleeding, rashes, and liver damage.
Three weeks after they were infected, no trace of the virus could be detected in the animals' blood.
Untreated monkeys all succumbed to the virus by day eight after infection.
One drawback of the research was that it used a version of the virus different from the Guinea strain responsible for the current outbreak, which was not available at the time.
But the scientists went on to show that ZMapp blocks replication of the Guinea strain in laboratory tests.

EBOLA VIRUS IS MUTATING RAPIDLY

Researchers claim the Ebola virus disease (EVD) is rapidly and continually mutating, making it harder to diagnose and treat.
A study of the initial patients diagnosed with the virus in Sierra Leone revealed almost 400 genetic modifications. And it could be detrimental not only to current treatments, but also to future vaccines that are in the works. The team of researchers, led by the Broad Institute in Massachusetts and Harvard University, analyzed more than 99 Ebola virus genomes. These were collected from 78 patients diagnosed with Ebola in Sierra Leona in the first 24 days of the outbreak. Their findings, reported in the journal Science, could have important implications for rapid field diagnostic tests. The team found more than 300 genetic changes that make the 2014 Ebola virus genomes distinct from the viral genomes tied to previous Ebola outbreaks. They also found variations in the genome sequence indicating that, from the samples analyzed, the outbreak started from a single introduction into humans, subsequently spreading from person to person over many months.

Dr Alain Kohl, from the Medical Research Council/University of Glasgow Centre for Virus Research, said: 'What needs to be done next is assess against how many strains and species of the virus it can act.
Clinical trials in humans are not possible so some questions will go unanswered. At present too few people have received the drug to allow conclusions about efficacy and treatment timings, though in emergency situations it is at least one potentially useful option.'
David Evans, Professor of Virology at the University of Warwick, said: 'All animals survived and had undetectable viral loads 21 days post-infection. This is an extremely encouraging result for a virus which has an incubation period of two to 21 days in humans and for which no vaccine exists.
'These results do not prove that the healthcare workers who received ZMapp and recovered did so due to the therapy. Others who also received ZMapp succumbed to the virus.
'Distinguishing between correlation and causation will require analysis of the clinical data on viral loads before and after therapy was administered. Nevertheless, the results are encouraging.'
Professor Martin Hibberd, from the London School of Hygiene & Tropical Medicine, said: 'This looks to be a very well designed study with better than expected results, which give great hope for future clinical trials.
'I hope the team can receive sufficient funding to undertake these clinical trials straight away as this is by far the most advanced potential treatment option available to my knowledge.'

▶ **Read the full paper of Nature Journal at:**
http://www.nature.com/nature/journal/vnfv/ncurrent/full/nature13777.html

Nicotiana benthamiana is a close relative of tobacco and species of *Nicotiana* indigenous to Australia. The herbaceous plant is found amongst rocks on hills and cliffs throughout the northern regions of Australia. Variable in height and habit, the species may be erect and up to 1.5 metres or sprawling out no taller than 200 millimetres. The flowers are white. The plant was used by peoples of Australia as a stimulant - it contains nicotine and other alkaloids - before the introduction of commercial tobacco (*N.tabacum* and *N.rustica*). The indigenous names for it include Tjuntiwari and Muntju. It was first collected on the north coast of Australia by Benjamin Bynoe on a voyage of the H.M.S. Beagle in 1837.
A synonym for this species is *Nicotiana suaveolens* var. *cordifolia*, a description given by George Bentham in *Flora Australiensis* in 1868. This was transferred to *Nicotiana benthamiana* by Karel Domin in *Bibliotheca Botanica* (1929), retaining the authors name in the specific epithet. *N. benthamiana* is considered by a growing scientific community as a model organism for performing plant research. For example, the leaves are rather frail and can be injured in experiments in order to study ethylene synthesis. Ethylene is a plant hormone

which is secreted, among other situations, after injuries. Using gas chromatography, the quantity of ethylene they emitted can also easily be measured. Due to the large number of plant pathogens able to infect it, *N. benthamiana* is widely used in the field of plant virology. It is also an excellent target plant for agroinfiltration and a platform for industrial production of recombinant pharmaceutical proteins, including monoclonal antibodies.

Source: *Wikipedia*

Colorado State University researcher helps evaluate drug for use against bacterial biothreat

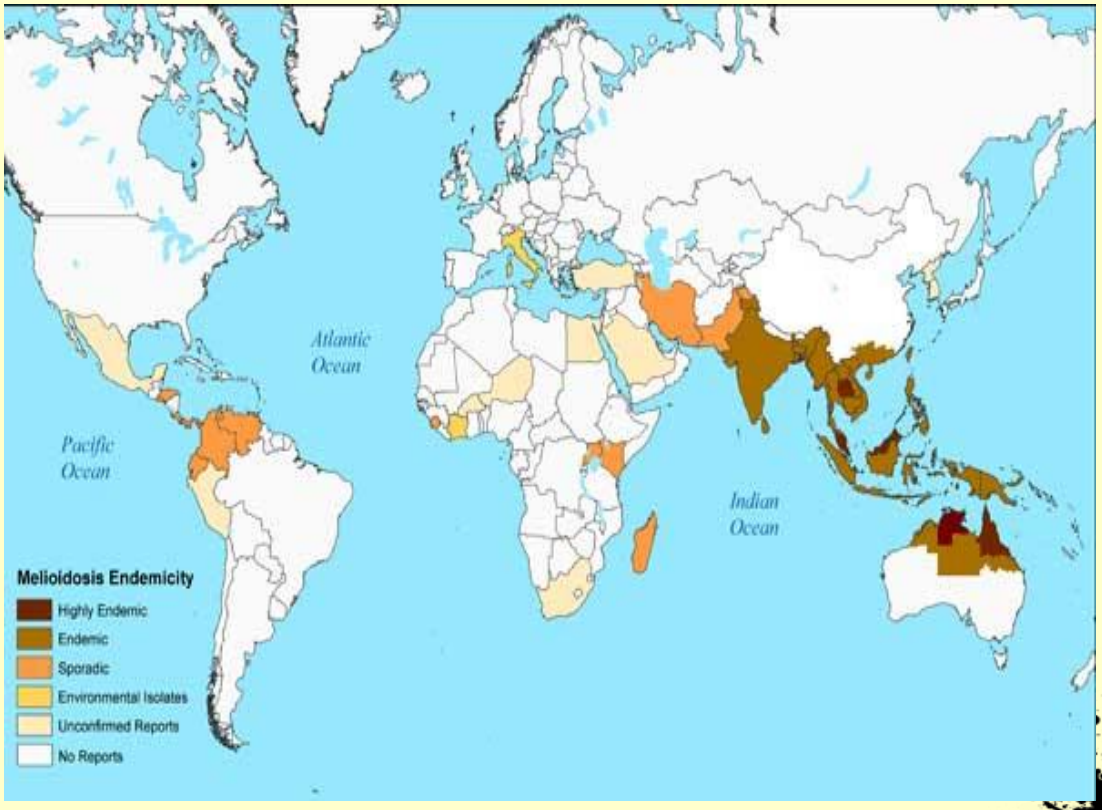
Source: http://www.news.colostate.edu/Release/7414

Pathogen experts at Colorado State University are working with a global pharmaceutical company to discover whether a new drug combination could successfully thwart human infection by a bacterium pegged as a potential bioterrorism threat.

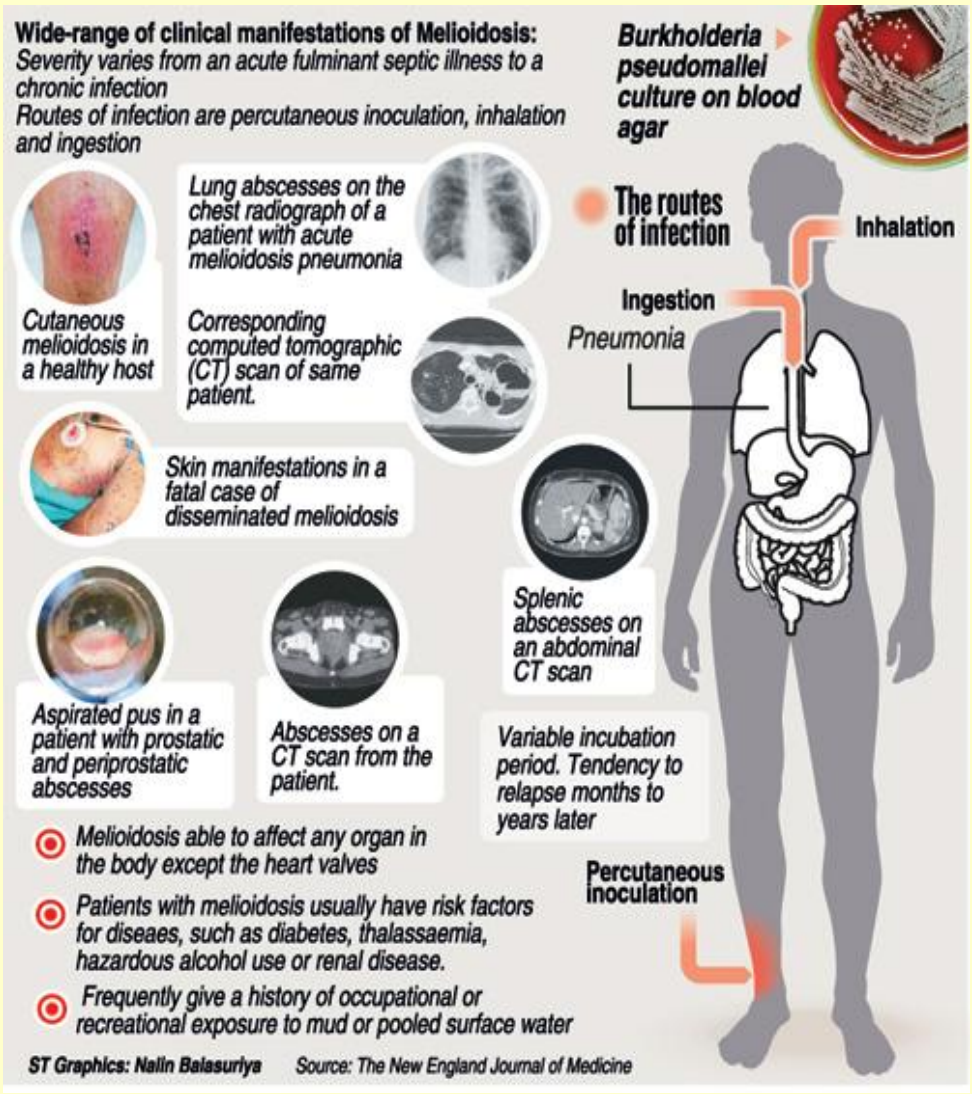
Herbert P. Schweizer, a professor in the CSU Department of Microbiology, Immunology and Pathology, is partnering with Rempex Pharmaceuticals, Inc., a wholly owned subsidiary of The Medicines Company, to investigate whether a drug therapy called **Carbavance™** can be used to treat infection with **Burkholderia pseudomallei** (photo: right). The highly infectious bacterium is found in soil and water and causes the disease **melioidosis**.

The U.S. Centers for Disease Control and Prevention lists B. pseudomallei as a select

agent, meaning a disease-causing pathogen



that could pose a severe threat to public health, with limited treatment options. Melioidosis is an emerging infectious disease primarily of tropical climates that affects people and animals; the disease is problematic because symptoms vary greatly, often mimicking tuberculosis and pneumonia. Even with aggressive antibiotic treatment up to 50 percent of patients die from the illness. The Biomedical Advanced Research and Development Authority, a division of the Office of the Assistant Secretary for Preparedness and Response within the U.S. Department of Health and Human Services, is funding this public-private partnership with Rempex Pharmaceuticals, Inc., to investigate the potential utility of Carbavance™ for the treatment of melioidosis. The agency is charged with developing effective medical countermeasures that address national biodefense preparedness and routine public health needs, including the threat of multi-drug resistant pathogens.



"We have unique resources here that can contribute to these research projects that otherwise could not be done by the companies involved," said Schweizer, an internationally recognized expert in antibiotic resistance of gram-negative bacteria, including B. pseudomallei.

CSU resources include Biosafety Level 3 sealed laboratory facilities. In addition, Schweizer and his colleagues participate in the work of Rocky Mountain Regional Center of Excellence, a Fort Collins-based consortium of university researchers, federal labs and biotech companies focused on battling infectious diseases, including those that could result from bioterrorism.

Schweizer's new project will specifically examine the drug therapy Carbavance, developed by Rempex Pharmaceuticals, Inc. Carbavance is the combination of a carbapenem antibiotic with a novel beta-lactamase inhibitor for treatment of multi-drug resistant gram-negative infections.

The CSU scientists will determine whether Carbavance can help protect the public against certain bioterrorism threats, and whether it could provide a new option for treatment of difficult antibiotic-resistant infections. Such infections have been emerging and now pose public-health crises worldwide.

Rempex and BARDA entered into a cost-sharing agreement that provides an initial commitment from the U.S. government of $19.8 million while establishing six option periods that, if executed, would bring the total value of the award to approximately $90 million.

The Islamic State's Terror Laptop of Doom

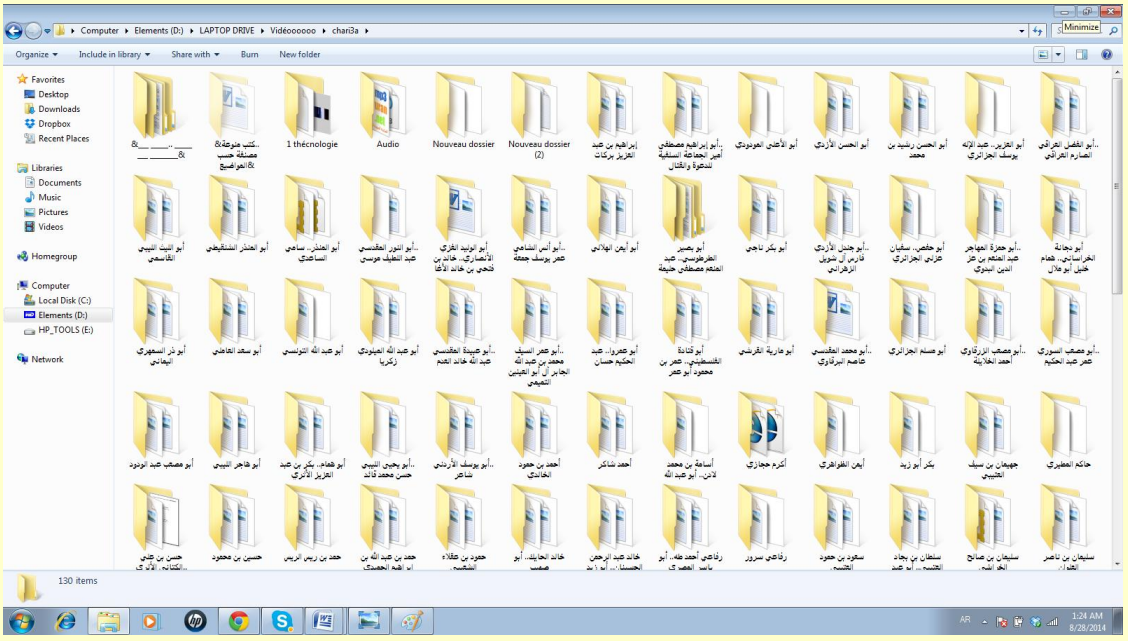
Source:http://www.foreignpolicy.com/articles/2014/08/28/found_the_islamic_state_terror_laptop_of_doom_bubonic_plague_weapons_of_mass_destruction_exclusive

August 30 – Abu Ali, a commander of a moderate Syrian rebel group in northern Syria, proudly shows a black laptop partly covered in dust. "We took it this year from an ISIS hideout," he says.

Abu Ali says the fighters from the Islamic State of Iraq and al-Sham (ISIS), which have since rebranded themselves as the Islamic State, all fled before he and his men attacked the building. The attack occurred in January in a village in the Syrian province of Idlib, close to the border with Turkey, as part of a larger anti-ISIS offensive occurring at the time. "We found the laptop and the power cord in a room," he continued, "I took it with me. But I have no clue if it still works or if it contains anything interesting."

As we switched on the Dell laptop, it indeed still worked. Nor was it password-protected. But then came a huge disappointment: After we clicked on "My Computer," all the drives appeared empty.

Appearances, however, can be deceiving. Upon closer inspection, the ISIS laptop wasn't empty at all: **Buried in the "hidden files" section of the computer were 146 gigabytes of material, containing a total of 35,347 files in 2,367 folders.** Abu Ali allowed us to copy all these files -- which included



documents in French, English, and Arabic -- onto an external hard drive.

The laptop's contents turn out to be a treasure trove of documents that provide ideological justifications for jihadi organizations -- and practical training on how to carry out the Islamic State's deadly campaigns. They include videos of Osama bin Laden, manuals on how to make bombs, instructions for stealing cars, and lessons on how to use disguises in order to avoid getting arrested while traveling from one jihadi hot spot to another.

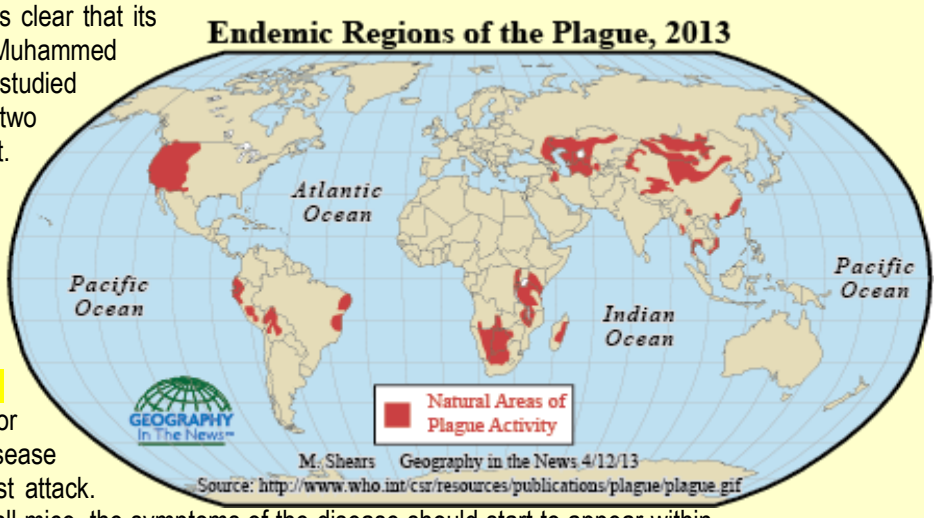
But after hours upon hours of scrolling through the documents, it became clear that the ISIS laptop contains more than the typical propaganda and instruction manuals used by jihadists. The documents also suggest that the laptop's owner was teaching himself about

the use of biological weaponry, in preparation for a potential attack that would have shocked the world.

The information on the laptop makes clear that its owner is a Tunisian national named Muhammed S. who joined ISIS in Syria and who studied chemistry and physics at two universities in Tunisia's northeast.

Even more disturbing is how he planned to use that education:

"The advantage of biological weapons is that they do not cost a lot of money, while the human casualties can be huge," the document states.



The document includes instructions for how to test the weaponized disease safely, before it is used in a terrorist attack. "When the microbe is injected in small mice, the symptoms of the disease should start to appear within 24 hours," the document says.

The laptop also includes a 26-page fatwa, or Islamic ruling, on the usage of weapons of mass destruction. "If Muslims cannot defeat the *kafir* [unbelievers] in a different way, it is permissible to use weapons of mass destruction," states the fatwa by Saudi jihadi cleric Nasir al-Fahd, who is currently imprisoned in Saudi Arabia. "Even if it kills all of them and wipes them and their descendants off the face of the Earth."

A photo of Muhammed S. found on his laptop. This image has been digitally altered.

When contacted by phone, a staff member at a Tunisian university listed on Muhammed's exam papers confirmed that he indeed studied chemistry and physics there. She said the university lost track of him after 2011, however.

Out of the blue, she asked: "Did you find his papers inside Syria?" Asked why she would think that Muhammed's belongings would have ended up in Syria, she answered, "For further questions about him, you better ask state security."

An astonishing number of Tunisians have flocked to the Syrian battlefield since the revolt began. In June, **Tunisia's interior minister estimated that at least 2,400 Tunisians were fighting in the country, mostly as members of the Islamic State.**

This isn't the first time that jihadists have attempted to acquire weapons of mass destruction. Even before the 9/11 attacks, al Qaeda had experimented with a chemical weapons program in Afghanistan. **In 2002, CNN obtained a tape showing al Qaeda members testing poison gas on three dogs, all of which died** (photo: left).

Nothing on the ISIS laptop, of course, suggests that the jihadists already possess these dangerous weapons. And any jihadi organization contemplating a bioterrorist attack will face many difficulties: Al Qaeda tried unsuccessfully for years to get its hands on such weapons, and the

United States has devoted massive resources to preventing terrorists from making just this sort of breakthrough. The material on this laptop, however, is a reminder that jihadists are also hard at work at acquiring the weapons that could allow them to kill thousands of people with one blow.

"The real difficulty in all of these weapons ... [is] to actually have a workable distribution system that will kill a lot of people," said Magnus Ranstorp, research director of the Center for Asymmetric Threat Studies at the Swedish National Defence College. **"But to produce quite scary weapons is certainly within [the Islamic State's] capabilities."**

The Islamic State's sweeping gains in recent months may have provided it with the capacity to develop such new and dangerous weapons. Members of the jihadi group are not solely fighting on the front lines these days -- they also control substantial parts of Syria and Iraq. **The fear now is that men like Muhammed could be quietly working behind the front lines -- for instance, in the Islamic State-controlled University of Mosul or in some laboratory in the Syrian city of Raqqa, the group's de facto capital -- to develop chemical or biological weapons.**

In short, the longer the caliphate exists, the more likely it is that members with a science background will come up with something horrible. The documents found on the laptop of the Tunisian jihadist, meanwhile, leave no room for doubt about the group's deadly ambitions.

"Use small grenades with the virus, and throw them in closed areas like metros, soccer stadiums, or entertainment centers," the 19-page document on biological weapons advises. "Best to do it next to the air-conditioning. It also can be used during suicide operations."

On the same topic

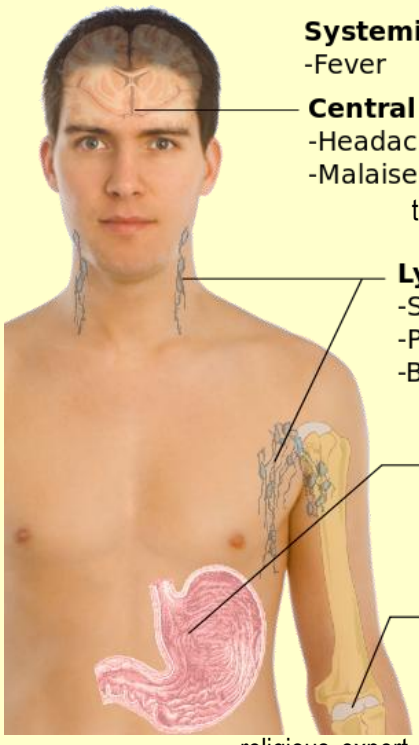
(Source: http://www.telegraph.co.uk/news/worldnews/middleeast/iraq/11064133/Islamic-State-seeks-to-use-bubonic-plague-as-a-weapon-of-war.html)

Hamish de Bretton-Gordon, a former commander of British nuclear, biological and chemical weapons protection forces, said that the Islamic State has shown interest in using chemical weapons already.

That the group had sought a fatwa from an Islamic scholar, which was also on the computer, shows Islamic State had, unlike al-Qaeda, decided that chemical weapons were a legitimate option on the battlefield.

"Al-Qaeda thought that biological weapons were beyond the pale but Islamic State don't have similar quandaries, especially since the Assad regime has used them and people have seen how effective they are," he said.

"It is difficult – but not impossible – to get people to ingest biological spores, while the chemical stuff that Islamic State mentions shows they have the intent to co-opt these weapons."



Islamic State seized control of al-Muthanna, the storage facility that houses Iraq's stockpile of chemical weapons, in July.

Mr Gordon subsequently warned the material at the facility could be used by Islamic State to make an improvised chemical weapon. The laptop shows it is actively seeking ways of making chemical and biological bombs.

Al-Aan said the owner of the manual, which it only identified as a Tunisian called Mohammad, had studied physics and chemistry at a university in his homeland until 2011.

The documents recommended targeting confined spaces with large gatherings of people, including underground train systems, football stadiums or shopping complexes.

A separate file on the laptop contained a letter from an Islamic religious expert, Sheikh Nasir al-Fahd, who is currently languishing in a Saudi Arabian detention centre for terrorist sympathisers. The edict, or fatwa, tells believers that Muslim fighters can use chemical or biological weapons against the "infidel".

"Looking to the American aggression against the Muslim people and their lands during the past decades, you will conclude that it's permissible (to attack with weapons of mass destruction) under the principal of reciprocity. Some brothers calculate the number of Muslim casualties and they found it more than 10 millions killed by America, directly and indirectly, the lands which were burnt by their bombs are uncountable," the fatwa said.

EDITOR'S COMMENT: In August 2014 issue of the Newsletter I commented on the possibility of **"suicide bio-terrorists".** It might happen to us if we continue to believe that there are limits to human cruelty and sick minds of the new species evolved in this planet…

Secret trade in monkey meat that could unleash Ebola in UK

By Andrew Malone (Mail Online)
Source: http://www.dailymail.co.uk/news/article-2713707/Secret-trade-monkey-meat-unleash-Ebola-UK-How-appetite-African-delicacies-British-markets-stalls-spread-killer-virus.html

With the sun beating down on the strange and exotic-looking meats on sale — some dripping blood, some heavily smoked and impossible to identify — the sights and sounds at this London

market are straight out of Africa.
Skinned goat carcasses dangle overhead, blackened cow heads and lamb brains are lined up in trays, while baskets tucked in darker corners brim with yellowing strips of cured flesh.
Nearby, women hawk spices, cassava and yams, as men in shacks offer cheap airline tickets to Nigeria, Ghana and Cameroon, as well as cash transfers back to family members still living on the continent.
At Lagos restaurant, just past 'Monni Matters' foreign exchange and the 'God Is Good Hair Salon', there is nothing fancy about the cheap seats and chipped tables — but what's on the menu is a taste of home.
At £5 a plate, dishes include **Nkwobi** (photo: right), a traditional meal of spiced cow feet and 'assorted meat and fish' with pounded yam, through to giant African snails, served as part of a 'designer stew' with, again, unnamed 'assorted meats'.
The scene — at Ridley Road in Dalston, East London (photo), an area with a large African community — is replicated at similar markets in many British towns and cities, and is part of the daily ebb and flow of people and goods between the African continent and Europe.
Indeed, with flights from West Africa taking fewer than eight hours, traders boast that much of their produce is 'fresh' from the country of origin.
Yet for all the sunshine, bustle and sound of African voices, the butchers here were oddly tense this week, not to mention strangely reluctant to discuss certain choice cuts of meat.
The reason? Ridley Road has been identified as a hub for the secret market in 'bush meat' — the flesh of exotic animals such as chimpanzee, monkey, porcupine, fruit bats and

even giraffe, slaughtered in the African bush and smuggled into Britain.

It is estimated that a staggering 7,500 tonnes of illegal meat enters Britain each year, the bulk of which is bush meat.

The trade has hitherto been defended on cultural grounds, as little different to Britons eating rabbit or venison. But it is now at the centre of a terrifying health crisis.

For we are in the midst of the worst outbreak in history of the deadly Ebola virus — and bush meat is one of the primary sources of the disease's transmission.

Spread through the blood and body fluids of infected people and animals, Ebola's latest outbreak began in February in Guinea and has so far claimed more than 700 lives.

With no cure, there are growing fears that the movement of people and goods between Africa and Europe will make it all too easy for Ebola to wreak death and havoc around the world.

And the underground trade in bush meat may be the channel by which the UK is most vulnerable to an Ebola outbreak.

Having lived in Africa and travelled the continent for 20 years, I have been offered everything from elephant meat to monkey and lion steaks, and the markets selling this bush meat are still flourishing.

But the appetite for such delicacies has also spread dramatically from Africa, to Europe and the U.S.

The reason this gives such cause for concern is that ever since the Ebola virus was discovered, deep in the forests of the Democratic Republic of Congo in 1976, scientists have warned it can pass from animals to humans who prepare or eat infected meat.

A 1996 outbreak in Gabon was caused when local people ate the fresh body of a dead chimpanzee they found in the bush.

Disturbingly, one of the hosts of the disease in the latest outbreak is the forest fruit bat, sold as bush meat all over West Africa and made into a popular spicy stew called kedjenou.

The bats are also hunted and eaten by some large animals such as baboons, which, again, are sold as part of the vast global trade in bush meat.

Five previous outbreaks have been linked to the handling of meat from gorillas, chimps and duikers (a small antelope) for the bush meat business — and all these animals have been found for sale in the UK.

Heathrow baggage handlers frequently complain about foul-smelling packages, some seeping blood, as couriers arrive with their goods from Africa.

But their tip-offs present no significant hindrance to the trade, as the UK's over-stretched customs officers focus their resources on drugs and terrorist activities.

Meat is also brought into the country through the Channel Tunnel after being flown to Paris, a major hub for flights from Africa.

Which brings us to back to the bustle of Ridley Road. Here, the risk posed to public health from bush meat comes as no surprise to Dr Yunes Teinaz, a former environment health official for the area.

For years, he has been warning that the bush meat trade is a time-bomb owing to the sheer size of the business and the fact that the meat is sold without any of the safety tests demanded by law.

He has, as a result, been targeted for revenge attacks by the gangs controlling the trade.

'I'm horrified and disappointed by what has been allowed to go on,' he told me. 'I warned about this many years ago, but local authorities are still not taking any action.

'This meat is sold everywhere. It's smuggled in vast quantities. It's supplied all around Britain. It poses a potentially huge risk to public health, yet we are doing nothing to tackle it.'

It was two years ago that a BBC programme revealed that giant rats smuggled from Africa were among the items on sale at Ridley Road market.

A year earlier, trading standards officials testing meat samples, believed to be seized from vendors in the Midlands, realised they were handling chimpanzee flesh.

Dr Teinaz believes there should be a full government inquiry into the scale of the scandal, scoffing at claims by health inspectors that they check African markets regularly to ensure there is no bush meat being sold.

'You can't just walk up as a white person and ask to buy bush meat,' he said.

'You need to be an African and speak the language, and then it's easy. You can get monkey heads, animal blood used in rituals — all smuggled in without

any health checks. You can place orders at these African markets and they will deliver to your home.

'This is very big business and people are smart — they will think you are an inspector or the police if you just start asking around.'

Perhaps this explains the reaction when, during a shopping expedition to Ridley Road this week, I asked for 'special meat' at a number of stalls. The so-called 'code' did not work: one Ghanaian shopkeeper became angry and agitated, turning his back and telling me to go away because 'we only sell cassava here', referring to the starchy vegetable that's a staple of tropical diets.

Yet, for all the reticence and secrecy, everyone knows what goes on.

A woman running a stall selling wigs, who came to London from Nigeria 20 years ago, confirmed that many of her fellow Africans buy bush meat from the market.

'I often get a craving for it,' she admitted. 'You used to get it everywhere here, but it's gone underground now.

'I don't have a problem with people eating it — you eat deer and rabbits and other creatures.'

This trader told me, however, that she would no longer buy bush meat because of the Ebola terror.

'That's always been my only objection — on health grounds,' she said. 'I wouldn't risk it.'

But not all share her caution. One shopkeeper, outside a stall named two years ago as a supplier of bush meat, insisted that there was nothing wrong with it — though he swore he did not sell such products.

'Everybody knows where you can get it,' he told me. 'Bush meat is like drugs — you can get it everywhere if you know the right people, but you won't see it openly on sale. It's word of mouth and under-the-counter deals.'

Certainly, that is the modus operandi of one man involved in the trade. This Nigerian butcher agreed to meet me in a cafe away from the market, and made a spirited, if dangerously ignorant, defence of his business.

'A lot of people believe bush meat is magical,' he told me. 'But meat is meat. People in Britain are only against it because nobody pays any taxes.'

Insisting he did not eat bush meat himself, he told me that hunting and eating wild animals was part of his culture.

'We grew up doing it — it was normal,' he said. 'That's why people think it's normal here to eat their food from home, just like Brits want baked beans or ketchup when they live abroad.'

As for attempts to end the trade at its source, they seem doomed for a number of reasons, even despite the threat posed by Ebola.

With countries such as Liberia, Ivory Coast and Sierra Leone trying to introduce local bans on bush meat to halt the spread of the virus, people are simply refusing to stop the practice.

Bush meat is, in fact, booming in popularity among Africans, encouraged by proclamations by some of their leaders to reject western ways.

For instance, in the Democratic Republic of Congo, there have even been calls from nationalists for foreign cuisine to be replaced with 'typically African' dishes such as chimpanzee, served as 'les cousins' to human diners.

With bush meat costing more than chicken or beef in some African cities, it has also become a status symbol for richer Africans, many of whom believe the attributes of the animals they eat will pass to them.

The number of animals being killed is staggering, with conservation groups warning that millions of tonnes of meat are being taken from Africa's forests.

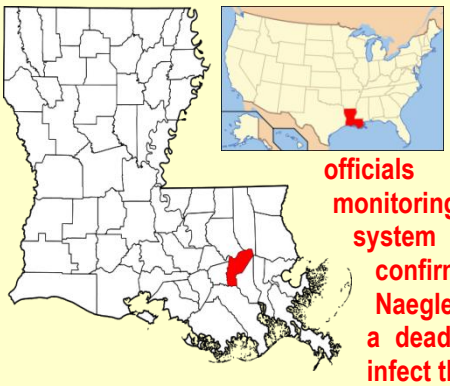
'You will not stop it [the trade] — I just think it's futile,' said Bob Swanepoel, a virologist at the University of Pretoria in South Africa.

But all it needs is a small piece of infected meat, perhaps brought in the suitcase of a guest visiting from the continent, to pass Ebola into the community here — and the nightmare could start.

EDITOR'S COMMENT: What came to my mind after reading this article: Few weeks ago, certain Greek blogs uploaded photos of skinned dogs/cats in a balcony downtown Athens (in the very busy

road of I. Drosopoulou, Kypseli) where illegal immigrants live. Quite often there are reports of these people selling dog meat for food (in open sight). We might not have bush meat in our markets (yet) but perhaps we will in the near future due to the multicultural evolution we are enforced to experience – Chinese living in Italy asked for permission to import dog heads for food…

Brain-eating amoeba found in La. parish's water system



Source: http://www.usatoday.com/story/news/nation-now/2014/08/28/brain-eating-amoeba-holiday-weekend/14727601/

St. John the Baptist Parish officials are carefully monitoring the parish's water system after test results confirmed the presence of Naegleria fowleri, which is a deadly amoeba that can infect the brain.

The Louisiana Department of Health and Hospitals, or DHH, issued an emergency order late Wednesday requiring the parish to perform a chlorine burn throughout its water system to kill the amoeba.

According to the parish and state health officials, the water is safe to drink, and no one has become sick from the amoeba.

St. John Water District 1 was set to increase chlorine levels to combat the brain-eating amoeba early Thursday.

The water system was sampled as part of DHH's surveillance, which was started earlier in August. During the amoeba testing, the department found that the system was not in compliance with the state's emergency rule, which requires systems to maintain a minimum disinfectant residual level of .5 milligrams per liter throughout all of their distribution lines, according to a statement by the DHH. The disinfectant residual level is known to control amoeba.

The parish says it tests its water system daily, but why chlorine levels dropped below state required levels is now under investigation.

"Clearly, as we get to exactly what has happened in this case, the protocol will be revisited and if changes are necessary we will take care of that," said parish President Natalie Robottom.

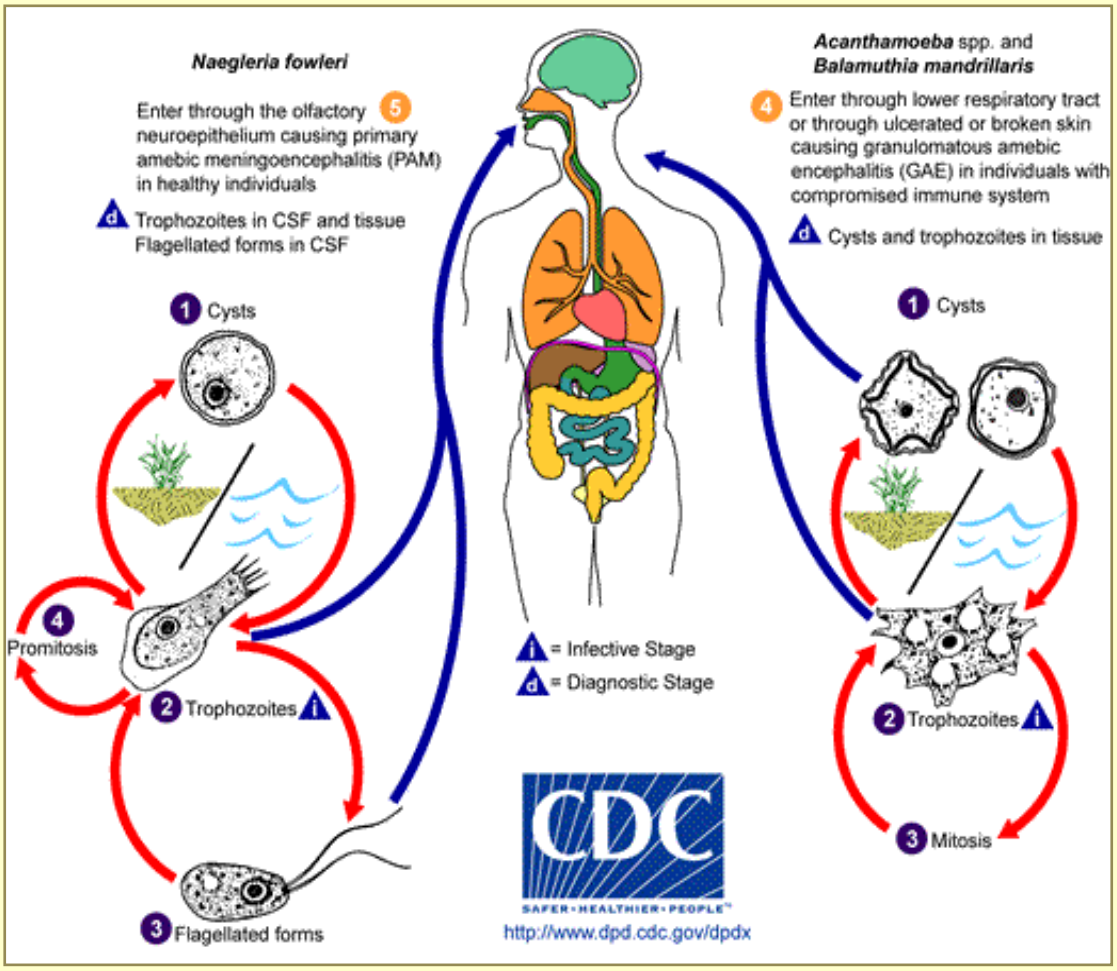
"The parish utilities department is taking immediate actions to fully chlorinate the water system and eliminate the threat," Robottom added.

However, with the holiday weekend approaching, residents are being asked to use caution.

"It is safe to drink, to eat, and use to cook," Robottom said. "The problem is to make sure that you keep precautions to prevent the water from going up your nose. Now understanding it's the holiday weekend, swimming and slip 'n' slide, those are all areas to proceed with caution."

The water system serves 12,577 people in the towns of Reserve, Garyville and Mount Airy.

According to the Centers for Disease Control and Prevention, personal actions to reduce the risk of Naegleria fowleri infection should focus on limiting the amount of water going up a person's nose and lowering the chances that Naegleria fowleri may be in the water.



Naegleria fowleri is a free-living, thermophilic excavate form of protist typically found in warm bodies of fresh water, such as ponds, lakes, rivers, and hot springs. It is also found in soil, near warm-water discharges of industrial plants, and in **poorly chlorinated,** or **unchlorinated** swimming pools, in an amoeboid or temporary flagellate stage. There is no evidence of this organism living in salt water. It is an amoeba belonging to the phylum Percolozoa. *N. fowleri* can invade and attack the human nervous system and brain, causing primary amoebic meningoencephalitis (PAM). Although this occurs rarely, such an infection nearly always results in the death of the victim. **The case fatality rate is greater than 95%.**

The CDC recommends the following preventative measures:

• Do not allow water to go up your nose or sniff water into your nose when bathing, showering, washing your face, or swimming in small hard plastic/blow-up pools.
• Do not jump into or put your head under bathing water (bathtubs, small hard plastic/blow-up pools) - walk or lower yourself in.
• Do not allow children to play unsupervised with hoses or sprinklers, as they may accidentally squirt water up their nose. Avoid slip-n-slides or other activities where it is difficult to prevent water going up the nose.
• Do run bath and shower taps and hoses for five minutes before use to flush out the pipes. This is most important the first time you use the tap after the water utility raises the disinfectant level.
• Do keep small hard plastic/blow-up pools clean by emptying, scrubbing, and allowing them to dry after each use.
• Do use only boiled and cooled, distilled or sterile water for making sinus rinse solutions for neti pots or performing ritual ablutions.
• Do keep your swimming pool adequately disinfected before and during use. Adequate disinfection means: pools: free chlorine at 1-3 parts per million (ppm) and pH 7.2-7.8, and hot tubs/spas: free chlorine 2-4 parts per million (ppm) or free bromine 4-6 ppm and pH 7.2-7.8.
• If you need to top off the water in your swimming pool with tap water, place the hose directly into the skimmer box and ensure that the filter is running. Do not top off by placing the hose in the body of the pool.

EDITOR'S COMMENT: It seems that organisms like this should be added to the main list of biothreat agents. Perhaps not for massive dissemination but it would do for targeting specific areas or building blocks or isolated buildings. The incidence of infection itself is likely to increase as its range through climate change is increasing. So far clinical cases have been reported in the following countries: Costa Rica, Czech Republic, India, Iran, N. Zealand, Pakistan, Taiwan, UK, USA (132 cases: 1962-2013) and Venezuela.

Bioterrorism at the salad bar: 30 years ago in US history

Source: http://outbreaknewstoday.com/bioterrorism-at-the-salad-bar-30-years-ago-in-us-history-19227/

Bioterrorism has made the news the past couple days after the discovery that an ISIS terror group laptop contained among other things, a diabolical

plan for weaponizing plague. Before this, before the anthrax scares of 2001 ,there was another story. Many of you may have never heard this story; many of you are too young, regardless, it did happen to be the first case of bioterrorism in the United States and I'd like to share that story in public health history.

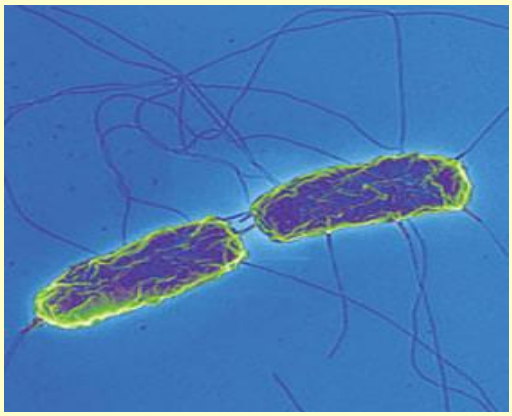
The year was 1984 in the small town of The Dalles, Oregon (current population around 14,000), in Wasco County. The leader, an Indian guru and mystic, **Bhagwan Shree Rajneesh**, settled in Oregon to set up a

community for him and his followers. They bought about 65,000 acres of land and took political control of the neighboring town of Antelope (pop. 75) and changed the name to Rajneeshpuram. They continued to expand by transporting thousands of homeless people by the busload to their compound trying to grow their constituency. The local population, whose relationship at first was friendly with the Rajneeshees, turned sour as they disapproved with the way the commune was expanding.

It started as building permits were being denied for Rajneeshpuram. The Rajneeshees decided to attempt to gain political control by trying to win seats in the Wasco County government. To win the elections they decided to take drastic action.

The Rajneeshees decided the way to win the election was to incapacitate the voters of The Dalles so they would be too sick and stay home and the Rajneeshees could win the elections. **How would they do this dastardly deed?**

Between September and October of 1984, numerous people were coming forth with the horrible symptoms; diarrhea, fever, chills, vomiting and bloody stools. It was confirmed that the citizens were sick with *Salmonella enterica Typhimurium*, a bacteria that causes food poisoning and gastroenteritis. Public health officials have



never seen anything like this, there hasn't been a case of Salmonella in several years in this county, now they had 751.

Upon interviewing the victims, they were able to **establish a common link to 10 restaurants.** But unlike more common sources of Salmonella like meats, poultry and eggs, it was linked to **lettuce at the salad bars.** Upon

investigation it was determined that a member either spread it over the food at the salad bar or poured it into the salad dressing. Of curiosity, the town of Rajneeshpuram had a small medical laboratory which had the exact strain in their stock as the strain that infected so many.

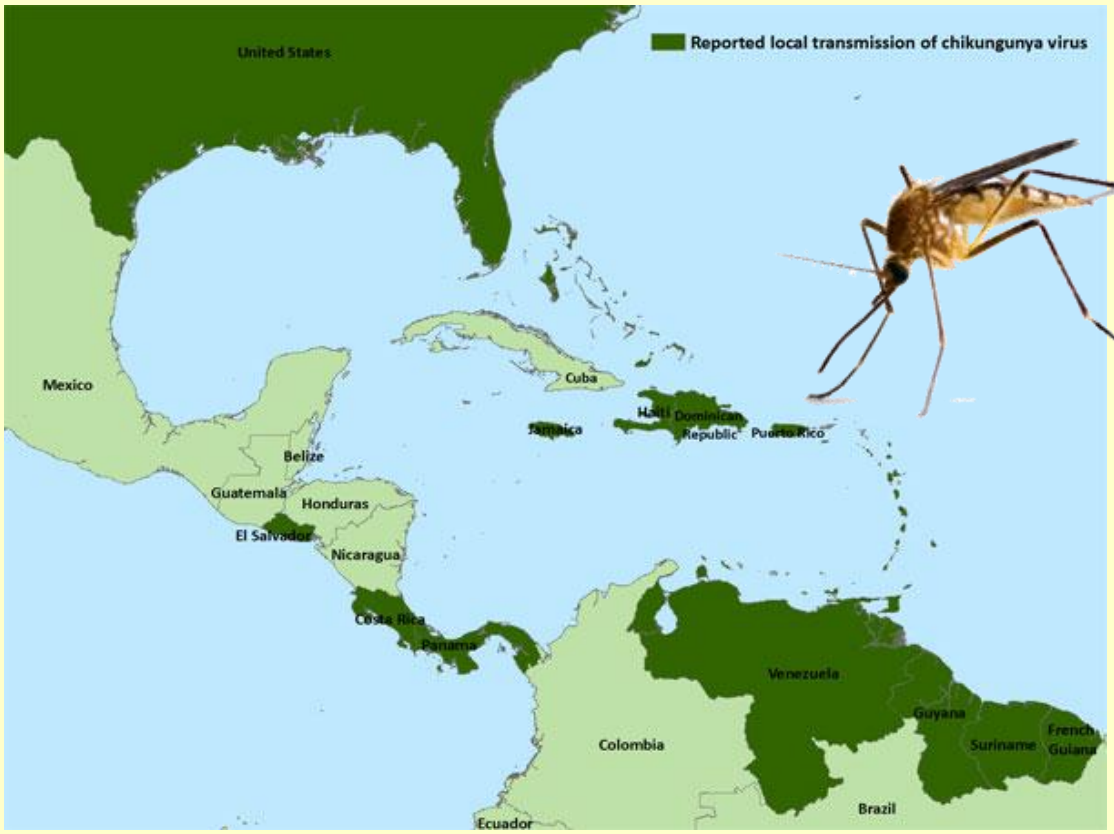
In the end, 751 people became ill with 45 hospitalized. Fortunately, nobody perished as result of this diabolical plot. The candidates the Rajneeshees put up for the county seats all lost. Bhagwan Shree Rajneesh was later arrested for immigration violations and deported. Two high ranking officials for the cult were prosecuted and imprisoned for numerous crimes including

second-degree assault for the poisonings.
• Salmonella can be found normally found in poultry, swine and other animals. Ensure you thoroughly cook all chicken, turkey, eggs and other meats to a time and temperature to kill the bacteria.
• Avoid cross contamination in the kitchen with utensils and cutting boards while preparing food.
• Salmonella is commonly found in pets; turtles, iguanas, cats and hamsters. This frequently becomes an issue with the youngsters who handle these pets and do not have the best hand washing habits.
• Do not eat or drink foods using raw eggs or unpasteurized milk.
The story of the Rajneeshees was not highly publicized when it happened. The first thought was contamination by an infected food handler because that was the most plausible explanation. This happened 30 years ago in the United States.

Chikungunya in the Americas: 650,000 cases and counting

Source: http://outbreaknewstoday.com/chikungunya-in-the-americas-650000-cases-and-counting-73136/

The number of chikungunya cases reported in the Western hemisphere increased by some 70,000 cases from last week, according to data released by the Pan American Health Organization (PAHO) today.



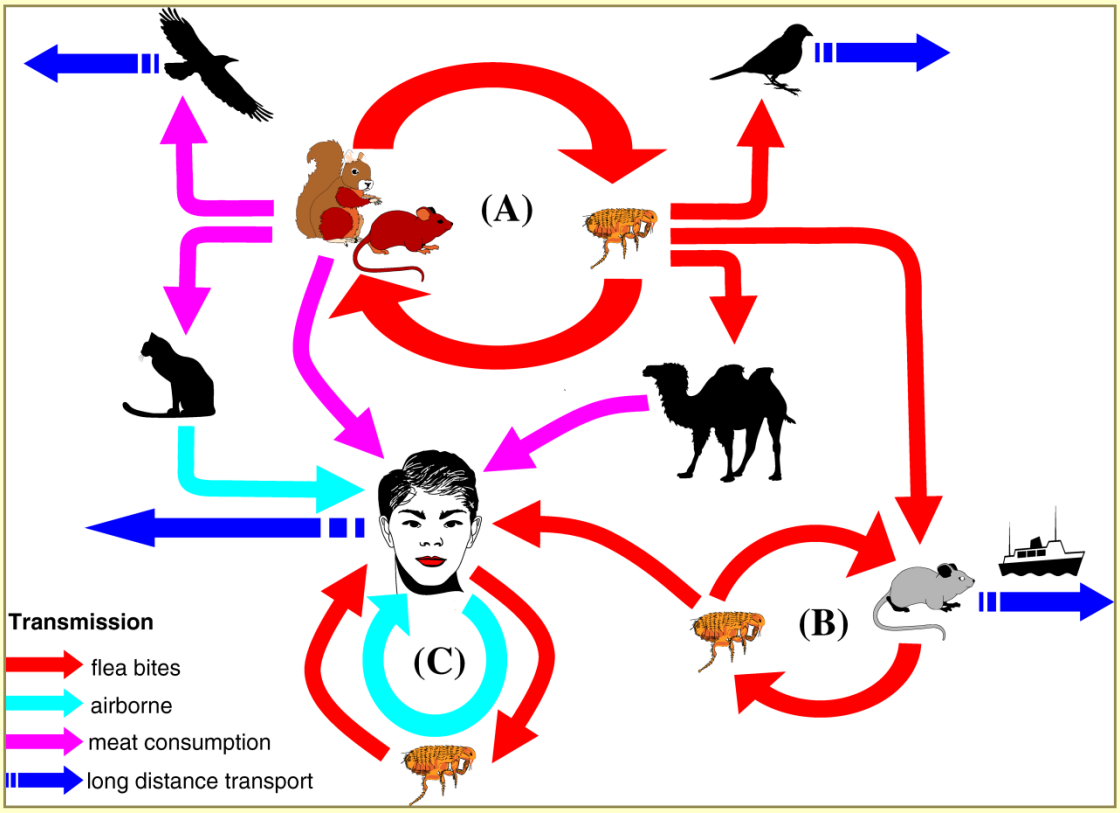
The total suspected and confirmed cases near 660,000, up from nearly 590,000 last Friday. Approximately 59,000 additional cases were reported from the Dominican Republic, which now tallies at 429,000 cases.
In Central America, El Salvador's chikungunya case count increased by 3,000 cases, bringing that countries total to more than 8,000.
Chikungunya is a viral disease transmitted by the bite of infected mosquitoes such as Aedes aegypti and Aedes albopictus. It can cause high fever, join and muscle pain, and headache. Chikungunya does not often result in death, but the joint pain may last for

months or years and may become a cause of chronic pain and disability. There is no specific treatment for chikungunya infection, nor any vaccine to prevent it. Pending the development of a new vaccine, the only effective means of prevention is to protect individuals against mosquito bites.

The Plague As A Weapon?

Source: http://www.medicalnewstoday.com/releases/67390.php

The possibility of bubonic plague and pneumonic plague being used as bioterrorism agents is discussed in an article published in *The Lancet* (Prentice MB, Rahalison L. *Plague*. Lancet 2007;369:1196-207). Professor Mike Prentice, of University College, Cork, Ireland, and Dr Lila Rahalison, of Institut Pasteur, Madagascar, did a comprehensive review of the genetic makeup of the plague, its transmission vectors,



and potential use as a biological weapon. They also look at a number of historical outbreaks of the disease, including the Black Death.

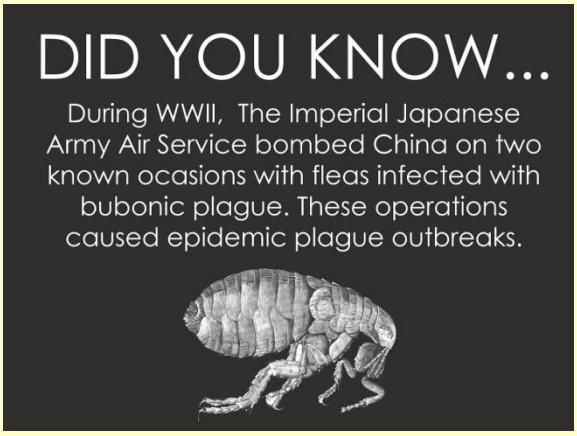
Plague is caused by the bacterium *Yersinia Pestis*, which multiplies in the gut fleas which have fed on blood from infected aminals. This causes a blockage in the proventriculus - the tube which connects the gut and the oesophagus of the flea. This blockage causes the flea to continually regurgitate and feed again, introducing *Y. Pestis* into the bloodstream of whatever it is biting - rodent or human.

The onset of bubonic plague is sudden, and causes malaise, dizziness, high fever and swellings near the lymph nodes called "buboes", after two to six days incubation.

Patients who develop secondary plague pneumonia after fleabite can transmit pneumonic plague directly to others. This form of plague generally has a shorter incubation time (two to three days) and is characterized by sudden onset, high fever, pleuritic chest pain and a cough containing bloody sputum.

It is now possible to harness the ability of the plague to spread by respiratory droplets, and make aerosol-based weapons capable of causing widespread pneumonic plague outbreak. This and many other factors could combine to make *Y. Pestis* an attractive agent for bioterrorism - its wide distribution, simple culture techniques, the high mortality rate of the associated pulmonary disease, availability of expert advice from former weapons

scientists, or perhaps only the knowledge that many countries have investigated its use as a weapon.
Untreated bubonic plague has mortality of 50 to 90 per cent; and associated untreated meningitis, pneumonia or septicaemia is fatal in most cases. Diagnosis and appropriate therapy reduces bubonic plague mortality to five to 15 per cent, but delays in diagnosis and treatment can also be fatal.



Standard antibiotic therapy (originally Strepotmycin, later tetracycline or gentamicin) is successful in treating the disease, **but there are concerns about a *Y. pestis* strain in Madagascar showing multiple antimicrobial resistance.** Due to bioterrorism concerns, a number of vaccines are currently in development, one of which has reached phase II trials (an intermediate stage in the clinical trials process).
Plague control aims to reduce the likelihood of people being bitten by infected fleas or being exposed to infected droplets from people or animals with plague pneumonia. Thus monitoring and controlling local plague hosts (i.e. rodent populations) is vital in plague-endemic regions. But the authors add: "However, removal of the fleas' normal food supply by poisoning their usual hosts can increase human contact with starving fleas, so flea control by application of insecticides in plague outbreak areas is also important."

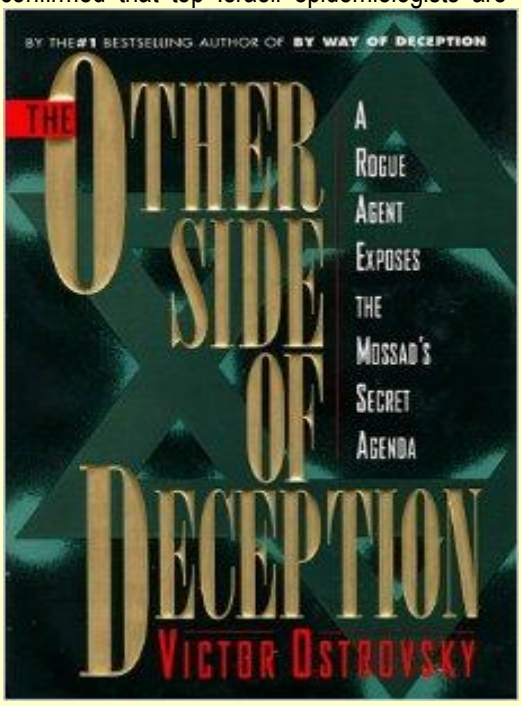
Ebola: The next weapon of mass destruction?

By Seema Sengupta
Source: http://www.arabnews.com/columns/news/623316

September 01 – Ever since the return of the deadly Ebola — a disease that snuffs out human life in the most gruesome manner — in parts of Africa last February, the world has witnessed two extreme reactions in the form of a lackadaisical initial response to the pressing of panic button thereafter.
Though the World Health Organization (WHO) has called this outbreak “the most challenging ever” that requires a concerted global response, the agency is accused of failing to respond adequately. Indeed, one needs to be extremely cautious because with every infection the Ebola virus gets a better chance to adapt to human bodies. In fact, the current Ebola outbreak is said to be four times as large as the previous largest attack recorded anywhere on globe.
Intriguingly, there have been no previously recorded cases of Ebola attack in the presently affected zone of West Africa. The last known Ebola outbreak was in Central Africa where the virus was thought to be carried by fruit bats. The same species of bats are said to be responsible for the new invasion of the deadly virus in western Africa. Epidemiologists fear, the current magnitude of the outbreak will make Ebola more difficult to control, with effective contact tracing — necessary for quarantining infected individuals — becoming virtually impossible.
Experts argue that there are primarily two reasons behind the comparative vastness of the present outbreak. Firstly, urbanization has increased population size and mobility thus making it easy for the virus to spread. Unlike rural areas, cities provide more chances to the virus to spread and the rapid urbanization in Africa may invite Ebola to strike again and again. **Secondly**, the loss of forest cover and alteration in its ecosystem due to high urban growth rate (the highest in the world) forces virus-carriers like fruit bats to move to new locations. But then, it might not be an open-and-shut case, as it appears to be. Some strategic experts are convinced that Ebola is being readied as the next weapon of mass destruction. **A dangerous strain of this filamentous single-stranded RNA virus was allegedly developed in an Israeli experimental laboratory secretly. The Biological Research Institute at the nondescript town of Nes Tziona, south of Tel Aviv, is said to be handling such clandestine research program**

on biological and chemical weapons for quite some time now.

Victor Ostrovsky, an ex-Mossad official has fortunately spilled the beans in his book **"The Other Side of Deception."** Ostrovsky has confirmed that top Israeli epidemiologists are



diligently engaged in developing various "doomsday machines" in the secret facility at Nes Tziona under government patronage. Worst still, as per Ostrovsky's revelation, captured Palestinians were used as human guinea pigs to fine-tune the efficacy of the lethal weapons. Given such a background, is it at all improbable for the aggressive Israeli's to surreptitiously infect live hosts in Africa (having genetic affinity with Arab population) with deadly Ebola strains prepared in vitro?

Let us not forget that Tel Aviv is accused of trying to develop **ethnically targeted biological weapons** that would only harm Arabs. Israeli scientists have apparently not given up on their endeavor to engineer fatal microorganisms that attack only those bearing distinctive genes found in Arab and a section of African population.

The process to weaponize a biological agent like Ebola might be complex and multi-staged but not impossible for non-state actors to achieve. Some bioterrorism experts believe the idea of harvesting Ebola, as a biological weapon of mass destruction is unrealistic especially because the transmission of virus from one host to another is complex. Moreover,

the complete replicative cycle of the virus remains un-decoded. Hence isolating the virus and maximizing its potential impact as a bio-terror agent is almost negligible, argues those who negates the idea of non-state actors exploiting the deadliness of Ebola to their advantage.

However, despite the complexity of enriching a biological agent consisting of Ebola strains outside the supervisory purview of nation States, the possibility of an Ebola host volunteering as a suicide agent to create havoc by way of initiating a chain of infection cannot be ruled out altogether. The claim of suboptimal climatic conditions coming in the way of the Ebola virus causing great damage in highly developed urban centers does not hold ground because the molecular structure of the Ebola virus is changing fast and becoming more virulent. **The intensity of the present outbreak indicates that the coded proteins may have undergone some metamorphosis to attain the capability of generating unprecedented human pandemic.**

nfortunately, Ebola is being seen as just another RNA virus residing quietly in some species of wildlife that spill over occasionally to kill mercilessly, with hot contaminated blood, bile and feces oozing out of the infected human body continuously.

But is it just a coincidence that the virus appeared on the face of earth in the same year when "Smallpox" was eradicated?

Smallpox virus, after all, was accepted by experts as a potent bio-terrorism agent because of its contagious nature. Since, WHO has made it impossible for anybody to get hold of Smallpox virus by concentrating all residual samples in two high security laboratories after complete eradication of the disease, who knows Ebola might just be a replacement?

According to experts, a spray containing Ebola virus can indeed be made in small camouflaged laboratories for causing havoc. **This is a warning sign for countries like India, where unsecured yet advanced biomedical research facilities may turn into potential source of biological agents.**

***Seema Sengupta** is a Kolkata-based journalist and columnist.*

EDITOR'S COMMENT: The story with "ethnic bombs" is an old – and unproven – story [London *Sunday Times*, November 15, 1998: "Israel Planning 'Ethnic' Bomb as Saddam Caves In," by Uzi Mahnaimi and Marie Colvin].Though it does not mean that it does not exist or cannot be done. Looking for more info about Ness Ziona I copy this from a Canadian website in French – the important key-word here is "nanotechnology":

Selon différents rapports internationaux, cités aussi par le journal israélien Ha'aretz, *des armes biologiques et chimiques sont développées à l'Institut pour la recherche biologique, situé à Ness-Ziona, à côté de Tel Aviv. Officiellement, 160 scientifiques et 170 techniciens font partie du staff, qui depuis cinq décennies accomplit des recherches en biologie, chimie, biochimie, biotechnologie, pharmacologie, physique et d'autres disciplines scientifiques. L'Institut, avec le Centre nucléaire de Dimona, est « une des institutions les plus secrètes d'Israël » sous juridiction directe du premier ministre. Le plus grand secret entoure la recherche sur les armes biologiques : bactéries et virus qui, disséminés chez l'ennemi, peuvent déclancher des épidémies. Parmi eux, la bactérie de la peste bubonique (la « mort noire » du Moyen-âge) et le virus Ebola, contagieux et létal, pour lequel n'est disponible aucune thérapie. …… Des témoignages médicaux indiquent qu'à Gaza et au Liban, les forces israéliennes ont utilisé des armes de conception nouvelle : elles laissent le corps intact à l'extérieur mais, en y pénétrant, dévitalisent les tissus, carbonisent le foie et les os, et coagulent le sang. Ceci est possible avec la* ***nanotechnologie****, cette science qui projette des structures microscopiques en les construisant atome par atome. Au développement de ces armes participe aussi l'Italie, liée à Israël par un accord de coopération militaire et son premier partenaire européen dans la recherche & développement. Dans la dernière loi de finances est prévue une attribution annuelle de 3 millions d'euros pour des projets de recherche conjoints italo-israéliens. Comme celui, indiqué dans le dernier avis de la Farnesina (ministère italien des affaires étrangères), de "nouvelles approches pour combattre des agents pathogènes résistants aux traitements".*

Source: http://www.mondialisation.ca/les-armes-secretes-nbc-disrael/5351258

On the other hand:

▶ In 2012, *The Atlantic* wrote that a specific virus that targets individuals with a specific DNA sequence is within possibility in the near future. The magazine put forward a hypothetical scenario of a virus which caused mild flu to the general population but deadly symptoms to the President of the United States. They cite advances in personalized gene therapy as evidence.

▶ In May 2007, Russian newspaper *Kommersant* reported that the Russian government banned all exports of human biosamples. The report claims that the reason for the ban was a secret FSB report about on-going development of "genetic bioweapons" targeting Russian population by Western institutions. The report mentions the Harvard School of Public Health, American International Health Alliance, United States Department of Justice Environment and Natural Resources Division, Karolinska Institutet and United States Agency for International Development.

Source: http://en.wikipedia.org/wiki/Ethnic_bioweapon

Conspiracy theories? Perhaps! But **there is no smoke without fire…**

Berkeley Journal of International Law

Volume 22 | Issue 2 Article 4

2004

Is Nanotechnology Prohibited by the Biological and Chemical Weapons Conventions

Robert D. Pinson

Read also this interesting paper:
Source: http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1271&context=bjil

NIH launching human safety study of Ebola vaccine candidate

Source: http://www.homelandsecuritynewswire.com/dr20140902-nih-launching-human-safety-study-of-ebola-vaccine-candidate

September 02 – Initial human testing of an investigational vaccine to prevent Ebola virus disease will begin this week by the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH).

An NIAID release reports that the early-stage trial will begin initial human testing of a vaccine co-developed by NIAID and GlaxoSmithKline (GSK) and will evaluate the experimental vaccine's safety and ability to generate an immune system response in healthy adults. Testing will take place at the NIH Clinical Center in Bethesda, Maryland.

The study is the first of several Phase 1 clinical trials that will examine the investigational NIAID/GSK Ebola vaccine and an experimental Ebola vaccine developed by the Public Health Agency of Canada and licensed to NewLink Genetics Corp. The others are to launch in the fall. These trials are conducted in healthy adults who are not infected with Ebola virus to determine if the vaccine is safe and induces an adequate immune response.

In parallel, NIH has partnered with a British-based international consortium that includes the Wellcome Trust and Britain's Medical Research Council and Department for International Development to test the NIAID/GSK vaccine candidate among healthy volunteers in the United Kingdom and in the West African countries of Gambia (after approval from the relevant authorities) and Mali.

Additionally, the U.S. Centers for Disease Control and Prevention (CDC) has initiated discussions with Ministry of Health officials in Nigeria about the prospects for conducting a Phase 1 safety study of the vaccine among healthy adults in that country.

The pace of human safety testing for experimental Ebola vaccines has been expedited in response to the ongoing Ebola virus outbreak in West Africa. According to the World Health Organization (WHO), more than 1,400 suspected and confirmed deaths from Ebola infection have been reported in Guinea, Liberia, Nigeria, and Sierra Leone since the outbreak was first reported in March 2014.

"There is an urgent need for a protective Ebola vaccine, and it is important to establish that a vaccine is safe and spurs the immune system to react in a way necessary to protect against infection," said NIAID director Anthony S. Fauci. "The NIH is playing a key role in accelerating the development and testing of investigational Ebola vaccines."

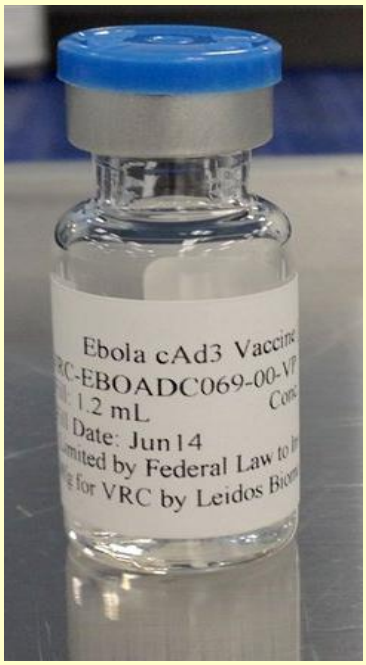
"Today we know the best way to prevent the spread of Ebola

infection is through public health measures, including good infection control practices, isolation, contact tracing, quarantine, and provision of personal protective equipment," added Fauci. "However, a vaccine will ultimately be an important tool in the prevention effort. The launch of Phase 1 Ebola vaccine studies is the first step in a long process."

"Tried and true public health interventions, strong supportive medical care and the rapid testing of Ebola vaccines and antiviral treatments can help to reduce suffering now and in the future," said CDC director Thomas R. Frieden.

The investigational vaccine now entering Phase 1 trials was designed by Nancy J. Sullivan, chief of the Biodefense Research Section in NIAID's Vaccine Research Center (VRC). She worked in collaboration with researchers at the VRC, the U.S. Army Medical Research Institute of Infectious Diseases, and Okairos, a Swiss-Italian biotechnology company acquired by GSK in 2013.

Phase 1 clinical trials are the first step in what is typically a multi-stage clinical trials process. During Phase 1 studies, researchers test an investigational vaccine in a small group of people to evaluate its safety and the immune response it provokes. Phase 2 clinical trials of investigational vaccines are designed to further assess safety and immune response in larger numbers of volunteers. Under certain circumstances, the vaccine's ability to prevent infection or disease (called efficacy) can be determined in a Phase 2 trial. Phase 3 clinical trials are directed predominantly at determining efficacy.



The **NIAID/GSK Ebola vaccine candidate is based on a type of chimpanzee cold virus, called chimp adenovirus type 3 (ChAd3). The adenovirus is used as a carrier, or vector, to deliver segments of genetic material derived from two Ebola virus species: Zaire Ebola and Sudan Ebola. Hence, this vaccine is referred to as a bivalent vaccine. The Zaire species of the virus is responsible for the current Ebola outbreak in West Africa.**

The vaccine candidate delivers one part of Ebola's genetic material to human cells, but the adenovirus vector does not replicate. Rather, the Ebola gene that it carries allows the cells of the vaccine recipient to express a single Ebola protein, and that protein prompts an immune response in the individual. It is important to know that the Ebola genetic material contained in the investigational vaccine cannot cause a vaccinated individual to become infected with Ebola.

"The experimental NIAID/GSK vaccine performed extremely well in protecting nonhuman primates from Ebola infection," Fauci noted.

The release notes that the candidate vaccine builds upon three earlier NIAID-developed investigational Ebola vaccines that began Phase 1 clinical trial testing in 2003.

"The knowledge gained from each of those trials has contributed to the development of the candidate vaccine we are now studying, as well as our improved understanding of human immune responses to investigational Ebola vaccines," said John R. Mascola, director of NIAID's Vaccine Research Center.

The Phase 1 clinical trial, called VRC 207, will be led by principal investigator Julie E. Ledgerwood, chief of the VRC's clinical trials program, and will be conducted among twenty healthy adults ages 18 to 50 years. Participants will be divided into two groups of ten participants each. One group will receive an intramuscular injection of the NIAID/GSK experimental vaccine. The second group will receive a single injection of the same vaccine but at a higher dose.

A number of safety features are built into the study's design, including daily and weekly reviews of patient data by clinical staff and the study protocol team. Additionally, the trial features a staged enrollment plan that requires interim safety reviews after three participants have been vaccinated

and have undergone three days of follow up before enrolling additional study participants into the group. Participants in both groups will be seen and evaluated by clinical staff nine times over a 48-week period.

Additional Phase 1 tests of the NIAID/GSK vaccine

As part of the VRC 207 trial, NIAID will also test a version of the NIAID/GSK vaccine that contains genetic material from only the Zaire Ebola species. Hence, this vaccine is referred to as a monovalent vaccine. This portion of the Phase 1 safety study, which will also involve twenty healthy adults, is expected to begin in October at the NIH Clinical Center and potentially another U.S. location. Dr. Ledgerwood will also lead that effort. The VRC 207 clinical trial is being conducted based on expedited review and approval by the U.S. Food and Drug Administration.

In parallel, NIH has partnered with an international consortium that includes the British-based Wellcome Trust, as well as Britain's Medical Research Council and Department for International Development to test the same NIAID/GSK monovalent vaccine candidate. **The vaccine candidate will be tested** among sixty healthy volunteers at the University of Oxford in England and among forty healthy volunteers in Mali by the University of Maryland School of Medicine Center for Vaccine Development and its Center for Vaccine Development in Mali (a joint enterprise of the University of Maryland School of Medicine and the Ministry of Health of Mali). Additionally, the vaccine candidate is expected to be tested among forty healthy volunteers in Gambia after approval from the relevant authorities.

The Oxford trial is expected to launch in mid-September pending ethical and regulatory approval.

"Today's announcement shows how private and public partners can pull together to quickly respond to this critical public health emergency. Developing a new vaccine is complex with no guarantees of success, and we are still in the early days for our Ebola vaccine candidate.

But we are encouraged by progress so far and will do the best we can, along with WHO and our partners, to speed up development and explore ways in which the vaccine could contribute to this or future Ebola outbreaks," said Dr. Moncef Slaoui, chairman of Global R&D and Vaccines at GSK.

Initial safety and immunogenicity data from the Phase 1 trials of the NIAID/GSK investigational Ebola vaccine are expected in late 2014.

Vesicular stomatitis virus (VSV) Ebola vaccine testing

The NIH said it will also collaborate with the U.S. Department of Defense in support of efforts by NewLink Genetics Corp., a biopharmaceutical company in Ames, Iowa, to conduct Phase 1 safety studies of the investigational recombinant vesicular stomatitis virus Ebola vaccine (called VSV-EBOV) developed by and licensed from the Public Health Agency of Canada. Those clinical trials are expected to begin in the fall at the Clinical Trials Center of Walter Reed Army Institute of Research in Silver Spring, Maryland.

▶ **For more information** about these early-stage Ebola vaccine clinical trials, see Questions and Answers: Phase 1 Clinical Trials of NIAID/GSK Investigational Ebola Vaccine.

Ebola now threatening West Africa's major cities

Source: http://www.homelandsecuritynewswire.com/dr20140903-ebola-now-threatening-west-africa-s-major-cities

The Ebola virus has begun to spread in Guinea in March, then spread to Liberia and Sierra Leone, and then to Nigeria and Congo. It is now threatening to overwhelm West Africa's largest cities.

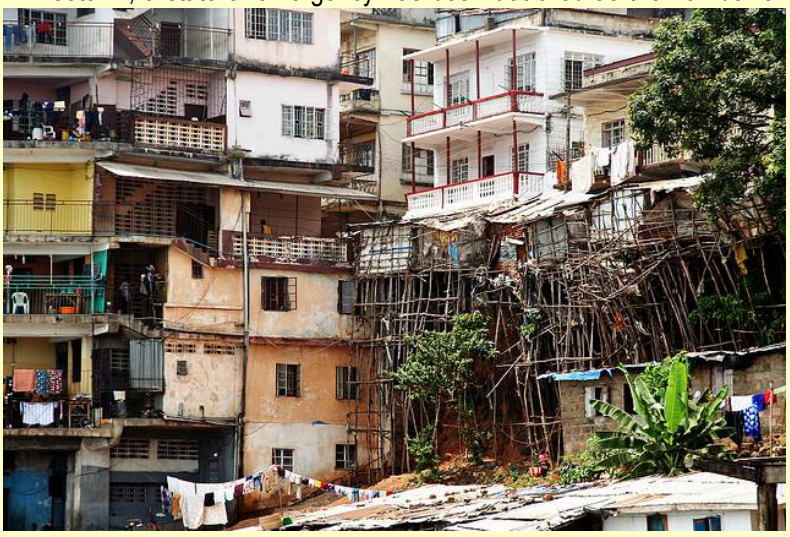
The *Independent* reports that the virus is now infecting not only remote rural provinces, but also "teeming" cities such as Freetown (the capital), Sierra Leone and Monrovia, Liberia — places where millions of people live in close quarters, making the situation exponentially more dangerous.

Freetown has watched the number of infected residents rise from onet in mid-July to thirty only six weeks later. The number has now risen to forty..

Freetown, Sierra Leone

"We have never had this kind of experience with Ebola before," said David Nabarro, the coordinator for the UN's new Ebola effort. "When it gets into the cities, then it takes on another dimension."

In Freetown, a state of emergency has been declared as the number of infections has risen gradually since May. As a preventative measure, the government of Sierra Leone has passed laws limiting close contact, altered the transportation rules and guidelines, urged citizens to maintain their cleanliness, limited the times that businesses are open, and even outlawed large public gatherings.



"It looked like panic," said Killian Doherty, an Irish architect who lives in Freetown. "It's the kind of thing that makes you lose your bearings."

While many who can afford to live Freetown have fled to the outlying areas of the country or to other places to wait out the infection, the majority of Freetown citizens remain in the city with little preparation or education — mainly just fear.

"Everyone is scared. Even I am scared," said Michael Karoma, a gynecologist at Prince Christian Maternity Hospital in Freetown. "Everyone is afraid of Ebola. This used to be in the villages. Now it is in the cities. What is happening in the world?"

The fright has led to many empty facilities and businesses. Karoma reports that few venture to the hospital out of fear, and most hotels and airports are operating at a fraction of their normal occupancy.

At Connaught Hospital, the main health-care center in the city, suspected Ebola victims are screened and await their test results in carefully sealed wards. If found to be infected, the patients are shipped to either a government hospital or a Doctors Without Borders facility outside of the city.

"Fear of Ebola is just permeating everything right now," said Dan Kelly, a University of California at San Francisco disease specialist who has come to Freetown to teach proper sanitation and use of protective gear. At the hospital to which he has been assigned, Kelly said he expected a steep rise in patients.

"The only question is whether patients will be too scared to come," he told the *Telegraph*. The answer may arrive sooner than anyone had anticipated.

Social sciences suffer from severe publication bias

By Mark Peplow

Source: http://www.nature.com/news/social-sciences-suffer-from-severe-publication-bias-1.15787

Masses of experimental results lie unpublished in social scientists' file drawers, potentially skewing the reliability of those that do get into print.

When an experiment fails to produce an interesting effect, researchers often shelve the data and move on to another problem. But withholding null results skews the literature in a field, and is a particular worry for clinical medicine and the social sciences.

Researchers at Stanford University in California have now measured the extent of the problem, finding that most null results in a sample of social-science studies were never published. This publication bias may cause others to waste time repeating the work, or conceal failed attempts to replicate published research. Although already recognized as a problem, "it's previously been hard to prove because unpublished results are hard to find", says Stanford political scientist Neil Malhotra, who led the study.

His team investigated the fate of 221 sociological studies conducted between 2002 and 2012, which were recorded by Time-sharing Experiments for the Social Sciences (TESS), a US project that helps social scientists to carry out large-scale surveys of people's views.

Only 48% of the completed studies had been published. So the team contacted the remaining authors to find out whether they had written up their results, or submitted them to a journal or conference. They also asked whether the results supported the researchers' original hypothesis.

Of all the null studies, just 20% had appeared in a journal, and 65% had not even been written up. By contrast, roughly 60% of studies with strong results had been published. Many of the researchers contacted by Malhotra's team said that they had not written up their null results because they thought that journals would not publish them, or that the findings were neither interesting nor important enough to warrant any further effort.

"When I present this work, people say, 'These findings are obvious; all you've done is quantify what we knew anecdotally'," says Malhotra. But social scientists often underestimate the magnitude of the bias, or blame journal editors and peer reviewers for rejecting null studies, he says. His team's findings are published today in *Science*[1].

Poisoned by success

The problem may be bigger than the TESS sample suggests. Each survey design proposed to TESS is peer-reviewed, to ensure that it

has sufficient statistical power to test an interesting hypothesis; weaker studies in these fields would probably have an even lower rate of publication. "It's very likely that this study underestimates the true extent of the problem," says Daniele Fanelli, an evolutionary biologist who studies publication bias and misconduct, and is currently a visiting professor at the University of Montreal in Canada.

In 2010, Fanelli surveyed the publication bias across a range of disciplines, and found that psychology and psychiatry had the greatest tendency to publish positive results[2]. "But it's not just a social-science issue — it's also common in the biomedical sciences," says Hal Pashler, a psychologist at the University of California, San Diego, in La Jolla. **"Both are really poisoned by only hearing about the successes."** (See "'Ethical failure' leaves one-quarter of all clinical trials unpublished'.)

Social scientists are already trying to tackle publication bias (see 'Replication studies: Bad copy'). Malhotra is involved in the Berkeley Initiative for Transparency in the Social Sciences, which advocates a range of strategies to strengthen social-science research. One option is to log all social-science studies in a registry that tracks their outcome — a model that is already used to help ensure that null results from drug trials see the light of day. Meanwhile, Pashler has set up a website, PsychFileDrawer, to capture null results generated by attempts to replicate findings in experimental psychology.

These remedies have not been universally welcomed, however. "There's been a lot of pushback," says Malhotra. Some social scientists are worried that sticking to a registered-study plan might prevent them from making serendipitous discoveries from unexpected correlations in the data, for example. But most accept the need for change, adds Pashler: "We're all waking up to this."

References

1. Franco, A., Malhotra, N. & Simonovits, G. Science http://dx.doi.org/10.1126/science.1255484 (2014).
2. Fanelli, D. PLoS ONE 5, e10068 (2010).

*From 2004 to 2006, **Mark Peplow** was an online news reporter for Nature, covering the physical sciences. After spending a couple of years as the editor of Chemistry World magazine, he rejoined Nature in July 2008, initially as online news editor, then as chief news editor. He left Nature in January 2013.*

Can Ebola Go Airborne?

By Scott Gottlieb

Source: http://www.forbes.com/sites/scottgottlieb/2014/09/03/can-ebola-go-airborne/

September 03 – **A recent study in the journal Science, shows that the Ebola strain spreading across Western Africa has undergone a surprisingly high amount of genetic drift during the current outbreak**. Experts say the mutations could eventually make the virus harder to diagnose and perhaps treat with a new therapeutic, should one come along.

In yesterday's *Wall Street Journal*, I wrote that in response to the crisis, the Obama administration has stressed that the disease is unlikely to spread inside America. We will certainly see cases diagnosed here, and perhaps even experience some isolated clusters of disease. For now, though, the administration's assurances are generally correct: Health-care workers in advanced Western nations maintain infection controls that can curtail the spread of non-airborne diseases like Ebola.

But our relative comfort in the U.S. is based on our belief that our public health tools could easily contain a virus spread only through direct contact. That would change radically if Ebola were to alter its mode of spread. We know the virus is mutating. Could it adapt in a way that makes it airborne?

It's highly unlikely. It would be improbable for a virus to transform in a way that changes its mode of infection. Of the 23 known viruses that cause serious disease in man, none are known to have mutated in ways

that changed how they infect humans. Of course, we only know about a small portion of the existing viruses.

A little background is in order.

The ability of Ebola to spread without direct contact with an infected individual, and whether or not it is efficiently spread through air, are different issues.

It's already possible that Ebola can spread, in rare cases, through direct contact with respiratory secretions. This might occur, for example, when an infected person coughs or sneezes directly on another, uninfected individual. The Centers for Disease Control specifically recommends "droplet protection" be taken in the hospital setting when healthcare workers are treating patients infected with Ebola. This kind of direct spread is sometimes referred to as "droplet contact," but it's distinct from airborne spread.

When a viral infection becomes "airborne," like ordinary influenza, it means that discharged microbes remain suspended in the air for long periods of time. Generally speaking, this is what is meant by "airborne transmission." In this case, the organisms must be capable of surviving for long periods of time outside the body and must be resistant to drying. Airborne transmission allows organisms to enter the upper and lower respiratory tracts. This sort of transmission is sometimes also referred to as "droplet contact" or "viral droplet nuclei transmission."

For this article, I am focused on the latter circumstance — whether or not Ebola could mutate in a way that makes it highly contagious through the air, by allowing the individual viral particles to survive for long periods suspended in dry air.

Right now, Ebola is spread through direct contact with the body fluids of actively infected individuals. Indirect transmission is also possible by means of contact with an object (fomite) that has been soiled by the body fluids of an infected individual.

The widespread belief is that the Ebola virus would be very unlikely to change in a way that would allow the individual virus particles to be concentrated, and remain suspended in respiratory secretions — and then infect contacts through inhalation.

The Ebola virus is comprised of ribonucleic acid (RNA). Such a structure makes it prone to undergoing rapid genetic changes. But to become airborne, a lot of unlikely events would need to occur. Ebola's RNA genome would have to mutate to the point where the coating that surrounds the virus particles (the protein capsid) is no longer susceptible to harsh drying effects of being suspended in air.

To be spread through the air, it also generally helps if the virus is concentrated in the lungs of affected patients. For humans, this is not the case. Ebola generally isn't an infection of the lungs. The main organ that the virus targets is the liver. That is why patients stricken with Ebola develop very high amounts of the virus in the blood and in the feces, and not in their respiratory secretions.

Could Ebola mutate in a way that confers these qualities on the virus?

Anything is possible. But such a scientific feat would rate as highly unlikely. A lot of the speculation that Ebola could be airborne stems from a set of earlier studies that showed Ebola virus may have been able to spread through the air between infected pigs and monkeys. **There are reasons why these studies are not applicable when it comes to questions around human-to-human transmission.** In animals, Ebola behaves differently than it does in people, for example concentrating in lung tissue.

Nonetheless, the fact that the Ebola virus is undergoing rapid changes reinforces the urgency of getting this epidemic under control. We need to snuff it out. While the virus is unlikely to be modified in a way that changes its mode of infection, the resulting mutations could nonetheless make it harder to diagnose, or even treat.

Moreover, our ability to prevent an epidemic here in the U.S. doesn't relinquish our obligations abroad. Even if the epidemic remains confined to Western Africa, the outbreak could rank as one the cruelest natural catastrophes of recent times—if not in human death and suffering, then certainly in the economic and social devastation caused by declining commerce, and the strife resulting from mass cordons. As I note in the *Wall Street Journal*, "compared with a one-time act of nature, like a storm, that delivers its destruction at once; the swelling nature of a viral

epidemic can magnify its impact on economic and civil life."
For all of these reasons, and most of all for the humanitarian imperative; we need to be very concerned about the epidemic unfolding in Western Africa, even if the U.S. isn't at direct risk of an outbreak now. We need a vigorous plan for helping that region deal with this evolving catastrophe.

Scott Gottlieb, MD is a physician and Resident Fellow at American Enterprise Institute at Washington, DC.

Genomic surveillance elucidates Ebola virus origin and transmission during the 2014 outbreak

By Stephen K. Gire, Augustine Goba, Kristian G. Andersen et al.
Source: http://www.sciencemag.org/content/early/2014/08/27/science.1259657

In its largest outbreak, Ebola virus disease is spreading through Guinea, Liberia, Sierra Leone, and Nigeria. We sequenced 99 Ebola virus genomes from 78 patients in Sierra Leone to ~2,000x coverage. We observed a rapid accumulation of interhost and intrahost genetic variation, allowing us to characterize patterns of viral transmission over the initial weeks of the epidemic. This West African variant likely diverged from Middle African lineages ~2004, crossed from Guinea to Sierra Leone in May 2014, and has exhibited sustained human-to-human transmission subsequently, with no evidence of additional zoonotic sources. Since many of the mutations alter protein sequences and other biologically meaningful targets, they should be monitored for impact on diagnostics, vaccines, and therapies critical to outbreak response.

In memoriam: Tragically, five co-authors, who contributed greatly to public health and research efforts in Sierra Leone, contracted EVD in the course of their work and lost their battle with the disease before this manuscript could be published. We wish to honor their memory!

Published Online August 28 2014
Science DOI: 10.1126/science.1259657

Bio-Martyrs: A Very Real Threat at Unique Moment in Time

By James Phelps, Ph.D., and Monica Koenigsberg, Ph.D.
Source: http://www.hstoday.us/industry-news/general/single-article/exclusive-bio-martyrs-a-very-real-threat-at-unique-moment-in-time/2a07ea5072bf5060cb8da27240135041.html

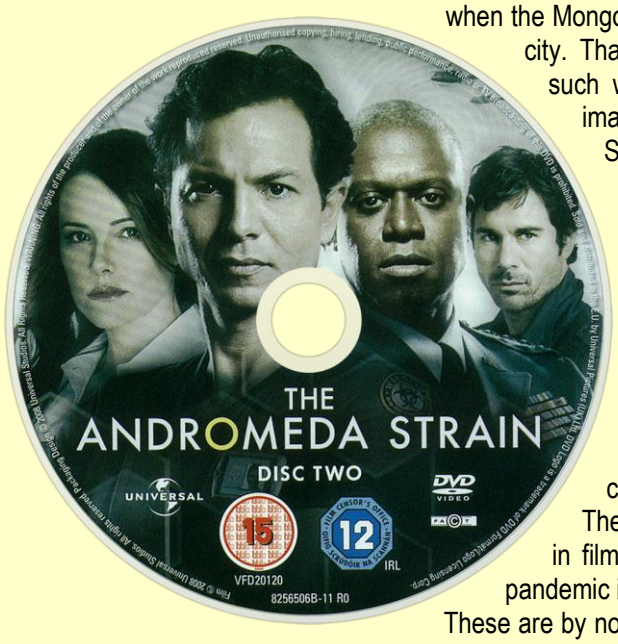
One aspect of terrorism and the threat it poses to the United States is the constant admonition that we have to think like a terrorist to understand our own vulnerabilities. **We have to think out of the box because the terrorists certainly are not thinking inside** the constructs we have created around our concepts of rule of law, sovereignty and the social contract.

But when we think outside of the box, we often are confronted with responses such as, "that will never happen," "it hasn't been done before" and "they aren't that smart." But the problem with such responses is that they deny the very admonition the same leaders have directed us to consider.

The concept of martyrdom missions is, in and of itself, anathema to most people of western ideology. However, the concept of self-sacrifice for a cause greater than oneself, for a reward to be received after death or in the honored memories of your decedents, remains a part of many other long established cultures. So, too, has been the concept of the use of unique methods by the weak to attack stronger and more capable forces. When these esoteric thoughts are combined we get the Japanese Kamikaze, the Arab Hashishin, the Jewish Zealot and

today's suicide bomber. This is not new, but has always been a part of conflict between nations, societies, cultures and religions.

One of the first recorded use of biologicals in warfare was the siege of Caffa on the Crimean Peninsula when the Mongols used siege engines to toss diseased bodies over the walls of the city. That today's asymmetrical warriors would combine the availability of such weapons with the concept of martyrdom is a simple leap in the imagination.



Science- and techno-fiction writers and producers of thrillers have long seen the potential of such threats. Michael Crichton brought the threat of a biological disaster in his novel and the big screen in, ***The Andromeda Strain***. Crichton's bio-threat came from outer space. Tom Clancy altered the origins of the threat by establishing the possibility of the weaponization of Ebola by Middle Eastern terrorists in *Executive Orders*. Clancy never takes that story line to a point of conclusion in the book or in subsequent narratives. Marc Cameron revived Clancy's concept in *National Security*.

The movie, ***Contagion***, provided in film the frightening prospect of a pandemic in the age of modern travel.

These are by no means exclusive examples of the concept as presented by a handful of producers during the past four decades. If these western authors and screenwriters can conceive of these ideas, then it's certainly possible terrorists will also find ways to implement such concepts as part of their asymmetrical warfare against our culture and social order.

If luck is the confluence of preparation and opportunity, then the opportunity presented by the openness of the southern border coupled with the unprecedented Ebola outbreak in West Africa could be the luckiest moment in recent history for several potential terrorist organizations. We merely have to remember that we knew of the possibility that terrorists could fly a plane into a building, but prior to 9-11 the probability was considered low. We know Islamist jihadists want to attack the US using a weapon of mass destruction, but once again, the probability they would gain access to an effective and truly frightening biological threat has been relatively low. At least until now.

As *Homeland Security Today* previously reported in the report, *With Ebola 'Moving Faster than Efforts to Control It,' Could Illegals, Terrorists Bring it to the US*?, the numbers of people crossing into the US through the Rio Grande Valley sector of south Texas is extraordinary. Consider the ease in which Other Than Mexicans (OTMs) have crossed the Rio Grande, located Border Patrol agents to surrender themselves to for processing and subsequent release to the homes of family members across the country. **An enterprising terrorist would simply have to recruit a couple of young men, women or even teens, particularly those who have lost parents or siblings to the disease and convince them to martyr themselves in an act of revenge.** Neither option exists outside the realm of possibility or probability.

The argument that the rich Americans have the cure that would have saved their family members but would not share it would likely be extremely persuasive amongst grief-stricken West African Muslims, **especially with the last six doses of a potential treatment drug going to two white American doctors and four specially selected African aid workers. All one would have to do is intentionally "vaccinate" the recruits with blood serum from a recent victim and arrange a flight to Mexico, El Salvador, Honduras or Guatemala.** The newly "vaccinated" could be provided with directions on how to get a bus ticket to Matamoros and what to do when they cross the river into the US. One could even go so far as to "vaccinate" jihadist recruits with the blood of their own recently deceased relatives. These recruits would become the carriers of revenge.

When processed by Border Patrol and Immigration and Customs Enforcement (ICE), the bio-martyrs could identify themselves as coming from any African country, Brazil or even islands in the Gulf of Mexico. They need not specifically identify themselves as coming from an infected country as our Department of Homeland Security agencies have no way to verify the country of origin. Customs and Border Protection and ICE are merely looking for a real address within the US to discharge the person to and that can easily be provided by the terrorist organization before the bio-martyr leaves Africa.

Is there a potential that this has already happened? Between January 1 and August 12, 2014, over 1,300 apprehensions in the Rio Grande Valley district came from special interest countries including twelve self-identifying as originating from Benin, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Ghana and Sierra Leone. How many of the 338 stating their country of origin was Brazil, Haiti, the Dominican Republic or Jamaica could have actually been from West Africa?

We have no way of knowing.

Once the recruit reaches the United States and two to 20 one days after they were exposed to the disease, they would become active carriers and anybody coughed or sneezed on would potentially become infected. Ensuring they infect people, they could simply commit suicide in a subway train during rush hour. Or while aboard a flight. Or while touring the US Capitol. If they can get their bodily fluids on other people, they don't even have to successfully infect them. The goal of terrorists is to terrorize. This accomplishes their mission.

That possible exposures to Ebola have appeared in New Mexico and Sacramento, and that 30 states and Washington, DC have asked the Centers for Disease Control and Prevention (CDC) for assistance in screening and testing potential victims, coupled with nearly 3,000 reported cases in West African nations and over 1,400 already dead, every emergency manager, public health official and homeland security professional should be on alert and aware of a very real threat.

Yet, the CDC and public health officials across the country must downplay the possible threat posed by the outbreak and the limited potential of spread of the disease in a country as advanced as the US due to fears that there'd be panic among the population.

But the reality is that Boko Haram or Al Qaeda in the Islamic Maghreb may have already begun the process of sending bio-martyrs to the US.

Dr. James Phelps *is president of Phelps and Associates LLC, a veteran owned and operated consulting firm. He is the primary developer of the online and face-to-face undergraduate and graduate degrees in border and homeland security at Angelo State University. Prior to earning his Ph.D. in Criminal Justice from Sam Houston State University, he served in the US Navy in a variety of positions,*

ending his career as the Quality Assurance officer for deep submergence systems at SEAL Delivery Vehicle Team 1.

***Dr. Monica Koenigsberg** is an Associate Professor in the Department of Security Studies and Criminal Justice at Angelo State University. Among her courses are several addressing terrorism and counterterrorism. She is an observer of disease transmission in prisons and of the nexus of incarceration and society. Koenigsberg is co-author of the seminal textbook,* Border Security, *published by Carolina Academic Press.*

Editor's note: *Homeland Security Today* reported in November, 2005 that jihadists had discussed bio-martyrs to spread pandemic-capable flu virus. (read more below).
On August 14, 2013, *Homeland Security Today* Editor-in-Chief Anthony Kimery appeared in "Biopocalypse," an episode of the new SyFy Channel TV series, "Joe Rogan Questions Everything," filmed in Los Angeles. Appearing with former CIA WMD counterterrorism unit chief Charles Faddis, the segment dealt with bio-terrorism, designer-hybrid pathogenic threats and unregulated DIY-bio genetics labs.

Terrorists Discussed Bio-Martyrs to Spread Pandemic-Capable Flu Virus

November 10, 2005

By Anthony L. Kimery
Source: http://www.hstoday.us/blogs/the-kimery-report/blog/terrorists-discussed-bio-martyrs-to-spread-pandemic-capable-flu-virus/873c329bae9febff5270577d5e6bdd56.html

These plans are said to call for squads of suicide-willing terrorists who would deliberately infect themselves with a human transmittable strain of bird flu once such a strain has become a human contagion, or a human transmissible form clandestinely bio-engineering to be easily passed between humans, and then to spread the virus as widely around the world as they can by traveling on one international flight after another, the officials said.

The officials added that they are much more concerned about avian flu carrying bio-martyrs than they are about a naturally occurring pandemic. A terror exacerbated pandemic could, according to classified studies described to *HSToday.us*, kill inestimable millions around the world. One study even reiterates what the UN's pandemic czar warned, and that is the virtual extinction of humankind.

The officials discussed their concerns with *HSToday.us* because, they explained, the terrorist component of a pandemic could be planet devastating and "must" be taken into any response planning consideration "because it changes the dynamics of a natural pandemic and requires considerably different planning and far more resources to deal with it," as one explained.

"This is a damned frightening possibility, and it isn't science fiction by any stretch of the imagination," one of the counterterrorist officials candidly told *HSToday.us*. "While we're rightfully concerned by a natural pandemic, we're a lot more concerned about a terrorist-induced pandemic or a pandemic fueled by terrorists. If terrorists get involved in this, this could get out of control, or at least beyond our capabilities to contain and respond given our current state of readiness. This is the gravest threat we face right now, outside I guess an asteroid the size of Texas hitting us!"

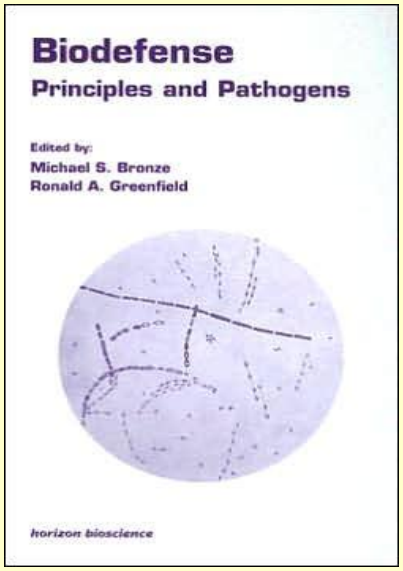
The notion of terrorists deliberately infecting themselves with a pandemic-causing flu strain isn't new, and it should give pause to public health and government emergency preparedness planners worldwide.

HSToday first reported in its July, 2005 issue concerns about bio-terrorists.

This reporter also disclosed in June, 2003 that counterterrorists were worried about bio-martyrs in the midst of the SARs outbreak. One veteran terrorist hunter told me at the time that "in many respects, this [bio-martyr] method of delivery could be more catastrophic than the localized detonation of a bomb or warhead with a biological agent.

The consequence … is potentially unimaginable. Imagine a team of infected terrorists crisscrossing the world on aircraft with connecting flights."

Several years earlier, in December, 2001, Raymond A. Zinkas had written in *Current History* that "the terrorist group that carried out the September 11 attacks convincingly demonstrated that its members are willing to die to complete their mission. **A biological equivalent of the suicide pilot or bomber would be an individual who has been deliberately infected with a deadly contagious pathogen and given the mission to circulate among the targeted population**," spreading "the virus to others through saliva droplets produced by coughing and sneezing ... a human biological time bomb could infect tens or even hundreds of Americans. If additional infected operatives were to circulate, a more extensive epidemic would ensue, and in a shorter time."



In early October, *Newsweek* has reported, a select group of lawmakers and staffers were given a classified briefing by Intelligence Community officials on monitoring of terrorists due to the concern they could use a bird flu pandemic to cause mass casualties in America. A US official familiar with intelligence activities told *Newsweek* analysts are trying to keep tabs on whether terrorists could somehow bio-engineer a new strain of avian flu or otherwise exploit a flu outbreak.

In Australia, counterterrorism authorities have drawn up plans to defend their country against terrorists spreading avian influenza.

The National Counter Terrorism Committee has included the use of contagious new bird flu strain as a terrorist weapon in possible terrorist attack scenarios, Attorney General Philip Ruddock's office confirmed last month.

"It certainly is factored into the counter-terrorism plan," a spokeswoman for Ruddock told the *Melbourne Herald Sun*.

Directly north of America, Canada's military intelligence arm, the J2 Directorate of Strategic Intelligence warned of the potential for terrorists to fuel a bird flu pandemic a year ago. Directorate analysts concluded in the heavily censored Dec. 8, 2004 report, "*Recent Human Outbreaks of Avian Influenza and Potential Biological Warfare Implications*," that the development of a man-made avian flu strain capable of triggering a human flu pandemic is possible.

The report states a pandemic strain engineered in a laboratory using reverse genetics would be technically challenging, but possible, and could be used to custom tailor a flu virus taking genes from a virulent but not highly transmissible strain and combining them with the genes of a contagious virus.

The potential for terrorists to unleash a devastating pandemic is also discussed in the 2005 book, ***"Biodefense: Principles and Pathogens."*** The contributing authors of Chapter 21, "*Miscellaneous Threats: Highly Pathogenic Avian Influenza and Novel Bio-engineered Organisms*," write "the prospect of intentionally generating novel bacterial and viral strains with pandemic potential is … a concern. There is evidence that research directed toward engineering of bioweapons with improved lethality was conducted in the past, demonstrating that the threat is not simply hypothetical."

Years earlier, in June, 2002, the "*American Journal of the Medical Sciences*" published the paper, "*Unconventional Biological Threats and the Molecular Biological Response to Biological Threats*," that emphasizes the "influenza A virus … Although it does not receive much attention [as a bioterror weapon, nevertheless has] the potential for mass casualties and public panic certainly exist if an epidemic of a virulent influenza A virus were initiated."

The manner in which some samples of flu viruses and other pathogens are shipped among research facilities also has become an issue of concern to authorities.

Intelligence officials told *HSToday.us* they are concerned

about the protection and handling of shipments of flu samples for scientific purposes.

Indeed. **This week a sample of the deadly H5N1 avian flu virus taken from dead Romanian birds disappeared from a British Airways flight.** When security couriers arrived to collect the package, it could not be found. British Airways is investigating and says there is no health risk.

In early October, a cargo plane owned by Morningstar Air Express of Edmonton, Canada under contract to Federal Express which was carrying small amounts of flu virus crashed on railway tracks near Winnipeg's city center, killing the pilot but missing buildings and vehicles.

The research samples of frozen influenza viruses were destroyed in the crash and ensuing fire along with other freight, Federal Express spokeswoman Karen Cooper said.

In March, a **FedEx courier truck carrying a package of anthrax collided with a car in central Winnipeg Wednesday,** but officials say the package was not damaged in the crash and the public was never in danger.

These incidents have raised troubling questions about the use of commercial delivery services to transport potentially dangerous, even lethal, pathogens.

Authorities not only criticize the practice of using commercial transport of pathogens as unsafe, but that it is susceptible to intercept by terrorist groups.

The journal, *New Scientist*, reported Wednesday that, "**armed with a fake email address, a would-be bioterrorist could probably order the building blocks of a deadly biological weapon online, and receive them by post within weeks.**"

Continuing, the journal said its investigation found that "dozens of biotech firms now offer to synthesize complete genes from the chemical components of DNA. Yet some are carrying out next to no checks on what they are being asked to make, or by whom. It raises the frightening prospect of terrorists mail-ordering genes for key bioweapon agents such as smallpox, and using them to engineer new and deadly pathogens."

Last month, a team of researchers from the US Centers for Disease Control and Prevention (CDC), Armed Forces Institute of Pathology, Mount Sinai School of Medicine and Department of Agriculture, used similar means to recreate the virus that caused the 1918 flu pandemic.

"A more realistic risk is that terrorists could order genes that confer virulence to dangerous pathogens such as the Ebola virus, and engineer them into another virus or bacterium," *New Scientist* reported, adding, "they could also order genes for a hazardous bacterial toxin - although many of these are also available by isolating the microorganisms from the environment."

Professor William Guilford, who teaches biomedical engineering at Mount Sinai School of Medicine in New York City, believes "it is highly unlikely, and essentially impossible, that a terrorist or terrorist organization would have the facilities and expertise to completely recreate an influenza virus based solely on its genome."

Yet, the genetic and microbiological techniques and equipment needed to replicate what the CDC researchers did are readily available. The infamous polio virus was recreated based solely off its genome sequence by famed microbiologist Eckard Wimmer. The facilities and expertise also are possessed by terrorist-supporting regimes like Iran and Syria. It's that point that seems lost on scientists who assert terrorists do not have the know-how or wherewithal to engage in hybrid virus making.

And because **the Department of Health and Human Services published the full genome of the 1918 influenza virus on the Internet in the GenBank database**, the editors of the American Association for the Advancement of Science journal, *Science*, noted that "terrorists could, in theory, use the information to reconstruct the 1918 flu virus."

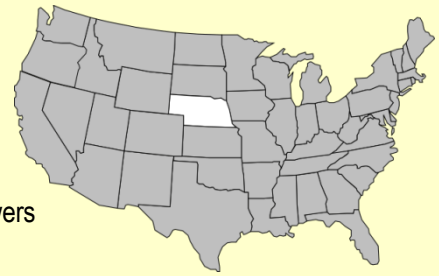
"This is extremely foolish. The genome is essentially the design of a weapon of mass destruction," wrote Ray Kurzweil, author of, "*The Singularity is Near: When Humans Transcend Biology*," and Bill Joy, founder and former chief scientist of Sun Microsystems in a recent *New York Times* op-ed. "No responsible scientist would advocate publishing precise designs for an atomic bomb, and in two ways revealing the sequence for the flu virus is even more dangerous."

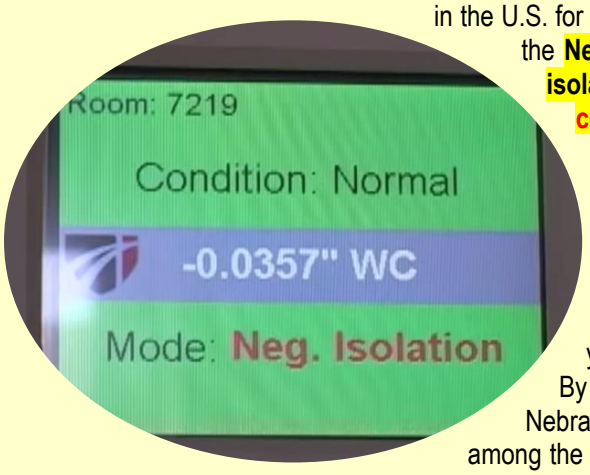
__Anthony L. Kimery__, Editor-in-Chief, draws on 30 years of experience and extensive contacts as he investigates and analyzes homeland security, counterterrorism and border security. "The Kimery Report" was awarded a 2008 National ASBPE Award for Original Web News Section. He most recently won a 2014 regional gold ASBPE award for impact/investigative journalism. His report, "Savage Struggle on the Border," was the lead report in the series of the same title that won the 2010 National ASBPE Gold Award for best magazine series.

EDITOR'S COMMENT: Well written in 2005 but the "it will not happen to us" attitude proved to be stronger! Once more similar thoughts are expressed in 2014. This time the Ebola pandemic (?) looks like a convenient candidate for similar plots and perhaps now the unthinkable will become a reality! With all that technological progress why can't we discover the gene of apathy? This might change many things and nullify Einstein's quota on "universe and stupidity"!

A Look at Nebraska Unit Treating Ebola Patient

Source: http://abcnews.go.com/US/wireStory/nebraska-unit-treating-ebola-patient-25276489





September 05 – A third American aid worker, Dr. Rick Sacra, to be treated in the U.S. for the deadly Ebola virus arrived Friday at the **Nebraska Medical Center's biomedical isolation unit — the largest in the country.**

Here are some questions and answers about the Omaha unit:

WHY IS THE COUNTRY'S LARGEST BIOCONTAINMENT UNIT IN OMAHA?

The Nebraska Biocontainment Patient Care Unit got its start in the years after Sept. 11 as Nebraska prepared to combat bioterrorism. By 2004, Nebraska ranked among the top six states for bioterrorism preparedness, according to a report by the nonprofit Trust for America's Health.

A year later, Nebraska's health agency pooled its allotment of federal bioterrorism dollars with contributions from the hospital and the University of Nebraska's medical school and opened the $1 million isolation unit.

The hospital renovated its **seventh floor**, which had been its pediatric transplant wing, to construct the isolation unit. Because of the space, Omaha's unit ended up being the largest quarantine and treatment facility in the country.

The **10-bed, five-room unit** is designed to handle highly contagious and deadly infections — including severe acute respiratory syndrome (SARS), smallpox and plague. Other biocontainment units are in Montana, Maryland and at Emory University Hospital in Atlanta, where two infected Americans were treated earlier this summer.

HOW MANY PEOPLE HAVE BEEN TREATED IN OMAHA?

The unit has so far briefly housed only one person, a traveler five years ago from Africa whose symptoms concerned emergency-room workers in a Nebraska town, according to unit officials. The patient was diagnosed with malaria, which doesn't require quarantine.

WHY WAS DR. SACRA SENT TO THE OMAHA UNIT, AS OPPOSED TO EMORY'S IN ATLANTA?
The U.S. Department of Health asked the Omaha medical center to treat Sacra in order to prepare other biocontainment units besides Emory's to take more Ebola patients, if needed.

WHAT KIND OF EQUIPMENT DOES OMAHA HAVE?

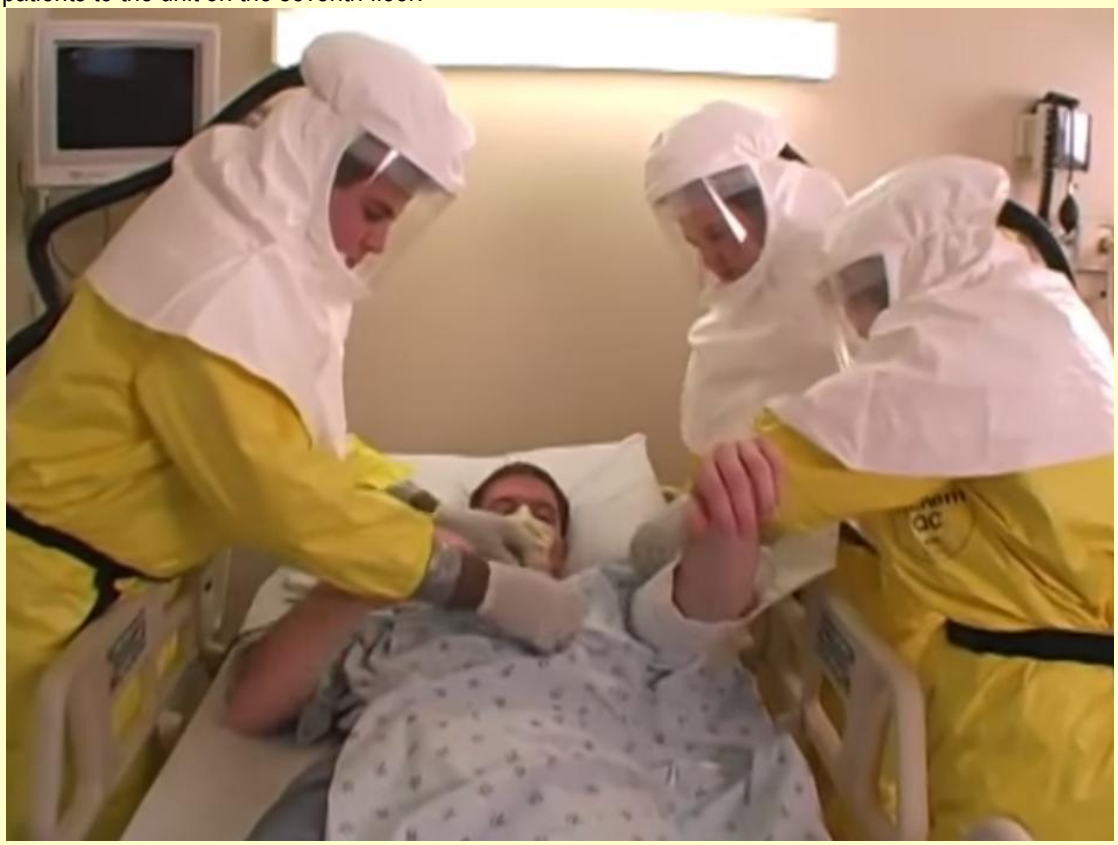
The biocontainment unit is separate from all other units in the hospital, and medical staff can only enter by security access. The unit has its own air-handling system to help ensure that no infectious particles escape to the largest hospital campus.

Doctors can use a videoconferencing system to communicate with the patient and staff so not everyone has to wear the full protective suit at all times.

Lab specimens are placed in heat-sealed, double-layered plastic bags; then they are submerged in a dunk tank for 10 minutes.

Ultraviolet light, a dunk tank for lab specimens and a sterilizer for items to be taken out of the unit are among the safety features designed to protect people on the outside.
The unit also has two videophones that families and friends can use to talk to ill loved ones, as well as for easier and safer medical consultations.

A special transportation gurney enclosed by a bubble-type seal is used to transfer contaminated patients to the unit on the seventh floor.



WHO WORKS THERE?

Dr. Philip Smith (photo – middle) is the medical director of the Nebraska Biocontainment Patient Care Unit and a professor of infectious diseases at the University of Nebraska Medical Center. Smith has served as guest faculty for the Hospital Infections Course at the Centers for Disease Control and Prevention in Atlanta; is president of the Nebraska Infection Control Network board; and is co-director of the Nebraska Center for Bioterrorism Education.

Smith will work closely with Dr. Angela Hewlett (photo – right), associate medical director of the isolation unit and assistant professor of infectious diseases at the center.

Dr. Mark Rupp (photo – left), as chief of UNMC's Division of Infectious Disease, oversees the treatment at the unit.

A staff of 35 doctors, nurses and other medical professionals will provide Sacra with care.

▶ **Watch an interesting video about this specialized unit at:**
http://www.youtube.com/watch?v=a68NdXDk9Tk

Ricin toxin vaccine shows promise in a non-human primate study

Source: http://www.homelandsecuritynewswire.com/dr20140908-ricin-toxin-vaccine-shows-promise-in-a-nonhuman-primate-study

Ricin toxin is a plant toxin thought to be a bioterror threat because of its stability and high potency as well as the large worldwide reservoir created as a by-product of castor oil production. As a poison, ricin is so potent that the U.S Centers for Disease Control (CDC) estimates the lethal dose in humans is about the size of a grain of salt. There are currently no effective means to prevent the effects of ricin poisoning. **Soligenix, Inc.,** a clinical stage biopharmaceutical company developing several biodefense vaccines and therapeutics, announced last week promising preliminary results from a preclinical study with its **ricin toxin vaccine RiVax,** in a non-human primate (NHP) lethal aerosol exposure model.

Soligenix, Inc., a clinical stage biopharmaceutical company developing several biodefense vaccines and therapeutics, announced last week promising preliminary results from a preclinical study with its ricin toxin vaccine RiVax, in a non-human primate (NHP) lethal aerosol exposure model. **The company says the study demonstrated that NHPs vaccinated with RiVax were completely protected against a lethal aerosol of ricin toxin with a highly significant survival benefit (p<0.002)**. RiVax, manufactured with the company's thermostabilization platform technology ThermoVax, was used to vaccinate NHPs to assess efficacy against lung exposure to ricin toxin in an animal model that is anticipated to respond to vaccination similarly to humans. ThermoVax provides for stabilized, lyophilized (freeze-dried) subunit vaccines which are resistant to exposure to heat, avoiding refrigeration during storage and distribution.

The company notes that in this pilot study, the ability of the stabilized RiVax vaccine to protect against an aerosolized form of ricin toxin was evaluated. Animals were exposed to an aerosol of ricin toxin 3-5 times the amount that is known to result in death of untreated animals. In the case of vaccinated NHPs, the vaccine regimen was safe and well-tolerated, with all of the animals developing antibodies in their sera that neutralized the activity of ricin toxin.

More importantly, all of the NHPs in the RiVax-vaccinated treatment group survived when exposed to the respiratory aerosol of ricin toxin, with no apparent signs of gross lung damage. Conversely, all NHPs in the unvaccinated treatment group died within approximately thirty-six hours of exposure to aerosolized ricin while developing severe lung damage, including hemorrhaging.

"We are extremely pleased with the positive preliminary efficacy results with RiVax in NHPs. This particular study is a critical step along the path of establishing efficacy under the FDA 'animal rule' which dictates that efficacy in animals must be ascertained in cases where a drug or vaccine cannot be ethically tested for efficacy in humans," stated Christopher J. Schaber, president and CEO of Soligenix. "It is clear that vaccination with heat stable RiVax resulted in robust protection against lung exposure, the most dangerous and likely way that ricin toxin could be used. We anticipate further development of RiVax in order to conduct human safety and immunogenicity trials along with advanced manufacturing."

The vaccination and exposure studies were conducted at the Tulane National Primate Research Center (TNPRC) under the direction of Dr. Chad Roy, director of Infectious Disease Aerobiology. These studies were performed under sponsorship of a National Institute of Allergy and Infectious Disease (NIAID) cooperative grant to Soligenix with TNRPC and other collaborators.

About ricin toxin

Ricin toxin is a plant toxin thought to be a bioterror threat because of its stability and high potency as well as the large worldwide reservoir created as a by-product of castor oil production. Ricin comes in many forms like powder, mist, pill, or pellet. Ricin can also be dissolved in water and other liquids. As a poison, ricin is so potent that the U.S Centers for Disease Control (CDC) estimates the lethal dose in humans is about the size of a grain of

salt. Exposure to ricin results in local tissue necrosis and general organ failure leading to death within several days of exposure, and is especially toxic when inhaled. **Ricin is a ribosome inactivating protein (RIP) and a potent member of the AB family of toxins.** The enzymatic ricin toxin A subunit (RTA) is an RNA-N-glycosidase which cleaves a specific adenine residue with eukaryotic 28S ribosomal RNA, leading to protein synthesis arrest and cell death.

There are currently no effective means to prevent the effects of ricin poisoning. The successful development of an effective vaccine against ricin toxin may act as a deterrent against the actual use of ricin as a biological weapon and could be used in rapid deployment scenarios in the event of a biological attack.

▶ **Read more on RiVax™ and ThermoVax™ at:** http://www.soligenix.com/news.aspx?titleId=456

New gene therapy approach offers better treatment of botulism exposure, other illnesses

Source: http://www.homelandsecuritynewswire.com/dr20140908-new-gene-therapy-approach-offers-better-treatment-of-botulism-exposure-other-illnesses

The current method to treat acute toxin poisoning is to inject antibodies, commonly produced in animals, to neutralize the toxin. This method, however, has challenges ranging from safety to difficulties in developing, producing and maintaining the anti-serums in large quantities.

New research led by Charles Shoemaker, Ph.D., professor in the Department of Infectious Disease and Global Health at Cummings School of Veterinary Medicine at Tufts University, shows that **gene therapy may offer significant advantages in prevention and treatment of botulism exposure over current methods.** The findings of the National Institutes of Health funded study appear in *PLOS One.*

A Tufts University release reports that Shoemaker has been studying gene therapy as a novel way to treat diseases such as botulism, a rare but serious paralytic illness caused by a nerve toxin that is produced by the bacterium *Clostridium botulinum.* Despite the relatively small number of botulism poisoning cases nationally, there are global concerns that the toxin can be produced easily and inexpensively for bioterrorism use. **Botulism, like *E. coli* food poisoning and *C. difficile* infection, is a toxin-mediated disease, meaning it occurs from a toxin that is produced by a microbial infection.**

Shoemaker's previously reported antitoxin treatments use proteins produced from the genetic material extracted from alpacas that were immunized against a toxin. **Alpacas, which are members of the camelid family, produce an unusual type of antibody that is particularly useful in developing effective, inexpensive antitoxin agents.** A small piece of the camelid antibody — called a **VHH** — can bind to and neutralize the botulism toxin. **The research team has found that linking two or more different toxin-neutralizing VHHs results in VHH-based neutralizing agents (VNAs) that have extraordinary antitoxin potency and can be produced as a single molecule in bacteria at low cost. Additionally, VNAs have a longer shelf life than traditional antibodies so they can be better stored until needed.**

The newly published *PLOS One* study assessed the long-term efficacy of the therapy and demonstrated that a single gene therapy treatment led to prolonged production of VNA in blood and protected the mice from subsequent exposures to C. botulinum toxin for up to several months. **Virtually all mice pretreated with VNA gene therapy survived when exposed to a normally lethal dose of botulinum toxin administered up to nine weeks later. Approximately 40 percent survived when exposed to this toxin as late as thirteen or seventeen weeks post-treatment.** With gene therapy the VNA genetic material is delivered to animals by a vector that induces the animals to produce their own antitoxin VNA proteins

over a prolonged period of time, thus preventing illness from toxin exposures.
The second part of the study showed that mice were rapidly protected from C. botulinum toxin exposure by the same VNA gene therapy, surviving even when treated ninety minutes after the toxin exposure.
"We envision this treatment approach having a broad range of applications such as protecting military personnel from biothreat agents or protecting the public from other toxin-mediated diseases such as *C. difficile* and Shiga toxin-producing *E. coli* infections," said Shoemaker, the paper's senior author. "More research is being conducted with VNA gene therapy and it's hard to deny the potential of this rapid-acting and long-lasting therapy in treating these and several other important illnesses."

— Read more in Jean Mukherjee et al., "Prolonged Prophylactic Protection from Botulism with a Single Adenovirus Treatment Promoting Serum Expression of a VHH-Based Antitoxin Protein," PLOSOne (29 August 2014)

Ebola orphans in Sierra Leone face isolation from hard-hit relatives

Source: http://www.theguardian.com/global-development/2014/sep/08/ebola-orphans-sierra-leone-isolation-families

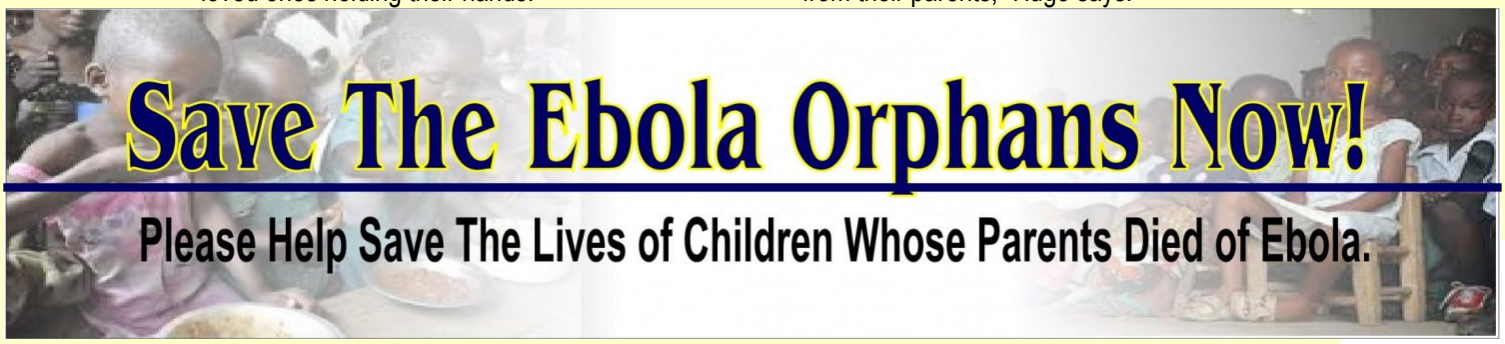
Hawa and Amidu Alieu have been taken in by their step-grandmother 'Mami', after their parents died of Ebola. Photograph: Monica Mark

On the sunny morning he was released from the Ebola treatment centre, Abraham was especially looking forward to seeing his mother again. For three weeks, the 14-year-old had lain feverish on a mattress as others around him succumbed in Kailahun, the remote forested region at the centre of Sierra Leone's Ebola outbreak. Abraham had beaten the odds.
"He was so excited about seeing his mother again," says Emily Veltus, the Médecins sans Frontières (MSF) health worker who had accompanied him on the bumpy drive along forest tracks to his home. More than a dozen family members had come out to welcome Abraham, Veltus recalls, then an uncle had shuffled forward. "Son, I'm sorry but your mother died two weeks ago from Ebola," he told Abraham. The boy sat down wordlessly.
In Sierra Leone, one of three west African nations hardest hit, the disease has sliced not only

through entire extended families but the kinship networks that traditionally support orphans in Africa. Abraham's uncle, who is already looking after three sets of orphaned relatives, said he would care for his nephew despite struggling to feed his enlarged family.

Many are less fortunate. Caught up in a perfect storm of poverty, fear and stigma amid the chaos of the epidemic, other orphaned children have been unable to trace relatives or have been abandoned. Extreme cases include that of 10-year-old Saah Exco, who was found naked and abandoned on a beach in neighbouring Liberia. He later died.

Part of the cruelty of Ebola is how the disease sows division; as it is spread through direct contact with bodily fluids, it means mothers no longer nurse infants; grandparents die without loved ones holding their hands.



"Interestingly, when you had the HIV pandemic, which caused many more orphans, 90% of them were absorbed by their [extended] families. But because of the stigma, that is not happening [here]," says Roeland Monasch, Sierra Leone's Unicef director.

Even in ordinary times, children are more likely to die before the age of five in Sierra Leone than in any other country in the world. Roughly a quarter of those who have caught Ebola are under 18, and about 100 children in Kailahun alone need to be rehoused at any given moment, according to Unicef. With schools closed indefinitely and scarce resources diverted to curbing the world's biggest outbreak, countless more may have slipped under the radar of authorities.

Many children reach the treatment centre dazed with pain or traumatised. Recently, a seven-year-old arrived after an 11-hour drive, during which her mother died.

"It's terrifying for young children," says Malcolm Hugo, a psychologist at the 80-bed centre where dozens of staff in anti-contamination suits work. Earlier that day, he had discovered that another seven-year-old survivor had been having nightmares since being released. "I remembered [that case] very clearly because his brother died in the night and he'd stayed with the body all night."

Yet bonds form even amid the misery. In a tent for those recovering, a talkative man wearing a heavy gold chain played up to amused doctors during the lunch break. "I'm the president of the Ebola centre!" he joked. Later though, when no one was watching, he gently encouraged a frail boy to finish his food. Mothers who have lost their own children sometimes care for young ones, doctors say.

"The hardest part of the job is telling parents their children have died, or separating children from their parents," Hugo says.

Seventeen-month-old Lansana Kamara was still being breastfed when his mother died. Health officials found a foster father for him while they attempted to trace his family, so far in vain. "I get sympathy. The whole family don die. [I felt sorry for him, he lost his whole family]," said Aboubacar, a 33-year-old carpenter cradling the child he has been caring for since July.

"Normally, people do want to take care of really vulnerable children," says Fatou Fomba, a child protection officer with Save the Children, one of the agencies working alongside the government. **But in this "era of Ebola", some families aren't coming forward to claim their children, because of either fear or the general chaos, she said, before breaking off to answer a phone call.**

A home was needed for a teenager, the medic said down the line. Did she have a family available by tomorrow? By the time the hour was up, three sets of children needed shelter.

Other pressing child welfare issues have been put on hold as agencies and the government struggle to rehouse the stream of child survivors, despite an emergency rapid registration of potential carers.
Crucial long-term funding hasn't materialised, Monasch says. A recent grant from the UK government has boosted the organisation, but "basically only local well-wishers are funding Unicef". For now, temporary carers receive rice, secondhand clothes for the children, toiletries and a small stipend, while regular financial help from the government and Unicef is being considered. The ministry of social welfare has opened a temporary five-room shelter for children in Kailahun.
Nevertheless, there are signs of hope, says Rosina Mahoi, a case officer with Unicef. "Even a man in the village will know about the 21 days [virus incubation period]. Now, people observe and see if the kids are OK. Based on that, they come around."
Growing acceptance came too late for 15-year-old Musu Allieu, whose parents both died of Ebola. Traumatised, she fled her step-grandmother's home, where she complained neighbours shunned them. Her two younger siblings coped better. Amidu, five, and Hawa, three, have been taken in by their step-grandmother.
As Mahoi visited one afternoon, Amidu waved shyly as Hawa bounded up, forcing her step-grandmother to shout out a reminder about the "no touching" rule in force in the town. "You know," she said, smiling, "people here now call her [Hawa] 'how are you' because she's always running up to everyone and asking, 'how are you?"

Johnson & Johnson accelerates Ebola vaccine program

Source: http://www.homelandsecuritynewswire.com/dr20140909-johnson-johnson-accelerates-ebola-vaccine-program

September 09 – Johnson & Johnson last week announced it will fast-track the development of a promising new combination vaccine regimen against Ebola and collaborate with its partners to address the current Ebola outbreak.
The accelerated vaccine program features a prime-boost regimen, in which one vector is used to prime and the other to boost the immune response. It consists of two vaccine components that are based on AdVac technology from Crucell N.V. (part of the Janssen pharmaceutical companies of Johnson & Johnson, based in the Netherlands) **and the MVA-BN technology from Bavarian Nordic** (a biotech company, based in Denmark). The program has received direct funding and is also utilizing vaccine preclinical services from the National Institute of Allergy and Infectious Diseases (NIAID), part of National Institutes of Health (NIH). Crucell will bring this development program forward, in collaboration with Bavarian Nordic and the NIAID, to allow for initiation of a clinical trial of this combined regimen in humans in early 2015.
Johnson & Johnson said the company's expedited vaccine development schedule is in response to the current Ebola outbreak in West Africa and is aligned with the World Health Organization's Ebola Response Roadmap, including its call to fast-track access to treatment and vaccine options to address the Ebola virus outbreak.
Johnson & Johnson also said that its multi-pronged approach includes:

- An intensive review of known pathways in Ebola pathophysiology to determine whether previously tested medicines can be used to help patients survive an Ebola infection, and
- Additional support to the non-profit organization Direct Relief International to facilitate the air transport of a variety of infection prevention products to Liberia and Sierra Leone.

"Patients are at the heart of everything we do. Our primary goal in this escalating Ebola epidemic is to assist governments in protecting health care workers, families and populations who are at high risk of being infected with Ebola as soon as possible in an effort to stop the disease from spreading further," said Paul Stoffels, M.D., Chief Scientific Officer of Johnson & Johnson. "With a strong heritage in collaborative partnerships and a proven track record in the rapid development and access of innovative

products, we aim to ultimately eradicate deadly diseases like Ebola and save lives around the world."

Crucell and Bavarian Nordic are both currently developing preventive vaccines against filoviruses, including Ebola virus, with direct funding and vaccine preclinical services from NIAID. In addition, the two companies have developed a combination regimen that harnesses the potency of both vaccines and could be used to elicit protective immunity against the Zaïre species of the Ebola virus, which is responsible for the current outbreak in West Africa. The combination vaccine provided complete protection of vaccinated macaques against disease and death after exposure to a highly virulent wildtype Ebola Zaire strain.

Based on these promising results, Bavarian Nordic, Crucell and NIAID intend to advance this development program to allow for initiation of a human trial in early 2015.

Johnson & Johnson notes that the combination regimen uses proven vaccine technology platforms from both companies that have shown to be immunogenic and safe when used in humans for other applications: to date more than 1,000 humans have received Crucell's adeno-platform based vaccine in clinical trials, while Bavarian Nordic's MVA-BN platform is the basis of the smallpox vaccine registered in Canada and Europe and stockpiled in the rest of the world with a safety record of use in more than 7,300 humans. In addition to the clinical advantage of the combination regimen, the collaboration also allows for faster production with each company taking on the production of one element of the combination regimen.

Crucell has been exploring vaccines as well as other related programs targeting diseases with potential widespread social impact in partnership with the NIH since 2002. This new research collaboration for a monovalent vaccine targeting the Zaire strain of the Ebola virus is part of an ongoing development program for a multivalent vaccine against all filoviruses that cause disease in humans, including Ebola and Marburg viruses.

"In light of the current emergency in West Africa and given the evident, huge unmet medical need, we are stepping up our efforts and accelerating the Ebola program currently in pre-clinical development," said Johan Van Hoof, M.D., Global Head, Infectious Diseases and Vaccines, Janssen and Managing Director, Crucell. "We recognize the urgency of the situation and the need to collaborate with multiple partners to develop treatment and preventive solutions for Ebola."

U.S. air marshal in quarantine after suspected Ebola syringe attack at Lagos airport

Source: http://www.homelandsecuritynewswire.com/dr20140909-u-s-air-marshal-in-quarantine-after-suspected-ebola-syringe-attack-at-lagos-airport

September 09 – **An American federal air marshal was placed in quarantine in Houston, Texas yesterday after being attacked Sunday night at the Lagos, Nigeria airport. The assailant wielded a syringe which contained an unknown substance, and was able to inject an unknown substance into the back of one of the air marshal's arms.**

ABC News reports that the air marshal, who was in Nigeria with a team of other marshals, was attacked when the group was in an unsecured area of the airport terminal in Lagos.

The marshal was able to board the United Airlines flight to Houston, where he was met by FBI agents and health workers from the Centers for Disease Control (CDC).

Fearing the syringe contained liquid contaminated with the Ebola virus, the authorities in Houston immediately put him into quarantine. The FBI said he was screened "on-scene… out of an abundance of caution."

An FBI spokesperson said, "The victim did not exhibit any signs of illness during the flight and was transported to a hospital upon landing for further testing. None of the testing conducted has indicated a danger to other passengers."

The infectious agents would not immediately manifest or make the patient contagious.

ABC News also reports that while the unknown assailant escaped,

Nigerian officials said the other air marshals on the team secured the needle and brought it on the flight for testing in the United States.
Officials noted that U.S. air marshals travel undercover in plain clothes and an attacker would not be able to identify his target as an American law enforcement agent.
"While there is no immediate intelligence to confirm this was a targeted attack, this is our reminder that international cowards will attempt to take sneaky lethal shots at our honorable men and women abroad," said Jon Adler, the national president of the Federal Law Enforcement Officers Association.
The Lagos airport has been considered a possible target for the Islamist group Boko Haram.

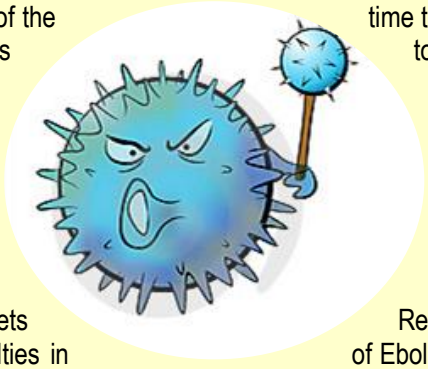
Stabbing With Syringe in Nigeria Raises Concerns of Ebola as Weapon

By Andrew Pollack
Source:http://topics.nytimes.com/top/reference/timestopics/people/p/andrew_pollack/index.html?action=click&contentCollection=Africa&module=Byline&region=Header&pgtype=article

A federal air marshal was stabbed with a syringe at the airport in Lagos, Nigeria, on Sunday, an incident that is raising concerns about whether the deadly Ebola virus could be harvested from the widespread outbreak in West Africa and used as a bioweapon.
Initial tests on the substance in the syringe, conducted at a special biodefense forensics laboratory at Fort Detrick, Md., did not detect the virus or any other threatening agent, a spokesman for the Federal Bureau of Investigation, Christos Sinos, said Wednesday.
The marshal, who arrived in Houston on Monday, was examined there and has been released from the hospital with no sign of illness, according to a spokesman for the Transportation Security Administration.
Experts say it would be extremely hard for a group to grow large amounts of the virus and turn it into a weapon that could be dispersed over a wide area, infecting and killing many people.
"The bad guys are more likely to kill themselves trying to develop it," said Dr. Philip K. Russell, a retired major general who was the commander of the Army Medical Research and Development Command.
But it is harder to totally discount the possibility of a smaller attack, perhaps like the one at the airport in Lagos. Another possibility would be suicide infectors, people who deliberately infected themselves and carried the virus out of the epidemic zone to sicken others.
"To truly isolate the virus takes a lot of resources," said Dr. Ryan C. W. Hall, a Florida psychiatrist who has written about the psychiatric impacts of bioterrorism attacks. "But if you have people who are willing to die and willing to inject themselves with the blood of someone who has been infected, you don't need a Biosafety Level 4 lab," he said, referring to the special containment facilities used to work with the most deadly pathogens.
Such an attack would not kill many, or even any, people in an advanced country like the United States. **But it could strike terror and cause economic disruption.** "Someone gets sick on an airplane, conceivably everyone on that airplane has to be quarantined," said Dr. Robert Kadlec, who was special assistant on biodefense policy to President George W. Bush.
The United States government considers Ebola and other hemorrhagic fever viruses to be among the most serious potential bioterrorism agents, along with those that cause smallpox, anthrax, botulism, plague and tularemia.
"It's not very contagious compared to things like plague, but it does have high lethality and could cause fear and terror," said Dr. Amesh Adalja, a senior associate at the Center for Health Security, which is affiliated with the University of Pittsburgh Medical Center.
Most of the experimental drugs and vaccines now being considered for use in Africa's Ebola outbreak have been developed in whole or in part with United States government biodefense funding, including ZMapp, the drug that appeared to help two American aid workers who were stricken with Ebola in Liberia.
Before it killed 13 people by unleashing nerve gas in the

Tokyo subways in 1995, the **Japanese cult Aum Shinrikyo traveled to Zaire, now known as the Democratic Republic of Congo. The trip was ostensibly a medical aid mission, but the real intent was to collect Ebola samples, according to a congressional investigation. It does not appear the cult succeeded in its quest.**

The Soviet Union tried to develop a weapon using Ebola, but dropped the effort in favor of the closely related Marburg virus, said Raymond A. Zilinskas, director of the chemical and biological weapons nonproliferation program at the Monterey Institute of International Studies.



Dr. Zilinskas, who is a co-author of "The Soviet Biological Weapons Program: A History" (Harvard University Press, 2012), said the Soviets might have encountered difficulties in mass producing Ebola. He said they did manage to mass produce the Marburg virus in a form that could be stable if dispersed through the air, but he doubted that terrorists could do the same.

"You are talking about highly capable people working on it for years," he said. "That's not terrorists."

A terrorist could expose himself to the infection, for example by rubbing against a corpse or by using bodily fluids from an infected person. That could be accomplished in West Africa, where many people are dying not in hospitals.

Ebola hemorrhagic fever has an **incubation period estimated at two to 21 days,** according to the World Health Organization. That means that many people would not have symptoms for a week or more after being exposed.

"So they could get on an airplane and get through customs and not be symptomatic and be in downtown Minneapolis before we know it," Dr. Hall said.

Dr. Adalja said such a situation was not that plausible. He said that infected people are not contagious until they have symptoms, by which time they might not have the strength to go to a public place to infect others. And it would be hard for a suicide infector to spread the disease to others, since contact with bodily fluids is required.

"You have to literally vomit on them," he said.

Researchers say that the inability of Ebola to be transmitted from person to person by air would also limit its effectiveness as a weapon of mass destruction. It is also not clear how stable the virus would be when exposed to ultraviolet light. Anthrax, by contrast, can be dispersed through the air in the form of very hardy spores.

One study by Army researchers showed that when forced to inhale Ebola virus, monkeys could be infected.

Another study published by Canadian scientists two years ago found that pigs could transmit the virus through the air to monkeys in nearby cages.

***Andy Pollack** has covered the business and science of biotechnology since 2000. He joined The Times in 1981, covering computers and telecommunications, after three years at The Dallas Times-Herald. He previously covered technology and other business while based in San Francisco from 1985 to 1992, Tokyo from 1992 to 1997 and Los Angeles from 1997 to 2000. He still works out of the Los Angeles bureau. A native of Queens, New York, Andy earned a bachelor's degree from Princeton and a master's degree in civil and environmental engineering from the Massachusetts Institute of Technology.*

Bacteria from bees as possible alternative to antibiotics

Source: http://www.homelandsecuritynewswire.com/dr20140911-bacteria-from-bees-as-possible-alternative-to-antibiotics

Thirteen lactic acid bacteria found in the honey stomach of bees have shown promising results in a series of studies. The group of bacteria counteracted antibiotic-resistant MRSA in lab experiments. The bacteria, mixed into honey, have healed horses with persistent wounds. The formula has previously been

shown to protect against bee colony collapse.
Raw honey has been used against infections for millennia, before honey — as we now know it — was manufactured and sold in stores. So what is the key to its' antimicrobial properties?
Researchers at Lund University in Sweden have identified a unique group of thirteen lactic acid bacteria found in fresh honey, from the honey stomach of bees.

The bacteria produce a myriad of active antimicrobial compounds. These lactic acid bacteria have now been tested on severe human wound pathogens such as methicillin-resistant *Staphylococcus aureus* (MRSA), *Pseudomonas aeruginosa* and vancomycin-resistant *Enterococcus* (VRE), among others. When the lactic acid bacteria were applied to the pathogens in the laboratory, it counteracted all of them.
A Lund University release reports that while the effect on human bacteria has only been tested in a lab environment thus far, the lactic acid bacteria has been applied directly to horses with persistent wounds. The LAB was mixed with honey and applied to ten horses; where the owners had tried several other methods to no avail. All of the horses' wounds were healed by the mixture.
The researchers believe the secret to the strong results lie in the broad spectrum of active substances involved.
"Antibiotics are mostly one active substance, effective against only a narrow spectrum of bacteria. When used alive, these 13 lactic acid bacteria produce the right kind of antimicrobial compounds as needed, depending on the threat. It seems to have worked well for millions of years of protecting bees' health and honey against other harmful microorganisms.
Since store-bought honey does not contain the living lactic acid bacteria, however, many of its unique properties have been lost in recent times", explains Tobias Olofsson.
The next step is further studies to investigate wider clinical use against topical human infections as well as on animals.
The findings have implications for developing countries, where fresh honey is easily available, but also for Western countries where antibiotic resistance is seriously increasing.

— Read more in Tobias C Olofsson et al., "Lactic acid bacterial symbionts in honeybees — an unknown key to honey's antimicrobial and therapeutic activities," International Wound Journal *(8 September 2014); and Éile Butler et al., "A pilot study investigating lactic acid bacterial symbionts from the honeybee in inhibiting human chronic wound pathogens,"* International Wound Journal *(8 September 2014)*

The virus detective who discovered Ebola in 1976

By Rob Brown (BBC World Service)
Source: http://www.bbc.com/news/magazine-28262541

Nearly 40 years ago, a young Belgian scientist travelled to a remote part of the Congolese rainforest - his task was to help find out why so many people were dying from an unknown and terrifying disease.
In September 1976, a package containing a shiny, blue thermos flask arrived at the Institute of Tropical Medicine in Antwerp, Belgium.
Working in the lab that day was Peter Piot, a 27-year-old scientist and medical school graduate training as a clinical microbiologist.
"It was just a normal flask like any other you would use to keep coffee warm," recalls Piot, now Director of the London School of Hygiene and Tropical Medicine.
But this thermos wasn't carrying coffee - inside was an altogether different cargo. Nestled amongst a few melting ice cubes were vials of blood along with a note.

It was from a Belgian doctor based in what was then Zaire, now the Democratic Republic of Congo - his handwritten message explained that the blood was that of a nun, also from Belgium, who had fallen ill with a mysterious illness which he couldn't identify.

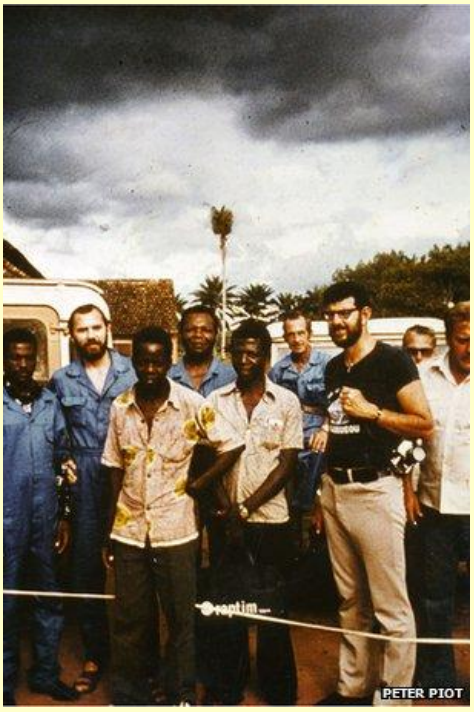
Piot (right), at the Institute of Tropical Medicine, Antwerp in 1976

This unusual delivery had travelled all the way from Zaire's capital city Kinshasa, on a commercial flight, in one of the passengers' hand luggage.

"When we opened the thermos, we saw that one of the vials was broken and blood was mixing with the water from the melted ice," says Piot.

He and his colleagues were unaware just how dangerous that was. As the blood leaked into the icy water so too did a deadly unknown virus.

The samples were treated like numerous others the lab had tested before, but when the scientists placed some of the cells under an electron microscope they saw something they didn't expect.



"We saw a gigantic worm like structure - gigantic by viral standards," says Piot. "It's a very unusual shape for a virus, only one other virus looked like that and that was the Marburg virus."

The Marburg virus was first recognised in 1967 when 31 people became ill with haemorrhagic fever in the cities of Marburg and Frankfurt in Germany and in Belgrade, the capital of Yugoslavia. This Marburg outbreak was associated with laboratory staff who were working with infected monkeys imported from Uganda - seven people died.

Piot (second from left) and the team in Yambuku in 1976

Piot knew how serious Marburg could be - but after consulting experts around the world he got confirmation that what he was seeing under the microscope wasn't Marburg - this was something else, something never seen before.

"It's hard to describe but the main emotion I had was one of real, incredible excitement," says Piot. "There was a feeling of being very privileged, that this was a moment of discovery."

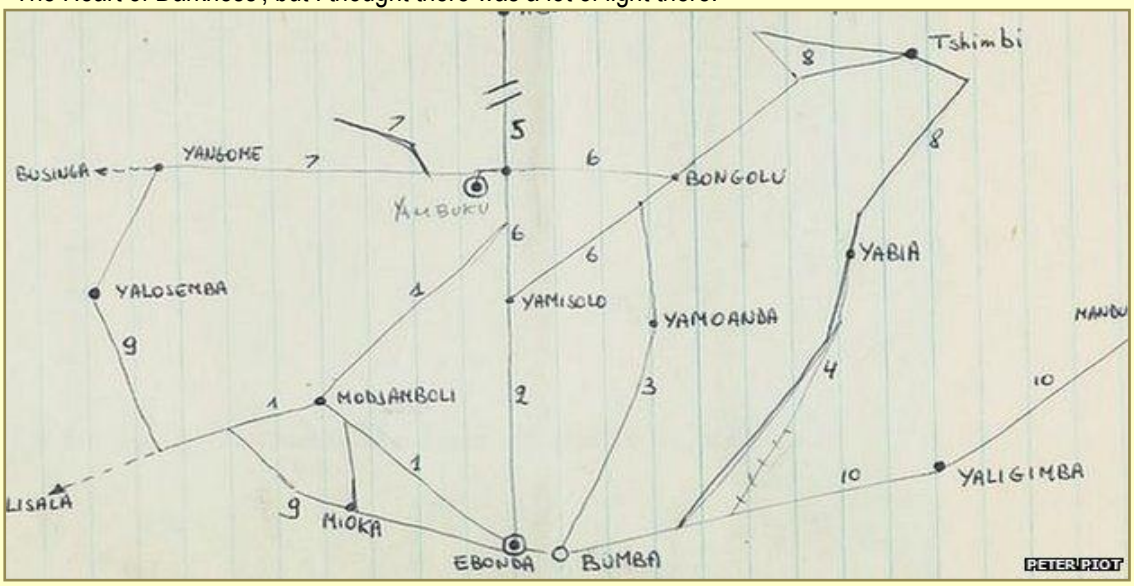
News had reached Antwerp that the nun, who was under the care of the doctor in Zaire, had died. The team also learnt that many others were falling ill with this mysterious illness in a remote area in the north of the country - their symptoms included fever, diarrhoea and vomiting followed by bleeding and eventually death.

Two weeks later Piot, who had never been to Africa before, was on a flight to Kinshasa. "It was an overnight flight and I couldn't sleep. I was so excited about seeing Africa for the first time, about investigating this new virus and about stopping the epidemic."

The journey didn't end in Kinshasa - the team had to travel to the centre of the outbreak, a village in the equatorial rainforest, about 1,000km (620 miles) further north.

"The personal physician of President Mobutu, the leader of Zaire at that time, arranged a C-130 transport aircraft for us," recalls Piot. They loaded a Landrover, fuel and all the equipment they needed on to the plane.

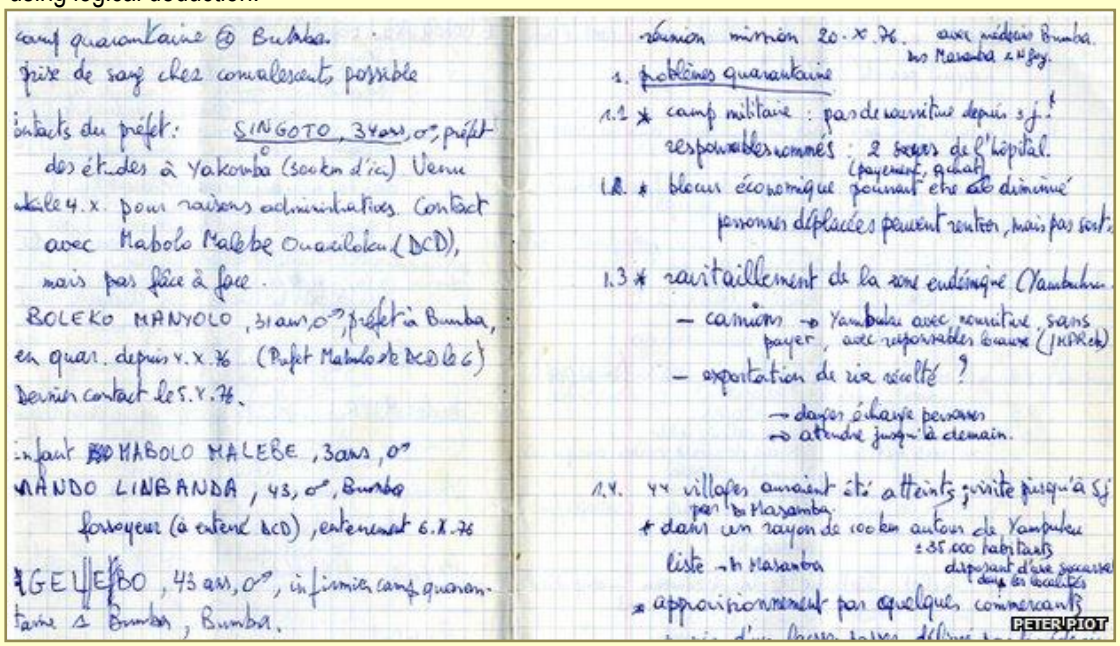
When the C-130 landed in Bumba, a river port situated on the northernmost point of the Congo River, the fear surrounding the mysterious disease was tangible. Even the pilots didn't want to hang around for long - they kept the airplane's engines running as the team unloaded their kit.
"As they left they shouted 'Adieu,'" says Piot. "In French, people say 'Au Revoir' to say 'See you again', but when they say 'Adieu' - well, that's like saying, 'We'll never see you again.'"
Standing on the tarmac watching the plane leave, facing a deadly unknown virus in an unfamiliar place, some people might have regretted the decision to go there.
"I wasn't scared. The excitement of discovery and wanting to stop the epidemic was driving everything. We heard far more people were dying from the disease than we originally thought and we wanted to get to work," Piot says.
The curiosity and sense of adventure that brought Piot to this point had been ignited many years earlier when he was a young boy growing up in a small rural village in the Flanders region of Belgium.
A museum near Piot's home was dedicated to a local saint who worked with leprosy patients, and it was here that he got his first glimpse into the world of disease and microbiology.
"I decided one day to cycle to the museum. The old pictures I saw there of those suffering from leprosy fascinated me," he says. "That sparked my interest in medicine - it gave me a thirst for scientific knowledge, a desire to help people and I hoped it would give me a passport to the world."
It did give Piot a passport to the world. The team's final destination was the village of Yambuku - about 120km (75 miles) from Bumba, where the plane had left them.
Yambuku was home to an old Catholic mission - it had a hospital and a school run by a priest and nuns, all of them from Belgium.
"The area was beautiful. The mission was surrounded by lush rainforest and the earth was red - the nature was incredibly rich but the people were so poor," says Piot. "Joseph Conrad called that place 'The Heart of Darkness', but I thought there was a lot of light there."



To investigate the spread of the virus the team drew maps and plotted each village they visited

The beauty of Yambuku belied the horror that was unfolding for the people that lived there.
When Piot arrived, the first people he met were a group of nuns and a priest who had retreated to a guesthouse and established their own cordon sanitaire - a barrier used to prevent the spread of disease.
There was a sign on the cord, written in the local Lingala language that read, "Please stop, anybody who crosses here may die."
"They had already lost four of their colleagues to the disease," says Piot. "They were praying and waiting for death."
Piot jumped over the cordon and told them that the team would help them and stop the epidemic. "When you are 27, you have all this confidence," he says.

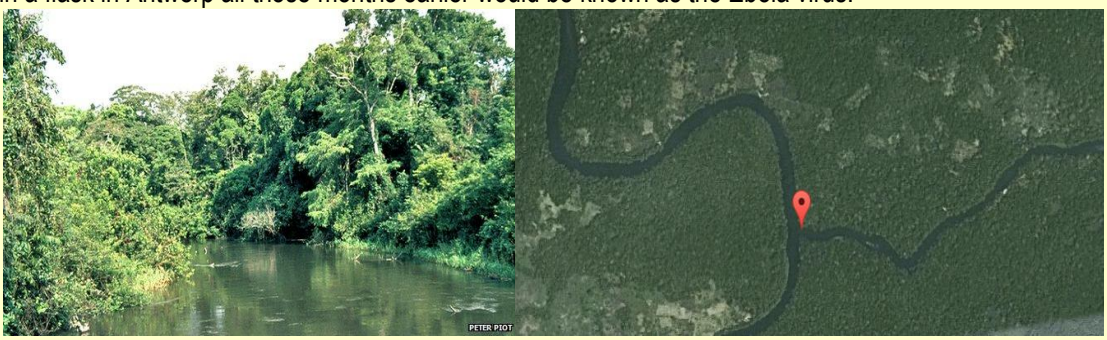
The priority was to stop the epidemic, but first the team needed to find out how this virus was moving from person to person - by air, in food, by direct contact or spread by insects. "We had to start asking questions. It was really like a detective story," says Piot.
These were the three questions they asked:
• How did the epidemic evolve? Knowing when each person caught the virus gave clues to what kind of infection this was - from here the story of the virus began to emerge.
• Where did the infected people come from? The team visited all the surrounding villages and mapped out the number of infections - it was clear that the outbreak was closely related to areas served by the local hospital.
• Who gets infected? The team found that more women than men caught the disease and particularly women between 18 and 30 years old - it turned out that many of the women in this age group were pregnant and many had attended an antenatal clinic at the hospital.
The mystery of the virus was beginning to unravel.
The team then discovered that the women who attended the antenatal clinic all received a routine injection. Each morning, just five syringes would be distributed, the needles would be reused and so the virus was spread between the patients.
"That's how we began to figure it out," recalls Piot. "You do it by talking, looking at the statistics and using logical deduction."



Many people were interviewed and detailed notes were taken during the investigation

The team also noticed that people were getting ill after attending funerals. When someone dies from Ebola, the body is full of the virus - any direct contact, such as washing or preparation of the deceased without protection can be a serious risk.
The next step was to stop the transmission of the virus.
"We systematically went from village to village and if someone was ill they would be put into quarantine," says Piot. "We would also quarantine anyone in direct contact with those infected and we would ensure everyone knew how to correctly bury those who had died from the virus."
The closure of the hospital, the use of quarantine and making sure the community had all the necessary information eventually brought an end to the epidemic - but nearly 300 people died.
Piot and his colleagues had learned a lot about the virus during three months in Yambuku, but it still lacked a name.
"We didn't want to name it after the village, Yambuku, because it's so stigmatising. You don't want to be associated with that," says Piot.

The team decided to name the virus after a river. They had a map of Zaire, although not a very detailed one, and the closest river they could see was the Ebola River. From that point on, the virus that arrived in a flask in Antwerp all those months earlier would be known as the Ebola virus.



The Ebola River in 1976 – map below (red pin)

In February 2014, Piot returned to Yambuku for only the second time since 1976, to mark his 65th birthday. He met Sukato Mandzomba, one of the few who caught the virus in 1976 and survived. "It was fantastic to meet him again, it was a very moving moment," says Piot.

Back then, Mandzomba was a nurse in the local hospital and could speak French so the pair had managed to build up a rapport. "He's still living in Yambuku and still working in the hospital - he's now running the lab there and it's impeccable. I was really impressed," Piot says.

It's 38 years since that initial outbreak and the world is now experiencing its worst Ebola epidemic ever. So far more than 600 people have died in the West African countries of Guinea, Liberia and Sierra Leone. The current situation has been called unprecedented, the spread of the disease across three countries making it more complicated to deal with than ever before.

In the absence of any vaccine or cure, the advice for this outbreak is much the same as it was in the 1970s. "Soap, gloves, isolating patients, not reusing needles and quarantining the contacts of those who are ill - in theory it should be very easy to contain Ebola," says Piot.

In practice though, other factors can make fighting an Ebola outbreak a difficult task. People who become ill and their families may be stigmatised by the community - resulting in a reluctance to come forward for help. Cultural beliefs lead some to think the disease is caused by witchcraft, while others are hostile towards health workers.

"We shouldn't forget that this is a disease of poverty, of dysfunctional health systems - and of distrust," says Piot.

For this reason, information, communication and involvement of community leaders are as important as the classical medical approach, he argues.
Ebola changed Piot's life - following the discovery of the virus, he went on to research the Aids epidemic in Africa and became the founding executive director of the UNAIDS organisation.
"It led me to do things I thought only happened in books. It gave me a mission in life to work on health in developing countries," he says.
"It was not only the discovery of a virus but also of myself."

Largest Liberian Newspaper: US Government Manufactured Ebola, AIDS Virus

By Dr. Cyril Broderick

Source: http://washington.cbslocal.com/2014/09/11/largest-liberian-newspaper-us-government-manufa ctured-ebola-aids-virus/

Dear World Citizens,

I have read a number of articles from your Internet outreach as well as articles from other sources about the casualties in Liberia and other West African countries about the human devastation caused by the Ebola virus. About a week ago, I read an article published in the Internet news summary publication of the Friends of Liberia that said that there was an agreement that the initiation of the Ebola outbreak in West Africa was due to the contact of a two-year old child with bats that had flown in from the Congo. That report made me disconcerted with the reporting about Ebola, and it stimulated a response to the "Friends of Liberia," saying that African people are not ignorant and gullible, as is being implicated. A response from Dr. Verlon Stone said that the article was not theirs, and that "Friends of Liberia" was simply providing a service. He then asked if he could publish my letter in their Internet forum. I gave my permission, but I have not seen it published. Because of the widespread loss of life, fear, physiological trauma, and despair among Liberians and other West African citizens, it is incumbent that I make a contribution to the resolution of this devastating situation, which may continue to recur, if it is not properly and adequately confronted. I will address the situation in five (5) points:

1. EBOLA IS A GENETICALLY MODIFIED ORGANISM (GMO)

Horowitz (1998) was deliberate and unambiguous when he explained the threat of new diseases in his text, Emerging Viruses: AIDS and Ebola - Nature, Accident or Intentional. In his interview with Dr. Robert Strecker in Chapter 7, the discussion, in the early 1970s, made it obvious that the war was between countries that hosted the KGB and the CIA, and the 'manufacture' of 'AIDS-Like Viruses' was clearly directed at the other. In passing during the Interview, mention was made of Fort Detrick, "the Ebola Building," and 'a lot of problems with strange illnesses' in "Frederick [Maryland]." By Chapter 12 in his text, he had confirmed the existence of an American Military-Medical-Industry that conducts biological weapons tests under the guise of administering vaccinations to control diseases and improve the health of "black Africans overseas." The book is an excellent text, and all leaders plus anyone who has interest in science, health, people, and intrigue should study it. I am amazed that African leaders are making no acknowledgements or reference to these documents.

2. EBOLA HAS A TERRIBLE HISTORY, AND TESTING HAS BEEN SECRETLY TAKING PLACE IN AFRICA

I am now reading The Hot Zone, a novel, by Richard Preston (copyrighted 1989 and 1994); it is heart-rending. The prolific and prominent writer, Steven King, is quoted as saying that the book is "One of the most horrifying things I have ever read. What a remarkable piece of work." As a New York Times bestseller, The Hot Zone is presented as "A terrifying true story." Terrifying, yes, because the pathological description of what was found in animals killed by the Ebola virus is what the virus has been doing to citizens of Guinea, Sierra Leone and Liberia in its most recent outbreak: Ebola virus destroys peoples' internal organs and the body deteriorates rapidly after death. It softens and the tissues turn into jelly, even if it is refrigerated to keep it cold.

Spontaneous liquefaction is what happens to the body of people killed by the Ebola virus! The author noted in Point 1, Dr. Horowitz, chides The Hot Zone for writing to be politically correct; I understand because his book makes every effort to be very factual. The 1976 Ebola incident in Zaire, during President Mobutu Sese Seko, was the introduction of the GMO Ebola to Africa.

3. SITES AROUND AFRICA, AND IN WEST AFRICA, HAVE OVER THE YEARS BEEN SET UP FOR TESTING EMERGING DISEASES, ESPECIALLY EBOLA

The World Health Organization (WHO) and several other UN Agencies have been implicated in selecting and enticing African countries to participate in the testing events, promoting vaccinations, but pursuing various testing regiments. The August 2, 2014 article, West Africa: What are US Biological Warfare Researchers Doing in the Ebola Zone? by Jon Rappoport of Global Research pinpoints the problem that is facing African governments.

Obvious in this and other reports are, among others:

(a) **The US Army Medical Research Institute of Infectious** Diseases (USAMRIID), a well-known centre for bio-war research, located at Fort Detrick, Maryland;
(b) **Tulane University, in New Orleans, USA**, winner of research grants, including a grant of more than $7 million the National Institute of Health (NIH) to fund research with the Lassa viral hemorrhagic fever;
(c) The **US Center for Disease Control** (CDC);
(d) **Doctors Without Borders** (also known by its French name, Medicins Sans Frontiers);
(e) **Tekmira,** a Canadian pharmaceutical company;
(f) The UK's **GlaxoSmithKline**; and
(g) The **Kenema Government Hospital** in Kenema, Sierra Leone.

Reports narrate stories of the US Department of Defense (DoD) funding Ebola trials on humans, trials which started just weeks before the Ebola outbreak in Guinea and Sierra Leone. The reports continue and state that the DoD gave a contract worth $140 million dollars to Tekmira, a Canadian pharmaceutical company, to conduct Ebola research. This research work involved injecting and infusing healthy humans with the deadly Ebola virus. Hence, the DoD is listed as a collaborator in a "First in Human" Ebola clinical trial (NCT02041715, which started in January 2014 shortly before an Ebola epidemic was declared in West Africa in March. Disturbingly, many reports also conclude that the US government has a viral fever bioterrorism research laboratory in Kenema, a town at the epicentre of the Ebola outbreak in West Africa. The only relevant positive and ethical olive-branch seen in all of my reading is that Theguardian.com reported, "The US government funding of Ebola trials on healthy humans comes amid warnings by top scientists in Harvard and Yale that such virus experiments risk triggering a worldwide pandemic." That threat still persists.

4. THE NEED FOR LEGAL ACTION TO OBTAIN REDRESS FOR DAMAGES INCURRED DUE TO THE PERPETUATION OF INJUSTICE IN THE DEATH, INJURY AND TRAUMA IMPOSED ON LIBERIANS AND OTHER AFRICANS BY THE EBOLA AND OTHER DISEASE AGENTS.

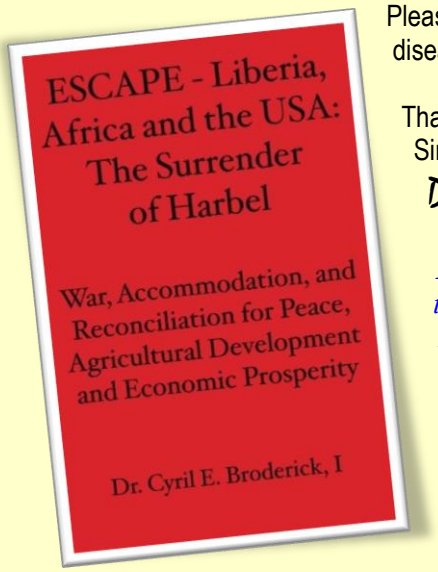
The U. S., Canada, France, and the U. K. are all implicated in the detestable and devilish deeds that these Ebola tests are. There is the need to pursue criminal and civil redress for damages, and African countries and people should secure legal representation to seek damages from these countries, some corporations, and the United Nations. Evidence seems abundant against Tulane University, and suits should start there. Yoichi Shimatsu's article, The Ebola Breakout Coincided with UN Vaccine Campaigns, as published on August 18, 2014, in the Liberty Beacon.

5. AFRICAN LEADERS AND AFRICAN COUNTRIES NEED TO TAKE THE LEAD IN DEFENDING BABIES, CHILDREN, AFRICAN WOMEN, AFRICAN MEN, AND THE ELDERLY. THESE CITIZENS DO NOT DESERVE TO BE USED AS GUINEA PIGS!

Africa must not relegate the Continent to become the locality for disposal and the deposition of hazardous chemicals, dangerous drugs, and chemical or biological agents of

emerging diseases. There is urgent need for affirmative action in protecting the less affluent of poorer countries, especially African citizens, whose countries are not as scientifically and industrially endowed as the United States and most Western countries, sources of most viral or bacterial GMOs that are strategically designed as biological weapons. It is most disturbing that the U. S. Government has been operating a viral hemorrhagic fever bioterrorism research laboratory in Sierra Leone. Are there others? Wherever they exist, it is time to terminate them. If any other sites exist, it is advisable to follow the delayed but essential step: Sierra Leone closed the US bioweapons lab and stopped Tulane University for further testing.

The world must be alarmed. All Africans, Americans, Europeans, Middle Easterners, Asians, and people from every conclave on Earth should be astonished. African people, notably citizens more particularly of Liberia, Guinea and Sierra Leone are victimized and are dying every day. Listen to the people who distrust the hospitals, who cannot shake hands, hug their relatives and friends. Innocent people are dying, and they need our help. The countries are poor and cannot afford the whole lot of personal protection equipment (PPE) that the situation requires. The threat is real, and it is larger than a few African countries. The challenge is global, and we request assistance from everywhere, including China, Japan, Australia, India, Germany, Italy, and even kind-hearted people in the U.S., France, the U.K., Russia, Korea, Saudi Arabia, and anywhere else whose desire is to help. The situation is bleaker than we on the outside can imagine, and we must provide assistance however we can. To ensure a future that has less of this kind of drama, it is important that we now demand that our leaders and governments be honest, transparent, fair, and productively engaged. They must answer to the people. Please stand up to stop Ebola testing and the spread of this dastardly disease.



Thank you very much.
Sincerely,

Dr. Cyril E. Broderick, Sr.

***Dr. Broderick** is a former professor of Plant Pathology at the University of Liberia's College of Agriculture and Forestry. He is also the former Observer Farmer in the 1980s. It was from this column in our newspaper, the Daily Observer, that Firestone spotted him and offered him the position of Director of Research in the late 1980s. In addition, he is a scientist, who has taught for many years at the Agricultural College of the University of Delaware.*

American Ebola-infected doctors receive blood transfusions

Source: http://www.presstv.ir/detail/2014/09/13/378565/ebola-patients-get-blood-transfusions/

September 13 – **Two American doctors infected by the Ebola virus have reportedly received blood transfusions from survivors.**

The logic behind the treatment is that an Ebola survivor is stocked with vital antibodies against the deadly virus, latest reports say.

Jeffrey Klausner, professor of medicine at the University of California, Los Angeles, said, "In the very old days horse serum was used a source of antibodies to treat certain infections."

The technique of using survivors' blood as a remedy has been advocated by the UN health agency, the World Health Organization (WHO). Some medical experts, however, say that the method may carry some health hazards.

Although the treatment is commonly practiced in developed countries, it is difficult to use it in Africa, said Francois Bricaire, the former head of infectious and tropical diseases at the Pitie Salpetriere Hospital in Paris.
"You have to make sure the serum is safe to use first, to avoid spreading HIV or hepatitis," he added.
The development comes as latest figures by the WHO show that the death toll from the Ebola outbreak in the West African countries has risen to over 2,400 from nearly 4,800 cases.
Guinea, Liberia and Sierra Leone are the worst hit countries, while Nigeria and the Democratic Republic of Congo have also been affected by the virus.
Ebola is a form of hemorrhagic fever whose symptoms are diarrhea, vomiting and bleeding. The virus spreads through direct contact with infected blood, feces or sweat. It can be also spread through sexual contact or the unprotected handling of contaminated corpses.

Treatment of Ebola Hemorrhagic Fever with Blood Transfusions from Convalescent Patients

By K. Mupapa, M. Massamba, K. Kibadi, et al.
Kinshasa University, Ministry of Public Health, and Kikwit General Hospital, Kikwit, and National Institute for Biomedical Research, Kinshasa, Democratic Republic of the Congo; Institute of Tropical Medicine, Antwerp, Belgium
Source (**full paper**): http://jid.oxfordjournals.org/content/179/Supplement_1/S18.long

Abstract
Between 6 and 22 June 1995, 8 patients in Kikwit, Democratic Republic of the Congo, who met the case definition used in Kikwit for Ebola (EBO) hemorrhagic fever, were transfused with blood donated by 5 convalescent patients. The donated blood contained IgG EBO antibodies but no EBO antigen. EBO antigens were detected in all the transfusion recipients just before transfusion. The 8 transfused patients had clinical symptoms similar to those of other EBO patients seen during the epidemic. All were seriously ill with severe asthenia, 4 presented with hemorrhagic manifestations, and 2 became comatose as their disease progressed. Only 1 transfused patient (12.5%) died; this number is significantly lower than the overall case fatality rate (80%) for the EBO epidemic in Kikwit and than the rates for other EBO epidemics. The reason for this low fatality rate remains to be explained. The transfused patients did receive better care than those in the initial phase of the epidemic. Plans should be made to prepare for a more thorough evaluation of passive immune therapy during a new EBO outbreak.

Patient	Age (years)	No. of days between onset of symptoms and transfusion	Blood volume (cm^3)	Received blood from donor no.	Outcome
1	27	7	400	1	Survived
2	12	11	150	2	Survived
3	15	13	150	3	Survived
4	54	9	250	2	Survived
5	44	15	250	4	Survived
6	25	13	250	4	Survived
7	40	11	450	5	Survived
8	48	4	400	2	Died

J Infect Dis. (1999) 179 (Supplement 1): S18-S23.

Ninja polymers

Source: http://www.research.ibm.com/articles/nanomedicine.shtml#fbid=J5eaC8yvMdA

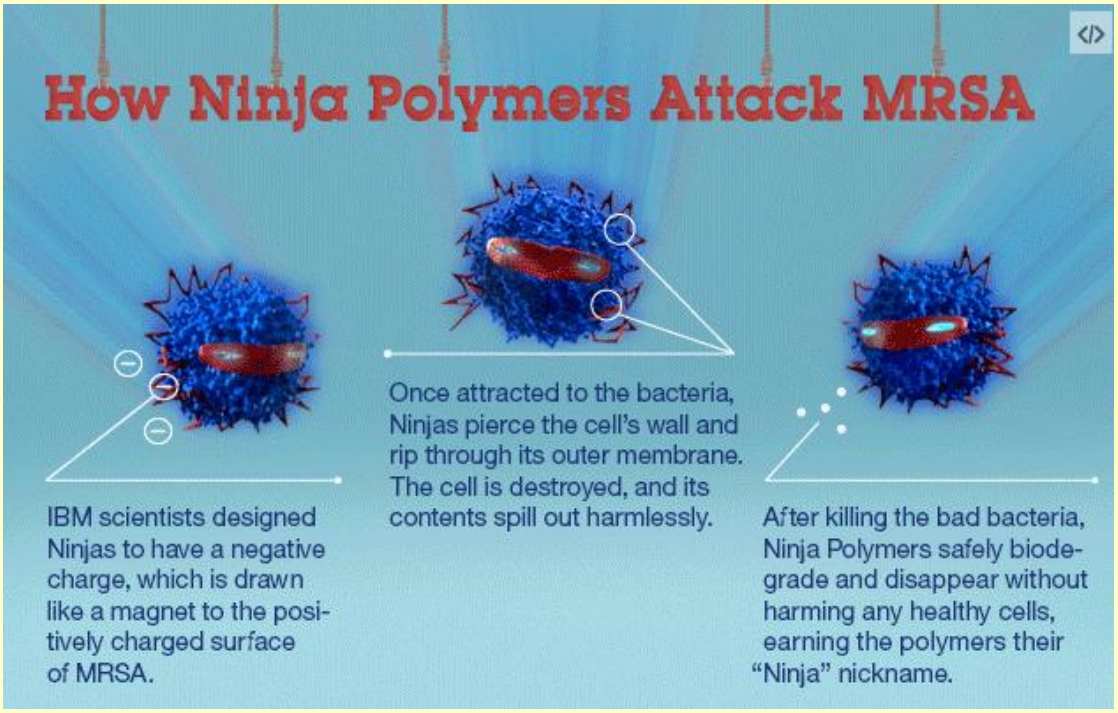
For decades, bacteria like the stubborn methicillin-resistant Staphylococcus aureus (**MRSA**) have concerned gym goers, hospital patients and staff, and parents of school children. What's particularly worrisome is that MRSA is not contained and killed by commonly available antibiotics. So, the bacteria can produce painful and sometimes deadly results for those who come in contact with it. **In the United States alone, MRSA kills more than 19,000 people a year.** Fortunately, a team of scientists at IBM Research - Almaden have drawn upon years of expertise in semiconductor technology and material discovery to crack the code for safely destroying the bacteria.

Ninja polymers

The IBM nanomedicine polymer program has looked to existing chip development research done at IBM, which identified specific materials that, when chained together, produced an electrostatic charge that allows microscopic etching on a wafer to be done at a much smaller scale.

This newfound knowledge that characterization of materials could be manipulated at the atomic level to control their movement inspired the team to see what else they could do with these new kinds of polymer structures. They started with MRSA.

The outcome of that experiment was the creation of what are now playfully known as "ninja polymers" - sticky nanostructures that move quickly to target infected cells in the body, destroy the harmful content inside without damaging healthy cells in the area, and then disappear by biodegrading.



"The mechanism through which [these polymers] fight bacteria is very different from the way an antibiotic works," explains Jim Hedrick, a polymer chemist in IBM Research. "They try to mimic what the immune system does: the polymer

attaches to the bacteria's membrane and then facilitates destabilization of the membrane. It falls apart, everything falls out and there's little opportunity for it to develop resistance to these polymers."

Creating a hydrogel from the polymers

Through the precise tailoring of the ninja polymers, researchers were able to create macromolecules - molecular structures containing a large number of atoms - which combine water solubility, a positive charge, and biodegradability. When mixed with water and heated to normal body temperature, the polymers self-assemble, swelling into a synthetic hydrogel that is easy to manipulate.

When applied to contaminated surfaces, the hydrogel's positive charge attracts negatively charged microbial membranes, like stars and planets being pulled into a black hole. However, unlike other antimicrobials that target the internal machinery of bacteria to try to prevent it from replicating, this hydrogel destroys the bacteria by rupturing the bacteria's membrane, rendering it completely unable to regenerate or spread.

The hydrogel is comprised of more than 90 percent water, making it easy to handle and apply to surfaces. It also makes it potentially viable for eventual inclusion in applications like creams or injectable therapeutics for wound healing, implant and catheter coatings, skin infections or even orifice barriers. It is the first-ever to be biodegradable, biocompatible and non-toxic, potentially making it an ideal tool to combat serious health hazards facing hospital workers, visitors and patients.

Fighting fungal infections

The IBM scientists in the nanomedicine polymer program along with the Institute of Bioengineering and Nanotechnology have taken this research a step further and have made a nanomedicine breakthrough in which they converted common plastic materials like polyethylene terephthalate (PET) into non-toxic and biocompatible materials designed to specifically target and attack fungal infections. BCC Research reported that **the treatment cost for fungal infections was $3 billion worldwide in 2010 and is expected to increase to $6 billion in 2014**. In this breakthrough, the researchers identified a novel self-assembly process for broken down PET, the primary material in plastic water bottles, in which 'super' molecules are formed through a hydrogen bond and serve as drug carriers targeting fungal infections in the body. Demonstrating characteristics like electrostatic charge similar to polymers, the molecules are able to break through bacterial membranes and eradicate fungus, then biodegrade in the body naturally. This is important to treat eye infections associated with contact lenses, and bloodstream infections like Candida.

▶ **See the complete animated infographic (from where the photo was taken) at:**
http://www.research.ibm.com/featured/ninjas/index.shtml#fbid=J5eaC8yvMdA

With Bio-Threats on the Rise, US Focuses on Global Cooperation, Rapid Detection in Wake of BioWatch Gen-3 Demise

By Matthew J. Shaw

Source: http://www.hstoday.us/industry-news/general/single-article/with-bio-threats-on-the-rise-us-focuses-on-global-cooperation-rapid-detection-in-wake-of-biowatch-gen-3-demise/ae8da65f0be9318f07a35ff9e6fecd94.html

As governments, intelligence networks and law enforcement agencies around the world indicate that the threat from biological agents is growing, the need for effective detection and identification systems that can quickly detect and classify such biological agents increases.

Biological agents are troubling both as naturally-occurring and as man-made bio-terrorism weapons.

"The possibility of unlawful acts using biological materials represents a growing concern for

law enforcement, governments and public health officials around the world," INTERPOL said in a recent assessment of the bioterrorism threat. In terms of the naturally-occurring threat to public health, one needs look no further than the unprecedented Ebola outbreak in Western Africa to gain an appreciation for what nature can unleash on the world in short order.

As part of its effort to prepare for a microbial storm unleashed by either nature or enemy, the Department of Defense is feverishly working domestically and internationally to improve global biosurveillance cooperation. For example, the Joint United States Forces Korea Portal and Integrated Threat Recognition (JUPITR) program supports Homeland Security Presidential Directive-21, which stated biological threats could take many forms, including naturally-occurring disease outbreaks. This program will provide bio detection capabilities to address demands for stronger biosurveillance capabilities on the Korean peninsula.

In addition, the Defense Threat Reduction Agency (DTRA) and the Centers for Disease Control and Prevention (CDC) are pursuing greater international cooperation on bio-defenses. Kenneth Myers, the top official at DTRA, told Congress in April that the two frontline agencies inked agreements to "improve and expand a global network of international partners that can provide accurate and timely awareness of biological threats; and build a reliable and sustainable capacity to detect, prevent, attribute, report, respond and recover from CBRNE threats, as early as possible, for the United States and international partners."

Underpinning concerns about the man-made bio-terrorism threat is the rapid pace of biotechnology developments. The latest discoveries in the life sciences diffuse globally and rapidly. At the same time, the knowledge and know-how emerging from the continuing biotechnology revolution is legitimately accessible given its dual-use nature.

"As technology proliferates, chemical and biological weapons are becoming more sophisticated," Defense Intelligence Agency Director Army Lt. Gen.Michael T. Flynn told Congress earlier this year.

Biological materials such as bacteria, viruses and toxins "are significantly cheaper and easier to produce, handle and transport than nuclear or chemical materials," INTERPOL said. And that makes them attractive for terrorists and rogue nation states. What's more, biological agents "are difficult to detect and symptoms from exposure may not appear for days, possibly weeks," the world's international police organization said.

In its reassessment of biodefense programs, the Obama administration this past spring cancelled development of a new biological attack detection system. While earlier generation defenses remain in place, Department of Homeland Security (DHS) Secretary Jeh Johnson terminated the BioWatch Generation-3, or Gen-3, because of its excessive cost (over $3 billion), and concerns in Congress about the project's effectiveness.

Gen-3 was being designed to continuously monitor the air for dangerous aerosolized biological agents to provide an improved early warning capability over the BioWatch Gen-2 variant, which is currently deployed around the US. The promise of the Gen-3 was the ability to collect and analyze air samples in less than six hours, unlike Gen-2, which can take up to 36 hours to detect and confirm the presence of biological pathogens.

In the wake of Gen-3 program's demise, DHS officials have publicly expressed their commitment to the BioWatch program -- they have stressed the need to develop improved systems capable of monitoring for biological attack and rapidly providing information to decision-makers.

One fundamental pillar of the Obama administration's strategy is robust biosurveillance capabilities that provide as early detection as possible. Of course,

the faster a biological event is detected, the faster it can be contained and a response and aid be sent to contain and provide emergency and medical assistance. Officials have stated that the focus should be on building "capacities to detect bio-attacks in near-real time in order to enhance protective response actions."

"Timing is everything with bio defense," said DTRA's Miller.

Despite the cancellation of the Gen-3 program, a handful of organizations are focused on developing technology that can detect biological attacks with emphasis on decreasing the time for detection and operational cost. For example, Battelle recently introduced REBS (Resource Effective Bioidentification System) – a significant advance in airborne biological agent collection and identification. REBS is a ruggedized, battery-powered system that is relatively small and light and much easier to transport and carry than existing systems. Yet, REBS is capable of continuous, truly autonomous operation in missions lasting for days or weeks with supply line power, or up to 18 hours if the integrated batteries are used.

Perhaps most important in an era of government austerity, REBS drives down the cost for continuous monitoring because liquid consumables (e.g., chemistries, reagents, etc.) are not used. Rather, REBS uses patented aerosol collection and Raman spectroscopy to provide rapid and autonomous identification of an ever-expanding list of potential biological threats. **The use of this proven "leap-ahead" technology significantly drives down costs of operations to under $1 per day, and allows truly autonomous operation for weeks at a time with no operator intervention.**

As the worst-ever outbreak of the Ebola virus in Africa has underscored, developing public health and defense systems capable of real-time detection and identification of naturally-occurring or nefariously-produced biological agents -- and to do so on budget and on schedule -- is essential.

***Matthew J. Shaw** leads Battelle National Security's CBRNE Defense business, a $200 million operation with hundreds of staff members located around the world. He is responsible for developing and delivering CBRNE technology solutions and services to the national security community, to include defense, intelligence and inter-agency organizations. The business operates and maintains state-of-the-art chemical, biological and explosive/energetics laboratories and facilities, and is home to many of the nation's CBRNE defense thought leaders. This combination of facilities and staff is a national asset that provides comprehensive CBRNE defense solutions to all aspects of a wide range of national security programs and systems.*

Ebola outbreak "out of all proportion" and severity cannot be predicted

Source: http://www.homelandsecuritynewswire.com/dr20140917-ebola-outbreak-out-of-all-proportion-and-severity-cannot-be-predicted

September 17 – **A mathematical model that replicates Ebola outbreaks can no longer be used to ascertain the eventual scale of the current epidemic, finds research conducted by the University of Warwick.**

Dr. Thomas House, of the University's Warwick Mathematics Institute, developed a model that incorporated data from past outbreaks that successfully replicated their eventual scale.

A UW release reports that the research, published by *eLife*, shows that when applying the available data from the ongoing 2014 outbreak to the model, it is, according to Dr. House, "out of all proportion and on an unprecedented scale when compared to previous outbreaks."

Dr. House commented: **"If we analyze the data from past outbreaks we are able to design a model that works for the recorded cases of the virus spreading and can successfully replicate their eventual size. The current outbreak does not fit this previous pattern and, as a result, we are not in a position to provide an accurate**

prediction of the current outbreak."

Chance events, Dr. House argues, are an essential factor in the spread of Ebola and many other contagious diseases. "If we look at past Ebola outbreaks there is an identifiable way of predicting their overall size based on modeling chance events that are known to be important when the numbers of cases of infection are small and the spread is close to being controlled."

Chance events can include a person's location when they are most infectious, whether they are alone when ill, the travel patterns of those with whom they come into contact or whether they are close to adequate medical assistance.

The Warwick model successfully replicated the eventual scale of past outbreaks by analyzing two key chance events: the initial number of people and the level of infectiousness once an epidemic is underway.

"With the current situation we are seeing something that defies this previous pattern of outbreak severity. As the current outbreak becomes more severe, it is less and less likely that it is a chance event and more likely that something more fundamental has changed," says Dr. House.

Discussing possible causes for the unprecedented nature of the current outbreak, Dr. House argues that there could be a range of factors that lead it to be on a different scale to previous cases;

"This could be as a result of a number of different factors: mutation of virus, changes in social contact patterns or some combination of these with other factors. It is implausible to explain the current situation solely through a particularly severe outbreak within the previously observed pattern."

In light of the research findings and the United Nations calling for a further $1 billion to tackle the current outbreak, Dr. House says that "Since we are not in a position to quantify the eventful scale of this unprecedented outbreak, the conclusion from this study is not to be complacent but to mobilize resources to combat the disease."

▶ **The paper can be viewed here:**
http://elifesciences.org/content/elife/early/2014/09/12/eLife.03908.full.pdf

Ebola outbreak: Malta rejects ship carrying suspected case

Source: http://www.bbc.com/news/world-europe-29257619

Maltese authorities have turned away a ship travelling from Guinea to Ukraine over fears one person on board may be infected with the Ebola virus.

Maltese Prime Minister Joseph Muscat said the captain of the ship had made a request for assistance for a sick Filipino passenger on board.

The decision to turn the ship away was "morally and legally correct", Mr Muscat said.

The Ebola outbreak in West Africa has now killed more than 2,600 people.

Mr Muscat said permission for the ship to dock was refused as the patient's symptoms were similar to those of Ebola.

Patrol boats were sent to ensure the vessel did not enter Maltese waters.

After being turned away, the MV Western Copenhagen is believed to have headed towards the Italian island of Sicily.

"It could be a false alarm, but we are morally correct to take this decision because we cannot endanger our health system, especially when we don't know the magnitude of the problem," Mr Muscat said, according to the Reuters news agency.

The current outbreak is the world's worst of the deadly disease on record, with officials warning that more than 20,000 people could ultimately be infected.

EDITOR'S COMMENT: Tough decision indeed! But was it for protecting Maltese populace or because the medical system was totally unprepared to deal with such possibility?

Shenzhen company develops kit to test for Ebola virus

Source: http://www.scmp.com/news/china/article/1573511/shenzhen-company-develops-kit-test-ebola-virus-report-says

A Shenzhen-based company has developed a field test kit that can quickly identify the Ebola virus, *People's Daily* reports, as China is trying a range of countermeasures against the possible spread of the deadly virus on the mainland.

Customs and quarantine staff members hand out brochures about preventing Ebola virus disease to passengers arriving at the airport in Nanjing. Photo: Xinhua

BGI, the world's largest genomics research institution, is using technical assistance from People's Liberation Army's Academy of Military Medical Sciences to synthesise a liquid chemical solution that would change color if the unique nucleic acid of the Ebola viral strain is present.

The state newspaper said the test kit could be massively deployed when the virus was detected on the mainland.

The test kits are being produced in Wuhan, Hubei, said a BGI spokeswoman. Major cities such as Beijing have 10,000 sets each.

However, mass production of the kits has not begun because they still need final approval from national food and drug safety authorities, said the spokeswoman, who asked that her name not be used.

"The US FDA [Food and Drug Administration] issued a special permit for an Ebola test kit last week," she said. "We have submitted a request for special approval to the China Food and Drug Administration with hope that they will respond as efficiently as the US FDA to this public health emergency.

"If the infection zones request it, we can begin mass production."

BGI had been working with military research institutes on the Ebola virus for years, which enabled it to come up with a test kit shortly after the outbreak in West Africa, the spokeswoman said.

Meanwhile, the National Centres for Disease Control and Prevention (CDC) has obtained key Ebola virus genes for analysis and vaccine development from Genewiz, a US-based genomics service company.

The genes were synthesised at the company's branch in Suzhou, Jiangsu, under the commission of the CDC and the Chinese Academy of Sciences, according to a statement on Genewiz's website.

Genewiz president Dr Amy Liao said in the statement that "synthesising the Ebola virus genes is the foundation for studying the pathogenic function and crystal structure of the viral proteins".

"This information can help researchers gain a better understanding of the pathogenesis and transmission mechanisms quickly," she added.

In Beijing, 10 ambulances with quarantine capability stationed at the Beijing Emergency Medical Centre were on 24-hour standby to transport suspected Ebola infected patients, according to the Beijing Morning News.

Traffic authorities will set up an emergency lane to help transport

these patients, the municipal government said. **Two hospitals, Youan (photo) and Ditan, have been designated to admit Ebola victims.**

The municipal government also said it would intensify medical checks on travelers from infected regions in West Africa and closely monitor their health conditions.

Suspected patients would be isolated and diagnosed by a special committee of medical experts. Once confirmed, the patients would receive various treatments, including Chinese herbal medicine.

A military research institute is using the test kit to screen some suspected patients from Africa. The testing procedure, from sample taking to result analysis, takes three to four hours.

EDITOR'S COMMENT: People's Liberation Army's Academy of Military Medical Sciences ???

Ebola patients buying survivors' blood from black market

Source: http://edition.cnn.com/2014/09/18/health/ebola-blood-black-market/index.html

September 18 – As hospitals in nations hardest hit by Ebola struggle to keep up, **desperate patients are turning to the black market to buy blood from survivors of the virus,** the World Health Organization warned.

The deadliest Ebola outbreak in history has killed at least 2,400 people in Guinea, Liberia and Sierra Leone -- the countries most affected by the virus.

Blood from survivors, referred to as convalescent serum, is said to have antibodies that can fight the deadly virus. Though the treatment is unproven, it has provided some promise for those fighting a disease that's killing more than half of those it has infected.

"Studies suggest blood transfusions from survivors might prevent or treat Ebola virus infection in others, but the results of the studies are still difficult to interpret," the WHO said. "It is not known whether antibodies in the plasma of survivors are sufficient to treat or prevent the disease. More research is needed."

Convalescent serum has been used to treat patients, including American aid worker Rick Sacra, who is hospitalized in Omaha, Nebraska. He got blood from Kent Brantly, a fellow American who survived Ebola. Both got infected when they were helping patients in Liberia.

But unlike their situation, patients in affected nations are getting blood through improper channels. The illicit trade can lead to the spread of other infections, including HIV and other blood-related ailments.

"We need to work very closely with the affected countries to stem out black market trading of convalescent serum for two reasons," Margaret Chan, the WHO's director-general, said this week.

"Because it is in the interest of individuals not to just get convalescent serum without ... going through the proper standard and the proper testing because it is important that there may be other infectious vectors that we need to look at."

'Just sitting, waiting to die'

Heath experts have declared the disease a global emergency and criticized the international community for a lax response.

President Barack Obama on Tuesday announced the United States will send troops, material to build field hospitals, additional health care workers and community care kits to affected nations. The United States will also create a facility to help train thousands of health care workers to identify and care for Ebola patients.

"Men and women and children are just sitting, waiting to die right now," Obama said.

Hospitals in affected nations are overwhelmed, and the WHO has described the outbreak as a "dire emergency with ... unprecedented dimensions" of human suffering.

"If the outbreak is not stopped now, we could be looking at hundreds of thousands of people infected with profound political and economic and security implications for all of us," Obama said.

There is also a concern that the virus could mutate into an even more dangerous form.

Ebola currently transmits only though contact with bodily fluids; **a mutation that allows the virus to spread through the air would pose a catastrophic threat to people worldwide,** experts say.

Meanwhile, a French volunteer with Doctors Without Borders contracted Ebola in Liberia and will be taken to France for further treatment, the group said Thursday.

A private American plane will be used for the evacuation, according to the organization, which is known by its French acronym, MSF.

The myths (and realities) of synthetic bioweapons

By Filippa Lentzos, Catherine Jefferson and Claire Marris

Source: http://thebulletin.org/myths-and-realities-synthetic-bioweapons7626

The dominant narrative permeating scientific and policy discussions on the security threat posed by synthetic biology can be summarized in five ways:

- Synthetic biology is making it easier for non-experts to manipulate dangerous pathogens and, therefore, making it easier for terrorists to concoct bioweapons.
- Synthetic biology has led to the growth of a do-it-yourself biology community that could offer dual-use knowledge and equipment to bioterrorists seeking to do harm.
- DNA synthesis has become cheaper and can be out-sourced, making it easier for terrorists to obtain the basic materials to create biological threat agents.
- Non-experts could use synthetic biology to design radically new pathogens.

- Terrorists want to pursue biological weapons for high-consequence, mass- casualty attacks.

This narrative rests on misleading assumptions about both synthetic biology and bioterrorism, and these five myths are challenged by more realistic understandings of the scientific research currently being conducted in both professional and do-it-yourself laboratories, and by an analysis of historical cases of bioterrorism.

Synthetic biology is not easy

The assumption that synthetic biology makes it easy for *anybody* to "engineer biology" is not true. The underlying vision holds that well-characterized biological parts

can be easily obtained from open-source online registries and then assembled, by people with no specialist training outside professional scientific institutions, into genetic circuits, devices and systems that will reliably perform desired functions in live organisms.

This vision, however, does not even reflect current realities in academic or commercial science laboratories, let alone the situation facing people with no specialist training who work outside professional scientific institutions. Academic and commercial researchers are still struggling with every stage of the standardization and mechanization process.

Even if the engineering approaches offered by synthetic biology make processes more systematic and more reproducible, skills do not become irrelevant, and all aspects of the work do not become easier. Certainly, advances in synthetic biology do not make it easier for *anybody* to engineer biological systems, including dangerous ones. **An analogy to aeronautical engineering is useful:** Planes are built from a large number of well-characterized parts in a systematic way. But this does not mean that any member of the general public can build a plane, make it fly, and use it for commercial transportation.

Do-it-yourself biology is not particularly sophisticated

Developments in synthetic biology are seen to be closely associated with the growth of the do-it-yourself bio-community, and some observers have expressed concerns that do-it-yourselfers could offer knowledge, tools, and equipment to bioterrorists seeking to do harm.

But the link between synthetic biology and DIYbio, and the level of sophistication of the experiments typically being performed, is grossly overstated. **Do-it-yourself biologists** typically comprise a wide range of participants of varying levels of expertise, ranging from complete novices with no prior background in biology to trained scientists who conduct experiments in their own time. Some do-it-yourself biologists work in home laboratories assembled from everyday household tools and second-hand laboratory equipment purchased online; the majority conduct their experiments in community labs or "hackerspaces."

Studies of scientific practice in community labs demonstrate the challenges that amateur biologists face while trying to successfully conduct even rudimentary biological experiments. These amateurs particularly lack access to the shared knowledge available to institutional researchers, highlighting the importance of

local, specialized knowledge and enculturation in laboratory practices.

Building a dangerous virus from scratch is hard

DNA synthesis is one of the key enabling technologies of synthetic biology. **There are now a number of commercial companies that provide DNA synthesis services**, so the process can be out-sourced: A client can order a DNA sequence online and receive the synthesized DNA material by post within days or weeks. The price charged by these companies has greatly reduced over the last 20 years and is now around 3 cents a base pair, which puts the cost within reach of a broad range of actors. This has led to routine statements suggesting that it is now cheap and easy to obtain a synthesized version of any desired DNA sequence. There are however several challenges that need to be taken into account when assessing the potential for misuse that inexpensive DNA sequencing might enable.

Even specialized DNA synthesis companies cannot easily synthesize, *de novo*, any desired DNA sequence. Several commercial companies provide routine gene synthesis services for sequences of less than 3,000 base pairs, **but length is a crucial factor**; the process is error prone, and some sequences are resistant to chemical synthesis. A number of entirely new synthesized DNA fragments would have to be assembled to produce a full genome, and, even if doing so were not already regulated by guidelines, simply ordering the full-length genome sequence of a small virus online is not possible.

Ordering short DNA sequences and assembling them into a genome requires specialist expertise, experience, and equipment available in academic laboratories but not easily accessible to an amateur working from home.

For longer sequences, assembly of DNA fragments becomes the crucial step. This was the major technological feat in the work conducted at the J. Craig Venter Institute that produced a "synthetic" bacterial genome, and the Gibson assembly method developed for that project is now widely used. The description of that work, however, demonstrates how the assembly of smaller fragments into larger ones and eventually into a functioning genome requires substantial levels of expertise and resources, including those needed to conduct trouble-shooting experiments to identify and correct errors when assembled DNA constructs do not perform as expected.

Constructing a genome-size DNA fragment is not the same as creating a functional genome. In particular, ensuring the desired expression of viral proteins is a well-documented, complex challenge.

Even experts have a hard time enhancing disease pathogens

Some observers have also expressed concerns that synthetic biology could be used to enhance the virulence or increase the transmissibility of known pathogens, creating novel threat agents.

Mousepox and bird flu (H5N1) experiments are frequently cited to demonstrate how dangerous new pathogens could be designed. But assessments of this threat tend to overlook a salient fact: In both these experiments, the researchers did not actually design the pathogens. With respect to H5N1, researchers had indeed been trying to design an air-transmissible virus variant for some time, without success. The ferret experiment was set up as an alternative approach, to see whether natural mutations could generate an air-transmissible variant. The researchers had no influence on the specific mutations induced. In the mousepox experiment, researchers inserted the gene for interleukin-4 into the mousepox virus to induce infertility in mice and serve as an infectious contraceptive for pest control. **The result—that the altered virus was lethal to mice—was unanticipated by the researchers. In other words, it was not planned.**

Moreover, some of the key lessons that came out of the extensive **Soviet program to weaponize biological agents** involve the trade-offs between improving characteristics that are "desired" in the context of a bioweapons program—such as virulence—and diminishing other equally "desired" characteristics, such as transmissibility or stability. Pleiotropic effects—that is, when a single gene affects more than one characteristic—and genetic

instability are common in microorganisms. While it is too simple to say that increased transmissibility will always be associated with reduced virulence, this is often the case for strains produced in laboratories.

The bioterror WMD myth

Those who have overemphasized the bioterrorism threat typically portray it as an imminent concern, with emphasis placed on high-consequence, mass-casualty attacks, performed with weapons of mass destruction (WMD). **This is a myth with two dimensions.** The **first** involves the identities of terrorists and what their intentions are. The assumption is that terrorists would seek to produce mass-casualty weapons and pursue capabilities on the scale of 20th century, state-level bioweapons programs. Most leading biological disarmament and non-proliferation experts believe that the risk of a small-scale bioterrorism attack is very real and present. But they consider the risk of sophisticated large-scale bioterrorism attacks to be quite small. This judgment is backed up by historical evidence. The three confirmed attempts to use biological agents against humans in terrorist attacks in the past were small-scale, low-casualty events aimed at causing panic and disruption rather than excessive death tolls.

The **second** dimension involves capabilities and the level of skills and resources available to terrorists. The implicit assumption is that producing a pathogenic organism equates to producing a weapon of mass destruction. It does not. Considerable knowledge and resources are necessary for the processes of scaling up, storage, and dissemination. These processes present significant technical and logistical barriers.

Even if a biological weapon were disseminated successfully, the outcome of an attack would be affected by factors like the health of the people who are exposed and the speed and manner with which public health authorities and medical professionals detect and respond to the resulting outbreak. A prompt response with effective medical countermeasures, such as antibodies and vaccination, can significantly blunt the impact of an attack.

More than sloppy shorthand

We have identified a number of assumptions that underlie policy discourse on the security threat posed by synthetic biology and characterized them as myths. Use of the term "myths" is not intended to imply falsity. **We are not simplistically opposing myth and reality, and we are not arguing that there is no threat.** Rather, we aim to convey the pervasiveness of misleading assumptions about both synthetic biology and bioterrorism that frequently underlie discussions about the dual-use threat of synthetic biology. In doing so, we hope to present some of the subtleties that frequently disappear from these discussions.

We acknowledge that these particular myths have power and perform real functions; they mobilize support for resources and action to deal with the bioterror threat. The dominant narrative we describe influences the way in which the problem is defined, and, therefore, the kinds of solutions that are proposed. **In short, these myths are real enough to influence policy in significant ways,** which makes it all the more important to examine them more carefully than they have been in the run of public discourse to date.

Catherine Jefferson *is a researcher in the Department of Social Science, Health, and Medicine at King's College London. Her research focuses on the origins of treaty regimes prohibiting chemical and biological weapons and contemporary policy issues in chemical and biological weapons control.*

Filippa Lentzos *is a senior research fellow in the Department of Social Science, Health and Medicine at King's College London. Her research focuses on contemporary and historical understandings of the threat of biological weapons, bioterrorism, and the strategic use of infection in conflict.*

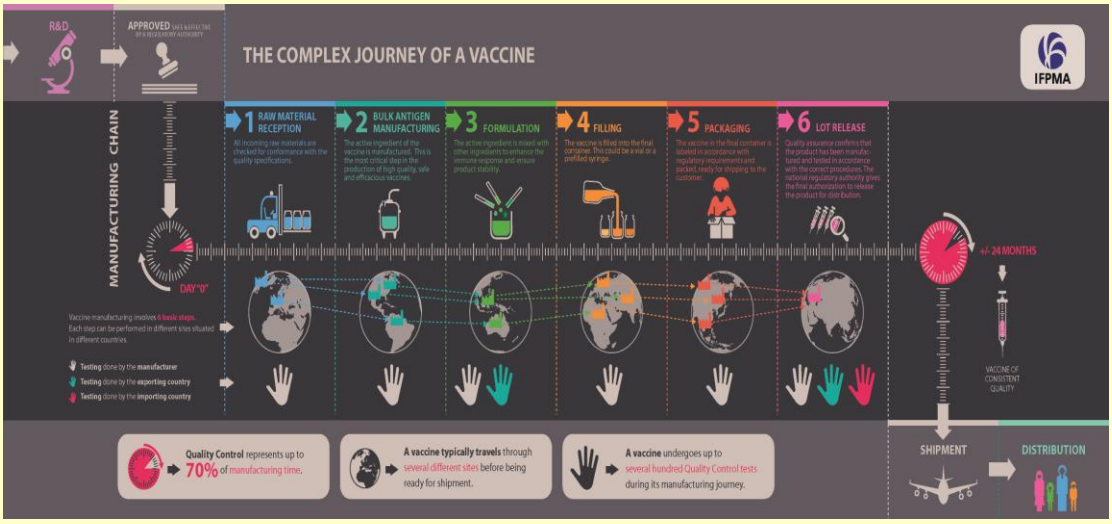
Claire Marris *is a senior research fellow in the Department of Social Science, Health, and Medicine at King's College London. Her research focuses on the*

ways in which a field of bioscience, such as synthetic biology, comes to be defined and problematized in different scientific, regulatory, political, and public arenas.

▶ **Read the full paper at:** http://journal.frontiersin.org/Journal/10.3389/fpubh.2014.00115/full

The complex journey of a vaccine

Source: https://farm4.staticflickr.com/3741/11837289095_e6efc6cc3f_o.jpg

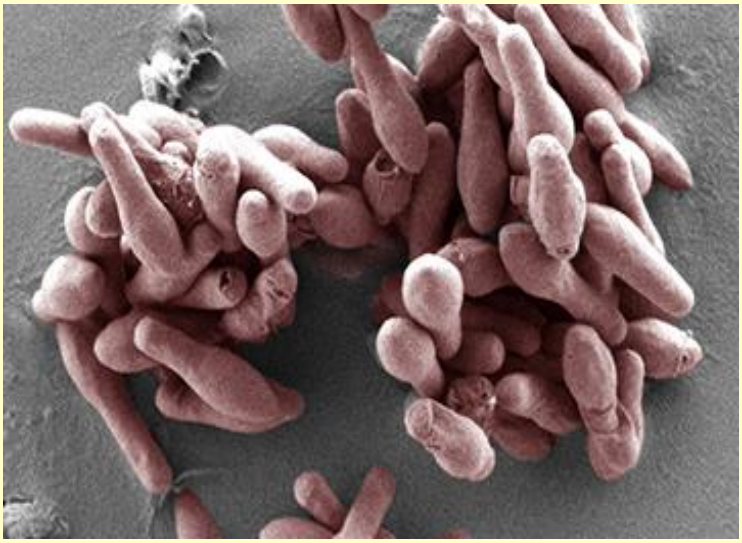


▶ **Visit source's URL for a large version of the image above.**

Botulism's genetic triggers found

Source: http://www.homelandsecuritynewswire.com/dr20140922-botulism-s-genetic-triggers-found

September 22 – *Clostridium botulinum* bacteria produce the most deadly toxin we know of. Scientists from the U.K. Biotechnology and Biological Sciences Research Council (BBSRC) strategically funded Institute of Food Research have discovered genes that are crucial for its germination, which may present a new way of stopping these deadly bacteria growing in our food.



Botulinum spores are found throughout the environment. If they contaminate food, under certain conditions they can germinate and reproduce in our food, and generate a neurotoxin.

This is when they become dangerous, as anyone eating this can develop botulism, a rare but potentially fatal condition. Stringent measures are taken by food manufacturers to stop this happening, and fortunately botulism outbreaks are now quite rare. **But until now, we've known surprisingly little about the germination process.**

Botulinum spores only germinate in a suitable environment, for example in the presence of nutrients which they sense through specialized receptors. These receptors then trigger a chain of events that lead to the spore becoming viable.

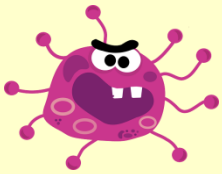
Clostridium botulinum has **had its genome sequenced**, and by comparison with other bacteria it is possible to identify genes that look like they might be involved in the spore germination process.

A BBSRC release reports that the researchers at IFR systematically turned off these candidate genes to see which were crucial for germination.

The research, published in *PLOS Pathogens*, identified two sets of genes that *C. botulinum* needs, and which must act together for the spores to germinate in response to the correct stimulus, in this case the presence of a nutrient amino acid. This allowed them to build a much better understanding of exactly how the spores germinate.

Dr. Jason Brunt of the IFR said: "As more is understood of the complex germination systems in clostridia, it may be conceivable to formulate detailed strategies to interrupt this process. This would be of great benefit to help control pathogenic clostridia, for the food industry."

— Read more in Jason Brunt et al.., "Functional Characterization of Germinant Receptors in Clostridium botulinum *and* Clostridium sporogenes *Presents Novel Insights into Spore Germination Systems."* PLoS Pathogens *10, no. 9(11 September 2014)*



How To Make The 'Ebola Bomb': Why You Should Stop Worrying About Bioterrorism

By Sandra Ivanov

Source: http://cimsec.org/make-ebola-bomb-stop-worrying-bioterrorism/13069

The Ebola outbreak in West Africa is the deadliest epidemic since the virus was discovered in 1976, international borders, it has claimed over 2'600 lives (as of September 18, 2014). There is no vaccine and there is no cure. Aid and medical personnel are sought from all over the world, borders have been contained, and risks of rising violent conflict continue to develop out of the Ebola eruption. However, there have been other interesting analyses of this issue on the side – media and opinion pieces are claiming that terrorist groups could get a hold of the virus and spread it around their regions, and the world (see for example Rick Noack, "Why Ebola worries the Defense Department", The Washington Post, 05.08.2014). Well, I wanted to test this claim for myself, so with a bit of research and optimism, I've created a recipe to examine what a potential

terrorist group would need to do to make this so-called "Ebola Bomb" – how hard could it really be?

Many studies from a health, as well as a humanities perspective, assume that terrorists could successfully generate biological or chemical agents and weaponise them. Taking this initial premise, a lot of literature has been based around this looming threat, subsequently offering policy advice, public health recommendations, and technological investment to avoid such catastrophes. However it would be useful to deconstruct this claim entirely. So I'll begin by offering a baking recipe, to explore at the very core, what a group would need to do to successfully create a biological weapon, in this case, utilising the Ebola virus.

Ingredients

Firstly, any terrorist group wanting to create and weaponise a biological or chemical agent will need to have an appropriate kitchen. In the case of the Ebola virus, a standard biosafety level 4 (BSL-4) scene will be required (Adeline M. Nyamathi et al., "Ebola Virus: Immune Mechanisms of Protection and Vaccine Development", Biological Research For Nursing 4, No. 4, April 2003: 276-281). Some features of these laboratories include decontamination mechanisms, pest management systems, air filters, and special suits. Sometimes the kitchen will have to be in a separate building, or in an isolated area within a building to meet the safety requirements. Not only will the kitchen be under strict conditions, the baking process will need to be kept in total secrecy. The constant threat of law enforcements raiding facilities, and intelligence and secret services detecting activities will have to be avoided. Also, there are only some fifty of these laboratories successfully maintained worldwide.

Before starting, make sure there is a baking dish of 'uncertainty' readily available to just throw all of the following ingredients into:

- **1 Tablespoon of Proper Agent**

Initially, a terrorist group must decide what kind of agent they would like to use in a bioterror attack. This is one part of the recipe which can be modified, but the other ingredients will be standard for all types of attacks. The recent spread of the deadly Ebola virus will be the agent of choice for this bomb. Ebola is a virus which is passed to humans through contact with infected animals. The spread of the virus from person-to-person is brought about through blood and bodily fluids, as well as exposure to a contaminated environment. An infected live host with Ebola would need to be maintained in a human or animal – only a few animals are able to be used as hosts, such as primates, bats, and forest antelope. Although Ebola infection of animals through aerosol particles can be effective, it has not successfully been transferred with this method to humans (Manoj Karwa, Brian Currie and Vladimir Kvetan, "Bioterrorism: Preparing for the impossible or the improbable", Critical Care Medicine 33, No. 1, January 2005: 75-95).

- **1 Bucket of Resources and Money**

In order to develop a biological weapon, a substantial amount of material and money is required. Investment is needed from the very outset – taking into account membership size and capabilities of a terrorist group, financial assets of a group, and making sure territory and proper infrastructure is available for the biological agent. For a successful bomb to be created, a group must think about the resources they will need for each stage of the baking process, such as weapons production, potential testing phases, and logistics, such as transportation and communications technologies (Victor H. Asal, Gary A. Ackerman and R. Karl Rethemeyer, "Connections Can Be Toxic: Terrorist Organizational Factors and the Pursuit of CBRN Terrorism", National Consortium for the Study of Terrorism and Responses to Terrorism, 2006). Resources needed for an "Ebola Bomb" will most likely need to be imported from the outside, and a group must determine the feasibility of acquiring the materials and technologies needed for the bomb (Jean Pascal Zanders, "Assessing the risk of chemical and biological weapons proliferation to terrorists", The Nonproliferation Review, Fall 1999: 17-34). A surplus of money would also be a

smart idea in case technical difficulties arise.

- **5 Cups of Expertise**

With all the correct resources and necessary amount of monetary support, the recipe will require the right kind of know-how. For an operation like this, a terrorist group should have members with high levels of education and training in science, engineering, and technological development, to deal with highly virulent agents, and for successful weaponisation (Zanders). A group may need to be integrated into knowledge flows and institutions, or be able to recruit members to their cause with this specific expertise (Asal, Ackerman and Rethemeyer). Knowledge and expertise is required to create the correct strain, handling the agent, growing the agent with the desired characteristics, and maintaining the agent. Taking Ebola specifically requires synthesising proteins which make it infectious, and becomes a task that is difficult and unlikely to succeed (Amanda M. Teckma, "The Bioterrorist Threat of Ebola in East Africa and Implications for Global Health and Security", Global Policy Essay, May 2013). If Ebola is successfully created in the kitchen, it is not itself a biological weapon – an expert will be required to transform the virus into a workable mechanism for dissemination.

- **A Teaspoon of Risk**

The decision to use biological weapons for an attack is in itself extremely risky. There is a risk that bioterrorism could cause dissenting views among followers, and that public approval and opinion may channel the way a group operates. After all, terrorists are political communicators, wanting to bring attention to their grievances. If a group becomes polarised or resented by their actions, they will not see the benefits of pursuing certain methods. Terrorists want to send powerful messages, gain more members, in which these members assist to bring about certain plans and demands. Therefore, public opinion and political opportunism will be risked in a quest to create a bioweapon such as an "Ebola Bomb" (Zanders). Secondly, a terrorist group may be subject to more scrutiny or attention. This is why keeping activities covert will be a key to success. States will be more vigilant towards groups that are known to be seeking and acquiring biological and chemical capabilities (Asal, Ackerman and Rethemeyer). And finally, risk will always cling on to funding requirements, and potential technical difficulties in all stages of the bioweapon making process.

- **A Fist of Time**

Now this recipe is going to take a while to prepare and bake in the oven, and there is no particular moment to determine when it should be removed from the baking dish. So, whatever group wants to make this bomb, will need to realise this is a long-term and complex effort. It will not work like most conventional weapons, which produce a high number of casualties with a single explosion, and that could be a reason why bioterrorism is not the most popular means for a violent attack – demanding time, effort, and resources without guarantees of a concrete result. A fist full of time may be needed so that knowledge, both tacit and explicit, can be acquired, as well as accounting for the various mistakes and learning curves to overcome (Asal, Ackerman and Rethemeyer). It can also refer to how long it will take to cook up, maintain and prepare a virus for an attack. It will take time to create a successful weapon with prior testing, and wait for the correct environmental conditions when it comes to dissemination. Time will have to be a group investment – it is not the kind of bomb that will detonate immediately.

- **A Pinch of Curiosity of the Unknown**

The teaspoon of risk coincides with uncertainty, and there will need to be a commitment to potential unknown factors. It is unknown what will happen once a virus is disseminated. Will the weapon even work in the first place? Weather conditions are unpredictable and Ebola will not have a prominent effect in certain environments. What happens to the terrorist group if the attack fails? What happens to the reputation of the group and its membership, or will the group cease to exist? If the recipe is a success, it is impossible to control the biological agent which is released – not only can it affect the targeted population, but it may annihilate the terrorist group itself. There will be an unknown into potentially losing local and international support, and donors if this causes widespread catastrophe.

Scientists from the Southern African Development Community region, including a sponsored postdoctoral research fellow by the Southern African Centre for Infectious Disease Surveillance, working in the only biosafety level 4 (BSL-4) laboratory in Africa, which is located at the National Institute for Communicable Diseases, Johannesburg, South Africa.

Method: Weaponisation and Dissemination

Mix that up good in your baking dish of what is now "deep uncertainty" and pop it in the oven to bake. But as time passes, it seems as though the ingredients are not rising. The process of turning a biological agent into a weapon for attack is the phase with the most hurdles for terrorist groups. In order for a virus to inflict a lot of harm, it has to be disseminated through an effective delivery mechanism. As mentioned previously, the Ebola virus needs a live host. Weaponising a live host is more difficult than other agents which can be cultured on dishes of nutrients. The process has many stages which involve testing, refining, upgrading, and toughening. The methods to disseminate an agent are only known to few people, and rarely published – it is not a basement project (Teckman).

Let's take Aum Shinrikyo as an example of conducting a bioterrorist attack (even it was "only" a chemical attack). This apocalyptic religious organisation in Japan managed to release sarin gas inside a Tokyo subway, killing a dozen people, and injuring 50. However, even with money and resources, they failed to effectively weaponise the chemical. Factors which led to their failure included internal secrecy and breakdown in communication; selecting members only solely dedicated to their cause to work on the weapons, ultimately employing unskilled people to operate and maintain the project, causing accidents and leaks (Zanders). Aum Shinrikyo's attempt to disseminate botulinum toxin into Tokyo using a truck with a compressor and vents, did not work because they had not acquired an infectious strain (Sharon Begley, "Unmasking Bioterror", Newsweek, 13.03.2010; "Chronology of Aum Shinrikyo's CBW Activities", Monterey Institute of International Studies, 2001). Finally, a major obstacle to successfully disseminating Ebola, is because this virus requires a specific environment in order to thrive. Weather conditions can be unpredictable, and Ebola particularly needs high

temperatures and humidity to remain effective.

Decoration: Results and Conclusions

Obviously, this "Ebola Bomb" has not come close to containing the right requirements needed to explode. Looking back historically, pathogens, and all kinds of toxins have been used as tools in sabotage and assassinations since the beginning of time. Now, it would be silly to say this recipe will never work – there will always be a possibility that Ebola or other viruses may be used as biological weapons in the future. However, the likelihood of its development and use by a terrorist group is quite improbable.

Mentioning Aum Shinrikyo again, they are an organisation which at the time, had a war chest of more than $300 million, with six laboratories and a handful of biologists, in the end having insurmountable difficulties with the weaponisation and dissemination processes, and killing a dozen people (Begley). There is a greater amount of knowledge and technology available in our day and age than in 1995 with the Aum Shinrikyo attacks, but it is still unlikely that this will be the weapon of choice. Examining state biological weapons programmes, Soviet Russia had almost 60,000 personnel employed in their weapons development, with only about 100 people that actually knew how to take an agent through the full production process. In the United States, at Fort Detrick, there were 250 buildings with 3,000 personnel, and it took them a while to weaponise a single agent, such as botulinum (Manoj Karwa, Brian Currie and Vladimir Kvetan).

Nowadays, the narrative has assumed a worst case scenario analysis, and subsequently narrowed down bioterrorism to a single threat prognosis. There is little distinction made between what is conceivable and possible, and what is likely in terms of bioterrorism. Anything can be conceived as a terrorist threat, but what is the reality? The "Ebola Bomb" is not a danger. The likelihood of a bioterrorist attack remains highly unlikely (Teckman). The focus should be on preventing natural pandemics of human disease, such as tuberculosis, SARS, AIDS and influenza – emphasis placed on how we can cure diseases, and how medical training could be improved to contain, and avoid viruses such as Ebola altogether. Resources are being pumped into biodefence in the security as well as the medical sector, but preparedness and investment in bioterrorism needs to be in proportion to actual threats, otherwise, funds are diverted away from much needed public health programmes:

Diversion of resources from public health in the United States include diversion of funds needed for protection against other chemical risks – spills, leaks and explosives – and infectious diseases. Each year in the United States there are 60,000 chemical spills, leaks and explosions, of which 8,000 are classified as 'serious', with over 300 deaths. There are 76 million episodes of food-borne illness, leading to 325,000 hospitalisations and 5,000 deaths, most of which could be prevented. There are 110,000 hospitalisations and 20,000 deaths from influenza, a largely preventable illness, and there are 40,000 new cases and 10,000 deaths from HIV/AIDS. Diversion of resources for public health outside the US reduce the resources that can help provide protection against diseases rooted in poverty, ignorance and absence of services. — Victor W Sidel, "Bioterrorism in the United States: A balanced assessment of risk and response", Medicine, Conflict and Survival 19, No. 4, 2003: 318-325.

The effectiveness of biological weapons has never been clearly shown, the numbers of casualties have been small and it is likely that hoaxes and false alarms in the future will continue to outnumber real events and create disruptive hysteria (Manoj Karwa, Brian Currie and Vladimir Kvetan). Emphasis needs to be back on medical research, as well as social science investigations into the roots of why terrorist groups would even want to pursue biological weapons, and the lengths they would go to use them. Let this be an avenue for further pondering and exploring, the realities of bioterrorism.

Sandra Ivanov *is from New Zealand with a postgraduate education in Peace and Conflict Studies. She is currently an editor of the blog "Conflict and Security", and primarily works in the non-government sector.*

How the U.S. Screwed Up in the Fight Against Ebola

By Brendan Greeley and Caroline Chen

Source: http://www.businessweek.com/articles/2014-09-24/ebola-drug-zmapps-development-delayed-by-pentagon-agency

September 24 – It was a small victory in a grim and runaway catastrophe. In July, Kent Brantly and Nancy Writebol, both American medical workers in Liberia, became stricken with Ebola hemorrhagic fever after treating dozens suffering from the disease, which has a mortality rate of 50 percent to 90 percent. They were rushed doses of an experimental cocktail of Ebola antibodies called ZMapp, flown home via a Gulfstream III on separate flights on Aug. 2 and 5, and each isolated inside a special tent called an "aeromedical biological containment system." The U.S. Department of State and the Centers for Disease Control and Prevention (CDC) coordinated the flights, operated by Phoenix Air, a private transport company based in Georgia. Cared for in a special ward at Emory University in Atlanta, they recovered within the month and later met with President Obama. It appeared to be a win for the White House.

Mapp Biopharmaceutical, the San Diego company that developed ZMapp, is also in a way a White House project. It's supported exclusively through federal grants and contracts that go back to 2005. The antibody mixture hadn't yet passed its first phase of human clinical trials, but after the two Americans were infected with Ebola, the Food and Drug Administration granted emergency access to ZMapp.

It's too early to say whether ZMapp was vital to the Americans' survival. There were a limited number of doses available. Mapp ran out after having given doses to the two Americans, a Spanish priest, and doctors in two West African countries, although it declined to say how many. And that raised fair questions: Why hadn't the promising treatment gone through human clinical trials sooner, and why were there so few doses on hand?

Since appearing in Guinea in December, Ebola has spread to five West African countries and infected 5,864 people, of which 2,811 have died, according to the World Health Organization's Sept. 22 report. This number is widely considered an underestimate. The CDC's worst-case model assumes that cases are "significantly under-reported" by a factor of 2.5. With that correction, the CDC predicts 21,000 total cases in Liberia and Sierra Leone alone by Sept. 30.

A confluence of factors has made it the biggest Ebola outbreak yet. For starters, West Africa has never seen Ebola before; previous outbreaks have mainly surfaced in the Democratic Republic of the Congo in Central Africa. The initial symptoms of Ebola—fever, vomiting, muscle aches—are also similar to, and were mistaken for, other diseases endemic to the region, such as malaria.

Then, when officials and international workers swept into villages covered head to toe and took away patients for isolation, some family members became convinced that their relatives were dying because of what happened to them in the hospitals. They avoided medical care and lied to doctors about their travel histories. Medical staff at local hospitals became scared and quit their jobs. Aid workers trying to set up isolation units or trace infected people's contacts were attacked by angry villagers. With these countries short on resources, staff, medical equipment, and basic understanding of the disease, Ebola took hold and spread.

There have been a number of admirable and vigilant responses, from local doctors and emergency workers to nongovernmental organizations such as Doctors Without Borders. Foreign governments have so far pledged about a third of the $988 million the United Nations says is

needed to fight the epidemic. On Sept. 16, the Obama administration announced plans to send 3,000 military personnel to assist with shipping and distribution of medical equipment and supplies. The Americans will also help build treatment centers and train health-care providers in the region.

Could a large stockpile of ZMapp have halted the spread of Ebola? No one can say. What's certain is that the U.S. government hasn't done a good job taking the idea behind ZMapp and turning it into a treatment. The technology for antibody cocktails such as ZMapp has "been around for a few decades," says Robert Garry, a professor of microbiology

at Tulane University. "This is something that, given the emergency, the government could have moved a little faster on, quite honestly." He's more right than he knows. The treatment came into the hands of a little-known Pentagon agency in late 2010, and, *Bloomberg Businessweek* has learned, ZMapp sat there dormant, waiting for a contract, for two years.

There are, broadly speaking, two ways to spend money on biological defense: on gloves or on drugs. A response to any attack requires a public health infrastructure, things like gowns, boots, masks, and gloves to prevent the spread of infection, training for doctors and nurses, and field hospitals that can be moved to the site of an outbreak. Or a threat can be met with what the federal government calls a "medical countermeasure," a vaccine to prevent infection or a therapy for recovery.

In the 1990s, after revelations of the Soviet biological and chemical weapons programs and the 1995 sarin gas attack in the Tokyo subway, the U.S. handed its defensive drug making to the Pentagon. After 2001, the Pentagon budget for biological and chemical defense rose from $880 million to $1.12 billion. Since then, roughly a third of its total budget, about $3.9 billion, has been designated for a list of "biological threat agents." The list is classified, but it now numbers 18, according to a 2014 analysis by the U.S. Government Accountability Office. Ebola is almost certainly on this list and likely near the top. The Soviet Union had an Ebola program, and Aum Shinrikyo, the cult that released the sarin gas in Tokyo, sent doctors in 1993 to what's now the Democratic Republic of the Congo on an unsuccessful mission to get an Ebola sample.

Then, because the 2001 anthrax attacks on the Capitol in Washington were directed at civilians, the Department of Health and Human Services launched a parallel track in biochemical defense. Soon, the HHS began keeping its own list of biological threats. Over the next two years, the budget at the National Institute of Allergy and Infectious Diseases (NIAID), part of the HHS, jumped from $2.04 billion to $3.7 billion. Two separate arms of the federal government, with a $5 billion annual budget between them, now were focused on the same set of problems but not talking to each other well. And neither was accomplishing what was needed most: producing drugs.

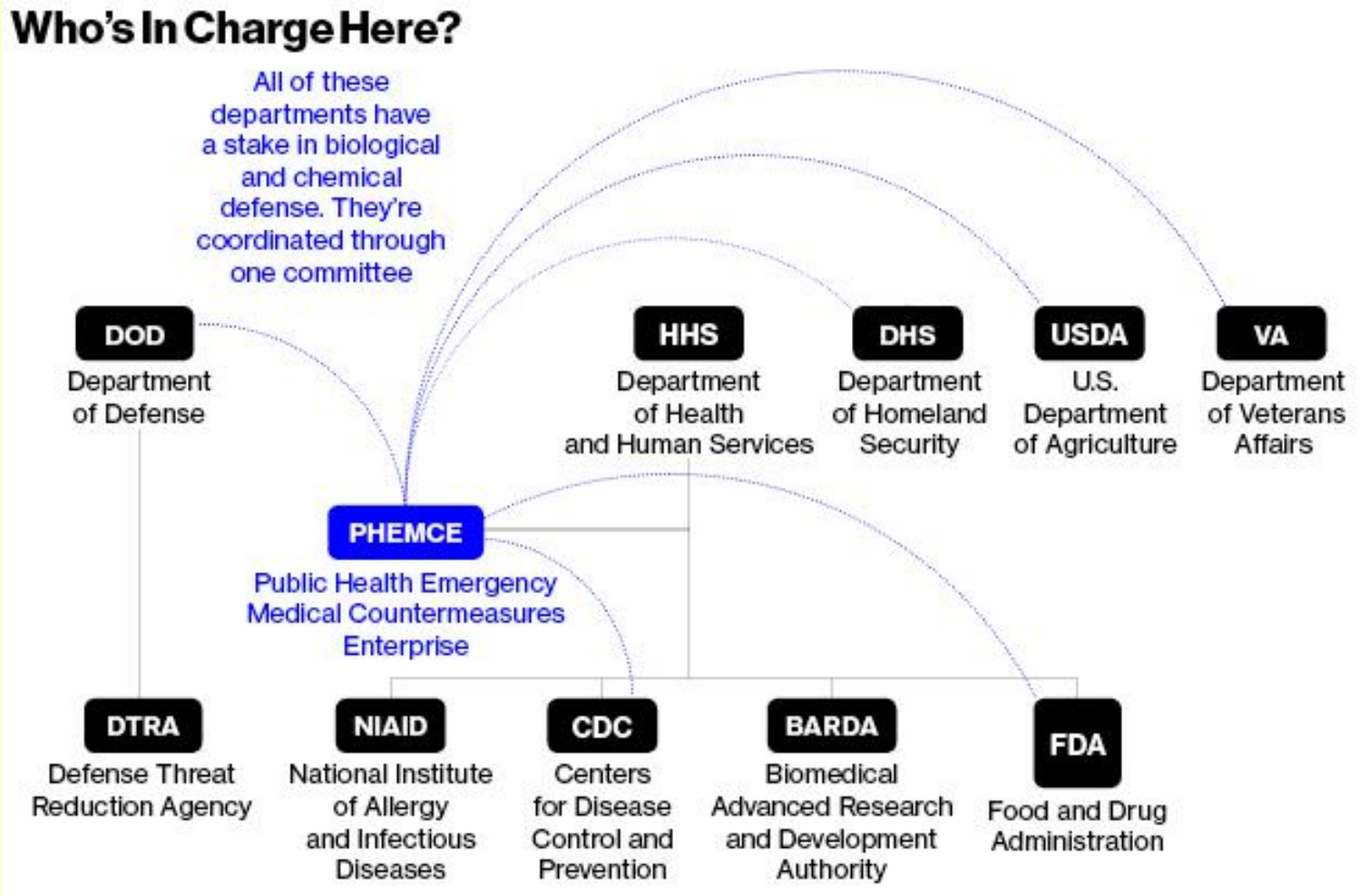
By 2006 the White House became aware of an inefficiency. NIAID's budget went to sponsor basic research at university and commercial labs, **but** the agency didn't move its ideas out of the lab, into trials, and through the FDA approval process. The Pentagon's program also "never got enough money to be a pharmaceutical company," says Robert Kadlec. A consultant and public health physician who held several high-level posts in biodefense in the George W.

Bush administration, Kadlec says the Pentagon had "enough for research and development, but not for licensure."

"For things like Ebola, there is no clear buyer other than the government," says Thomas Inglesby, the director of the Center for Health Security at the University of Pittsburgh Medical Center who's advised three White Houses on biosecurity issues. Normally, he notes, market potential "pulls" a drug forward. With relatively rare tropical diseases, "you basically have to start and finish that process" within the government, "because there is no other buyer in the world."

To hear legislators talk about it, getting treatments through the FDA is like a Hollywood movie in turnaround. "We identified the struggle as the advanced development," says Senator Richard Burr, a Republican from North Carolina, referring to the challenge of getting promising treatments through trials and approvals. "We called that area sort of 'the valley of death' for any product." Kadlec helped Burr create an agency to bridge the valley of death, the Biomedical Advanced Research and Development Authority (Barda). Unlike the Pentagon, Barda, a civilian agency, was granted fast-track contracting authority. It would get drugs out of research labs into trials and through to production.

Unfortunately, Barda was underfunded from the start. Pharma companies generally spend about a billion dollars to get a single drug from idea to FDA license. "Look at $100 million for Barda," says Kadlec, referring to the agency's annual budget. "We've been operating literally on dimes when they need dollars." In the last months of the Bush administration, he says, he persuaded the president to propose an appropriation of $900 million. Unlike almost every other pet project in Washington, it didn't make it into the 2009 stimulus bill.

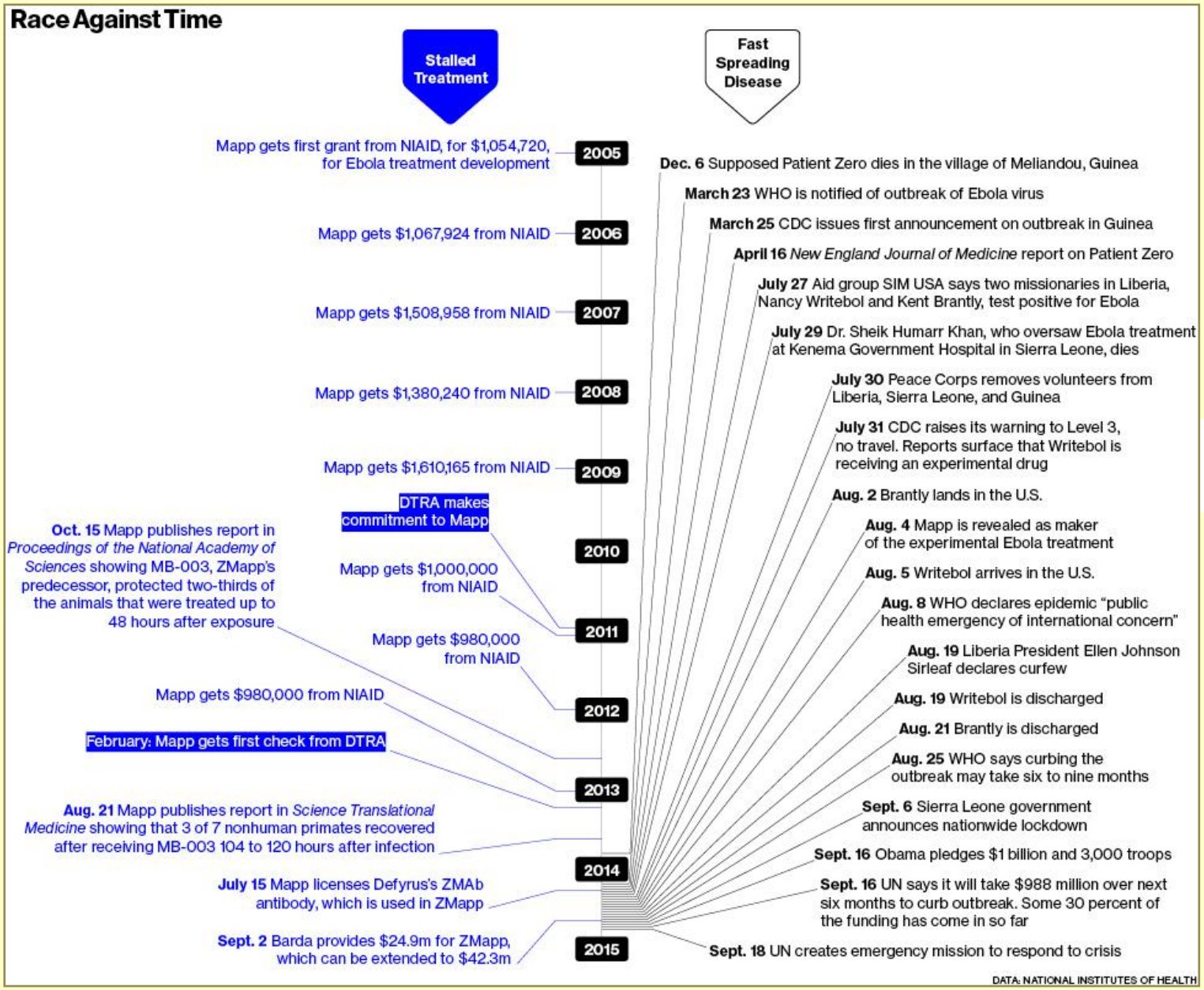


Photograph by Frank Duenzl via NewscomThe San Diego headquarters of Mapp Biopharmaceutical, maker of the

experimental drug ZMapp, in August 2014

Around the same time, Mapp Biopharmaceutical was looking for more money. Founded in 2003, the company has nine employees (as of Aug. 5) and no external investors. For about a decade, it's taken an approach to Ebola that had been largely abandoned. Rather than develop a vaccine, which triggers the body to create its own antibodies—defenses against a virus—Mapp worked to develop monoclonal antibodies, a ready-made supply that can be introduced into the body as a therapy after infection. The company didn't respond to requests for comment.

Mapp had been funded through grants from NIAID, the civilian agency that did only basic research. While NIAID continued to fund Mapp until 2013, the grants were small, generally around $1 million a year, enough to keep the lights on but not enough to get ZMapp into clinical trials. Barda, then focused on influenza, didn't offer a contract. The agency's spokeswoman, Gretchen Michael, says that "in terms of Ebola, there haven't been products mature enough to get Barda level of funding" up until ZMapp this year. And so, according to a person familiar with the project who wasn't authorized to speak,



informal communication among scientists brought the company to the Defense Threat Reduction Agency (DTRA), the arm of the Pentagon that would lead it out of the valley of death.

In the summer of 2011, right as Mapp was looking for a new sponsor, DTRA was taking a hard look at what it was doing. Created in 1998 largely to counter all weapons of mass destruction, DTRA had taken on the task of developing drugs for the Pentagon because there was no one else to do it. The agency's leadership toured labs, talked to researchers, and brought in advisers from pharmaceutical companies and academia. The conclusions from that review, laid out in a presentation *Bloomberg Businessweek* has seen, weren't encouraging.

The presentation describes the agency's work as it was in 2011. Too much effort was wasted on "knowledge products," or basic science. Unpromising projects weren't killed and continued to waste money. Drug development was managed around yearly budgets rather than end goals. Efficacy studies, which determine whether drugs work on animals, weren't complete, nor were safety studies, which test whether a drug is OK for human use. Samples of Ebola were found in a freezer in a containment lab without patient histories, control samples, or even validation that they contained the virus. The samples were safe but useless for drug development.

Overall, the 2011 presentation concluded, the agency lacked "translational S&T project management discipline," which is a bureaucratic way of saying that there was no way to take ideas and move them down the long path toward a drug approved by the FDA for production or technology ready for the Pentagon to deploy.

One year later, in a second report, an external Ph.D. researcher looked at DTRA's projects on technology to detect chemical and biological attacks. He found "a lack of solid technical oversight for a period of years," and "a near absence of strategic vision, complicated by much programmatic incoherency." One project suffered from an "egregious lack of coordination." Another is described as "an unmitigated disgrace, divorced from any sense of reality."

This was the agency that picked up Mapp.

According to two people familiar with the project who weren't authorized to speak, Mapp received a commitment from DTRA in February 2011 for MB-003, ZMapp's predecessor. This means that the antibody had been deemed a worthy idea but needed to go through a review process before any actual money could be disbursed to develop it. And that's when the ZMapp program really stalled. Unlike Barda, DTRA doesn't have fast-track contracting authority. Rather, it uses the Pentagon-wide contracting standards. This is slow anywhere in the Department of Defense. At DTRA, it can be agony.

"It was one of the most frustrating places I ever worked," says Riva Meade. "I lasted 13 months." Meade, now retired, worked in Pentagon contracting her entire career, much of it at the Defense Advanced Research Projects Agency. Around the same time as the 2011 review, she was brought into DTRA as the chief of the agency's business division.

Meade describes two problems. First, DTRA's contracting officers' added unnecessary hurdles into an already cumbersome process. They aimed to make the organization what Meade calls "super clean"—no audits, no reviews, no second-guessing. This is difficult for research and development, when the government is frequently buying something it's never bought before and doesn't know how to buy it. "They just had a policy where they wanted never to be called out for making mistakes," says Meade. "If you want to run a shop like that, it's going to take a long time. I'm not sure it's a good policy when you're working in R&D and you need to get things done that the country needs done." The contracts department also refused to use expertise from other agencies to assess highly technical programs.

Meade's time as the business chief at DTRA also coincided with a culture clash within the agency, one confirmed by three other people familiar with the agency who declined to speak on the record. DTRA had hired several people with experience at private pharmaceutical companies who were used to killing programs that were going nowhere and spending money on promising ones.

The new arrivals wanted to drive products through early trials and

to always be shipping. Older employees wanted to focus on publishing research and securing academic prestige. "When you work with a group of scientists who believe that the best thing that they can do is have a published paper, you're not going to get a lot of productivity when it comes to pharmaceuticals," says Meade. "Published papers are important in that line of work, but that seemed to be more important to them than anything else."

The people with pharma experience, she says, in turn failed to show the patience necessary to work in any government agency. "Frequently, what [government contracting officers] were requesting was ridiculous," she says, "but you know what, you just do it." One trick to federal contracting, she explains, is to know when not to fight.

Kadlec, the former Bush administration official who was still working in biodefense medicine, was well aware of both the delay with Mapp and the more general problems at DTRA. He says other companies working with the agency encountered similar holdups. "It was like, can we do any better than this?" he says.

In late 2012, Kadlec wrote a report for the UPMC's Center for Biosecurity on the potential benefits of monoclonal antibodies, the Mapp approach. The report, he says, was in part designed to nudge DTRA toward completing Mapp's contract. In it, he suggests that the Pentagon fast-track a few sample projects, including one for "prophylaxis against a fast-moving virus." Kadlec lays some blame on the Pentagon's contracting process. "You have to do this like you're buying an F-35," he says. "As you well know, a vaccine is not an airplane."

"The pharma guys lost," says Meade. In February 2013, Alan Rudolph, whose name appears on several presentations urging streamlined decision-making at DTRA, left the agency. Rudolph's departure happened to come the same month the agency finally wrote its first check to Mapp Biopharmaceutical.

According to one person familiar with DTRA, without the contract delays, Mapp could have completed trials necessary for either the CDC or the Pentagon to stockpile the drug. The Department of Defense says it's only because of its forethought that the U.S. has groundbreaking treatments like ZMapp at all. "Since the outbreak took hold, DTRA, along with other partners within the U.S. government, has accelerated its counter-Ebola efforts as much as possible as part of the global response," say Jennifer Elzea, a DOD spokeswoman.

It's still uncertain how effective ZMapp is, because only a handful of people have taken it. But doctors would have had a better idea if it hadn't been stuck in the federal bureaucracy for four years. The drug's path through the research labs of the Washington-Baltimore corridor shows that the federal government still isn't good at producing drugs. Barda needs money. DTRA can't move quickly. And the U.S., until now, hasn't made Ebola a priority. "That's why we don't have an Ebola countermeasure," says Kadlec. "We failed to invest enough dollars to have it mature."

Even the seemingly straightforward stuff can be hard. This summer, when Obama decided that the U.S. was going to bring home Americans stricken with Ebola, the White House had to deal with pushback. According to two people familiar with the matter who weren't authorized to speak on the record, the State Department first asked the U.S. Air Force, whose Transportation Command flies C-17 Globemasters outfitted with biological containment systems for sick patients. But the Air Force demurred. Its C-17s fly servicemen. The State Department didn't respond to a late request for comment on why the government used a private carrier. The Air Force referred questions to the National Security Council. Edward Price, a spokesman for the NSC, says the White House "did not request U.S. military transport."

Biological hazards are difficult to plan for. Any pathogen can pose a threat to troops deployed abroad or citizens at home. It can spread as a weapon or on its own as a natural outbreak. Any plan spends money on something that hasn't happened yet, something difficult for any president to do. And it forces different federal agencies to work well together, something no U.S. president has yet accomplished. According to Kadlec, Bill Clinton became alarmed about bioterror toward the end of his administration. George W. Bush fired Clinton's bioterror adviser, then rehired him after Sept. 11. Dick Cheney was consumed by

bioterror. Obama is now. And he's handling a situation none of his predecessors planned for: a natural foreign outbreak that may destabilize countries and become a national security risk. Barda now has given Mapp Biopharmaceutical a $25 million contract to start clinical trials with ZMapp. This is encouraging, but it hasn't fixed the problem. The Pentagon and the HHS have a list of threats, and no real way to work down the list, devising treatments and getting them through the FDA's approval process.

Every outbreak will make every administration look feckless and incompetent. But the U.S., at the very least, needs to admit to itself that to improve readiness, it needs to function like a drug maker—and be good at it. "As long as there's not sufficient money to address every one of the targeted diseases," says Senator Burr, "it's going to force the system to make a decision based on what's the greatest threat today."

***Josh Greeley** is a staff writer for* Bloomberg Businessweek *in New York.*

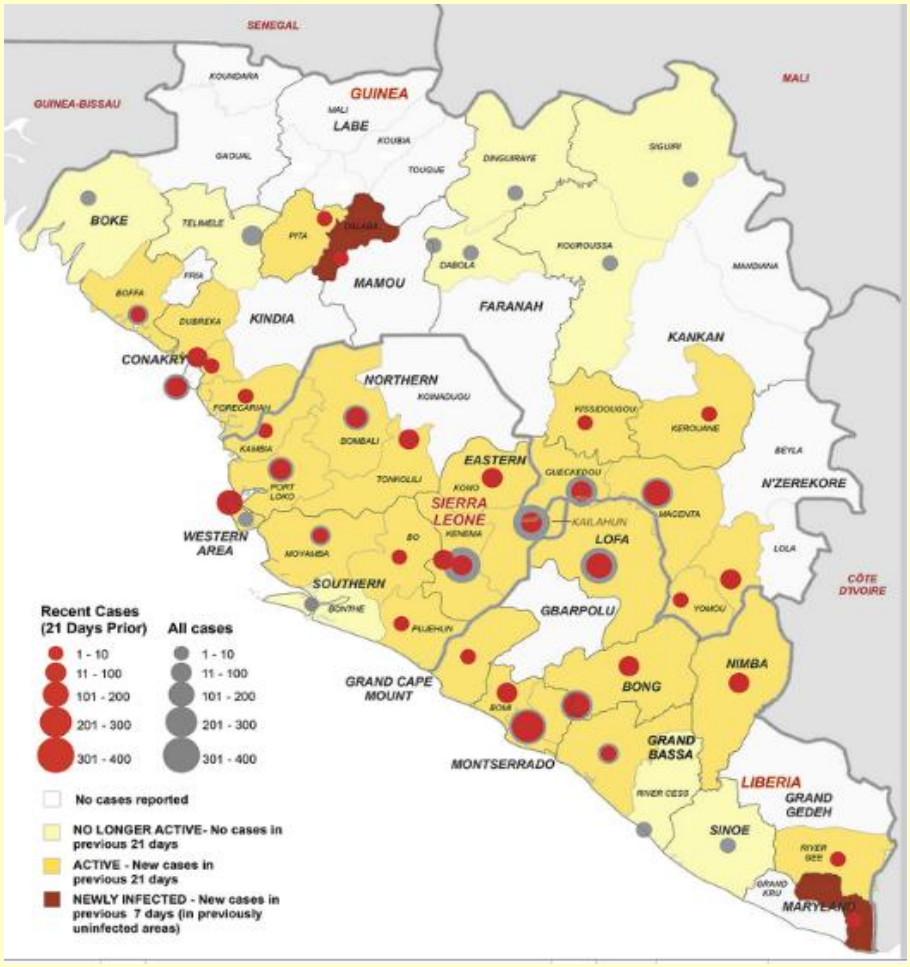
***Caroline Chen** is a reporter for Bloomberg News in New York.*

Ebola Virus Disease in West Africa — The First 9 Months of the Epidemic and Forward Projections

The NEW ENGLAND JOURNAL of MEDICINE

WHO Ebola Response Team

Source: http://www.nejm.org/doi/full/10.1056/NEJMoa1411100?query=featured_home&



Background

On March 23, 2014, the World Health Organization (WHO) was notified of an outbreak of Ebola virus disease (EVD) in Guinea. On August 8, the WHO declared the epidemic to be a "public health emergency of international concern."

Methods

By September 14, 2014, a total of 4507 probable and confirmed cases, including 2296 deaths from EVD (Zaire species) had been reported from five countries in West Africa — Guinea, Liberia, Nigeria, Senegal, and Sierra Leone. We analyzed a detailed subset of data on 3343 confirmed and 667 probable Ebola cases collected in Guinea, Liberia, Nigeria, and Sierra Leone as of September 14.

Results

The majority of patients are 15 to 44 years of age (49.9% male), and we estimate that the case fatality rate is 70.8% (95% confidence interval [CI], 69 to 73) among persons with known clinical outcome of infection. The course of infection,

including signs and symptoms, incubation period (11.4 days), and serial interval (15.3 days), is similar to that reported in previous outbreaks of EVD. On the basis of the initial periods of exponential growth, the estimated basic reproduction numbers (R_0) are 1.71 (95% CI, 1.44 to 2.01) for Guinea, 1.83 (95% CI, 1.72 to 1.94) for Liberia, and 2.02 (95% CI, 1.79 to 2.26) for Sierra Leone. The estimated current reproduction numbers (R) are 1.81 (95% CI, 1.60 to 2.03) for Guinea, 1.51 (95% CI, 1.41 to 1.60) for Liberia, and 1.38 (95% CI, 1.27 to 1.51) for Sierra Leone; the corresponding doubling times are 15.7 days (95% CI, 12.9 to 20.3) for Guinea, 23.6 days (95% CI, 20.2 to 28.2) for Liberia, and 30.2 days (95% CI, 23.6 to 42.3) for Sierra Leone. Assuming no change in the control measures for this epidemic, by November 2, 2014, the cumulative reported numbers of confirmed and probable cases are predicted to be 5740 in Guinea, 9890 in Liberia, and 5000 in Sierra Leone, **exceeding 20,000 in total.**

Conclusions

These data indicate that without drastic improvements in control measures, the numbers of cases of and deaths from EVD are expected to continue increasing from hundreds to thousands per week in the coming months.

▶ **Read the full paper at source's URL.**

The U.S. Military vs. Ebola: Lessons From the Asia-Pacific

By Frank L. Smith III

Source: http://thediplomat.com/2014/09/the-u-s-military-vs-ebola-lessons-from-the-asia-pacific/

U.S. President Barack Obama recently ordered the U.S. military to intervene in the fight against the Ebola virus. Responding to the mounting death toll and requests for assistance from West Africa, the U.S. military will soon provide a logistic "air bridge" into Ghana, a command center in Liberia, 17 new hospitals, a high-throughput training facility, and up to 3000 troops. This is a remarkable surge in resources and American commitment, yet it also raises the critical question: How can the U.S. military be most effective in this new mission?

Perhaps the U.S. military can help turn the tide on what has heretofore been a largely unmitigated disaster. But military involvement also carries considerable risks, as indicated by research into health diplomacy by the U.S. Navy in Indonesia, let alone the military's struggle to defend itself when diseases are used as biological weapons. Among other concerns, at least three political

risks should be anticipated and mitigated to help win the fight against Ebola.

First and foremost, resources are limited. U.S. assistance may prove insufficient and so conflict may arise over scarce resources. While healthcare is sometimes misrepresented as an apolitical or global public good, it is not. **There can be winners and losers, as tragically illustrated by images of people near death lying outside the closed doors of overflowing hospitals in Monrovia** (photos in p.156).

The military should plan accordingly. Triage procedures at the hospitals it builds or staffs should be transparent, for example, and troops should have public relations and legal support on hand to address potential conflicts early on. The lack of such support hurt the U.S. Naval Medical Research Unit (NAMRU-2) when its presence in Indonesia started to become controversial in the late 1990s. Moreover, as in Indonesia, conspiracy theories about the U.S. military and Ebola already run rampant. It would therefore be wise to prepare for resistance and controversy so that conflict can be managed, thereby increasing the potential for more local and international cooperation.

Second, U.S. military intervention against Ebola is rather unprecedented. Granted, NAMRU-2 built a microbiology lab for Indonesia in Aceh after the 2004 Sumatra tsunami. And the U.S. military has delivered humanitarian assistance after Typhoon Haiyan and other natural disasters, as well as provided healthcare as part of nation-building in Afghanistan and Iraq. But a contagion like Ebola is not the same as a typhoon or tsunami. Unfortunately, in the past, the U.S. military has struggled to understand and even recognize important differences in nonkinetic missions – particularly those involving infectious disease. As a result, the top brass should heed to advice from medical and biodefense experts throughout this intervention.

Third, deservedly or not, the U.S. military is also at risk of becoming a convenient scapegoat if the international effort against Ebola continues to fall short. After all, civilians in the public health community are often suspicious of the armed forces.

To increase the chances of success and avoid being an easy target for blame, the U.S. military should work to build trust across a broad coalition. It should foster interpersonal relationships, not only with its military counterparts in the region, but also with the civilians involved with diplomacy, transportation, communications, and especially public health. For instance, Médecins Sans Frontières (MSF) deserves tremendous credit for fighting this outbreak so long and calling for military assistance. The U.S. military should reach out to MSF in return, as well as other non-governmental organizations and ministries of health across West Africa.

U.S. military intervention against Ebola may prove decisive in the months ahead. Or it may backfire if the risks of conflict, misunderstanding and mistrust are not mitigated in advance. The stakes are far too high not to take proactive steps that will improve the odds of civil-military cooperation actually ending this deadly outbreak.

Frank L. Smith III *is a Lecturer with the Centre for International Security Studies and the Department of Government and International Relations at the University of Sydney. His teaching and research examine the relationship between technology and international security.*

I'm the head nurse at Emory. This is why we wanted to bring the Ebola patients to the U.S.

By Susan M. Grant

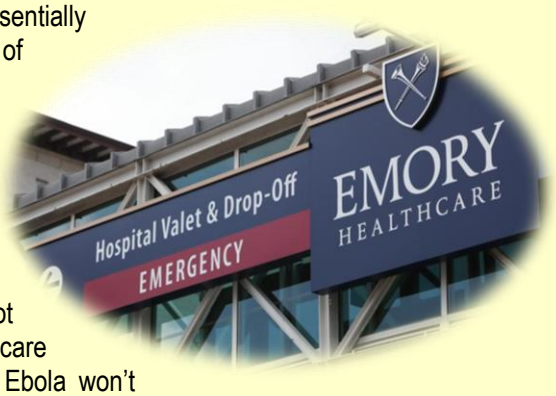
Source: http://www.washingtonpost.com/posteverything/wp/2014/08/06/im-the-head-nurse-at-emory-this-is-why-we-wanted-to-bring-the-ebola-patients-to-the-u-s/

.

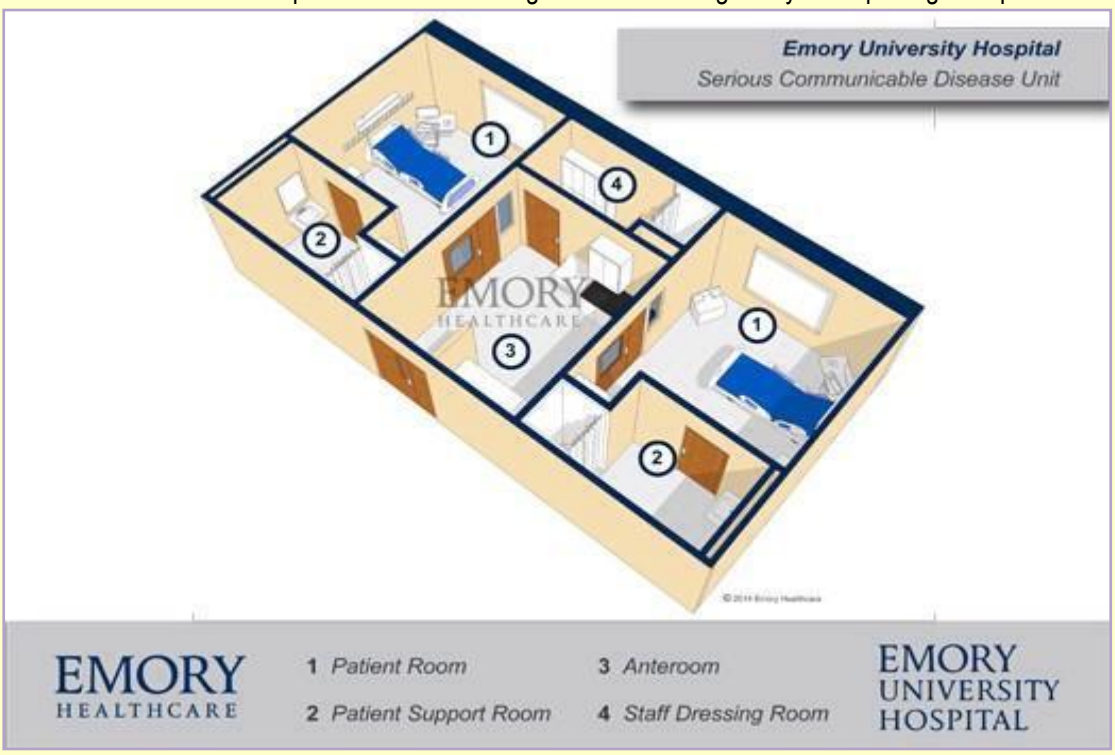
A second American infected with the potentially deadly Ebola virus arrived at Emory University Hospital on Tuesday from Africa, following the first patient last weekend. Both were greeted by a team of highly trained physicians and nurses, a specialized isolation unit, extensive media coverage, and a storm of public reaction. People responded

viscerally on social media, fearing that we risked spreading Ebola to the United States.
Those fears are unfounded and reflect a lack of knowledge about Ebola and our ability to safely manage and contain it. Emory University Hospital has a unit created specifically for these types of highly infectious patients, and our staff is thoroughly trained in infection control procedures and protocols. But beyond that, the public alarm overlooks the foundational mission of the U.S. medical system. The purpose of any hospital is to care for the ill and advance knowledge about human health. At Emory, our education, research, dedication and focus on quality — essentially everything we do — is in preparation to handle these types of cases.

Susan Mitchell Grant, RN, is chief nurse for Emory Healthcare



Further, Americans stand to benefit from what we learn by treating these patients. (Bound by federal law, Emory cannot name the patients. The HIPAA Privacy Rule forbids health-care institutions from releasing identifiable health information.) Ebola won't become a threat to the general public from their presence in our facility, but the insight we gain by caring for them will prepare us to better treat emergent diseases that may confront the United States in the future. We also can export our new knowledge to treat Ebola globally. This pathogen is part of our



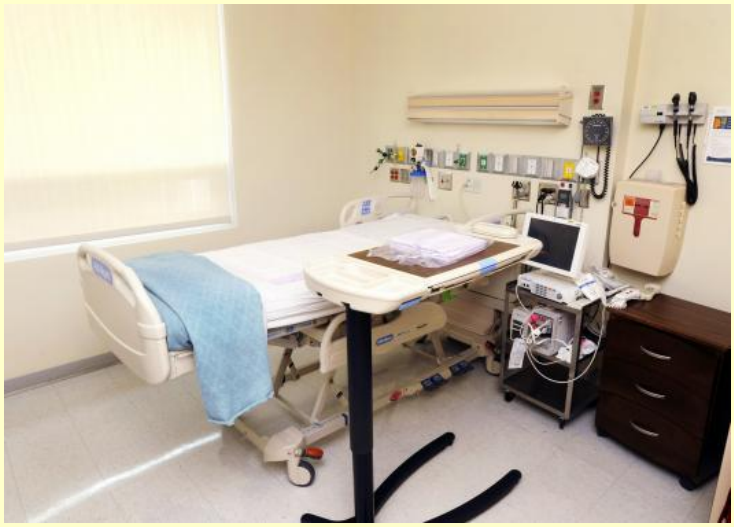
world, and if we want to eradicate these types of potentially fatal diseases before they reach our shores uncontrolled, we have to contribute to the global research effort. Today, diseases do not stay contained to one city, country or even continent.
Most importantly, we are caring for these patients because it is the right thing to do. These Americans generously went to Africa on a humanitarian mission to help eradicate a disease that is especially deadly in countries without our health-care infrastructure. They deserve the same selflessness from us. To refuse to care for these professionals would raise enormous questions about the ethical foundation of our profession. They have a right to come home for their care when it can be done effectively and safely.

As health-care professionals, this is what we have trained for. People often ask why we would choose to care for such high-risk patients. For many of us, that is why we chose this occupation — to care for people in need. Every person involved in the treatment of these two patients volunteered for the assignment. At least two nurses canceled vacations to be a part of this team. They derive satisfaction from knowing that, after years of preparing for this type of case, they are able to help, to comfort and to do it safely. The gratitude they receive from the patients' families drives their efforts.
As human beings, we all hope that if we were in need of superior health care, our country and its top doctors would help us get better. We can either let our actions be guided by misunderstandings, fear and self-interest, or we can lead by knowledge, science and compassion.
We can fear, or we can care!

U.S. hospitals unprepared to handle Ebola waste

Source: http://www.reuters.com/article/2014/09/24/us-health-ebola-usa-hospitals-insight-idUSKCN0HJ0AD20140924

September 24 – U.S. hospitals may be unprepared to safely dispose of the infectious waste generated by any Ebola virus disease patient to arrive unannounced in the country, potentially putting the wider community at risk, biosafety experts said.



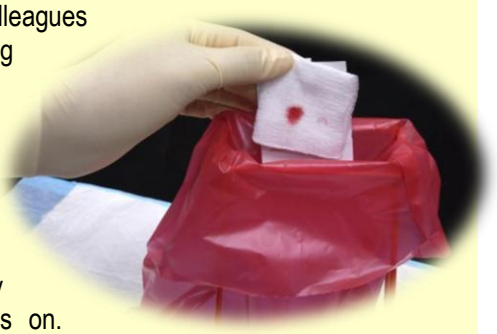
Waste management companies are refusing to haul away the soiled sheets and virus-spattered protective gear associated with treating the disease, citing federal guidelines that require Ebola-related waste to be handled in special packaging by people with hazardous materials training, infectious disease and biosafety experts told Reuters.

Many U.S. hospitals are unaware of the regulatory snafu, which experts say could threaten their ability to treat any person who develops Ebola in the U.S. after coming from an infected region. It can take as long as 21 days to develop Ebola symptoms after exposure.

The issue created problems for Emory University Hospital (photo) in Atlanta, the first institution to care for Ebola patients here. As Emory was treating two U.S. missionaries who were evacuated from West Africa in August, their waste hauler, Stericycle, initially refused to handle it. Stericycle declined comment.

Ebola symptoms can include copious amounts of vomiting and diarrhoea, and nurses and doctors at Emory donned full hazmat suits to protect themselves. Bags of waste quickly began to pile up.

"At its peak, we were up to 40 bags a day of medical waste, which took a huge tax on our waste management system," Emory's Dr. Aneesh Mehta told colleagues at a medical meeting earlier this month.



Emory sent staff to Home Depot to buy as many 32-gallon rubber waste containers with lids that they could get their hands on.

Emory kept the waste in a special containment area for six days until its Atlanta neighbor, the U.S. Centers for Disease Control and Prevention, helped broker an agreement with **Stericycle**.

While U.S. hospitals may be prepared clinically to care for a patient with Ebola, Emory's experience shows that logistically they are far from ready, biosafety experts said.
"Our waste management obstacles and the logistics we had to put in place were amazing," Patricia Olinger, director of environmental health and safety at Emory, said in an interview.

Not if, but when

The worst Ebola outbreak on record is now projected to infect as many as 20,000 people in West Africa by November, while U.S. officials have said that number could rise above 550,000 by mid-January without an international intervention to contain its spread. Experts say it is only a matter of time before at least some infected patients are diagnosed in U.S. hospitals, most likely walking into the emergency department seeking treatment.
Already there have been several scares. As of Sept. 8, as many as 10 patients have been tested by U.S. hospitals for suspected Ebola cases, Dr. Barbara Knust, team leader for the CDC's Ebola response, said at a medical meeting this month. All tested negative.
The CDC has issued detailed guidelines on how hospitals can care for such patients, but their recommendations for handling Ebola waste differs from the U.S. Department of Transportation, which regulates the transportation of infectious waste.
CDC advises hospitals to place Ebola-infected items in leak-proof containers and discard them as they would other biohazards that fall into the category of "regulated medical waste." According to DOT guidelines, items in this category can't be in a form that can cause human harm. The DOT classifies Ebola as a Category A agent, or one that is potentially life-threatening.
DOT regulations say transporting Category A items requires special packaging and hazmat training.
CDC spokesman Tom Skinner said the agency isn't aware of any packaging that is approved for handling Ebola waste.
As a result, conventional waste management contractors believe they can't legally haul Ebola waste, said Thomas Metzger, communication director for the National Waste & Recycling Association trade group.

A temporary fix

Part of Emory's solution was to bring in **one of the university's large-capacity sterilizers called an autoclave**, which uses pressurized steam to neutralize infectious agents, before handing the waste off to its disposal contractor for incineration.
Few hospitals have the ability to autoclave medical waste from Ebola patients on site.
"For this reason, it would be very difficult for a hospital to agree to care for Ebola cases - this desperately needs a fix," said Dr Jeffrey Duchin, chair of the Infectious Diseases Society of America's Public Health Committee.
Dr. Gavin Macgregor-Skinner, an expert on public health preparedness at Pennsylvania State University, said there's "no way in the world" that U.S. hospitals are ready to treat patients with highly infectious diseases like Ebola.
"Where they come undone every time is the management of their liquid and solid waste," said Macgregor-Skinner, who recently trained healthcare workers in Nigeria on behalf of the Elizabeth R. Griffin Research Foundation.
Skinner said the CDC is working with DOT to resolve the issue. He said the CDC views its disposal guidelines as appropriate, and that they have been proven to prevent infection in the handling of waste from HIV, hepatitis, and tuberculosis patients.
Joe Delcambre, a spokesman for DOT's Pipeline and Hazardous Materials Safety Administration, could not say whether requiring hospitals to first sterilize Ebola waste would resolve the issue for waste haulers. He did confirm that DOT is meeting with CDC.
Metzger said his members are also meeting with officials from the DOT, the CDC and the Environmental Protection Agency to sort out the issue.
Until the matter is resolved, however, "We're bound by those regulations," he said.