

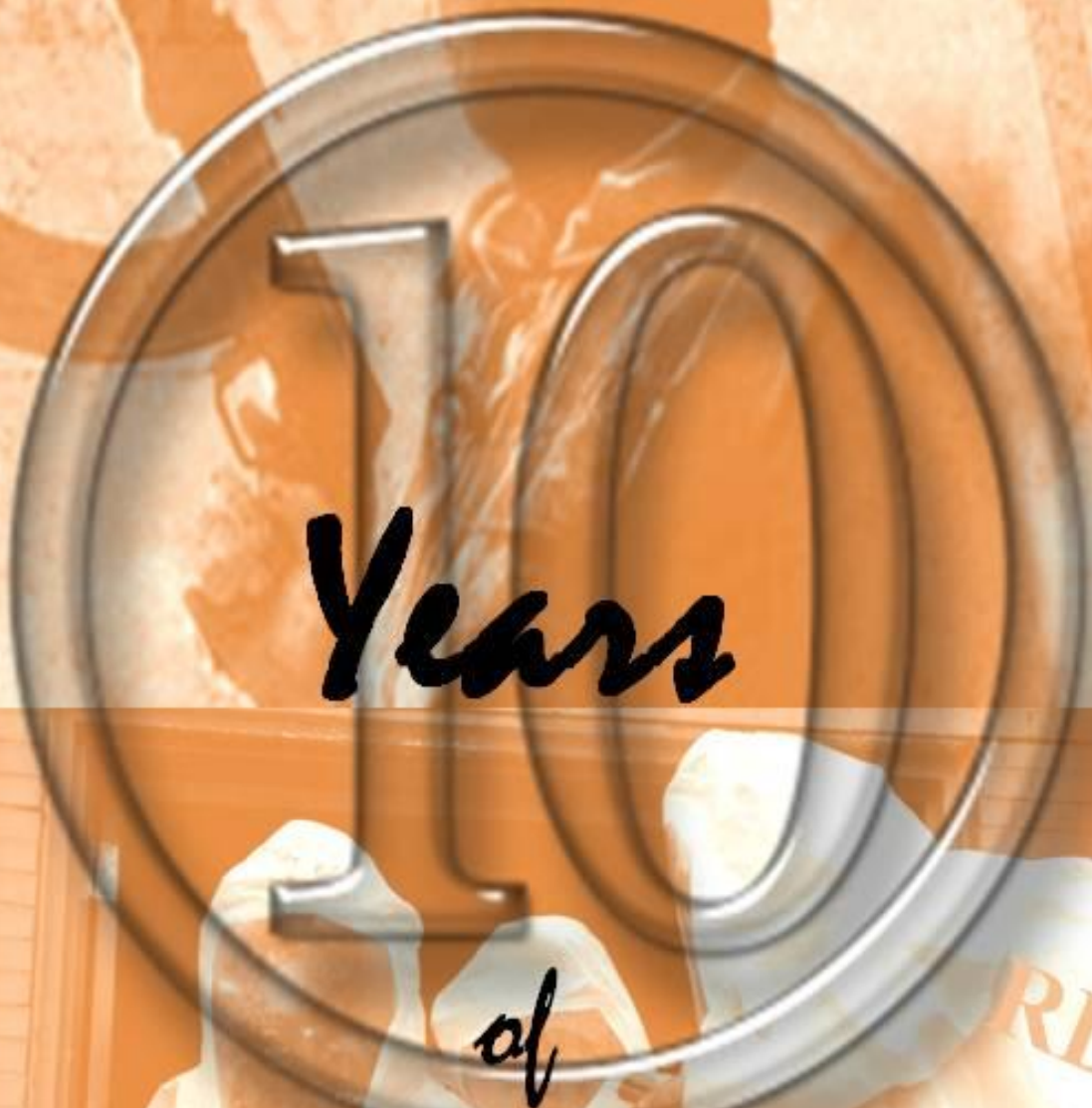


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CBRNE-Terrorism Newsletter

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ΕΠΙΧΕΙΡΗΣΙΑΚΑ ΑΣΦΑΛΕΙΑ - ΜΕΤΕΧΝΕΣ  
Tel: 20276570 - Email: [gama@crne.gov.gr](mailto:gama@crne.gov.gr)

ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΔΕΛΤΙΟ ΕΠΙΧΕΙΡΗΣΙΑΚΗΣ



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To US Department of Homeland Security and its Environmental Protection Agency (EPA)...

ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΚΕΝΤΡΟ ΕΚΤΡΩΣΗΣ ΜΗΡΟΦΟΒΙΑΣ ΚΑΙ ΤΡΑΥΜΑΤΩΝ

Η επιχείρηση αφορά στην υλοποίηση της απειλής...

ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΚΕΝΤΡΟ ΕΚΤΡΩΣΗΣ ΜΗΡΟΦΟΒΙΑΣ ΚΑΙ ΤΡΑΥΜΑΤΩΝ

Επισημαίνεται ότι η απειλή που αντιμετωπίζει η χώρα...

ΕΠΙΧΕΙΡΗΣΙΑΚΟ ΚΕΝΤΡΟ ΕΚΤΡΩΣΗΣ ΜΗΡΟΦΟΒΙΑΣ ΚΑΙ ΤΡΑΥΜΑΤΩΝ

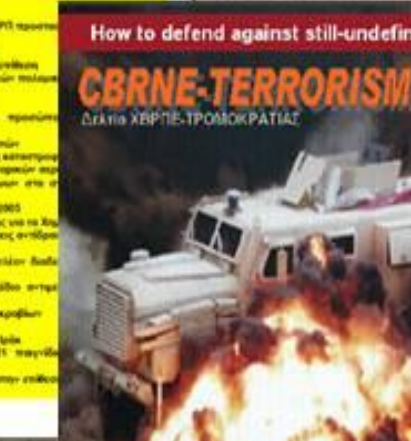
To US Nuclear Institute of Energy and Materials (NIEM)...



10 years



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November 2014



# CBRNE NEWSLETTER

E-Journal for CBRNE & CT First Responders

Fear



[www.cbrne-terrorism-newsletter.com](http://www.cbrne-terrorism-newsletter.com)

# CBRNE-Terrorism Newsletter – 2014©

November 2014

Website: [www.cbrne-terrorism-newsletter.com](http://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](mailto: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)



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## 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](mailto:Valia.Kalantzi@info@mendor.gr)

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

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



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## Editorial

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

*Editor-in-Chief*  
CBRNE-Terrorism Newsletter

*Dear Colleagues,*

November was a month characterised again by Ebola outbreak and IS atrocities. Ebola outbreak in West Africa revealed that we are still unprepared to deal with such medical emergencies in a pre-emptive way. The Ebola problem is not strictly medical. It is mostly technical related to personal and collective protection starting from medical air-evacuation all the way to receiving hospitals. Lack of preparedness and training facilitated secondary infections experienced from nursing personnel both in Europe and the United States. Repeated corrections in guidelines is a proof that the viral potential was not adequately addressed when the outbreak peaked. So far the PPE guidelines issued by ECDC is by far the most comprehensive with a lot of practical innovations that secure wearers against viral contamination. As for the hospitals preparedness status and organization was much better but for a very limited number of infected patients. Hospitals might have hi-tech equipment but what if an outbreak similar to the African one explodes in a European capital or an American metropolitan area? One might argue that the overall health status in our continents is by far better than that of Africa where running water is still a problem. This might be a good excuse to rest in current preparedness status but since the unexpected always happens, perhaps it is time for an eagle-eye approach of similar bio-threats.

A big debate evolved about the bioterrorism potential of Ebola virus. Most experts agree that the potential is low but it can happen under ideal situations advantaging the window provided by the incubation period of the virus. On the other hand the current plague outbreak in Republic of Madagascar is more dangerous than Ebola in Sierra Leone or Guinea. A scenario that has not widely appeared in experts chatrooms is the one involving bio-terrorists that survived the deadly virus but still have it inside their sperm and can transmit it to healthy individuals via sexual intercourse for 70-90 days. This hidden bio-bomb has not been addressed in all the isolation/quarantine directives limited to 21 days restrictions. WHO also caught by surprise and its overall response was not the anticipated one. It seems that huge organizations lack the flexibility and ability for fast responses to real emergencies. Let us hope that problems identified during the recent flu pandemic and ongoing Ebola outbreak will be transformed to lessons learned.

By the way: why we continue to write about an "outbreak" and not a "pandemic"? I copy from the ECDC website on "definition of pandemic":

*The internationally accepted definition of a pandemic as it appears in the Dictionary of Epidemiology is straightforward and well-known: "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people". It should be noted that this definition can apply to other infections subject to such global spread, e.g. cholera and HIV. There is no element of severity in it: while some pandemics are severe in the disease they cause in some individuals or at a population level, not all pandemics are severe.*

*WHO developed a more technical set of requirements for a pandemic: the emergence of influenza A virus significant different genetically from circulating human influenza A viruses (i.e. many of the population are non-immune to the new virus) with the following three characteristics:*

- *Able to infect humans,*
- *Able to cause disease in humans,*
- *Able to spread from human to human quite easily.*



*There is no reason for which an influenza pandemic has to be more or less severe than the preceding interpandemic (seasonal) influenza. Severity has never been part of the WHO definition of a pandemic, although the pandemic virus has to be able to cause disease in at least some people.*

Based on the above it is clear that we can speak about an "Ebola Pandemic".

Two Ebola related problems also emerged: the 'fear factor' among citizens in Western world and the "role of mass media" providing information to the citizens. There is a vicious circle between them. Lack of information detonates fear and lack of news' follow-up keep the fire live. For example: if one reads that there are Ebola cases on a merchant vessel heading a big port in Greece the interpretation is that "Ebola arrived in Greece". If the news agencies or the bloggers do not write an update that the "Ebola case was a malaria case" then the impression remains and this impression sometimes is complicated by the usual suspicion that the government is hiding reality for many reasons. In many cases "Ebola" is used for any case with fever – i.e. recent case in Cyprus where an epileptic seizure was taken as an Ebola case eliciting state response! And all that bring into surface the big issue of populace preparedness and education on major disasters (both natural or man-made). The biggest player continues to be out of the game in almost all state emergency response plans! Mainly because we do not want to panic the citizens! OK let them suffer the consequences of ignorance without the stress of preparedness!



Speaking about Cyprus: I recently visited Nicosia for a workshop of an EU-funded project (IMPRESS) held at the European University of Cyprus (EUC). I was impressed by the new Medical School they have! Amazing teaching facilities; fantastic clinical labs all equipped with simulation manekins (photo) and many others that made me to want to become a medical student again. I wish the best of

luck to medical students that have to opportunity to be taught in a very futuristic environment!

The Islamic State prospers and continue to spread terror and death in equal proportions. Western world is still to decide actions and schedule effective countermeasures. Recruitment inflow is also prospering (including small children) and very often we read about big numbers of fighters arriving in the area of operations mostly from European countries. Although all recognize the terrorist potential of these individuals upon returning home almost nothing is done to stop the flow. We also read about rehabilitation plans of those attracted by radicalistic ideologies. It seems that there are people in high places that still believe that they can push a button and a bad guy will become nice again posing no threat to the society. History proved that this is not the case. Guantanamo prisoners returned to the fields and many were involved in terrorist attacks in various parts of the world. In November another myth was busted – the one saying that if we are thousand of miles away from a hot spot we will never be affected by the flames! I am sure that now Canadians changed their mindset! Because if you do not follow the flow of history river (i.e. Norway's massacre) you will be deadly surprised.

A third issue of concern has to do with the chemical weapons in Syria and Iraq. Following the big issue of withdrawal and denaturation of CWAs from Syrian stockpile there is silence regarding the overall situation. In a recent CBRNe Workshop held in University of Rome Tor Vergata the OPCW representative was very careful in her presentation on this topic and there was no specific reference on who used CWAs against whom. It seems that after all the investigations done, we are still not sure about who is guilty of using them – only that sarin was used. A bigger silence is covering the CWA potential of abandoned CWAs in Iraq and the future role of IS most probably possessing them.



Despite the above do not think that the world is coming to its logic! Boko Haram continues its deadly role in Africa, the Maoist issue in India is slowly progressing (India is at sixth position on the Global Terrorism Index [GTI], according to a latest report released by US-based think tank Institute for Economic & Peace (IEP), Gaza-Israel status is still fragile (a third intifada is in progress [?]) while Hizbollah seems to have Iranian-made missiles able to hit all parts of Israel) while the situation in Afghanistan is same as usual – though not a very popular news' issue in our days. But bloodshed continues and I am sure that Talibans and supporters are envisioning huge massacres the moment that foreign forces will depart from the country (or will not according to latest leaks). British troops have ended combat operations in Afghanistan as they and US troops handed over two huge adjacent bases to the Afghan military, 13 years after a US-led invasion to topple the Taliban. The troops handed over to Afghan forces on Sunday (Oct 26, 2014) at camps Bastion and Leatherneck, in the southwestern province of Helmand. The timing of their withdrawal had not been announced for security reasons. Their departure leaves Afghanistan and its newly installed president, Ashraf Ghani, to deal almost unaided with an emboldened Taliban after the last foreign combat troops withdraw by year-end. After withdrawal, the Afghan National Army's 215th Corps will be headquartered at the 28sq km base, leaving almost no foreign military presence in Helmand. The US military leaves behind about \$230m of property and equipment for the Afghan military. This includes a major airstrip at the base, plus roads and buildings. The British experienced their heaviest fighting of the Afghan campaign in Helmand, losing hundreds of soldiers. Their presence was boosted in recent years by US troops as the UK wound down its operations. In all, 2,210 US and 453 British soldiers have been killed in Afghanistan since 2001, when the US-led coalition toppled the Taliban government shortly after the September 11 attacks. And all that for what? What really changed in this country where generations grew up between wars, occupations and terrorism? Still looking for a logic answer!

I will not comment on Greece status this time since nothing have changed so far. But I will say that the geopolitical game in our part of the world (SE Mediterranean area) is becoming more complicated than ever and certain players (both local but also far away) do not wish to play according to international rules. In situations like this you can easily discriminate real from not real friends. Time will show if oil/gas profit is over historic bonds and traditional synergies and coalitions. Belonging to West is not an empty cell but has human content and soul.

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!



*The Editor-in-Chief*





**Criminality support in modern era...**

Just another sample of the intellectual quality of a former empire!

# The Telegraph

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## The Elgin Marbles belong in Britain, Mrs Clooney

Had the ghastly Lord Elgin not plundered his works of art, they could have ended up in the footings of some Athens kebab stand



Part of the Elgin Marbles collection at the British Museum Photo: EPA

By **Jeremy Paxman**

5:10PM BST 25 Oct 2014

570 Comments

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## No Laughing Matter: Clown Terror Spreads in France

Source: <http://www.ndtv.com/article/world/no-laughing-matter-clown-terror-spreads-in-france-612116?site=classic>

A wave of panic sparked by evil clowns stalking French towns has spread to the south of France where police on Saturday night arrested 14 teenagers dressed as the pranksters, carrying pistols, knives and baseball bats.

A police source said the group of teens was arrested in the parking lot of a highschool in the

port town of Agde, as several other complaints poured in over "armed clowns" in the region over the weekend.

In the Mediterranean city of Montpellier a man disguised as a clown was arrested after beating up a pedestrian with an iron bar, while three motorists in different



towns complained about "scary clowns" threatening them.

The phenomenon of dressing up as an evil clown and terrifying passers-by -- a trend which has also been seen in the United States and Britain -- cropped up in the north of France in early October.

In the northern French town of Bethune, a fake clown last week received a six-month suspended jail term Monday for threatening passers-by while in full circus garb.

Using fake weapons these "clowns" have been "mostly spotted outside schools, but also on public roads, in bushes, in a square. Their targets are often young children or teenagers, but also adults," a police source in northern France told AFP.

**Theories abound as to the origin of the trend in a country where American fear-fest Halloween has yet to take hold.**

These include a challenge launched on social networks, a video published on YouTube showing a terrifying clown pranking people -- which have had some 31 million views -- or even a recent episode of popular series American Horror Story featuring Twisty the killer clown.

**Anti-clown vigilantism**

After a rumour a clown was stalking the eastern town of Mulhouse, five teenagers on

Wednesday armed themselves with a baseball bat, a teargas canister, a hammer and a truncheon to mete out vigilante justice to the not-so-funny pranksters.

They were arrested and later released, but the incident prompted the national police to step in to quell the hysteria.



"Since mid-October, a rumour inspired by videos published on the internet, is worrying the population about the presence of threatening and aggressive clowns in France," the national police said in a statement this week.

The statement cautioned that "despite numerous reports

made to police, there have been only a few sightings of people dressed as clowns having fun scaring passers-by."

"Symptomatic of the impact of the internet, this phenomenon can lead to damaging individual acts and disturbances to public order."

Whether brandishing a rubber chicken at a children's party or starring as the evil protagonist in a horror film, clowns have long had both the ability to both entertain and terrify. Infamous creepy clowns include notorious American serial killer and rapist John Wayne Gacy -- who would dress up as Pogo the clown -- to the fictitious Pennywise in Stephen King's movie "It".

**The fear of clowns is known as coulrophobia.**

**What is wrong with VVIPs Security?**

A second invasion to White House premises -- this time K9 units got the intruder. And on Oct 27<sup>th</sup> a man pushed PM Cameron (UK) while visiting Leeds. If the "top men" are not secure how can they expect us to trust them for own security?



**Extraordinary solar eTree transforms public seating**

Source: [http://www.israel21c.org/headlines/extraordinary-solar-panel-etree-transforms-public-seating/?utm\\_source=Israel21c+Weekly+Newsletter&utm\\_campaign=ad5192dc72-2014\\_10\\_29&utm\\_medium=email&utm\\_term=0\\_a2ed5ed71b-ad5192dc72-250351849](http://www.israel21c.org/headlines/extraordinary-solar-panel-etree-transforms-public-seating/?utm_source=Israel21c+Weekly+Newsletter&utm_campaign=ad5192dc72-2014_10_29&utm_medium=email&utm_term=0_a2ed5ed71b-ad5192dc72-250351849)



Lots of cities have free Wi-Fi, but only one – so far – has an eTree. This revolutionary ecological installation from Israel’s Sologic provides free wireless Internet, charging stations for electronic devices, nighttime lighting, and water coolers for humans and dogs – all powered by a “canopy” of solar panels. Just before the ceremonious unveiling of the very first eTree prototype, in the Ramat Hanadiv public gardens in Zichron Ya’acov, Michael Lasry of Sologic told ISRAEL21c that two more eTrees are soon to be installed, one in Nice and the other in Shanghai.

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**EDITOR’S COMMENT:** This is really nice! I must confess I had a similar vision for ugly traffic lights. Perhaps one day someone will change that as well!

**The woman who tackles medical mysteries**

Source: [http://www.israel21c.org/headlines/the-woman-who-tackles-medical-mysteries/?utm\\_source=Israel21c+Weekly+Newsletter&utm\\_campaign=ad5192dc72-2014\\_10\\_29&utm\\_medium=email&utm\\_term=0\\_a2ed5ed71b-ad5192dc72-250351849](http://www.israel21c.org/headlines/the-woman-who-tackles-medical-mysteries/?utm_source=Israel21c+Weekly+Newsletter&utm_campaign=ad5192dc72-2014_10_29&utm_medium=email&utm_term=0_a2ed5ed71b-ad5192dc72-250351849)

**Each year, one out of every 70 Americans receives a blood transfusion.** With the help of preservatives, the shelf life of red blood cells is more than a month. Yet there is an active debate whether fresher blood is a better choice for certain patients. Israeli researcher Dr. Rinat Abramovitch contributed critical information to this debate last year with her groundbreaking study proving that **stored donor blood actually harms the liver.**

Recently, Abramovitch received two major grants to investigate whether bleeding and further blood resuscitation affects the liver’s natural capacity to regenerate, and how this happens. “If you understand the mechanism, you can improve it,” Abramovitch tells ISRAEL21c. She won one of only two €60,000 three-year research grants awarded in 2014 by the European Society of Anaesthesiology, as well as an additional three-year



grant from Israel's Ministry of Health. These funds will be put to good use in her lab at the Goldyne Savad Institute of Gene Therapy at Hadassah Medical Center in Jerusalem.



and the Surgery Division at Tel Aviv Sourasky Medical Center.

Matot told her that in surgeries to remove a tumor from the liver, there is often massive bleeding, necessitating a blood transfusion. "The real question is whether this stored blood is good or bad for these patients."

Rinat Abramovitch receiving her grant from Prof. Andreas Hoeft in May 2014 at the 10th annual Euroanaesthesia Congress in Stockholm.

Abramovitch and her team devised a study where they removed half of the liver from lab rats. The control group was not given a blood transfusion. A second group received seven-day-old

Abramovitch, 48, prefers to gear her research toward practical solutions rather than abstract theories.

"It is worth doing research about medical mysteries; something that can help people," she says. "That is what gives me motivation."

Over the past 13 years, eight graduate students have worked in her lab with sophisticated imaging modalities to find answers to medical conundrums involving tumors and new therapies.

**"It's a matter of opening your ears to hear the problems physicians are talking about,"** says Abramovitch, who also is a senior lecturer at the Hadassah-Hebrew University School of Medicine.

**Novel findings about the liver**

In this case, the study resulted from discussions with her former Hadassah colleague, Dr. Idit Matot, now head of the Anesthesia, Pain and Intensive Care Division

blood and the third group received fresh red blood cells. They monitored the groups to see how the different approaches affected the liver's ability to regenerate, a process that takes only about a week in rodents and slightly longer in humans.

"When we started to compare the process of liver regeneration, our first insight was that bleeding delays the regeneration process and so it is important to administer blood. We then compared fresh versus stored blood, and showed that while fresh blood is helpful, blood stored for too long can be harmful."

Over the following year, Abramovitch's lab began investigating the genetic and cellular mechanism responsible for this phenomenon. The Israeli group is collaborating with scientists in Bonn, Germany.

The results thus far were so promising that the European grant was awarded to Abramovitch in Stockholm last May at the annual Euroanaesthesia congress.

**Christian school 'downgraded for failing to invite an imam to lead assembly'**

Source: <http://www.telegraph.co.uk/news/religion/11173102/Christian-school-downgraded-for-failing-to-invite-an-imam-to-lead-assembly.html>

**A successful Christian school has been warned it is to be downgraded by inspectors and could even face closure after failing to invite a leader from another religion, such as an imam, to lead assemblies, it is claimed.**

The small independent school in the Home Counties was told it is in breach of new rules intended to promote **"British values"** such as individual liberty and tolerance in the wake of the Trojan Horse



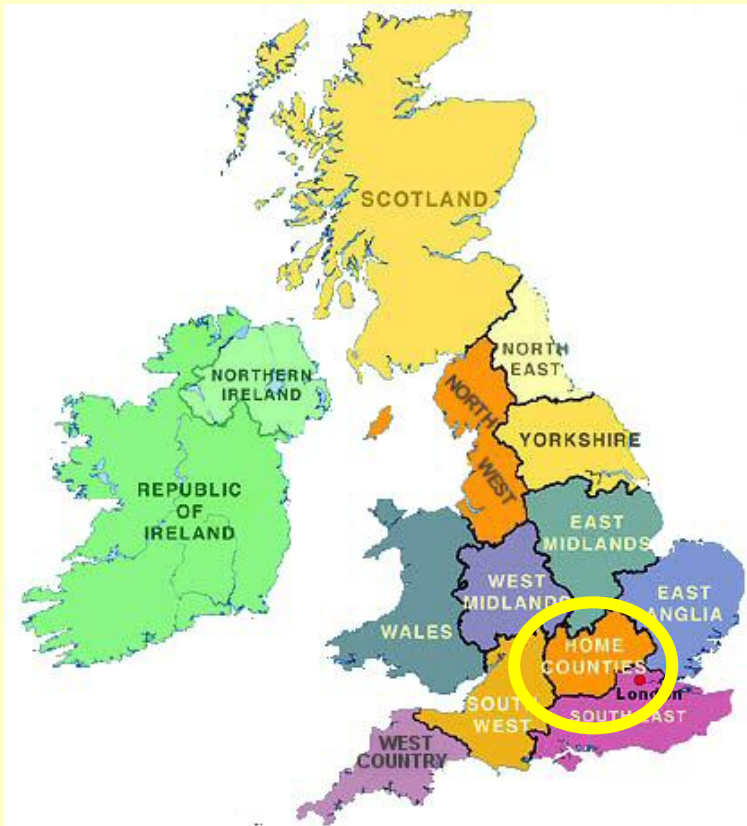
scandal, involving infiltration by hard-line Muslim groups in Birmingham. Details of the case are disclosed in a letter to the Education Secretary, Nicky Morgan, from

**new requirements there would be a further full inspection which could ultimately lead to it being closed.**

A Government consultation paper published in June, explaining the new rules, makes clear that even taking children on trips to different places of worship would not be enough to be judged compliant.

The Institute, which is already planning a legal challenge to the consultation, arguing that it was rushed through during the school holidays, fears that the new guidelines could be used to clamp down on the teaching of anything deemed politically incorrect on issues such as marriage.

“Worryingly, evidence is already emerging of how the new regulations are requiring Ofsted inspection teams to behave in ways which do not respect the religious ethos of faith schools,” Simon Calvert, deputy director of the Christian Institute, told Mrs



the Christian Institute, which is providing legal support to the school.

The group warned that the new rules intended to combat extremism are already having “disturbing consequences” for religious schools and forcing Ofsted inspectors to act in a way which undermines their ethos.

**It follows complaints from orthodox Jewish schools about recent inspections in which girls from strict traditional backgrounds were allegedly asked whether they were being taught enough about lesbianism, whether they had boyfriends and if they knew where babies came from.**

In the latest case inspectors are understood to have warned the head that the school, which was previously rated as “good” that it would be downgraded to “adequate” for failing to meet standards requiring it to “actively promote” harmony between different faiths because it had failed to bring in representatives from other religions.

**They warned that unless the school could demonstrate how it was going to meet the**

Morgan.

“The new requirements are infringing the rights of children, parents, teachers and schools to hold and practise their religious beliefs.”

Listing recent cases involving criticism of Anglican, Roman Catholic and Jewish schools by Ofsted, he added: “The Christian Institute is currently working with an independent Christian School which has been marked down by Ofsted for not promoting other faiths.

“Astonishingly it was told it should invite representatives of other faith groups to lead assemblies and lessons, such as an Imam.

“The wording of the regulations inevitably results in these kind of outcomes.

“While we obviously support attempts to address the problem of radicalisation, the current regulations fail to do this.”

A spokeswoman for Ofsted said: “Under Ofsted’s revised guidance for the inspection of schools, inspectors now pay greater attention to ensuring that schools provide a broad and balanced education for



their pupils, so that young people are well prepared for the next stage in their education, or for employment and for life in modern Britain.

“Inspectors will consider the effectiveness of the school’s provision for pupils’ spiritual, moral, social and cultural development and how the school’s leadership and management

ensure that the curriculum actively promotes British values.

“This includes, among other factors, pupils’ acceptance and engagement of different faiths and beliefs, and their understanding and appreciation of the range of different cultures within school and further afield.”

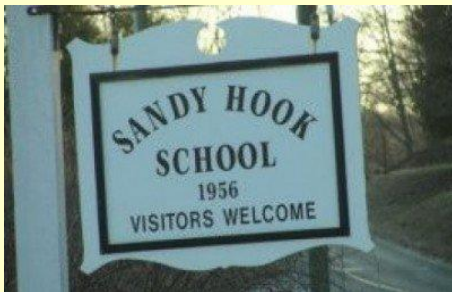


Instead of comments...

**“Protecting our Children” in the Wake of Sandy Hook: Psychiatric Surveillance of US Public School Children**

By Prof. James F. Tracy

Source: <http://www.globalresearch.ca/protecting-our-children-in-the-wake-of-sandy-hook-psychiatric-surveillance-of-public-school-children/5411780>



*Using the Sandy Hook Elementary School massacre as its justification, the Obama administration has recently given the psychiatric business and pharmaceutical industry a major gift by quietly introducing a behavioral and mental health program in public schools throughout the United States. The maneuver was initially laid out on January 16, 2013 in President Obama’s executive policy, Now is the Time: The President’s Plan to Protect Our Children*

*and Our Communities by Reducing Gun Violence.*

The document is partly devoted to articulating Obama’s proposed gun control measures that failed to move gain legislative traction in 2013.

Yet an under-reported section of *Now is the Time* is applied to “making schools safer” and



“improving mental health services” for students.[1] While presented by the Obama administration as “commonsense solutions to gun violence,” one is left to consider the long range implications of such an initiative, particularly in light of the Affordable Care Act and the psychopharmaceutical complex’s never-ending drive to expand its clientele.

On September 22, 2014 Department of Health and Human Services Secretary Sylvia M. Burwell announced \$99 million in new grants “to train new mental health providers, help teachers and others recognize mental health issues in youth and connect them to help and increase access to mental health services for young people.”[2]

On September 23 the Department of Education announced an additional \$70 million in “School Climate Transformation grants.” According to the DOE, over half of the funding “will be used to develop, enhance, or expand systems of support for implementing evidence based, multi-tiered behavioral frameworks for improving behavioral outcomes and learning conditions.” The goals of such measures include “connecting[ing] children, youths, and families to appropriate services and supports,” and “increase[ing] measures of and the ability to respond to mental health issues among school-aged youth.”[3]

Both HHS and DOE explicitly cite Obama’s *Now is the Time* declaration as rationale for the new programs. “The administration is committed to increasing access to mental health services to protect the health of children and communities,” Secretary Burwell asserts. “If kids don’t feel safe, they can’t learn,” Secretary of Education Arne Duncan similarly remarks. “Through these grants of more than \$70 million, we are continuing our commitment to ensure that kids have access to the best learning experience possible.”

Of the DOE’s \$70 million, \$13 million is allocated to aiding school districts in creating “high-quality school emergency plans.” Another \$14 million goes toward “Project Prevent grants” for violence-plagued schools to “be used for school-based counseling services, or referrals to community-based counseling services for assistance in coping with trauma or anxiety.”[4]

Such designs should be viewed in light of two related concerns that hint at broader motives

and agendas: 1) the US government’s continued aggressive transformation of the healthcare system; 2) psychiatry and drug manufacturers’ shared mission to persuade an increasing segment of the national and global population that it has one or more undiagnosed mental or emotional “disorders” that require analysis and treatment.

Introducing psychiatric explanations and methodologies into school environments guarantees a growing customer base for the psychiatric profession and pharmaceutical industry. Alongside government’s increasing control of healthcare, the technocratic surveillance and management of everyday thought and behavior is likewise emerging as part of what is deceptively termed “wellness.” In reality such efforts ensure an ever-expanding bureaucracy, handsomely line the pockets of a select few, and further normalize a culture of learned helplessness and control within an environment that already privileges conformity as a matter of routine.

Between the early 1990s and mid 2000s antidepressant use in the US increased almost fourfold.[5] At present 20 percent of Americans take at least one psychotropic medication, a figure that at the present rate of expansion will double by the early 2020s. Yet there is little evidence such drugs actually address the symptoms psychiatric patients are advised they have.

Indeed, the entire notion of “biological psychiatry”—that psychiatric conditions are rooted in observable processes—cannot withstand serious scientific scrutiny. Yet such notions comprise the underlying rationale of psychopharmacology. As psychology professor Elliot Valenstein observes,

The belief that the complex cognitive and emotional states that underlie any emotional disorder are regulated by a single transmitter receptor subtype is probably no more valid than the idea held earlier by phrenologists who believed that complex mental attributes could be localized in one specific part of the brain.[6] More recently, Dr. Richard Friedman, professor of clinical psychology at Weill Cornell Medical College, remarks, “[W]e don’t yet understand the fundamental cause of most psychiatric disorders, in part because the brain is uniquely difficult to study;



you can't just biopsy the brain and analyze it. That is why scientists have had great trouble identifying new targets for psychiatric drugs.”[7] At present de facto behavioral examinations are administered by medical providers' inquiring on a patient's tobacco and alcohol intake. Yet psychiatry has been pushing for “mental health screenings” to ferret out clientele since the early 1990s. The fact that such mental health practices are being introduced throughout the nation's schools suggests how they will likely become much more commonplace under in coming years.

“Absolutely, people should have a mental health checkup,” notes Dr. Jeffrey Borenstein, editor of the American Psychiatric Association's *Psychiatric News*. “It's just as important as having a physical checkup.” Borenstein recommends the “P.H.Q.-9,” a “patient health questionnaire,” freely available online, as a preliminary assessment for determining mild-to-major “depressive disorder.” The P.H.Q.-9 was designed with funding from Pfizer.[8]

Perhaps coincidentally, the HHS and DOE announced their mental health grants just two weeks before National Depression Screening Day on October 9th. The occasion for “mental health awareness” has been observed since the early 1990s by Screening for Mental Health, Inc., a nonprofit 501c(3) offering its own free online examination.

“People stop and they check in on their physical health but they don't do the same with

their mental health,” says Michelle Holmberg, director of programs at SMH. “In the same way you would get a blood pressure screening ... why aren't people stopping to do mental health screenings?”[9]

Saul Levin, the CEO and Medical Director of the American Psychiatric Association, sits on Screening for Mental Health's board of directors. SMH received over \$16 million in “gifts, grants, contributions, and membership fees” between 2008 and 2012, according to the organization's 2012 federal tax return, suggesting backing from APA and like-minded stakeholders.

Corporate news media have thoroughly blacked out the Obama administration's program that further transforms the nation's public schools in to lucrative referral centers for big psychopharma. In contrast, most school shootings that have become routine throughout the US receive considerable publicity, yet almost no investigative work or follow-up from the same news outlets sensationalizing them.[10]

Alongside Obama's mental health mandate, the coverage further anchors in the public mind the idea—however subtle—that practically all youth are potential time bombs that must be closely monitored and, where appropriate, defused. Such approaches only negate the possibility for achieving what they implicitly promise: the prospect for self realization within a genuine community of peers.

► Notes are available at source's URL.

*James Tracy is an educator located in South Florida. His work on media history, politics and culture has appeared in a wide variety of academic journals, edited volumes, and alternative news and opinion outlets. Tracy is also an affiliate of Project Censored.*

### Night-Vision Capability for nano UAV

Source: <http://i-hls.com/2014/10/night-vision-capability-nano-uav/>

The world's smallest operational military UAV with night capability was unveiled by Prox Dynamics. The PD-100 Black Hornet is an 18-gram single-rotor helicopter UAV. It is fitted with both long-wave infrared and day video sensors, and can transmit video streams as well as high-resolution still images via a digital datalink with a 1m range.

According to Aviation Week, more than 3,000 PD-100 air vehicles have been delivered, and the system has been used operationally in Afghanistan by British army units since 2013.

The complete system weighs 1.3 kg and comprises two vehicles, a charging and transport case and a ground control station. The UAV helicopter has an endurance of 25 min. and can operate in a 15-kt. wind.





Norway-based Prox Dynamics produces most components of the PD-100 itself, above the chip level.



For example, the company buys the IR detector but has designed and built the new camera itself, and also designs and builds the high-efficiency propulsion motor. Component design, the company says, allows the PD-100 to achieve a useful endurance while powering the cameras, datalink and GPS receiver.

**USA – Schools review lockdown protocols for active shooter scenarios**

Source: <http://www.homelandsecuritynewswire.com/dr20141106-schools-review-lockdown-protocols-for-active-shooter-scenarios>

Schools across the country are reviewing their lockdown protocols for active shooter scenarios. In Santa Fe, New Mexico, Ortiz Middle School is encouraging educators to not only gather students within their care to safety, but if necessary to fight off an

students in her classroom, got them to help barricade the door, and she was prepared to use any object including books and chairs to fend off anyone who might try to enter the classroom.

For years, teachers were urged to deal with emergency lockdowns by turning off classroom lights, silencing all mobile devices, and shuttering windows. **The new approach** to active shooter lockdown is a response to the 2012 massacre at Sandy Hook Elementary School in Newtown, Connecticut, that left six faculty and twenty first-graders dead. Dubbed the **“Run, Hide and Fight”** approach, teachers are encouraged to escape if possible, but only fight as a last resort, as



attacker if the situation permits. On 9 October, school principal Steve Baca ordered a lockdown after a security guard discovered a gun in a student’s backpack. Immediately, English teacher Alexandra Robertson locked

fighting back is a better strategy than acting as a stationary target. The *Santa Fe New Mexican* reports that Brad Spicer, head of Safe Plans, a security firm that



trains and consults organizations on security measures, supports Run, Hide and Fight. Spicer admits that it is unrealistic to expect teachers and students to be trained in responding quickly to an active shooter and running does not guarantee safety, but the odds are better for those who plan to escape. "We have to get people away from the lockdown response, the idea that hiding under the desk or in the closet makes you safe," he said.

Michael Horn, president of Safe Havens International, a campus safety and security firm, disagrees with the Run, Hide and Fight approach, adding that if implemented properly, the lockdown approach will work. Run, Hide and Fight can induce panic he said. "Cops don't think like teachers, and teachers don't think like cops," he said.

The night before Baca ordered a school lockdown, the Santa Fe Police Department had

presented the Run, Hide and Fight approach to parents and teachers at the school. "You have children who are counting on you getting them out of there alive," Santa Fe police Sgt. Ben Valdez told the assembly of about fifty educators. Active shooters, he said, "are looking for the path of least resistance." And they know law enforcement officers are coming for them, so they are racing against the clock to inflict damage fast, Valdez said.

According to Valdez, previous active shooter events show that **students and teachers who either ran or blocked entrances to their classrooms were more likely to survive**. He also stressed that running is an option only if teachers and their students feel confident that the shooter is far away. Escaping out of first floor windows is also encouraged. "If they can get out, then we'd like them to get out," Valdez said.

**Iran – Dog owners face receiving 74 lashes if they take their dog for a walk**

Source: <http://www.dailymail.co.uk/news/article-2823712/Dog-owners-face-receiving-74-lashes-dog-walk.html>

**Dog owners could be arrested and subjected to 74 lashes if they are caught taking their pet for a walk or keeping one in their home under a proposed Iranian law.**

**A bill presented by 32 members of the Iranian Parliament claimed that owning a dog as a pet harms the country's Islamic culture because of their 'uncleanliness'.**

Violators could be arrested if they are caught accompanying their pet in public and forced to pay a fine of up to 100 million rials, around £2,243, or receive 74 lashes.



Unwelcome pets could also be confiscated and transferred to a zoo or desert, according to the bill.

An excerpt of the bill released by France-based opposition group National Council of Resistance of Iran, said: 'Anyone who takes a pet like a monkey or a dog in public and damages the Islamic culture or the health and tranquility of the people - particularly children and women, or attempts to buy or sell them, or keep them at their

house, and not to act on the warnings issued by State Security Forces (police), would be fined between 10 to 100 million rials or would receive 74 lashes, plus the pet would be confiscated.'

**The law will exempt police officers, farm owners, sheep herders and fishermen.**

Dog ownership has been frowned upon over the past years from authorities who criminalise its owners and deem it as an imitation of Western culture.

Animal supporters regard the rule as a crackdown on youth and an attempt to suppress freedoms in the conservative country.



The Iranian regime has already banned drivers travelling with pets in their cars.



In 2011, authorities threatened to criminalise dog ownership and said the growing popularity of keeping the pets 'poses a cultural problem, blind imitation of the vulgar Western culture'.

In June 2010 Grand Ayatollah Naser Makarem Shirzi warned that dog ownership would lead to family corruption and damage societal values.

'Many people in the

West love their dogs more than their wives and children,' he said.

The Ministry of Culture and Islamic Guidance then banned all media from publishing adverts about pets, according to AFP.



Another side of our ugly world

Horse brought to hospital to say goodbye to its dying owner

Source: <http://www.telegraph.co.uk/health/healthnews/11217366/Horse-brought-to-hospital-to-say-good-bye-to-its-dying-owner.html>

A dying grandmother was granted a final wish of seeing her favourite horse one last time - after the animal was brought to visit her in her hospital bed at Wrightington, Wigan and Leigh NHS Foundation Trust.

Sheila Marsh, a 77-year-old grandmother-of-four, passed away from cancer just hours after the horse, named Bronwen, was brought to see her at Wigan Royal Infirmary.

Mrs Marsh, who had raised the horse over 25 years since it was a foal, was wheeled outside the hospital for the meeting.

Their last encounter was captured in a moving photograph that shows the horse nuzzling up against her.



Gail Taylor, bereavement liaison specialist nurse at the hospital, said: "We listened and acted on Mrs Marsh's last wishes.

"Sheila gently called to Bronwen and the horse bent down tenderly and kissed her on the cheek as they said their last goodbyes."



Mrs Marsh's family arranged for the horse to visit her after her condition deteriorated. Mrs Marsh, who lived in Bickershaw, Wigan, had a life-long affiliation with horses and used to work at Haydock Park Racecourse.

Her daughter Tina, 33, said: "She loved her horses and she loved and adored all animals. She had six horses, three dogs, three cats and other animals.

"Her condition did not get any better and the hospital allowed us to bring Bronwen in. It was a matter of hours later that she passed away. I want to thank the hospital and all the nurses.

**Improvements in robot steering could save lives**

Source: <http://i-hls.com/2014/11/improvements-robot-steering-save-lives/>

A team from Sweden was able to greatly improve the ability of operators to perform



tasks with remotely piloted emergency robots by making the bots steer less like tanks and

more like a first-person shooter video games like Call of Duty. It's a small change that could save lives in an environment where an emergency robot has a limited amount of time to perform a life or death task like finding a survivor in a collapsed building.

Emergency response robots are really just small, remotely controlled tanks so the default steering system, not surprisingly, is akin to video games of the dual analog control system era. The operator has to move the robot to face a particular direction before it can move in that direction.



Petter Ögren, an associate professor at the Center for Autonomous Systems (CAS) at Stockholm's KTH Royal Institute of Technology, set out to test a counter-intuitive theory, that less tank-like controls could improve emergency workers' ability to steer small, tank-like robots. He designed an alternative "free look" piloting system.

Free look control is common in first-person shooter games. It's been around since 1992 but it wasn't until the 1993 release of the blockbuster video game Doom that free look went on to become the defining characteristic of the first-person shooter. "The idea is to reduce the mental strain on the operator, so they can focus on the environment they are dealing with," says Ögren.

Though free look has been an aspect of video game design for almost twenty years, it wasn't until very recently that it made its way into robotic piloting. Earlier this month, at the Association of the United States Army convention in Washington, iRobot demonstrated a new robotic steering system called uPoint Multi-Robot Control that exhibited clear free look characteristics. The company told Defense One that the system is not



**CALL OF DUTY**  
**ADVANCED WARFARE**

intended to emulate free look video game steering.

Ögren tested it on a group of fire fighters out of Pisa, Italy. Of the 16 users, 12 preferred the free look control to the tank control. The free look users also performed better. One of the experiment tasks involved finding a certain number of so-called markers in a given space. The operators need lots of degrees of freedom to visually investigate the space and find various markers. "Using tank control, the average was 4.5 markers per user. Using free look control, they found an average of 6," Ögren said. In a real world setting, that improved capability could translate to one or two more survivors found before a roof collapse or explosion. Making robot steering schemes more like Call of Duty and less like Resident Evil is more important than improving user experience — it will actually save lives.

**Quick Halal test device**

Source: <http://www.homelandsecuritynewswire.com/dr20141110-quick-halal-test-device-determines-whether-food-contains-pork>

**There are more than a billion Muslims on Earth, and many of them observe the Halal strictures, making the Halal segment of the food market a multi-billion dollar segment – worth \$6.8 billion in France alone.** A French start-up is now offering Muslims – and observant Jews, for that matter – a portable

device which would allow them to find out whether a dish they have ordered or the food product they have bought contains pork. Capital Biotech says its Halal Test device determines, within ten minutes, whether a food contains



pork meat, which is forbidden for Muslims and Jews. Co-founder Jean-Francois Julien told *Le Point*

Bendali said. "It's difficult to invest seven euros to test a bowl of pasta that costs three," he said.



that the company, which was launched only a few months ago, has already received orders worth \$135,000, a "surprise" according Julien. The company notes that the test, which uses the company's disposable, **one-use device costing €6.90**, does not constitute a comprehensive Halal test, because Halal rules govern the manner in which the animal was slaughtered, information the device cannot provide.

The test "allows you to dispel a one-off doubt, for example when you are on holiday or when a new 'Halal' product hits the market," said Julien.

**To test a dish or a product, the user mixes a small amount with hot water and inserts a small strip into the mixture. The strip tests for pork proteins and takes less than ten minutes.**

TV5 Monde quotes Abbas Bendali from marketing firm Solis, who said that France's five million Muslims have witnessed several food scandals — in 2011, for example, "Halal" sausages were found to contain pork — and want to be sure they are not eating forbidden food.

Capital Biotech says it expects 70 percent of its sales to be to professionals and businesses who want a quick way of testing whether food is suitably for non-pork eaters.

Consumers may be deterred by the relatively high price for a disposable, one-use device,

Muslims are more reassured by "a genuine Halal certificate" from a recognized religious authority, he said.

The company says it is now going beyond pork to develop reference for tests on all types of food allergies. It plans to launch a range of tests for soya, egg, or almonds — all potential allergens — in ready meals. The firm will then begin to market tests for gluten, peanut, or milk. In the future, the start-up plans to extend its quick-fire testing to pharmaceutical products.

Faycal Bennatif, marketing director of the world's leading biological analysis group Eurofins, told AFP it was not down to the consumer to perform quality tests on food products.

He said that in the wake of the horsemeat scandal which rocked Europe last year, Eurofins has been approached with requests to test meat products, but has not developed a quick-fire test.

"We work with DNA sequencing in the lab which is not at all the same method," said Bennatif, adding he was "dubious" as to how efficient the new quick tests were.

Capital Biotech says it already has its eye on the next market by securing domain names for "kosher tests."





**Adorable moment baby chimpanzee clings to mother during operation**

Source: <http://www.express.co.uk/news/nature/534614/Baby-chimpanzee-mother-operation>

Mother chimp Jutta, 40, had to be put under anaesthetic so that surgeons could remove the stubs of two

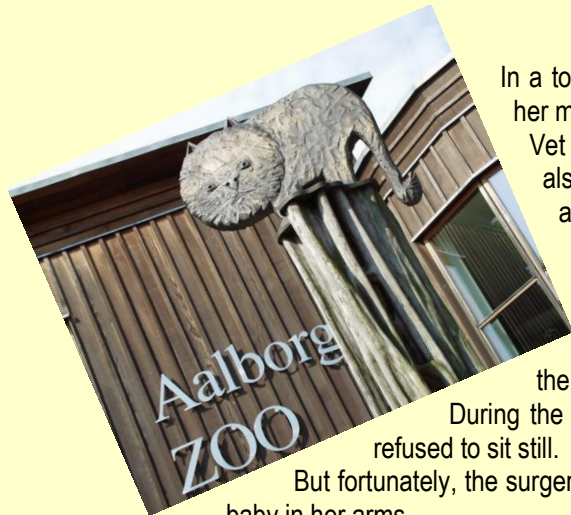


teeth that had broken off and risked creating infection if they were not removed. But the relatively straight-forward operation proved trickier than anticipated when doctors realised it was going to be difficult to separate baby chimp My from her parent. In the run up to the surgery, zoo keepers at Aalborg Zoo in north-east Denmark decided to keep Jutta



and baby together right until the last possible minute to minimise any stress. They had planned on separating them once the anaesthetic had kicked in, but the baby chimp soon became distressed at the thought of leaving mum.





In a touching turn of events, veterinary staff then decided to let My stay with her mother WHILE they operated on her.

Vet Trine Hammer Jensen, 39, said: "The baby chimp was nervous and also quite clearly keen on protecting its mother after she was put under anaesthetic.

The baby chimp was nervous and also quite clearly keen on protecting its mother after she was put under anaesthetic

Vet Trine Hammer Jensen

"In the end we decided it was possible to do the operation and leave the chimp where she was clutching onto her mother while we worked."

During the operation, the baby chimp was extremely fidgety and had completely refused to sit still.

But fortunately, the surgery went relatively smoothly and Jutta had been allowed to wake up with baby in her arms.

She said: "At one point she even chewed through the wires that were monitoring the mother's heartbeat. But in the end it all went to plan."

Jutta, who is a mother of eight and also a grandmother, is an important member of the chimpanzee community at the zoo.

Both mother and baby are doing well - despite Jutta now missing two teeth.

**The emergence of Islamic coinage**

Source: <http://www.thenational.ae/the-emergence-of-islamic-coinage>

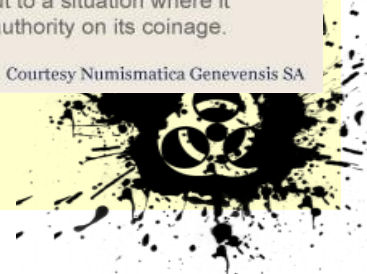
The emergence of Islamic coinage



The first coin is a Byzantine solidus, the common currency of the Christian Byzantine empire during the seventh century; the other is an example of one of the earliest forms of Islamic coinage, minted at the order of Muawiyah I, the scribe and secretary to the Prophet Mohammed and the one-time governor of Syria who was crowned in Jerusalem in 661AD as the first Umayyad caliph.

The production of hybrid coins such as the "Islamised" solidus (right), marks an important step, not just towards the stability associated with an Islamic empire that could control the quantity and quality of its own money supply, but to a situation where it could also stamp that confidence and authority on its coinage.

Courtesy Numismatica Genevensis SA





**ISIS Introduces New Currency**

Source: <http://www.newsweek.com/isis-islamic-state-iraq-syria-oil-jihad-terrorist-terrorism-site-284211>

November 13 – The Islamic State (ISIS) announced plans to begin minting its own currency on Thursday. The terrorist organization gave specifics to SITE Intelligence Group, an organization that monitors the jihadist threat. ISIS told SITE the new currency, minted in gold, silver and copper, will remove Muslims from the "satanic usury-based global

*comprehensive project, by the grace of Allah, to mint a currency based on the inherent value of the metals gold and silver.*

Within the gold currency, there are two coins: one dinar with a symbol of seven wheat stalks and five dinar with a symbol of a world map. Within silver, three coins: one dirham symbolized with a spear and shield, five dirhams with a white minaret of Damascus and 10 dirhams with the al-Aqsa mosque. For the copper currency, one 10 fils coin has a crescent while another 10 fils coin has a palm tree. It is unclear



economic system." The currency was created by Abu Bakr al-Baghdadi, the organization's leader. The terrorist group's statement on the matter, translated by SITE, reads:

*Based on the directive of the Emir of the Believers in the Islamic State, Caliph Ibrahim, may Allah preserve him, to mint current for the Islamic State, as it is far removed from the tyrannical monetary system that was imposed on the Muslims and was a reason for their enslavement and impoverishment, and the wasting the fortunes of the Ummah, making it easy prey in the hands of the Jews and Crusaders, the Treasury Department studied the matter and presented a*

how ISIS plans to mint the currency at this time, but ISIS has said its Treasury Department will "organize the minting, how to obtain the money, its value, and the relationship between its different categories and how to deal with it." In regards to the conversion rate, Adam Raisman at SITE told Newsweek, "IS stated it's based on the 'inherent' value of gold and silver, and named the various denominations. It's not known based on the statement how their Dinar converts to Dinars in other Islamic countries." In addition to sending information regarding currency, ISIS provided SITE with an audio recording of al-Baghdadi, in an attempt to prove the jihadist leader is alive after airstrikes that were thought to have injured him.

**Turkey Reaches Out to Latin America's Muslims**

By J. Millard Burr and Rachel Ehrenfeld

Source: <http://acdemocracy.org/turkey-reaches-out-to-latin-americas-muslims/>

Since the fall of the Morsi government, Turkish Prime Minister Recep Tayyip Erdogan's efforts have doubled to elevate his stature in the Muslim world and turn Turkey into the new center for the International Brotherhood (al-Ikhwan al-Muslimun). While the Ikhwan penetration of Europe has advanced for a half-century, little attention has been given to Latin America's Muslims.

To remedy the situation, for the first time in the history of the Ikhwan, the organization's leadership has extended a hand of friendship to Muslim leaders of Latin America. In 2006, Erdogan's push into the Latin continent came in handy. On November 11th, Istanbul welcomed some seventy-one Muslim leaders to a four-day gathering labeled the First Latin



American Muslim Religious Leaders Summit. Turkish deputy Prime Minister, Yalçın Akdoğan, urged those present to “take action against anti-Islam propaganda across the world.” Turkey’s dominant Directorate of Religious Affairs (DIB) played host to representatives from all Latin American countries. The President of Religious Affairs, Professor Mehmet Görmez, opened a conclave that was based on the theme “Building Our Tradition and Future.” Görmez opened the meeting with remarks on “the current global problems Muslim communities face as a community,” noting in particular the oppression of minorities, internal conflicts, and economic problems that beset the Islamic community (ummah).

As often is the case, especially these days, the presence of the Ikhwan was downplayed and obfuscated, and this summit’s organizers claimed their agenda was not “to impose any ideology, or shift the current conflicts in Muslim regions to other lands, but rather to initiate a dialogue to discuss the opportunities for cooperation, and relationship building in religious, historical and cultural areas, as well as sharing experiences in religious education and services.”

In his speech, Görmez admitted, given the years of tribulation that had impacted the Muslim world, it took some time to reach out to Muslims in Latin America. “Today, we gathered to rebuild the brotherhood we have long neglected and exchange views with brothers we have not heard from for decades.” The meeting was also attended by religious organizations from Africa, Europe and the Middle East — the Eurasian Islam Council, the African Religious Leaders Summit, the Meeting of European Muslims, the Balkans Meeting of Religious Directorate Leaders, and the World Islam Scholars’ Peace, Moderation and Foresight Initiative.

The participants discussed the need for “religious leaders who speak Spanish and religious books in Spanish,” and called to

create easily accessible credible online sources of Islam.

Certainly, Görmez has been busy since mid-year. Last August he denounced the pronouncements of the Islamic State (IS, ISIL, ISIS; Da’esh) to declare a caliphate (khilafa) with Abu Bakr al-Baghdadi as caliph (khalifa), claiming they contradict Islam: “Their actions may perhaps be explained by medical and psychiatric terms,” he said. Clearly, Turkey, home to the last caliph, is not ready to relinquish its claim to the Islamic Caliphate.

In October, while serving as the official delegate of Turkey’s Department of Religious Affairs during his pilgrimage (hajj) to Saudi Arabia, he announced that Turkey was about to found a new Islamic university in Istanbul. Although he would deny it, it was unspoken, but obvious, that in the wake of the Ikhwan disaster in Egypt, Görmez and Erdogan, were planning an alternative to compete with Cairo’s renowned Al Azhar University, the Muslim World’s primary institution of learning. Görmez concluded that the Turkish exertion would be “an important project for humanity.”

Just how the Latin representatives will respond to the Turkish overtures bears watching, if for no other reason than the Sunni Muslims have had reason to fear Shiite inroads in Latin America. The Hezbollah is very powerful in the Argentina-Brazil-Paraguay tri-border region. In Brazil alone the Muslim population is estimated to be approximately one million people. Since the Iranian President Mahmoud Ahmadinejad’s promise of \$1.1 billion in aid to Bolivia, during his visit to La Paz in 2007, Iran continued in a more overt way what was already a serious effort to make an impact in Latin America. The “summit” held in Istanbul, is likely the first step to counter the Iranian influence.

With Turkish support, the hour is at hand for the Muslim Brothers to organize chapters in Latin America. If that is so, should its governments be on the qui vive?



*J. Millard Burr is a Senior Fellow at the American Center for Democracy. Rachel Ehrenfeld is Director of ACD*

## Satelites do not lie...

За мгновения до крушения "Боинга" под Донецком - уникальный кадр в аналитической программе "Однако"

(Moments before the crash "Boeing" near Donets)

Source: <http://www.1tv.ru/news/leontiev/271824>



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**The next Flotilla to Gaza may well include Latin Americans and with them their governments support of Hamas**

Source: <http://i-hls.com/2014/11/next-flotilla-gaza-may-well-include-latin-americans-governments-support-hamas/>

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### Transforming planes into flying aircraft carriers

Source: <http://www.homelandsecuritynewswire.com/dr20141119-transforming-planes-into-flying-aircraft-carriers>



Military air operations typically rely on large, manned, robust aircraft, but such missions put these expensive assets — and their pilots — at risk. While small unmanned aircraft systems (UAS) can reduce or eliminate such risks, they lack the speed, range, and endurance of larger aircraft. These complementary traits suggest potential benefits in a blended approach — one in which larger aircraft would carry, launch, and recover multiple small UAS. A flying carrier would allow the United States to

use of drones in areas where the United States has no access to nearby airfields, but recovering a drone in mid-air remains a daunting technical challenge.



**Who gave her the right?**



Who gave her the right to disgrace the uniform she wears? What they do in their bedroom is their own right and selection. No problem with that! At all! But NOT in public! And NOT while wearing her uniform – any uniform!

**When nations poison children...**

November 22 – During an international soccer match between Greece and Serbia in the Island of Crete (Chania) three children (in front of the Serbian team), crossed their hands to shape the Albanian flag

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symbol – common gesture of those favoring the "dream" for a "big Albania" the map of which shows occupying territories from neighboring countries – including Greece!  
We do not know if we have to laugh (again) or really worry about actions like this one. Although for the time being we choose the first option, what will happen if we stop laughing?



## Christianity is being extinguished in the land of its birth and the West is to blame, say Syria's faithful

Source: <http://www.telegraph.co.uk/news/worldnews/middleeast/syria/11247798/Syrian-Christians-Help-us-to-stay-stop-arming-terrorists.html>

Outgoing artillery shook St Elias church as the priest reached the end of the Lord's Prayer. The small congregation kept their eyes on the pulpit, kneeling when required and trying to ignore the regular thuds that rattled the stained glass windows above them.

Home to one of the oldest Christian communities in the world, the hard to reach Syrian agricultural town of Izraa has stood the comings and goings of many empires over the centuries.

But as the country's civil war creeps closer, it is threatening to force the town's Christians into permanent exile: never to return, they fear.

"I have been coming to this church since I was born," said Afaf Azam, 52. "But now the situation is very bad. Everyone is afraid. Jihadists control villages around us."

A Canaanite city that was mentioned in the Bible, Izraa has lived through Persian and Arab rule, with St Elias's Church being built in 542AD - 28 years before the birth of the Prophet Mohammed in Mecca.

During the past four years of Syria's war, its Christian population has largely stayed put, despite the war destroying much of the surrounding province of Deraa.

In the last two weeks however, men from the al-Qaeda linked Jabhat al-Nusra and other rebel groups have captured the nearby towns of Nawa and al-Sheikh Maskin, bringing the frontline to less than two miles away. They are now trying to assault Izraa.



Sunday service at the church of St Elias in Izraa. The pews are sparsely populated because the frontlines are less than two miles away. The sounds of outgoing shellfire regularly interrupts the service. Photo: Ruth Sherlock/The Telegraph

Some of the rebels were vetted by the CIA as "moderate Muslims" and subsequently trained and armed in Jordan, as part of a US-led program to bolster a non-sectarian opposition to President Bashar-Assad.

But past experience has rendered such distinctions irrelevant to Izraa's Christians. After all, in Syria - and on this frontline - the "moderates" continue to work in alliance with Nusra. And the conquest of other Christian villages by the opposition has shown that more moderate factions frequently do little to stop the jihadists imposing their will.



"It's simple," said Father Elias Hanout, 38, who led the prayers at Sunday's service. "If the West wants Syria to remain a country for Christian people, then help us to stay here; stop arming terrorists."

The pews were sparsely occupied for last Sunday's service in St Elias, with the choir missing its tenors and altos. Mrs Azam, who led the hymns, was reluctant to acknowledge the exodus at first, saying the singers were absent "because of work". But as the tempo of the falling shells increased outside, she admitted: "People from here are leaving. Many are applying to emigrate."

Exactly how many Christians have left Syria is difficult to say, but according to the Christian charity Open Doors, some 700,000 have left the country, which equates to some 40 per cent of Syria's pre-war Christian population.

Christian leaders in the country warn of an exodus on the scale of Iraq, where the 1.5 million-strong community that lived there prior to the first Gulf War is now down to as little as a tenth of its former size. The threat to towns like Izraa will be uppermost in the mind of the Pope during his visit to Turkey this week, amid warnings from Christian leaders worldwide that their religion might soon lose its foothold in the very region where it was born.

Looking around his 1,500 year old church, Mr Hanout warned: "In this land the Word started. And if you delete the Word here, then Christianity across the world will have no future."

Evidence of the Church's heritage is everywhere in Izraa's narrow streets. Across from St Elias, lies the chapel of St George, an octagonal stone building that is said to be one of the most ancient churches in the world. Dating to 515 AD, it was originally converted from a pagan temple, and an inscription on its stone lintel reads: "Hymns of cherubs replaced sacrifices offered to idols and God settles here in peace, where people used to anger him."



The church of St George is said to be the oldest continuously inhabited church in Syria and one of the oldest in the world. Photo: Ruth Sherlock/The Telegraph

Today, Izraa remains a mixed town of both Christians and Muslims. And in early 2011, when the uprising in Syria was defined by popular protests rather than war, a small number of Christians had welcomed the calls for regime change.

That changed when the Islamists began to dominate the rebel ranks.

"Nobody wants these men to advance," said one resident, who asked not to be named. "They are frightened of their town being overrun by Islamists,"

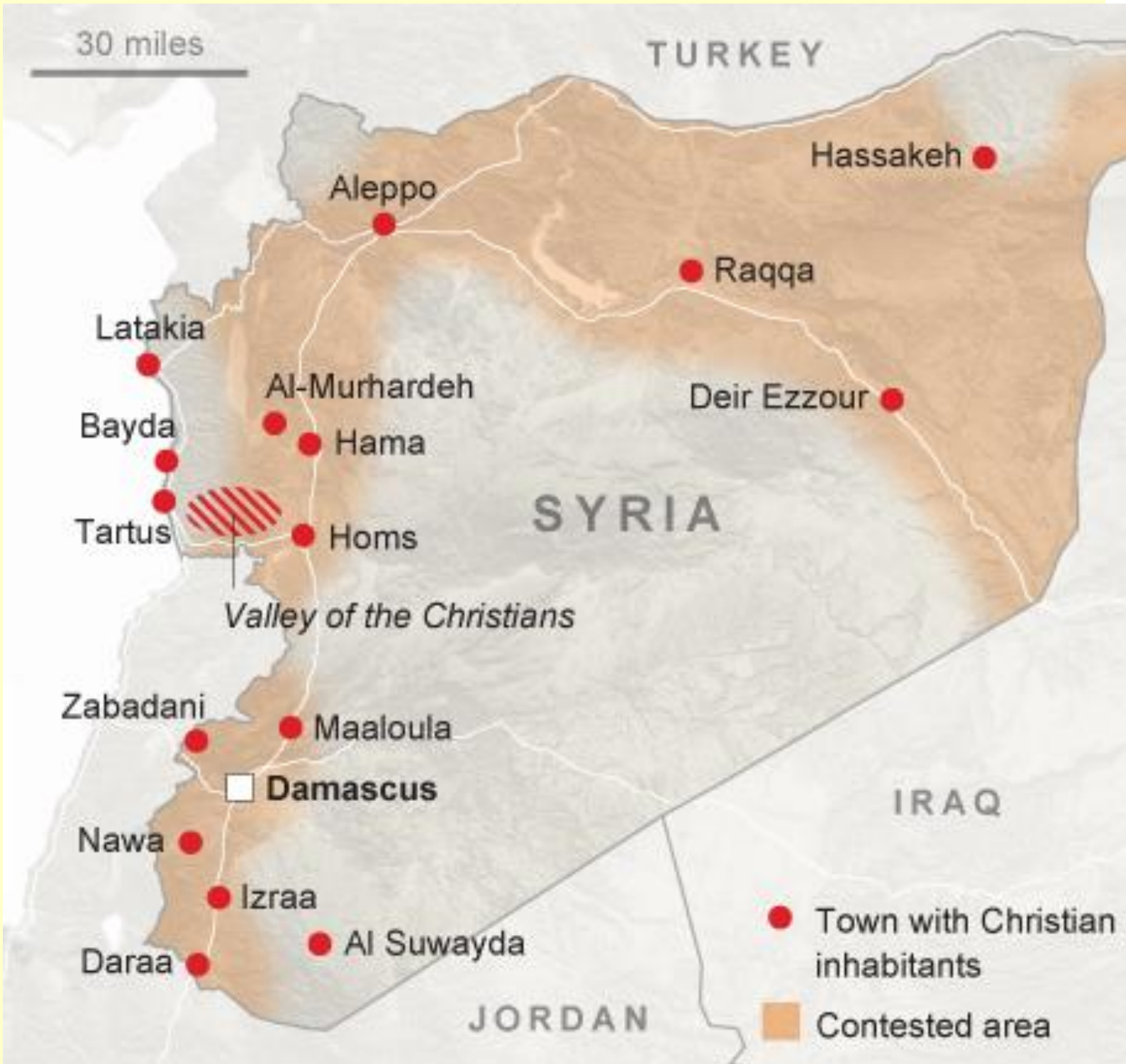
Instead Izraa's Christians have sought solace in the government's defences, and increasingly blame the West for their suffering.

Mrs Azam added: "When evil comes you have to defend your country. We love our government, just as we love our country."





The picture in Izraa is one repeated across other Christian pockets of Syria. Christian homes in Deir Ezzour, Raqqa, and in Hassakeh, home to the Syriac Christians, the oldest denomination on earth, are all devoid of their inhabitants. From Homs too, a major Christian stronghold, many have left.



Map of Syria showing the location of Christian communities Image: Telegraph Graphics

Some Christian residents initially remained in the Christian town of Ghassaniyeh in northern Latakia province when it first fell to the rebels in mid-2012. A few weeks later however, Islamic extremists took control of the terrain. Christian men were kidnapped,



captured or forced to flee. They desecrated the church, ransacked homes and murdered the priest. Even in Bab Touma, the Christian quarter in the old city of Damascus, residents told the Telegraph they were looking to leave.

Eva Astefan, 43, said she applied to the United Nations for asylum, after her 14-year-old daughter, Adel



was shot and killed by a rebel sniper in 2012.

Eva Astefan, 43, is seeking asylum after her 14 year old daughter Adel - in the photo - was shot by a sniper. Photo: Ruth Sherlock/The Telegraph

The family had been driving down the highway back to Damascus after attending the "Feast of the Holy Cross" in nearby Maaloula, when a hail of

bullets pierced their vehicle, one entering her daughter's skull who was sitting in the back. Mrs Astefan's nephew, Joseph Haroun, 29, said: "Its our country and we love it, but we feel we have little choice.

"The terrorists - referring to the opposition rebels - kidnap and kill our men and dangle the holy cross over their bodies."

It is not just Christian's who are suffering. The war in Syria is political as well as sectarian, and, as it draws closer to Izraa, the town's schools and municipal offices have become impromptu shelters for thousands of refugees from all sects.

Only a small number of the fighters near Izraa are from Nusra, with many of those fighting coming from local Sunni families.

Abo Mohammed, a frail Sunni man in his early sixties - who spoke using a pseudonym - told how of men who were his neighbours, fellow Sunnis, killed his "whole family" in revenge because his son is serving in the Syrian military.

"They entered our house in al-Sheikh Maskin and attacked my son, my brother, my brother's children and my nephew. They broke their arms and legs and then threw them from the roof. I am the only one who escaped," he said, tears welling in his eyes.

It is precisely because al-Qaeda is weak in the south of Syria, that the West and its allies have concentrated on sending weapons to rebels in this area.

Residents from other sects have been able to return to their homes, even when they are in rebel control, but Christians fear that if they leave and their town is then captured by the opposition - even one led by western trained groups - they will never be able to return.

So, they put their hopes in the Syrian military that is now protecting the town. At the main entrance to the town are sandbagged army checkpoints, plastered with posters of President Bashar al-Assad. Military vehicles, laden with weapons, drive full-pelt across the intersection down the road that marks the beginning of the frontline.

In Izraa, shop fronts have been painted in the Syrian flag to rouse nationalist fervour, the graffiti of past anti-government protests has been scrubbed out or painted over.

Instead, the sense is of having been abandoned by other "Christian nations" such as America and Britain, no matter what the promises of their leaders are.

As another priest in Izraa, who asked not to be named, put it: "Please tell Mr Cameron, we don't want any help or donations - but please, equally, stop arming terrorists."



**Marine Dad Takes Stand After Daughter Gets 'F' for Refusing Islamic Indoctrination**

Source: <http://www.charismanews.com/us/46222-marine-dad-takes-stand-after-daughter-gets-f-for-refusing-islamic-indoctrination>

The Thomas More Law Center (TMLC) today announced its representation of John Kevin Wood, and his wife, Melissa, in their battle with La Plata High School in Maryland over the



Islamic indoctrination of their 11th-grade daughter in her World History class. Their daughter was required to complete assignments where she had to affirm that "There is no god but Allah" and the other Five

that Islam is not "a religion of peace;" and he would not budge from his position.

The Thomas More Law Center is a national public-interest law firm based in Ann Arbor, Michigan. TMLC Senior Trial Counsel, Erin Mersino, and Maryland attorney, Michael F. Smith of The Smith Appellate Law Firm, represent the Wood family. Yesterday they filed a request for records relating to the case under Maryland's Public Information Act.

On Oct. 22, 2014, John Wood discovered that his daughter was being forced to repeat religious tenets of Islam as a part of her World History class assignment. She was required to write how the prophet Muhammad was visited by the angel Gabriel and preached that there is only one true god, who is Allah. The assignment made her write that Mohammad is



Pillars of Islam.

The case gained national attention when the school banned John Wood from entering school property after he objected to the religion of Islam being taught in his daughter's history class and demanded that she be given an alternative assignment. The school refused. Wood, a former Marine who served in Operation Desert Shield/Desert Storm and lost friends in that action, saw firsthand the destruction caused in the name of Allah and

the messenger of Allah and that the Quran is holy text.

The assignment required her to affirm that "Allah is the same god that is worshipped in Christianity and Judaism" and that the "Quran is the word of Allah revealed to Mohammad in the same way that Jews and Christians believe the Torah and the Gospels were revealed to Moses and the New Testament writers." The assignment also



forced young women such as the Woods' daughter, to fill in the following sentences: "Men are the managers of the affairs of women" and "Righteous women are therefore obedient."



When John Wood discovered the Islamic propaganda and indoctrination, he was rightfully outraged, and that evening unsuccessfully tried to contact the school by phone to voice his objections. Wood witnessed firsthand the destruction caused in the name of Allah and knows Islam is not "a religion of peace." He served in Operation Desert Shield/Desert Storm, and lost friends in that action. On 9-11, Wood responded as a firefighter to the smoldering Pentagon. He refused to allow La Plata High School to subject his daughter to Islamic

indoctrination despite the threatened academic consequences.

The next day, Oct. 23, Wood had a phone conversation with a La Plata vice principal where he again reiterated his objections to his daughter being indoctrinated into the religion of Islam. The vice principal indicated that his daughter, a high school junior with college hopes, would receive zeros on her assignments on Islam if she did not complete them. He asked how the religion of Islam could be taught when schools are prohibited from teaching the religion of Christianity.

The following day, Oct. 24, John Wood again spoke with the vice principal. She again refused to allow an alternative assignment.

Commenting on the case, Richard Thompson, TMLC's President and Chief Counsel stated: "Adding insult to injury, in an arrogant and unnecessary display

of power, La Plata's principal issued a written "No Trespass" notice, which denied this former Marine who stood in harm's way defending our country—which included the principal and her staff—any access to school grounds. The school's actions not only dishonored John Wood's service, but the service of all men and women in our Armed Forces who defended our nation from Islamic violence. True to his Marine training, John Wood stood his ground. He did not retreat. Yes, his daughter has received a failing grade in her World History Class. But the story is not yet over."



## Improved First Responder Ensembles Against CBRN Terrorism (IFREACT)

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

From the October 2014 issue of CBRNe World Magazine:

IFREACT Feature

Dr Catherine Bertrand, project coordinator for IFREACT, on the three year odyssey to bring better protection to Europe's first responders

# The fire's strong fury

The Improved First Responder Ensembles Against CBRN Terrorism (IFREACT) began in 2012 as a European commission funded project under the seventh framework programme (FP7). It is a consortium of European CBRN manufacturers, subject matter experts and end users, tasked collaboratively with research on and the production of an advanced protective ensemble that will enhance the chemical, biological and radiological capability of European first responders and the public at large.

To prepare adequately for terrorist attacks involving CBRN agents, IFREACT's role is to

involve dangerous substances and also revise requirements, needs, analyze and draw conclusions. The ultimate goal is to develop the next generation of innovative protective clothing for first responders.

The equipment currently used by first responders handling an incident is far from ideal, as confirmed in the European Security Research Innovation Forum's (ESRIF) final report of December 2009. Personal protective equipment (PPE) is heavy and bulky, and a physiological burden that interferes with first responders' operational duties. It is also a concern that current PPE is neither

attacks or other types of hazmat incident, is not well suited to the enormous impact these incidents often have. CBRN protective garments for first responders need to protect against a myriad of threats, whilst still allowing the responders to fulfil their 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. Protecting our first responders adequately, whilst maintaining a high standard of operability in case of a CBRE event, is of the utmost importance. First responders are our

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<http://www.cbrneworld.com/#axzz3HLM099Zx>

## Next-generation technology for first responders: intuitive, instinctive, and interoperable

Source: <http://www.homelandsecuritynewswire.com/dr20141027-nextgeneration-technology-for-first-responders-intuitive-instinctive-and-interoperable>

DHS's Science and Technology Directorate (S&T) has a vision for a new age of first responders, a vision which will enable first responders and their technology to be more intuitive, instinctive, and interoperable.

The Next-Generation First Responder suit will incorporate wearables, the Internet, and cellular connectivity, along with multiple environmental and biological sensors to help firefighters, law enforcement, and aid workers, better perform their jobs safely.

At last week's Wearables + Things technology conference, Robert Griffin, the new deputy undersecretary for DHS's Science and Technology Directorate (S&T) shared the department's vision for a new age of first responders, noting that S&T will soon release a

five-point vision which will enable first responders and their technology to be more intuitive, instinctive, and interoperable. According to *Fedscoop*, DHS plans to spend the next three to five years leveraging commercially available wearable technology to improve how first responders operate in emergencies. "What we're looking for is not government-off-the-shelf products, but commercial-off-the-shelf products," Griffin said. "What wearable technology can we adapt that already exists to realize the dream we laid out." Griffin, a former fire chief, understands the needs of first responders and will rely on his experiences and conversations with state and local governments



as well as the private sector to develop the new generation of wearables for public safety.

On 17 November, S&T will launch a program to develop a Next-Generation First Responder suit that incorporates wearables, the Internet, and cellular connectivity, along with multiple environmental and biological sensors to help firefighters, law enforcement, and aid workers, better perform their jobs safely. **Using Ideascale, a crowdsourcing platform**, DHS will rely on inputs from the private sector and the public throughout the developmental phase of the suit. "We're going to try and take multiple approaches because one size doesn't fit all," Griffin said. "(Ideascale) is a better way to crowdsource some of these ideas, particularly where some of these areas can get pretty down into the weeds. This is part of what we are trying to do to be more transparent but also

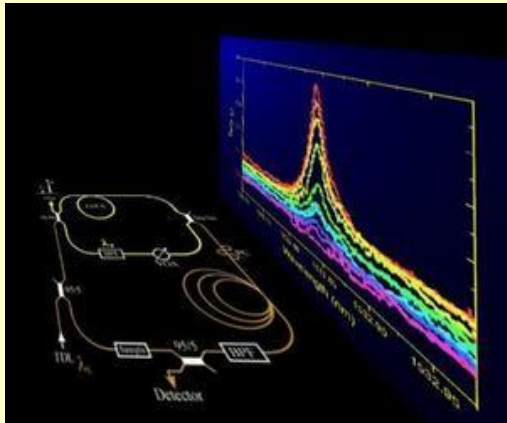
to begin a process of engaging industry and users and begin to think about the operators."

DHS's wearables initiative is part of the department's larger vision to integrate new technology into public safety. The *Homeland Security News Wire* recently reported on DHS's outfitting of Border Patrol canines with wearable electronics. Thousands of border agents are currently outfitted with smart wrist-watches, wearable cameras, and clothing equipped with health and safety sensors capable of monitoring body temperatures and stress levels. "The long-term vision is that fully aware, fully connected, fully integrated responder," Griffin says. "We recognize that it could take us 20 to 30 years, maybe longer to get there. It's not just a technology issue, its usage, its operating procedures, its governance, and training. It's part of the whole continuum we need to think about."

### Light frequencies help sniff out deadly materials from a distance

Source: <http://www.homelandsecuritynewswire.com/dr20141027-light-frequencies-help-sniff-out-deadly-materials-from-a-distance>

DARPA earlier this month issued a solicitation for proposals responsive to its Spectral Combs



from UV to THz (SCOUT) program, which seeks new capabilities for highly sensitive remote detection of multiple biological or chemical agents in liquid or gaseous forms. A proposers' day was held 15 October via Webcast.

**DARPA says that spectroscopic chemical sensing, which measures the frequency of light absorbed or scattered from a substance to help determine its molecular**

**identity, can be used to detect traces of biological and chemical agents and residue from explosive materials.** Current capabilities in operational military environments, however, lack the sensitivity and broad spectral coverage needed to detect and distinguish among deadly chemicals and the "frequency clutter" generated by common components in the atmosphere.

The SCOUT program aims to overcome these shortcomings by harnessing optical frequency comb (OFC) technology, which is akin to using thousands of lasers simultaneously (like extremely fine teeth on a hair comb) to enable both high sensitivity and wide spectral coverage for detecting multiple types of substances at extended distances.

"In laboratory settings we've seen proof of principle that it's possible to identify and quantify multiple substances at a distance of two kilometers or more, but no portable sensors exist today that can detect and distinguish among multiple chemical or biological agents in gas or liquid form at even half that distance," said



Prem Kumar, DARPA program manager. "The challenge DARPA is addressing is to develop portable, microchip-size optical frequency combs that display a high degree of sensitivity and specificity across the electromagnetic spectrum, even in a cluttered frequency environment."

The program has identified four spectral regions for technical development of chip-scale OFCs and potential uses: Ultraviolet to visible (useful for biological threat detection and real-time monitoring of chemical reactions); mid-wave infrared (useful for breath analysis applications); long-wave infrared (useful for

detection of explosives); and submillimeter/terahertz (useful for detection of complex molecules). Additionally, SCOUT aims to develop new techniques in chem/bio sensing that exploit the unique properties of optical frequency combs.

DARPA note that the SCOUT program seeks expertise in optical materials processing and device fabrication, chip-based OFC generation, high-resolution metrology and molecular spectroscopy, algorithm development and data processing, as well as domain expertise in trace level chemical and biological threats detection to achieve success in the program.

### European CBRNE Center trains customs and border staff in the Balkans

Source: <http://www.teknat.umu.se/english/about-the-faculty/news/newsdetailpage//european-cbrne-center-trains-customs-and-border-staff-in-the-balkans.cid241857>

The European CBRNE Center (photo) at Umeå University, Sweden, will conduct a training course for border staff and customs in Sarajevo, Bosnia-Herzegovina, on 28-30

**basics of the CBRN field. The second part is planned to take place in late autumn and will cover more practical components.**

During the second part, participants will work on emergency plans and road maps related to CBRN incidents. The plans will then be incorporated in the participating countries' border and customs practices.

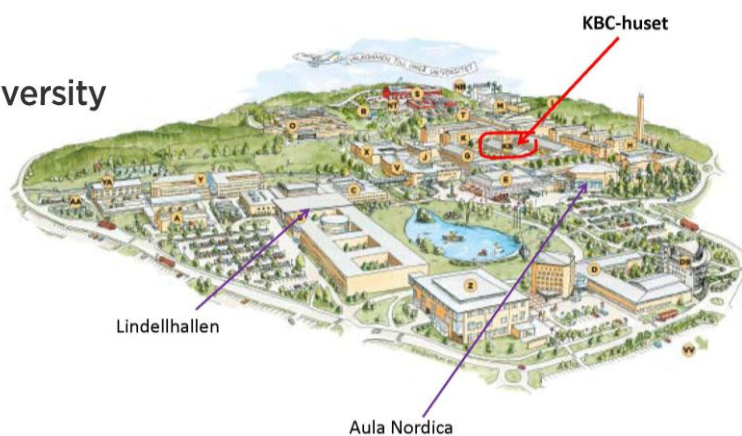
The current security context, characterised by the Ebola epidemic in West Africa, a complex situation in the Middle East, and a growing concern of terrorist

October within the framework of the project on "Building Capacity to Identify and Respond to Threats from Chemical, Biological, Radiological and Nuclear Substances". **The course will involve 20 participants from Serbia, Croatia, FYROM and Bosnia-Herzegovina.** The training will give the participants the basic knowledge on how to quickly respond to a possible incident involving dangerous substances.

**The first part of the course will focus on Chemical, Biological, Radiological and Nuclear (CBRN) theory and will include the**

threats highlight the importance of having well-trained customs and border staff. The training course which is conducted by the European CBRNE Center will have lectures held by staff from the European CBRNE Center and the Swedish Defence Research Agency (FOI). The course will raise the participating countries' CBRN preparedness.

Following the course, participants will be able to safely and correctly handle, for example, suspected goods or vehicles that might contain chemical or biological



weapons, and if an accident occurs they will be able to handle the acute phase of a CBRN incident, says Dzenan Sahovic, Director of the European CBRNE Center and Coordinator of the project.

**The Training Project is an event part of the EU CBRN Risk Mitigation Centres of Excellence Initiative.** The Initiative is funded by the European Commission and implemented in cooperation with the United Nations Interregional Crime and Justice

Research Institute (UNICRI). The European External Action Service is also involved in the follow-up of the initiative. The initiative is developed with the technical support of relevant international and regional organisations, the EU Member States and other stakeholders, through coherent and effective cooperation at the national, regional and international level. **The initiative involves 48 countries in 8 regions of the world.**

**CT CBRNe Award Winners**

Source: <http://www.nctawards.com>



The NCT CBRNe Awards are part of Asia's premier CBRNe event, Conventional Threat: CBRNe Asia. During the last three years, NCT CBRNe Asia has become the largest and leading forum in the field of CBRN defense in Asia. After successful regional events in Thailand (2012) and Malaysia (2013), NCT CBRNe Asia 2014 came in its third year to the magnificent Koh Pich (Diamond Island) City Hall in Phnom Penh, Cambodia. Having taken place from October 14-16 in cooperation with the United Nations Office for Disarmament Affairs (UNODA) as well as the Cambodian Ministry of Defense and National Defense Authority of Chemical Weapons, NCT CBRNe Asia 2014 welcomed more than 250 visitors from over 30 countries.



**NCT CBRNe Awards Gala Dinner**

The NCT CBRNe Awards Gala Dinner represented the glamorous highlight of this 3-day event.



Therefore the Koh Pich City Hall showed off his outstandingly beautiful site while official government delegations arrived in limousines with police escort before strolling down the red carpet. In front of 150 invited attendees, H.E. General Em Sam An, Secretary of State at the Cambodian Ministry of





Interior opened the festive gala together with fireworks, dancers and the two hosts of the evening: Iija Bonsen (Managing Director, IB Consultancy) and Elsa Schrier (Consultant, IB Consultancy). While the delegations enjoyed a 6 course menu of exquisite Cambodian cuisine and while casting the final votes for the NCT CBRNe Community Award, this year's winners had been announced in 4 categories:

Handed out by Prof Dr Aung Kyaw Myat, Deputy Minister of Science and Technology of Myanmar, the **NCT CBRNe Innovation Award** for the most innovative product went to **NBC-Sys' 'BioChemGel'**, for presenting an outstanding and cost-friendly alternative to the predominant approaches of using liquid-based decontamination techniques for biological and chemical decontamination of infrastructures. Further nominees were CEA's 'Biodosi' air sampler and 908 Devices' M908 handheld device utilizing high-pressure mass spectrometry for time-critical missions.

The **NCT CBRNe Product Award** for the best CBRNe solution on the market was won by **Camtech's 'Camthrex' biodetection handheld device**, for being truly innovative, versatile and end-user friendly, and integrating a large number of application areas. Further nominees were Bluecher's Saratoga Protective Suits, as well as Irdam's Military meteorological sensor MAWS6056HCGPS.

For the **NCT CBRNe Community Award**, the online voting and the live voting during the Gala Dinner knew a very clear winner with over 50% of the total votes: the **German Army's Joint CBRN Defense Command** was awarded for being an example of successful and efficient transformation of CBRN defense organization responding to changes in this century's CBRN threat environment and providing an integrated comprehensive response approach from prevention and training to efficient recovery. Other nominees were again 908 Devices' M908 handheld device and Prof Dr. Lawrence Roberge from Atlantic International University, USA.

And finally, the **NCT CBRNe Capability Award** for the country or organization that has improved its capabilities or has had an impact on the capabilities of another country or organization, goes to the **US Defense Threat Reduction Agency (DTRA)** for the worldwide known and numerous capability building programs. Other nominees were the German Federal Office for Economic Affairs and Export Control (BAFA), the United Nations Office for Disarmament Affairs (UNODA), and Interpol.

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In cooperation with CBNW Magazine, we sincerely congratulate this year's winners and wish to thank our jury, consisting of Guy Roberts (Former Deputy Assistant Secretary General for WMD Policy at NATO), Lt Gen Ke Da (NDACW, Cambodia), Dr Zalini Yunus (STRIDE, Malaysia), Laurent Olmedo (Program Director Global Security, CEA, France), Lt Col Frank Kaemper (CBRN Defense Desk Officer, Ministry of Defense, Germany), and Dr. Dave Sloggett (CBNW Magazine, UK). We're looking forward for new applications for the NCT CBRNe Awards in 2015.

### **Police, hazmat, counter terrorism team called to clear chemical suicide scene**

Source: <http://www.smdailyjournal.com/articles/news/2014-10-29/police-hazmat-counter-terrorism-team-called-to-clear-chemical-suicide-scene/1776425132409.html>

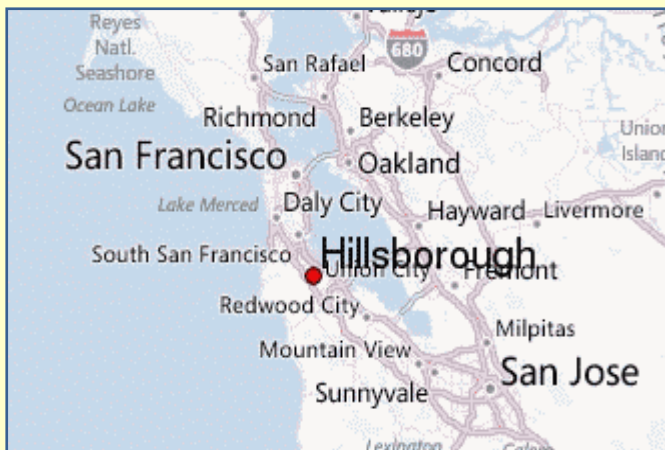
Hillsborough police and the county's Terrorism Counter Assault and hazardous material teams spent nearly seven hours working to clear the scene of a young man who died by chemical suicide Sunday night.

Police were called to the 1000 block of Hayne Road around 9 p.m. to find an 18-year-old Hillsborough resident enclosed in his car with a warning note taped inside the driver's side window, Hillsborough police Capt. Doug Davis said.

One of the first officers on scene was injured after he walked by the car and was overcome by fumes, Davis said. The officer was taken to the hospital where he was treated and released, Davis said.



The county's Terrorism Counter Assault Team, made up of various departments' SWAT teams, have



**been trained to handle chemical suicide cases after previous cases occurred in the county and nearby,**

Davis said. In September, a father and son died after inhaling chemicals in Mountain View.

Neither Davis nor the San Mateo County Coroner's Office would confirm which chemicals the young man used, however, **hydrogen sulfide is commonly used in these cases.**

Police are unsure who made the initial 911 call or whose home the man was parked in front of when he was found,

Davis said. But the note is indicative of a chemical suicide case whereby the victims warn others of the danger, Davis said.

"Once this stuff dissipates off into the air, it's no longer a threat, but it's a threat in a confined space," Davis said. "There was a note, typical chemical suicide note. Just a warning that there's a harmful gas inside."

**New micromotor technology can zap chemical and biological warfare agents.**

Source: <http://www.insidescience.org/content/neutralize-bioterrorism-just-add-tiny-motors-water/2231>

Researchers around the world are studying how to destroy chemical and biological warfare agents without anyone getting hurt. **A research group at the University of California, San Diego has demonstrated the ability to destroy dangerous agents, such as nerve gas and anthrax spores, with a recent new invention: self-propelled micromotors.**

Micromotors can act as tiny nanotorpedoes that propel themselves through fluids using chemical energy. Ordinary micromotors consist of double layers of iron and platinum rolled up into tubular structures. If a dangerous agent was detected in a liquid, scientists and decontamination crews could add the motors to that liquid, along with the chemical that serves as their fuel, hydrogen peroxide. The peroxide reacts with iron within the motors, and through a series of reactions also involving water, produces a jet of oxygen bubbles that propel the micromotor in a whirling motion. The tube is coated on the outside with a catalyst or active chemical compound that destroys the dangerous agents. Because of their stirring action the decontamination rate is much higher. But the research group at the University of California, San Diego **demonstrated that a new type of micromotor can neutralize a**

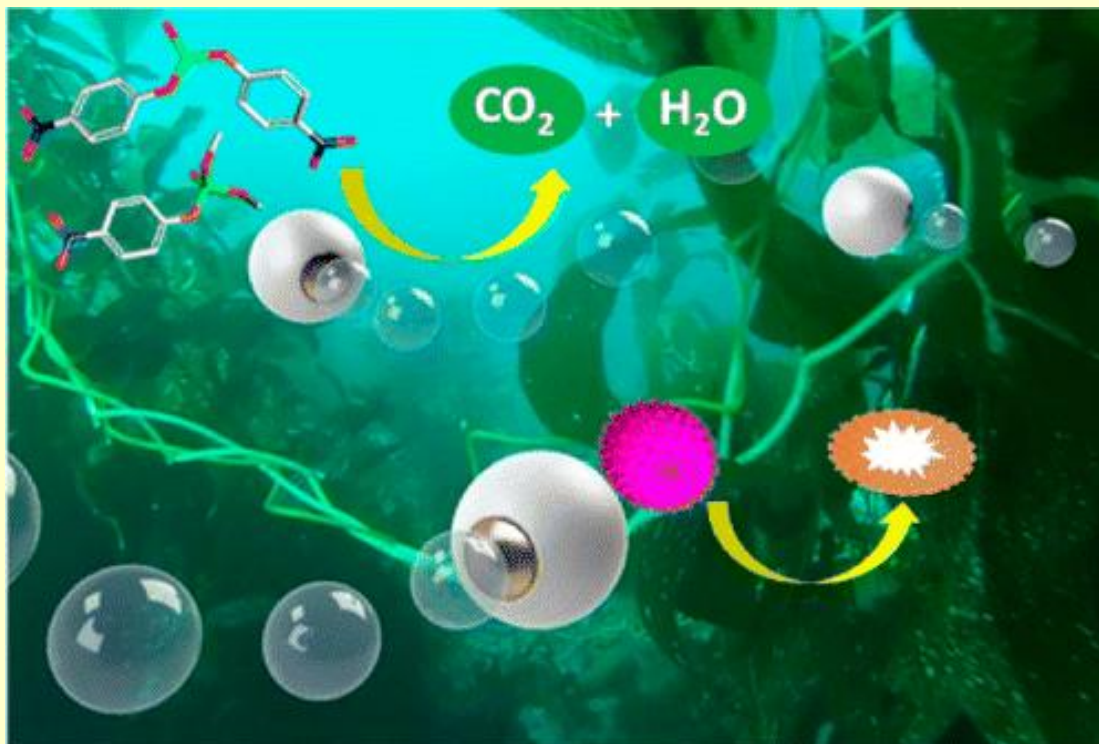
**category of nerve gases, and destroy anthrax cells. Both categories are among the most dangerous biological warfare agents. The new motors don't need added fuel such as hydrogen peroxide, but run on water.** The micromotors are covered by a layer of titanium dioxide, and when illuminated with ultraviolet light the top layer releases highly reactive radicals, which oxidizes and destroys dangerous agents. The research was published in the journal *ACS Nano*.

"This is a project funded by the Defense Threat Reduction Agency, but it can also be used for other decontamination processes, and environmental decontamination in general," said Joseph Wang, a chemist and nanoengineering researcher at the University of California, San Diego.

**The micromotors consist of spherical magnesium nanoparticles about 20 micrometers across, or two to three times the size of a human blood cell. These nanoparticles are dispersed on a glass slide, coated with a layer of gold nanoparticles. A layer of titanium dioxide is then deposited on the gold layer by evaporation, leaving a circular**



hole where the magnesium touched the glass, exposing the magnesium inside. This configuration is called a "Janus sphere," named for the two-faced Roman god Janus.



When the researchers added the micromotors to water, the water reacts with the magnesium, with gold acting as a catalyst. The reaction produces hydrogen bubbles that propel the microspheres around, causing the required stirring.

In one test, the researchers investigated what happened after they added their micromotors to a mixture of water and a compound called b-NPP, which has a similar chemical structure as nerve gases known as organophosphates, but without the toxicity. They found that the magnesium-based micromotors broke down almost 97 percent of the molecules within 10 minutes, while micromotors coated the same way but without motion only decomposed 15 percent.

Will micromotors be able to destroy chemical and biological agents in meaningful quantities in the future?

"They showed that this is feasible," said Vladimir Fomin, a physicist at the Institute for Integrative Nanosciences, at IFW Dresden, in

Germany. Their experiments use contaminated solutions of 600 microliters – fewer than 10 drops of liquid – which is too little for a meaningful result, he argued.

"If they are talking about an application that will

help avoid a danger to human society, there should be a much larger amount of material that is undergoing this degradation process," said Fomin.

Wang plans to work with larger samples in the future.

"We will try to make it as close to relevant biodefense conditions as possible," he said.

Using gold to make the nanomotors could be an impediment for wide-scale application, argues Fomin. These micromotors can only be used in water, they will not be able to eliminate nerve gasses dispersed in air, but only residues that end up in water supplies or reservoirs. Widespread use of titanium-oxide-coated particles could also cause problems because they are very strong oxidizers, and can kill life.

"When released into the environment, they can have a very big impact on the ecosystem, said Hsin-Hou Chang, a molecular biologist at the Tzu-Chi University in Taiwan.



► Read the full paper at: <http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/nn505029k>

## New version of Chemical Hazards Emergency Medical Management (CHEMM)

Source: <http://chemm.nlm.nih.gov/>

The National Library of Medicine® has released a new version of Chemical Hazards Emergency Medical Management (CHEMM). Chemical emergencies are high risk events that require first responders and others to quickly make a series of complex decisions to minimize the risk of injury to their patients and themselves. The tools in CHEMM provide a comprehensive resource to help make decisions and provide them with the right information when, where, and how it is needed most. CHEMM enables first responders and other healthcare providers and planners to plan for, respond to, recover from, and mitigate the effects of mass-casualty incidents involving accidental or terrorist chemical releases. It provides evidence-based information and guidance on a wide variety of topics, including quick chemical identification, acute patient care guidelines, and initial event activities.

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**Examples of new or updated content in CHEMM include:** 1) updated and enhanced content on Decontamination Procedures, Discovering the Event, and Training and Education, 2) an NIH CounterACT program funded database with information on twenty-two medical countermeasures (including efficacy, relevant publications, research in progress, FDA and other global regulatory status information), 3) content for how emergency responders can recognize and handle events dealing with toxic gases generated by the combinations of consumer products or common household chemicals, 4) a workshop report describing toxic chemical syndromes, or toxidromes, that lays the foundation for a consistent lexicon for use in CHEMM and for other uses that, if adopted widely, will improve response to chemical mass exposure incidents, 5) a toxidromes outreach plan whose goal is to raise widespread awareness and encourage use of the toxidromes throughout the stakeholder community, and 6) an evaluation and validation plan for CHEMM's Intelligent Syndromes Tool (CHEMM-IST) that, once completed, will move CHEMM-IST from its current state as a prototype to a product ready for use in an operational response environment. CHEMM is a Web-based resource that is downloadable in advance to Windows and Mac computers so that it is available during an event if the Internet is not accessible.



As of late 2013, CHEMM's content is also integrated into NLM's Wireless System for Emergency Responders (WISER), which is Web-based and downloadable to Windows computers. Further, CHEMM's content is now available in WISER's Web-based version and WISER's iOS and Android apps. The new CHEMM content will be incorporated into the next release of WISER. CHEMM and Radiation Emergency Medical Management (REMM) are the result of collaborative efforts between the United States Department of Health and Human Services, the Office of the Assistant Secretary for Preparedness and Response (ASPR) - Office of Emergency Management (OEM), Tactical Programs Division, CBRNE Branch, the National Library of Medicine - Division of Specialized Information Services (NLM@SIS), as well as many medical, emergency response, toxicology, industrial hygiene, and other experts.

**Examples of what is coming soon to CHEMM include:** 1) an expansion of the toxidromes in CHEMM-IST, from the current four to seven, 2) new or enhanced content on 50 CHEMM-relevant chemicals expected by end of 2014, including "Just-In-Time" (JIT) content for first responders and hospital providers (contact CHEMM project leader for early access to chemicals of interest), and 3) under a partnership with NLM and NIOSH, access to a new online tool referred to as Dermal Exposure Risk Management and Logic (DERMaL) e-tool, which provides emergency preparedness and response professionals a resource library for information related to skin exposure from chemicals. For more information see the "What's New on CHEMM?" section of CHEMM ([arrow in the photo](#)).

**EDITOR'S COMMENT:** A "must" STUDY website with tons of useful information!!!

### One man under arrest in Oshkosh hazmat case, possible biological or nuclear material on site

Source: <http://whbl.com/news/articles/2014/nov/03/update-one-man-under-arrest-in-oshkosh-hazmat-case-possible-biological-or-nuclear-material-on-site/>



The scene of a police investigation into hazardous material in Oshkosh. (Photo from: FOX 11).

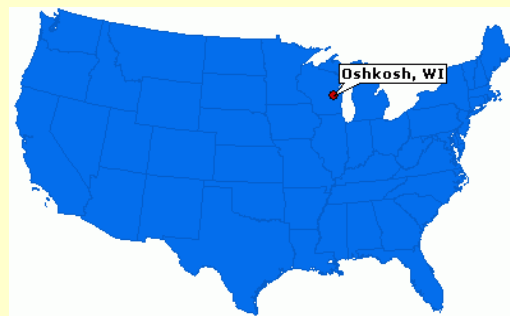
November 02 - An Oshkosh man is under arrest in connection with the discovery of hazardous materials in a Oshkosh residential neighborhood.

A 21-year-old Oshkosh man has been arrested and charged with recklessly endangering safety. Local agencies are continuing the cleanup at the site where hazardous materials were found on Friday. Specifics about what has been found at the

site have not yet been released, but crews from the FBI and the National Guard participated in the response this weekend. **WBAY-TV is reporting that the FBI has transported material from the site to a lab in Quantico, Virginia, and that the National Guard responded "because of suspected biological or nuclear substances as well as explosives."**

Police and fire crews kept traffic blocked in the area through Sunday morning, and residents were only being allowed back into their homes with a police escort.

Authorities say the material is contained and isn't a threat to public safety.



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**DoD to monitor troops exposed to Iraqi chemical weapons**

Source: <http://www.militarytimes.com/article/20141031/NEWS/310310060/DoD-monitor-troops-exposed-Iraqi-chemical-weapons>



A soldier from a U.S. Army Fox Chemical Reconnaissance team of the Tenth Cavalry Division stands up wind at a distance determined safe by his superior officer, at a site containing suspicious drums full of unknown liquid, outside Baiji, Iraq, April 28, 2003. (Brennan Linsley / The Associated Press)

The Defense Department will provide medical assessments and health surveillance for troops and veterans exposed to chemical agents during the 2003-2011 Iraq War who may not have received proper treatment, senior officials said.

In response to a New York Times investigation published Oct. 14 that included interviews with service members exposed to nerve agents and mustard gas during the war, defense officials said they are reviewing how units handled exposure cases and are tracking down those who may have been injured by discarded or cached Iraqi chemical munitions.

"We want to ensure they received appropriate medical care and, if needed, continued treatment, as well as determine whether appropriate standards and regulations were applied in determining awards such as the Purple Heart," Army Secretary John McHugh said in a written statement Thursday.

The New York Times report found at least 17 service members who suffered chemical weapons exposures, many of whom said they were instructed not to disclose their exposure. Because of the secrecy, the injured troops did not receive adequate treatment immediately following the exposure nor were they monitored over time, according to the report.

Several also did not receive Purple Heart awards for their injuries and records of wounds were expunged from some medical files.

The investigation also noted that the exposures were kept from the public and Congress. A full list of events or exposures has never been disclosed.

A senior defense health official said Thursday that efforts are underway to identify affected active-duty personnel and the Pentagon is working with the Veterans Affairs



Department to find those who are no longer serving.

Officials also are reviewing Post-Deployment Health Assessments to find individuals already known to have been exposed and to possibly identify new cases, the official said.

"I expect we'll find more [affected troops] just given the numbers. Those weapons were there," the official said.

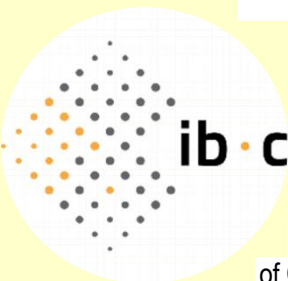
Rear Adm. John Kirby, a spokesman for Defense Secretary Chuck Hagel, said Hagel is committed to ensuring that the injured troops get the necessary treatment and support.

Hagel understands the importance of preserving operational security but "recognizes the value in making available as much information as possible to veterans preparing — or continuing to file — VA claims" for exposures, Kirby said.

Hagel "has been a staunch advocate of this approach to openness with veterans throughout his public life," Kirby said, adding that Hagel intends to discuss this issue with VA Secretary Bob McDonald "in the very near future."

### Press release

## NCT CBRNe USA – Call for Papers



IB Consultancy, in partnership with the National Consortium for the Study of Terrorism and Responses to Terrorism (START) is **calling for papers** to be presented at the Non-Conventional Threat (NCT) CBRNe USA 2015 conference. NCT CBRNe USA 2015 will take place in Washington DC, 29 April – 1 May 2015, providing a forum for armed forces, government agencies, civil first responders and the industry to discuss crucial challenges of CBRNe.

### CBRNe Innovation

Innovative companies, as well as academic/governmental research institutes, think tanks, companies, end-users, are kindly invited to submit abstracts, presenting their latest research results and/or innovative ideas within the topic guidelines.

The NCT Scientific Committee, chaired by Dr. Gary Ackerman from START, will select proposed presentations based on the following criteria: relevance, novelty, soundness, potential impact and practical interest to the CBRNe community.

Selected papers will be part of a separate Innovation Stream, which is running in parallel with the NCT Conference Stream and a Workshop Stream. All stakeholders who wish to present research papers, novel ideas and best practices are invited to submit their papers to the NCT Scientific Committee.

"We are excited to bring this conference to Washington DC to highlight the importance of the danger of CBRNe, and to enable scientists and practitioners to present their ideas and research to counter this threat," said Ilja Bosen, Managing Director of IB Consultancy. The NCT CBRNe USA conference will provide a forum to discuss current and imminent themes in the field of CBRN, focusing on the American perspective on the requirements of international CBRN defense, CBRN operations in a military environment, threat mitigation and decontamination, international threat reduction, critical infrastructure and urban security – challenges for CBRN detection, nuclear and radiation monitoring and surveillance, mass diagnosis and forensics, as well as CBRN preparedness and protection.

► For more information on topics and guidelines, please visit [www.cbrneusa.com/call-for-papers/](http://www.cbrneusa.com/call-for-papers/)

**NOTE:** for additional information please contact Ms. Susan Klinker via [ibc1@ib-consultancy.com](mailto:ibc1@ib-consultancy.com) or +31717440174.



**Ansell Introduces TRELLECHEM ACT Protective Suit for Law Enforcement & CBRN Terrorism Responders**

Source: <http://www.fireengineering.com/articles/2014/11/ansell-introduces-trellchem-act-protective-suit-for-law-enforcement-cbrn-terrorism-responders.html>



November 05 – Ansell, a global leader in protection solutions, today announces the US launch of TRELLECHEM ACT, a new protective solution for law enforcement responders dealing with consequences of Chemical, Biological, Radiological and Nuclear (CBRN) terrorism incidents. The garment is intended for use in all CBRN terrorism environments, including the Immediately Dangerous to Life and Health zone (IDLH) and is certified according the American standard NFPA 1994 Class 2. Duties of the law enforcement community have become much more complex and challenging with the realization of new kind of threats, as introduced by the 9/11 attacks in 2001. Today, law enforcement teams on all national levels are expected to take active roles



in the response to terrorism and potential terrorist threats. The personal protective equipment (PPE) used by these responders consequently needs to be adapted to fulfill the special demands and requirements set forth by close contact with various CBRN substances, while at the same time not limiting the ability for adequate response. To be truly effective, PPE equipment intended for safekeeping of law enforcement personnel must consider and put focus on both garment material, as well as garment design and comfort. “With TRELLECHEM ACT, Ansell is expanding its protective clothing offering in a new and exciting direction” says François le Jeune, Senior Vice President Business Development and Transformational Initiatives at Ansell. “By combining our unique knowledge of protective clothing solutions with user comfort requirements, we





are helping to protect these brave responders in their most challenging missions.”

Trellchem ACT is developed with a system-level perspective to offer law enforcement and other CBRN terrorism response teams the best possible protection and comfort when engaging in incidents involving high levels of CBRN hazards where concentrations are recognized to be at IDLH levels (lethal).

**The Trelchem ACT suit is made from a strong, durable and lightweight technical fabric with a fluoro-based barrier film.** Wearer comfort is high and noise level from being active in the suit is at a minimum. Besides the safety aspect provided by the suit material, the ensemble has a range of standard features to elevate comfort for the wearer. **The suit is equipped with an elasticated waist for good fit, shoulder paddings to ease the discomfort from the SCBA load, and an external neck strap fitted to obtain**

**individually optimal comfort of the hood. The mask seal of the hood is uniquely cut in a 3D shape to bring maximum safety and fit around the BA face mask. Gloves are offered with dual attachment options, which can either be permanently fixed to the suit, or optimally attached with the Trelchem® Bayonet glove ring system, offering quick, safe, and simple glove replacement.** Additional optional features for increased comfort include pockets and elbow/knee padding.

The ACT ensemble fulfils NFPA 1994 (class 2), 2012 edition and consists of garment, gloves, and footwear tested and certified as one protective system, with a manufacturer specified CBRN respiratory protective device. For the Trelchem ACT ensemble, SCBA units by both Scott and MSA has been certified and approved for use, along with Onguard Hazmax® boots as protective footwear.

### New acoustic sensor for chemical, biological detection

Source: <http://www.homelandsecuritynewswire.com/dr20141119-new-acoustic-sensor-for-chemical-biological-detection>

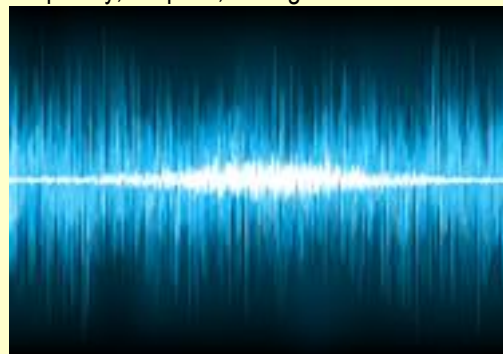
November 19 – Testing for ovarian cancer or the presence of a particular chemical could be almost as simple as distinguishing an F sharp from a B flat, thanks to a new microscopic acoustic device that has been dramatically improved by scientists at the U.S. Department of Energy’s (DOE) Argonne National Laboratory.

**The device, known as a surface acoustic wave (SAW) sensor, detects frequency changes in waves that propagate through its crystalline structure. This makes it ideal for detecting the presence of chemicals or biomarkers present in a liquid or gas. For example, it can detect cancer proteins attached to a receptor on the sensor surface.**

An ANL release reports that the initial wave is created by a physical phenomenon known as the **piezoelectric effect**, in which an initial electric signal is converted into a mechanical displacement. This displacement takes the form of a wave transmitted through the crystal. In the SAW sensor, the signal travels like a seismic wave from the input transducer through the material to an output transducer, where it is converted back into an electrical signal. The

wave’s frequency is determined by the velocity of sound through the material, said Argonne nanoscientist Subramanian Sankaranarayanan of the Center for Nanoscale Materials, a DOE Office of Science User Facility at Argonne.

The usefulness of these devices as sensors comes from the ability of researchers to detect frequency, or pitch, changes in the waves as



they propagate. The pitch changes are caused by changes in the density of the crystalline medium, which result from bonding of chemicals to receptors on the crystal or of proteins to antigens. “When something binds to the sensing layer, it changes the wave properties, and we can



sense those changes,” Sankaranarayanan said.

In collaboration with scientists at the University of South Florida, Sankaranarayanan added a new and important feature to these devices to significantly reduce their power consumption while simultaneously improving their sensitivity.

**One of the major benefits of these new sensors comes from the fact that they can, at least theoretically, be made battery-operated and portable.** To do so, however, requires scientists to find a way to reduce the power the device needs to operate. “Making it portable means being able to operate at a very low power,” Sankaranarayanan said.

First-generation SAW sensors lost much of the input signal due to properties of the crystal lattice. **To fix this problem,** Sankaranarayanan and his colleagues incorporated zinc oxide-filled microcavities designed to trap energy near the surface that otherwise would be lost to bulk waves — acting somewhat like bumpers in a bowling alley.

**According to Sankaranarayanan, the microcavities reduced energy losses by 50 percent.** “This means we are one large step closer to making these hand-held biosensors,” he said.

The work was funded by the U.S. Department of Energy’s Office of Science.

— Read more in “*Low Insertion Loss and Highly Sensitive SH-SAW Sensors Based on 36° YX LitaO3 Through the Incorporation of Filled Microcavities,*” *IEEE Sensors (29 August 2014);* and M. Richardson et al., “*Shear-horizontal surface acoustic wave phononic device with high density filling material for ultra-low power sensing applications,*” *Applied Physics Letters* 104, 253501 (23 June 2014)

## Thousands of Iraq Chemical Weapons Destroyed in Open Air

Source: <http://www.nytimes.com/2014/11/23/world/middleeast/thousands-of-iraq-chemical-weapons-destroyed-in-open-air-watchdog-says-.html>

The United States recovered thousands of old chemical weapons in Iraq from 2004 to 2009 and destroyed almost all of them in secret and via open-air detonation, according to a written summary of its activities prepared by the Organization for the Prohibition of Chemical Weapons, the international body that monitors implementation of the global chemical weapons treaty.

The 30-page summary, prepared after quietly held meetings between the organization’s technical staff and American officials in Washington in 2009, was provided to The New York Times by the Pentagon on Friday.

It included a table disclosing limited details on 95 separate recoveries and destructions of chemical warheads, shells or aviation bombs, for a total of 4,530 munitions from May 2004 through February 2009 — a period of often intense fighting in Iraq.

The United States later recovered more Iraqi chemical weapons, pushing its tally to 4,996 by early 2011, according to redacted intelligence documents obtained by The Times via the Freedom of Information Act.

The weapons destroyed through early 2009, the newly released report said, included some that contained chemical agents, others that were corroded and degraded, and some that appeared to have been previously demilitarized but that the United States destroyed “to err on the side of safety and security.”

Its authors noted that none of the weapons had been recently manufactured. All were legacy items from Iraq’s chemical weapons program in the 1980s and early 1990s. That program had been rushed into production during the Iran-Iraq War and then destroyed in the 1991 Gulf War and the period of United Nations inspections that followed.

“All munitions found were left over from pre-1991 Iraqi program,” the report said.

The report by the organization, which has its headquarters in The Hague and is often referred to as an international watchdog on chemical weapons and treaty compliance, was a result of an unusual moment in the American occupation.

In early 2009, at American prodding, Iraq’s fledgling government joined the Chemical



Weapons Convention, the international treaty that has largely banned chemical weapons worldwide. With that, Iraq assumed obligations to declare and ultimately destroy under the

more thorough disclosure. It invited the organization's specialists to review, in private, records of the military's activities. The report, prepared by the organization's

The screenshot shows a web browser displaying a New York Times article. The article title is "U.S. Intelligence Documents on Chemical Weapons Found in Iraq". Below the title is a sub-headline: "American troops secretly reported finding more than 4,990 chemical munitions, according to interviews with dozens of participants, Iraqi and American officials and to heavily redacted intelligence documents obtained under the Freedom of Information Act. OCT. 14, 2014". There are links for "RELATED ARTICLE" and "ALL DOCUMENTS".

Overlaid on the article is a document viewer window. The document is a letter from the "DEPARTMENT OF THE ARMY, UNITED STATES ARMY INTELLIGENCE AND SECURITY COMMAND, FREEDOM OF INFORMATION/PRIVACY OFFICE, FORT GEORGE G. MEADE, MARYLAND 20755-5995". It is dated "16 JAN 2014" and is addressed to "Ms. D. Victoria Baranetsky, The New York Times Company, 520 8th Avenue, New York, New York 10018". The letter is a response to a Freedom of Information Act (FOIA) request from October 22, 2013, regarding chemical weapons in Iraq. It lists three documents: 1. "Iraq: Recovered Chemical Weapons Update (April 2009 - March 2011)", 2. "Iraq: Chemical Weapons Continue to be Recovered", and 3. "Iraq: Chemical Weapons Assessment January 2008 - March 2009". The letter explains that 52 pages of information are being withheld under Executive Order (EO) 13526, classified as SECRET, because their unauthorized disclosure could cause serious damage to national security. It provides specific FOIA exemptions for these sections.

organization's supervision any chemical weapons remaining from Saddam Hussein's rule. Until that point, American forces had been quietly finding and destroying old chemical weapons in the country; at times, the weapons were being used by militants in improvised bombs. As American forces took possession of the weapons, the United States government had kept the bulk of these activities and their complications secret, including chemical wounds, especially from sulfur mustard blister agent, sustained by American troops. Once Iraq joined the convention, however, the United States shifted its stance and proposed a

Technical Secretariat, recounted elements of that review, which was held in summer 2009. Its authors appeared to choose words carefully, relating information and positions that the American government had shared with them without passing judgment on their contents. The report explicitly noted that in many cases the American records were scarce, and that "this activity was not a verification measure" and "was not conducted in accordance with rules contained in the Verification Annex" — the part of the treaty that delineates procedures for destroying chemical weapons and confirming compliance.



The report's purpose, the authors noted, was "to allow the U.S. to provide assurance that it acted in the spirit of the Convention."

A spokesman for the organization, reached late Friday, said he had not seen the document.

The Pentagon's release of the report was a partial departure from its nearly decade-long posture of secrecy.

In 2004, Charles A. Duelfer, who led the Iraq Survey Group, a task force established by the C.I.A. after the American-led invasion, published a lengthy compendium on the state of Iraq's weapons-of-mass-destruction programs, which included sections describing the American recovery and destruction of a small number of chemical warheads and shells that year. An early 2005 addendum updated the information.

The United States then fell nearly silent as troops encountered more chemical shells, publicly releasing only snippets in 2006. By then, the number of encounters with chemical weapons in improvised bombs had increased. Soon more troops were wounded by them, as secrecy prevailed.

The Technical Secretariat noted, for instance, that even when the United States sent a letter in 2006 to The Hague disclosing that it had encountered chemical munitions and expected to encounter more, it guarded the details and asserted that "efforts to recover and destroy chemical munitions remained an extremely sensitive matter."

The contents of the newly released report suggest that there were limits to American information-sharing in 2009, even with the watchdogs.

Almost no reference is made to people wounded while handling the chemical weapons. And the list of incidents is not complete; it is missing, for instance, the September 2006 recovery of a repurposed mustard shell from an improvised bomb that wounded two Navy ordnance disposal techs — Chief Petty Officer Ted Pickett and Petty Officer Third Class Jeremiah Foxwell.

Further, the United States declined to share precise locations for the recoveries of chemical

munitions. "U.S. representatives indicated that the exact locations are considered sensitive," the report said.

Jeffrey Lewis, a nonproliferation analyst at the Monterey Institute of International Studies, upon reviewing the newly released document on Friday, also said that what the report described of American actions appeared to be unsafe to American troops and Iraqis alike.

"The thing I take away from this is, 'God, they blew all of this up in open pits?'" he said.

"There is a reason that is arguably incompatible with our treaty obligations. There is no universe where this is a safe and ecologically appropriate way to dispose of chemical weapons."

The Pentagon has said the exigencies of war required that the weapons be destroyed hastily and in the open.

Mr. Lewis said he understood that troops who assumed disposal missions, typically while on missions to counter improvised bombs, lacked the equipment and time to handle chemical weapons more deliberately and with less risk. He suggested the Pentagon had failed them by being unprepared and careless.

"When you step back to look at the broader responsibilities we have as a country, we rolled into Iraq, we had no plan, we were not very focused, and so we stumbled onto this stuff," he said. "I am totally sympathetic to the guys on the ground who had to deal with this, but I just can't get away from the fiasco that put them in this situation in the first place."

The released documents also included six pages on a similar visit by the organization's technical staff to England, where they reviewed records provided by the British government of a far smaller set of destructions disclosed by British forces — 21 Borak rockets containing sarin nerve agent in early 2006.

The British government, in contrast to the United States government, had in 2010 publicly released details of the Borak destructions after Iran complained to the watchdog group of the "clear violation of the United States and the United Kingdom obligations under the Convention."

► Read the released documents at:

<http://www.nytimes.com/interactive/2014/10/14/world/middleeast/us-intelligence-documents-on-chemical-weapons-found-in-iraq.html? r=0>



## FilmArray BioSurveillance System Fully Automated BioDetection

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-syringe-loaded system represents the next generation 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.

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

**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.

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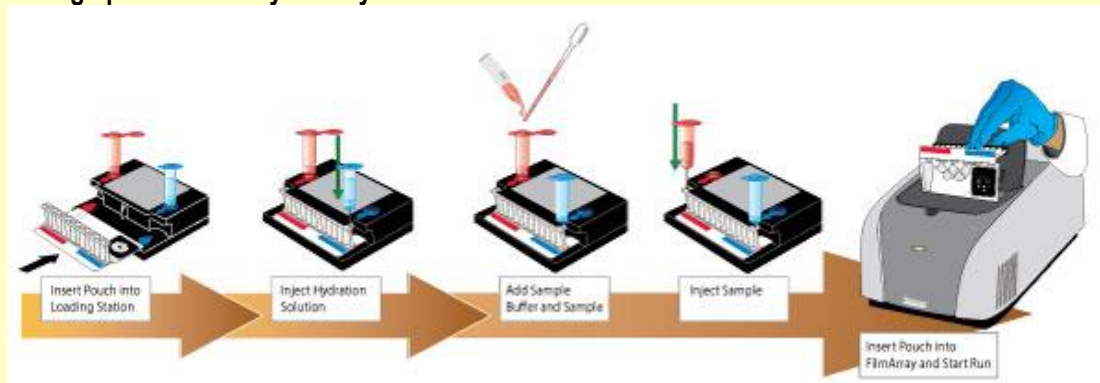


## Ebola Detection with the FilmArray BioThreat Panel

1 Test. 16 BioThreat Pathogens/26 Targets. All in about an hour.



Setting up the FilmArray is Easy



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.

1. First, the FilmArray extracts and purifies all nucleic acids from the unknown sample.
2. Next, the FilmArray performs a nested multiplex PCR. During the first-stage PCR, the FilmArray performs a single, large volume, massively multiplexed reaction.
3. 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.

FilmArray™ Biothreat Panel		FilmArray Molecular Technology Inc. www.sdsoltech.com	
<b>Run Summary</b>			
Sample ID:	YBG21531	Run Date:	30 Sep 2010
Detected:	Bacillus anthracis Yersinia pestis	Controls:	Passed
Equivocal:	Marburg virus		
<b>Result Summary</b>			
✓ 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		
<b>Run Details</b>			
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		

FilmArray Instrument and Pouch Specifications

Instrument Specifications	
<b>Sample Handling</b>	Sample Types: Swab, powder, liquid, culture, soil Sample Volume: 250 µL
<b>Reagents</b>	Freeze-dried in durable plastic pouches Room temperature storage
<b>Instrument Specifications</b>	Power Requirements: 90-264 VAC, 10 A Size: 25.4 x 39.3 x 16.5 cm (10 x 15.5 x 6.5 in.) Weight: 9 kg (20 lb.)
<b>Performance Parameters</b>	Hands on time: Approx. 2 minutes Raw sample to results: 1 hour
<b>Environmental Specification</b>	Operating: 15 °C to 30 °C at 20 to 80% humidity Storage: -30 °C to 65 °C
<b>Desktop Software</b>	Windows-based instrument control and data analysis software Barcode reader for data input Automated qualitative analysis and reporting Separate advanced analysis software



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

Additional Panels Available (CLICK HERE FOR MORE DETAILS)

- FilmArray Respiratory (RP) Panel - FDA CLEARED
- FilmArray Blood Culture (BCID) Panel - FDA CLEARED
- FilmArray Gastrointestinal (GI) Panel - FDA CLEARED
- FilmArray Meningitis/Encephalitis (ME) Panel – In Development

**Ebola Virus PPE: Tracking Inventory and Training?**

Source: <http://www.d4h.org/blog/post/20141016-ebola-virus-ppe-tracking-inventory-and-training>

Healthcare workers are among those most at risk of catching Ebola. Many healthcare professionals have knowledge of the virus, but very few have had to treat an infected patient. This has led to a knowledge gap on how to manage Personal Protective Equipment(PPE) when dealing with expected Ebola cases.

Human error can endanger even the most experienced health care workers in the fight against Ebola. Health-care workers should always take standard precautions when caring for patients, regardless of their presumed diagnosis. These include basic hand hygiene, respiratory hygiene and use of personal protective equipment (PPE).

Given the amount of PPE required for one worker. The equipment levels can scale quickly in a response scenario and require proper management to ensure a safe response.

Reducing the risk of human-to-human transmission from direct or close contact with people displaying Ebola symptoms requires each healthcare worker to properly apply a large amount of the appropriate PPE. Listed below is the PPE that has been recommended by WHO for one individual healthcare worker;

**1. Surgical cap**

The cap forms part of a protective hood covering the head. It offers healthcare

workers an added layer of protection, ensuring that they cannot touch any part of their face whilst treating a patient.

**2. Medical mask**

Covers the mouth to protect from sprays of body fluids from patients. When wearing a respirator, the medical worker must tear this outer mask to allow the respirator through.

**3. Respirator**

A respirator is worn to protect the wearer from a patient's coughs.

**4. Goggles**

Goggles, or eye visors, are used to provide cover to the eyes, protecting them from splashes. The goggles should ideally be sprayed with an anti-fogging solution before being worn.

**5. Overalls**

The overalls are placed on top of the scrubs. These suits are similar to hazardous material (hazmat) suits worn in toxic environments. The team member supervising the process should inspect that the equipment is not damaged.

**6. Medical Scrubs**

A surgical scrub suit; durable hospital clothing that absorbs liquid and is easily cleaned, is worn as a base layer



underneath the overalls. It should be tucked into rubber boots to ensure no skin is exposed.

**7. Apron**

A waterproof apron is placed on top of the overalls as the final layer of protective clothing.

**8. Double gloves**

A minimum two sets of gloves are required, covering the suit cuff. When putting on the gloves, care must be taken to ensure that no skin is exposed and that they are worn

in such a way that any fluid on the sleeve will run off the suit and glove.

**9. Boots**

Ebola health workers typically wear rubber boots, with the scrubs tucked into the footwear. If boots are unavailable, workers should wear closed, puncture and fluid-resistant shoes.

**Any faults with PPE can also be one of the easiest ways to catch Ebola.** This why it's essential to track, inspect and account for equipment appropriately.

**RMS develops probabilistic model of West African Ebola outbreak**

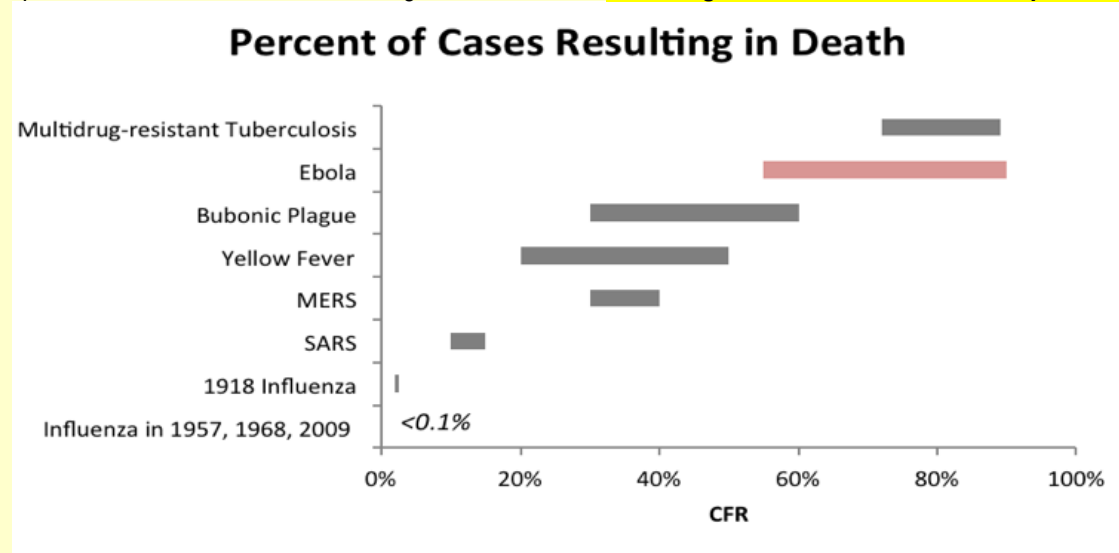
Source: <http://www.homelandsecuritynewswire.com/dr20141024-rms-develops-probabilistic-model-of-west-african-ebola-outbreak>

According to a new report by RMS, a catastrophe risk management firm, the Ebola virus disease outbreak in West Africa has the potential to be the most deadly infectious disease event since the 1918 flu pandemic.

The current outbreak will continue to worsen while the deployment of resources is ramped up to meet the caseload. According to RMS

said Dominic Smith, pandemic risk expert and senior manager of Life Risks at RMS. "The fight against the Ebola epidemic is a race against a moving target; more resources are required as the number of cases increases."

RMS modeling suggests that, based on current response efforts, the tipping point will not be reached until January 2015. Modeling further reveals a 55 percent



modeling, until a tipping point is reached at which the number of new daily cases declines rather than increases, the severity of the outbreak will continue to multiply, with the total number of new cases approximately doubling each month.

"Controlling the spread of this Ebola outbreak is more a question of logistics than virology,"

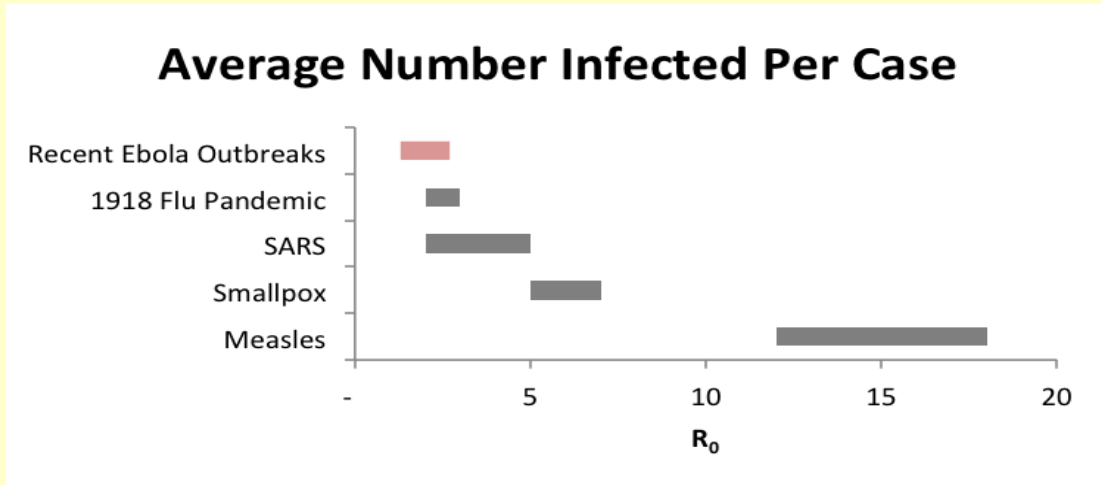
chance that by the end of November, at least 1,000 new cases of Ebola will develop daily, and as many as 1,400 per day in a worst-case scenario. There have been more than 9,000 cases reported in total to date.





Adding to the devastation of the Ebola outbreak, overwhelmed medical systems in West Africa have fewer resources to respond

to 75 percent of cases are in medical care or treatment units, or in environments where there is a reduced risk of disease transmission.



to other diseases and the mortality rate of malaria and yellow fever is on the rise. Malaria deaths are likely to continue rising as the seasonal height of malaria transmission is reached next month.

RMS modeled the future paths of cases and deaths from the Ebola virus in Sierra Leone, Guinea, and Liberia, which were combined with a probabilistic assessment of various international medical and military response scenarios to estimate the timing of the tipping point where cases are controlled such that the disease tapers off.

**Reaching the tipping point**

If effective resources are deployed at a rate that outstrips the pace of increase in new cases, a tipping point can be reached where the number of new daily cases reaches a maximum, allowing response measures to kick in and prevent new infections at a rate that causes the epidemic to subside.

“The way to stop this outbreak is simple in principle and has been demonstrated in Nigeria and in specific cities in the affected region: reduce contacts with infected people by more than half,” said Smith. “The scale and pace of the international response will define how long it takes to reach the tipping point.”

The U.S. Centers for Disease Control and Prevention (CDC) estimates that, even in the absence of treatments and vaccines, the epidemic would be brought under control and eventually come to an end if approximately 70

In a realistic scenario based on current response efforts, RMS analysis projects the tipping point will be reached at the end of January 2015, with the outbreak subsiding by June 2015.

**Modeling the West African Ebola outbreak**

When modeling a disease, RMS first looks at the reported virulence and the transmissibility of the pathogen responsible for causing Ebola. This virus is extremely deadly, with an estimated case fatality rate of 69 to 73 percent. This range of estimates for transmissibility, as measured by R<sub>0</sub>, is between 1.5 and 2.2, which means on average an infected individual will transmit the virus to approximately two other people in a susceptible population.

RMS then takes into account mitigating criteria, including medical and non-medical interventions. In its modeling, RMS evaluated the current response resources in place in impacted countries, further resources already pledged and a range of estimates of potential additional resources that will be deployed. For each country, RMS used these factors to formulate five scenarios, ranging from very optimistic to very pessimistic, and their associated probabilities.

The number of beds for Ebola treatment currently in use is far below what is needed to reverse the outbreak in any of the three effected countries. To reach the tipping point sooner, faster ramp up of



mitigating efforts is essential, but subsequently, fewer total beds and resources in general will be required.

For example, in order to reach the tipping point in Sierra Leone, the current number of beds in use needs to be approximately tripled by the end of November to halt the outbreak with the smallest total number of cases and at the lowest overall cost. If that fails, the number will need to increase to six times today's number by the end of December to halt the outbreak.

A large degree of reliance will be placed on beds being rolled out in Ebola treatment centers (ETCs), which cost \$5.7 million to set up and run a fifty-bed center for one month. Ebola community care units (ECUs) staffed by rapidly trained non-experts rather than medical workers are being set up in some areas, but there is larger uncertainty surrounding their effectiveness.

Treatments might help reduce the case fatality rate, but are very unlikely to have a significant role in halting the spread of the Ebola epidemic. An Ebola vaccine might be available in time to shorten the epidemic, but will not be produced in sufficient quantities to have an active role in halting the spread of the epidemic in the next few months.

**Ebola outside of West Africa**

RMS does not expect this outbreak of Ebola to become a significant mortality threat in other

parts of the world. It is possible that it could spread to neighboring countries in West Africa. This risk can be reduced by appropriate screening of people leaving the impacted region and could be contained with rapid implementation of effective control measures.

**In the situation where there are potentially 10,000 new cases per week in West Africa, there will be more cases exported into other countries. This is possible via two routes:**

- Foreign workers combating the spread of the virus are likely to be repatriated to their home countries. Currently the United States, United Kingdom, France and Cuba have delivered personnel in significant numbers. RMS does not consider this to be a probable source of escalation as such cases will be monitored and isolated by the public health systems already in place in those countries.
- Infected people travelling to other regions unchecked could transmit Ebola outside of West Africa. However, the capability of most countries to trace contacts is higher than in Liberia and Sierra Leone, and stronger travel control measures could be implemented if case numbers exceeded a prudent limit.

RMS says it will be updating the model with new numbers every few weeks, projecting the course of the event in near real-time.



**First Midwest Ebola, Toxic Mold, & Bioterrorism Decontamination Specialist**

Source: <http://prwire.com.au/pr/47691/first-midwest-ebola-toxic-mold-amp-bioterrorism-decontamination-specialist-announced-by-eha>

Phillip Fry now has been trained and certified as Michigan, Ohio, Indiana, Wisconsin, and Minnesota's first Certified Decontamination Specialist by the Environmental Hygienist Association (E.H.A.).

Mr. Fry has successfully completed the E.H.A. training for the building inspection, testing, and decontamination of Ebola, other dangerous viruses and bacteria, toxic mold, and bioterrorism threats such as weaponized Anthrax, Small Pox, and special toxic mold spores.

For information on being trained and certified as a decontamination specialist, visit [www.decontaminationgear.com](http://www.decontaminationgear.com) and [www.ecology-college.com](http://www.ecology-college.com).

Phillip Fry is also certified as a Certified Environmental Hygienist, Professional Industrial Hygienist, Certified Environmental Inspector, Certified Remediation Specialist, Certified Mold Inspector, Certified Mold Remediator, Certified Air Duct Cleaning Specialist. He has over 16 years of experience across the U.S.A. and Asia in environmental inspection, testing, and remediation.

Included in Mr. Fry's extensive decontamination training, he has mastered the use of enzyme neutralization of bacteria, viruses, and mold; spraying and fogging of E.P.A. biocides to kill bacteria, viruses, and toxic mold; HEPA-filtered air scrubbers and negative ion generators to remove indoor air pollutants and contaminants; ozone generator to kill



airborne and surface bacteria, viruses, and toxic mold growth; and other high tech equipment such as fiber optics cable video camera inspection inside heating and cooling ducts, as well as air and surface testing techniques and procedures.

Mr. Fry also knows how to contain biological health threats during the decontamination procedures done for a home or commercial building and its furniture, furnishings, and personal contents.

**Ebola: What Clinicians Need to Know CME/CE**

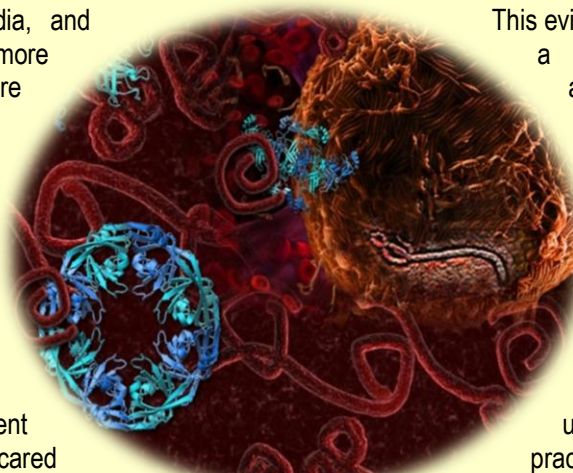
By Charles P. Vega, MD

Source: [http://www.medscape.org/viewarticle/832353?src=wnl\\_cme\\_revw](http://www.medscape.org/viewarticle/832353?src=wnl_cme_revw)



The Ebola virus epidemic in West Africa is currently a leading headline in both the medical and popular media, and each day seems to bring more ominous news. To date, there have been nearly 9000 reported cases of infection with Ebola in Africa, with more than 4000 of those cases resulting in death. In the United States, the case of the Liberian citizen who eventually died of Ebola infection and the subsequent infection of 2 nurses who cared for him receives constant coverage.

One of the most critical ways to prevent the spread of Ebola is the appropriate use of isolation and personal protective equipment (PPE). However, a study of Canadian pediatric emergency medicine physicians serves as a warning regarding our collective preparedness for a serious infectious disease. This research, which was published in the March 2011 issue of the *Canadian Journal of Emergency Medicine*, found that 22% of physicians had not received training in the use of PPE and 32% had not been trained in the past 2 years. Nearly half of physicians were uncomfortable with their knowledge of transmission-based isolation practices, a fact which was reinforced by a mean score of less than 50% on a short questionnaire regarding such practices. Finally, given 6 case scenarios in which PPE was recommended by national standards, physicians selected an average of 1 case in which they would actually wear PPE. Another review of infection control practices of healthcare workers published in the *American Journal of Infection Control* following the SARS (severe acute respiratory syndrome) outbreak revealed that failure to implement appropriate



PPE is responsible for most hospital-acquired infections.

This evidence is frightening in a climate that had already witnessed fairly recent outbreaks of H1N1 influenza and SARS. Ebola is another lethal virus that needs to be addressed through diligent and unwavering prevention practices. **The current report from the American Hospital Association and the US Centers for Disease Control and Prevention highlights facts regarding Ebola-related disease and its prevention.**

**Highlights**

- One of the difficulties in identifying potential cases of Ebola infection is the nonspecific presentation of most patients. Fever/chills and malaise are usually the initial symptoms, so all medical personnel should maintain a high index of suspicion in these cases.
- The most common symptoms of patients in the current outbreak of Ebola include fever (87%), fatigue (76%), vomiting (68%), diarrhea (66%), and loss of appetite (65%).
- Other symptoms may include chest pain, shortness of breath, headache or confusion, conjunctival injection, hiccups, and seizures.
- Bleeding does not affect every patient with Ebola and usually presents as small subcutaneous bleeding vs frank hemorrhage.



- More severe symptoms at presentation with Ebola infection predict a higher risk for mortality. Most patients with fatal disease die between days 6 and 16 of complications.
- The case-fatality rate of the current outbreak is approximately 71%.
- Patients who survive infection with Ebola generally begin to improve around day 6 of the infection.
- Multiple tests can be used to diagnose Ebola provided they are ordered in a timely fashion. Antigen-capture enzyme-linked immunosorbent assay (ELISA), IgM ELISA, polymerase chain reaction, and virus isolation may be employed to make the diagnosis during the first few days of symptoms. Patients identified later during the disease course may be diagnosed with serum antibody levels.
- There is no cure for Ebola infection; treatment is largely supportive. Therefore, prevention of the spread of Ebola in healthcare facilities is particularly important.
- Patients with fever, even subjective fever, or other symptoms associated with Ebola infection along with a history of travel to an Ebola-affected area within the past 21 days need to be identified in triage.
- If such a patient is identified, she/he needs to be isolated immediately in a single room with access to a bathroom. The door to the room should remain closed.
- Hospital infection control and local health departments should be contacted immediately in the case of suspected Ebola disease. Each healthcare site should have a site manager responsible for healthcare worker safety on site at all times during the evaluation and treatment of a patient with Ebola infection.
- Standard, contact, and droplet precautions should be enforced immediately.
- A trained observer should oversee all donning and doffing of PPE in order to maintain safety protocols.
- There has to be a clear separation between areas for donning and doffing PPE. PPE is preferably removed in an anteroom or adjacent vacant patient room rather than in the patient's room.
- PPE must be worn at all times when in the patient's room and must include a powered air-purifying respirator (PAPR) or N95 mask with face shield; a fluid-resistant, single-use gown; a long pair of nitrile gloves covering a shorter pair of gloves; and boot covers.
- No skin should be exposed while wearing PPE. The gown and boot covers may meet at the mid-calf. An apron should be worn over the gown when the patient has vomiting or diarrhea.
- Trained observers should wear essentially the same PPE as personnel entering the patient's room, albeit without the PAPR or N95 mask.
- There is a very precise method for the appropriate donning and doffing of PPE. Frequent decontamination with a disinfectant wipe or alcohol-based hand rub, even while still wearing potentially soiled gloves, is important when disposing of PPE.
- Visibly soiled areas in the patient's room should be cleaned immediately. Physicians and nurses should perform cleaning tasks while engaging in patient care activities in order to limit the number of workers in the patient's room.
- A log should be maintained of all persons entering the room of a patient with suspected Ebola disease.
- Invasive procedures, including phlebotomy, should be limited to what is medically necessary.
- A contact assessment should be performed for all patients with suspected Ebola infection. High-risk contacts include individuals with direct contact with the patient's skin or bodily fluids. Low-risk contacts include household members and others who have had no more than casual contact with the patient. Healthcare workers in the area of a patient with Ebola who do not use PPE are also considered low-risk contacts.

#### Clinical Implications

- Fever is the most common presenting symptom of the current outbreak of Ebola disease, followed by fatigue and vomiting.
- Measures to reduce the risk of transmission of Ebola in healthcare settings include the identification of suspected cases in triage; immediate



patient isolation in a room with access to a bathroom; and PPE featuring PAPR or an

N95 respirator with facemask, double gloves, disposable gown, and boot covers.

## Evaluating Ebola as a Biological Weapon

By Scott Stewart

Source: <http://www.stratfor.com/weekly/evaluating-ebola-biological-weapon#axzz3GtYjrDRy>

Over the past few weeks, I've had people at speaking engagements ask me if I thought the Islamic State or some other militant group is using Ebola as a biological weapon, or if such a group could do so in the future. Such questions and concerns are not surprising given the intense media hype that surrounds the disease, even though only one person has died from Ebola out of the three confirmed cases in the United States. The media hype about the threat posed by the Islamic State to the United States and the West is almost as bad. Both subjects of all this hype were combined into a tidy package on Oct. 20, when the Washington Post published an editorial by columnist Mark Thiessen in which he claimed it would be easy for a group such as the Islamic State to use Ebola in a terrorist attack. Despite Thiessen's claims, using Ebola as a biological warfare agent is much more difficult than it might appear at first blush.

### The 2014 Outbreak

In the past, there have been several outbreaks of Ebola in Africa. Countries included Sudan, Uganda, the Republic of the Congo and the Democratic Republic of the Congo, and several comparatively small outbreaks occurred in Gabon as well. In most cases, people who handled or ate animals infected with the disease started the outbreaks. "Bushmeat," or portions of roasted meat from a variety of wild animals, is considered by many to be a delicacy in Africa, and in a continent where hunger is widespread, it is also a necessity for many hungry people. After several months of medical investigations, epidemiologists believe the current outbreak most likely began when a two-year-old child in Guinea touched or perhaps ate part of an infected animal such as a bat or monkey.

The source of the disease means it is highly unlikely that some malevolent actor intentionally caused the latest outbreak. Besides the fact that the current outbreak's

cause has been identified as a natural one, even if a transnational militant group such as the Islamic State was able to somehow develop an Ebola weapon, it would have chosen to deploy the weapon against a far more desirable target than a small village in Guinea. We would have seen the militants use their weapon in a location such as New York, Paris or London, or against their local enemies in Syria and Iraq.

**As far as intent goes, there is very little doubt that such a group would employ a biological weapon.** As we noted last month when there was increased talk about the Islamic State possibly weaponizing plague for a biological attack, terrorist attacks are intended to have a psychological impact that outweighs the physical damage they cause. The Islamic State itself has a long history of conducting brutal actions to foster panic.

**In 2006 and 2007, the Islamic State's predecessor, al Qaeda in Iraq, included large quantities of chlorine in vehicle bombs deployed against U.S. and Iraqi troops in an attempt to produce mass casualties.** The explosives in the vehicle bombs killed more people than the chlorine did, and after several unsuccessful attempts, al Qaeda in Iraq gave up on its chlorine bombings because the results were not worth the effort. Al Qaeda in Iraq also included chemical artillery rounds in improvised explosive devices used in attacks against American troops in Iraq on several occasions. Again, these attacks failed to produce mass casualties. Finally, according to human rights organizations, the Islamic State appears to have recently used some artillery rounds containing mustard gas against its enemies in Syria; the group presumably recovered the rounds from a former Saddam-era chemical weapons facility in Iraq or from Syrian stockpiles.

**The problem, then, lies not with the Islamic State's intent but**



instead with its capability to obtain and weaponize the Ebola virus. Creating a biological weapon is far more difficult than using a chemical such as chlorine or manufactured chemical munitions. Contrary to how the media frequently portrays them, biological weapons are not easy to obtain, they are not easy to deploy effectively and they do not always cause mass casualties.

#### The Difficulty of Weaponization

Ebola and terrorism are not new. Nor is the possibility of terrorist groups using the Ebola virus in an attack. As we have previously noted, the **Japanese cult Aum Shinrikyo attempted to obtain the Ebola virus as part of its biological warfare program. The group sent a medical team to Africa under the pretext of being aid workers with the intent of obtaining samples of the virus.** It failed in that mission, but even if it had succeeded, the group would have faced the challenge of getting the sample back to its biological warfare laboratory in Japan. The Ebola virus is relatively fragile. Its lifetime on dry surfaces outside of a host is only a couple of hours, and while some studies have shown that the virus can survive on surfaces for days when still in bodily fluids, this requires ideal conditions that would be difficult to replicate during transport. If the group had been able to get the virus back to its laboratory, it would have then faced the challenge of reproducing the Ebola virus with enough volume to be used in a large-scale biological warfare attack, similar to its failed attacks on Tokyo and other Japanese cities in which the group sprayed thousands of gallons of botulinum toxin and Anthrax spores. Reproducing the Ebola virus would present additional challenges because it is an extremely dangerous virus to work with. It has infected researchers, even when they were working in laboratories with advanced biosafety measures in place. **Although Aum Shinrikyo had a large staff of trained scientists and a state-of-the-art biological weapons laboratory, it was still unable to effectively weaponize the virus.**

The challenges Aum Shinrikyo's biological weapons program faced would be multiplied for the Islamic State. Aum Shinrikyo operatives were given a great deal of operational freedom until their plans were discovered after the 1995

sarin attacks on the Tokyo subway. (The group's previous biological weapons attacks were so unsuccessful that nobody knew they had been carried out until after its members were arrested and its chemical and biological weapons factories were raided.) Unlike the Japanese cult, the Islamic State's every move is under heavy scrutiny by most of the world's intelligence and security agencies. This means jihadist operatives would have far more difficulty assembling the personnel and equipment needed to construct a biological weapons laboratory. Since randomly encountering an infected Ebola patient would be unreliable, **the group would have to travel to a country impacted by the outbreak.** This would be a difficult task for the group to complete without drawing attention to itself. Furthermore, once group members reached the infected countries, they would have to enter quarantined areas of medical facilities, retrieve the samples and then escape the country unnoticed, since they could not count on randomly encountering an infected Ebola patient.

Even if Islamic State operatives were somehow able to accomplish all of this -- without killing themselves in the process -- Ebola is not an ideal biological warfare vector. The virus is hard to pass from person to person. In fact, on average, **its basic reproductive rate (the average amount of people that are infected by an Ebola patient) is only between one and two people. There are far more infectious diseases such as measles, which has a basic reproductive rate of 12-18, or smallpox, which has a basic reproductive rate of five to seven. Even HIV, which is only passed via sexual contact or intravenous blood transmission, has a basic reproductive rate of two to five.**

#### Ebola's Weakness as a Weapon

The Ebola disease is also somewhat slow to take effect, and infected individuals do not become symptomatic and contagious for an average of 8-10 days. The disease's full incubation period can last anywhere from two to 21 days. As a comparison, influenza, which can be transmitted as quickly as three days after being contracted, can be spread before symptoms begin



showing. This means that an Ebola attack would take longer to spread and would be easier to contain because infected people would be easier to identify.

Besides the fact that Ebola can only be passed through the bodily fluids of a person showing symptoms at the time, the virus in those bodily fluids must also somehow bypass the protection of a person's skin. **The infectious fluid must enter the body through a cut or abrasion, or come into contact with the mucus membranes in the eyes, nose or mouth.** This is different from more contagious viruses like measles and smallpox, which are airborne viruses and do not require any direct contact or transfer of bodily fluids. Additionally, the **Ebola virus is quite fragile and sensitive to light, heat and low-humidity environments, and bleach and other common disinfectants can kill it.** This means it is difficult to spread the virus by contaminating surfaces with it. The only way to infect a large amount of people with Ebola would be to spray them with a fluid containing the virus, something that would be difficult to do and easily detectable.

Thiessen's piece suggested that the Islamic State might implement an **attack strategy of infecting suicide operatives with Ebola and then having them blow themselves up in a crowded place, spraying people with infected bodily fluids.** One problem with this

scenario is that it would be extremely difficult to get an infected operative from the group's laboratory to the United States without being detected. As we have discussed elsewhere, jihadist groups have struggled to get operatives to the West to conduct conventional terrorist attacks using guns and bombs, a constraint that would also affect their ability to deploy a biological weapon.

Even if a hostile group did manage to get an operative in place, it would still face several important obstacles. By the time Ebola patients are highly contagious, they are normally very ill and bedridden with high fever, fatigue, vomiting and diarrhea, meaning they are not strong enough to walk into a crowded area. **The heat and shock of the suicide device's explosion would likely kill most of the virus.** Anyone close enough to be exposed to the virus would also likely be injured by the blast and taken to a hospital, where they would then be quarantined and treated for the virus.

Biological weapons look great in the movies, but they are difficult and expensive to develop in real life. That is why we have rarely seen them used in terrorist attacks. As we have noted for a decade now, jihadists can kill far more people with far less expense and effort by utilizing traditional terrorist tactics, which makes the threat of a successful attack using the Ebola virus extremely unlikely.

*Scott Stewart supervises Stratfor's analysis of terrorism and security issues. Before joining Stratfor, he was a special agent with the U.S. State Department for 10 years and was involved in hundreds of terrorism investigations. Stewart was the lead State Department investigator assigned the 1993 World Trade Center bombing and the follow-up New York City bomb plot. He also led a team of American agents assisting the Argentine investigation of the 1992 bombing of the Israeli Embassy in Buenos Aires and was involved in investigations following a series of attacks and attempted attacks by the Iraqi intelligence service during the first Gulf War. Stewart was deputy regional security officer in Guatemala City and was responsible for embassy and diplomatic security at that post as well as in Belize City. As protective intelligence coordinator for Dell, he served as a member of Michael Dell's executive protective team. He also has consulted on terrorism issues for the Texas Department of Public Safety. He is regularly featured as a security expert in leading media outlets, including The New York Times, the Los Angeles Times, CNN International, NPR, Reuters, USA Today, The Associated Press, World Magazine, Fox News, Discovery Channel and Time magazine.*

**EDITOR'S COMMENT:** Down to earth article. Just a short comment though: some Israelis involved in suicide bombing incidents have been infected with *Hepatitis B* virus from (bone) fragments acting as secondary infected bullets. Same applies for *Hepatitis C* and HIV.

► Read more at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1121027/>



**Private cleaning firms had to improvise when cleaning apartments of U.S. Ebola patients**

Source: <http://www.homelandsecuritynewswire.com/dr20141027-private-cleaning-firms-had-to-improvise-when-cleaning-apartments-of-u-s-ebola-patients>

October 27 – Officials responsible for disinfecting the Ebola-infected homes of Thomas Eric Duncan’s fiancée, and of the two nurses he infected, relied on best



decontamination practices, but note that an official manual for responding to a home contaminated with the Ebola virus was nonexistent at the time. To clean up the apartment Duncan fell ill in, Dallas officials came up with a quick plan which included riding the apartment of a sixty-inch television. “That Samsung was one of the hardest cuts of our lives, but we were told to get rid of everything that could be replaced and we did,” said Brad Smith, vice president of Fort Worth-based CG Environmental (the Cleaning Guys), which decontaminated Louise Troh’s home at the apartment complex where Duncan became symptomatic with vomiting and diarrhea.

**According to the *Herald Democrat*, at the time there were no manuals or guidelines from the Centers for Disease Control and Prevention (CDC) on how to clean the infected apartment.** “We’ve done lots of life-threatening jobs, but this was the unknown, and we didn’t take any risks,” Smith said.

Throughout the apartment, only passports, a family Bible, and a few sentimental items were spared.

Hours after the Cleaning Guys were called back to decontaminate the apartment of Nina Pham, a nurse who contracted Ebola while caring for Duncan. The team was called off the job by the Texas Division of Emergency Management, which had assumed control from Dallas County and then assigned the Texas Commission on Environmental Quality to oversee cleanup efforts. Protect Environmental Services, a state contractor was then issued the contract to clean Pham’s apartment. Protect Environmental Services general manager Richard Cameron said his team relied on existing virus decontamination guidelines from the Environmental Protection Agency, the Occupational Safety and Health Administration (OSHA), hospitals and various microbiology professors and laboratories, and “boiled them all down to create our own with the state and CDC.”

In New York City, a 10-person crew from the Bio Recovery Corp. was assigned to clean up the Harlem apartment of Dr. Craig Spencer, the city’s first Ebola patient.

OSHA recently announced official guidelines for “Cleaning and Decontamination of Ebola on Surfaces” for workers and employers in non-healthcare/non-laboratory settings. For disposal of waste from cleanup, OSHA recommends following guidelines issued by the CDC and the U.S. Department of Transportation’s Hazardous Materials Regulations.

► Read OSHA Guidelines at: [https://www.osha.gov/Publications/OSHA\\_FS-3756.pdf](https://www.osha.gov/Publications/OSHA_FS-3756.pdf)

**Insurance companies now write Ebola exclusions into policies; offer Ebola-related products**

Source: <http://www.homelandsecuritynewswire.com/dr20141027-insurance-companies-now-write-ebola-exclusions-into-policies-offer-ebolarelated-products>

**U.S. and British insurance companies have begun to write Ebola exclusions into their policies for hospitals, event organizers, airlines, and other businesses vulnerable to disruption from the disease.** As a result, new policies and renewals will





become more expensive for firms looking to insure business travel to West Africa or to cover the risk of losses from Ebola-driven business interruptions (BI). “What underwriters are doing at the moment is they’re generally providing quotes either excluding or including Ebola — and it’s much more expensive if Ebola is included,” said Gary Flynn, an event cancellation broker at Jardine Lloyd Thompson Group Plc in London.

According to Flynn, **the cost of insuring an event against Ebola would be triple the amount of normal cancellation insurance, if the venue was in a region not known to be affected by the virus.** So far, no major events have been canceled in the United States due to the Ebola threat; but news of New York’s first Ebola case has forced event organizers who expect a significant portion of attendees to arrive from Africa to take precaution.

Retail insurance broker William Gallagher Associates of Boston and Miller Insurance Services, a London-based independent specialist insurance broker, recently partnered to launch Pandemic Disease Business Interruption Insurance to deal with loss of revenue due to shutdowns of healthcare facilities or forced quarantine measures.

Though Ebola has had little presence in the United States, threats of the disease could disrupt key business operations. Vulnerable employees like healthcare workers or flight attendants may refuse to come to work for fear of infection. “Probably the biggest issue coming up is business interruption,” said Tony DeFelice, managing director of Aon Risk Solutions’ national casualty practice in the United States. Unfortunately, many property or business interruption policies are triggered only by direct physical damage, according to *Insurance Journal*. “This means that without special provisions – for example, manuscripted wording to broaden coverage — healthcare providers’ property insurance and BI policies would likely not be triggered based solely on the presence of Ebola,” insurance broker Marsh said.

Lockton, the world’s largest privately owned, independent insurance brokerage firm, notes that BI coverage may also extend to temporary shutdowns due to “dependent properties,” such as a major supplier to the policyholder. **A recent outlook on the effects of Ebola on global business suggests that BI is “most likely to occur in mining, agricultural, energy, chocolate and travel sectors that have a strong presence in the affected West African countries.”**

### Geospatial Agency Goes Unclassified for Ebola Effort

Source: <http://www.nextgov.com/emerging-tech/2014/10/geospatial-agency-goes-unclassified-ebola-effort/97352/>

**The National Geospatial-Intelligence Agency has launched a public website, featuring unclassified geospatial imagery and tools, to aid U.S. and international efforts to combat the spread of Ebola in West Africa.**

The agency has turned its powerful capabilities over to unclassified disaster-relief work before, including after Typhoon Haiyan, which devastated the Philippines last November.

But the online Ebola tools the agency is offering nongovernmental organizations and other relief agencies provide much more dynamic mapping capabilities than the agency has previously deployed in an unclassified setting.

“The level at which we are trying to expose our data and commercial imagery products is unprecedented,” said Martin Cox, national geospatial-intelligence officer for Africa who’s leading NGA’s Ebola response, in an agency

release. “If they are trying to do good, why would we not want to help?”

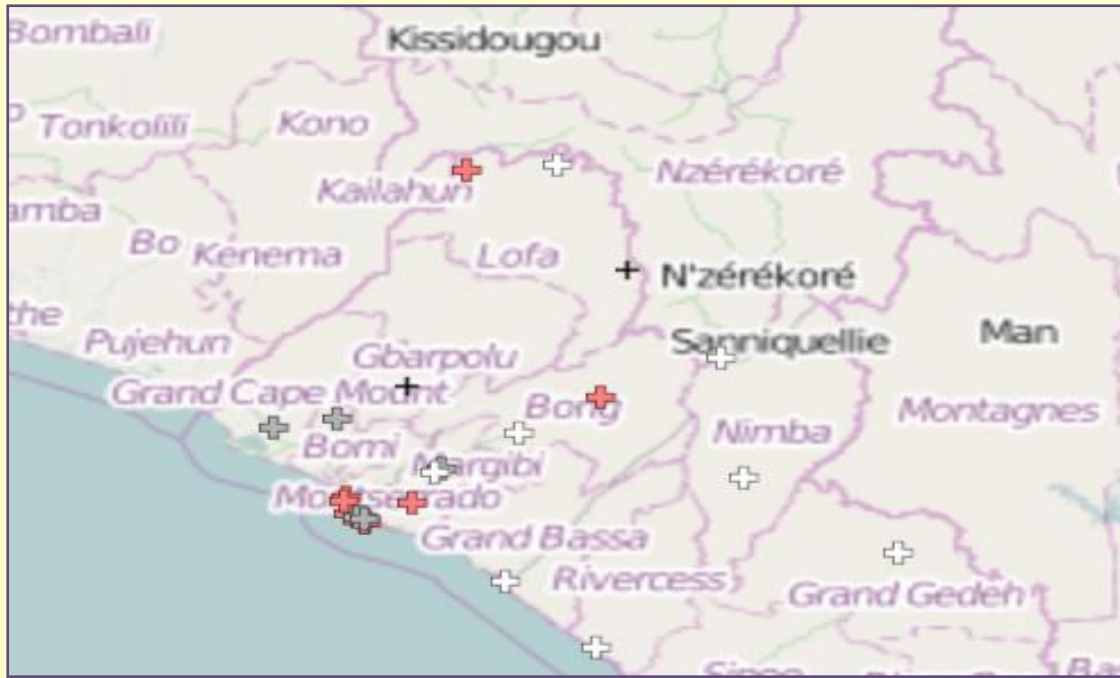
The first draft of the new mapping tools contains data on the disease’s outbreak specifically in Guinea. That includes constantly updated data on Ebola cases overlaid with other data on cultural landmarks, power grids, and communications and transportation infrastructure.

Users can pinpoint Ebola cases by area and their approximate locations to hospitals and airfields based on both publicly released NGA data and open source data.

In its previous disaster-relief work, NGA would only provide static “snapshots” of relevant data, according to NGA corporate communications.

But with the multitude of NGOs and other outside groups working on the crisis, the agency decided to take a different tack.





"If we don't keep it unclassified, the majority of the people who are working in the field will not be able to access the information that they may need to help bring

this epidemic to a close," Cox said.

The site uses the ArcGIS Platform from geographic mapping software provider ESRI and is hosted in the cloud by Amazon Web Services.

► The NGA Ebola Map is available at:

<https://nga.maps.arcgis.com/home/webmap/viewer.html?webmap=8c8dae9c136c4e05b495587fa1c4ea86&extent=-16.5433,5.4376,-5.2274,12.2293>



**Many of America's Ebola-Preparedness Supplies Have Expired**

Source: <http://www.nationaljournal.com/health-care/report-many-of-america-s-ebola-preparedness-supplies-have-expired-20141024>

October 24 – **Eighty-four percent of the hand sanitizer the Homeland Security Department has in stock in the event of an Ebola outbreak is expired**, according to a government audit.

An August 2014 report from the department's inspector general found that DHS did not adequately assess its need for pandemic preparedness supplies. The report also found that the purchase and management of these materials do not follow clear guidelines.

"The department did not develop and implement stockpile replenishment plans, establish sufficient inventory controls to monitor stockpiles, conduct adequate contract oversight, or ensure compliance with departmental guidelines," wrote DHS Inspector

General John Roth, in written testimony for a House Oversight hearing Friday.

"As a result, the department may not be able to provide pandemic preparedness supplies that are adequate to continue operations during a pandemic."

The report raises concerns about the ability of DHS to protect personnel in the event of an Ebola outbreak in the U.S.

**Congress appropriated \$47 million in supplemental funding for DHS in 2006 to prepare for a possible pandemic, according to the report. Yet the report alleges that the logic behind the equipment purchases is unclear: \$9.5 million was spent on pandemic protective**



**equipment and \$6.7 million on antiviral drugs since 2006, without clear methodologies for how the decisions on type and number of supplies were made.**

This includes a reported inventory of 350,000 white coveralls and 16 million surgical masks, without demonstrated need.

No one from DHS testified at the hearing Friday. According to Roberts, the department agreed with all 11 of the recommendations made in the report and has fully implemented one thus far.

"Certainly now the department is starting to do the kinds of planning we recommended," he said.

The risk of an Ebola outbreak in the U.S. remains extremely low. There have been four cases of Ebola diagnosed in the States thus far, including one aid worker in New York City, who was diagnosed with the virus Thursday evening. One person has died from the disease in the U.S.

► Read the full report at: <http://oversight.house.gov/wp-content/uploads/2014/10/Roth-DHS-OIG-Statement-10-24-Ebola.pdf>



## **Ebola Evokes Executive Decisions**

By Michael Hopmeier and Melissa S Hersh

Source: <http://www.globalpolicyjournal.com/blog/27/10/2014/ebola-evokes-executive-decisions>

### **A Czar is Born**

It is still unclear as to whether or not the Ebola Czar's purview extends both to the disaster in West Africa and the management crisis in the U.S. This seemingly basic confusion actually addresses some key considerations that Mr. Klain and the general public need to understand: the situation in West Africa is a disaster, whereas the situation in the United States is a crisis of confidence. Should Klain run point on coordinating America's response overseas as well, it is hoped that he will recognize that the Ebola epidemic in West Africa is an epidemic that has become a disaster with public health components, not the other way around.

**If we ask how many aircraft, fuel tankers, security personnel, helicopters, trucks, radios, satellites, shelters, relief funds, etc. the public health community has, it becomes apparent that public health communities are not disaster responders.**

Public health and clinical medicine's role, much like every other domain expert, is advisory to professionals who are, first and foremost, disaster and response managers.

A disaster is a highly complex, multi-faceted, and highly dynamic situation. In human endeavors, it is akin only to fighting a war. In a war, however, no particular aspect of the military is in charge (i.e. medical, logistics, infantry, command structures). Instead, personnel trained in management,

coordination, and complex operations are "in charge" under the direction of a battlefield commander.

The question of who is "in charge" in the current disaster should be focused on identifying the agency and individuals who most clearly possess the highly complex skill sets, training, resources and backgrounds needed to provide overall management of a crisis, not merely the health aspects of the crisis. Fortunately, we do have people, with the training and the resources, to act here and abroad. Who is tapped to respond and how they are coordinated is most prominent challenge Ebola faces.

### **Fundamental Questions**

**Consequently, the question of who is "in charge" should be focused on identifying the agency and individuals who most clearly possess the highly complex skill sets, training, resources, and backgrounds needed to provide overall management of a crisis, not merely the health aspects of the crisis.** In order to execute consistent, standardized response procedures using large numbers of personnel, the military seems to be a key supporting player in a disaster solution, though not necessary the leader of the effort.

The Department of Defense (DOD) in the United States is frequently used as a responder of



last or first, resort. While this is due in part to its massive infrastructure and available resources, it is more due to its organizational ability, as an enterprise and institution, to manage complex events. Is it time that we consider whether or not we should have the military provide the same temporary services on domestic soil? Likely not at this stage, in so far as in the United States., Ebola has become a PR nightmare, but it is not a disaster in the operational sense of the word.

Fundamentally, there are several questions an Ebola Czar with a dual-front portfolio must answer: How can we contain the Ebola epidemic in Africa and prevent one from occurring in the United States?; What are the actual skills that are needed to fulfill these objectives, and Who are best prepared to provide them? In framing the debate along these lines, we are in fact also making distinction between the duties to contain Ebola versus treat all infected persons with Ebola.

**The disconnect between these two goals means that we are currently experiencing a fragmented, inconsistent, and possibly ineffective response.**

Human capital comes in all forms. In so far as containment is not specifically a medical response, we as a global community may need to look at unconventional solutions. Hospital acquired infections are not just a problem for understaffed and poorly resourced African nations, they are also a problem in supposedly 'developed' nations. If the goal is to train teams of personnel who are used to working together in agile environments, we should be looking to target marines, firefighters, SWAT teams, and construction workers rather than just clinicians and lab scientists.

Public health workers, clinicians, and lab scientists must play an important and key role by assisting in the medical response to any large scale incident, including a pandemic-prone outbreak. **Professionals with this specific expertise, however, are only part of the response.**

#### U.S. Trends in Managing Population Health

Since we do not currently have a vaccine to prevent against Ebola, and the virus is not spread through the air like influenza or the Black Death, containment procedures that include quarantine, decontamination, isolation,

and disposal are the most effective tools in our collective tool belt. These are not specifically medical tools, but instead are control measures that prioritize the prevention of the spread of Ebola. By focusing attention there, we define the problem and our expectations for resolution clearly. Disaster response may require national, regional, or supranational support but, ultimately, response is a local affair. With this understanding, community-level containment can be attained.

**Population health is conceptually different from the practice of clinical medicine.** In a disaster situation of any origin the primary goal is population health. In real terms, this means keeping the number of people who get sick or injured to a minimum, and failing that (or in combination with it) minimizing the number of people who become very ill, die, or infect others. Population health is also about managing expectations and sharing with the public the strategies that will be employed during a disaster.

Our concept of population health has evolved over the last two decades in the United States. Following terrorist attacks like the 1993 World Trade Center bombings, protocols for managing large numbers of injured people or decedents were evolving. And after the terrorist attacks of September 2001, health responders and disaster managers began moving from a 'standard of care' concept, whereby we expect individuals to be treated with the utmost attention to individual treatment, to a concept of 'sufficient care.' **Sufficient care in situations of mass casualties or possible mass casualties means that population health maintenance takes precedence over individual health.** Very seldom do physicians in the developed world ever make a decision that results in the death of a patient or patients based solely on a lack of resources. Framing and articulating expectations such as how triage will work and introducing the concept that developed nation "standard of care" may not be available are crucial for this Ebola outbreak.

In the recent past, fears over a severe pandemic influenza re-vitalized disaster planning in the area of mass casualty management. As it happened, federal funding that had previously been allocated to



the management of the biological terrorism threat found its way to a different line item in DHHS. However, the concept of individual health seemed to still play a primary role in planning. And, while the US is not poised to experience an Ebola epidemic of the proportions seen in West Africa, it might be time to once again, have a discussion of sufficient care, and, who should be providing it.

### **Coordinating American Vital Interests Abroad and at Home**

Shortly before Klain's appointment USAID raised the flag in hopes of recruiting all relevant partners and organizations to help resolve several problems faced in the West African Ebola epidemic, including the development of new, practical and cost-effective solutions to improve infection treatment and control that can be rapidly deployed (1) to help health care workers provide better care and (2) transform our ability to combat Ebola.

Inherent in USAID's approach, however, is that containing the outbreak in West Africa is seen as secondary to the provision of care or treatment. Infection control is absolutely part of a containment strategy, but only one aspect of how to implement infection control or who should be doing it. USAID does not appear to touch upon existing 'practical and cost-effective solutions to improve infection treatment and control that can be rapidly deployed': the use of non-clinical, but trained hazardous materials and decontamination teams.

### **Is there really a need for the humanitarian-industrial complex to reinvent the wheel?**

We should learn to do more with less and to look at what non-medical tools or countermeasures we have that can safeguard population health. Yes, of course improving the conditions for healthcare workers is necessary to ensure occupational health and safety, to prevent further spread of infection, as well as to facilitate the timely treatment of patients.

Still, these are not the issues in question. Rather, the push to provide a transformative solution to 'combat Ebola' may in fact mean that USAID work more closely with the U.S. military. Is there really a need for the USAID to develop its own, parallel solution set to managing Ebola either outside the United States (OCONUS) or within it (CONUS)? Both the CDC and the US Army Public Health

Command (USAPHC) have complimentary advice for the management of contaminated persons, materials, vehicles, waste, and waste run-off.

Pentagon coordination *and* development assistance by USAID are admirable goals, but implementation is key. **Population health – whether in West Africa or in the United States – requires using resources and assets where and when available.** Consequently, parallel approaches that separate rather than unite the military and civilian seem counterproductive. OCONUS and CONUS, officials should be looking at strategies that force multiply our ability to contain a highly-contagious virus as well as to treat those that are already affected. And, since the cases of Ebola in the U.S. do not represent a disaster, a different approach is needed to ensure prevention rather than disaster response.

We certainly have lessons of what not to do (Dallas) and what to do (Atlanta) when treating highly-contagious, infected persons. We also know that when MSF healthcare workers effectively implement infection control procedures, they do not become infected. When there is a breach or faulty equipment, infection becomes a high likelihood. Using designated facilities that have expert hazardous materials management teams or using the military seems like a good option at this point. Would we send NGOs in to decontaminate or treat a population affected by a biological weapon? Not likely, because we would designate the areas 'hit' to be a hot-zone or disaster zone, whereby only trained hazardous material experts would be able to enter. The brave NGO workers that have put themselves in the line of fire so to speak may or may not be trained in effective infection control procedures. Let's make sure that these humanitarian responders do not become part of the problem.

So, now that President Obama has appointed an Ebola Czar – whether you are for this appellation and role or decry Obama's appointment of a "political operative," – the issue at hand is working towards a unified concept of operations, domestically and overseas. Politicized rage directed at the Administration misses the driving



point, however: appointing an experienced manager and communicator to manage the public response to a disaster is a politically savvy and organizationally smart move. The world over, the burden of response should be

shifted from the shoulders of public health leaders; while they are essential consultants for best practices, more than their expertise is needed to solve the problem.

*Michael Hopmeier is President of Unconventional Concepts, Inc., an engineering and policy consulting firm specializing in national security issues. He is also a consultant and senior advisor to numerous government agencies and organizations and an international expert in crisis response and communications.*

*Melissa S Hersh is a Washington D.C.-based risk analyst and a fellow of the Truman National Security Project. Views expressed are their own.*



## Two sources on Ebola survival outside host

Source: <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/ebola-eng.php>

### SECTION IV - STABILITY AND VIABILITY

All information available on stability and viability comes from peer-reviewed literature sources depicting experimental findings and is intended to support local risk assessments in a laboratory setting.

**DRUG SUSCEPTIBILITY:** Unknown. Although clinical trials have been completed, no vaccine has been approved for treatment of ebolavirus. Similarly, no post-exposure measures have been reported as effective in treating ebolavirus infection in humans although several studies have been completed in animals to determine the efficacy of various treatments.

**DRUG RESISTANCE:** There are no known antiviral treatments available for human infections.

**SUSCEPTIBILITY TO DISINFECTANTS:** Ebolavirus is susceptible to 3% acetic acid, 1% glutaraldehyde, alcohol-based products, and dilutions (1:10-1:100 for ≥10 minutes) of 5.25% household bleach (sodium hypochlorite), and calcium hypochlorite (bleach powder). The WHO recommendations for cleaning up spills of blood or body fluids suggest flooding the area with a 1:10 dilutions of 5.25% household bleach for 10 minutes for surfaces that can tolerate stronger bleach solutions (e.g., cement, metal). For surfaces that may corrode or discolour, they recommend careful cleaning to remove visible stains followed by contact with a 1:100 dilution of 5.25% household bleach for more than 10 minutes.

**PHYSICAL INACTIVATION:** Ebola are moderately thermolabile and can be inactivated by heating for 30 minutes to 60 minutes at 60°C, boiling for 5 minutes, or gamma irradiation (1.2 x10<sup>6</sup> rads to 1.27 x10<sup>6</sup> rads) combined with 1% glutaraldehyde. Ebolavirus has also been determined to be moderately sensitive to UVC radiation.

**SURVIVAL OUTSIDE HOST:** Filoviruses have been reported capable to survive for weeks in blood and can also survive on contaminated surfaces, particularly at low temperatures (4°C). One study could not recover any Ebolavirus from experimentally contaminated surfaces (plastic, metal or glass) at room temperature. In another study, Ebolavirus dried onto glass, polymeric silicone rubber, or painted aluminum alloy is able to survive in the dark for several hours under ambient conditions (between 20°C and 25°C and 30–40% relative humidity) (amount of virus reduced to 37% after 15.4 hours), but is less stable than some other viral hemorrhagic fevers (Lassa). When dried in tissue culture media onto glass and stored at 4 °C, Zaire ebolavirus survived for over 50 days. This information is based on experimental findings only and not based on observations in nature. This information is intended to be used to support local risk assessments in a laboratory setting.

A study on transmission of ebolavirus from fomites in an isolation ward concludes that the risk of transmission is low when recommended infection control guidelines for viral hemorrhagic fevers are followed. Infection control protocols included decontamination of floors with 0.5% bleach daily and decontamination of visibly contaminated surfaces with 0.05% bleach as necessary.



► Relevant *footnotes* are available at source's URL.

**Source:** <http://www.phac-aspc.gc.ca/lab-bio/res/psds-ftss/ebola-eng.php>

**COMMUNICABILITY:** Communicable as long as blood, secretions, organs, or semen contain the virus. Ebola virus has been isolated from semen 61 days after the onset of illness, and transmission through semen has occurred 7 weeks after clinical recovery (1, 2).

**SURVIVAL OUTSIDE HOST:** The virus can survive in liquid or dried material for a number of days (5). Infectivity is found to be stable at room temperature or at 4°C for several days, and indefinitely stable at -70°C (3, 4). Infectivity can be preserved by lyophilisation.

1. Plague. (2004). In R. G. Darling, & J. B. Woods (Eds.), *USAMRIID's Medical Management of Biological Casualties Handbook* (5th ed., pp. 40-44). Fort Detrick M.D.: USAMRIID.
2. Acha, P. N., & Szyfres, B. (2003). In Pan American Health Organization (Ed.), *Zoonoses and Communicable Diseases Common to Man and Animals* (3rd ed., pp. 142-145). Washington D.C.: Pan American Health Organization.
3. Mwanatambwe, M., Yamada, N., Arai, S., Shimizu-Suganuma, M., Shichinohe, K., & Asano, G. (2001). Ebola hemorrhagic fever (EHF): mechanism of transmission and pathogenicity. *Journal of Nippon Medical School = Nihon Ika Daigaku Zasshi*, 68(5), 370-375.
4. Evans, A. S., & Kaslow, R. A. (Eds.). (1997). *Viral Infections of Humans - Epidemiology and Control* (4th ed.). New York, NY: Plenum Publishing Corporation.
5. Leroy, E. M., Rouquet, P., Formenty, P., Souquière, S., Kilbourne, A., Froment, J. -, Bermejo, M., Smit, S., Karesh, W., Swanepoel, R., Zaki, S. R., & Rollin, P. E. (2004). Multiple Ebola Virus Transmission Events and Rapid Decline of Central African Wildlife. *Science*, 303(5656), 387-390.

### Anonymous individuals make Ebola threats

Source: <http://www.praguepost.com/czech-news/42295-anonymous-individuals-make-ebola-threats>

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October 27 – **Unknown perpetrators are attempting to blackmail the Czech state with threatening to spread the Ebola virus in public spaces**, the Interior Ministry said in a press release today.

Deputy Police President Zdeněk Laube said at a press conference the perpetrators mainly aim to cause panic, and they face up to 12 years in prison if found guilty.



"We will do everything to protect the public," Laube said. The police Squad for Uncovering Organized Crime (ÚOOZ) is working on the case, and the government also discussed it today.

[A Bitcoin ATM machine \(at a restaurant in San Diego, California on Sept 18, 2014\)](#)

ÚOOZ head Robert Šlachta said the perpetrators are "very sophisticated" and they use "very sophisticated ways of communication and documentation."

The police have qualified the matter as blackmailing and endangering the safety of the public.

Chief Sanitary Officer Vladimír Valenta said the spread of Ebola in the Czech environment is very unlikely.

"To gain the virus, to transport it, to effectively spread it otherwise but in direct contact with the ill persons or their fluids is not very feasible. The sanitary conditions in the Czech Republic, its climatic conditions, the level of work of epidemiologists as well as the level of health care facilities practically rule out a massive spread of Ebola in the country. We are ready for isolated cases," Valenta said.



According to the World Health Organisation (WHO), more than 10,000 people have been infected with the deadly virus, and about half of them have died as a result of it. The most afflicted countries are Guinea, Sierra Leone and Liberia.



Blackmailers are threatening to spread Ebola in the Czech Republic unless Prague pays them **a million euros' worth of the virtual Bitcoin currency**, police said Monday. An e-mail allegedly from the blackmailers claiming they had "biological material" from an infected patient in Liberia was published by the country's top commercial TV station, TV Nova, on Monday.

► **Source:** <http://www.straitstimes.com/news/world/europe/story/blackmailers-threaten-czech-republic-ebola-outbreak-bitcoin-currency-2014102#sthash.PaO2XVHS.dpuf>

### Powder sent to 5 consulates in Turkey tests negative

Source: <http://www.ctvnews.ca/world/powder-sent-to-consulates-in-turkey-tests-negative-canadian-consulate-closed-1.2072409>



An ambulance waits outside a building, left, where the Canadian consulate is located in Istanbul, Turkey, Friday, Oct. 24, 2014. (AP / Emrah Gurel)

October 27 – Turkish officials say initial tests indicate suspicious packages sent to five consulates in Istanbul -- including Canada's -- did not contain bioterrorism agents.

A statement from the Turkish health ministry on Monday says powdery substances sent to the consulates last week **tested negative for anthrax, ricin, botulism, tularemia and plague bacteria. However, it says more advanced tests are being conducted.**

The Department of Foreign Affairs says the Canadian consulate in Turkey's largest city would remain closed Monday as a precaution but that all staff was safe and accounted for.

The consulate was shut down on Friday after it received a package containing a suspicious **yellow** powder.

Staff members who came into contact with the powder were sent to hospital but a Foreign Affairs spokeswoman said Monday that all of them have now been released.

Similar packages were also sent to the **German, Belgian, French and American consulates** in Istanbul on Friday, and authorities say the Hungarian Consulate in the city also received a package on Monday.





Foreign Affairs officials say Canadians in the area who require consular assistance should contact the consulate in Ankara.

**Ebolapalooza**

Source: <http://www.cbrneworld.com/#axzz3HLM099Zx>

► From the October 2014 issue of CBRNe World Magazine (p.58)

CBRNEWORLD

**Jeffrey Bigongiari on what lessons Ebola offers us for future emerging infectious diseases**

# Ebolapalooza

*"Howdy folks!...While you're at the fair today, I want to remind you that clean hands keep us healthy. Remember, always wash your hands before eating."*

Big Tex, 55-foot-tall mascot of the State Fair of Texas, in a new, Ebola-inspired message

hospital janitor would now ignore someone talking about their recent vacation in Sierra Leone.

Unfortunately, Ebola is only one of a surprisingly large number of emerging and reemerging infectious diseases (EIDs) that have been identified as capable of causing severe loss of life should they establish themselves in the human population, as Ebola has, in Sierra Leone, Guinea, and Liberia.

The US government and its pandemic planners quickly observed that the fear caused by the sudden appearance of a single case of a deadly disease can be highly disruptive beyond

centuries, but have become prevalent in new locations or have developed new traits such as drug-resistance. Obviously, the recent past means different things to different people, but generally speaking, EIDs are still adapting to humans as a host or have already reached a pathogenic state.

At least one new pathogen has been identified in humans every year since 1980. Although modern medicine has more tools available to fight these illnesses than ever before, the number of EIDs has continued to rise substantially.

Of the total number of human pathogens in existence, roughly half are

**W**hile waiting for a flight to Texas from Monrovia, Liberia, on September 19, Thomas E Duncan made a decision that has since put America on edge. Days before, he helped carry a young, pregnant neighbour home from an overcrowded hospital to die of Ebola. On a screening

**Plant toxic proteins and their current significance for warfare and medicine**

By Jiri Patock and Ladislav Streda

*Katedra toxikologie, Vojenska lekarska akademie, Trebesska 1575, 500 01 Hradec Kralove, Czech Republic*

Source: [http://jab.zsf.jcu.cz/1\\_3/patockastreda.htm](http://jab.zsf.jcu.cz/1_3/patockastreda.htm)



**SUMMARY**

**Abrin, ricin, viscumin, modeccin, and volkensin are very potent toxins derived from plants.** They are glycoproteins composed of two polypeptide chains linked by a disulphide bridge. The A-chain is the enzymatic toxic moiety and B-chain is responsible for bonding to the target cell and internalization of toxin.

*Adenia digitata* (source of modeccin)

The toxic part of the toxin molecule removes an adenine from a specific adenosine residue in ribosomal RNA and block proteosynthesis. That is the

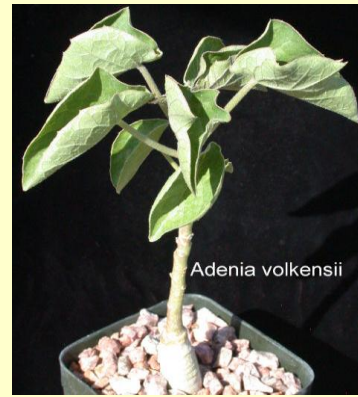


reason of extreme toxicity of these compounds and their capacity to be used as biological warfare agents or terrorist weapon.

*Adenia volkensii* (source of volkensin)

Therefore all these compounds are in the schedules of controlled biological agents and toxins. Contrariwise, plant ribosome-inactivating proteins are studied intensive as possible chemotherapeutic agents.

► Read the full paper at:  
[http://jab.zsf.jcu.cz/1\\_3/patockastreda.pdf](http://jab.zsf.jcu.cz/1_3/patockastreda.pdf)



**Experts consider implications of Ebola strain being stolen from lab**

Source: <http://www.homelandsecuritynewswire.com/dr20141028-experts-consider-implications-of-ebola-strain-being-stolen-from-lab>

October 28 – As the Ebola virus continues to plague several Americans and Europeans and thousands in Africa, researchers are beginning to examine the outcomes should a strain of Ebola be stolen from a testing laboratory.

As *Time* reports, many scientists in U.S. labs study the Ebola virus in order to find out how they can fight it. They wonder, however, what set of procedures are in place if a sample of the virus was stolen.

Under current federal regulations, Ebola viewed as “a select agent and toxin” by the U.S. Department of Health and Human Services (HHS). Additionally, its effects are defined as those that have the “potential to pose a severe threat to public health and safety.” Currently, certificates are required for any individual to handle the virus or transfer it to someone else. According to John Kraemer, an expert on infectious diseases and the law at Georgetown University’s Department of Health Systems Administration, in order to obtain such a certificate means “Meeting a set of biosafety and biosecurity requirements. And, the penalties for failing to do so can be steep.”

**In the past, any laboratory which did not uphold these standards had received hefty fines reaching hundreds of thousands of**

**dollars. In 2008, safety violations at Texas A&M University in Austin led to a \$1 million fine and the threat of criminal charges.**

**Any individual who steals a disease sample would not only face similar fines of up to \$250,000, but also would be looking at a prison sentence of close to five years.**



Because Ebola is considered a “viral hemorrhagic fever” by the Centers for Disease Control and Prevention (CDC), it is also seen as a bioterrorism agent, especially in the wake of the 9/11 attacks which led to new legislation such as the Patriot Act and the Bioterrorism Act which granted the HHS the authority to strictly regulate the virus and the use of permits.

“If however someone broke into a hospital to steal Ebola, it’d be at least ten years [of jail time],” added Kraemer, “If someone acquires Ebola with an intent to weaponize it, then they can get life in prison. And, of course, if you actually use Ebola as a weapon, you can be prosecuted under federal anti-terrorism laws, with penalties up to the death penalty.”

The chances of that happening, however, are not high, considering that anyone stealing Ebola would also risk infecting themselves.

“Stealing an Ebola sample would be extremely dangerous because the thief would face a significant



risk of exposure,” said Robert Field, a law professor at Drexel University, “Other

pathogens [such as Anthrax] would be safer to steal because protection is easier.”

**Legality of mandatory quarantine of asymptomatic individuals questioned**

Source: <http://www.homelandsecuritynewswire.com/dr20141028-legality-of-mandatory-quarantine-of-asymptomatic-individuals-questioned>

October 28 – **Roughly three decades ago, patients in New York were forced into isolation after an outbreak of tuberculosis, and about seventy years before that, an influenza pandemic led to mass quarantine in major American cities.** Today, fear of an Ebola outbreak in the United States has led some states to mandate quarantine of individuals suspected of having the Ebola virus, but legal analysts question the legality of such measures. “Coercive measures like mandatory quarantine of people exhibiting no symptoms of Ebola and when not medically necessary raise serious constitutional concerns about the state abusing its powers,” said Udi Ofer, executive director of the ACLU of New Jersey.

mandatory quarantine order and quarantined at home,” said Christie spokesman Kevin Roberts. “Nonresidents would be transported to their homes if feasible and, if not, quarantined in New Jersey.” Some federal health officials and the White House have said that such measures could discourage potentially sick patients from coming forward.



On Saturday, Cuomo responded to questions on the legal challenges of forced quarantine. **“Could you have a hostile person who doesn’t want to be quarantined?”** He said during a campaign appearance in Queens. “I suppose you could. But that hasn’t been the case yet.” On whether those refusing to be quarantined could face arrest or prosecution, “It’s nothing that we’ve discussed, no,” Cuomo said.

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**New Jersey governor Chris Christie and New York governor Andrew Cuomo recently announced that individuals returning from an Ebola-infected country would be quarantined at home for three weeks.** “The protocol is clear that a New Jersey resident with no symptoms, but who has come into contact with someone with Ebola, such as a health care provider, would be subject to a

Nurse Kaci Hickox, who was quarantined in New Jersey upon returning from Sierra Leone, but now released after showing no symptoms of Ebola, said she is considering a legal challenge to her confinement. “My human rights have been violated, and we must react in order to ensure that other health care workers do not endure such injustice,” she wrote in an e-mail to the *New York Times*.

Donna E. Lieberman, the executive director of the New York Civil Liberties Union, said forced quarantine measures are too broad. “The current order is sweeping in individuals who are asymptomatic and who may never develop symptoms,” Lieberman said. “I think there is a serious question as to whether the governor has the authority to impose the broad quarantine that he has imposed,” she added.

**Forced quarantine of a whole class of people is**



**unprecedented in modern American history.**

Lawrence O. Gostin, a professor of global health law at Georgetown University, said the 1918 influenza pandemic would be the most recent example of the blanket approach to quarantine announced in New Jersey. "This is, I think, pushing the envelope quite a bit and is highly counterproductive," Gostin said. "I can't think of a situation where any jurisdiction in the United States in modern times has simply quarantined a whole class of people."

The **U.S. Army has announced that troops returning from deployments to Liberia would be quarantined so they can be monitored** for possible exposure to the Ebola virus. ABC News reports that the order immediately affected about a dozen soldiers who returned to their home base in Italy this weekend, including Maj. Gen. Darryl Williams, the former top U.S. commander in Liberia.

"Out of an abundance of caution the Army directed a small number of personnel, about a dozen, that recently returned to Italy to be monitored in a separate location at their home station of Vicenza," Col. Steve Warren, a Pentagon spokesman, said yesterday. "None of these individuals have shown any symptoms of exposure."

The Army later released a statement confirming that the decision was made by Gen. Ray Odierno, the Army chief of staff.

"The Army Chief of Staff has directed a 21-day controlled monitoring period for all redeploying soldiers returning from Operation United Assistance," the statement said. "He has done this out of caution to ensure soldiers, family members and their surrounding communities are confident that we are taking all steps necessary to protect their health."

**Robots Gearing Up to Join Ebola Front Lines**

Source: <http://www.technewsworld.com/story/81252.html>

The White House Office of Science and Technology Policy will cohost the workshop on



*Credit: Worcester Polytechnic Institute*

safety robotics for Ebola workers, with Texas A&M University's Center for Robot-Assisted Search and Rescue, or CRASAR.

Medical and humanitarian aid workers, members of the Defense Advanced Research Projects Agency (DARPA), and representatives from the Worcester Polytechnic Institute (WPI) and the University of California at Berkeley also will attend.

Possible roles for robots, according to CRASAR Director Robin Murphy, include transporting bodies, as Ebola is most virulent at the time of death and immediately after; handling materials; detecting contamination; performing disinfection routines; serving as telepresence robots that experts can use to provide consultation or advice on medical issues; serving as rolling interpreters; and providing physical security for workers in events such as the food riots that recently occurred in Sierra Leone.

Aero, pictured above, is a prototype robot developed at WPI to address the Ebola crisis.

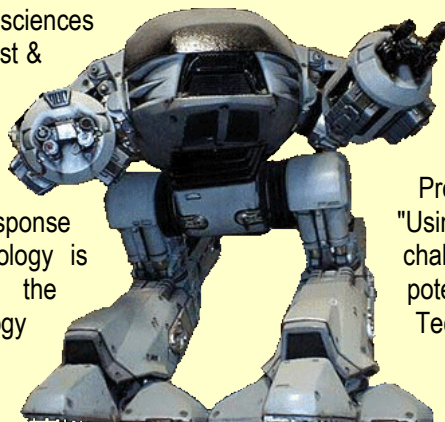
**Too Late?**

"Unless Ebola continues to thrive through human transfer, I doubt that they would even have the time to build all these robotic solutions, and there will be many taxpayer dollars wasted on this effort," cautioned Jim



McGregor, principal analyst at Tiriya Research. "Given that Ebola cases require immediate decision support management systems, any potential delay could cost lives, promote contamination, and spread the disease, said Divyaa Ravishankar, life sciences senior industry analyst at Frost & Sullivan.

Texas A&M reportedly has applied for funding through the National Science Foundation for a rapid response grant to study what technology is needed and what the requirements for the technology would be.



graduate AI Robotics class this semester will be designing and simulating intelligent robots.

**Aiyee! Robot!**

Mention of using robots for physical security brings to mind the **ED-209** robot (photo) in the movie *Robocop*. It malfunctioned, you may recall, killing a junior executive of Omni Consumer Products, its creator.

"Using robots for physical security is challenging and fraught with potential issues," McGregor told TechNewsWorld.

**Will the Idea Work?**

It might be more fruitful to invest time and money in constructing more effective protective clothing or decontamination facilities, Frost's Ravishankar told TechNewsWorld.

While the use of robots "looks promising, especially due to possible contamination and human risks, it would take a significant amount of time to introduce robots for clean-room applications such as this," said Muthuraman Ramasamy, industrial automation and process control industry manager at Frost & Sullivan.

"If there's a malfunction, how can we service the robot without touching it? Remote maintenance and service might not always be the answer," he told TechNewsWorld.

Still, "there is a significant utility in automating certain aspects of patient care where otherwise personnel trained in caring for a diagnosed Ebola patient may not be available," Venkat Rajan, principal analyst for advanced medical technologies at Frost & Sullivan, told TechNewsWorld.

Such robots likely would supplement human workers and not supplant them.

**What's Needed**

Robots have to meet "a lot of hidden requirements" and sometimes the least exciting or glamorous job can be of the most help to workers, Murphy wrote.

Examples of such hidden requirements include ensuring that an isolated field hospital can handle a heavy robot in the rainy season when the ground gets muddy; transporting robots to locations where they're required; ensuring that robots are easy enough for locals to use so they can earn a living wage; ensuring the right kind of network communications are available; and figuring out what to do if the robots need repair.

"It's actually often easier to design a robot for adverse conditions than to use humans," McGregor acknowledged.

The United States Marine Corps' Chemical Biological Incident Response Force and the U.S. the Army Telemedicine & Advanced Technologies Research Center (TATRC) are also participating in the effort, Murphy said.

Meanwhile, students at Texas A&M will be creating prototypes, and students in Murphy's

**Infection projections: how the spread of Ebola is calculated**

By Jonathan Keith

Source: <http://www.homelandsecuritynewswire.com/dr20141029-infection-projections-how-the-spread-of-ebola-is-calculated>

The number of reported Ebola cases is doubling roughly every five weeks in Sierra Leone, and in as little as two to three weeks in Liberia.

The number of reported cases globally is projected to reach 10,000 by the end of October. The actual number of cases may



be twice the official figure. So how are such figures estimated — and what can bioinformatics do to help control the disease? The 2014 Ebola outbreak in West Africa appeared suddenly and spread rapidly, and is thought to have started with a single animal-to-human transfer in December last year. It's an

time the disease takes to incubate, and the period of time during which diseased individuals are infectious.

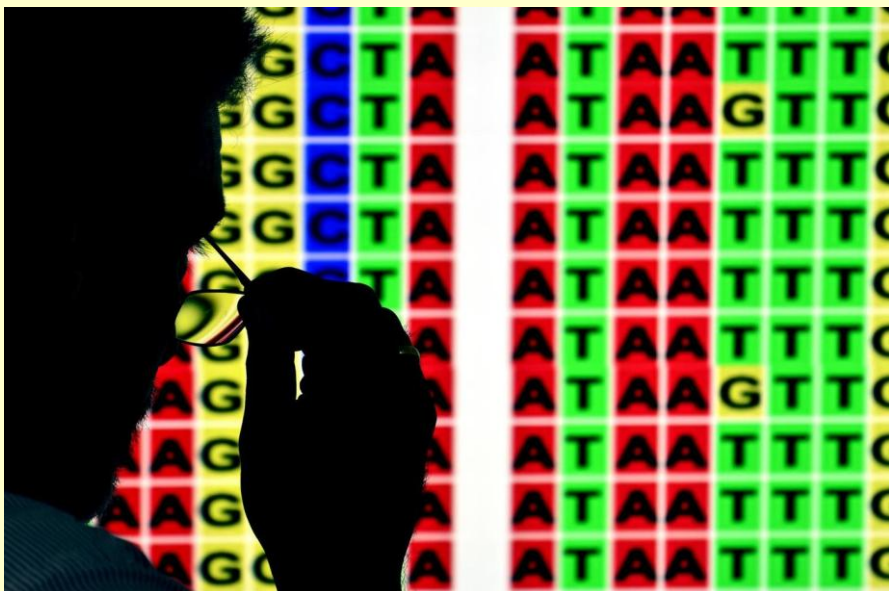
A key parameter is the proportion of cases that are identified. Many cases, including some that result in death, are not reported, either because victims do not seek medical care, or because overwhelmed medical personnel might fail to accurately record all interventions.

This is important not only because under-reporting reduces the effectiveness of management strategies, but also because it can influence estimates of the other parameters mentioned above, particularly if there is variation in reporting levels across regions.

Attempts have been made by the Center for Disease Control to estimate the degree of under-reporting for Ebola, but these are currently not very accurate.

The World Health Organization (WHO) estimates that the actual number of cases in Guinea is about 1.5 times the reported figure, with corresponding factors of 2 for Sierra Leone and 2.5 for Liberia.

(The WHO hasn't published the methodology used to estimate these figures: they may be little more than guesses).



example of an emerging infectious disease (EID): one that has newly appeared in a population or has undergone a rapid increase in incidence. SARS and various strains of avian influenza are examples of EIDs.

EIDs are often zoonoses — animal diseases that have infected humans as hosts and become transmissible. Such “host-switching” events can happen anywhere at anytime, and preparedness to respond rapidly and effectively when this occurs is an important aspect of public health policy.

**One parameter that epidemiologists use to quantify the rate of a disease's spread is the basic reproduction number: R0 (R-nought).**

This is the number of new cases generated on average by each infected individual, in idealized conditions. Diseases with R0 less than 1 are not likely to become epidemics, but those with R0 more than 1 have the potential to spread exponentially.

**Current estimates for Ebola indicate an R0 of around 2** — higher than the R0 of some strains of influenza — although it varies between regions.

Other parameters that determine the spread dynamics of a disease include the length of

**Putting the pieces together**

**Bioinformatics plays a key role in detecting, monitoring and responding to EIDs.**

In the case of Ebola, the bioinformatics community has responded rapidly. For example, the current outbreak of Ebola in Sierra Leone was first detected in May, but by September a study reported sequencing 99 Ebola virus genomes from 78 patients diagnosed with the disease between late May and mid-June.

The process of sequencing a genome involves assembling many thousands of short sequences — gene fragments obtained from all over the genome. Algorithms for assembling genome sequences detect overlaps between fragments, and align and merge them to reconstruct the sequence of the whole genome.

Bioinformaticians have been developing and refining



algorithms for sequence assembly since the late 1980s, and are constantly adapting them so they can handle new sequencing technologies and ever-larger scales of assembly.

**By the end of September this year, the UC Santa Cruz Genomics Institute had released a new Ebola genome browser with an alignment of 148 individual viral genomes, including 102 from the current outbreak.** This was a monumental effort: UCSC researcher Jim Kent led a team that reportedly worked around the clock in the last week of September to produce the browser.

Such genome browsers will undoubtedly accelerate global efforts to develop a vaccine and antiserum.

**One of the advantages of having whole genome sequences is that they can be used to reconstruct the family tree (phylogeny) of Ebola viruses, and trace the course of the outbreak.** Reconstructions of this kind can provide important insights into the successes and failures of current management strategies.

**They can also be used to estimate parameters that govern how rapidly the virus spreads, in terms of both number of cases and geographic range.**

**These can, in turn, be used to forecast the future course of the epidemic and predict**

**the impact of various management strategies.**

There are many other ways in which bioinformatics contributes to the management of EIDs. Genomic sequence analyses can lead to a better understanding of the biology of a disease, the features that make it pathogenic, and potential drug targets or clinical interventions.

A recent survey of Australian life sciences conducted by Bioinformatics Resource Australia EMBL (BRAEMBL) found that bioinformatics is seen by many laboratory scientists as core to their work, but also identified marked community concern about a lack of expertise and access to expertise in bioinformatics.

In light of the importance of bioinformatics in managing EIDs, and its growing role in facilitating research in the life sciences more generally, it is important that students and early career researchers from mathematics, statistics, computer science and biology are attracted into this field, and receive world-class training in its practice and implementation.

Bioinformatics is, and will continue to be, a core component of the international response to Ebola and other EIDs, and patients, medical staff and those close to them need all the help they can get.

*Jonathan Keith is Senior Lecturer, School of Mathematical Sciences at Monash University.*

**These clothes crush viruses, bacteria and fire**

Source: <http://www.israel21c.org/headlines/these-clothes-crush-viruses-bacteria-and-fire/>



Jeff Gabbay ignites the end of a foot-long cotton fiber tuft with a cigarette lighter, and the entire tuft is ablaze in an instant. When the lighter touches the same length of fiber impregnated with a natural fire retardant invented at his [Argaman Technologies](#), the flame stops dead in its tracks.

**The new multifunctional textiles aren't only fireproof. They can be made into "bio-inhibitive" bedding, shirts, socks and underwear that permanently self-sterilize against the bacteria that ordinarily make for smelly laundry, and even inactivate viruses that might penetrate the fabric.**

A sample shirt developed by Argaman for the Japanese police



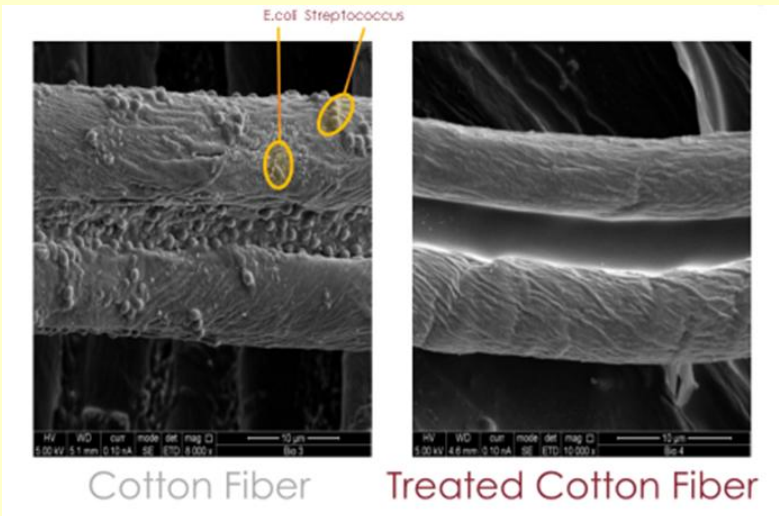
and for racecar drivers. It controls core body temperature to reduce heart stress; can deliver active ingredients to sterilize a wound and promote healing; has “weltings” to keep a bulletproof vest off the body to allow air circulation; and is fire retardant.

In an exclusive interview with ISRAEL21c, the Argaman CEO/CTO reveals that NASA and the US Army Special Forces are testing garments made with the Jerusalem-based company’s proprietary technology platform.

However, Gabbay says his innovation motivation isn’t driven by spaceships but by his wish to save lives and spare the misery of millions of patients plagued by hospital-acquired infections and bedsores.

“We’re going to improve people’s lives and relieve suffering,” claims the veteran textile engineer trained in New York and Milan.

**According to the World Health Organization, seven of every 100 hospitalized patients in developed countries (and 10 in every 100 in developing countries) acquire at least one healthcare-associated infection, leading to significant mortality.**



At his previous Israeli company, [Cupron](#), Gabbay invented a process for **infusing bacteria-fighting copper oxide into textiles.**

**Last year, Reuth Medical Center in Tel Aviv became the first in the world to incorporate Cupron technology into all surfaces and textiles in one of its patient units. Studies show this technology reduces hospital-acquired infections by 24 percent.**

Gabbay subsequently sold Cupron – which is still going strong — and in 2013 founded Argaman (a biblical Hebrew word for “crimson”)

with Simcha Edell as his partner and chief financial officer.

**Saving lives and money**

Toward the end of 2013, Argaman acquired a method for blasting accelerated copper oxide and natural fire-retardant particles into fibers – including high-quality Israeli pima cotton – using an unusual technology: high-power ultrasonic waves.

This technique causes a permanent mechanical bond that will never wash out or decrease in effectiveness. (An environmental bonus: The process recycles 100% of the water and chemistry used.)

The lifesaving potential is paramount, but the monetary savings may be a bigger selling point.

A 24-hour test by an independent lab shows how two kinds of common bacteria populate untreated fibers but failed to infest fibers treated with Argaman’s technology, right.

“With these new textiles, we can reduce infection rates and bring down the cost of patient care significantly – by 27%, according to hospital tests in Israel,” says Gabbay. “I’m willing to give every hospital these fabrics for free. Just give me back half the money you save on antibiotics and patient care.”

Argaman unveiled its technology publicly for the first time at the TechTextil North America Show last May in Atlanta.

“We’ve had some very serious inquiries for certain products from large international companies,” says Gabbay. He recently provided samples of bio-inhibitive socks to one of the largest foot-care companies in the world.

“Our short-term goal is to market the socks as a medical device to cure athlete’s foot. The longer-term goal is prove that they also close diabetic foot ulcers and will allow diabetics to keep their toes on their feet. We will go through the regulatory process to make those claims.”

An even more ambitious goal is to market virus-vanquishing fabrics. With Ebola continuing to rampage out of control in Africa, a fabric like this could be life-saving. “Everybody touching Ebola should be outfitted with our highly anti-viral fabric from head to toe,” declares Gabbay.

Though Argaman doesn’t yet have test data to prove its fabrics deactivate Ebola, already





published evidence on copper-oxide impregnated fabrics is strong enough that an American NGO has approached Argaman about purchasing masks and gloves for healthcare workers dealing with Ebola patients. Gabbay says he has enough treated fabric in stock to make about a million masks.

He hopes the textiles will also be employed against frightening viruses such as the H5N1 "chicken virus," MERS (Middle East Respiratory Syndrome) virus and even the coronavirus that causes the common cold.

The same technology can be put into garments that squelch dust mites, mosquitoes and ticks. "Imagine the lives you could save from malaria," Edell says.

**Not just for astronauts**

**NASA's order of 36 shirts to test in outer space stems from its interest in keeping astronauts healthy and comfortable during months-long space missions.**

"When astronauts enter outer space, muscular atrophy and bone thinning begin immediately," explains Gabbay. "To reduce these effects, they must do high-level aerobics at least two hours a day. You want to control their core body temperature as they do these aerobics, and you want their clothing to stay dry and odor-free because they can't do laundry in space. That's what you get with our shirts."

Eventually, regular consumers will be able to buy the exceptionally lightweight Argaman shirt as "the world's first performance-enhancing garment." Gabbay hopes to establish its scientific validity at Hadassah Medical Center's sports medicine lab.

**Another coming product is self-sterilizing, hypoallergenic cotton damask and sateen for use in luxury hotels.** But the sky is the limit; one day, Argaman's fabrics might deliver transdermal medications and chemotherapy, says Gabbay.

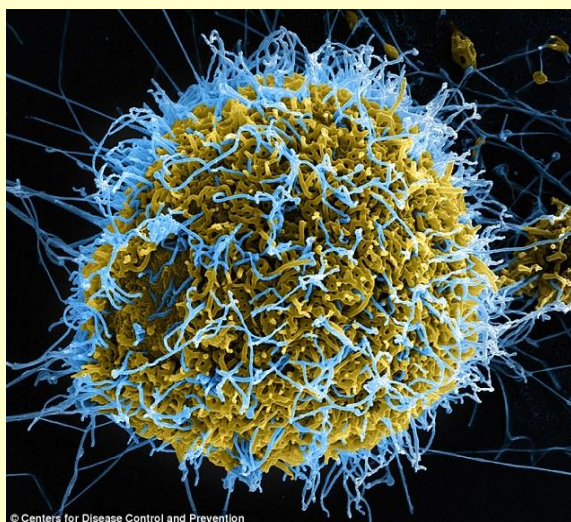
The 11-person company is setting up a beta production site and plans to produce knit fabrics in Israel. Woven fabrics will be made by China's largest textile manufacturer using a "chemical pellet" containing Argaman's technology. Chinese investment in Argaman is likely, but Gabbay pledges that the technology will remain in Israel.

The CEO doesn't claim that Argaman has no competitors. "I do not ever seek to be alone in a market and I'm never afraid of competition. The issue is how you compare to your competition. We have a superior product with better technology, better quality and fewer environmental concerns," Gabbay asserts.

"This is one of those rare opportunities in life that, if you handle it correctly, just think of all the good we can do."

**Ebola's family history revealed: Scientists discover ancestors of killer virus are 23 MILLION years old - and find could lead to new vaccines**

Source: <http://www.dailymail.co.uk/sciencetech/article-2810005/Ebola-s-family-history-revealed-Scientists-discover-ancestors-killer-virus-23-MILLION-years-old-lead-new-vaccines.html>



Researchers have uncovered the history of Ebola - and found it dates back far further than they expected.

The research shows that filoviruses - a family to which Ebola and its similarly lethal relative, Marburg, belong - are at least 16-23 million years old.

They say the discovery could help find new ways to create a vaccine.

A digitally-colored scanning electron micrograph (SEM) depicts filamentous Ebola virus particles (blue) budding from a chronically-infected VERO E6 cell (yellow-green).



The new study is helping to rewrite Ebola's family history.

Filoviruses likely existed in the Miocene Epoch, and at that time, the evolutionary lines leading to Ebola and Marburg had already diverged, the study concludes.

The research was published in the journal PeerJ in September.

It adds to scientists' developing knowledge about known filoviruses, which experts once believed came into being some 10,000 years ago, coinciding with the rise of agriculture.

The new study pushes back the family's age to the time when great apes arose.

'Filoviruses are far more ancient than previously thought,' says lead researcher

Derek Taylor, PhD, a University at Buffalo professor of biological sciences.

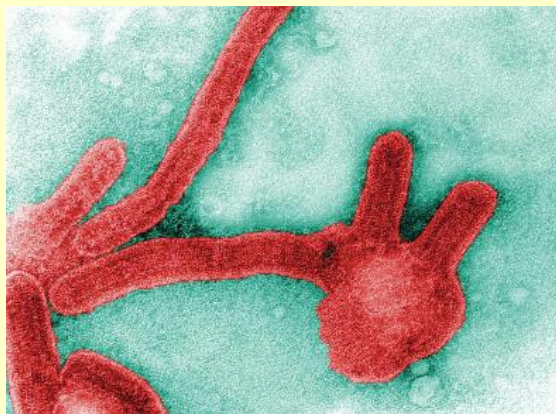
'These things have been interacting with mammals for a long time, several million years.' According to the PeerJ article, knowing more about Ebola and Marburg's comparative evolution could 'affect design of vaccines and programs that identify emerging pathogens.'

The research does not address the age of the modern-day Ebola virus.

Instead, it shows that Ebola and Marburg are each members of ancient evolutionary lines, and that these two viruses last shared a common ancestor sometime prior to 16-23 million years ago.

### MARBURG VIRUS DISEASE

Marburg virus disease (MVD) (formerly known as Marburg haemorrhagic fever) was first identified in 1967 during epidemics in Marburg and Frankfurt in Germany and Belgrade in the former Yugoslavia from importation of infected monkeys from Uganda.



MVD is a severe and highly fatal disease caused by a virus from the same family as the one that causes Ebola virus disease.

These viruses are among the most virulent pathogens known to infect humans.

Both diseases are rare, but have a capacity to cause dramatic outbreaks with high fatality.

Illness caused by Marburg virus begins abruptly, with severe headache and severe malaise. Many

patients develop severe haemorrhagic manifestations between days 5 and 7, and fatal cases usually have some form of bleeding, often from multiple sites.

The Marburg virus is transmitted by direct contact with the blood, body fluids and tissues of infected persons.

Transmission of the Marburg virus also occurred by handling ill or dead infected wild animals (monkeys, fruit bats).

Taylor and co-author Jeremy Bruenn, PhD, UB professor of biological sciences, research viral 'fossil genes' — chunks of genetic material that animals and other organisms acquire from viruses during infection.

The first Ebola outbreak in humans occurred in 1976, and scientists still know little about the virus' history.

The same dearth of information applies to Marburg, which was recognized in humans in 1967 and implicated in the death of a Ugandan health worker this month.

Understanding the virus' ancient past could aid in disease prevention, Taylor says.

He notes that if a researcher were trying to create a single vaccine effective against both Ebola and Marburg, it could be helpful to know that their evolutionary lineages diverged so long ago.

Knowing more about filoviruses in general could provide insight into which host species might serve as 'reservoirs' that harbor undiscovered pathogens related to Ebola and Marburg, Taylor says.

'When they first started looking for reservoirs for Ebola, they were crashing through the rainforest, looking at everything —



mammals, insects, other organisms,' Taylor says.

'The more we know about the evolution of filovirus-host interactions, the more we can learn about who the players might be in the system.'

In the new study, the authors report finding remnants of filovirus-like genes in various rodents.

One fossil gene, called VP35, appeared in the same spot in the genomes of four different rodent species: two hamsters and two voles.

This meant the material was likely acquired in or before the Miocene Epoch, prior to when these rodents evolved into distinct species some 16-23 million years ago.

In other words: It appears that the known filovirus family is at least as old as the common ancestor of hamsters and voles.

'These rodents have billions of base pairs in their genomes, so the odds of a viral gene inserting itself at the same position in different

species at different times are very small,' Taylor says. 'It's likely that the insertion was present in the common ancestor of these rodents.'

The genetic material in the VP35 fossil was more closely related to Ebola than to Marburg, indicating that the lines leading to these viruses had already begun diverging from each other in the Miocene.

The new study builds on Taylor's previous work with Bruenn and other biologists, which used viral fossil genes to estimate that the entire family of filoviruses was more than 10 million years old.

However, those studies used fossil genes only distantly related to Ebola and Marburg, which prevented the researchers from drawing conclusions about the age of these two viral lines.

The current PeerJ publication fills this viral 'fossil gap,' enabling the scientists to explore Ebola's historical relationship with Marburg.

**New Ebola handshake**

Source: <http://nypost.com/2014/10/30/un-ambassador-shows-off-new-ebola-handshake/>

October 30

UN Ambassador Samantha Power showed off the **new "Ebola handshake"** while greeting the World Health Organization's Dr. Peter Graaff in Liberia.

The two bumped elbows as health authorities in the three West African countries hardest hit by the virus urged people to no longer shake hands as a way to help stop the lethal virus.



**Why not this one?**



**Ebola is the least of your worries**

Source: <http://www.washingtonpost.com/wp-srv/special/world/how-deadly-is-ebola/>

**What will kill you?**

CAUSE	LIFETIME ODDS	YEARLY ODDS	YEARLY DEATHS
Ebola	1 in 3,934,300	1 in 309,629,415	1
your pajamas catching fire	1 in 983,575	1 in 77,407,353	4
a spider bite	1 in 562,042	1 in 44,232,773	7
a snake bite	1 in 437,144	1 in 34,403,268	9
being struck by lightning	1 in 135,666	1 in 10,676,876	29
being scalded	1 in 131,143	1 in 10,320,981	30
an earthquake	1 in 119,221	1 in 9,383,710	33
a dog bite	1 in 103,534	1 in 8,148,143	38
a flood	1 in 100,879	1 in 7,939,216	39
legal execution	1 in 95,959	1 in 7,551,937	41
storm	1 in 83,709	1 in 6,587,860	47
a bee, wasp or hornet sting	1 in 75,660	1 in 5,954,412	52
clothes catching fire	1 in 57,019	1 in 4,487,383	69
riding an animal or in an animal-drawn vehicle	1 in 33,342	1 in 2,623,978	118
accidental hanging	1 in 15,309	1 in 1,204,784	257
choking on your own vomit	1 in 13,071	1 in 1,028,669	301
being electrocuted by power lines	1 in 12,143	1 in 955,646	324
being killed by a police officer	1 in 11,437	1 in 900,086	344
a boating accident	1 in 9,885	1 in 777,693	398
the bathtub	1 in 9,279	1 in 730,258	424
falling off a ladder	1 in 9,003	1 in 708,534	437
an airplane accident	1 in 8,335	1 in 655,995	472
falling out a window	1 in 8,129	1 in 639,730	484
an accidental firearm discharge	1 in 6,492	1 in 510,940	606
a swimming pool	1 in 5,786	1 in 455,337	680
suffocating in bed	1 in 5,752	1 in 452,675	684
tripping and falling	1 in 5,012	1 in 394,432	785
a bicycle struck by a motor vehicle	1 in 4,961	1 in 390,453	793
falling out of bed	1 in 3,765	1 in 296,296	1,045
choking on food	1 in 3,640	1 in 286,429	1,081
a knife assault	1 in 2,187	1 in 172,112	1,799
a river, lake or sea	1 in 2,134	1 in 167,912	1,844
falling down stairs	1 in 1,976	1 in 155,515	1,991
alcohol	1 in 1,867	1 in 146,953	2,107
a house fire	1 in 1,818	1 in 142,818	2,168
surgical complications	1 in 1,580	1 in 124,349	2,490
choking	1 in 1,234	1 in 97,123	3,188
a motorcycle struck by a motor vehicle	1 in 920	1 in 72,377	4,728
a pedestrian struck by a motor vehicle	1 in 721	1 in 56,740	5,457
suicide by poisoning	1 in 596	1 in 46,921	6,599
a car	1 in 491	1 in 38,660	8,009
suicide by hanging	1 in 414	1 in 32,617	9,493
a firearm assault	1 in 355	1 in 27,950	11,078
an illegal drug overdose	1 in 320	1 in 25,214	12,280
a self-inflicted gunshot	1 in 203	1 in 15,967	19,392
influenza	1 in 79	1 in 6,181	50,097
diabetes	1 in 57	1 in 4,482	69,071
Alzheimers disease	1 in 47	1 in 3,708	83,494
stroke	1 in 30	1 in 2,391	129,476
a chronic lower respiratory disease	1 in 28	1 in 2,242	138,080
cancer	1 in 7	1 in 538	574,743
heart disease	1 in 7	1 in 534	579,689



## Japan Develops 30-Minute 'Simple' Test To Quickly Diagnose Deadly Virus

Source: <http://www.ibtimes.com/ebola-outbreak-japan-develops-30-minute-simpler-test-quickly-diagnose-deadly-virus-1675502>

September 02 – Japanese scientists said Tuesday that they have developed a **new test that could detect the Ebola virus in 30 minutes**, with the help of a technology they claim is faster and cheaper than the current method being used in West Africa. More than 1,550 people have so far died from the current Ebola outbreak and over 3,000 have been infected.



Eiken Chemical Co., along with researchers at Nagasaki University, reportedly created the new testing method, which **can be conducted with a "small, battery-powered warmer,"** making it ideal for use in places without an **adequate power source**, the scientists claimed. The current test requires "dedicated equipment and a stable supply of electricity," according to a local report.

"The new method is simpler than the current one and can be used in countries where expensive testing equipment is not available," Jiro Yasuda, a professor at Nagasaki University, told Agence France-Presse, or AFP. "We have yet to receive any questions or requests, but we are pleased to offer the system, which is ready to go," he reportedly said.

Yasuda and his team at the university have reportedly created what they called a "primer," which magnifies only those genes specific to Ebola found in a blood sample or any other fluid in the body. If Ebola is present, the action of the primers distinguishes DNA specific to the deadly virus in 30 minutes. Currently, a technique called polymerase chain reaction, or PCR, is being used to detect the Ebola virus. The PCR method takes up to two hours as doctors need to heat and cool the blood samples repeatedly to complete the procedure.

"The new method only needs a small, battery-powered warmer and the entire system costs just tens of thousands of yen [hundreds of dollars], which developing countries should be able to afford," Yasuda said, according to AFP.

The deadly virus, which is transmitted through contact with infected bodily fluids, has spread across five countries including Senegal, Liberia, Guinea, Sierra Leone and Nigeria.

## Ebola virus: Genes 'play significant role in survival'

Source: <http://www.bbc.com/news/health-29834687>

**Genetic factors could play an important role in whether people survive the Ebola virus, say US scientists.**

A study of mice infected with the virus found they showed a number of different symptoms, with 19% remaining unaffected by the disease. This could explain why some people recover from the illness while others die in pain, the scientists said.

Their study is published in the journal Science.

Scientists from the universities of Washington and North Carolina, and the National Institute of Health in Montana, examined mice they had infected with the same species of Ebola virus causing the current outbreak in West Africa.

**Although all the mice lost weight in the first few days after infection, nearly one in five regained that weight within two**



weeks and showed no evidence of the disease.

But 70% of the mice became very ill, some showing signs of liver inflammation and a larger group having blood that took too long to clot.

These mice also had internal bleeding, swollen spleens and changes in liver colour.

They also had a greater than 50% chance of dying from the disease.

#### Host's genes

Angela Rasmussen, from the Katze Laboratory at the University of Washington, said the different ways in which the mice were affected mirrored the variety of symptoms seen in humans in the 2014 outbreak.

Recent Ebola survivors could have had immunity to this virus or a related virus which may have saved them, for example.

This would have meant the disease reacting in a particular way to a host's genes, which is seen with many other viruses.

Andrew Easton, professor of virology at the University of Warwick, said the study provided valuable information, but the data could not be directly applied to humans because they have a much larger variety of genetic combinations than mice.

He added: "The paper also does not assess the role of environmental factors that undoubtedly also play a role in the disease process such as the underlying health status of the at-risk population."

However, Prof Easton said the data suggested that "it may not be necessary to completely

eliminate Ebola virus from the body during infection to ensure that there is no disease, and that reduction of virus growth in the body may offer alleviation from some aspects of the disease".

This suggests new treatments may not have to be as thorough as initially expected, he said.

#### 'Intriguing'

Prof Jonathan Ball, professor of molecular virology at the University of Nottingham, said some of the study's discoveries regarding blood clotting were interesting.

"In this mouse model study, the finding that levels of expression of a gene involved in coagulation differs between mice showing different severity of disease symptoms is really intriguing.

"Of course, this is merely an association and needs to be explored more to know definitively how expression is controlled and how it might influence disease.

Prof Ball added: "It will also be important to see if a similar phenomenon is happening in humans."

**Another study published in Science, on how best to stop the transmission of the Ebola virus, concluded that funerals were "super-spreader events".**

Researchers from Yale University, Oregon State University and Liberia, said funeral practices - which often involve washing, touching and kissing of the bodies - had to end in order to bring the disease under control.

They also said aggressive steps should also be taken "to isolate cases and and better protect healthcare workers".



### UAE lab devises breakthrough test to detect coronavirus in camels

Source: <http://www.thenational.ae/uae/health/uae-lab-devises-breakthrough-test-to-detect-coronavirus-in-camels>

November 02 – Al Wathba Veterinary Laboratory of the Abu Dhabi Food Control Authority (ADFCA) has achieved a scientific breakthrough, devising a test to **detect coronavirus in camels in just 20 minutes.**

Mohammed Al Raisi, head of communications and

community service at the ADFCA, said that the agency is keen on achieving security to ensure animal health and developing livestock production while ensuring food supply and food safety. Mr Al Raisi added that the test will be provided at all ADFCA veterinary laboratories and will be made available to camel breeders.



All UAE laboratories will eventually have the test.

He said the ADFCA Veterinary Laboratory Department has been assigned to provide necessary technical support and training to staff in other laboratories with regards to coronavirus in camels.

## These scientific studies show that airport Ebola screenings are largely ineffective

By Josh Hicks

Source: <http://www.washingtonpost.com/blogs/federal-eye/wp/2014/10/31/these-scientific-studies-show-that-airport-ebola-screenings-are-largely-ineffective/>

The debate over whether the Obama administration should ban flights from Ebola-stricken nations has been raging for weeks, fueled by fears of an outbreak in the United States and a lot of election-inspired finger pointing.

The Department of Homeland Security last week imposed new travel restrictions for



anyone arriving from Liberia, Sierra Leone and Guinea, requiring those passengers to come through one of five major U.S. airports in Atlanta, Chicago, New Jersey, New York and Virginia.

**Those travelers now have to submit to temperature checks and questioning.** But scientific studies published by the National Institutes of Health have shown that similar protocols were largely ineffective during an outbreak of Swine Flu in 2009, as Government Executive pointed out in [an article last week](#).

[A study of screenings at Australia's Sydney Airport](#) during the Swine Flu pandemic found that fever was detected in 5,845 passengers during the roughly two-month period covered by the analysis. **Only three of those individuals ended up having the virus,**

**which is known in the scientific community as H1N1.**

Researchers determined that 45 patients who acquired the illness overseas would have "probably passed through the airport" during the roughly two-month period covered in the study. That means the screeners likely missed the vast majority of individuals who arrived at the facility with Swine Flu, despite grabbing thousands of travelers who showed signs of fever.

**The report said only 0.5 percent of H1N1 cases in New South Wales, Australia, were detected at the airport, whereas 76 percent were identified in emergency rooms and at general-practice medical centers.**

Ultimately, researchers concluded that airport temperature checks were "ineffective in detecting cases of [Swine Flu]." Similarly, a [study of fever screening in Japan](#) during the pandemic determined that "reliance on fever alone is unlikely to be feasible as an entry screening measure."

**Indeed, temperature checks didn't work for Liberian Thomas Eric Duncan, who died from Ebola this month after arriving in Dallas.** Duncan did not have a fever when he landed in Texas on Sept. 28, and he said he had not been in contact with Ebola patients in his native country, although that later proved to be a false statement.

The Australian study concluded that officials should consider "more effective interventions, such as contact tracing in the community." The findings are in line with what federal officials have said: That the best way to prevent Ebola from spreading is to identify everyone whom infected individuals have contacted.

*Josh Hicks covers the federal government and anchors the Federal Eye blog. He reported for newspapers in the Detroit and Seattle suburbs before joining the Post as a contributor to Glenn Kessler's Fact Checker blog in 2011.*



**Mass. hospitals agree on plan to care for Ebola patients**

Source: <http://www.bostonglobe.com/metro/2014/10/31/six-massachusetts-hospitals-agree-handle-ebola-patient-one-found-bay-state/rcsjyq1UXncx4oA3wAyiPM/story.html>

**Six of Massachusetts' largest academic hospitals, including five in Boston, have agreed to treat a limited number of Ebola patients, should anyone with the virus surface in the state,** health officials said Friday.

The six hospitals have scrutinized their operations and concluded that they are prepared for the challenging task, state public health commissioner Cheryl Bartlett said at a news conference.

**The hospitals are Baystate Medical Center in Springfield, Beth Israel Deaconess Medical Center, Boston Medical Center, Brigham and Women's Hospital, Massachusetts General Hospital, and Tufts Medical Center (photo).**

"This collaborative system of hospitals would accept transfers from other providers in Massachusetts, based on existing referral relationships and capacity," Bartlett said.

Boston's top academic hospitals had rejected calls that one of them be designated as the state's primary Ebola treatment hub, saying that staff and space requirements would prove too burdensome, the Globe reported Wednesday.

The US Centers for Disease Control and Prevention has been trying to create individual, regional treatment facilities, but leaders at Boston's hospitals said they believed that having multiple centers able to care for one or two patients was the right approach.

**The sensitive discussions about where to treat Ebola patients reflect the medical complexity of caring for such patients and the costs, in terms of finances and image, to hospitals.** After a Texas hospital treated an Ebola patient from Liberia, other patients canceled outpatient procedures, and business in the emergency room slowed, according to Dallas media reports.

Under the new Massachusetts plan, all hospitals will be expected to handle the earliest steps involved in encountering a patient suspected of having an Ebola infection, Bartlett said.

"Each of the state's hospitals and their emergency departments are prepared to

screen, identify, and isolate any suspect cases and coordinate with [the state Health Department] on risk assessment and patient transfers, as needed," Bartlett said.

No one with Ebola has been identified in Massachusetts, and the likelihood of an infection here is considered remote, although possible. Logan Airport is not among the five US airports that receive more than 94 percent



of travelers from the Ebola-ravaged nations of Guinea, Liberia, and Sierra Leone.

Bartlett said the decision to funnel any suspected Ebola cases to the six large hospitals reduces the number of health care workers who will be required to have the intensive level of training needed to care for such patients.

The decision also "will allow the state's hospitals to target resources toward the specific training they need to safely treat and transfer an Ebola patient to the appropriate medical facility."

Other states in the region are also prepared to deal with suspected Ebola cases, Bartlett said, so out-of-state patients are not expected to be transferred to Massachusetts.

**Two other Massachusetts hospitals that were not included in the DPH announcement said they also are preparing to treat Ebola patients.**

"Boston Children's has been preparing for several months," a spokesman for the hospital said. "We are ready and committed to care for children with Ebola at our hospital and we expect to be part of the collaborative."

In a statement, UMass Memorial Medical Center president Patrick





Muldoon said the Worcester hospital is working toward joining the collaborative effort, and expects to be ready within the next four weeks. "During this time, in consultation with DPH, we are confirming the specific suite of laboratory services necessary to support the care of a patient with Ebola," Muldoon said.

The state has not yet calculated the cost to the hospitals in the collaborative for their extensive extra efforts, which includes staff training and the capacity to isolate and treat patients, but also the ability to remove their highly infectious waste.

**The Globe reported Wednesday that Brigham and Women's believes it could treat only one Ebola patient at a time.**



**Massachusetts General Hospital (photo) said it could take up to four patients. Boston Medical Center can handle two to four.**

Bartlett said that hospitals already receive extra money from the federal government for emergency preparedness, and that her agency has been in discussion with federal regulators about whether some of that money might be redirected to the hospitals in the collaborative. She said CDC officials have offered the agency's expertise in helping to evaluate whether they are ready to treat Ebola patients, and Massachusetts will accept that offer.

Bartlett said her department would have a better idea of what extra funding the hospitals might need after officials from the CDC visit the state.

**Health care workers in Massachusetts, including some who work in emergency rooms, have continued to express concerns about possible exposure to the virus, if called on to treat an infected patient.**

Leaders of the designated hospitals who attended the news conference said they are working to address those fears.

"We're fighting fear with facts. And we're addressing this with science," said Dr. Eric Goralnick, medical director of emergency preparedness at Brigham and Women's Hospital.

"Obviously there is a lot of anxiety around this issue," Goralnick said. "And we're being very aggressive around communications, and listening and listening and listening. And we're educating, and focused on training."

**U.S. will see between 1 and 130 additional Ebola cases by end of 2014**

Source: <http://www.homelandsecuritynewswire.com/dr20141104-u-s-will-see-between-1-and-130-additional-ebola-cases-by-end-of-2014-experts>

November 04 – Top U.S. medical experts studying the spread of Ebola predict a few more cases will reach America before year's end, citing the return of healthcare workers currently working in West Africa as the most likely cause of new cases. Using data models that weigh several variables including daily new infections in West Africa, global airline traffic, and transmission possibilities, **top infectious disease experts predict as few as one or two additional infections and as many as 130 by the end of 2014.** "I don't think there's

going to be a huge outbreak here, no," said Dr. David Relman, a professor of infectious disease, microbiology and immunology at Stanford University's medical school. "However, as best we can tell right now, it is quite possible that every major city will see at least a handful of cases."

Dominic Smith, a senior manager for life risks at Newark, California-based RMS, a leading catastrophe-modeling firm, shared with the AP results from a U.S.



simulation that projected fifteen to 130 cases between today and end of December. Smith's method does assume that a steady number of U.S. healthcare professionals will continue to travel to West Africa to help with the Ebola efforts. Still, the 130 potential cases may be a bit of an overestimate as it does not take into consideration the automatic quarantine measures that some airports in the United States are implementing. Those quarantines "could both reduce the number of contacts for imported cases, as well as increase the travel burden on - and perhaps reduce the number of - U.S. volunteers planning to support the effort in West Africa," he said.

Another simulation by Northeastern University professor Alessandro Vespignani, predicts a likely scenario of one new case and as many as eight cases through the end of November. "I'm always trying to tell people to keep calm and keep thinking rationally," said Vespignani, who projects the spread of infectious diseases at the university's Laboratory for the Modeling of Biological and Socio-Technical Systems. According to the *Telegraph*, in the journal *PLOS ONE*, Vespignani and his colleagues said that the probability of Ebola spreading outside of

West Africa is small and ultimately depends on what happens in the region in the next few months. His first analysis, published 2 September, was accurate when it predicted that the United States would be among thirty countries likely to experience an Ebola case. To date, the United States has treated nine Ebola patients including Thomas Eric Duncan, the first patient to arrive undiagnosed.

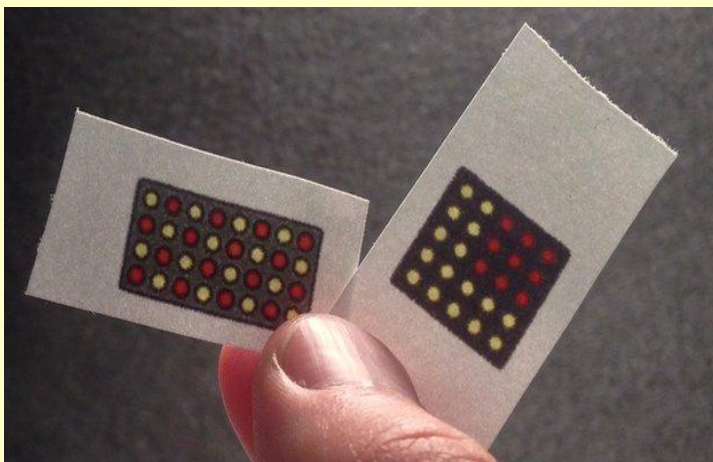
The surge in assistance to West Africa is expected to bring the Ebola epidemic under control, but some medical experts say it is possible that Ebola could spread across more international borders. "My worry is that the epidemic might spill into other countries in Africa or the Middle East, and then India or China. That could be a totally different story for everybody," Vespignani said.

The Centers for Disease Control and Prevention has conducted risk modeling to predict the number of cases in West Africa, but "there isn't enough data available in the U.S. to make it worthwhile to go through the exercise," said spokeswoman Barbara Reynolds. Ebola will not be a widespread threat in the United States, "we're talking about clusters in some places but not outbreaks," she said.

**Harvard Professor Develops Fast, Cheap Prototype Ebola Test**

Source: <http://www.emergencymgmt.com/health/Harvard-Fast-Cheap-Prototype-Ebola-Test.html>

October 28 – A Harvard researcher and his team have developed a prototype Ebola test that could detect the virus in 30 minutes and **cost less than \$1 to reproduce.**



Jim Collins, a professor of biomedical engineering at Harvard's Wyss Institute for Biologically Inspired Engineering, said he and his team created the test in 12 hours, using just \$20 of materials.

"We're keen to see if we can move the technology out into the field to address the (Ebola) crisis," Collins said.

**The test takes molecules inside a cell drawn from a saliva or blood sample and then drops**

**them on a pocket-sized piece of paper that contains freeze-dried biosensors — molecular switches that are activated in the presence of molecules of the Ebola virus. If, after 30 minutes, the paper turns from yellow to purple, the sample is positive for Ebola.**



Collins said the team still has to ensure a low false-positive rate with the test and make it more sensitive so that it would work even with a smaller amount of viral molecules before it will be ready to be field-tested.

I do feel this has great potential, using really low-cost materials,” said Lingchong You, an expert in cellular reprogramming at Duke University.

Currently, the “gold-standard” test for Ebola is RT-PCR, or reverse transcription polymerase chain reaction, which is very sensitive and highly specific, meaning that it does not produce false positives, said John Connor, a researcher at Boston University’s National Emerging Infectious Diseases Laboratories. However, it takes about four hours to produce results, Connor said. The test reportedly costs anywhere from \$60 to \$200.

► **Read also:** <http://www.bbc.com/news/science-environment-29780942>

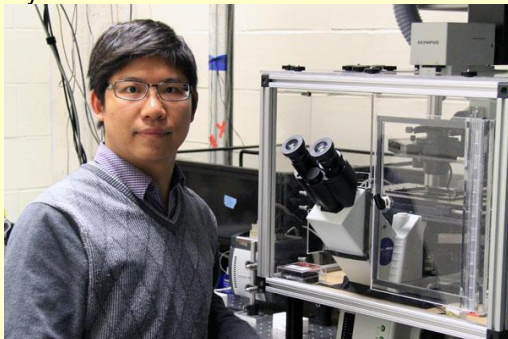
## Searching for weapons in the fight against drug-resistant bacteria

Source: <http://www.homelandsecuritynewswire.com/dr20141106-searching-for-weapons-in-the-fight-against-drugresistant-bacteria>.

With the help of cutting edge microscopy, new research at University of Toronto Mississauga could help stop “superbugs” in their tracks.

The Milstein Lab is taking a very close look at bacterial cells in hopes of figuring out how to stop the spread of antibiotic-resistant bacteria known as **CRE, or carbapenem-resistant Enterobacteriaceae**. Dubbed the “nightmare bacteria,” CRE infections are immune to even the strongest antibiotics and have the ability to transfer that drug resistance to other bacteria.

**A U Toronto release reports that there are thousands of documented cases of superbugs in North America every year, and that number is rising.** The infections, which can lead to pneumonia, sepsis, meningitis and more, have a 50 percent mortality rate. **“That’s worse than Ebola,”** says assistant physics professor Joshua Milstein. “We have to start investing in new approaches beyond antibiotics.”



That is where the research of post-doctoral fellow Yong Wang (photo) comes in. Wang joined the Milstein Lab in July 2014 after

winning a coveted three-year fellowship from the Human Frontier Science Program, which supports international collaborations in interdisciplinary research.

Wang is studying the behavior of plasmids — foreign genes absorbed by bacterial cells from other bacteria and viruses or from the environment — before and after the cells divide. To prevent harm to itself, bacterium can shut the genes off through a process called “silencing” that acts like a basic immune system, but the genes can turn back on again when the cell divides. According to Wang, this process can result in strains of infection that are both more resistant and more virulent, turning the bacterium into a dangerous “superbug.”

“We’re studying that pathogenesis — how the bacteria get this foreign DNA and how it eventually gets turned on,” Milstein says. “If we can figure out how these things propagate, maybe we could figure out how to stop these things from propagating.”

At the forefront of this research is a new technique called super-resolution imagery. Pioneered by the 2014 Nobel Prize winners in physics, the powerful microscopy is key to the lab’s research. “It’s an important technique that’s driving a lot of the field at the moment,” Milstein says.

Previous technology allowed researchers to glimpse just one-eighth of a cell at a time, however super-resolution microscopy lets



researchers see the entire cell at once, making it possible to watch the behavior of the plasmids before cell division.

**The technology does not come cheap — commercial versions run about \$1 million — however the Milstein lab built its own microscope in 2012 (photo above) using parts sourced on e-Bay, to create a DIY microscope for one-tenth that amount.**

“With super-resolution imaging, you can image inside a bacteria and see things you could never see in the past,” says Milstein. “Now we start to get these spectacular images.”

The technology allows researchers to see an amazing level of detail within the cell, which will

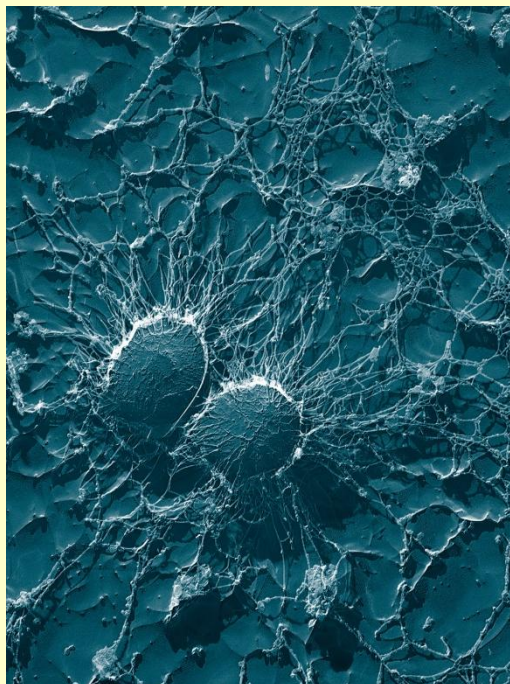
give researchers a boost when it comes to understanding how the bacteria replicate. The new microscope also lets Wang observe living cells, an important component of understanding plasmid activity. “We want to be able to track these plasmids as they move in a cell,” says Wang. “We can watch a cell divide and see what it does next.”

Wang hopes his research will lead to a quantitative understanding of how bacterial cells distribute plasmids during cell division. “If we understand that correctly, we hope to develop therapies or strategies to interfere with its propagation.”

### Alternative to antibiotics

Source: <http://www.homelandsecuritynewswire.com/dr20141105-alternative-to-antibiotics>

Ever since the development of penicillin almost ninety years ago, antibiotics have remained the gold standard in the treatment of bacterial infections. The World Health organization (WHO), however, has repeatedly warned of a



growing emergence of bacteria that develop antibiotic resistance. Once antibiotics do no longer protect from bacterial infection, a mere pneumonia might be fatal.

Alternative therapeutic concepts which lead to the elimination of bacteria, but do not promote resistance are still lacking.

**A University of Bern release reports that a team of international scientists has tested a novel substance**, which has been developed by Eduard Babiychuk and Annette Draeger from the Institute of Anatomy, University of Bern in Switzerland. **This compound constitutes a novel approach for the treatment of bacterial infections: the scientists engineered artificial nanoparticles made of lipids, “liposomes” that closely resemble the membrane of host cells. These liposomes act as decoys for bacterial toxins and so are able to sequester and neutralize them. Without toxins, the bacteria are rendered defenseless and can be eliminated by the cells of the host’s own immune system.** The study was published 2 November in *Nature Biotechnology*

#### Artificial bait for bacterial toxins

In clinical medicine, liposomes are used to deliver specific medication into the body of patients. Here, **the Bernese scientists have created liposomes which attract bacterial toxins and so protect host cells from a dangerous toxin attack.**

“We have made an irresistible bait for bacterial toxins. The toxins are fatally attracted to the liposomes, and once they are attached, they can be eliminated easily without danger for the host cells”, says Eduard Babiychuk who directed the study.



“Since the bacteria are not targeted directly, the liposomes do not promote the development of bacterial resistance”, adds Annette Draeger. **Mice which were treated with the liposomes**

**after experimental, fatal septicemia survived without additional antibiotic therapy.**

— *Read more in Brian D. Henry et al., “Engineered liposomes sequester bacterial exotoxins and protect from severe invasive infections in mice,” Nature Biotechnology (2 November 2014)*

**Epidemics do not require long-distance travel by virus carriers to spread**

Source: <http://www.homelandsecuritynewswire.com/dr20141105-epidemics-do-not-require-longdistance-travel-by-virus-carriers-to-spread>

November 05 – The current Ebola outbreak shows how quickly diseases can spread with global jet travel. Yet knowing how to predict the spread of these epidemics is still uncertain, because the complicated models used are not fully understood, says a UC Berkeley biophysicist.

**Using a very simple model of disease spread, Oskar Hallatschek, assistant professor of physics, proved that one common assumption is actually wrong. Most models have taken for granted that if disease vectors, such as humans, have any chance of “jumping” outside the initial outbreak area — by plane or train, for example — the outbreak quickly metastasizes into an epidemic.**

A UC-Berkeley release reports that Hallatschek and co-author Daniel Fisher of Stanford University found instead that **if the chance of long-distance dispersal is low enough, the disease spreads quite slowly, like a wave rippling out from the initial outbreak. This type of spread was common centuries ago when humans rarely traveled.** The Black Death spread through fourteenth-century Europe as a wave, for example.

**If the chance of jumping is above a threshold level, however — which is often the situation today with frequent air travel — the diseases can generate enough satellite outbreaks to spread like wildfire. The greater the chance that people can hop around the globe, the faster the spread.**

“With our simple model, we clearly show that one of the key factors that controls the spread of infection is how common long-range jumps are in the dispersal of a disease,” said Hallatschek, who is the William H. McAdams

Chair in physics and a member of the UC Berkeley arm of the California Institute for Quantitative Biosciences (QB3). “What matters most are the rare cases of extremely long jumps, the individuals who take plane trips to distant places and potentially spread the disease.”

**This new understanding of a simple computer model of disease spread will help epidemiologists understand the more complex models now used to predict the spread of epidemics, he said, but also help scientists understand the spread of cancer metastases, genetic mutations in animal or human populations, invasive species, wildfires and even rumors.**

**Epidemic spread**

Hallatschek typically studies in a Petri dish how new mutations spread in colonies of microbes, activity that he models mathematically to understand how evolution fixes new traits in a population. When looking at simple theories of such “epidemic” spread, however, he was surprised to discover that no one knew the answer to a simple question: How does the long-distance dispersal of individuals during an outbreak affect the spread?

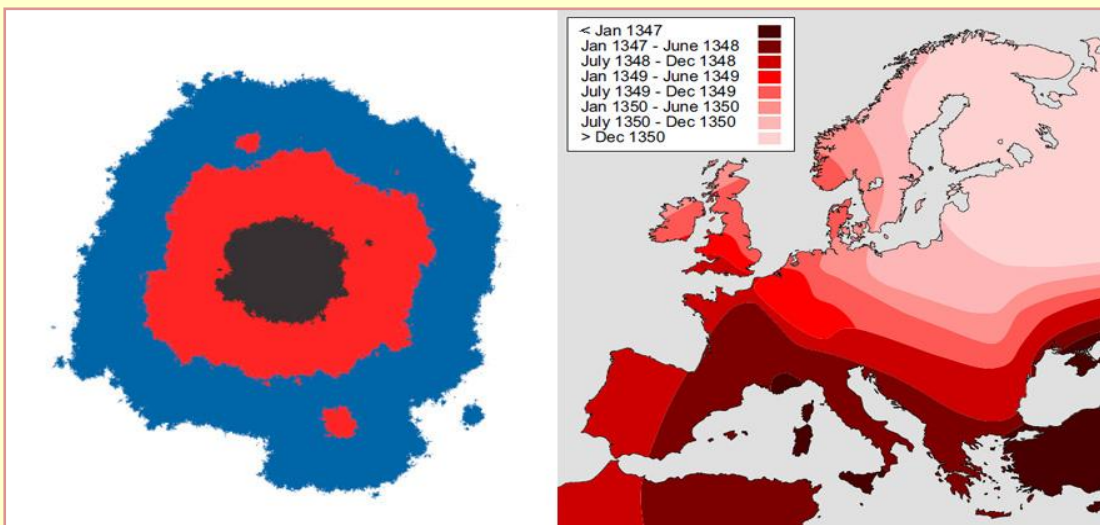
Simulations show that if the chance of individuals traveling away from the center of an outbreak drops off exponentially with distance — for example, if the chance of distant travel drops by half every ten miles — the disease spreads as a relatively slow wave.

Simulations also suggested that a slower “power-law” drop off — for example, if the chance of distant travel drops by half every time the distance is doubled — would let



the disease get quickly out of control.”  
 “We were shocked to see that this had not been demonstrated, and saw a chance to prove something really fundamental,” Hallatschek said.

Hallatschek said that previous studies failed to take into account the randomness of jumps, which led people to think that any long-range jump would lead to new outbreaks and rapid spread. But if long-range jumps are extremely



When long-distance travel is rare, epidemics spread like a slow, rippling wave, as demonstrated by the simulation (left) and the actual historical spread of the black death during the Middle Ages. (Images courtesy of Oskar Hallatschek and D. Sherman and J. Salisbury)

The simple model he used was stripped of real-world complexity, but contained the crucial ingredients needed to predict evolutionary spread and, more importantly, could be captured by a mathematical formula. Hallatschek discovered three types of epidemic situations involving power-law distributions. In cases where long-range jumps are very rare, epidemics spread in a slow wave, typified by the Black Death. The invasive cane toad also spread in a slow wave after being introduced to Australia in the 1930s. When long-range jumps are common, the disease spreads very rapidly, as in 2002-2003 with SARS (severe acute respiratory syndrome), which was spread around the world by air travelers. An intermediate situation produces satellite outbreaks, but spreads far more slowly than SARS-like cases.

rare, distant outbreaks tend to be overtaken by the slow, wavelike spread of the initial outbreak before they can contribute much to the overall epidemic.

He noted that two recent studies of human dispersal — the “Where’s George?” dollar bill tracking study and a 2008 cellphone-user mobility study — suggest that in the real world, humans disperse according to a power-law distribution over distances of up to hundreds of kilometers and exponentially over even longer distances.

The release notes that in the future, he plans to make his model more and more realistic, first by incorporating networks to mimic the real world where people do not jump randomly, but must travel through airport hubs or train stations. Hallatschek also hopes to test his model by using data on the evolving genome sequences of pathogens as they spread, which provide one measure of where and when satellite outbreaks occur.

The work was supported by the Simons Foundation and QB3, as well as grants from Germany’s Deutsche Forschungsgemeinschaft and the U.S. National Science Foundation.

— Read more in Oskar Hallatscheka and Daniel S. Fisherb, “Acceleration of evolutionary spread by long-range dispersal,” *Proceedings of the National Academy of Sciences* (2 September 2014)



## Travelers from Ebola-affected nations restricted to 5 U.S. airports

Source: <http://i-hls.com/2014/11/travelers-ebola-affected-nations-restricted-5-u-s-airports/>

The U.S. Department of Homeland Security (DHS) announced Tuesday that travelers from three West African Ebola-affected countries will now be required to enter the U.S. at just five airports.

**Travelers from Liberia, Sierra Leone and Guinea will now need to arrive at John F. Kennedy International Airport in New York, Washington Dulles International Airport, O'Hare International Airport in Chicago, Hartsfield-Jackson International Airport in Atlanta and Newark Liberty International Airport.**

According to *Government Security News*, DHS implemented enhanced screening measures at the five airports in cooperation with the Centers for Disease Control (CDC) and Prevention.

Passengers flying into one of these airports from flights originating from the three nations have been subject to secondary screening and added protocols, including having their temperature taken, before they can enter the United States.

**These airports account for about 94% of travelers flying to the United States from the nations, according to DHS.**

DHS currently has in place measures to identify and screen anyone at all land, sea and air ports of entry into the United States who the agency believes have been present in the three nations in the prior 21 days, he added. "We are continually evaluating whether additional restrictions or added screening and precautionary measures are necessary to protect the American people and will act accordingly."

## Ebola guidance for firefighters

Source: [http://the-ncec.com/November-2014?utm\\_medium=email&utm\\_source=Ricardo-AEA+Ltd&utm\\_campaign=4954551\\_NCEC%2fTG%2fEV91040500%2fNCEC%2fNewsletter+%28November+2014%29&utm\\_content=ebola&dm\\_i=DA4,2Y6YF,1Q2VSG,AN2C9,1#ebola](http://the-ncec.com/November-2014?utm_medium=email&utm_source=Ricardo-AEA+Ltd&utm_campaign=4954551_NCEC%2fTG%2fEV91040500%2fNCEC%2fNewsletter+%28November+2014%29&utm_content=ebola&dm_i=DA4,2Y6YF,1Q2VSG,AN2C9,1#ebola)



October 2014 saw a proliferation of news coverage about the Ebola outbreak in West Africa and beyond. The first case in the most recent outbreak occurred in Guinea in late 2013. Since then, the virus has spread to neighbouring countries and, more recently, further afield, as healthcare workers in the USA and Spain test positive for Ebola. The UK's response is stepping up, with four UK airports now screening passengers arriving from West Africa.

The statistics on Ebola make for grim reading. There is a 70% fatality rate among those testing positive for the virus. The World Health Organisation estimates that, by December, there could be up to 10,000 cases per week. With an incubation period of up to 21 days, unless prompt and drastic action is taken to stop the explosion of cases, it seems inevitable that case will occur in the UK.

A recent national exercise set out to test the preparedness of the emergency services for an Ebola outbreak, with an emphasis on the capabilities of medical professionals, Public Health England and the Government response. It is possible, though, for other emergency responders to come into contact with Ebola victims, for example when assisting medical staff. What advice in this situation should firefighters follow?



The Hazardous Materials Commission of the International Association of Fire and Rescue Services (CTIF), of which NCEC's Dan Haggarty is a contributing member, has just published a guidance document on Ebola, which is designed specifically for the needs of firefighters. Covering transmission, treatment, containment, protection and disinfection, the guidance brings together all the key facts and proposes a quick risk assessment process.

## Fighting an Epidemic With Hands Tied

By Lawrence K. Altman, MD

Source: [http://www.nytimes.com/2014/11/04/health/fighting-an-epidemic-with-hands-tied.html?\\_r=2](http://www.nytimes.com/2014/11/04/health/fighting-an-epidemic-with-hands-tied.html?_r=2)

Hundreds of government and civilian workers of all stripes, and thousands of military personnel, have braved the terrifying prospect of infection to respond to the Ebola emergency in West Africa. And thousands more will be needed for an effort that is expected to go well into 2015.

But will they go? Beyond the obvious dangers to health care workers — more than 270, mostly African, have died so far this year — a host of obstacles stand in the way of anyone who may want to help stem a catastrophe.

Foremost among them, perhaps, is that with no central agency in charge, volunteers often cannot be placed when and where they are most needed.

The affected African countries have crippling weaknesses in their health systems. Doctors Without Borders, a nonprofit humanitarian group, led the initial response, but it is not big or powerful enough to do the entire job. The World Health Organization failed to heed the group's cries for earlier help. The United States has lately taken the lead, but it, too, responded late.

**The Ebola emergency contrasts sharply with previous disasters — hurricanes, cholera, tsunamis, earthquakes — in which experienced volunteers quickly joined relief efforts.**

"Ebola is scary," said Dr. Susan L. F. McLellan, an infectious disease specialist at Tulane University in New Orleans, who cared for patients in Sierra Leone for nearly three weeks in August and has battled previous outbreaks of other diseases in Africa and Haiti.

But it is made scarier, she said, by an epidemic of misinformation that leads many to refuse to be part of teams that would care for a potential Ebola patient even in the United States.

Misinformation has "put huge blockades in our ability to respond, and is part of why the United States is not recruiting that many volunteers," Dr. McLellan said.

Many change their minds after "talking to someone who provided hours of clinical care a day, had her skin exposed, sat with Sierra Leoneans, ate food they prepared, and not only lived to tell the tale but also saved some lives," Dr. McLellan said.

**Politicians have added further difficulties by forcing workers returning from West Africa into isolation or quarantine. Volunteers who do not become ill until they return — as happened to Dr. Craig Spencer in New York City — face public criticism instead of praise for their altruism.** And friends and fellow employees are shunning even the doctors, nurses and workers who are caring for him.

Louisiana officials have told scientists returning from West Africa, including many experts on Ebola, not to attend a meeting of the American Society of Tropical Medicine and Hygiene in New Orleans this week.

To be sure, the federal Centers for Disease Control and Prevention has sent more workers to the Ebola-stricken countries than for any other emergency in its 68-year history, and the Pentagon is sending at least 4,000 troops to provide hospital beds and organizational support. But other countries have refused to send health workers. When Australia offered to donate \$2 million to Doctors Without Borders instead of committing experienced doctors and nurses, the group turned down the money, saying it needed the people more.





“Countries like Australia with the capacity to make a real difference on the ground,” it said, “are looking at each other to take responsibility and are refusing to send their own personnel to help.”

Misinformation aside, Ebola poses a legitimate fear of the unknown. Many workers going to infected areas do not know how great a danger they face, said Dr. William H. Foege, an epidemiologist and former director of the C.D.C. A vast majority of volunteers have no experience with Ebola or other so-called hemorrhagic fevers like Marburg and Lassa, so they face a lethal disease they have never dealt with and for which there is no vaccine or proven therapy.

The decision to volunteer to go to West Africa requires finding a proper balance among valor, emotions, personal sacrifice, scientific evidence and common sense. Beyond conquering the fear of becoming another Ebola victim, prospective volunteers must overcome a formidable list of hurdles, some of them rarely discussed.

**Dr. Peter Piot, dean of the London School of Hygiene and Tropical Medicine, has assured full salary for staff who go to West Africa, and 250 individuals from his and other institutions have volunteered.** But even though his school has solved insurance and safety issues, only eight have gone so far because of a lack of available positions, he said. He is hoping more can go later.

Recruiting organizations screen applicants because they want only qualified workers, not individuals simply seeking adventure, and need to devise orderly schedules to avoid having too many people with too little to do.

Because each stint usually requires several months, potential volunteers must seek colleagues who are willing to work extra shifts in a hospital or clinic or teach their classes throughout their absence.

Moreover, working in poor countries with rudimentary health facilities is vastly different from working in high-tech hospitals in rich countries. So most volunteers must go to a training site to take courses in how to work with Ebola. That takes time, and the travel can be costly.

**In the United States, many volunteers come from hospitals, medical schools and**

**universities. But administrators of many of these institutions, worried about liability, are reluctant to let employees go to West Africa — in part because they are heeding the C.D.C.’s warnings against nonessential travel to Ebola areas.**

Critics say even well-meaning administrators have put up new hurdles that discourage volunteers. For example, academic and hospital officials want to know where their employees are going, why, and who will reimburse the employer for the lost time. Faculty and staff who go may not get paid.

**Volunteers are urged to be sure their life insurance policies are paid up. Also, there can be uncertainties about whether their health insurance will pay for evacuation and medical care if they develop Ebola.**

Health workers who understand administrators’ concerns still contend that some are exercising undue caution for public-relations reasons to assure employees, students and parents that their institution is safe from Ebola.

“We have not seen this kind of caution before,” said Dr. Michael H. Merson, the founding director of the Global Health Institute at Duke University.

Many people ask why foreigners should respond to an epidemic far from home, even if imported cases may significantly threaten people in their own country. The tradition of doctors’ and nurses’ accepting personal risks in caring for patients seems to be a casualty in the growing commercialism of medicine and academia.

In the mid-1960s, I served in the C.D.C.’s Epidemic Intelligence Service, which responds to outbreaks, but only if invited by domestic state and foreign governments. Back then, and in recent decades, I have heard many leaders advocate creation of a similar international group, a kind of SWAT team ready to respond immediately to an emergency anywhere.

**But the proposals have fallen on deaf ears — for lack of funds, disagreements over where such teams should be located, and because the potential need for new or amended laws to allow them to enter countries where they may not be welcome. The terror of Ebola may change that situation.**



**Harnessing artificial intelligence to search for new Ebola treatments**

Source: <http://www.homelandsecuritynewswire.com/dr20141106-harnessing-artificial-intelligence-to-search-for-new-ebola-treatments>



**The University of Toronto, Chematria, and IBM are combining forces in a quest to find new treatments for the Ebola virus.**

**Using a virtual research technology invented by Chematria, a startup housed at U of T's Impact Center, the team will use software that learns and thinks like a human chemist to search for new medicines. Running on Canada's most powerful supercomputer, the effort will simulate and analyze the effectiveness of millions of hypothetical drugs in just a matter of weeks.**

"What we are attempting would have been considered science fiction, until now," says Abraham Heifets, a U of T graduate and the chief executive officer of Chematria. "We are going to explore the possible effectiveness of millions of drugs, something that used to take decades of physical research and tens of millions of dollars, in mere days with our technology."

**A U Toronto release reports that Chematria's technology is a virtual drug discovery platform based on the science of deep learning neural networks and has previously been used for research on**

**malaria, multiple sclerosis, C. difficile, and leukemia.**

Much like the software used to design airplanes and computer chips in simulation, this new system can predict the possible effectiveness of new medicines, without costly and time-consuming physical synthesis and testing. The system is driven by a virtual brain that teaches itself by "studying" millions of datapoints about how drugs have worked in the past. With this vast knowledge, the software can apply the patterns it has learned to predict the effectiveness of hypothetical drugs, and suggest surprising uses for existing drugs, transforming the way medicines are discovered.

The World Health Organization (WHO) has projected that the number of new cases of Ebola could reach 10,000 each week by December 2014, underscoring the urgent need for research to address the crisis. The unprecedented speed and scale of this investigation is enabled by the unique strengths of the three partners: Chematria is offering the core artificial intelligence technology that performs the drug



research, U of T is contributing biological insights about Ebola that the system will use to search for new treatments and IBM is providing access to Canada's fastest supercomputer, Blue Gene/Q.

**"Our team is focusing on the mechanism Ebola uses to latch on to the cells it infects," said Dr. Jeffrey Lee of the University of Toronto. "If we can interrupt that process with a new drug, it could prevent the virus from replicating, and potentially work against other viruses like Marburg and HIV that use the same mechanism."**

While there are "broad spectrum" antibiotics that can treat multiple kinds of bacterial

infections, most antiviral medications are only effective against a single kind of virus.

The release notes that the initiative may also demonstrate an alternative approach to high-speed medical research. While giving drugs to patients will always require thorough clinical testing, zeroing in on the best drug candidates can take years using today's most common methods. Critics say this slow and prohibitively expensive process is one of the key reasons that finding treatments for rare and emerging diseases is difficult.

"If we can find promising drug candidates for Ebola using computers alone," said Heifets, "it will be a milestone for how we develop cures."

**Ricin vaccine shows promise in pilot study**

Source: <http://medicalxpress.com/news/2014-11-ricin-vaccine.html>



Chad Roy, director of infectious disease aerobiology at the Tulane National Primate Research Center, has demonstrated complete protection with a vaccine against ricin toxin in a nonhuman primate. (Photo by Robin Rodriguez)

**A recent study at the Tulane National Primate Research Center showed for the first time that an experimental vaccine could completely protect nonhuman primates exposed to deadly ricin toxin, a potential bioterrorism agent.**

"This is potentially a game-changer," said Chad Roy, director of infectious disease aerobiology at the

primate center. "This is the first time anyone has demonstrated complete protection with a vaccine against ricin toxin in this advanced of an animal model. Although the vaccine has a considerable way to go for FDA licensure, we have demonstrated through our studies that we can effectively vaccinate to protect against one of the most notorious biological toxins."

Ricin is a highly lethal toxin derived from the seeds of the castor oil plant. A dose of purified ricin powder the size of a few grains of table salt can kill an adult. Due to its toxicity and the ubiquity of source material, it's considered a leading bioterrorism threat.

The study, which is considered a proof of concept, is an important step in establishing the efficacy of a vaccine that could be a key biodefense product for those in the military, law enforcement or first responders who would potentially be at risk for exposure, Roy says.

**Private pharmaceutical firm Soligenix is developing the vaccine, called RiVax.** The pilot study, which was funded by the National Institutes of Health, was conducted with



researchers from the University of Kansas, University of Texas Southwestern Medical School, University of Colorado and the New York State Department of Health.

### U.S. Ebola researchers plead for access to virus samples

Source: <http://www.reuters.com/article/2014/11/05/us-health-ebola-usa-research-exclusive-idUSKBN01P1DZ20141105>

**Scientists across the United States say they cannot obtain samples of Ebola, complicating efforts to understand how the virus is mutating and develop new drugs, vaccines and diagnostics.**

The problems reflect growing caution by regulators and transport companies about handling Ebola as well as the limited resources of West African countries which are struggling to help thousands of infected citizens.

**Ten scientists from eight major research institutions contacted by Reuters reported they were unable to get Ebola samples in recent months.**

Tulane University, one of the institutions, received samples this week, and the U.S. Centers for Disease Control and Prevention (CDC) said it has reached an agreement to get live specimens, but it is not clear if new supplies will satisfy demand, and transport remains challenging.

Ebola mutates as it spreads, and while few expect it to acquire the ability to transmit through air, for instance, scientists require a constant supply of fresh samples to track these changes. The samples hold up is not likely to delay the development of experimental treatments. But if the virus undergoes significant changes that go undetected, the drugs and tests might not work, researchers said.

Microbiologist and infectious disease expert Dr. Charles Chiu of the University of California, San Francisco, needs samples from Ebola patients to develop a new genetic test that could detect the disease in infected individuals before symptoms appear.

"No one really knows right now what has the virus mutated to or if it has mutated," he said. Without that research, "we're not going to be able to determine in advance whether or not it has changed to a form where it might evade diagnostic assays or might render current vaccines or drugs ineffective."

Scientists say Liberia, Guinea and Sierra Leone have been slow to release samples as

they fight to contain the worst Ebola outbreak on record which has killed about 5,000 people. Laurie Garrett, the senior fellow for global health at the Council on Foreign Relations in New York, said the issue is largely, and appropriately, about safe transport, especially in the wake of the recent mishandling of pathogens such as anthrax at U.S. government laboratories.

"All the companies working on vaccines, diagnostics and treatments are complaining about lack of access to viral samples," of Ebola, she said.

#### Key research

Erica Ollmann Saphire of the Scripps Research Institute in La Jolla, California, directs scientists working on Ebola treatments, such as the three-antibody cocktail ZMapp, made by privately-held Mapp Biopharmaceutical. She said in an e-mail she needs special cells from Ebola survivors but has not been able to get any.

Dr. James Crowe, director of the Vaccine Center at Vanderbilt University, is collaborating with Mapp on ZMapp, and has had problems as well. Crowe said he may soon get some samples from U.S. Ebola survivors through Emory University, after going to great lengths to get them.

Crowe said a mutation in a key area of the virus "could compromise the utility of the drug," adding that there is no evidence that such changes have occurred. Mapp did not respond to a request for comment.

Importing Ebola virus into the United States has always been tricky, said Dr. John Schieffelin of



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Tulane, who has treated Ebola patients in Sierra Leone.

It has become even more difficult since the case of Thomas Duncan, the first person diagnosed with Ebola in the United States, stoked fears that the country could see its own outbreak. Duncan died in a Dallas hospital on Oct. 8.

"You can divide the outbreak into pre-Dallas and post-Dallas," Schieffelin said. "Everybody has safety as a very, very high priority, which is great. But sometimes the fear and hysteria trumps science."

#### A rare success

**This week, Tulane received a shipment of as many as 900 blood samples from Ebola patients in Sierra Leone, capping several weeks of effort. Tulane microbiologist Robert Garry believes the university's decade-long relationship with the Sierra Leone Ministry of Health and Sanitation was key to getting that access.**

Even so, exporting the samples from Sierra Leone required approval from an ethics committee, the minister of health and the president. On the U.S. side, importing samples of Ebola required a permit from the CDC and passage through U.S. customs.

The researchers switched shipping companies after one refused to carry Ebola, missed a flight which did not have room for cargo, and had to bring dry ice to Africa to pack the samples, which were killed with a double shot of an inactivating agent, plus a shot of ethanol for good measure.

Tulane researchers will extract RNA from the samples and ship them to collaborators at Harvard University and the Broad Institute, which plan to sequence the genetic code of the virus and track the mutations taking place.

Earlier this year, Garry and several dozen colleagues from Harvard and Sierra Leone found that Ebola was mutating twice as fast in humans as in fruit bats which carried the virus. Their last sample was from June, and it is not clear what changes have occurred in the virus since then.

"You need to know how much of an adaptation the virus is making in people," if you want to treat and diagnose it, Garry said.

CDC spokesman Tom Skinner said that the agency has struck agreements with the three

affected countries in West Africa and hopes to acquire live specimens in a matter of weeks. It then would try to share samples with other institutions.

"How much sharing will go on will depend on how many specimens we receive and finalizing details around getting permission to share from the affected countries," he said.

#### The scramble

**The lack of access to African samples has also caused a scramble for blood samples from the handful of U.S. patients who have survived, including Dallas nurse Nina Pham who treated Duncan, said Thomas Geisbert, a microbiologist at the University of Texas Medical Branch.**

Geisbert has a \$26 million grant from the National Institutes of Health to study experimental Ebola treatments. He works with leading Ebola drug developers Profectus BioSciences and Tekmira Pharmaceuticals Corp and is collaborating with Crowe at Vanderbilt for a next-generation antibody treatment for Mapp.

Tekmira did not respond to a request for comment. Profectus Chief Scientific Officer John Eldridge said the company had not encountered problems, but added that Geisbert should have a better understanding of the difficulties.

Geisbert does not think the delays in obtaining samples have held up the development of specific products. Most of these are based on samples from earlier Ebola outbreaks. But to confirm their effectiveness, it would be helpful to test Tekmira's TKM-Ebola and Mapp's ZMapp against the latest outbreak strains.

"There is no substitute for confirming activity against a live infectious virus," he said.

Geisbert managed to get blood samples gathered in March from Ebola survivors infected in Guinea, where the current outbreak started, but has none from Liberia or Sierra Leone. He has made several appeals to U.S. Ebola survivors and the hospitals that treated them, and enlisted Tekmira, but has not succeeded.

"It's crazy. You ask, and nobody responds," said Geisbert, who asked Reuters how to get in touch with Pham.



## Conflicting Information about How to Contract Ebola

By Anthony Kimery (Editor-in-Chief HSToday.US)

Source: <http://www.hstoday.us/single-article/conflicting-information-about-how-to-contract-ebola/ce5b279a458e838cf66342e18b1597ee.html>

As the second Dallas nurse diagnosed with Ebola who cared for Liberian Thomas Eric Duncan, who died of Ebola on October 8, flew from Ohio back home to Dallas on Frontier Flight 1143 on October 13 with a low-grade fever, Centers for Disease Control and Prevention (CDC) was working to update its report, *Review of Human-to-Human Transmission of Ebola Virus*.

The little noticed updated report stated that, “[The] Ebola virus is usually detectable in patients’ blood at the time of fever and symptom onset, although Ebola virus RNA levels at the time of fever and symptom onset are typically low (near the detection threshold limits) and in some patients may not be reliably detectable during the first 3 days of illness.”

The nurse, Amber Vinson, was diagnosed with Ebola on October 14 – the day after she’d flown back to Dallas with a low-grade fever, raising the question of whether her Ebola symptomatic fever indicated she was contagious during the flight. Although Vinson told CDC numerous times prior to flying that she had a fever, CDC nevertheless told her that because she only had a low-grade fever and showed no other signs of Ebola infection symptoms, she didn’t officially fall into the “high risk” category and was allowed to fly. CDC Director Tom Frieden said, “She wasn’t bleeding or vomiting. The level of risk around her would be extremely low, but because of the extra margin of safety, we will be contacting” all 132 people who were on the flight.” It’s unclear whether any of the passengers have expressed symptoms.

The CDC report, however, stated on October 10 the first nurse who’d cared for Duncan at Texas Presbyterian Hospital “reported a low-grade fever and was referred for testing.” She tested positive for Ebola.

“The healthcare worker was isolated after the initial report of a fever,” the CDC report on human-to-human transmission stated.

Frieden eventually conceded that Vinson “should not have been on that plane,” adding that health care workers who care for Ebola patients should not be traveling, period.

“We will, from this moment forward, ensure that no other individual with exposure travels in anything other than a controlled manner,” Frieden said.

According to the CDC report, Ebola virus RNA has been detected in patients’ saliva, sputum, skin (swab of the hand), breast milk, feces, tears (conjunctival swab), vomit, urine and seminal fluid.

**But more disturbing, CDC recently stated in its information paper, *What’s the Difference Between Infections Spread Through the Air or By Droplets?*, that, “Ebola is spread through droplets. Droplet spread happens when germs traveling inside droplets that are coughed or sneezed from a sick person enter the eyes, nose or mouth of another person. Droplets travel short distances, less than 3 feet from one person to another.”**

CDC had earlier warned of the possibility of becoming infected if in close proximity of an Ebola-stricken individual for a prolonged time.

Yet, in its “Review of Human-to-Human Transmission of Ebola Virus” webpage, CDC says, “While Ebola virus can be spread through airborne particles under experimental conditions in animals, this type of spread has not been documented during human Ebola virus disease outbreaks in settings such as hospitals or households.”

But if CDC’s information paper on the spread by coughing or sneezing is correct, in a confined space, like airline passengers seated next to or around an Ebola



infected person beginning to run a fever – and possible other symptoms on a long distance flight – could possibly become infected by the victim sneezing or coughing or from surfaces the infected person has touched, virologists told *Homeland Security Today* on condition of anonymity because of sensitive nature of their positions.

CDC has said, “A person might also get infected by touching a surface or object that has germs on it and then touching their mouth or nose,” like “droplet spread on [a] doorknob” and other surfaces where the virus can live for hours, although research also has determined it can survive for more than seven weeks under certain conditions.

The Public Health Agency of Canada said, “In laboratory settings, non-human primates exposed to aerosolized Ebola virus from pigs have become infected, however, airborne transmission has not been demonstrated between non-human primates. Viral shedding has been observed in nasopharyngeal secretions and rectal swabs of pigs following experimental inoculation.”

Ebola symptoms include fever, severe headache, muscle pain, vomiting, diarrhea, stomach pain or unexplained bleeding or bruising. However, all of these symptoms are not necessarily manifested all at once by an infectious Ebola infected person, said authorities *Homeland Security Today* consulted.

Indeed. Dr. Tom Fletcher of the Royal Army Medical Corps who has treated Ebola victims in West Africa, recently said, “The initial symptoms are quite non-specific and similar to a flu-like illness. They include fever, headache and lethargy. This eventually progresses to severe diarrhea and vomiting.”

“Technically,” one of the authorities told *Homeland Security Today*, someone infected with Ebola “who only is exhibiting symptoms like fever, headache and listlessness can potentially be contagious.”

The Public Health Agency of Canada said, “Less common early symptoms include

conjunctival injection, sore throat, rashes and bleeding.”

**Infectious disease specialists at Emory University Hospital in Atlanta said they've discovered the Ebola virus is present on a victim's skin after symptoms begin to manifest.**

CDC has reported that, “Across combined studies ... Ebola virus RNA has been detected up to 101 days after symptom onset in semen, 33 days from vaginal swabs, 29 days from rectal, 23 days from urine, 22 days from conjunctival swabs, 21 days in blood, 15 days in breast milk, eight days in saliva and six days on skin.”

Moreover, CDC cautioned that, “Given the relatively small number of patients in these persistence studies, durations may not represent the longest that the Ebola virus can persist in the blood and body fluids of individual patients.”

**The UK's Defense Science and Technology Laboratory found that the Zaire Ebola strain can live on samples stored on glass at low temperatures (39°F) for as long as 50 days.**

According to a 2010 paper published in the *Journal of Applied Microbiology*, “Filoviruses are associated with high morbidity and lethality rates in humans, are capable of human-to-human transmission, via infected material such as blood, and are believed to have low infectious doses for humans. Filoviruses are able to infect via the respiratory route and are lethal at very low doses in experimental animal models, **but there is minimal information on how well the filoviruses survive within aerosol particles.** There is also little known about how well filoviruses survive in liquids or on solid surfaces which is important in management of patients or samples that have been exposed to filoviruses.”

“This study has demonstrated that filoviruses are able to survive and remain infectious, for extended periods when suspended within liquid and dried onto surfaces,” the authors of the paper said.

**EDITOR'S COMMENT:** Too much science is bad for the health! Until we define about the way EV enters the respiratory tract, we don't we go Level-B PPE to keep our souls and body safe and ALIVE?



**New Ebola Rapid Testing Technologies Will Detect Surface and Airborne Infectious Viruses in Minutes**

Source: <http://www.hstoday.us/single-article/firm-says-new-ebola-rapid-testing-technologies-will-detect-surface-and-airborne-infectious-viruses-in-minutes/7904ab95d53d30af4db0c719ef2e72ea.html>

A new suite of mobile bio-detection technologies that can quickly detect the Ebola virus and other potentially lethal pathogens used in bioterrorism is in development by PathSensors Inc., a biotechnology and

"Onsite personnel can handle testing easily and receive a result in less than five minutes, thereby eliminating hours of critical transportation to, and processing time at a lab facility," the company said



"Government agencies suddenly are hard-pressed for rapid detection in point-of-entry systems for inadvertent or intentional bio threats," said airport security expert Peter Harris, president of Yankee Foxtrot, Inc., a security management consulting firm and a PathSensors director. "PathSensors systems can be used as standalone technologies or integrated with other bio-detection technologies. Together, they can be used to test a patient as well as the seat, surfaces touched, and places visited by the infected party to ensure complete remediation."

environmental testing company, but could be some time before its able to be fielded, industry sources told *Homeland Security Today*.

"Now that Ebola is a critical detection priority, we can deploy systems early next year, once we have a strategic partner in place to handle expanded production," said PathSensors CEO Ted Olsen. "Containment starts with accurate and timely detection so the faster that you can achieve detection the quicker the population can be protected from these worldwide threats."

**The company said its mobile PathSensor systems will be easy-to-use, require minimal training and can detect infectious pathogens (virus, bacteria or toxin) from safely obtained samples. Portable PathSensors systems can be deployed for pathogen detection at any port of entry (air, land and water) as well as healthcare facilities and entertainment venues.**



PathSensors **CANARY technology** licensed from the MIT-Lincoln Laboratory delivers extremely rapid detection of more than 25 pathogens at previously unattainable levels of speed and sensitivity. CANARY incorporates pathogen-specific antibodies expressed on a biosensor surface that, in the presence of a pathogen (virus, bacteria or toxin), trigger an intracellular calcium





release that in-turn activates bioluminescent proteins to generate the emission of light. PathSensors' financial partners in developing the new mobile pathogenic detection

technology include Blue Venture Investors, Empower Baltimore Management Corporation, Chesapeake Emerging Opportunities Club, and the Virginia Active Angel Network.

**Fast-spreading killers: how Ebola compares with other diseases**

By Mick Roberts

Source: <http://www.homelandsecuritynewswire.com/dr20141110-fastspreading-killers-how-ebola-compares-with-other-diseases>

The West African outbreak of Ebola has claimed more than 4,800 lives and this number is sure to rise. There is understandably a lot of fear about Ebola, but how does it actually compare with other fast-spreading infectious diseases?

**Bubonic plague**

Plagues have been reported since biblical times, but it is difficult to know how serious these early epidemics were, or even what the infectious agent was.

We now know that plague is a serious disease caused by the bacteria *Yersinia pestis*. The Black Death is thought to have been bubonic plague, named after the presence of infected lymph nodes; it killed one-third of the population of Europe in the fourteenth century. Bubonic plague killed one-quarter of the population of London in 1563, and the Great Plague of London killed 100,000 a century later.

Plague is spread by fleas that usually infest rodents. The disease is still found in parts of Asia, Africa and the Americas. Few humans are now infected, although outbreaks occasionally occur. The extensive wildlife reservoir means that it will never go away.

*The plague: a profile*

- Region: China
- The first recorded pandemic was the Justinian Plague, which began in 541 AD
- Origin: Infected rodents, black rats, and fleas
- Infection agent: Bacteria (*Yersinia pestis*)
- Transmission medium: Infected rodents and fleas Plague affects rodents, such as rats. People are most commonly infected by being bitten by a flea that is infected with the plague bacteria. The pneumonic form of the plague can be transmitted by cough droplets.

- Incubation: 2-6 days. Someone infected through the air could become ill within 1 to 3 day.
- Transmission rate: R<sub>c</sub> of 1.3 for pneumonic plague (R<sub>0</sub> ([basic reproduction number] is an approximate measure of how many new infections one person will generate during their infectious period).
- Fatality rate: 8-10% (It was over 60% pre antibiotics)
- Death toll: Over 100 million deaths
- Medication status: no vaccine. Plague vaccines are in development but are not expected to be commercially available in the immediate future.

Source: WHO & CDC

**Influenza**

The 1914-18 war resulted in between fifteen and eighteen million deaths, but the 1918 flu pandemic killed more than twice that number.

Influenza spreads rapidly by coughs and sneezes which release small droplets. These droplets may infect others while airborne or by contaminating surfaces.

Symptoms of the flu can start within a day or two of being infected and last for about a week. But virus shedding begins before the symptoms and one-third of cases show no symptoms at all.

The virus also readily mutates, so past infection does not necessarily provide future protection.



The fatality ratio of seasonal influenza is low, usually claiming one in 1,000 lives, so it is often regarded as inconsequential. But a virus shift can cause a pandemic and increased rates of death.

#### *Influenza: a profile*

- Region: Unknown. The first well described influenza -like outbreak was recorded in 1580, but it is thought people have suffered influenza for thousands of years.
- Origin: Animals. Humans may have acquired influenza when domestication of animals first began.
- Infection agent: Virus (two types: A and B)
- Transmission medium: Inhalation of infectious droplets. The airborne nature of influenza makes it relatively easy to spread among people.
- Incubation: 2-3 days, but anywhere from 1 to 7 days.
- Transmission rate:  $R_0$  of 1 to 3 ( $R_0$  [basic reproduction number] is an approximate measure of how many new infections one person will generate during their infectious period). Different outbreaks have different  $R_0$  values, and the "Spanish flu" of 1918 may have had a much higher basic reproduction number.
- Fatality ratio: Usually around 0.1%, but the Spanish flu had a fatality ratio of more than 2.5%
- Death toll: Uncertain. Each year, an estimated 3 to 5 million people suffer severe cases of influenza and about 250,000 to 500,000 of them die.
- Medication status: Various flu vaccines exist

Source: WHO & CDC

#### **Bird flu**

Of greater concern is the avian influenza reservoir in parts of Asia. Transmission of H5N1 and H7N9 influenza A from birds to humans has resulted in a fatality ratio of 50 percent.

If these viruses were to mutate and become easily transmitted between humans, public health services would be severely challenged by the resulting pandemic.

The basic reproduction number of an infection, usually expressed as  $R_0$ , is defined as the expected number of cases that would arise

from a typical primary case in a susceptible population.

If  $R_0$  is bigger than one, then the number of cases will increase until limited by control measures, behavior change or the exhaustion of the supply of susceptibles. If  $R_0$  is less than one, then the incidence of infection will decrease and the outbreak will fizzle.

Influenza typically has values of  $R_0$  between one and three, so vaccinating 67% of the population would prevent epidemics.

#### *Avian Flu or Bird Flu (H7N9, H5N1): a profile*

- Region: China
- First diagnosed with the death of six people in Hong Kong in 1997.
- Infection agent: Virus
- Transmission medium: Handling of infected birds. Bird flu is not thought to be airborne, so person -to-person transmission is considered rare.
- Incubation: Anywhere from 2-8 days, but can be as long as 17 days.
- Transmission rate:  $R_c$  of approximately 0.7 ( $R_c$  [basic reproduction number] is an approximate measure of how many new infections one person will generate during their infectious period). Avian flu has a low  $R_c$  (basic reproduction number), so transmission between people is less likely. In 2012, researchers created a highly infectious hybrid virus by merging bird flu with "swine flu."
- Fatality ratio: Approximately 60%
- Death toll: Approx. 393 deaths since 2003
- Medication status: No cure. Candidate vaccines to prevent H5N1 infection have been developed, but are not ready for widespread use.

Source: WHO & CDC

#### **SARS**

Severe acute respiratory syndrome (SARS) is likely to have emerged from a bat reservoir in China, and spread to a number of other countries in 2003. Its infectious agent is a coronavirus, from a family often implicated in the common cold.

Its mode of transmission was similar to that of influenza but its basic reproduction number, at over three, was twice that of the flu.

With no vaccine available and a fatality ratio around 10 percent,



SARS presented a scary prospect: it caused an estimated US\$40 billion of economic damage and severely disrupted international travel.

But SARS had an Achilles heel. The long (four to five-day) incubation period made it amenable to contact tracing, enabling the isolation of contacts before they became infectious.

It was largely these non-clinical interventions that succeeded in reducing the contact rate, and therefore the reproduction number, below one. The pandemic was brought to a halt and the infection eliminated, with the loss of 774 lives.

However, another coronavirus is now responsible for 837 cases of Middle East respiratory syndrome (MERS) and 291 deaths.

*SARS: a profile*

- Region: China
- The first known outbreak was in China, 2003.
- Origin: Bats
- Infection agent: Virus
- Transmission medium: airborne droplets. SARS most readily spreads through close person-to-person contact through respiratory droplets.
- Incubation: 4-5 days. The 4-5 day incubation period allows relatively easy tracking and isolation of people who have come in contact with infected people.
- Transmission rate:  $R_c$  Of 3 ( $R_0$ [basic reproduction number] is an approximate measure of how many new infections one person will generate during their infectious period).
- Fatality ratio: 10%
- Death toll: About 775 deaths
- Medication status: No vaccine

Source: WHO & CDC

### **Ebola**

Ebola is not an airborne infection; it is spread by bodily fluids, which means that more intimate contact is required for transmission. The basic reproduction number is usually estimated to be around two, although a recent estimate for hospital settings in Africa puts the value of  $R_0$  over four. Because SARS can be transmitted through airborne droplets, it has a relatively high  $R$ .

Research suggests around 70 percent of those infected in the latest Ebola outbreak will die of

the disease. However, according to the World Health Organization, past fatality ratios have ranged from 25 percent to 90 percent.

It seems that transmission only occurs while the patient is symptomatic, so contact rates must be low even though the probability of transmission given contact is high. The eight to ten-day average incubation period also suggests that contact tracing and isolation should be successful in halting the spread of infection.

*Ebola (H2N): a profile*

- Region: Africa
- First diagnosed in what is now the Democratic Republic of the Congo in 1976.
- Infection agent: Virus
- Transmission medium: Bodily fluids. Ebola is not airborne. It is transmitted via direct contact with the blood or secretions of an infected person.
- Incubation: Anywhere from 2-21 days, but average incubation period is 8-10 days. The relatively long incubation period of Ebola should make it easier to track and isolate people who have had contact with infected people.
- Transmission rate:  $R_0$  Of 2 ( $R_0$ [basic reproduction number] is an approximate measure of how many new infections one person will generate during their infectious period), but the latest outbreak's  $R_c$  could be as high as 4.
- Fatality ratio: Average around 50%. Case fatality ratios have varied from 25% to 90% in past outbreaks.
- Death toll: Over 6,400 so far
- Medication status: No vaccine or cure. Two possible drugs are currently being trialed.

Source: WHO & CDC

### **HIV/AIDS**

While not a fast spreader, another infectious disease that originated in Africa and is transmitted by bodily fluids is HIV/AIDS (human immunodeficiency virus infection and acquired immune deficiency syndrome).

HIV was transmitted to humans in the 1920s from a chimpanzee, but remained largely confined to (what is now) the Democratic Republic of Congo until undergoing an epidemiological transition in the 1960s. The resulting global HIV



pandemic has infected nearly seventy-five million people.

While transmission of HIV and Ebola both rely on the transfer of bodily fluids, there are major differences. A HIV patient can be infectious for many years while not exhibiting any symptoms, and may be unaware of their status.

In contrast, for Ebola, the time from being infected to infecting others is measured in days and, although not as infectious as influenza, it is more readily transmitted than HIV.

*HIV/AIDS: a profile*

- Region: Africa
- Has been traced back to the 1920s in the Democratic Republic of the Congo.
- Infection agent: Virus
- Transmission medium: Bodily fluids. HIV/AIDS is not airborne and is transmitted via contact with bodily fluids. Sexual contact

and the sharing of needles are two common modes of transmission.

- Incubation: 3 to 8 weeks to develop HIV antibodies. An HIV patient can be infectious for many years while not exhibiting any symptoms.
- Transmission rate:  $R_0$ , is difficult to define ( $R_0$  [basic reproduction number] is an approximate measure of how many new infections one person will generate during their infectious period). For HIV,  $R_0$  varies greatly with location and mode of transmission.
- Fatality ratio: less than 5% with treatment, but the ratio jumps to about 80% without treatment.
- Death toll: Over 35 million deaths
- Medication status: No vaccine or cure. Antiretroviral drugs are used for treatment

Source: WHO & CDC

**Emergence of infectious diseases**

While bubonic plague is bacterial, all of the other infections mentioned above are viral. Yellow fever was the first human virus to be discovered in 1901. Since then more than 200 have been recognized.

Most “new” infections result in “species jumps”, mainly from mammals and birds. The ability of viruses to adapt should make us wary of the avian influenza viruses and their potential for human-to-human transmission.

Ebola has all the epidemiological characteristics of a containable infection, but it is only now spreading to developed countries that have no experience of dealing with it. The desirable strategy, from global health and humanitarian perspectives, is to eliminate the epidemic at its source.

*Mick Roberts is Professor in Mathematical Biology at Massey University.*



**Infection Secrets of Ebola Explained**

Source: <http://www.scientificamerican.com/article/how-ebola-blindsides-the-bodys-defenses/>

Researchers often describe the battle between the Ebola virus and the humans it occasionally infects as a race—one that people win only if their immune systems manage to pull ahead before the virus destroys too many of their internal defenses. What they may not know is that the virus is a cheat.

The Ebola virus gives itself a head start when it first slips into a human body by disabling parts of the immune system that should be leading the charge against the invader. It hijacks the functions of certain defense warriors known as dendritic cells—whose primary function is to alert the immune system to the incoming

threat. Other targets include monocytes and macrophages, types of white blood cells whose job is to absorb and clear away foreign organisms.

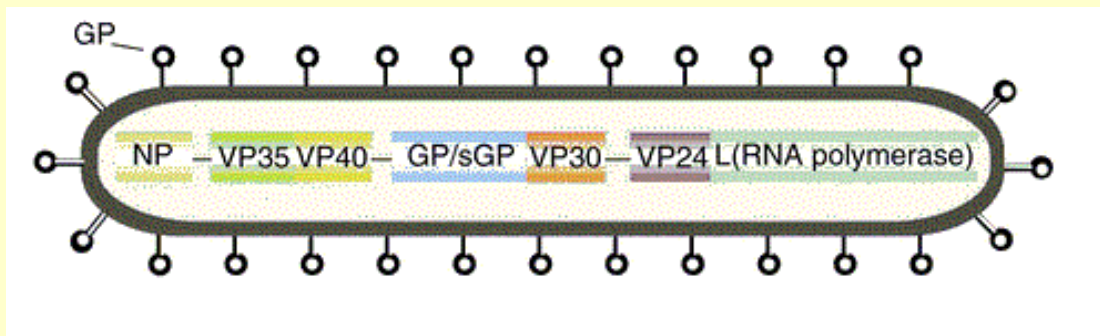
These are the first cells Ebola infects and bends to the process of making more Ebola viruses. The maneuver is the viral version of invading a country by hypnotizing the army and turning it against its own people. Then, having kicked the immune system’s feet out from under it, Ebola takes off in a run.

**Seven Deadly Genes**



Although it contains only seven genes, Ebola is an exquisitely effective killer of humans and other primates once it enters a body. Unlike the spiky sea urchin that is influenza, or the golf-ball shaped poliovirus, Ebola resembles noosed ropes under the electron microscopes used to capture viral images.

because of the high risk posed by the procedures. In fact, a scientific review published in October 2014 identified only 30 human cases where an autopsy or post-mortem biopsies were performed. But here is what's known about the way the disease takes off in the body: The early infection of—or



**Ebola genome**

Classified as a filovirus, Ebola is one of two members of that family; the other is Marburg virus, named after the German city where it was first seen in researchers who caught it from imported non-human primates. Both pathogens are among the most lethal viruses that afflict people, but it is Ebola that has become the recognized and dreaded face of the filovirus family.

Marburg tends not to provoke the same fear in the general public as Ebola, although it is deserves equal billing. Daniel Bausch, a filovirus expert at Tulane University School of Public Health and Tropical Medicine in New Orleans, La., recalls preparing to head to a Marburg outbreak in the Democratic Republic of Congo in the late 1990s when he was contacted by a journalist. The reporter had heard there was an Ebola outbreak. "And I said 'No, it's Marburg.' And he said 'Oh, thanks anyway' and he hung up the phone." The outbreak that the journalist had so nonchalantly dismissed killed 83 percent of known cases.

Ebola was previously known as a viral hemorrhagic fever, a description that is falling from use because of the erroneous implication that it kills by exsanguination or bleeding out. In fact, most patients do not hemorrhage or ooze blood, at least not externally, Bausch says. Ebola virus disease is now the preferred terminology.

Few autopsies have been performed on people who have died from Ebola virus disease,

recruitment of—the monocytes, macrophages and dendritic cells is believed to speed spread of the virus to the lymph nodes, liver, spleen and elsewhere in the body. In the liver, the presence of the virus appears to trigger a sharp decline of lymphocytes, white blood cells that help fight infections. The reason for their decline is unknown, but the result helps the virus; lymphocytes typically would increase in number in the face of an infection.

**Decoy Strategy**

Meanwhile, Ebola employs a second dastardly trick, another cheat. It releases large amounts of something called secreted glycoprotein – sGP – into the bloodstreams of its victims. A decoy, sGP looks like the glycoprotein on the exterior of the virus, GP, which should be the immune system's chief target. By tricking the immune system into seeing it, not GP as the invader, sGP undermines the system's ability to react effectively to stem the infection.

As the amount of virus in a person's system starts to rise, symptoms begin to appear. They start with low-grade fever, which can come and go, and is sometimes missed. Severe headache and abdominal pain are followed by vomiting and diarrhea, which lead to profound loss of fluids.

Doctors at Emory University Hospital, who have treated four repatriated medical workers infected with Ebola in the current outbreak, found at times their patients excreted between six and eight



liters of diarrhea a day – a loss that triggers electrolyte imbalances, says Marshall Lyon, an infectious disease physician on the Emory Ebola team. It has been known for some time that keeping Ebola patients hydrated is the main battle to be waged – at least until drugs proven to be effective are available. But the experience at Emory and other hospitals treating med-evaced health-care workers also suggests that when patients have profound diarrhea, replenishing electrolytes such as potassium may be something doctors should consider, even in low-resource settings where laboratory support is minimal and electrolyte levels cannot be monitored.

Back in the body, the accumulating damage in the liver leads to something called disseminated intravascular coagulation or DIC, where blood over-coagulates in some locations, but cannot thicken in others, creating a situation where blood vessels become leaky. That is what results in the bleeding – mostly internal – for which Ebola is known.

The leakiness of blood vessels compromises blood supply to key organs like the liver and the kidneys. Bausch employs the analogy of trying to use a hose full of holes to water your garden – the water does not get to where it is needed. Likewise, bacteria from the gastrointestinal tract can slip into the bloodstream, causing sepsis. The result in the worst cases: blood pressure plummets, vital organs begin to fail, the patient goes into shock and dies.

#### Where and How Much?

The speed and degree to which Ebola manages to overcome an individual depends on a couple of factors, scientists who study the virus say. If you are unlucky enough to be infected with Ebola, the amount (or dose) of virus to which you are exposed and the route by which the virus makes its way into your body could mean the difference between whether you live or die.

In the world of Ebola, less is better but even a very little is bad. Scientists have differing views on the sometimes cited claim that a single virion – just one virus – is sufficient to trigger infection. While that may, or may not be the true figure for the minimum infectious dose for humans, it is likely that infection can occur from

contact with small amounts of virus, Bausch says.

"We think that it's very low — a little dab will do you," he notes, playing on a 1960s advertisement for a men's hair pomade, Brylcreem. "You don't need much of this virus to get infected." Nevertheless, a low-dose exposure may prove less lethal if it allows the immune system to get into gear before the viruses have a chance to disable too many of the early responders.

How you get infected likely also plays a role in how sick you become. An exposure that delivers the virus into the blood stream – for example a needlestick injury, dreaded in the filovirus research world – is more damaging than when viruses are introduced via the mucus membranes surrounding the eyes, nose and in the mouth. Onset of symptoms is quickest with direct-to-blood exposures; they typically account for the short end of the incubation period range, two to 21 days. Most infections become apparent within eight to 10 days of exposure.

"If you get a direct injection with a lot of virus particles, I don't think anything's going to save you, because you're just overwhelmed," says Thomas Geisbert, a microbiologist at the University of Texas Medical Branch at Galveston. Geisbert notes that in the 1976 Ebola epidemic that brought the disease to the attention of the world, 85 people were known to have been infected through the reuse of contaminated syringes. All 85 died, along with nearly 200 others in and around Yambuku, in the former Zaire (now the Democratic Republic of Congo).

Two other features that may play into the outcome of the life or death struggle between humans and Ebola are age and genetic predisposition. A recently published study which tracked case outcomes in Sierra Leone during the current West African outbreak showed a higher survival rate for patients under the age of 21 compared to those over the age of 45. Earlier, a study done based on blood samples from people who had been infected during a 2000 outbreak of Ebola Sudan in Uganda found that certain people were more likely to have milder disease and survive. Another recently published paper looking at the spectrum of



disease in mice also suggests genetics play a role in survival.

Geisbert is one of the discoverers of an Ebola species known as Ebola Reston, unique among the five types of the viruses because it does not originate in Africa and so far it has not been seen to sicken people. Reston viruses come from the Philippines; on six occasions research monkeys imported from that country have triggered animal outbreaks. It has also been found in pigs, though the animals do not show signs of infection. Ebola Reston is lethal in primates.

Research done after animal outbreaks shows that several people have developed antibodies (or "seroconverted") to Ebola Reston, but did not become noticeably ill. Still, it is too soon to assume Reston is harmless in humans, Geisbert says. "Some people have seroconverted but we don't really know much

about that. All you can say is there hasn't really been any human that has gotten really sick or died from it. But the 'n' [number infected] is quite small."

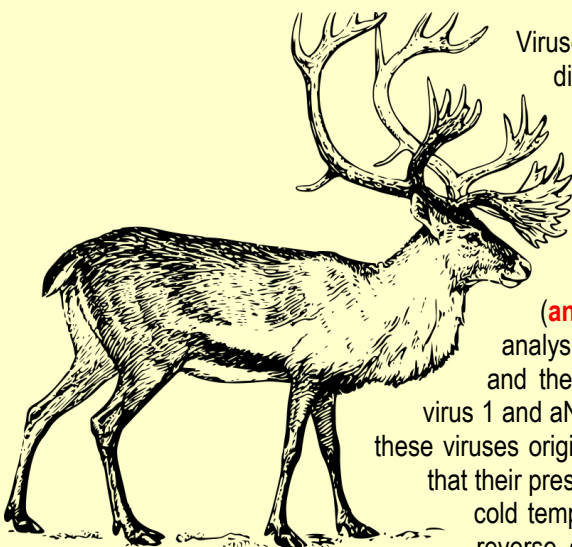
The other species of Ebola are: Zaire, the most lethal and the virus responsible for the current West African outbreak, Sudan, Bundibugyo and Ivory Coast (sometimes called Tai Forest). The fatality rates for the first three range from 70 percent to 90 percent, about 50 percent and 25 percent, respectively. The Ivory Coast virus has only been seen once, in 1994. The infected person survived, but was very ill.

Geisbert works with a variety of bad bugs. But it is Ebola and the Marburg strain responsible for the 2004 outbreak in Uije, Angola – case fatality rate, 90 percent – that make him extra cautious. "It's always in the back of your mind that you're working with something that can kill you."

**Preservation of viral genomes in 700-y-old caribou feces from a subarctic ice patch**

By Terry Fei Fan Ng, Li-Fang Chen, Yanchen Zhou et al

Source: <http://www.pnas.org/content/early/2014/10/23/1410429111>



Viruses preserved in ancient materials provide snapshots of past viral diversity and a means to trace viral evolution through time. Here, we use a metagenomics approach to identify filterable and nuclease-resistant nucleic acids preserved in 700-y-old caribou feces frozen in a permanent ice patch. We were able to recover and characterize two viruses in replicated experiments performed in two different laboratories: a small circular DNA viral genome (**ancient caribou feces associated virus**, or aCFV) and a partial RNA viral genome (**ancient Northwest Territories cripavirus**, or aNCV). Phylogenetic analysis identifies aCFV as distantly related to the plant-infecting geminiviruses and the fungi-infecting *Sclerotinia sclerotiorum* hypovirulence-associated DNA virus 1 and aNCV as within the insect-infecting *Cripavirus* genus. We hypothesize that these viruses originate from plant material ingested by caribou or from flying insects and that their preservation can be attributed to protection within viral capsids maintained at cold temperatures. To investigate the tropism of aCFV, we used the geminiviral reverse genetic system and introduced a multimeric clone into the laboratory

model plant *Nicotiana benthamiana*. Evidence for infectivity came from the detection of viral DNA in newly emerged leaves and the precise excision of the viral genome from the multimeric clones in inoculated leaves. Our findings indicate that viral genomes may in some circumstances be protected from degradation for centuries.

**Significance**

Knowledge of ancient viruses is limited due to their low concentration and poor preservation in ancient specimens. Using a viral particle-associated nucleic acid enrichment approach, we genetically characterized one complete DNA and one partial RNA viral genome from a 700-y-old fecal sample preserved in ice. Using reverse genetics, we reconstituted the DNA virus, which replicated and systemically spread in a model plant



species. Under constant freezing conditions, encapsidated viral nucleic acids may therefore be preserved for centuries. Our finding indicates that cryogenically preserved materials can be repositories of ancient viral nucleic acids, which in turn allow molecular genetics to regenerate viruses to study their biology.

### Animal Ebola guidance documents, hot off the press

Source: <http://www.wormsandgermsblog.com/2014/11/articles/animals/dogs/animal-ebola-guidance-documents-hot-off-the-press/>



**November 11** – Today, guidance documents coordinated by the US Centers for Disease Control and Prevention and the American Veterinary Medical Association were released. CDC descriptions of the two documents are below, Click on the title to get the document.

#### [Interim Guidance for Public Health Officials on Pets of Ebola Virus Disease Contacts](#)

*This document provides interim guidance based on the latest scientific evidence and recommendations from national organizations, for the management of pets, specifically dogs and cats, owned by Ebola virus disease (Ebola) contacts.*

#### [Interim Guidance for Dog or Cat Quarantine after Exposure to a Human with Confirmed Ebola Virus Disease](#)

*The intent of this interim guidance is to provide guidance for companion animals, specifically dogs and cats with exposure to a person with Ebola, based on the latest scientific evidence and recommendations from national organizations. This interim guidance describes the process for conducting a risk assessment for exposure of dogs or cats that had contact with a human with laboratory-confirmed evidence of Ebola, and it describes how to implement quarantine of dogs or cats if deemed appropriate by state and federal human and animal health officials.*

*In memory of Excalibur (Spain)...*

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### Ebola discussion in U.S. driven by fear, not science: Infectious disease experts

Source: <http://www.homelandsecuritynewswire.com/dr20141112-ebola-discussion-in-u-s-driven-by-fear-not-science-infectious-disease-experts>

A significant part of the Ebola debate in the United States has been driven by fear, not science, according to infectious disease experts. Dr. Anthony Fauci has spent thirty years as the director of the National Institute of Allergy and Infectious Diseases. He has experienced the AIDS outbreak of the 1980s, and the post-9/11 anthrax scare, but when it comes to Ebola, **“This one’s got a special flavor of fear,”** Fauci said at the Washington Ideas Forum, sponsored by the *Atlantic* magazine and the Aspen Institute.

Most of the fear around Ebola is driven by the growing death toll in Guinea, Sierra Leone, and Liberia, despite assurances from medical experts that the United States is unlikely to





suffer a widespread outbreak. James Colgrove, a public health professor at Columbia University, and Pamela Cipriano, president of the American Nurses Association, both agree that the chances of an outbreak in the United States are extremely remote. "What we know right now would suggest that there is no risk of an epidemic," Cipriano said.

Current control measures set in place include enhanced screenings of West African travelers, which allow U.S. health officials to "very quickly identify and sequester and evaluate and care for anyone who shows any type of risk," Cipriano said. "That's a very high level of control." Health officials point out that despite the transmission of the Ebola virus from patient Thomas Eric Duncan to two nurses at Texas Health Presbyterian Hospital in Dallas, U.S. hospitals are prepared to deal with Ebola. The *Alaska Dispatch News* points out that out of seventy-plus healthcare workers and forty-eight family and community members who interacted with Duncan, only two nurses became infected.

**Yet, the general public continues to be fearful of an Ebola outbreak in the United States.** Some states have imposed mandatory quarantines for all healthcare workers returning from Ebola-stricken West Africa, even if they show no symptoms. "The fear is trumping science," said Dr. Georges Benjamin, executive director of the American Public Health Association. Fauci suggests that lawmakers are simply responding to the concerns of their citizens. "You have to respect the fear of people," he said. "You can't denigrate it and say, 'Why are you afraid?' You've got to try and explain to them and you've got to do it over and over. ... It's just that as a health person, as a physician and a scientist, I would say you look at the data, and it tells you what the risk is."

Public health officials also bear the blame for the public's extreme concern about Ebola. Tom Frieden, director of the U.S. Centers for Disease Control and Prevention, initially said U.S. hospitals were ready to care for Ebola patients, when many in fact were not. "Some of the missteps have eroded some of the trust that the public has had," said Cipriano. "I think that it certainly has added to the sense of, 'Well, who do we trust?'"

Colgrove recommends that when dealing with public concern about an infectious disease, "You want people to be worried enough that they give you the resources that you need to do the job, but you don't want them to be so worried that they do stupid things. It's a very, very delicate balance that he has to walk. That any public health official has to walk."

**EDITOR'S COMMENT:** If "fear" is the #1 problem this means there is something wrong with the dissemination of specialized (medical community) and simplified (populace) knowledge. If these two important players are not confident and well informed/educated then the overall defense is a joke! It seems that a lot of work should be done (fast) and the expected vaccines are not the antidote to fear – any fear!



**Study: isolating only "likely non-survivors" can stop Ebola**

Source: <http://www.world-science.net/othernews/141027 Ebola.htm>

**Isolating the sickest Ebola patients within four days of symptom onset would eliminate the Ebola epidemic in Liberia,** according to a newly published modeling study.

According to the study, isolating only "likely non-survivors" would be enough, because they are the most contagious group. **The study is published Oct. 28 online in the journal *Annals of Internal Medicine*.**

West Africa is suffering the largest and deadliest Ebola epidemic ever recorded. Liberia has been especially hard-hit with more than 3,500 infections and 2,000 deaths in the past three months. About 70 percent of Ebola patients die in West Africa, although experts attribute the high mortality rate partly to lack of modern medical care in the area.

In the study, Karen N. Peart of Yale University and colleagues developed a model known as random-transmission to see how disease progression and case fatality affect transmission, and the effects of patient isolation. **They found that the risk for transmitting Ebola depends on the viral load, or amount of viruses, in an infected person, and the number of people with which he or she interacts.**



Distinguishing between survivors and non-survivors is important, they said, because survivors tend to achieve peak viral load about four days after symptoms develop; then viral load declines. **But in non-survivors, with more severe symptoms, viral load is 100 times higher than that of survivors throughout infection and doesn't decline after peak.**

The survivors were found to have a 32 percent probability of infecting at least one other person. Non-survivors have more than twice the probability of infecting someone else—67 percent, the study found.

### The economics of Ebola

By Catherine de Fontenay

Source: <http://www.homelandsecuritynewswire.com/dr20141113-the-economics-of-ebola>

November 13 – Economists are being called upon to estimate the costs of the Ebola epidemic to West Africa and elsewhere. However, economists should also play a part in

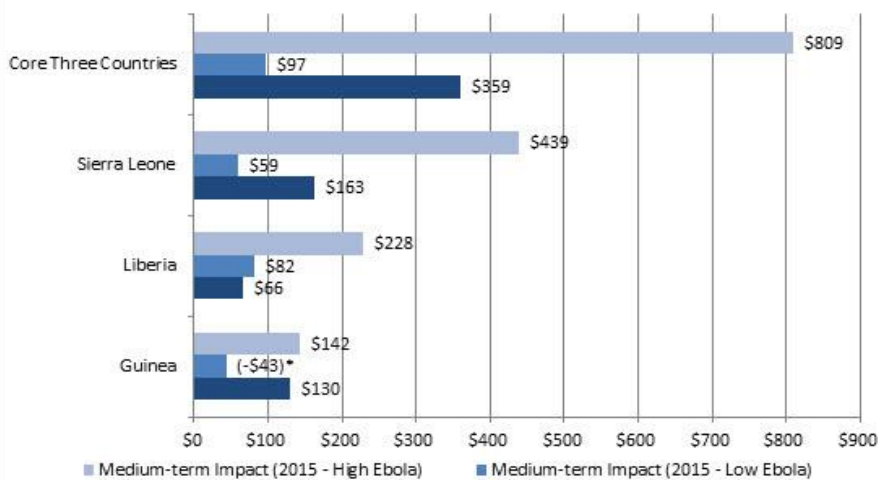
The impact on West Africa as a whole is tipped to be between US\$2 billion and US\$7 billion. Important agricultural regions are under quarantine, interrupting production and sales.

This will lead to food shortages. Retailers are also reporting a 50 percent to 75 percent drop in turnover as people avoid human contact. According to The Economist, the response is that “investors evacuate foreign workers, borders close and international flights are suspended.”

The risk of further embargoes also mean that exporters are suspending production and investment in the region. Already Sime Darby, the world's largest listed producer of oil palm, is slowing production and SIFCA Group, an Ivory Coast-based agribusiness, has stopped exporting rubber.

**If Ebola spreads throughout West Africa, the cost could rise to US\$32.6 billion by the end of 2015.** There are larger

**Figure 2. Estimates of GDP Lost Due to the Ebola Outbreak in the short term (2014) and medium term (2015), in \$US millions**



\*The World Bank notes that “absent any further outbreak of disease in Guinea, the economy is projected to remain resilient in the medium-term” owing to the recovery of the services and mining sectors. The World Bank’s “Low Ebola” scenario actually depicts an increase of \$43 million in GDP compared with pre-crisis levels, while the “High Ebola” scenario represents a loss of \$142 million.

Source: World Bank

estimating the likelihood of the disease spreading. Economics is the study of incentives, and many biological models of the spread of the disease may be underestimating the impact of individual incentives.

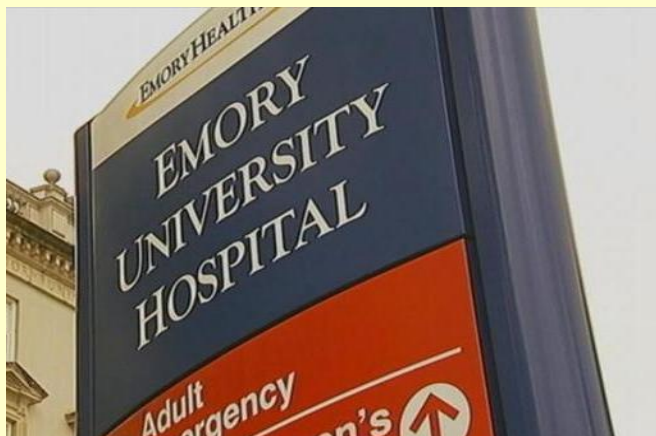
Assessments of the cost of Ebola in West Africa are grim. **The World Bank estimates the impact of Ebola on Liberia, Guinea, and Sierra Leone this year is around 3 percent of GDP.** It estimates these governments have incurred financial losses of a similar magnitude.

and more populous countries nearby and Nigeria has already contained one outbreak. Many of these countries are more integrated with the world economy — Lagos in Nigeria is a major travel hub. The trade and travel embargoes would be extremely costly and the costs in terms of lost output would also be hefty.

These costs do not even take into account the damage to the health system from the loss of many



health-care workers, nor the damage to the economy from lost workers and schooling.



They also fail to take into account the enormous personal toll of those who lose family and friends to the disease.

These estimates give some indication of the costs faced if Ebola were to penetrate other parts of the world. These costs would be significantly higher because developed economies rely much more on trade and travel.

**Are Western countries likely to be safe from contagion?**

The response of Western governments has been vastly insufficient to contain the outbreak, according to the World Bank and Medecins Sans Frontieres. Governments have provided too few military and health professionals, and little funding.

In response to pressure, Australia has recently provided A\$20 million for a 100-bed hospital in Sierra Leone, but no medical personnel. This suggests the Australian government believes Ebola will be largely restricted to West Africa. Applying economic theory can assess whether this is correct.

This belief seems to rest on two pillars: first, that the risk of contagion is low for informed individuals because transmission is through bodily fluids; and, second, that some combination of reduced travel to West Africa and the quarantine of at-risk returnees will be effective.

The first belief seems reasonable if there are a small number of cases. By taking extreme precautions about touching others, the spread of the disease may be halted. However, as the number of unidentified cases in the population expands, public places become a potential risk.

It is daunting to consider that at the critical stage of the illness, patients lose five to ten liters of contagious fluids per day. Beyond a small number of cases, hospitals' capacity to safely dispose of these fluids could easily be overwhelmed. **The Emory University hospital treating three Ebola patients had to use an autoclave to sterilize 1,360 kilograms of medical waste.**

Biologists say mass contagion is unlikely in the West. However, they have serious concerns about India and China with their dense populations and poor public health systems.

U.S. Centers for Disease Control and Prevention director Thomas Frieden says: "We have got infection control in hospitals and public health that tracks and isolates people if they get symptoms." However, this view may be overlooking the incentives driving at-risk individuals.

**Individual self-interest in conflict with society's interests**

While it is in society's interest for individuals to declare any contact with Ebola, it is not in the individual's interest. Thomas Duncan, who died in Texas from Ebola, did not disclose his contact with a sick patient to Liberian authorities. An individual's freedom of travel may be severely curtailed.

Australia and the United States have already implemented home quarantine orders for at-risk individuals. However, at least one person has refused to comply. If the individual is identified while in a country with low-budget quarantine procedures, they may be around other at-risk individuals, which is certainly not in their interest.

Individuals are also unlikely to respect any travel ban. **Modelling by Northeastern University suggests that a 90 percent reduction in flights to West Africa would delay the spread by only a few months.**

Individuals will enter through other countries, meaning they will be harder to track and isolate.

Based on cost-benefit analysis, the potential costs of Ebola spreading are extremely high and the risks may be much higher than they are currently portrayed.



Voters and donors should support greater efforts to end Ebola in West Africa. As International Monetary Fund director Christine

Lagarde says, “real action” is needed to counter the outbreak. Without such action Ebola places the global economy at risk.

*Catherine de Fontenay is Associate Professor at Melbourne Business School.*

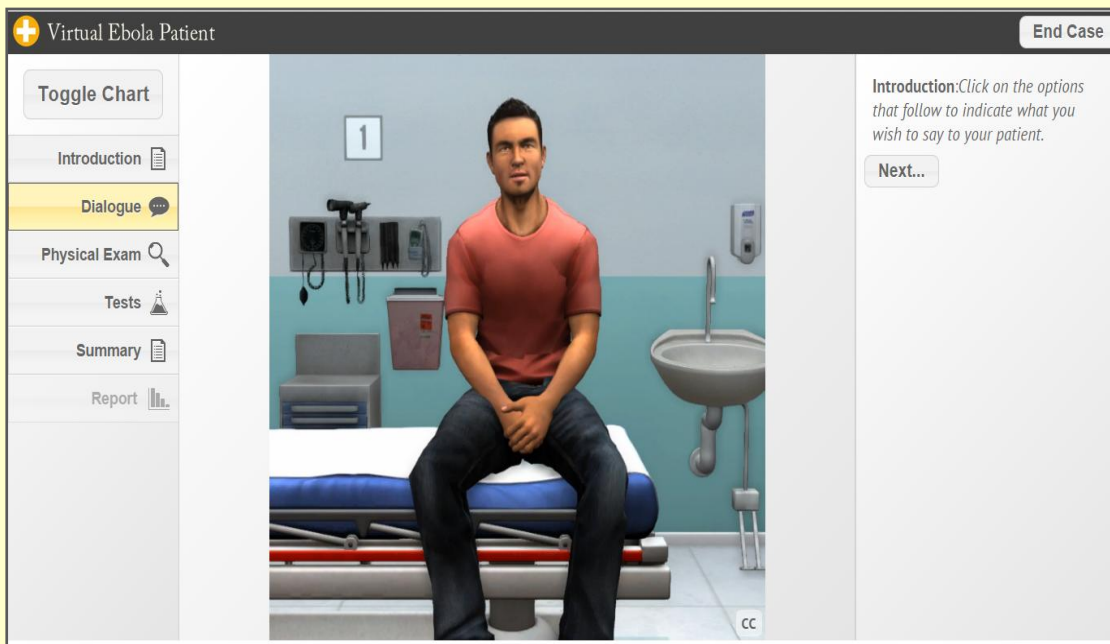


### USC Standard Patient

Source: <http://standardpatient.org/>

The USC Standard Patient is a new University of Southern California Institute for Creative Technologies research project. It seeks to improve clinic-based medical encounter simulation with the goal to create engaging virtual standardized patient (VSP) encounters, enable objective and meaningful assessment of learner interview performance and mature physician interviewing & diagnostic skills.

Standard Patient is a modular system that includes several complete applications that work together. There is an encounter player, an authoring application, an on-line community and a learning management system.



[Experience Virtual Ebola Patient](#)

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#### What is a Virtual Standardized Patient (VSP)?

A Virtual Standardized Patient is a virtual human that speaks, expresses him or herself nonverbally and understands your questions in normal clinical language. Standard Patient Hospital features more than fifty different virtual humans that vary by age, ethnicity and body type. VSP encounters closely simulate office-based patient visits where the clinician must obtain a chief complaint, elicit a narrative and follow up with specific questions to establish a diagnosis and rule out other conditions within a working differential.

#### How is a VSP different from a Virtual Patient?

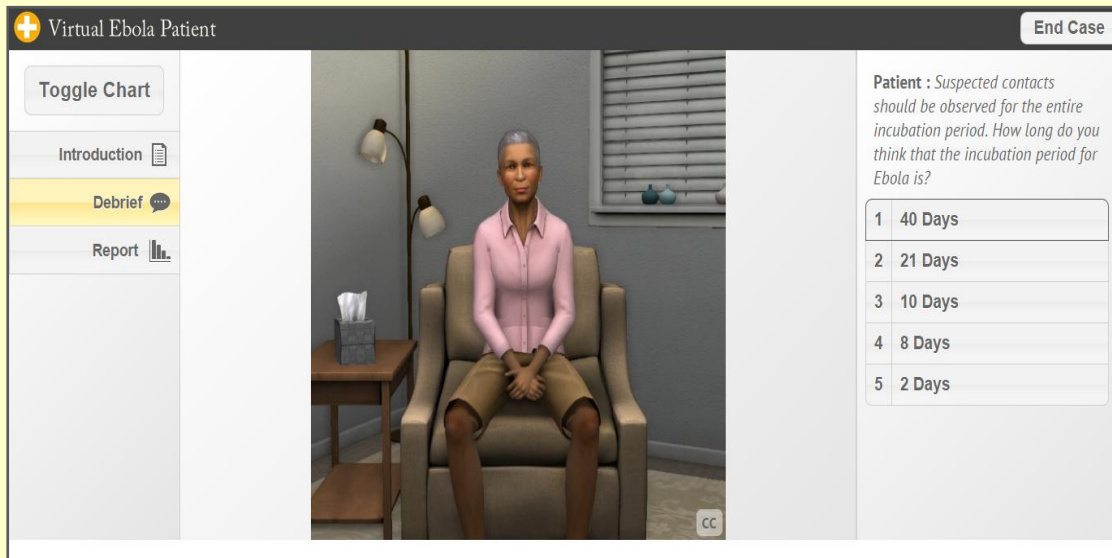
Typical ‘Virtual Patients’ are usually text-based cases that sometimes have multimedia elements and different possible outcomes in their progress based upon learner choices as the case unfolds. Virtual patients are typically used to assess medical decision making. Sometimes they are used to determine if the learner recognizes a diagnosis or has specific knowledge. Although there is a medical decision making component to VSPs, their richest benefits are concerned with case-specific diagnostic skills and strategies. VSPs are



substantially different in design and use from what is typically referred to as Virtual Patients.

**What interviewing & diagnostic skills will Standard Patient evaluate?**

Standard Patient can assess a variety of skills in this area. For entry level learners, the system assesses general interviewing skills such as interpersonal skills, open ended questioning, solicitation of a patient narrative, choice of follow up questions and demonstration of empathy and respect for the patient. For more advanced learners, interview strategy is more diagnosis-specific and involves elicitation of an illness script and pertinent negative follow up questions to narrow the differential. The learner’s diagnostic strategy can be determined as can the learner’s efficiency and overall diagnostic skills maturity.



[Experience Virtual Ebola Patient](#)

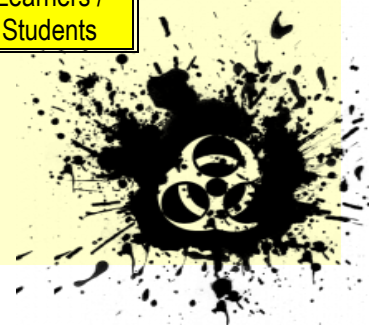
**Have you considered medical decision making?**

Since the VSP encounter is intended to resemble a single clinic visit, there are no opportunities for a VSP to die on an operating table or to miraculously improve from the learner’s valiant efforts. Medical decision making assessment is based upon the learner’s selection of diagnostic tests, identification of main and supporting diagnoses and selection of appropriate medications, procedures and therapies. VSP cases may also contain a dynamic interview with Hippocrates, the USC Standard Patient Attending Physician. The attending physician encounter can be used to explore reasons behind the learner’s decision making or their patient management strategy.

The ACGME is establishing competency milestones. Has this emerging approach to residency education informed your design?

The American College of Graduate Medical Education (ACGME) competency milestone concept has significantly shaped the design of Standard Patient. Specifically, elements of the interview assessment system have been inspired by the American Board of Pediatrics (ABP) milestone project. ABP milestones uniquely scale from entry to medical school through continuing medical education. The areas addressed by Standard Patient include 1) Patient Care, 2) Medical Knowledge and 3) Interpersonal & Communications Skills. The assessment system will provide feedback in context of milestones when possible.

Application	Function	User
Standard Patient Hospital	Access VSPs, enroll in curricula, and access assessments & achievements.	Learners / Students



Standard Patient Studio	Guided authoring system that allows for creation and modification of VSPs.	Authors / Educators
Community	A forum to browse the shared content library, borrow patients, obtain medical assets and peer review VSP cases.	Medical Educators
Teachers' Lounge	A light learning management system (LMS) to enroll students in a course, evaluate individual students or class cohorts.	Medical Educators

**Who is the intended audience of Standard Patient?**

The three audience areas for Standard Patient include medical learners, mature clinicians & medical educators. For medical learners, the optimal audience ranges from third year of medical school through residency. The focus is to more rapidly mature their interviewing skills and in the future to provide a controlled case curriculum as a basis for establishing competency in a clinical area.

For mature clinicians, Standard Patient can be used for case-specific competency assessment, refresher training or continuing medical education. Medical educators can author cases, take advantage of the sharing community to obtain VSP patients and assets, and review student assessments.

**Are there any special technologies in Standard Patient?**

Three ICT technologies power Standard Patient; SimCoach, the Unified Medical Taxonomy (UMT) and the Inference-RTS Assessment Engine. SimCoach is ICT's web-based virtual human platform that allows for real-time natural language virtual human interactions through a web browser or tablet. The Unified Medical Taxonomy is a common data model that represents a human patient and contains over 1,200 medical items for each patient. The Inference-RTS Assessment Engine is a real-time artificial intelligence system that continuously evaluates learner performance during the medical encounter and aggregates feedback into useful guidance for improvement.

**When will this be available and what will it cost?**

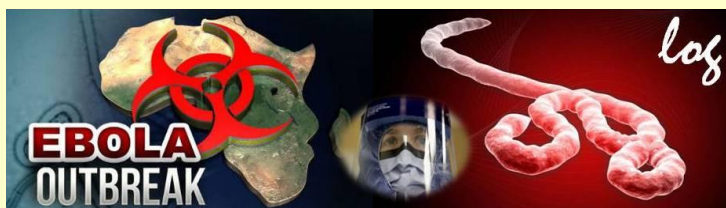
When available in 2015, Standard Patient will be free for anyone to use. The authoring system will also be free. There is a catch – this is a sharing project. Any case that is authored is automatically accessible to all medical educators in the community. The intent is to create a critical mass of high quality patients across a range of specialties.

**How do I learn more?**

**This project is currently in primary development. A beta release is expected in Fall 2014 followed by an official release in 2015.** Those interested in joining the external academic advisory group, using the technology for your own project, or discussing the project may **contact Thomas Talbot, MD at [Talbot@ict.usc.edu](mailto:Talbot@ict.usc.edu)**

**EDITOR'S COMMENT:** I had the chance to overview a sample of virtual Ebola patient! It was great! **Highly recommended!**

► You can access Ebola Virtual Patient from Ebola Outbreak Log [link](#) in the Newsletter.



## CDC Releases New Reports on Ebola Cases in Liberia and the United States

Source: <http://www.cdc.gov/media/releases/2014/p1114-ebola-liberia.html>

November 14 – The effort to contain the Ebola epidemic in Liberia is showing preliminary signs of progress in some counties, but maintaining and extending these trends will require sustained efforts, according to three early-release articles in CDC's Morbidity and Mortality Weekly Report (MMWR) on November 14. The three reports are among six MMWR articles on Ebola released by CDC today.

One of the six reports provides an overview of the complex and rapidly changing situation in Liberia. There is widespread distribution of disease in urban and rural settings. Containing the epidemic will require more intensive efforts to identify new cases and perform contact tracing in the densely populated capital city of Monrovia while rapidly containing outbreaks in hard-to-reach and newly affected areas.

Two other reports document a significant decrease in new Ebola cases in two of Liberia's 15 counties. Nevertheless, new cases continue to occur in these areas. United States, Liberian and international partners are now responding to new outbreaks in remote parts of the country as opposed to the larger outbreaks primarily occurring in more accessible areas. In recent weeks, there has been approximately one new outbreak or cluster per day. For comparison, during the past four decades, CDC has responded to approximately one Ebola outbreak every one to two years.

The Ebola epidemic in Liberia poses new challenges for response containment efforts. Because small outbreaks will expand if they are not contained quickly, response efforts are being adapted to manage smaller outbreaks in widely scattered, remote areas.

Declines in cases in two counties may also be a sign that medical and humanitarian support provided by the U.S. government and its partners – augmented by efforts from local communities and the Liberian government – is helping to slow the epidemic.

"The recent decrease in cases suggested by these reports shows how important it is to continue to intensify our Ebola response," said CDC Director Tom Frieden, M.D., M.P.H. "We have to keep our guard up. In Guinea, cases

have increased and decreased in waves; we can't stop until we stop the last chain of transmission."

Half of Liberia's Ebola cases have been in Montserrado County, which is home to the capital city of Monrovia with its population of about 1.5 million. Since mid-September there has been a 73 percent decline in admissions to Ebola Treatment Units (ETUs), a 58 percent decline in blood samples testing positive for Ebola, and a 53 percent decline in body collections. Expansion of ETUs, safe burials, and public education and community action appear to be important factors in this improvement.

The report warns that Ebola has not been eliminated from Montserrado County. New cases continue to occur, and a reversal of this recent positive trend remains possible.

Another report documenting a decrease in Ebola cases in Liberia comes from Lofa County, where Liberia's Ebola epidemic began. The weekly number of newly reported cases in Lofa decreased from a peak of 153 new cases in the week ending on August 16 to four new cases in the week ending November 1. Weekly admissions to the county's ETU dropped from a peak of 133 in the week ending August 16 to one new admission in the week ending November 1. Results for testing of deceased persons for Ebola were 95% positive from June 8 to August 16 but declined to 25 percent positive during August 24 to November 1.

### The Ebola containment strategy in Lofa County had several key elements:

- Encouraging community behavior change, including safe burial practices.
- Establishing an ETU
- Setting up a local Ebola hotline and outreach teams that quickly transported people with Ebola symptoms to the ETU
- Initiating active case finding, which means rigorously identifying and following up with contacts of patients with Ebola
- Training community volunteers to monitor patient contacts for Ebola symptoms

The strategy recently implemented in Lofa County might



serve as a model for reducing transmission of Ebola, but the report warns that new Ebola cases continue to be reported in Lofa County, and continued vigilance is needed there and in other affected areas, including Guinea and Sierra Leone.

### **Ebola among Health Care Workers Not Working in Ebola Treatment Units– Liberia**

A separate MMWR article released today explores how health care workers in West Africa were at increased risk of Ebola infection if they were not working in ETUs. This report, which covers events before mid-August, highlights the importance of recent key efforts of the international Ebola response in West Africa, such as establishing more ETUs and strengthening infection control in all healthcare facilities.

Isolating infected patients is essential for preventing transmission. Historically, this has been accomplished by caring for infected persons in specialized ETUs with strict isolation and infection control protocols, including guidelines for patient movement, physical layout, disinfection, and use of personal protective equipment (PPE) designed to protect health care workers and patients.

CDC disease detectives and Liberia's Ministry of Health investigated 62 Ebola cases before mid-August 2014 among health care workers not working in ETUs. The cases fell into 10 clusters, seven of which were primarily associated with hospitals.

"Health care workers in West Africa are on the front lines of the fight against Ebola. Protecting these workers will help stop the Ebola epidemic in West Africa at its source," says CDC Director Tom Frieden, M.D., M.P.H. "Recent investments in infection control training and equipment in West Africa can reduce risk, protect workers and patients, help stop Ebola at the source, and reduce risks of spread of Ebola globally."

The investigation found that in four of the 10 clusters, health care workers contracted Ebola from patients who had been admitted to a hospital and were suspected to have Ebola but did not yet have a confirmed diagnosis. In another four clusters, health care workers contracted Ebola from patients who were initially thought to have another diagnosis but eventually tested positive for Ebola. In one

cluster, health care workers contracted Ebola from a patient who initially tested negative for Ebola but was tested later and came back positive.

During past Ebola outbreaks, up to 25 percent of cases have been among health care workers.

### **Factors in health-care-worker infections in Liberia included:**

- inconsistent recognition/triage of Ebola patients;
- overcrowding of hospitals/clinics;
- limitations in physical layout of hospitals;
- lack of training in PPE and inadequate supply of PPE; and,
- limited supervision of and adherence to infection control.

The report notes that the immediate consequences of Ebola among health care workers in West Africa are closure of health facilities, loss of routine services, grief and fear among healthcare workers, and public mistrust of healthcare workers and health facilities. All undermine the overall Ebola response effort.

Since August 2014, the U.S. government and a consortium of partners have worked with the Liberian Ministry of Health to strengthen the infection control infrastructure and training in non-ETU health facilities. Infection control specialists will be embedded in non-ETU facilities.

In addition, U.S. Public Health Service medical staff have opened the Monrovia Medical Unit which is a 25-bed facility dedicated to treating medical care workers in Liberia who contract the Ebola virus.

### **First Ebola Virus Disease Cluster in the United States—Dallas County, Texas, 2014**

In late September 2014, a patient at a Dallas hospital showed symptoms of Ebola and later tested positive for the disease. This was followed by the first two domestically acquired Ebola cases in the United States as two of the nurses caring for the patient became infected.

The patient died on October 8. **Initial contact tracing identified a total of 103 individuals, of whom 48 were close unprotected contacts of the initial patient.**

**All 48 contacts underwent direct active monitoring, which means that public health authorities contacted them**





directly to check on the presence of symptoms. After the two nurses became infected, health officials identified three additional Dallas community contacts; all three lived within the households of the two nurses. One hundred forty-seven health care workers who cared for the initial patient or the two nurses, irrespective of PPE use, were actively monitored. As of November 7, all contacts of the three patients had finished active monitoring and none of the contacts besides the two nurses themselves had developed Ebola.

**Response to Importation of a Case of Ebola Virus Disease – Ohio, October 2014**

In October, two of the nurses who treated a Dallas patient with Ebola disease became infected with the virus. Before learning that

either she or her colleague were infected, one of the nurses traveled to Cleveland, Ohio and returned to Dallas via a commercial airline. During her time in Ohio, **the nurse had contact with 164 people including: two household members, 10 friends and family members, and 60 persons at one store; seventeen airline and airport personnel and 76 airline passengers were also monitored in Ohio because of contact with the nurse (other passengers were followed by health departments in other states).** Some contacts were brief, while others lasted several hours and included direct skin-to-skin exposure. All of these contacts completed daily monitoring for fever or Ebola symptoms. As of November 3, the end of the incubation period and final day of monitoring, none of the contacts had developed Ebola infection.

**Ebola: Rethinking Security**

By Dr. Patricia Campbell

Source: <http://in homelandsecurity.com/ebola-rethinking-security/>

Ebola is more than a potential pandemic; it is a prime example of the importance of viewing “security” much more broadly than traditional definitions, which have focused on power, military might, and defensive and offensive capabilities.

Human security pushes us to envision security as much more complicated and interconnected. As Derek S. Reveron and Kathleen A. Mahoney-Norris describe in their book *Human Security in a Borderless World*, this more nuanced understanding of security requires we focus on issues of “globalization, climate change, pandemic diseases, endemic poverty, weak and failing states, transnational narcotics trafficking, piracy and vulnerable information systems.”

If we begin from this understanding of security, what is happening in West Africa with Ebola comes into sharp relief. Here we will explore just two aspects of human security in the context of the Ebola outbreak.

First, there is a lack of a cohesive, functioning government in most of these countries. These failing or fragile states struggle with day-to-day existence even without a crisis. The most recent outbreaks in Guinea, Sierra Leone and Liberia have spread into urban areas where

one might expect more government control. However, due to the barely functioning nature of these states, the governments’ responses have ranged from completely absent to delayed to incredibly heavy-handed in the form of a military imposed quarantine that left thousands of citizens trapped within a cordoned off area without food, access to health care, or any way for the healthy to separate themselves from the sick. These states are completely unprepared for—and overwhelmed by—the magnitude of the disease.

Second, the disease corridors created by deforestation and mining, both a response to global market imperatives and to externally imposed neo-liberal economic policies, have allowed the Ebola virus to spread more easily. For example, fruit bats that inhabit the forests and carry Ebola have come into increasing contact with humans as deforestation has eradicated their habitat. Extensive mining has also contributed to the spread of the disease, as miners travel into what is left of a rapidly-dwindling forest to access the minerals, thereby exposing themselves to the bats.



Ebola is ravaging the poorest countries with the most dilapidated or non-existent infrastructures. These West African countries emerged from the scourge of colonialism, only to be sucked into the Cold War chess game, which helped prop up notorious dictators whose repressive regimes pillaged the countries' resources. Violent conflict has characterized the region since. The various power vacuums, ongoing violence, collapsed economies, and vicious struggles for natural resources have all contributed to the perfect storm that has allowed this disease to flourish. As the disease has overwhelmed these governments and their health systems, their militaries have proven to be of little to no use and non-state actors have stepped in to fill the void.

In short, to understand what is happening right now in West Africa, one needs to understand

globalization and the human security issues that are embedded within this crisis. The importance of grasping this was highlighted in a recent *Guardian* piece, which noted:

"The bottom line is that there is no public health without environmental health. Deforestation didn't cause this Ebola epidemic, but did make it much more likely. The region's legacy of war and poverty, its beleaguered health care systems, and a series of bureaucratic fumbles fanned a small and isolated outbreak into a full-blown epidemic fire, which has already killed more people than all previous 25 known Ebola outbreaks put together.

"It is shocking to realize that a tiny virus with just a handful of genes can fracture families, shred communities, destroy national economies and destabilize whole regions in just a matter of months. But this is what we are witnessing with Ebola."

*Dr. Patricia Campbell is the Assistant Provost of Graduate Studies, Research, and Innovation at American Public University System. She received her Ph.D. from the Korbel School of International Studies at the University of Denver. Dr. Campbell has numerous publications in academic journals including Journal of Political Science Education, International Feminist Journal of Politics, African Studies Quarterly, Politics and Policy; and Africa Today. Her co-authored textbook on Global Studies was published in 2010 (Wiley-Blackwell).*

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## Ebola and Islam – A deadly combination

Source: <http://threatjournal.com/>

As if Ebola itself is not creepy enough, a quiet little secret rarely shared with the American public is that many of those becoming infected with Ebola are Muslim. Further, the rapid spread of Ebola in Guinea, Sierra Leone and Liberia, as well as the continuing difficulty in controlling the outbreak, is in large part directly attributed to strict practices under Sharia law.

**For some context, consider that according to the CIA World Fact Book, 85% of the population in Guinea is Muslim. In Sierra Leone, 60%. In Liberia, ~13%.**

When reading the following material, keep in mind that **when an individual dies from Ebola the body is at its most infectious state.** Viral loads have undergone extreme amplification and everything from the skin to bodily fluids are lethally "hot."

### Islamic funerals

**Funerals in Islam (known as Janazah) follow very specific rituals which are**

**obligatory (Wajib). One aspect of this process is known as Ghusl, or the washing of the corpse** (► For details, see [this](#), [this](#) and [this](#).)

When an individual dies, Sharia Law mandates that same sex members of the family collectively wash the corpse 3 or more times, though ultimately an odd number of instances. Ghusl may also be performed by a spouse.

Prior to each round of scrubbing, part of the detailed Ghusl process calls for those involved to press on the stomach of the corpse to cause the release of as much internal fluid and impurities as possible. The process also calls for the brushing of teeth and cleaning of the nose.

A mixture of water and camphor is used for the final washing, after which the corpse is dried and wrapped in white linens. In the case of women, the hair is brushed and braided into three strands.



Those present at the time of an individual's death, as well as those who come pay final respects prior to burial, are allowed to uncover the face of the corpse and kiss it.

Prior to burial, it is also common for those in attendance to wash their face, hands and feet using a common bowl.

**Burial is mandatory, cremation is forbidden.**

This entire process is carried out either in a family home or within a mosque, many of which

(including in America) have rooms specifically set aside for this purpose.

It is through these practices that many thousands of individuals have become infected. The dangers with traditional Islamic funerals in relation to the Ebola outbreak are so great that the World Health Organization has even addressed the issue by attempting to roll out a public awareness campaign and new protocols for safe, but dignified burials.

▶ Read the NEW WHO safe and dignified burial protocol (Oct 2014) at: <http://www.who.int/mediacentre/news/notes/2014/ebola-burial-protocol/en/>

**Ebola scare raises its head in Mumbai, Delhi**

Source: <http://indianexpress.com/photos/picture-gallery-others/ebola-scare-raises-its-head-in-mumbai-delhi/3/>

Officials have quarantined a man who was cured of Ebola in Liberia but continued to show traces of the virus in samples of his semen after arriving in the country, the health ministry said on Tuesday.



A nurse and a security guard demonstrate the body suit provisioned for health care workers by the BMC in Mumbai. (Source: Express)

The ministry said in a statement that the Indian national had been shown to be negative for Ebola in tests conforming to World Health Organisation (WHO) guidelines, but had been quarantined as a precautionary measure when he arrived at New Delhi airport on November 10. **Later, tests of his semen detected traces of the virus.**

"It is a known fact that, during convalescence from Ebola Virus Disease, persons continue to shed virus in bodily fluids for variable periods," the ministry said. **"However, presence of virus in his semen samples may have the possibility of transmitting the disease through sexual route up to 90 days from time of clinical cure."**

India has screened thousands of passengers travelling from Ebola-hit West Africa in recent weeks. The Indian man carried with him

documents from Liberia that stated he had been cured. He will be kept in quarantine until the virus is no longer present in his body, and will undergo tests over the next 10 days or so, a senior health ministry official said.



"It is not an Ebola case, he is an Ebola-treated patient who is negative in blood but whose body fluid is positive. He has no symptoms," the official said, declining to be named because of the sensitivity of the matter.

Peter Piot, a former WHO official who was one of the discoverers of the virus, has in the past expressed concerns about the disease spreading to India. There are nearly 45,000 Indian nationals living in West Africa.

Many experts say densely populated India is not adequately prepared to handle any spread of the highly infectious haemorrhagic fever among its 1.2 billion people. Government health services are overburdened and many people in rural areas struggle to get access to even basic health services.

Hygiene standards are low, especially in smaller towns and villages, and defecating and urinating in the open are common.

**EDITOR'S COMMENT:** The text is consistent with the "preparedness" photo – red circles are my "visual" comments. If you want to do it right and care for your own people at least STUDY, EXPLORE, COMPARE methodologies or FOLLOW Guidelines. Like the latest (excellent) guidelines from ECDC!

► **Photo's source:** <http://indianexpress.com/photos/picture-gallery-others/ebola-scare-raises-its-head-in-mumbai-delhi/7/>



**University of Westminster awarded £620,000 grant to develop ebola diagnostic device**

Source: <http://www.westminster.ac.uk/news-and-events/news/science-and-technology/2014/university-of-westminster-awarded-620-000-grant-to-develop-ebola-diagnostic-device>

November 17 – The University of Westminster has been awarded a research grant of £620,000 funded by The Department for International Development (DFID) and the Wellcome Trust to develop a portable device which can test bodily fluids to diagnose the Ebola virus.

**The EbolaCheck research project, led by the University of Westminster, aims to test bodily fluids, such as saliva, to detect the Ebola virus in a single process, providing results within 40 minutes.** This is over eight times quicker than some existing laboratory techniques.

**Dr Sterghios A Moschos, director of the Westminster Genomic Services Unit at the University of Westminster, will lead the project and work in close collaboration with Dr Edward Wright, the renowned Ebola expert and senior lecturer in medical microbiology at the University of Westminster. The team will aim to develop a cost-effective, portable, battery-powered device which can provide reliable, rapid and safe diagnostic tests suitable for use in the field. The device is expected to be available for use as early as May 2015.**

The Ebola crisis in West Africa is continuing to claim many victims. To protect suspected patients and the community, the virus must be diagnosed as soon as possible in order to rein in the spread of the disease. Currently, this is done by collecting about a teaspoon of blood and sending it to specialised hospital laboratories for tests. It then takes some 7 to 8 hours of work before results are ready. Importantly, healthcare providers need to use needles and syringes to do this, putting themselves at significant risk as blood and contaminated instruments could be highly contagious.

Healthcare in West Africa, however, is nothing



like what we are used to in the West. Many people do not have



access to basic services like nurses and doctors, let alone complex laboratory tests and hospitals. It takes even more time to get samples from rural communities to diagnostics labs as many areas lack even basic road networks. A solution that can offer a diagnostic result safely, quickly and reliably at the point where suspected patients are located could transform how this outbreak is managed.

Dr Moschos said: “Dr Wright, the rest of the team and I are honoured to have been given the opportunity to help the victims of this dreadful disease and the healthcare teams deployed in West Africa. Our goal is to do away with needles, labs and delays to delivering diagnosis of the Ebola virus in suspected patients.

“We will use robust technologies to develop a simple but effective tool to diagnose this deadly virus similar to a blood glucose meter, and as reliable as hospital tests. Our portable device will be designed to run on batteries and only needs a small drop of blood to provide a result in less than 40 minutes. We then aim to make the whole process even safer by being able to use the device on saliva and urine. Early

prototypes of this tool will be available for demonstration in a few months and we expect to begin testing it with patient samples by May.” Experts from Public Health England, the United States and West African healthcare providers familiar with the challenges faced in these countries will work closely with the University of Westminster. Together, the team will deliver a solution as reliable as hospital tests, robust for the environment of West Africa and simple enough to be operated by healthcare providers focusing on caring for suspected Ebola victims. They will aim to create a device based on novel, IP-protected technology which will be provided on humanitarian grounds from a UK biotechnology company based in Cambridge. Dr Wright will be also working with collaborators at the Jenner Institute, University of Oxford and biotechnology companies, who are leading research on vaccines and treatments for Ebola.

The University of Westminster has a long-standing relationship with West African countries in education, research and biomedical science training.

**EDITOR'S COMMENT:** If you wonder about the "blue" background under Dr Sterghios A. Moschos' name it is because **he is Greek** and we are very proud of him! 😊



**Scientists identify weak spots in Ebola’s defenses**

Source: <http://www.homelandsecuritynewswire.com/dr20141118-scientists-identify-weak-spots-in-ebola-s-defenses>

November 18 – **Scientists at The Scripps Research Institute (TSRI) have identified weak spots on the surface of Ebola virus that are targeted by the antibodies in ZMapp, the experimental drug cocktail administered to several patients during the recent Ebola outbreak.**

The study, led by TSRI structural biologists Andrew Ward and Erica Ollmann Saphire and published online ahead of print this week by the journal *Proceedings of the National Academy of Sciences*, provides a revealing 3-D picture of how the ZMapp antibodies bind to Ebola virus.

**“The structural images of Ebola virus are like enemy reconnaissance,” said Saphire. “They tell us exactly where to target antibodies or drugs.”**

Ward said, “Now that we know how ZMapp targets Ebola, we can compare all newly discovered anti-Ebola antibodies as we try to formulate an even better immunotherapeutic cocktail.”

**How antibodies fight back**

A Scripps Institute release reports that ZMapp, developed by San Diego-based Mapp Biopharmaceutical, was used in August to treat several patients in the ongoing Ebola virus outbreak. Although five of the seven patients who received ZMapp survived, researchers cannot yet say for sure whether ZMapp made a difference in their recoveries.

**The new study explains why ZMapp could have been effective.**



Using an imaging technique called electron microscopy, researchers found that two of the ZMapp antibodies bind near the base of virus, appearing to prevent the virus from entering cells. A third antibody binds near the top of the virus, possibly acting as a beacon to call the body's immune system to the site of infection (photo)

The new picture of ZMapp reveals the two antibodies that bind near the base of the virus seem to be competing for the same site. While this appears to be a particularly vulnerable spot on Ebola virus's surface as identified in previous studies, one question now is whether future cocktails should continue to use two antibodies to target this site or try to attack the virus from a third angle.

"This information helps guide decisions about how to formulate these life-saving therapies," said C. Daniel Murin, a graduate student in the labs of Ward and Saphire and first author of the new study. "Instead of including two different antibodies that do the same thing, why not use twice as much of the more effective one instead? Or include a third antibody against a different site to stop the virus a third way?"

Luckily, while the Ebola virus has undergone more than 300 genetic changes in the current outbreak (according to research published in the journal *Science* in August), the new study indicates the sites where the ZMapp antibodies bind have been unaffected so far.

#### A Global search for treatments

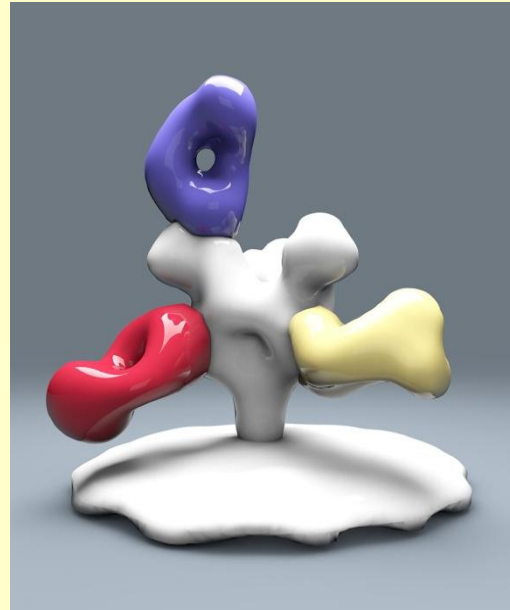
The new research is part of the National Institutes of Health-funded Viral Hemorrhagic

— Read more in Charles D. Murin et al., "Structures of protective antibodies reveal sites of vulnerability on Ebola virus," *Proceedings of the National Academy of Sciences* (17 November 2014)

#### Ebola education portal goes online

Source: <http://www.medicalnewstoday.com/releases/285277.php?tw>

Knowledge Cloud platform EdCast has announced [Health.EdCast.Org](http://Health.EdCast.Org) a new online site for leading healthcare, university and public policy organizations to make available personalized learning about Ebola and the spread and prevention of this deadly disease. EdCast has appealed to experts on Ebola and its prevention to contribute content to the Health.EdCast.Org portal which allows for



Fever Immunotherapeutic Consortium, which is testing antibodies from twenty-five laboratories around the world with the goal of developing the best cocktail for neutralizing Ebola virus and other closely related hemorrhagic fever viruses.

The release notes that the next step for the consortium is to study the new antibodies from human survivors of the current outbreak. Saphire, who leads the consortium, hopes the group can also develop a back-up cocktail in case the virus mutates and becomes resistant to treatment.

ZMapp is expected to go into clinical trials in early 2015. The antibodies in the cocktail were originally isolated by the Public Health Agency of Canada and the U.S. Army Medical Research Institute of Infectious Disease.

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first time, brings together multiple universities and organizations to share the latest developments in the search to understand the spread and prevention of Ebola.

"Open education on Ebola is critical for the global community to understand and protect themselves from this devastating disease," said Karl Mehta, Founder & CEO of EdCast. "The new portal is a first in online education because it brings together multiple perspectives from various sources - not all from one university or constituency - to ensure quality content and information."

The course will initially be moderated by Marcel Salathe, Assistant Professor of Biology at the Center for Infectious Disease Dynamics at Penn State University.

"I'm looking forward to contribute to the spread of accurate information on the current Ebola epidemic," said Salathe who has run two

popular MOOCs on infectious disease dynamics. "There is too much misinformation out there, and I hope others will join me in curating a repository of trustworthy information as this situation develops."

The educational content on Health.EdCast.Org is optimized by the memory management platform Cerego which provides a personalization layer that enables better learning and retention by boosting the memory strength of users.

"It's crucial that our workforce, as well as the general public, be well-informed," said Andrew Smith Lewis, Co-founder and Executive Chairman of Cerego. "Through this integration with EdCast, we hope to help easily commit essential information to memory for people fighting the battle against Ebola around the world."

## Single-dose, needle-free Ebola vaccine provides long-term protection in macaques

Source: <http://www.medicalnewstoday.com/releases/285365.php?tw>

**Scientists have demonstrated for the first time that a single-dose, needleless Ebola vaccine given to primates through their noses and lungs protected them against infection for at least 21 weeks.** A vaccine that doesn't require an injection could help prevent passing along infections through unintentional pricks. They report the results of their study on macaques in the ACS journal *Molecular Pharmaceutics*.

Maria A. Croyle and colleagues note that in the current Ebola outbreak, which is expected to involve thousands more infections and deaths before it's over, an effective vaccine could help turn the tide. Even better, taking the needle out of the inoculation process could also help prevent the accidental transmission of Ebola, as well as other diseases, such as HIV, that might otherwise spread from unintentional needle pricks and unsafe handling of medical

wastes. Other vaccines are currently under development to fight the virus, but they require an injection. Croyle's team tested an adenovirus-based Ebola vaccine using a respiratory delivery route.

The researchers gave a novel formulation of an Ebola vaccine to several macaques then exposed them to the virus more than four months later. **All three of the animals that received the vaccine through the nose and via a catheter into their airways did not fall ill.** However, since special equipment and training are required for the current respiratory delivery method, the scientists conclude that further work is needed if this formula, or an under-the-tongue version, is to be used eventually in large-scale immunization campaigns.

The authors acknowledge funding from the National Institutes of Health.

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### Abstract

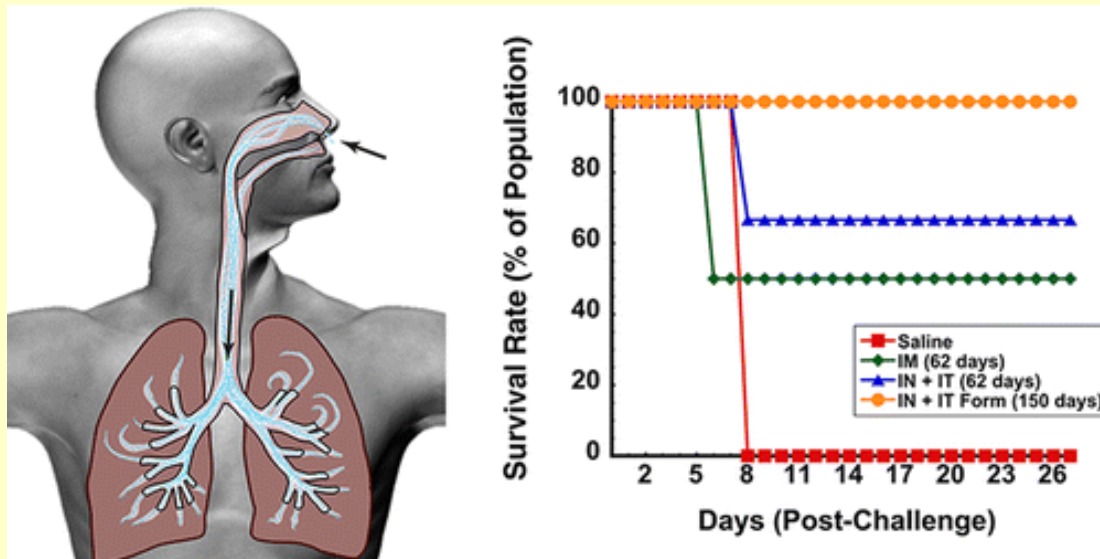
Source: <http://pubs.acs.org/doi/abs/10.1021/mp500646d>

As the Ebola outbreak in West Africa continues and cases appear in the United States and other countries, the need for long-lasting vaccines to preserve global health is imminent. Here, we evaluate the long-term efficacy of a respiratory and sublingual (SL) adenovirus-



based vaccine in non-human primates in two phases. In the first, a single respiratory dose of  $1.4 \times 10^9$  infectious virus particles (ivp)/kg of Ad-CAGoptZGP induced strong Ebola glycoprotein (GP) specific CD8<sup>+</sup> and CD4<sup>+</sup> T cell responses and Ebola GP-specific antibodies in systemic and mucosal compartments and was partially (67%) protective from challenge 62 days after immunization.

The same dose given by the SL route induced Ebola GP-specific CD8<sup>+</sup> T cell responses similar to that of intramuscular (IM) injection, however, the Ebola GP-specific antibody response was low. All primates succumbed to infection. Three primates were then given the vaccine in a formulation that improved the



immune response to Ebola in rodents. Three primates were immunized with  $2.0 \times 10^{10}$  ivp/kg of vaccine by the SL route. Diverse populations of polyfunctional Ebola GP-specific CD4<sup>+</sup> and CD8<sup>+</sup> T cells and significant anti-Ebola GP antibodies were present in samples collected 150 days after respiratory immunization.

The formulated vaccine was fully protective against challenge 21 weeks after immunization. While diverse populations of Ebola GP-specific CD4<sup>+</sup> T cells were produced after SL immunization, antibodies were not neutralizing and the vaccine was unprotective. To our knowledge, this is the first time that durable protection from a single dose respiratory adenovirus-based Ebola vaccine has been demonstrated in primates.

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**Radiologists devise new protocol for imaging patients with Ebola**

Source: <http://www.medicalnewstoday.com/releases/285668.php?tw>

In a breakthrough that could substantially improve physicians' ability to rapidly evaluate patients with suspected Ebola, radiologists at Emory University Hospital have devised a protocol for obtaining chest radiographs using portable computed radiography. The protocol not only limits the exposure of personnel and equipment to body fluids, it also minimizes the risk of contaminants leaving the isolation unit by use of thorough decontamination procedures.

'Radiographic Imaging for Patients with Contagious Infectious Diseases: How to Acquire Chest Radiographs of Patents Infected with the Ebola Virus.' The step-by-step protocol is outlined in an article published ahead of print in the *American Journal of Roentgenology*

► More info at: <http://www.ajronline.org/doi/abs/10.2214/AJR.14.14041>





**Bed Bugs Can Causes Chagas Disease**

Source: <http://ehspest.com/ri-ma-ehs-pest-control-blog/bed-bugs-can-causes-chagas-disease-boston-norwood-ma>

November 19 – Bed bugs suck. Literally. However, while they are indeed annoying and can keep people awake at night, they have not been regarded as a public-health concern because they have not been documented as transmitters of diseases like malaria, yellow fever, dengue, or others.

However, that status has just changed. A new study from Penn Medicine researchers in the Center for Clinical Epidemiology and Biostatistics demonstrated that **bed bugs can transmit *Trypanosoma cruzi*, the parasite that causes Chagas disease, one of the most prevalent and deadly diseases in the Americas.**



*Trypanosoma cruzi*

In a study published online this week in the American Journal of Tropical Medicine and Hygiene, senior author Michael Z. Levy, PhD, assistant professor in the Department of Biostatistics and Epidemiology at the University of Pennsylvania’s Perelman School of Medicine, and researchers at the Universidad Peruana Cayetano Heredia in Peru conducted a series of laboratory experiments that **demonstrated bi-directional transmission of *T. cruzi* between mice and bed bugs.**

In the first experiment run at the Zoonotic Disease Research Center in Arequipa, Peru, the researchers exposed 10 mice that were infected with the parasite to 20 uninfected bed bugs every three days for a month. Of about 2,000 bed bugs used in the experiment, the majority acquired *T. cruzi* after feeding on the infected mice. In a separate experiment to test

transmission from bug to mouse, they found that 9 out of 12 (75 percent) uninfected mice acquired the parasite after living for 30 days with 20 infected bed bugs.

In a third experiment, investigators succeeded in infecting mice by placing the feces of infected bed bugs on the animal’s skin that had either been inflamed by bed bug bites, or scraped with a needle. Four out of 10 mice (40 percent) acquired the parasite by this manner; one out of five (20 percent) were infected when the skin was broken by the insect’s bites only.



Bed bug *Cimex lectularius*

“We’ve shown that the bed bug can acquire and transmit the parasite. Our next step is to determine whether they are, or will become, an important player in the epidemiology of Chagas disease,” Levy said.

*T. cruzi* is also especially at home in the guts of bed bugs.

“I’ve never seen so many parasites in an insect,” said Renzo Salazar, a biologist at the Universidad Peruana Cayetano Heredia and co-author on the study. “I expected a scenario with very low infection, but we found many parasites — they really replicate well in the gut of the bed bugs.”

These days, more people in the U.S. are being infected with *T. cruzi* than ever before. The Centers for Disease Control and Prevention estimates that the number of Chagas disease cases in the U.S. today could be as high as 300,000.

“If the parasite starts to spread through bed bugs, decades of progress on Chagas disease control in the Americas could be



erased, and we would have no means at our disposal to repeat what had been accomplished,” Levy said.

Often referred to as a silent killer, Chagas disease is hard to diagnose in its early stages because the symptoms are mild or absent. The parasites are hidden mainly in the heart and digestive muscle, and over time can cause cardiac disorders and sometimes digestive or neurological problems. In later years, the infection can lead to sudden death or heart failure caused by progressive destruction of the

heart muscle. Although there are some drugs to treat Chagas disease, they become less effective the longer a person is infected.

The long asymptomatic period of Chagas disease complicates surveillance for new outbreaks of transmission. In Arequipa, Peru, thousands became infected with the parasite before a case appeared in the hospital. The same could happen in cities in the United States if the parasite were to emerge in the bed bug populations, according to the authors.

**Control of communicable diseases, with an emphasis on Ebola-Marburg viral diseases**

By Maria Perno Goldie

Source: [http://www.dentistryiq.com/articles/2014/11/control-of-communicable-diseases-with-an-emphasis-on-ebola-marburg-viral-diseases.html#\\_gus&\\_gucid=/content/diq/en/articles/2014/11/control-of-communicable-diseases-with-an-emphasis-on-ebola-marburg-&\\_gup=LinkedIn&\\_gsc=yDVfWVvk](http://www.dentistryiq.com/articles/2014/11/control-of-communicable-diseases-with-an-emphasis-on-ebola-marburg-viral-diseases.html#_gus&_gucid=/content/diq/en/articles/2014/11/control-of-communicable-diseases-with-an-emphasis-on-ebola-marburg-&_gup=LinkedIn&_gsc=yDVfWVvk)

November 19 – As updates about the Ebola outbreak continue to make headlines, The American Public Health Association (APHA) has published the 20th edition of its “Control of Communicable Diseases Manual” as a key resource for public health professionals fighting infectious disease.(1)

The text, a respected sourcebook originally published in 1915, provides the latest control measures for communicable diseases.(1) A Web version of the manual is being developed to enhance access to the text and will allow for frequent chapter updates as new information on infectious diseases becomes available. These online resources will also be available on mobile devices. In advance of the book’s release and in response to the emerging Ebola outbreak, APHA has made the Ebola-Marburg virus chapter of CCDM available online as a free download to help public health workers respond to the disease.(2) In the full edition, all 138 chapters have been updated with the latest information about the occurrence, transmission, resistance, and control of infectious diseases. Three diseases included in previous editions – Japanese encephalitis, West Nile virus, and

Rift Valley fever – have now been given their own chapters based on their increasing importance. After I downloaded the chapter in Adobe format I found that a password was required to open the document, which I did not have. I used the print feature and was able to

save the document in Adobe format.

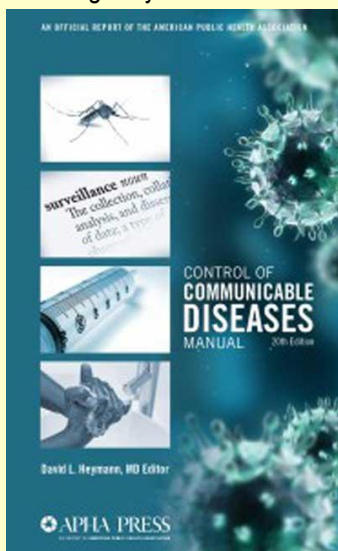
**The ADA has resources available for oral health professionals.(3)**

These include Ebola Webinar for Dental Professionals; OSAP Ebola Toolkit; CDC Health Alert Network (HAN) – Evaluating Patients for Possible Ebola Virus Disease: Recommendations for Healthcare Personnel and Health Officials; CDC Recommended Infection Control Practices for Dentistry; CDC Health Care Provider Preparedness Checklist for Ebola Virus Disease (PDF); the ADA Practical Guide to Effective Infection Control (P692); the CDC Ebola Check and Report Ebola (CARE) Kit; and the ASPR Ebola Preparedness Considerations for Outpatient/Ambulatory Care Settings (PDF).

The ADA Division of Science advises dental professionals not to treat dental patients if they have signs or symptoms of Ebola, as most oral health providers do not



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have the appropriate equipment, experience, or skills to safely treat an Ebola patient. The most common signs and symptoms of Ebola infection are fever (greater than 38.6°C or 101.5°F), severe headache, muscle pain, vomiting, diarrhea or stomach pain, or unexplained bleeding or bruising. As with all patients, dental professionals should take thorough medical histories of patients, including a travel history from those with symptoms in which viral infection is suspected. There are specific questions suggested to be included into a health questionnaire.(3)

Noel Kelsch, RDHAP, BS, wrote an informative article on DentistryIQ.(4) She explains that there is a screening tool, for initial assessment and management of returning travellers from

areas affected by Ebola, for dental offices and allied health professionals, courtesy of Public Health Ontario. (5)

Become informed, and do not panic. The Ebola virus disease (EVD) is spread through close contact with the blood, secretions, organs, or other bodily fluids of infected animals. Human-to-human transmission is through direct contact with broken skin or mucous membranes, blood, secretions, organs, or other bodily fluids such as the saliva of infected people. Indirect contact with environments contaminated with such fluids is also a route of transmission. To date, transmission through the air has *not* been documented, and there have not been any case reports of transmission in dental settings or through saliva contamination.

**References**

1. <http://www.apha.org/news-and-media/news-releases/book-news-releases/new-CCDM-edition>.
2. <http://www.apha.org/~media/files/pdf/pubs/ccdm Ebola.ashx>.
3. <http://www.ada.org/en/member-center/oral-health-topics/ebola-resources>.
4. <http://www.dentistryiq.com/articles/2014/10/ebola-dental-professionals-need-to-be-prepared-for-all-emerging-diseases.html>.
5. [http://www.publichealthontario.ca/en/eRepository/EVD\\_screening\\_tool\\_dental\\_allied\\_health\\_professionals.pdf](http://www.publichealthontario.ca/en/eRepository/EVD_screening_tool_dental_allied_health_professionals.pdf).

*Maria Perno Goldie, RDH, MS, is the editorial director of RDH eVillage FOCUS.*

**Haemorrhagic fever outbreak in Sudan’s El Gezira state**

Source: <https://www.radiodabanga.org/node/83792>

November 18 – Medical sources at Wad Madani City hospital in El Gezira state, have reported 19 deaths due to haemorrhagic fever over the past two weeks.



Speaking to Radio Dabanga, the source said that about 11 infected people have been quarantined in the hospital.

The health authorities have been keeping a tight lid on the outbreak and on Monday the State Ministry of Health issued instructions to the departments of rural hospitals to transfer all patients suffering any bleeding to hospitals in Wad Madani, Kamleen and Hassahiya.

Sources say the Federal Ministry of Health instructed the

state health authorities not to talk about these fevers in order to preserve the country's exports of livestock. Doctors do not rule out the possibility that the infection of patients was caused by eating meat. The sources pointed out that on Monday the Ministry of health of



the El Gezira instructed the rural hospitals to notify the Ministry of any new cases of the disease and transfer any patient suffering from bleeding to major hospitals in the state.



**WHO: Madagascar plague outbreak kills 40**

Source: <http://www.bbc.com/news/world-africa-30152979>

November 21 – An outbreak of plague in Madagascar has killed 40 people and infected almost 80 others, the World Health Organization has said.



The WHO warned of the danger of a "rapid spread" of the disease in the capital, Antananarivo.

The situation is worsened by high levels of resistance among fleas to a leading insecticide, the WHO added.

Humans usually develop the bubonic form of the plague after being bitten by an infected flea carried by rodents.

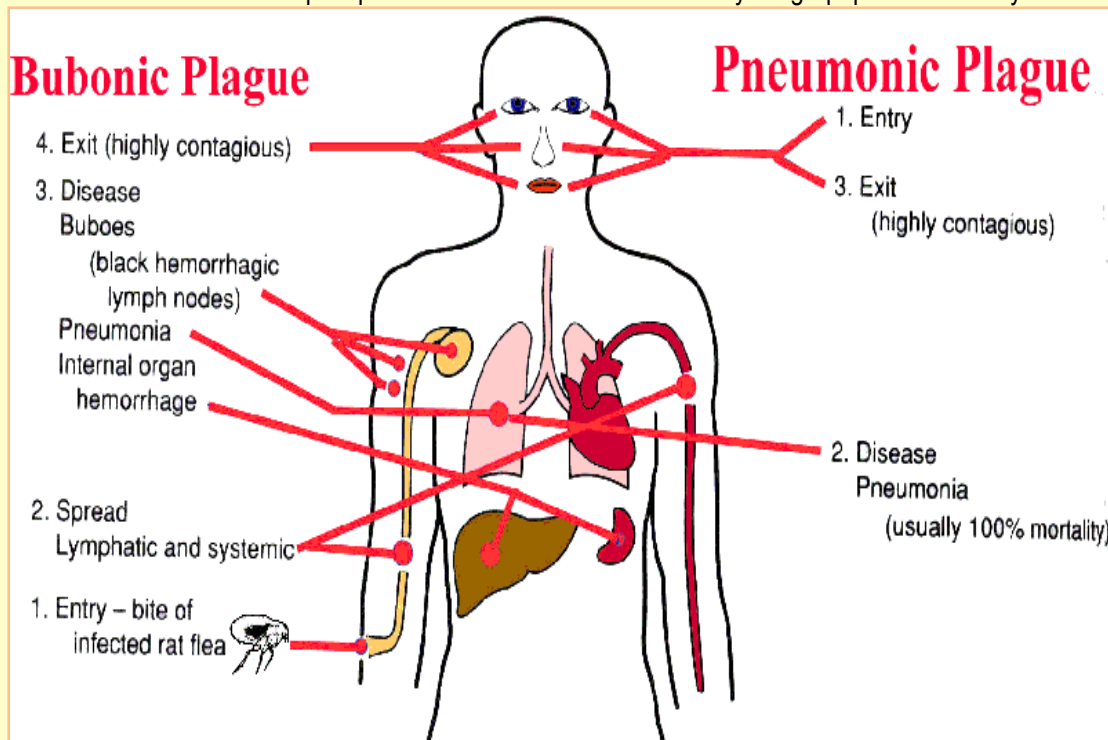
If diagnosed early, bubonic plague can be treated with antibiotics.

But 2% of the cases in Madagascar are the more dangerous pneumonic form of the disease, which can be spread person-to-person by coughing.

The first known case in the outbreak was a man in Soamahatamana village in the district of Tsiroanomandidy, about 200km west of Antananarivo, at the end of August.

There have been two confirmed cases in the capital, including one death.

"There is now a risk of a rapid spread of the disease due to the city's high population density and the



weakness of the healthcare system," the WHO said. A task force has been activated to manage the outbreak.





Last year health experts warned that the island was facing a plague epidemic unless it slowed the spread of the disease. It said that inmates in Madagascar's rat-infested jails were particularly at risk.



**CBRNE-Terrorism Newsletter Ebola Outbreak Log – stay tuned!**

