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RESHAPING OUR CBRNE RESPONSE PLANS

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By BrigGEN (ret'd) Ioannis Galatas, MD

Athens 2004 Olympic Games was the first Summer Olympiad after 9/11 catastrophe and the subsequent anthrax letters' global scare. Therefore a CBRN security plan was included for the first time in the overall security plans accompanying all mega sport events. This plan was designed by a group of Greek civilian-military experts (author was amongst them) in collaboration with the Olympic Security Advisory Group comprised from experts from 7 countries (United States, the United Kingdom, Germany, Israel, Australia, France, and Spain). Same plan with minor differences was advocated in following 2008 Beijing Olympic Games and 2012 London Olympiad – and most probably is about to be implemented during the Rio 2016 Olympic Games in a *copy-and-paste* procedure traveling from one organizing country to the next one.

But is this plan good enough to be trusted or do we have to revise it or even change it completely? One might wonder why changing a plan that have never be tested to conclude if it is good or not with another that will also be theoretical until tested under real operational environment? This article will try to pinpoint the pros and cons of the "old/current" plan and propose a new approach where advantages will minimize deficiencies and fill certain existing gaps. Of course "*no plan survives contact with the enemy*" (German Field Marshal Helmuth Karl Bernhard Graf von Moltke The Elder [1800-1891]) and "*a bad plan is better than no plan at all!*" (Emmanuel Lasker – German chess player, mathematician, and philosopher who was World Chess Champion for 27 years [1894-1921]) But if we can make a plan better why not give it a try?

The CBRNE threat

The CBRNE acronym replaced old (Cold Era) NBC first as CBRN and later on as CBRNE. In terms of emergency in urban environment this term should be coined to CRE for two reasons: (1) because B-threat is a gradually progressing emergency depending on the incubation time of the agent released; and (2) because the N-threat is quite remote (but always present).

The release of C/R agents could be overt (attacks in Syria) or covert (Tokyo sarin incident), with or without an accompanying explosion (i.e. RDD/RED). A secondary IED is always expected on site aiming First Responders.

A CR attack can take place during a mega event but also during a normal day. Capital cities and small towns can be equally become targets.

A CR attack can happen in: (1) an anticipated "single" target (i.e. opening/closing ceremony in a mega sport event); (2) "multiple" targets in the same city during a mega event or "multiple" targets in different cities; (3) other target distant to main mega event venues. Agents released can be either "C" or "R" alone or combination (CRE).

The "old/current" plan

According to this plan the state's CBRNE response plans follow the timeline below:

- Notification of an incident resulting in casualties in a mass gathering place (i.e. stadium);
- Traditional First Responders (police, fire service, ambulance service) rush to the scene;
- Initial evaluation of the scene is indicative that it is not a traditional explosion or that victims experience symptoms and signs resembling release of hazardous materials.

- General state alert and activation of specialized First Responders rushing to the incident site;
- When on site they deploy their decontamination equipment, dress their PPE (usually Level-A) and enter the Warm Zone to extract victims;
- Fast triage is conducted in place;
- Ambulatory victims are directed to a mass decontamination tent;
- Non-ambulatory victims are decontaminated and roper First Aids are provided;
- Following verification of successful decontamination, "clean" victims are transferred to the nearest hospital for further evaluation (triage) or hospitalization if in serious condition.

The Tokyo subway sarin experience (March 20, 1995)

- There was no bomb explosion;
- Commuters were exposed to sarin vapors (purity: 30%) released from a plastic bag left in one of the wagons during rush hours with hundreds of passengers stepping in it;
- Many commuters experienced symptoms and signs of exposure to chemical warfare agent in many stations of the subway system;
- Severely affected victims remained in place unable to move or escape (estimated ~20%);
- Those with less severe symptomatology (~80%) escaped the scene and rushed to the nearest hospitals on their own (by foot, with taxis, cars, motorcycles, buses);
- Although St. Luke's bore the brunt of the disaster (641 patients that day, and over 1,400 patients the following week), 278 Tokyo hospitals and clinics saw 5,510 patients, seventeen of whom were deemed critical, thirty-seven severe, and 984 moderately ill. The cases classified as moderate complained only of vision problems (e.g., myosis). In all 5-6,000 persons were exposed. 3,227 went to hospital, of whom 493 were admitted to 41 of Tokyo's many hospitals. Only 17 developed severe symptoms requiring intensive care. In all twelve people died from the sarin exposure;
- Of the 1,364 firefighters who rushed to the various subway stations, 135 reportedly were injured while attending to victims. This number equates to roughly 10 percent of the firefighters, but the injuries were not of a serious nature. At St. Luke's, the medical staff saw a few symptomatic police and a group of about twenty firefighters, who exhibited only mild effects (e.g., eye problems, headache) and were therefore released in the afternoon. Similarly, a total of 135 Tokyo EMTs, or about 10 percent of those who responded on March 20th, showed exposure symptoms and required medical treatment. The majority of these EMTs became symptomatic while transporting patients, probably because of off-gassing from the victims in the poorly ventilated ambulances. Authorities ordered the windows of ambulances opened which alleviated the problem. The secondary exposure problem in Tokyo was not too grave because no rescuers required antidote treatment. Although the on-scene rescuers after Aum's June 1994 attack in Matsumoto were similarly vulnerable, just over 7 percent of the first responders there became symptomatic, and only one of the affected rescuers sought medical assistance."
- It took almost 3 hours to recognize the nature of the agent released
- Two workers died after they removed the newspaper that had concealed the agent and absorbed some of it.
- Because no information that the incident was caused by poison gas was available in the first few hours of the attack, patient decontamination was not initially attempted, and 23% of the 472 house staff that were exposed to contaminated patients showed signs of sarin poisoning.

- 85 percent of the patients were “psychogenic cases,” or worried well. Mathewson claimed, without a supporting reference, that 9,000 psychogenic patients presented themselves to local health care facilities.

Pros of existing plans

Just the existence of a plan leading to a deployment of forces in order not to be accused that the state under attack was not prepared to deal with new emerging threats. This along with the realistic excuse that no nation worldwide is able to counter such an attack in urban environment no matter how strong the nation is or how thoroughly it is prepared. This combination will provide a subconscious reassurance to populace that the problem was immense to handle but we did our best to confront it. Partially true! But what if we can do better and greatly minimize the consequences of such brutal attack?

Cons of existing plans

- Problems identified in the aftermath of Tokyo sarin attack indicate the importance of three important numbers mentioned above: (1) ~20% will remain in place (dead, severely wounded or contaminated or both); (2) ~80% will escape the scene and rush to all hospitals and clinics in the affected city; and (3) worried well in a ratio approximately 1:5 (contaminated vs. worried well) will overwhelm hospitals or lead health system into collapse.
- Due to traffic jam (prominent in many big cities and capitals of today) heavy response vehicles will not achieve their normal times of intervention (i.e. 5-15 min for ambulances or fire engines). First Responders cannot fly and victims will surely not wait for them (especially when information about chemicals' release will become virulent among the public). And do not count on the fact that emergency lanes would be free of cars and that traffic deviations will be effective with the press of a button!
- Traditional First Responders most probably will be victimized due to lack of personal protective equipment and specialized knowledge and training.
- All victims will end up at the hospitals.
- Hospitals (especially those in close proximity) do not have fixed decontamination stations and adequately trained personnel to deal with mass CR casualties.
- CBRNE Medicine is not included into the curricula of universities' medical and nursing schools. In that respect why do we expect front-line health professionals to be able to recognize the signs and symptoms of such an attack?
- Populace that is the most important player in every state's CBRNE response plan is emphatically left out of the game conjuring the global excuse of "not to panic the people!"

The new approach

The new proposal is based on four pylons: (1) The fact that casualties will end up at all city's hospitals and clinics; (2) The fact that First Responders will not approach Hot Zone on time; (3) The fact that EDs personnel (and hospitals) are not able to recognize and manage mass CR casualties (but also B-casualties as it was recently proven with Ebola virus outbreak – or better pandemic); and (4) The fact that populace is totally unprepared to follow directives in case of CBR release. To the above one can add the renewed interest of terrorists (mainly Islamic State) on the possibility to use CBR agents against their enemies both in their areas of operations and in our part of the world.

Based on the above, the proposed plan's timeline could be unfolded as following:

- Notification of an incident resulting in casualties in a mass gathering place (i.e. stadium);
- Traditional First Responders (police, fire service, ambulance service) rush to the scene;

- Initial evaluation of the scene is indicative that it is not a traditional explosion or that victims experience symptoms and signs resembling release of hazardous materials.
- Traditional First Responder put their "escape hoods and rubber gloves" on (standard operational gear) and establish a pre-defined cordon (e.g. 500m-1km) around the incident site (Hot Zone);
- At the exit sites of the roads leading away from Hot Zone they guide escaping victims to a given hospital destination (if affected from agents' released) or an assembly point (if not obviously affected); police make necessary traffic deviations to provide fast access to people on foot or vehicles of all kinds. If the nearest hospital is at a distance for those on foot then fire service will guide them through "water curtains" (high volume, low pressure [60psi] "wet" decon), redress them and load them into mass transportation means that will carry them to destination hospital(s).
- In parallel CBRNE/HAZMAT First Responders fortify the premises of nearby hospitals (crowd control, decontamination facilities, First Aid Stations etc). At the same time specialized responders approach and enter the Hot Zone to conduct specific duties as fast as possible (due to time/oxygen limitations of their Level-A PPE): (1) scene assessment, casualties at scene, exploitation for secondary IEDs, sampling [air, liquid, soil], detection (CRE) and report to HQ or Incident Commander. They can be accompanied by ground robots (UGVs – for expected victims' evacuation and later for collection of dead bodies). Simultaneously UAVs map the incident site and together with info provided by entry teams state's experts design the contaminated plume released and its direction within the urban web.
- Contaminated plume might require "sheltering-in-place" and populace act accordingly because they are aware what this means and how to do it.
- Hospitals and front-line health professionals recognize the "toxidrome" (a portmanteau of toxic and syndrome) as a result of their university training and drills and act accordingly in a safe mode.

Practically instead of First Responder going to the Hot Zone, I propose Hot Zone victims' going to First Responders. This approach overcomes the following gaps present in current planning: (1) traffic jam/late arrival; (2) uncontrolled inflow of victims at hospitals; (3) unavailability of hospitals' decon stations; (3) uncontrolled flow of worried well; and (4) escape of mildly contaminated victims returning to their homes.
New proposal is not easy to accomplish since it requires careful study and continuous updating of targets and cordon/redirection/management process. But when the new prototype operational algorithm is set then it would be easily applicable to any given CRE incident saving time that equals lives.

Testing the new approach
Drills are the tools to test any plan. But we have to change the way we conduct drills as well. Usually CBRNE drills: (1) end the moment that casualties are inside the ambulances; (2) are organized in a pre-defined date and time; (3) are conducted during working hours. These common global features have nothing to do with reality! In that respect and following the right procedure of preparation (education-training-tabletop exercises-in-hospital drills) we have to simulate real life into specialized drills. A high official arrives at the ED of a major hospital and declares the type of drill (e.g. C/R/E or CE/RE). This can be done at 07:00 or 19:00 or in a national holiday or during summer vacations. Because this is when bad things happen in real life!
Same realistic conditions apply for the scenarios tested as well. Take for example the "single" attack in a "given" target like the opening ceremony of Olympic Games. In a setting like this all our response forces are in high alert surrounding the venue-target. But do you think it is possible to control the out coming flow of 80,000 contaminated spectators? Can you imagine the space we need to deploy our assets and the huge

effort when comes to crowd control – not to mention the sources that would be needed during the first hour following the incident. We design scenarios where a small airplane sprays a deadly chemical over the stadium and then we confront the casualties as if they were 100 or 200 the most. Play the game with 1,000 and you will see the difference! Play it with 10,000 and you will see the Apocalypse – this is war not terrorism!

CBRNE Medicine

So far in all mega events' organizers and nations give priority to the Hot Zone intervention (80%) and only small portion (20%) of the overall budget is allocated for medical/hospital response. Whether we like it or not, the consequences are of medical content and they might last for days, months or years (personal experience following a medical training organized by OPCW (2003) during the preparatory phase for 2004 Olympic Games in a central military hospital in Tehran where thousands of chemical victims from the Iran-Iraq war (1970s) were still treated on daily basis). Inclusion of "CBRNE Medicine" into the curricula of medical/nursing university schools is mandatory and will enhance both the knowledge and differential diagnosis capabilities of future front-line health professionals manning EDs of our hospitals. A second step towards the same direction could be a "European CBRNE Medical Training Academy" providing unanimous training (both theoretical and practical/hands-on) in a massive way to EDs physicians and nurses of major hospitals in all EU member-states.

International cooperation and assistance

We must keep in mind that each and every country will face the CRE crisis alone. There is no time to wait for international assistance (means and experts) and if given (even within hours) it would be too late to be effective due to the nature of the agents released. International cooperation and assistance would be surely effective during the prevention period (intelligence sharing, training, etc) and the aftermath period (rehabilitation, massive ground/infrastructure decontamination, bone marrow transplantation etc).

Populace awareness campaign

Modern populace all over the world grew up not only into contact with traditional disasters (wildfires, massive floods, catastrophic earthquakes/tsunamis etc) but also by watching live wars, conflicts, bombings, decapitations, chemical weapons usage in urban areas to name a few of 21st century terrifying threats. It would be naïve to support the "panic" excuse. If we manage to accomplish a successful CBRNE awareness campaign we will achieve to incorporate populace as important asset to our response plans. If we start this campaign from elementary schools all the way to professional groups then, half the battle would have been won. Simple measures and basic information might one day save the lives of many. It has been done for earthquakes; why not for new emerging threats. Knowledge is power and sharing this power will have a positive effect in the overall state defense and life continuation.

Conclusion

"The nicest thing about not planning is that failure comes as a complete surprise, rather than being preceded by a period of worry and depression!"

Sir John Harvey-Jones (BBC "Troubleshooter" series)

Experience has shown us that there is a gap between the planning phase and the actual "human" response to major incidents, especially chemical ones. Hence, human factors must be taken into consideration during preparation as plans designed on ideal responses (old/current plan) from both citizens and emergency responders will simply fail. Plan for what people will actually do, not for what they should do (new

approach/plan). In that respect CBRNE planners should be characterized by two qualities: (1) personal hands-on experience on CBRNE operations and peculiarities (in most cases they do not); and (2) be able to sincerely answer a very simple question: "What would have been my personal reaction if I was involved in a real C(B)R(N)E incident in my living environment". Rio2016 Olympiad is only 18 months away and perhaps it is a good time to think of reshaping our CBRNE response on more solid and logic grounds. ■

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Since 2001 he has been involved in CBRNE operations as planner and instructor trained (including live agent training) in a number of countries abroad. His main passion is "Hospitals' CBRN Defense & Preparedness in Megapolis Environment" and "CBRNE Design/Hardening of Critical Infrastructure" [airports, shopping malls, hotels etc]. During the 2004 Athens' Olympic Games, he served as Commandant of the Olympic Hospital CBRN Response Unit – the only hospital-based specialized unit (70 people) deployed for the Games.
He holds a Master degree (with merits) on "International Terrorism, Organized Crime and Global Security" from Coventry University, UK (2010) and he is a PhD candidate since May 2012 (Athens Medical School/Dept of Forensics & Toxicology).
His last appointment (as of August 2010), was as Head of the Department of Asymmetric Threats at the Intelligence Analysis Branch, Joint Military Intelligence Service of the Hellenic National Defense General Staff in Athens, Greece.
Currently he is the Editor-in-Chief of the monthly on-line "CBRNE Terrorism Newsletter" initiated in November 2005 and delivered freely to CBRNE-CT First Responders of more than 80 countries around the globe. He is also a Research Associate at "Center for Security Studies" (KEMEA), Athens, Greece. As of Jan 2015 he will deliver lectures at the University of Rome "Tor Vergata" (International CBRNe Master Courses).

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