as well as performing light rescue operations). All crew members have one common goal, but contribute differently in achieving this. This demands knowledge and support of each other's tasks, Crew Resource Management-training, and more.

- *Externally* — into the total chain of survival (early alarms, public first-aid competence, ambulance services, and definitive hospital treatment). HEMS systems are valueless if the other links of the chain are not strong enough to match that level.

Various HEMS bases experience different patterns regarding activity rate, patient severity, primary vs. secondary transports, and more. This illustrates variations within the country's population pattern. The HEMS services should be tailored to the specific conditions and needs within any society.

Keywords: ambulances, air; anaesthesiology; chain of defibrillation; defibrillation; emergency medical services (EMS); first aid; helicopter; intubation; Norway; Norwegian Air Ambulance Services; thrombolytic therapy; ventilation

G-45

Feasibility of Implementing Helicopter Emergency Medical Systems — Example from Egypt

Jannicke Mellin-Olsen
Assistant Medical Director, Norwegian Air Ambulance Ltd, Nordbyhagen, Norway

The Norwegian Air Ambulance Ltd (NLA) has provided air-ambulance services nation-wide in Norway for 21 years. We regularly are approached by requests to assist in establishing similar services. Together with Egyptian personnel, we conducted a feasibility study in Egypt. This study provides a good example to show that while it might look attractive and "high fashion" to use helicopters to retrieve patients, implementation of HEMS will not be successful if the following criteria are not fulfilled:

1) There must be a documented need for the service:

a) *Population pattern* — Egypt has 60 million inhabitants, 54% of which live in rural areas, with long evacuation distances. In urban areas, evacuation time is long due to extremely heavy traffic;
b) *Traffic accidents* — Since 1992, Egypt has had the world's highest rate of road accident fatalities. For example, early competent treatment after head injuries improves survival, regardless of other efforts;
c) *Tourist industry* — One of Egypt's major income sources is the tourist industry. Diving is an important tourist activity, connected to time-crucial medical emergencies. Top level medical care for tourists is important;
d) *Oil industry* — This industry is a high-risk activity for those involved, often in remote areas; and
e) *General disaster alertness.*

2) There must be an infrastructure in the chain of survival into which the HEMS services can be integrated:

Good care of emergency patients when provided early and correctly will save lives. But, one single action is seldom life-saving by itself. A HEMS-system *per se* is useless if other parts of the chain of survival are not functioning.

a) *Early activation of the Emergency Medical Services (alarm system)* — One alarm number, 1-2-3, operative in many governorates, is planned to be used nation-wide. A nation wide system for wireless communication for medical emergencies is being implemented. A dispatch system for ambulances is in place;
b) *Early basic life-support (the public)* — The first-aid skills of the Egyptian public must be increased;
c) *Early professional assistance (ambulance)* — In Egypt there are 1,500 ambulances nation-wide today, with uniform equipment and training. An upgrading of the system is planned. Rescue work is done by the Civil Defence;
d) *Early advanced medical treatment (emergency doctor; vehicle/helicopter)* — When introducing HEMS, additional training of doctors will be necessary, but there is already a recruiting ground, just as there is for pilots; and
e) *Early definitive treatment (hospital)* — There are hospitals that meet the requirements to match the level of HEMS-transport close to planned base locations.

3) There must be political willingness and support backed up by a financial capability to sustain the system:

a) *Egyptian side* — The signals from political and other authorities in Egypt have been uniform. This project is given high priority, not only to the Minister of Health and Population; and
b) *European side* — The NLA will assist Egyptian authorities to implement HEMS services. Other support is needed.

Conclusion: The project is feasible, provided that: 1) The project is given full political support; 2) Necessary financial guarantees are given; 3) The already planned improvements of the chain of survival are implemented; and 4) After implementation, there should be concrete plans to sustain the service.

Keywords: accidents, alarm systems; ambulances; basic life support; traffic; definitive care; emergency medical services; Egypt; feasibility; finances; helicopters; infrastructure; Norwegian Air Ambulance; politics; tourists

G-46

Helicopter use Transit Care of the Critically Ill: Ten Year Experience from Whangarei, New Zealand

Ramesh Nagappan, MD, FRACP; Tom Riddell, MBBS, DRCOG; Neville Maiden, FCA (SA);
Janet Barker, RGON, FCNA; Sarah Lindsay, RGON; Grant Pennycook; Reginald Ellwood
Intensive Care Unit, Whangarei Hospital; St John's Ambulance and Northland Emergency Services Trust, Whangarei, New Zealand

Introduction: New Zealand is a thinly populated country of only 3.4 million people living in an area the size of Japan. Three out of four New Zealanders live in the North Island. Northland is the northermost province of