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Optimized Patient Evacuation Norway (OPEN) – A candidate for a future Standard for global disaster approach.

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Optimized Patient Evacuation Norway (OPEN), - A candidate for a future standard in global disaster approach.

Abstract

Interdisciplinary training, strategic equipment stocks, and well-organized transportation chain are important key factors to reduce impact of disasters. More focus on patient health and patient logistics save time, cost and suffering. The Norwegian field tested model Optimized Patient Evacuation Norway (OPEN) may serve as a candidate for a future global standard in global disaster approach.

OPEN aims to save time, improve patient handling, prevent hypothermia, and simplify scene management. This best practice paper will explain the usefulness of the OPEN concept, and application should be considered for global accidents including industrial, natural and man-made disasters.

The OPEN approach to major incident response starts from an individual patient health perspective, applies logistics strategy and should have a positive influence on costs. The advantages of earlier back to normal in macro economical perspectives are well known.

Optimal care relies on a well-organized transportation chain using field-friendly evacuation equipment to ensure transport of “the Right Patient to the Right Place at the Right time.” Standardizing the equipment for patient evacuation seems essential given the multitude of responders. Because major incidents are infrequent they need an “all-hazards” approach which means methods and equipment that is functional in both mountainous and urban situations as well as cold or flooded areas.

A closer link is needed between industrialized countries disaster preparedness systems and humanitarian disaster preparedness and response, such as strategic national stockpiles operated in close cooperation with UN and NGO’s.

Rescue workers assisting in humanitarian disasters are required to avoid discrimination whilst exercising their duties. Groups to give special attention among those who cannot evacuate by themselves are the most vulnerable of all: the injured, the elderly, disabled people as well as pregnant women. It is also therefore essential to stress the need for patient logistics strategies and strategic stocks of versatile patient handling tools.

During processes of globalizing methods as introducing OPEN, each individual nation’s internal expertise should be respected highly.

Introduction

Immediate initiation of advanced Major Incident Management improves patient outcome and optimizes resource expenditure (Aylwin, 2006). This mechanism will be in effect during all types of disasters, from bus accidents to major natural disasters.

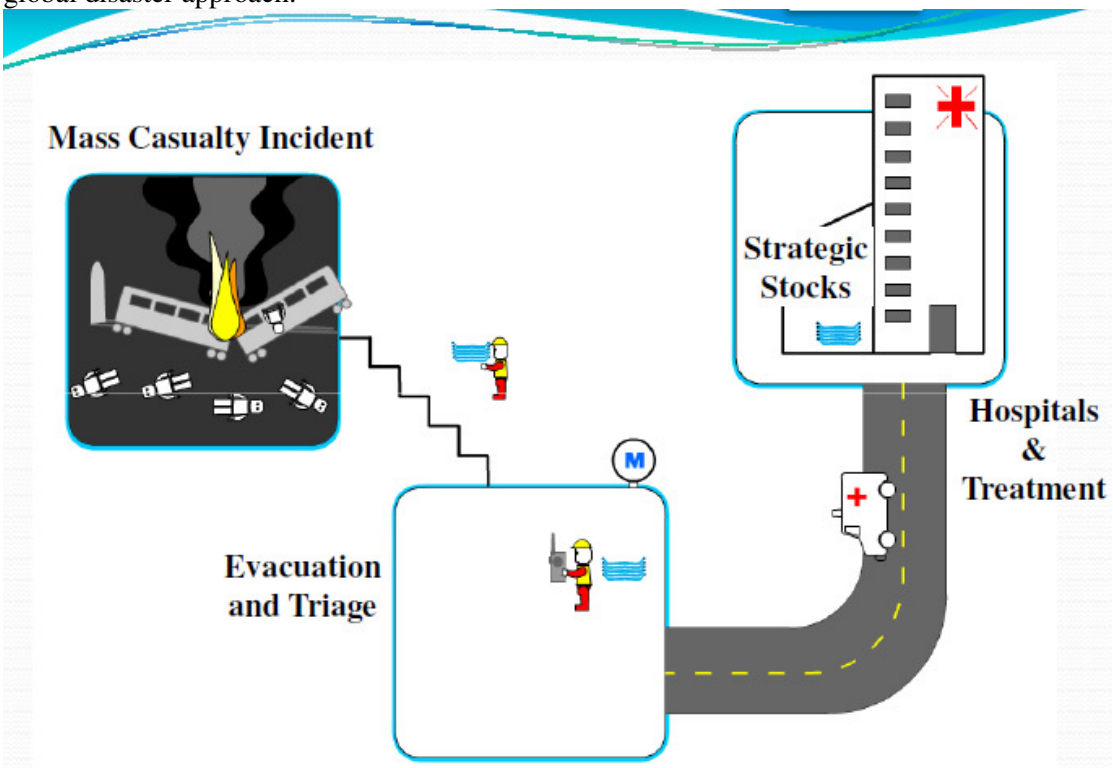
Medical preparedness and response is only one part of Emergency and Disaster Management. However, keeping focus on patient health and logistics will play an important role in total disaster risk mitigation. Interdisciplinary training is a key factor to assure this focus is held by all responders involved. Insight in other disciplines duties and priorities gives better understanding and cooperation during operations.

Absence of stretchers is often observed in disaster scenes. Training sessions reveal the need of strategic versatile patient handling devices. Better focus on this missing link and better patient handling should give advantages for the individual, increased survival with less complications and less use of resources.

The concept of Optimized Patient Evacuation Norway (OPEN) aims to save time, improve patient handling, prevent hypothermia, and simplify scene management. OPEN is co-developed by the Norwegian Air Ambulance Foundation. Corporate partner LESS, manufacturer of Light Emergency Stretcher Systems, has during development also received valuable input from other medical and search and rescue professionals as well as specialist from Norwegian Civil Defence. OPEN is a feasible and time-efficient way to standardize patient transport (Rehn, 2011).

Thesis

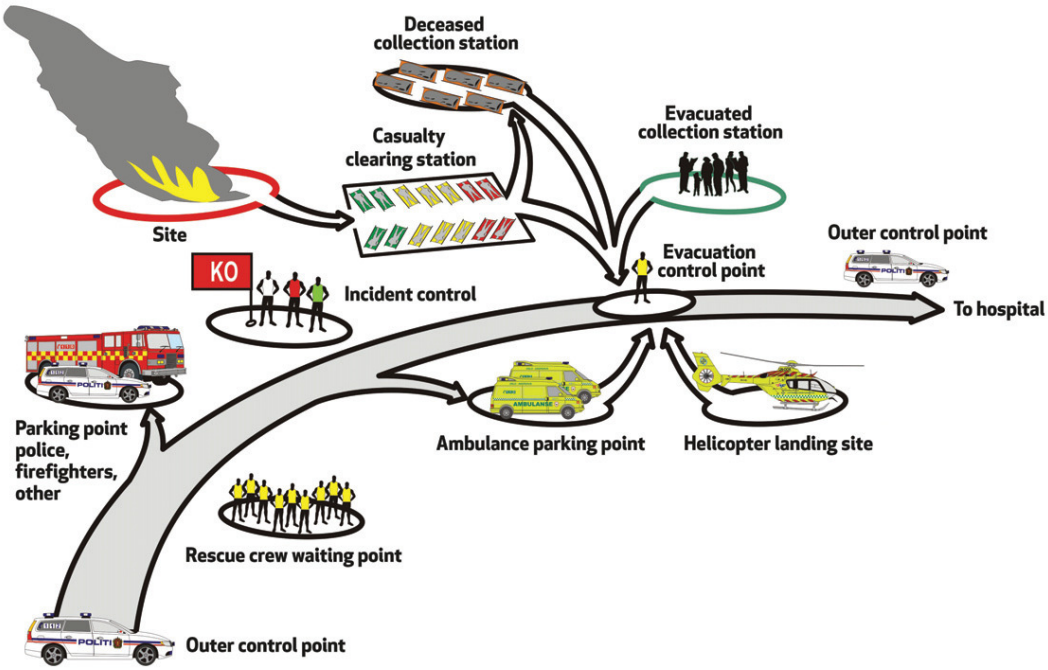
The Norwegian field tested model OPEN may serve as a candidate for a future standard in global disaster approach.



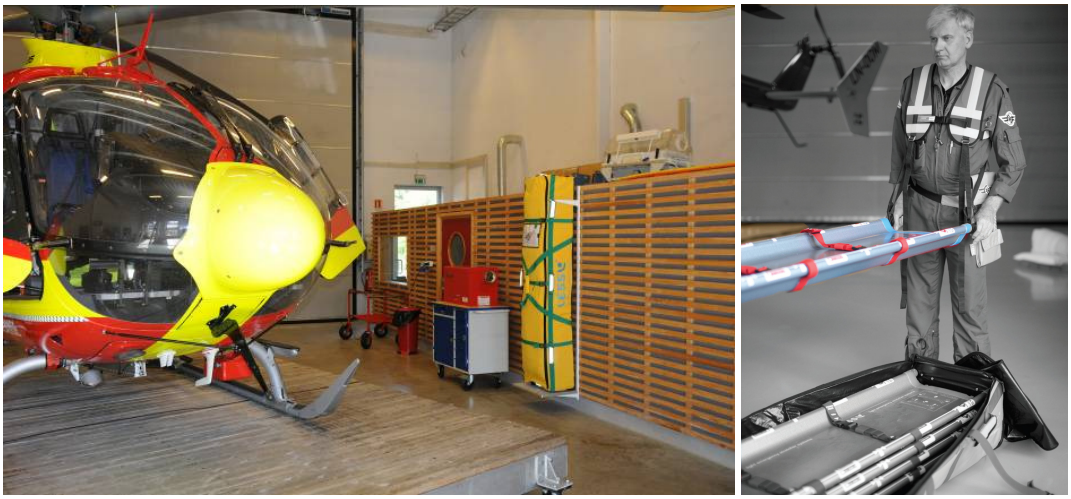
The Evacuation Chain *from scene of accident to scene(s) of treatment. Optimized Patient Evacuation Norway (OPEN) aims to save time, improve patient handling, prevent hypothermia, and simplify scene management. Strategic stockpiles of versatile emergency stretchers are a necessary key to make the concept work in a broad specter of settings.*

Application

Disaster Management and response has an overall objective with Own safety for personnel working within Search, Find and Rescue.



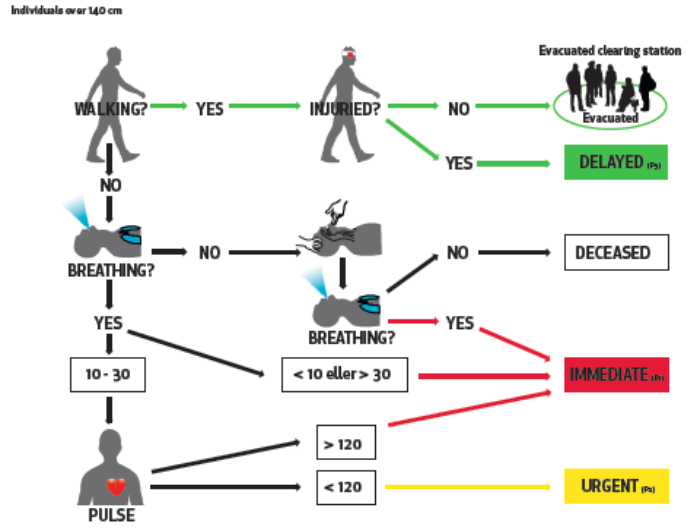
Principles for scene management organization.



***Strategic stocks in hangar**: Mass casualty Emergency Stretcher Packs.*

***Fly or drive**: Strategic stocks of emergency stretchers moved promptly to the scene of accident.*

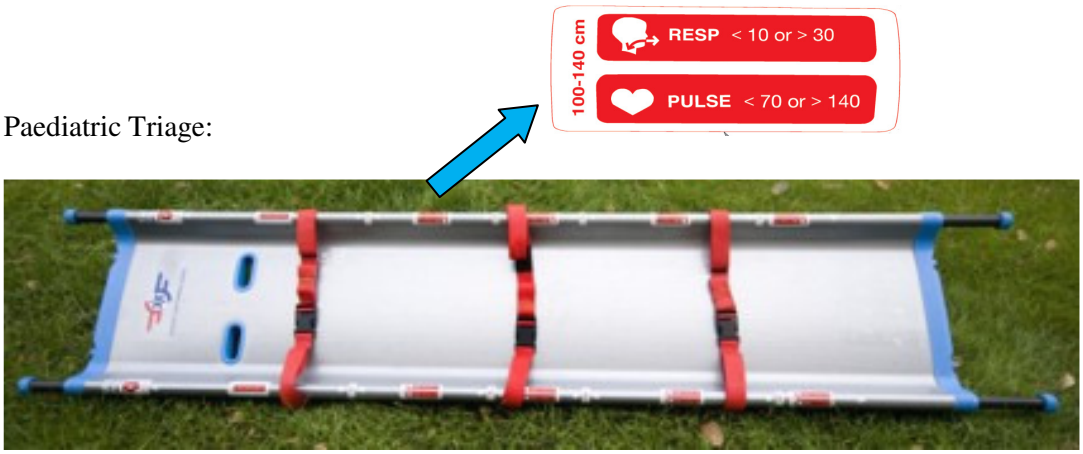
Suitable solutions for First Triage should be all-hazard, all-weather and simple to apply. This is essential to concentrate focus on the casualties in need of immediate assistance and evacuation. For their Interdisciplinary Emergency Service Cooperation Course (TAS), Norwegian Air Ambulance Foundation developed the TAS-triage concept which is based on the established triage Sieve and Paediatric Triage Tape models but modified with slap-wrap reflective triage tags and paediatric triage stretchers. The feasibility and accuracy of the TAS-triage concept was evaluated in full-scale simulated major incidents (Rehn, 2010).



Principles of Adult Triage.

Simplified First Triage with slap tags.

Paediatric Triage:



Paediatric triage tape stretcher. *Details: paediatric vital signs reference values.*

Evacuation of patients is the third initiative in the hierarchy of medical support at major incidents: Triage, treatment and transport (Advanced Life Support Group, 2002)

During evacuation , unnecessary patient transfers are time consuming and occupying professionals that are needed for survival assistance to third parties, but also a threat to patient health conditions. Using emergency stretcher equipment that is designed to be compatible with all ambulance stretcher equipment, these negative aspects are reduced.

Emergency Stretcher compatible with Ambulance stretcher

From the earliest stages in accidents, injured patients should be protected against temperature loss, to avoid complications of hypothermia. Emergency stretchers that are well insulating help to fight this danger of hypothermia. All-weather solutions should be used to protect casualties against temperature loss.

Patient wrapping *against temperture loss. Interdisciplinary training (Norwegian Air Ambulance Foundation, 2011)*

Rescue personnel using carrying harnesses, reduce chances for fatigue. Whenever free hands are needed for assisting patients or self-support in rough terrain, working capacity will be better.

Optimal care relies on a well-organized transportation chain using field-friendly evacuation equipment to ensure transport of "the Right Patient to the Right Place at the Right time." Standardizing the equipment for patient evacuation seems essential given the multitude of responders. Because major incidents are infrequent they need an "all-hazards" approach which means methods and equipment that is functional in both mountainous and urban situations as well as cold or flooded areas or even CBRN environments.

***Interdisciplinary Training**. One goal: safe time, save lives. (Norwegian Air Ambulance Foundation, 2011)*

Findings

Especially in remote areas local EMS capacity to handle multiple casualties is limited. Interdisciplinary training sessions showed that approx. half of the participating professionals were not aware of any stretcher storage in their coverage area (Rehn, 2011).

With focus on both patient health and optimizing the evacuation chain, the OPEN concept is using car- and helicopter-friendly stretcher packs, containing up to five standardized, lightweight, insulating stretchers.

To save time, prevent hypothermia, and avoid patient manipulation, one such stretcher can be allocated to each patient throughout the evacuation chain. These stretchers fit all ground and air EMS units and are radiolucent to optimize logistics during radiological evaluation at the hospital.

Optimized patient evacuation is also aiming to reduce cost of accidents and disasters. Analysis of a major bus accident in Sweden in 2001 reports that all 34 passengers were injured, 19 severely, and taken to hospital. Total hospital time for these victims was approx. 2 years and 7 months. Swedish Road Authorities would calculate social costs of such an accident to approx. € 5,8 mill. (Albertsson, 2003).

Discussion

A closer link is needed between industrialized countries disaster preparedness systems and humanitarian disaster preparedness and response, such as strategic national stockpiles operated in close cooperation with UN and NGO's.

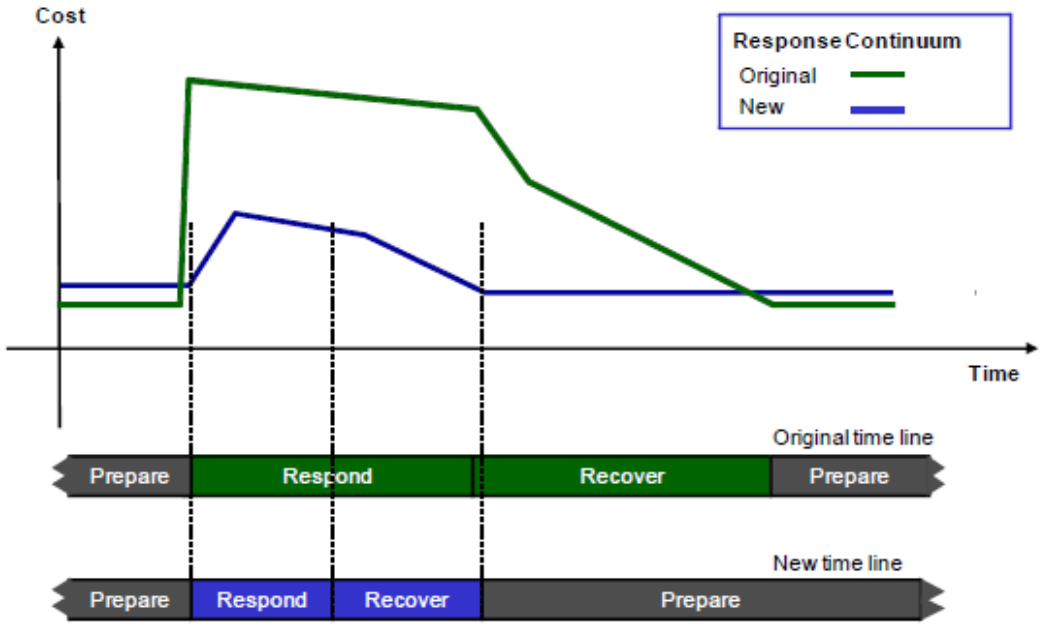
In spite of continuous and growing focus on prevention and early warning systems, there were 3.3 million deaths from natural hazards in the 40 years to 2010. (World Bank – UN, 2010). This can put a perspective on the huge numbers of injured during these incidents and the need for effective strategies to patient handling, as the frequency of disasters is rising.

Field workers in disasters are required to avoid discrimination whilst exercising their duties. In their 2007 World Disasters Report, the International Federation of Red Cross and Red Crescent Societies focus on avoidance of discrimination. Groups to give special attention are the most vulnerable of all: the injured, the elderly, disabled and (pregnant) women (IFRC 2007). Having this overall goal in mind, rescue workers therefore need to have easy access to functional rescue tools from the earliest phases in disasters. Strategic national stockpiles that can be accessed without delay, can supply essential tools to assist casualties. After disasters, survivors will naturally move back to their livelihoods. Suitable equipment is likely to be needed also in this phase.

Focus on avoidance of discrimination. *Groups to give special attention are the most vulnerable of all, the injured, elderly, disabled and (pregnant) women (IFRC).*

Besides strategies for disaster prevention, strategies for disaster reduction will always require investment, but this can pay back through earlier recovery. In addition will strategic preparedness assure an earlier readiness for a future event, a situation which is likely to happen in many earthquake stricken and flooding areas.

Traditionally, and from an economical perspective, most funding is made available when a humanitarian disaster occurs. More funding of preparedness can radically improve the speed and quality of the response. In times of disasters, transport costs may increase immensely, due to both time constraints often requiring airfreight, and a lack of capacity, therefore leading to increased prices in the surrounding area. Not being able to help quickly enough will lead to increased human costs (Jahre, 2008).



***Faster Back to Normal**: Investment in preparedness will even out over time (Jahre, 2008)*

The advantages of faster back to normal in a macro economical perspective is clear. It is therefore essential to stress the need for patient logistics strategies and strategic stocks of versatile patient handling tools. A strategic concept for patient logistics is a key factor in a well-organized rescue operation.

May 2009, company LESS in cooperation with Norges Vel (The Royal Norwegian Society for Development), performed a series of on-site interviews with the most important participants in the response of the 2007 Pisco Earthquake in Peru. Besides earthquakes, landslides and floodings are frequent natural disasters in Peru. The challenges of patient handling in the mountainous country include access to difficult terrain and danger of hypothermia.

Organizations interviewed in Lima were Defensa Nacional (at Department of Health), The Peruvian National Red Cross Society, in Callao INDECI (Civil Defence, Regional Government of Callao), in Pisco The General and Essalud Hospitals, Pisco Civil Defence, Fire Forces, Pisco Red Cross and Airport Corpac Pisco. Defensa Nacional reported to be the first institution from outside that assisted in the disaster, within 4 hours after the incident occurred. The Red Cross National Society experienced trouble with patient transfers because of heavy stretcher equipment. Defensa Nacional is stressing the importance of hypothermia prophylaxis. All organizations reported lack of sufficient stretcher equipment during this earthquake and concluded that strategic stockpiles of stretchers could improve quality of disaster response. Airports are strategic locations that enable rapid access and deployment.

Efficient management of major incidents involves triage, treatment and transport. In the absence of a standardized interdisciplinary major incident management approach, The Norwegian Air Ambulance Foundation developed The Interdisciplinary Emergency Service Cooperation Course (TAS). TAS was established in 1998 and by 2009, approximately 15 500 emergency service professionals had participated in one of more than 500 courses. (Rehn, 2010). Since 2009 these interdisciplinary courses are based on the OPEN concept. Approx. 50 courses are held throughout Norway each year.

We would like to encourage all participators in the world disaster response scene to create more links between industrialized countries disaster management and response and humanitarian disaster management and response. The OPEN model with main focus on patient health and logistics should be applicable also in major global accidents and disasters. Meanwhile, during processes of globalizing methods as introducing OPEN, each individual nation's internal expertise should be respected highly, and unwanted or inappropriate supplies must be avoided.

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