

Air Ambulance Nurses as Expert Supplement to Local Emergency Services

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Abstract

Objective: Flight nurses in the Norwegian National Air Ambulance Service are specialist nurse anesthetists or intensive care nursing specialists. For air ambulance bases far from hospitals, these nurses present otherwise unavailable competencies. This study reports a 6-year experience with flight nurse participation in local emergencies beyond the transportation phase.

Methods: The fixed-wing air ambulance base in Alta, Northern Norway (20,000 inhabitants), with 2 aircraft and 2 on-call teams is 150 km by road from the nearest hospital. We did a prospective registration of all emergency nonflight missions near the air ambulance base from January 1, 2005, to December 31, 2010.

Results: The 217 completed missions corresponded to 3 missions per month, half during daytime. Twenty-three percent of patients were under age 18, injury rate was high (36%), 63% had potentially or manifest life-threatening conditions, and 11% died during treatment. One third of all missions (67/217) resulted in an air ambulance flight to the hospital.

Conclusion: Mission frequency did not significantly reduce flight availability, and precision in case selection for this special service was good. The use of flight nurses in the local community promotes equal access to advanced medical services for populations far from hospitals.

Introduction

The Norwegian government has a national goal of providing equal access to health services regardless of where its residents live.¹ One approach to achieving this goal is a

well-developed national air ambulance service.² The Norwegian National Air Ambulance Service has ambulance helicopters and dedicated ambulance fixed-wing aircraft distributed over the country, with most fixed-wing aircraft in the northern part where the population density is low. The infrastructure in Northern Norway was developed through the 1970s by establishing a number of short runway air fields to enable communications, including patient transport, which previously was performed by boats and seaplanes.

In the northernmost part of Norway (Finnmark County), the community of Alta is the most inhabited area with approximately 20,000 residents (Fig. 1). This population is 150 km by road from the nearest hospital. The primary health care service in Alta has developed a unique model of a decentralized, advanced medical service in cooperation with the Finnmark Health Trust,^{3,4} the government's organization for providing specialized health care, including hospitals, ambulance services, and emergency medical preparedness. The Alta Health Centre had already implemented regular, multiprofessional emergency medical team training in cooperation with Finnmark Health Trust.⁵

Fixed-wing air ambulance services have been employed in Alta since the 1950s, initially using seaplanes. In 1988, a national air ambulance service was established, and since then, 2 ambulance aircraft have been deployed in Alta (Fig. 1); the current craft are 2 dual-engine Beech King Air 200/B200s. The flight nurses in the Norwegian National Air Ambulance Service are either specialist nurse anesthetists or intensive care nursing specialists.⁶ In Alta, all nurses work on a rotational basis at the air ambulance base and in the intensive care or anesthesia department at the hospital in Hammerfest, respectively. Thus, they have competency and experience in emergency situations beyond that available in the municipality's emergency medical preparedness network. At the air ambulance base in Alta, the flight nurses have traditionally engaged in preparedness and cooperation in the local community with the municipality health care services. The flight nurses have been summoned to emergency situations in the vicinity of the air ambulance base since its implementation in 1988.

In 2010, the Norwegian National Air Ambulance Service performed a total of 18,003 missions, of which 9,203 were fixed-wing aircraft missions.⁷ The rotor wing air ambulance bases and the rescue helicopter bases (all staffed by anesthesiologists) have an established emergency car service to enable the flight anesthesiologist to assist in emergency situations

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1067-991X/\$36.00

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<http://dx.doi.org/10.1016/j.amj.2013.08.004>

Figure 1. The air ambulance base in Alta, Finnmark, with the municipality of Alta shaded. The local hospitals in Hammerfest and Kirkenes as well as the University Hospital of Northern Norway in Tromsø (UNN) are marked. The straight line air distance between Alta and Hammerfest is 84 km, Alta and Tromsø is 175 km, and Alta and Kirkenes is 251 km.



near the bases. This service was established to obtain maximal benefit from this expertise independent of weather conditions and distance from the base. These anesthesiologist-staffed cars were involved in 1,793 missions in 2010 on a national level.⁷ A similar service has not been established nationally for flight nurse-staffed bases except for the base in Alta.

We systematically reviewed experiences gained through the use of flight nurses as a local emergency medical resource and performed a prospective registration over the course of 6 years of all missions involving the flight nurses in the vicinity of the base. We report demographic data on the missions, their indications, and our experiences.

Material and Methods

Flight nurses since January 1, 2005, have registered all requests for assistance from the vicinity of the base. Registrations were completed using especially developed forms, and all registrations in the time period from January 1, 2005, to December 31, 2010 (6 years), were analyzed.

Results

In the 6-year period, the flight nurses were requested to assist in the vicinity of the base in 249 situations. Requests came mainly from the regional emergency dispatch center (184, 74%), but some came from the local emergency medical center (58, 23%); the flight nurses offered their assistance after an “all-units alarm” at the emergency radio communication system in 5 instances (2%).

A total of 217 missions (87%) were completed in the time frame, and 32 missions were aborted before the flight nurse

reached the patient. Thus, the average of completed missions was 36 annually or 3 per month. Of these, 67 missions resulted in a subsequent air ambulance flight to the hospital, whereas the rest did not involve transfer or were transported by ambulance helicopter or anesthesiologist-staffed fixed-wing aircraft from another air ambulance base.

Missions

The missions were mainly in daytime, with 49% between 8:00 AM and 3:59 PM and 38% between 4:00 PM and 11:59 PM; 13% were between midnight and 7:59 AM. Most missions, a total of 116 (54%), were to scenes outside patient homes or institutions. The Alta municipal emergency health center was the scene for 60 missions (28%), whereas 30 missions (14%) were to a patient’s home and 10 (5%) were to other institutions, such as nursing or retirement homes. The median duration was 1 hour (mean = 1 hour 11 minutes), with an interquartile range of 1 to 2 hours.

Patients

The age distribution was 8% infants, 15% children and adolescents (ages 1-18 years), and 77% adults. Emergency medical conditions were the main diagnosis in 58% of patients; this group included 32 cases of cardiac arrest, 20 cases of airway or respiratory problems, and 1 case of anaphylaxis. Trauma comprised 36% of diagnoses, with 14 victims having multiple trauma and 6 with traumatic brain injury. The local midwife-led maternity clinic requested assistance for newborns in 4 situations (2%).

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