

Doctor-staffed ambulance helicopters: to what extent can the general practitioner replace the anaesthesiologist?

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SUMMARY

During two years, a rural ambulance helicopter programme saved 41 patients' lives. In 29 of these patients, the decisive medical interventions were carried out by the flight anaesthesiologist before reaching the hospital. We asked an expert panel to assess whether these interventions could have been carried out by a general practitioner (GP). This was the case for 17 (59%) of the 29 patients, while more advanced skills, equipment or drugs were needed for 11 (38%). Among these 11, three patients would probably have died without the interventions. We conclude that GPs can manage a majority of life saving missions for a rural ambulance helicopter programme, but the lack of a flight anaesthesiologist may imply substantial health losses for a few patients.

Keywords: general practitioner; emergency medical services; air ambulances; helicopter team; qualifications.

Introduction

GENERAL practitioners (GPs) play a vital role in medical emergencies in public health care systems, but, increasingly, helicopter programmes are adopted to provide acute, prehospital care. Such programmes may, however, induce the GP to remain passive while waiting for the 'experts' to arrive. Also, there is controversy with respect to the composition of the helicopter team, in particular the role and qualifications of the doctor on board.^{1,2}

In a previous publication³ we reported the results for 41 out of 370 patients for whom the ambulance helicopter in a rural area was life saving during a two-year period. In the present analysis, we aimed at exploring to what extent the decisive medical intervention given by the helicopter anaesthesiologist could have been managed by a GP.

Method

For each of the 41 patients who had health benefits from the helicopter programme,³ three consultant anaesthesiologists identified the medical interventions that were deemed crucial to achieve these benefits. We included 29 patients for whom crucial treatment was given by the helicopter doctor before reaching the hospital.

An expert panel was established to assess GPs' capabilities in

the various emergency situations. The panel consisted of five GPs. They had from eight to 13 years of experience as GPs in rural municipalities and all of them had been users of helicopter services.

Based on detailed case reports for each patient, the panel members were asked to indicate if a GP could be expected to carry out the intervention in question and, if so, to indicate what fraction (percentage) of Norwegian GPs in real life would have been able to carry out the actual interventions. If the panellists considered an intervention unmanageable for a GP, they were asked to state the reasons for this.

Results

Out of the 29 patients, 23 (79%) were male. The median age was 57 years (range = 0–80). Fifteen patients had cardiovascular disease, six had trauma, two were intoxicated, two had diabetes, one had a complicated delivery, and the rest had various other diagnoses (syncope, hypothermia, febrile convulsions).

In 17 (59%) out of the 29 patients, the panel unanimously agreed that a GP should be expected to carry out the decisive medical interventions. The median estimates of the fraction of GPs who, in real life, could have performed the interventions in these 17 cases varied, from 100% to 50%, depending on how complicated the interventions were.

In 11 (38%) out of the 29 patients, the expert panel unanimously stated that a GP could not be expected to carry out the crucial interventions (Table 1). A lack of necessary equipment or drugs was most frequently stated as the reason for this. The most commonly used drugs were suxamethonium, ephedrine, and dopamine. Lack of practical skills was the second most frequent reason. For each patient, the panel stated at least two reasons why the GP should not be expected to carry out the decisive intervention.

For the two-year programme,³ 96% of the estimated life year gain was achieved from transfer of nine patients. Three of these patients were among the 11 patients presented in Table 1. These three patients (one with home delivery, one with febrile convulsions, and one with poisoning and respiratory arrest) were attributed a median gain of 66, 27, and nine life years respectively.

For one patient out of the 29 included in the present study, the panel did not reach a consensus whether a GP should be expected to perform the decisive intervention.

Discussion

The findings of this study indicate that GPs can perform the crucial medical interventions in the majority of patients transferred by an ambulance helicopter from a rural area to acute care hospitals, while the anaesthesiologist is essential for some life saving interventions.

Our results should be interpreted with caution because of the low number of patients included and because the expert panel method may yield biased estimates.⁴

There seems to be a discrepancy between what experts consider a GP should manage and what the GPs can cope with in a real situation. The findings indicate that GPs need better training in

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Table 1. Patients where the panel unanimously concluded that a GP should not be expected to carry out the decisive medical interventions carried out by the helicopter doctor (HD).

Problem	Intervention	No. of panel members who indicated that a GP (compared with HD) could not be expected to:		
		Evaluate as well clinically	Have the necessary equipment or drugs	Have the practical skill
Shot wound, shock	Ketamine, suxam., dextran, NaCl i.v., intub., ventil., antishock garment	5	5	5
Home delivery, 8 weeks pre term	Intub., glucose, calcium i.v., incubator transport	5	5	5
MI, cardiac arrest, shock	Resusc., defib., intub., lidocaine, adrenaline, atropine, dopamine i.v.	3	5	5
Poisoning, resp. arrest, convulsions	Diazepam, pentothal, morphine i.v., intub., ventil.	2	5	5
Febrile convulsions, resp. insuff, hypoxia	i.v. access, suxam. i.v., intub., ventil.	2	5	5
Syncope, resp. arrest	Suxam., diazepam i.v., intub., ventil.	2	5	4
Traffic accident, spinal cord injury	Morphine, metoclopramide, ephedrine, atropine, dextran, Ringer i.v., back splint	5	4	0
MI, VT	Diazepam, morphine i.v., el. conversion	2	2	3
Intoxication, hypotension, bradycardia	Ringer, ephedrine, atropine i.v.	1	5	1
Resp. insuff., cardiac failure, airway secr.	Tracheal suctioning	1	1	5
Diving accident, spinal cord injury	Ringer, methyl-prednisolone i.v., O ₂ on mask, neck splint, traction	5	1	0
Total		33	43	38

Suxam. = suxamethonium, insuff. = insufficiency, VT = ventricular tachycardia, el. conversion = electroconversion, secr. = secretion, resp. = respiratory, intub. = intubation, ventil. = ventilation, defib. = defibrillation, MI = myocardial infarction, Ringer = Ringer's balanced electrolyte solution, i.v. = intravenous(ly).

emergency procedures.

Even in areas where the hospitals provide emergency care pre-hospitally, GPs may play an important role because they may arrive on the scene before the anaesthesiologist. In fact, our data showed that the GPs were not waiting passively for the experts to arrive, but rather they initiated life saving interventions while waiting for the helicopter. However, it is not realistic to expect that GPs will have training in administering muscle blockers or vasoactive drugs such as dopamine because they very rarely encounter situations where such drugs are indicated.

The impact of the ambulance helicopter doctor in patient outcome is controversial.^{1,2,5,6} Included in the present study were three patients who probably would have died if the interventions had not been carried out by the helicopter doctor before the patients arrived at the hospital. The panel agreed that the GP could not be expected to carry out the decisive interventions in any of these three patients. Therefore, in a few patients the potential health loss is substantial if the helicopter is not manned with a doctor with special training in emergency medicine, and GPs cannot be expected to master such skills.

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