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**Report No: DR/3.6**

**Report on a Table Top / Field Exercise at OSR to  
illustrate our Project Results to the European  
Community**

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## **Exercise CASUS 1 and 2 – Post Exercise Report**

### **Acknowledgements**

**The THREATS Project thanks all the agencies and individuals who participated in the planning and delivery of Exercise Casus 1 and Casus 2. We make special mention of the agencies and individuals who assisted in letting the exercise run alongside the MRMI course, inside of the OSR facility and the individuals who participated with great engagement in the Hospital Command Group.**

#### 1. Executive Summary

The final deliverable of the THREATS project was an enhanced table top exercise designed to illustrate and evaluate the application of some of the outputs of the THREATS project, including the toolkit from D1.6, to a prototype of a major health facility which is part of the critical infrastructure, namely the Ospedale San Raffaele in Milan.

The THREATS exercise ran concurrently with the MRMI exercise that was taking place at OSR at the end of May 2016 and was specifically tasked with testing the efficacy of the application of the products of the THREATS project. This included testing the toolkit at OSR at both a tactical and operational level. The participants were split into two groups – operational - consisting of the emergency department, operating theatres and ICU - and tactical – the Hospital Command Group consisting of the heads of the hospital's main assets' departments.

The THREATS exercise ran over two days – the first day, Exercise CASUS 1, simulated the effect of a second strike terrorist attack on OSR during the night with the hospital preparedness in an 'as-is' state. The second simulation was based on a similar event taking place during the working day and with the hospital control group having been exposed to the THREATS toolkit and the operational group assisted by some THREATS action cards.

There were four evaluators for each room and hot and cold debriefs were conducted with the participants. The observations and findings of both the evaluators and the participants are contained in this report. The performance of both the operational and tactical teams improved considerably on day two and they provided a proactive response to manage the simulated event. The exercise proved valuable for the vulnerability reduction process and highlighted that the tactical level should consider hospital vulnerabilities asset by asset and find solutions to increase their level of protection by working through the self-assessment questionnaire of the toolkit contained in D1.6. The exercises also highlighted issues with the hospital's emergency plans and communication and made it more aware of the need for Business Continuity planning. Significantly the exercise also confirmed that the first phases of the response to an emergency, in particular during the non-working hours (as exemplified in Exercise Casus 1), is managed by the operational level and that the increase of awareness and knowledge at this level is a crucial point in preparedness and consequences reduction of an unexpected event. Moreover, the exercise demonstrated that multi-agency collaboration and security awareness at OSR have already improved as a result of the THREATS project.

The THREATS exercise therefore allowed the project team to apply the results of the project to a major hospital and to measure the effects on vulnerability reduction to terrorism.

## 2. Introduction

### 2.1 Context

Exercise CASUS 1 and CASUS 2 were conducted as part of the THREATS project during the period 25-26 May 2016 at Ospedale San Raffaele in Milan. The exercise phase was a deliverable ‘output’ of Work Package 3 of the project and was scheduled specifically to provide an opportunity to conduct a ‘proof of concept’ of the products developed during the THREATS project in order to establish their utility to enhance preparedness and resilience within the Health Sector when responding to direct terrorist attacks to hospitals. The aims and objectives were stated as:

#### Aims –

- a. To illustrate the efficacy of the project results to the EU.
- b. To evaluate the THREATS toolkit.
- c. To emphasize the role of training medical personnel in increasing the resilience of hospitals to all emergencies including terrorist attacks.

#### Objectives –

- a) To simulate a terrorist incident inside a hospital already engaged in the management of a Mass Casualty Incident of terrorist matrix (THREATS “second strike” scenario) to demonstrate the efficacy of the THREATS project in increasing the protection of an EU hospital against terrorist actions
- b) To review the application of the toolkit in a post exercise audit of outcomes and current practices, in terms of vulnerability reduction to terrorism.
- c) To show that a training course on medical management of crisis, based on simulation, acts as an effective ~~a possible~~ additional system to increase the preparedness of the health personnel and as vector of other specific topics like security.

## 3. Medical Response to Major Incidents (MRMI)

The MRMI is an established course designed to train medical professionals to respond effectively to mass casualty events. The THREATS team observed two core elements being trained and practiced: the logistical chain and command and control (C2) required to triage and prioritize casualties on scene and convey them to suitable

definitive hospital care as quickly and efficiently as possible within the scope of available resources; and the medical assessment and care provided from the pre-hospital environment through the established hospital system to the point of optimum treatment.

The MRMI uses the Mass Casualty Simulation (MACSIM) system to facilitate the MRMI practical simulations. In simple terms the MACSIM system is a 'game' that uses cards to represent each casualty, providing sufficient physiological information to the medic to enable an assessment to be made. The casualty (card) is then processed through the logistical chain in accordance to the triage priorities but with realistic time and resource constraints imposed. The MRMI instructor cohort is able to assess each casualty and provide an informed assessment of the most probable outcome at the end of the simulation.

In order to fulfill all the roles that would be required for a real mass casualty incident there are opportunities for other emergency responders, such as police, ambulance and fire & rescue, to participate. In addition, coordinating activity within a 'Regional Command Centre' is simulated and also each hospital command group are represented by role players.

#### **4. MRMI/ THREATS Joint Exercise Approach**

The MRMI is designed to train medical professionals through an initial theory based learning session followed by a simulation exercise and then a summative assessment conducted by a second simulation exercise. The extensive debriefs provide an opportunity for reflective learning within the specific groups and teams, but also wider within the collective course group. The MRMI participants were predominantly medical doctors and nursing professionals. During the simulations members of the state police, local police and fire & rescue services participated to fulfill their requisite roles. OSR specifically proposed the utilisation of the MRMI based exercise at OSR to test the concept and applicability of the outputs of THREATS, and in particular D1.6, the THREATS toolkit.

#### **Participants**

The THREATS exercise was intended to 'test the efficacy' of the products of the THREATS project. This involved testing some of the outputs of THREATS, at both a

tactical and operational level, and was very much reliant upon the appropriate participants from OSR attending both simulation exercises and provide an emergency management response to a serious incident, based upon the OSR facility but represented within the MRMI virtual environment of ‘Anyland’ as ‘East City Hospital’ (please see Appendix 1 for a map of ‘Anyland’).

The participants were split in 2 different groups and rooms: operational (emergency department, operating theatres and ICU) and tactical level (Hospital Command Group). The Hospital Command Group was formed by the real Heads of OSR main assets departments or delegates (see the table below).

Name	Role	Organization
Carl Dakin	Exercise Co-Director	THREATS Coordinator
Susan Cook	THREATS Observing Staff	THREATS Project Management Office
Julien Fondrevelle	THREATS Observing Staff	THREATS WP2 Representative and INSA scientist
Stefano Grassi	THREATS Observing Staff	THREATS OSR WG, IRIS
Stefano Belfiore	Security	Senior OSR Security Officer (Vigilanza Emergenza)
Neva Pasqualini	SPP (Prevention and Protection Service)	Head Prevention Services (RSPP)
Goffredo Prestini	DAT (Technical Direction Staff)	Deputy-Head Technical Direction Staff (DAT)
Matteo Moro	Health Direction	Chief Medical Officer
Stefano Rolandi	Nursing Direction	Nursing Coordinator
Giuliano Pozza	Head IT Services	Director IT Services
Riccardo Pizzo	Customer Care Services	Head Customer Care Services
Gea Gardini	Media Relations OSR	Senior Officer Media Relations OSR
Antonio Limardi	Human Resources	Head Human Resources

The “operational level” of the hospital was represented by

Name	Role	Organisation
Roberto Faccincani	Exercise Director and MRMI Instructor	THREATS WP3 lead and OSR physician
Itamar Ashkenazi	THREATS Observing Staff and MRMI Instructor	THREATS advisor
Maria Teresa Cibelli	THREATS Observing Staff and MRMI Instructor	THREATS OSR WG and OSR nurse
Daniele Baranzini	THREATS Observing Staff	THREATS OSR WG, IRIS
Valentina Tomajer	Surgeon	OSR Senior Surgeon

Annalisa Gagliano	Surgeon	OSR Junior Surgeon
Maria Chiara Salandini	Surgeon	OSR Junior Surgeon
Massimiliano Greco	Anesthesiologist	OSR Anesthesiologist
Stefano Franchini	Physician	OSR ED Physician
Daniele Fontana	Administrative Staff	ED Administrative Staff
Mauro Caramaschi	DAT (Technical Direction Staff)	Technician (gas expert)
Michele Crisopulli	DAT (Technical Direction Staff)	Technician (water expert)
Gaetano Squeo	DAT (Technical Direction Staff)	Technician (power expert)
Massimo Colamartino	DAT (Technical Direction Staff)	Technician (water expert)
Vincenzo Rollo	Security	OSR Security (Vigilanza Emergenza)

Subject matter experts were called in on occasion.

## 5. Exercise Planning

An exercise planning team was established by the WP3 lead from across the THREATS consortium and MRMI as follows:

Name	Organisation
Carl Dakin	Hanover
Chris Arculeo	Hanover
Mick Massey	Hanover
Carol Morey	Hanover
Susan Cook	Hanover
Sten Lennquist	MRMI
Kristina Lennquist Montan	MRMI
Carl Montan	MRMI
Itamar Ashkenazi	MRMI
Pier Luigi Ingrassia	Crimedim
Ahmadreza Djalali	Crimedim
Alain Guinet	Insa
Julien Fondrevelle	Insa
Sauro Vicini	OSR
Stefano Grassi	OSR
Daniele Baranzini	OSR
Roberto Faccincani	OSR

Exercise planning meetings were held remotely by Skype call on 16<sup>th</sup> October 2015, 16<sup>th</sup> March 2016, 30<sup>th</sup> March 2016, 11<sup>th</sup> April 2016, 27<sup>th</sup> April 2016, 5<sup>th</sup> May 2016 and 18<sup>th</sup> May 2016. A final exercise planning meeting was held at OSR on 24<sup>th</sup> May 2016 at 14.40 CET.

It was decided to hold two exercises (Exercise CASUS 1 and 2), both simulating the effect of a second strike terrorist attack on OSR. The first simulation was based on an event occurring during the night and with the hospital preparedness in an 'as-is' state.

The second simulation was based on a similar event taking place during the working day, with the hospital control group having had some exposure to the THREATS toolkit and the key operational players having been introduced to the THREATS action cards.

## 6. Exercise CASUS 1 Scenario

Exercise CASUS 1 was conducted alongside the first MRMI simulation on day two of the MRMI course (May 25<sup>th</sup>).

The initial emergency event occurred during the late evening at a large hotel in a vacation resort (Paradise Resort) in the 'Anyland' virtual world (see Anyland map in Appendix 1) where a terrorist attack had caused two explosions resulting in significant casualties. The emergency response kicked in as expected and all hospitals within the simulation, including East City Hospital, representing OSR, were alerted to receive a large number of casualties. Once the initial casualties started to arrive at East City Hospital a terrorist wearing a suicide IED belt was brought to the hospital by a private car and entered the ED pretending to be a "walking wounded" coming from the scene of the first strike. The terrorist detonated himself inside the triage area, causing a lot of casualties and damage.

The operational level was able to activate the internal emergency management plan according with the 'as-is' hospital procedure, but the response was chaotic and ineffective, causing a delay in managing the emergency and the casualties.

The HCG had already started to arrive following the invoking of the hospital emergency response plan that was activated in response to the initial event. The HCG was provided with information to enable them to gain an understanding of the situation and manage the hospital response and recovery within the scope of the established ('as is') internal emergency management plan, but as we say the casualty management, the different actions and the flow of communications were not very well organized and finalized.

## 7. Exercise CASUS 2 Scenario

Exercise CASUS 2 was conducted on day three of the MRMI course (May 26<sup>th</sup>) and the simulation reflected normal working hours and availability of resources. An initial terrorist attack took place at a conference centre in 'Anyland' capital city of Major City, whereby an explosion resulted in a large number of casualties. As per the first simulation the medical response kicked in and the incident was being managed.

A second strike terrorist attack occurred at East City Hospital when a terrorist wearing a suicide IED belt was brought to the hospital by a private car and entered the ED pretending to be a "walking wounded" coming from the scene of the first strike. The terrorist was neutralized but the IED detonated causing damage to the ED and casualties. The operational level, having been already briefed on the THREATS toolkit and provided with some THREATS action cards, was able to handle the situation much better.

The HCG was able to convene quickly because they would have all been on-site during the normal operating hours of the hospital. They were provided with adequate and relevant information to manage the hospital response and recovery as per the hospital incident management plan and with the benefit of the THREATS toolkit that was provided at the end of the first simulation on day two. It is to be noted that the toolbox is not prescriptive; its aim is to draw attention and to stimulate consideration of essential points.

## 8. Evaluation/Findings

### 8.1 Evaluation Approach

There were four evaluators for each room (operational and HCG) who observed and took notes. An audio recording of everything that was said in the HCG room was also made and referred to for accuracy of detail.

There was a "hot" debrief for each team members immediately after the exercise on both days of the exercise. There was also a "cold" debrief via email in June 2016 and a formal post event review meeting has been held in OSR on June 23<sup>rd</sup>

As part of the exercise, evaluators and facilitators:

- were given an information pack, including the toolkit and instructions for evaluating

- attended face-to-face orientation meetings the day before the exercise
- received briefings before each exercise day.

Information about the results of the exercise was collected from:

- observation notes and comments on exercise play from observers
- narrative feedback from exercise participants
- hot debriefs with participants, facilitators and observers, including comparison of available information during the exercise between the HCG and the operative level
- cold debriefs with participants, facilitators and observers.

The observations and findings from the observers and facilitators are presented below. For the HCG, efforts have been made to identify where the observation ties into the toolkit, and additionally where revision of the toolkit may be considered in the light of the exercise. There is a tension in designing the toolkit between providing information and providing advice; advice should necessarily be context dependent and the toolkit is generic. For this reason, it is anticipated that, after due consideration, of the areas that feature in the observations on the toolkit not all of them will be altered and adapted into the final version of the toolkit.

## 8.2 Observations and findings

Exercise CASUS 1	
<b>1</b>	<b>Finding/ observation</b>
	Hospital incident management plans were in place but had not been tested/exercised or rehearsed by the nominated HCG together i.e internal and external emergencies concurrently.
	<b>Identified Gap</b>
	No collective training and testing had been conducted by the HCG.  There seems to be a lack of clarity of roles e.g. at 22.10 there was a discussion on who should call the fire department and it was decided that someone needed to tell the receptionist to do so
	<b>Comment</b>
	The HCG were not familiar with their respective individual or team roles within an emergency situation. E.g. once they knew there was a maxi-emergency they were not confident of who had to be informed.
	 <b>How the Toolkit might address the gaps</b>
	THREATS tool 2 security planning covers crisis management plans and their exercising.
	<b>Improvements for consideration</b>
	THREATS tool 2 security planning should consider stressing roles and responsibilities
<b>2</b>	<b>Finding/ observation</b>
	The security plan did not seem to include any spare capacity to react to extraordinary events
	<b>Identified Gap</b>
	<ul style="list-style-type: none"> <li>• Security policy? Not seen.</li> <li>• Ability to quickly search/check hospital for other suspicious articles (Op WIDEAWAKE).</li> <li>• Ability to control pedestrian/ vehicle access (controlled lockdown).</li> <li>• Ability to isolate essential services from ED – to isolate the medical gases (O2) mains supply to the ED would disrupt the remainder of the hospital.</li> <li>• Limited ability to restrict vehicle access to the hospital site – numerous vehicle access points – beyond the capacity of the small security team to manage.</li> </ul>
	<b>Comment</b>
	The Hospital Security Manager was also a member of the operational security team. It seemed more probable that his role was limited to the daily supervision of his team of six security officers, and probably did not include supporting hospital management decision making process at tactical level.  It was not clear that the full impact of the ED being a crime scene was apparent to the HCG or that anyone felt competent to make a dynamic risk assessment.
	 <b>How the Toolkit might address the gaps</b>
	THREATS tool 2 security planning covers security plans and their exercising. THREATS tool 2 security planning covers search plans and their testing. THREATS tool 2 security planning covers lockdown. THREATS tool 3 physical security covers access control systems.
	<b>Improvements for consideration</b>
	THREATS tool 2 security planning should consider mention of extra capacity. Should THREATS toolkit consider mention of dynamic risk assessment? Should the toolkit consider mention of the capacity to reallocate resources? Should the toolkit mention the importance of keeping a crisis coordinator clear of operational concerns?
<b>3</b>	<b>Finding/ observation</b>

	Communication strategy was limited – to report up and down the internal chain of command and externally to government, other agencies, media and the public.
	<b>Identified Gap</b>
	<ul style="list-style-type: none"> <li>• No single point of contact within the HCG.</li> <li>• No formal record of decisions made – incident log.</li> <li>• No record of events (SITREP – situation report) – incident log.</li> <li>• No ability to access the hospital website during out of hours – to update hospital statement and provide emergency helpline details.</li> <li>• Not clear who was briefing the press officer or whose views she was conveying at the press conference.</li> <li>• No account taken of what might be on social media.</li> <li>• Not clear how to communicate with or organise the off duty staff who began returning to OSR.</li> <li>• Some people probably informed of emergency too late e.g. IT head.</li> </ul>
	<b>Comment</b>
	<p>The HCG did not seem to be clear on the importance of getting clear information in order to make gain situational awareness to make decisions, e.g. there was a belief that “it was a bomb” but with no clarity about where that information had come from and whether it was accurate.</p> <p>There did not seem to be clarity that it should affect procedures if the cause of an explosion was a bomb both from the viewpoint of securing OSR and from the viewpoint of informing the Regional Command Centre to alert other hospitals.</p> <p>At 22.10 the CMO did pick up the pen and try to work out which roles were represented.</p>
	<b>How the Toolkit might address the gaps</b>
	THREATS tool 2 security planning covers crisis management plans and their exercising.
	<b>Improvements for consideration</b>
	<p>Should the toolkit mention media, website and social media?</p> <p>Should the toolkit mention surge demand management?</p> <p>Should the toolkit mention communication?</p> <p>Should the toolkit mention a checklist of who to call when?</p>
<b>4</b>	<b>Finding/ observation</b>
	HCG roles and responsibilities
	<b>Identified Gap</b>
	<ul style="list-style-type: none"> <li>• Lack of clearly defined roles</li> <li>• Responsibilities not well-defined</li> <li>• Lack of discipline about being present in the HCG</li> <li>• Some people were not available when important decisions needed to be made</li> </ul>
	<b>Comment</b>
	Need to define rules so that the HCG is not left empty
	<b>How the Toolkit might address the gaps</b>
	THREATS tool 2 security planning covers crisis management plans
	<b>Improvements for consideration</b>
	THREATS tool 2 security planning should consider stressing roles and responsibilities

As the THREATS toolkit is mainly directed at the strategic and tactical levels of hospital management, some action cards were produced by the WP3 Working Group, to assist the operational level. They provide guidance on security procedures in the case of a terrorist act and their aim is to aid a prompt and appropriate reaction to a direct attack on the hospital.

The action cards address the three functions who are operationally the key players in protecting OSR: namely, the in-hospital police staff, the internal security staff and the Hospital Disaster Manager (HDM). This action cards are prototypes: and based on the results of the exercise feedback OSR plans to improve and expand them to be an integrated part of the hospital's crisis response procedures.

The action cards were used on the second THREATS exercise and their intention is:

- 1) To take advantage of the presence inside the hospital of a police post and to propose an early warning system to raise the level of alert in accordance with any increased risk. This involves sharing and processing police intelligence within the hospital to increase the level of protection appropriately
- 2) To suggest a procedure to increase the level of security of the hospital for the internal security staff
- 3) To increase security awareness and knowledge of health personnel and in particular the HDM who is responsible for managing of the first phases of any incident

Exercise CASUS 2	
<b>1</b>	<b>Finding/ observation</b>
	Using a Single point of contact Keeping a log e.g. 9.30 day 2 writing everything on board Listening to security e.g. 9.35 day 2 Head of IT briefing the Press Officer rather than her going to press un briefed Better integrated team in HCG: each member seems to know what is his/her role and responsibility
	<b>Identified Gap</b>
	<b>Comment</b>
	<b>How the Toolkit might address the gaps</b>
	<b>Observation on Toolkit</b>
	Perhaps the toolkit could suggest that there is a central coordinating point to receive calls?
	.
<b>2</b>	<b>Finding/ observation</b>

	Suicide bomb detonated 9.40 at 10.55 RCG still hadn't been informed
	<b>Identified Gap</b>
	Still working somewhat in isolation with a lack of understanding of interdependencies
	<b>Comment</b>
	It's important if Health is part of the CI to understand that you are not JUST a hospital in isolation but part of the CI and act accordingly e.g. with information
	<b>How the Toolkit might address the gaps</b>
	<b>Improvements for consideration</b>

Generally speaking, the communication inside the HCG and between the HCG and the operative level and the Regional Command Center was more fluid.

The evaluation of the two exercises was collated by the THREATS monitoring team using a checklist of key performance indicators (KPIs) set up (see Appendix 5). The results of the evaluation are as follows:

## DAY 1

### Specific results: (quantitative)

The performance of the operational teams in ED (HDM, ED health personnel, non-health personnel, police post staff, internal security) was ineffective to manage the simulation exercise.

In particular, according to the checklist for KPIs evaluations **9 out of 17 KPIs were negative, and 2 were partial positive**. In general, the indices and key steps revealed failures in several communication and decision making issues between and across teams in operations.

Note: the team was exposed to the scenario simulation for the first time.

### General results: (qualitative)

In day 1, the team involved provided the following observable team/individual behaviours:

- 1) Pre-briefings (before exercise simulation) did not target role allocation and decision making strategies. All discussions were centered on reviewing the basics of the scenario simulation
- 2) The communication structure was not effective and multiple reporting occurred during the exercise
- 3) No apparent participatory or directive leadership strategy present
- 4) No delegation skills were present from HDM. Moreover, too much information was coming into the HDM for him to process.
- 5) No systematic time-based briefings
- 6) Although the role of the HDM was clear, no leadership and group guidance was evident
- 7) Actions were mostly reactive (to events as they unfolded)
- 8) There was very poor shared situation awareness due to no formal communication strategy (e.g. no briefings)
- 9) It was clear that the internal emergency management plan was not coordinated with the external emergency management plan.
- 10) The threat of a possible increased security risk was not handled at all
- 11) The HDM and HCG communication was sufficient. However, no coordination was evident.

## **DAY 2:**

### **Specific results: (quantitative)**

The performance of the operational teams in ED (HDM, ED health personnel, non-health personnel, police post staff, internal security) improved considerably since day one beyond a learning curve effect. The improvements provided a more proactive response overall throughout the management of the simulation exercise.

In particular, according to the checklist for KPIs evaluations **1 out of 17 KPIs were negative, and 2 were partial positive.** In general, the indices and key steps in actions revealed sufficient communication and improved decision making methods (e.g. briefings) between and across operational teams.

Note: the team was exposed to the scenario simulation for the second time. They received a briefing on the THREATS toolkit after day 1 which was particularly applicable for the tactical hospital management team.

### **General results: (qualitative)**

In day 2, the team provided the following observable team/individual behaviours:

- 1) Pre-briefings (before exercise simulation) focused on role allocation and expectations; there were preliminary agreements on the communication structure during exercise and some decision making strategies were discussed.
- 2) Communication structure was effective and made use of continuous briefings throughout the exercise.
- 3) A form of situational leadership strategy emerged and was the primary mechanism to share team situation awareness
- 4) HDM delegated tasks appropriately
- 5) There were systematic and timely briefings
- 6) Some primary decisions were proactive and anticipated expected problems
- 7) A favourable shared situation awareness was evident which resulted in reduced communication errors and misunderstandings
- 8) The internal emergency management plan was not coordinated with the external emergency management plan
- 9) The possible increased security risk was handled well with the result that the suicide terrorist was prevented from detonating inside the ED. For exercise reasons we decide to let the bomb explode, in order to monitor the team's reaction to the event, but the event could have been prevented, and then the consequences of the explosion would have been much less disruptive
- 10) The HDM and HCG communication was proficient and timely.
- 11) Coordination and planning was evident

### ***General Comments***

- In general, a lack of decision support technology is evident in both simulations, such as emergency planning checklists, optimisation planners and technological support to reschedule resources when they are in short supply.
- Internal or external emergency management plans have disjointed processes. More cross plan coordination is recommended.
- The lead roles of maintenance, police and fire brigade with HDM should be revised to enhance organisational efficiency.

### 9. Exercise Participant Feedback and Observations

OSR participants were asked to provide feedback and observations about their individual and collective experiences of the exercise. They were requested, where

relevant, to comment on the utility and effectiveness of the THREATS toolkit and the OSR action cards introduced during the second simulation.

The information collected during Exercise Casus 1 and 2 was evaluated and analysed using qualitative processes. Judgement was used to draw conclusions and identify the cause of problems identified in the comments.

There was a de-brief meeting held on June 23<sup>rd</sup> for the HCG to share their feelings and experiences. Some of the participants to the exercise could not attend this meeting: they sent some notes through e-mail. For some others we only rely on the hot de-briefing at the end of Exercise Casus 2.

Ser	Name	Role	Comment
	Roberto Faccincani	OSR THREATS PI	Taking notes
01	Neva Pasqualini	Head SPP	Present
02	Matteo Moro	Senior Representative Health Direction	Present
03	Goffredo Prestini	Head Deputy DAT	Present
04	Belfiore Stefano	Deputy Head Security	Present
05	Pozza Giuliano	Head IT Dept	By e-mail
07	Gea Gardini	Media Relations Senior Officer	Hot debrief
08	Antonio Limardi	Head HR	Hot debrief
09	Riccardo Pizzo	Head Costumer Services	Hot debrief
10	Stefano Rolandi	Nursing Dept Senior Officer	Hot debrief

The participant feedback was as follows:

- 1) Participation in the exercise was extremely useful in terms of:
  - Identifying some hospital vulnerabilities
  - Finding solutions and countermeasures to a direct terrorist attack against the hospital
  - Reviewing the emergency plans in general, and not just the specific terrorist scenario
  - Testing the THREATS toolkit as a guide for the vulnerability reduction process against terrorist attacks.
- 2) The THREATS toolkit seems very effective in helping:
  - The Strategic level to position the hospital criticality inside the Local, Regional and National and maybe even International Health System. It gave the HCG a chance to reflect on the consequences of disruption/destruction of the hospital's normal activity. It also made OSR more aware of its criticality, not only for providing elective medical services to the local population, but also for providing emergency medical care.
  - Highlighted the need for Business Continuity planning in order for the hospital to continue serving the local population

- The tactical level should consider hospital vulnerabilities asset by asset, according with their specific function and find solutions to increase their level of protection
- 3) The main outputs from the exercise have been identified as follows:
- It has highlighted the fact that although OSR already invested time and resource in the development of emergency management plans, both external (plan for massive afflux of injured) and internal (compartmentation/evacuation plan mainly in case of unintentional event), more work is needed to merge them in case an internal emergency causes many injured/affected people
  - Communication is of key importance in any emergency and this is only heightened in the face of a terrorist strike. More work is needed to standardize the organization of external and internal communication in case of a crisis (e.g. establishing a green telephone number raises questions such as: Who sets it up? Who answers it? Who decides what messages are given out etc.)
  - Like most hospitals OSR is necessarily open in nature rendering it harder to target harden against a terrorist attack. There is still the perception that the risk of a terror attack on a major hospital is low. In this climate it is difficult to get the necessary support from management to improve security, raise the culture of security awareness, increase the number of trained security guards and establish procedures that help protect assets. At present activities such as lock-in, shelter in place procedures are very difficult to implement even though exercises such as Casus indicate their necessity.
- 4) Despite this, the participation of the Directors of all the hospital main Assets Departments to the THREATS project (OSR THREATS Working Group for the scenario generation process) and the presentation of the project outputs including the THREATS toolkit to the CEO (meeting of January 28<sup>th</sup> 2016) already increased the awareness of OSR strategic management and has achieved some results:
- Additional physical barriers have established (e.g. inside the ED doors have been installed that can be locked down if needed)
  - Some CCTV cameras have been installed in vulnerable sites
  - Some changes in the power grid, oxygen-delivery system, access control to sensitive areas, cyber-network have been implemented

- Revision of the Emergency Management Plans has started with the objective to include the THREATS scenarios
- 5) Some countermeasures pointed out by the THREATS project seem very easy to be implemented and initiatives have been undertaken to do so:
- To increase the collaboration with state and local police to establish an early warning system to the hospital security staff and the health personnel in case of increased risk
  - To increase the number of internal security staff (permanent employees vs “ad hoc” mobilization of contractors through procurement with external agencies) and the level of knowledge through security trainings
  - To increase the awareness and the knowledge of personnel through security training
  - To implement security clearance procedures before allowing people to have access to the hospital, in particular to sensitive areas (employees’ recruitment, contractors’ selection, visiting researchers...)
  - In particular, investment in the THREATS pillar “PEOPLE” is suggested as a cost-effective means to improve security:
    - a) Employing more trained security personnel
    - b) Paying more attention to the security clearance of the different categories of people allowed to enter the hospital
    - c) Paying more attention to the security clearance needed in different hospital areas
    - d) Training personnel on emergency management and security

The operational level had an extensive hot debrief at the end of the exercise Casus 2 with Itamar Ashkenazi, THREATS advisor and part of the Exercise Planning Team, Maria Teresa Cibelli, THREATS OSR WG and Roberto Faccincani, OSR PI for THREATS.

Roberto also had the chance to meet all the participants of the exercise separately in the days after and to collect their thoughts. The feedback is as follow.

- 1) All the participants felt that they had benefitted from the exercise.
- 2) They suggested that there should be more emphasis on non-health resources. Although the MACSIM system was very effective in running a scenario where management of time and medical resources were crucial it did not reflect all aspects of crisis management.

- 3) They recognised that the exercise was very useful to point out the key points of emergency management in general: clear communication and command chain, need for planning and preparedness in order to be able to manage a real event.
- 4) They recognised that the exercise increased their awareness and knowledge about how to handle a security event as well as an event where the external and the internal emergency management plans have to merge.
- 5) They asked for more training, and in particular for more exercises using simulation.
- 6) They asked to for further training in medical management of emergencies.
- 7) They asked for more security personnel and in general non-medical staff to leave medical staff to concentrate on the medical issues.

## 10. Conclusions and Recommendations

- 1) The THREATS consortium recognizes that a course such as MRMI is an effective training to increase the level of preparedness of the medical personnel to manage and coordinate the response to a major incident/disaster, although the consortium suggests that in such training courses more attention needs to be placed on the non-medical functions.
- 2) In order to be effective in training, assessing or testing of hospital preparedness to terrorist attacks, it is necessary to include scenarios where the hospital staff need to implement security procedures, such as restricting pedestrian and vehicle access to the hospital site (lockdown), invacuation and shelter-in-place and other security procedures that are relevant responses to a heightened state of security.
- 3) Although it is important to exercise medical staff, it is also important to develop hospital resilience within all the business functions of the hospital such as

facilities management, information technology (IT) and maintenance. The THREATS toolkit, in its format of a self-assessment questionnaire, is a valuable instrument which enables any hospital to assess and reduce their vulnerability to terrorist attacks, while mitigating the impact of any such attacks. The scope of any exercise carried out to test hospital resilience should be sufficiently broad to include aspects of the Business Continuity Management system and to 'test' the plans and procedures designed to ensure continuity of service or recovery from a terrorist attack.

- 4) Stand-alone exercises for the different hospital sectors (HCG, operational level, non-health-functions...) can be effective for training, assessing or testing the hospital resilience plans. OSR rarely trains and exercises the whole hospital together but it is crucial to focus on the key points: the need for clear communication and a chain of command, the importance of decision making when time, resources and information constraints are in place, the involvement of all personnel in the process of preparedness, response and recovery. The hospital should be regarded as a complex system, made up of various diverse components, that has to be managed using a systemic approach.
- 5) Apart from the participation of the operational level, the engagement of the relevant members of the HCG (at a tactical/strategical level) to fulfill their requisite role and responsibility is essential for a meaningful test of the plans and procedures in place.
- 6) We recommend that training and exercises for the emergency management plans of hospitals use tools that represent real patients, real resources and real time pressures to simulate the prioritization of preservation of lives. For example, MACSIM is a useful simulation tool to test the existing external emergency management plan, both outside and inside the hospital, because it allows medical staff to focus on the clinical management of patients' needs. It also concentrates attention on the key points of crisis medical management: namely the need for clear communication and command chain; the need for planning for time and resource management in a situation where both are in short supply. As it is a table top exercise it can be run without any impact on the normal business of the hospital.

The two exercises at OSR proved to be a valuable opportunity to evaluate the application of the outputs of the THREATS project to a major hospital that is part of the Italian Critical National Infrastructure. Many recommendations came out of the exercises as a result of applying the toolkit to OSR and these are now being worked on by the hospital management team. By running two exercises, the first in an 'as-is' situation without the THREATS outputs being applied, and the second using the toolkit, the THREATS consortium was able to demonstrate that the toolkit is a useful instrument for OSR to improve its preparedness and resilience when responding to a direct terrorist attack against the hospital.

As a result of the exercises some small amendments to the toolkit were required, which particularly pertained to the area of personnel security, and a revised version of D1.6 was therefore produced on June 29<sup>th</sup> 2016.

Appendix 1: MRMI Anyland map





## Hospital police post

If there is an alarm for possible terrorist threat

- 1) **Inform the HDM**
- 2) Inform the Internal Security and **ask for more security people in ED**
- 3) Inform your HQ and **ask for more security people in ED**

NB Periodic briefings with the security people on ground have to be agreed

- 4) Prepare for **stopping vehicles out of the ED gate and check points**
- 5) Check for your **PPE and metal detectors**



## Internal Security

If there is an alarm for possible terrorist threat

- 1) **Inform the HDM**
- 2) Inform the Police Post and **ask for more security people in ED**
- 3) Inform your HQ and **ask for more security people in ED**

NB Periodic briefings with the security people on ground have to be agreed

- 4) Prepare for **stopping vehicles out of the ED gate and check points**
- 5) Check for your **PPE and metal detectors**

## Appendix 4 – Draft Action Card



### Senior Surgeon

#### HDM

If there is an alarm for possible terrorist threat

- 1) Confirm with the Police post and **ask for more security people in ED**
- 2) Inform the Internal Security and **ask for more security people in ED**

NB Periodic briefings with the security people on ground have to be agreed

- 3) Brief your personnel about the possible threat

- 4) Inform the Health Direction on call/HCG and **ask for more security people in ED**
- 5) Appoint a deputy HDM in case not planned before
- 6) Move the HDM station **far away from the hot room**
- 7) Prepare for ambulances **downloading patients out of the ED gate** (stretchers, porters, shelter if needed...)
- 8) Prepare for an **alternative site of care** in case of an attack against the ED

## Appendix 5 KPIs

	OBSERVER	OBSERVER	FROM	INJECT	TO	ACTION CARD	ACTION CARD	Human Factors issues (communication, teamwork, decision making, situation awareness)
001	Do the Police staff on duty report to somebody?	Y / N	Roberto	From Questura Info to Hospitals police posts: might be terrorist act	OSR Police staff on duty	If there is an alarm for possible terrorist threat, <b>inform the HDM</b>	Y / N	
003	Is the HDM aware of the potential terrorist threat?	Y / N	OSR Police staff on duty	From questura info to Hospitals police posts: might be terrorist act	HDM	<b>HDM receives a warning of potential terrorist threat</b>	Y / N	
003	Does the HDM ask for more Internal Security People	Y / N			HDM	1) Inform the Internal Security and <b>ask for more security people in ED</b>	Y / N	
005	Has been the HCG informed about the potential terrorist THREAT?	Y / N			HDM	2) <b>Inform the HCG</b> of the potential terrorist threat	Y / N	
	OBSERVER	OBSERVER	FROM	INJECT	TO	ACTION CARD	ACTION CARD	Human Factors issues (communication, teamwork, decision making, situation awareness)
005	1) Are cars prevented to enter the hot room? 2) Is there any check for the people before to enter the hot room? Is there somebody to stop an eventual terrorist forcing the security post 1?	Y / N partial		1) tactical/strategical level physically separated _____ 2) Head of operations far from patients flow _____ 3) communication systems back-up _____	SECURITY	Security posts: 1) at the gate: no car 2) at the hot room entrance: people check also with metal detector 3) in a place where can shoot somebody forcing the post 1	Y / N partial	
005	Is there a deputy HDM selected?	Y / N			HCG	1) Nominate a deputy HDM	Y / N	
005	Is the Direction of the Emergency activated?	Y / N			HCG	2) Activate the Direction of the Emergency (EEP + IEP)	Y / N	
	OBSERVER	OBSERVER	FROM	INJECT	TO	ACTION CARD	ACTION CARD	Human Factors issues (communication, teamwork, decision making, situation awareness)
005	Is there a contingency plan for evacuation of the ED and alternative sites of care?	Y / N			HCG	3) Consider possible evacuation of the ED and alternative sites of care	Y / N	

005	Is the personnel aware of the potential terrorist threat? Is the personnel aware of the procedures?	Y / N
006	Are periodic briefing organized with the security people?	Y / N

OBSERVER OBSERVER FROM

INJECT

HDM	3) Brief the personnel of the potential terrorist threat and remind them the suggested procedures (among them the possibility of shelter/lock-in)	Y / N
HDM	4) organize for periodic briefing with the Internal Security in command and the police post on duty for updates	Y / N

TO ACTION CARD ACTION CARD

Human Factors issues  
(communication, teamwork, decision making, situation awareness)

006	Is the HDM post close to entrance?	Y / N
006	Is there a reception point for casualties at the gate set up?	Y / N

HDM	5) Organize for moving the HDM post far from triage	Y / N
HDM	6) Organize for stretchers and crew for taking patients from the gate into the hot room	Y / N