

**2 nd YEAR**  
**PhD ANNUAL REPORT**  
**November 2014 – November 2015**

**Dottorato di ricerca in Medicina Clinica e Sperimentale - XXIX ciclo**

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### **Background:**

Over the past half century, naturally occurring and man-made disasters worldwide have seen a sharp upward trend, resulting in millions of victims and economic losses.<sup>1</sup> Most internal crises require external support either for immediate response and/or in the recovery and rehabilitation phase.<sup>2</sup> This is especially true for global public health emergency crises where both direct and indirect mortality and morbidity are significant.<sup>3, 4</sup> However, data and experience gained from recent disasters suggest that humanitarian medical responders are not sufficiently competent in disaster response.<sup>5</sup> Not surprisingly, health aid workers and international organizations have recently launched a call for further professionalization in humanitarian assistance, education and training.<sup>6, 7</sup>

It is well known that, emergency medicine, internal medicine, anesthesiology, critical care, pediatrics and surgery are among the disciplines that traditionally compose foreign medical teams due to their expertise in the treatment of acute injured victims.<sup>8, 9</sup> Nevertheless, most of them often fall short in providing proper medical support due to limited preparation, education and field experience specific for resource-poor or constrained settings.<sup>5, 7</sup> Separate from their specialist skills, health professionals are required to gain a broader understanding about the specific context in which the humanitarian crisis occurs.<sup>10</sup> Curiously, several studies have found great interest and engagement in humanitarian initiatives among residents in almost all the aforementioned specialties<sup>11-13</sup> and, in parallel, recent disasters have been characterized by the deployment of young and inexperienced humanitarian aid workers.<sup>7</sup>

During the last 3 years, the Research Center in Emergency and Disaster Medicine and Computer Science Applied to Medical Practice (CRIMEDIM), of the Università del Piemonte Orientale, in partnership with a non-profit non-governmental organization, designed a pilot course to take advantage of a blended methodology including distance learning and apprenticeships, with the specific goal of developing professional skills when working in low-resource environments for Anesthesia and Critical Care Medicine residents.

Results from a qualitative self-evaluation questionnaire documented that residents improved their technical and non-technical skills when working in resource poor settings, suggesting that the combination of a specific training pathway and apprenticeship in the field could represent a valid method for an early professionalization process of the healthcare staff involved in humanitarian aid.

Building on the encouraging outcomes derived from the implementation of our pilot project in a single center and the increasing commitment of anesthesiologists in humanitarian crises the purpose will be to develop a competency-based course that could be expanded to the entire population of residents in Anesthesia and Critical Care coming from any national or international anaesthesia school.

### **Overall objectives**

- 1) Conduct a national baseline assessment on the residents' interest in disaster medicine and humanitarian aid and their opinion about being professionalized as humanitarian workers.
- 2) Identify the cross-sectorial competencies necessary for disaster management and humanitarian assistance workers.
- 3) Develop and implement a competency-based course based upon the identified competency set.

## Methods

- 1) Electronic poll distributed to residents, using the on-line commercial software SurveyMonkey, covering all the residency programs in anaesthesia in Italy.
- 2)
  - a. Systematic literature review of peer reviewed and not peer reviewed studies aimed to identify existing competency sets for disaster management and humanitarian assistance.
  - b. Qualitative study, aimed to collect opinions and experiences, from experts operating in disaster management and humanitarian aid, on the topics that are worthy to be included in any education and training initiative.
- 3) The course
  - a. Curriculum: competency-based curriculum designed according to the competencies published in literature for disaster medicine and humanitarian assistance workers and the gaps reported by experts.
  - b. Structure: consist on the combination of e-learning, residential course and apprenticeship in the field in one of the projects run by the international NGO Medecines Sans Frontiers.
  - c. Implementation:
    - i. Pilot study involving 5 residents to test feasibility.
    - ii. First official edition
  - d. Validation: 10 experts in disaster management, humanitarian assistance and learning methods will approve both the course structure and contents.

## Preliminary results

### Study 1

#### ***Professionalization of Anesthesiologists and Critical Care Specialists in Humanitarian Action: A Nationwide Poll Among Italian Residents.***

A total of 29 (74%) of the training programs in Italy participated in the poll. Out of the 1362 questionnaires mailed to residents, 924 (68%) were fully completed and returned. Only 63(6.8%) of the respondents voiced prior participation in humanitarian missions but up to 690 (74.7%) stated they were interested in participating in future humanitarian deployments during their residency that carried over into their professional careers. Countrywide, 896 (97%) favored prior preparation for residents before participating in humanitarian missions while the need for a specific formal professionalization process of the entire humanitarian aid sector was supported by 889 (96,2%).

### Study 2

#### ***Core competencies in disaster management and humanitarian assistance: a systematic review.***

Thirty-eight papers were analyzed. Target audience was defined in all articles. Four references (10%) reported cross-sectorial competencies. Most of the articles (73%) were health-care specific. Eighteen (47%) papers included competencies for, at least, two different disciplines and eighteen (47%) for different professional groups. Nursing was the most widely represented cadre. Eighteen papers (47 %) defined competency domains and thirty-six (94%) reported list of competencies. Eighteen articles (47%) adopted consensus-building to define competencies and 12 (31%) included competencies adapted to different professional responsibility levels.

This systematic review revealed the large number of papers were mainly focused on the health-care sector and presented a lack of agreement on the terminology used for competency-based definition.

Two papers were selected from the literature review as a guide to develop the curriculum: one on the basis of its cross-sectorial approach and the other one on the basis of its definition of category-specific competencies easily adaptable to different levels of expected proficiency of health professionals across different disciplines.

- Subbarao I, Lyznicki JM, Hsu EB et al. A consensus-based educational framework and competency set for the discipline of disaster medicine and public health preparedness. *Disaster Med Public Health Prep.* 2008;2:57-68.
- The consortium of British Humanitarian agencies (CBHA). Core Humanitarian Competencies Framework.

### **Study 3**

#### ***Identifying Deficiencies in National and Foreign Medical Team Responses Through Expert Opinion Surveys: Implications for Education and Training***

There is a lack of competency-based training for disaster responders. Developing and performing standardized training courses is influenced by shortcomings in budget, expertise, and standards. There is a lack of both coordination and integration among teams and their activities during disasters. The participants of this study emphasized problems concerning access to relevant resources during disasters. Teams often are not competent during the response phase because of education and training deficiencies. Foreign medical teams and medically related nongovernmental organizations (NGOs) do not always provide expected capabilities and services. Failures in leadership and in coordination among teams are also a problem. All deficiencies need to be applied to competency-based curricula.

### **Study 5**

**HumanitarianMedic** is a competency-based course delivered by the Università del Piemonte Orientale, organized and coordinated by Research Center in Emergency and Disaster Medicine and Computer Science Applied to Medical Practice (CRIMEDIM) in partnership with the international NGO Medecins Sans Frontiers.

#### **Course curriculum**

The curriculum has been developed on the basis of the competencies listed through the aforementioned two articles and the gaps reported by experts.

#### **Learning methodology**

- E-Learning
- Residential course
- Apprenticeship in the field within an humanitarian aid project ruled by Medecins Sans Frontiers.

#### **Implementation**

- **Pilot edition:** took place in the time period comprised between October 2013 and September 2014. Five residents coming from, respectively, the residency programs of Trieste, Napoli, Verona and Novara, were deployed in The Philippines, South Sudan, Pakistan and Afghanistan.
- **First official edition:** started in April 2015 and involved 6 residents of 6 different residency programs in Italy. All the participants have completed both e-learning and residential phase. At present, waiting for matching with a project in the field.

## **Congress 2014**

- Congresso Nazionale SIAARTI 2014
- European Congress on Emergency Medicine 2014

## **Congress 2015**

- European Congress on Emergency Medicine 2015
- World Congress on Disaster and Emergency Medicine 2015

## **Abstracts presented**

### **2014**

Ingrassia PL, Ragazzoni L, Foletti M, Ripoll Gallardo A, Verginella F, Nappi TC, Gabrieli A, Della Corte F (2014). Humanitarian Medic: An innovative training program for humanitarian professionalization of aid workers in anaesthesia and critical care medicine during residency programs. Poster presentation, SIAARTI 2014, Venezia, Italy.

Djalali A, Ingrassia PL, Della Corte F, Foletti M, Ripoll Gallardo A, Ragazzoni L et al. (2014) Identifying Deficiencies in National and Foreign Medical Team Responses Through Expert Opinion Surveys: Implications for Education and Training. Poster presentation, European Congress on Emergency Medicine (EUSEM), Amsterdam, Holland

Ripoll Gallardo A, Ingrassia PL, Ragazzoni R, Djalali A, Carezzo L, Burkle F, Della Corte F (2014) Professionalization of anesthesiologists and critical care specialists in humanitarian action: a nationwide survey among Italian residents in training. Oral presentation, European Congress on Emergency Medicine (EUSEM), Amsterdam, Holland.

Ragazzoni L, Caviglia M, De Mattei G, Ripoll Gallardo A, Della Corte F, Ingrassia PL (2014) Perioperative anesthesia care and its correlation with the professionalization of medical teams deployed in the aftermath of natural and man-made disasters: a systematic literature review. Oral presentation, European Congress on Emergency Medicine (EUSEM), Amsterdam, Holland.

### **2015**

Krishnaraj G, Ripoll Gallardo A, O'Connell C, Olness K, Onyango M, Farrell P. GHHA Working Group IV: Building a Global Registry (2015) 19th World Congress on Disaster and Emergency Medicine. Cape Town. South Africa.

Levine AC, Balsari S, Johnson K, O'Connell C, Ripoll Gallardo A, Burkle F M. GHHA Working Group V: Developing Accreditation of Training Programs (2015) 19th World Congress on Disaster and Emergency Medicine. Cape Town. South Africa.

Balsari S, Levine AC, Johnson K, O'Connell C, Ripoll Gallardo A, Burkle F M. GHHA Working Group VI: Developing Certification for Humanitarian Health Professionals (2015) 19th World Congress on Disaster and Emergency Medicine. Cape Town. South Africa.

Ripoll Gallardo A, Djalali A, Foletti M, Ragazzoni L, Della Corte F, Frederick M. Burkle, Johnson K, Ingrassia PL. GHHA Working Group VIII: Developing Accreditation Standards (2015) 19th World Congress on Disaster and Emergency Medicine. Cape Town. South Africa

## Papers

### Published till November 2014

- Foletti M, Ingrassia PL, Ragazzoni L, Djalali A, Ripoll Gallardo A et al. Combining Dedicated Online Training and Apprenticeships in the Field to Assist in Professionalization of Humanitarian Aid Workers: a 2-year Pilot Project for Anesthesia and Intensive Care Residents Working in Resource Constrained and Low-income Countries. PLoS Curr. 2014. Jul 21. Edition 1.
- Djalali A, Ingrassia PL, Della Corte F, Foletti M, Ripoll Gallardo A et al. Identifying Deficiencies in National and Foreign Medical Team Responses through Expert Opinion Surveys: Implications for Education and Training. Prehosp Disaster Med. 2014 Jun 19:1-5.
- Della Corte F, Hubloue I, Ripoll Gallardo A, Ragazzoni A, Ingrassia PL, Debacker M. The European Masters Degree in Disaster Medicine (EMDM): a decade of exposure. Front. Public Health. 2014. May 21.

### Published till November 2015

- Ripoll Gallardo A, Ingrassia PL, Ragazzoni R, Djalali A, Carezzo L, Burkle F, Della Corte F. Professionalization of Anesthesiologists and Critical Care Specialists in Humanitarian Action: A Nationwide Poll Among Italian Residents. Prehosp Disaster Med. 2014 Dec 15:1-6.
- Djalali A, Della Corte F, Foletti M, Ragazzoni L, Ripoll Gallardo A, et al. Art of Disaster Preparedness in European Union: a Survey on the Health Systems. Plos Curr. December 17, 2014.
- Ripoll Gallardo A, Djalali A, Foletti M, Ragazzoni L et al. Core competencies in disaster management and humanitarian assistance: a systematic review. Disaster Med Public Health Prep. 2015 May 5:1-10.
- Ripoll Gallardo A, Meneghetti G, Ragazzoni L, Kroumova V, Ferrante D, et al. Multiple withdrawals from single-use vials: a study of sterility. Int J Pharm. 2015. March 485:160-163

### Papers currently under revision

- Ripoll Gallardo A, Ragazzoni L, Della Corte Francesco. Yemen- bits and pieces of an humanitarian crime.

### Ongoing studies

- Indicatori preferenziali per monitorare la salute a medio e lungo termine di una popolazione esposta a un terremoto in paesi ad elevato reddito.
- A pilot study using high-fidelity simulation to evaluate crisis resource management during the resuscitation of critically ill patients: a comparison of residents' performance in a high and low resource-scenario
- Anaesthesia in low resource-settings: a systematic review.

### Others

From June to September 2014 deployment in conflict zone in Khost (Afghanistan) with the international NGO Medecins Sans Frontiers. Position held: anaesthetist doctor with the international NGO Medecins Sans Frontiers.

From May to June 2015 deployment in armed conflict zone in Saada (Yemen) with the international NGO Medecins Sans Frontiers. Position held: anaesthetist, ICU and ER doctor.

## References

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2. Burkle FM, Jr., Nickerson JW, von Schreeb J, Redmond AD, McQueen KA, Norton I, et al. Emergency surgery data and documentation reporting forms for sudden-onset humanitarian crises, natural disasters and the existing burden of surgical disease. *Prehosp Disaster Med.* 2012;27:577-82.
3. McQueen KA, Parmar P, Kene M, Broaddus S, Casey K, Chu K, et al. Burden of surgical disease: strategies to manage an existing public health emergency. *Prehosp Disaster Med.* 2009;24 Suppl 2:s228-31.
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5. Griinewald F, Binder A. Griinewald F, Binder A. Inter-agency Real Time Evaluation in Haiti: 3 months after the earthquake. 2010. Available at [http://www.unicef.org/evaluation/files/Haiti\\_IA\\_RTE\\_final\\_Eng.pdf](http://www.unicef.org/evaluation/files/Haiti_IA_RTE_final_Eng.pdf). Accessed January 10, 2014.
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7. Burkle FM Jr, JAMES JJ. Cross-disciplinary competency and professionalization in disaster medicine and public health. *NATO Science for Peace and Security Series - E: Human and Societal Dynamics, Volume 100: Handbook for Pandemic and Mass-Casualty Planning and Response* p72-8.
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10. Brennan RJ, Nandy R. Complex humanitarian emergencies: a major global health challenge. *Emerg Med (Fremantle).* 2001 ;13:147-56.
11. Dey CC, Grabowski JG, Gebreyes K, Hsu E, VanRooyen MJ. Influence of international emergency medicine opportunities on residency program selection. *Acad Emerg Med.* 2002:679-83.
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13. Powell AC, Casey K, Liewehr DJ, Hayanga A, James TA, Cherr GS. Results of a national survey of surgical resident interest in international experience, electives, and volunteerism. *J Am Coll Surg.* 2009 ;208:304-12.