

CBRN—Managing the Threat

CBRN Medical Support of the French Groupe D'Intervention De La Gendarmerie Nationale

Patrick Hertgen,¹ Sébastien Peyrefitte,¹ Virgile Apparu,² Yann Le Vaillant,¹ Fabrice Castel,¹ Erwan Legonidec,¹ Benoît Houzé¹

1. Centre Médical de Satory, Groupe d'Intervention de la Gendarmerie Nationale, France
2. Groupe d'Intervention de la Gendarmerie Nationale, France

Introduction: The French Groupe d'Intervention de la Gendarmerie Nationale (GIGN) is a police special force unit from the military. Its main missions are counter-terrorism, fight organized crime, and also protection and security of vital keypoints of the nation and state, in France and overseas as well. The GIGN is trained to work under chemical, biological, radiological, or nuclear (CBRN) conditions. The aim of this study is to improve CBRN medical support. **Methods:** An in-depth literature analysis was conducted to the great expertise of the GIGN medical unit and of the French Service de Santé des Armées.

Results: Before a mission, the physicians of the military are key actors to train soldiers to face CBRN conditions. They define medical counter-measures including personal protective equipment (PPE) and antidote kits including Ineurope[®] auto-injecting syringes that contain atropine, pralidoxim, and diazepam.

During the mission, the medical units, including the GIGN, are able to move and work in contaminated areas. They can initiate the medical care of classic soldier wounds and CBRN contaminated wounds as well. The impact of the pharmaceutical and antidote kits and specific training are of great importance to accomplish the medical mission while wearing PPE. They can also strengthen CBRN decontamination modules of the Gendarmerie.

Conclusions: The CBRN risk must be considered for Special Force medical unit: training, constantly adapting the protective equipment and specific therapeutics to the risk is a major challenge.

Keywords: chemical, biological, radiological, or nuclear; decontamination; French Groupe d'Intervention; military
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Training of French Hospital Personnel in CBRN Decontamination

Catherine Bertrand; Eric Lecarpentier; Alain Margenet
SAMU 94—APHP—Samu de France

In France, the hospital health plan known as the white plan contains specific sections to deal with chemical, biological, radiological, or nuclear (CBRN) risks. The training of personnel and the organization of exercises are mandatory within the plan. This training began in 2002 after the conception of a civil-military doctrine by a national steering committee. Four-day training seminars occurred at a national then zonal level, and then, were divided into two-day seminars for additional teachers. Since 2002, these additional teachers trained >30,000 people from emergency services in one-day seminars. Since 2006, additional

efforts have been made under the responsibility of CESU (emergency teaching centre). First, voluntary health professionals who also are medically fit are chosen to run a decontamination area at the entrance to their hospitals. These people are trained for nine hours and receive a diploma that is valid for two years. Second, anybody working in hospitals has to be trained in emergency procedures every four years including general information on CBRN risks. These subjects must be taught in a hands-on manner with the objective of changing traditional health professionals' perceptions. Finally, training is a continuing learning and adapting process.

Keywords: chemical, biological, radiological, or nuclear; decontamination; hospital personnel; training
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Human Factors and Medicine Panel Activities—Human Protection Against CBRN

John Frazier Glenn

NATO Human Factors and Medicine Panel

Introduction: NATO nations continue to be concerned regarding the impact of chemical, biological, radiological, or nuclear (CBRN) attacks, both in terms of conventional force deployments, as well as the ever-increasing threat of terrorist attacks using CBRN materials against civilian populations. The Human Protection Area recently has examined, or is currently examining, Radiation Bio-effects, Risk management of exposure to chemicals under operational conditions, Chemical Agent Protection (Non-Medical), Application of Emerging Nano- and Bio-Technology to Deployable Laboratories, the State-of-the-Art in Research on Medical Countermeasures Against Biological Agents, and Integration of CBRN physical protective measures to lessen the burden on personnel.

Methods: This presentation will describe recent Human Factors and Medicine (HFM). Panel technical activities related to medical CBRN defense, with emphasis on human protection, will summarize some of the main findings from those activities.

Results: In preparation.

Conclusions: The NATO HFM Panel Technical Activities provide an opportunity for other NATO organizations to benefit from the efforts conducted with the support of the Research and Technology Agency of the Research and Technology Organization.

Keywords: chemical, biological, radiological, or nuclear; defense; Human Factors and Medicine Panel; protection
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Prediction of the Severity of Acute Radiation Syndrome Severity

Maria Druzhinina,¹ M. Kuniak,² T.V. Azizova,¹ A. Zhang,² R. Day,² N. Wald²

1. Southern Urals Biophysics Institute (SUBI)
2. University of Pittsburgh, Pittsburgh, Pennsylvania USA

Recent decades have been characterized by a steady growth in the number of contingents exposed to various ionizing radiation sources. Compliance with all safety procedures and regulations does not exclude a possibility of radiation

accidents with overexposure of both workers and the population. The threat of nuclear terrorism with possible negative consequences for the population is real. Medical triage of exposed individuals by the extent of required medical aid is critical in large-scale radiation emergencies. Medical triage is based on the prediction of acute radiation consequences by estimated exposure dose. Whereas physical dosimetry, which provides more accurate dose estimates, often is not feasible in the event of large-scale radiation accidents, especially within the first hours and even days after exposure, biological dosimetry is of special value. Thus, a scale of Radiation Injury Severity Classification (RISC) has been developed based on the recently available medical data on 59 workers in Russia and two in the US, who were exposed due to the short-term acute irradiation.

The RISC scale includes clinical and hematological parameters for triage of acute radiation injuries into three prognostic categories: (1) survival probable; (2) survival possible; and (3) survival improbable. For *in-situ* testing of the RISC scale, 24 workers with the full clinical information for the first days after acute exposure have been selected. Eight physicians with limited training in assessment of radiation injuries have been recruited to test the scale. They have used the RISC scale to assign a numerical score to each of the 24 cases. Physicians have been able to classify appropriately 84% of cases. More importantly, they have correctly classified 96.8% of cases into a category of possible survival, i.e., those who would benefit of medical care. A more extensive *in-situ* testing is planned to validate these findings.

Keywords: prediction; Radiation Injury Severity Classification; severity

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8th NATO Blood Conference

The Blood Supply of Foreign Missions Army of the Czech Republic

Milos Bobonek, LtCol., MD, PhD;¹
Tatjana Markovina, WO, Bc²

1. Central Military Hospital Prague, Czech Republic
2. 7th Field Hospital Army of the Czech Republic

The residence of the Czech Armed Blood Transfusion Service is the Department of Hematology, Biochemistry and Blood Transfusion (DHBBT) in the Central Military Hospital in Prague. This facility is the blood collection, processing, and storage base for the military health service, and in special circumstances (frozen blood) also for civilians. The DHBBT is responsible for the blood supply of the foreign army missions as well as for blood transfusions in field hospitals.

The blood supply is based on regular delivery by aircraft every 4–5 weeks, one pack usually consists of 20 TU RBC and 20 TU FFP. The field military blood bank is part and parcel of laboratory of field hospital in container ISO-1C.

The Czech Army operated in numerous field foreign missions with field hospitals: 1994–1996 Croatia (Knin UNPROFOR), 1996–1998 Croatia (Klisa UNTAES), 1999 Albania (Kavaje AFOR), 1999 Turkey (earthquake, Gölcük), 2002 Afghanistan (Kabul, ISAF), 2007 Iraq (Basra, Enduring Freedom), 2007–2008 Afghanistan

(Kabul, ISAF). During missions, more than 1,600 TU red cells and 500 TU FFP was delivered these from DHBBT. Some situations were solved by blood collection in place of the operation.

The problems with aircraft delivery led to the decision to build-up the special blood bank container for field hospitals with frozen blood storage and to have the blood supply ensured in 3 components: (1) frozen blood components; (2) delivery of fresh blood (if available); (3) and blood collection in place of operation.

Keywords: blood supply; Czech Armed Blood Transfusion Service; field hospitals

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Allergy Symptom Response Following Conversion from Injection Immunotherapy to Sublingual Immunotherapy

CDR Timothy Clenney, MD, MPH
Naval Medical Center Portsmouth, Portsmouth, Virginia USA

Background: The objective of this research was to determine the clinical response to sublingual immunotherapy (SLIT) among patients with allergic rhinitis previously managed with injection immunotherapy (SCIT). Because deployed, active-duty military personnel often are prevented from using SCIT due to logistic and safety concerns, a secondary aim was to consider the appropriateness of SLIT in this group.

Methods: Questionnaires were offered to a sample of patients using SLIT during the period November 2009 to February 2009. The questionnaire assessed changes in nasal, eye, sleep, and constitutional symptoms following conversion to SLIT. Allergy-related quality of life was quantified using a validated instrument.

Results: Thirty patients (100%) agreed to participate. The average age was 48.6 years and 27.5% were military personnel. 100% with nasal symptoms reported improvement or no change following conversion to SLIT. Of those with eye symptoms, 97% were improved or unchanged. Sleep and constitutional symptoms were reported in 26 patients each. Improvement or no change was reported in 25 (96%; $p < 0.001$) and 24 (93%; $p < 0.006$). No adverse reactions were reported.

Conclusions: Allergy patients receiving SCIT can be converted to SLIT without loss of allergy symptom control. Because military personnel in this study were able to use SLIT in conjunction with their duties, larger studies are indicated to fully assess the potential role of SLIT in deployed military personnel.

Keywords: allergy; response; sublingual immunotherapy; symptom

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The Use of Anthrax and Orthopox Therapeutic Antibodies from Human Origin in Biodefense

Cdr Dr Stef Stienstra

Royal Dutch Armed Forces, 1—CIMIC Bataljon

Introduction: It is impossible to protect whole nations from the effects of bioterrorism by preventive vaccination. There are too many possible agents, costs would be exorbitantly high, and the health risks associated with complex mass vaccination programs would be unacceptable. Adequate protection, however, could be provided via a combination of rapid