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# Emergency medicine in the Netherlands

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## Abstract

The Dutch health-care system provides high-quality inpatient care, but emergency care apart from trauma is poorly developed. A model for emergency medicine based on Anglo-American and Australasian principles was introduced in 2000, and a national integrated training curriculum was introduced in 2007. There exist many impediments and opposition to the acceptance of emergency medicine as a defined discipline. Despite this emergency medicine became a recognized specialty this year (2009). The present paper gives an overview of the Dutch health-care system and the history, current status, training and future development of emergency medicine in the Netherlands.

**Key words:** *emergency medicine, health care, Netherlands, training, curriculum.*

## Introduction

The author spent 15 months in the Netherlands as Visiting Emergency Medicine Consultant at the Academisch Medisch Centrum (AMC), a large tertiary hospital associated with the University of Amsterdam and at the Onze Lieve Vrouw Gasthuis (OLVG), a general hospital located in inner Amsterdam. As well as providing direct clinical support to emergency medicine trainees, he established an emergency medicine training programme at AMC and directed and restructured the education training programme at OLVG to integrate the new national emergency medicine training curriculum.

### The Dutch health-care system

The Netherlands is a small, densely populated and highly urbanized country in north-western Europe with a population of 16.5 million people. Its land area is less than 40% that of Tasmania. The Dutch health system consumes 12.4% of gross domestic product compared with 9.4% in Australia and 16% in the USA. In 2008 the Euro Health Consumer Index rated Dutch health care the best in Europe. Despite this, there are still major problems, particularly in acute medicine.

Health care in the Netherlands is not socialized; health insurance is compulsory other than for the elderly and those on social security. Premiums are income-related and subsidized by employers. People might elect to insure for higher benefits and tax relief is available for low income earners.

Eight large university hospitals are government-funded but otherwise hospitals are independent and negotiate their revenues through arrangements with health insurance companies. Access block to inpatient beds is virtually unknown.

Residents register exclusively with a local general practitioner (GP) or *huisarts*. GP are paid by insurance

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funds on a capitation basis and might also charge a small fee for service. They commonly work only office hours after which patients are directed to a GP-manned acute care clinic (*huisartsenpost*). Ambulances attend emergencies and are staffed by critical care nurses who have undergone additional training. This is a favoured career path for nurses, and no other paramedic training scheme exists.

General practitioners play a pivotal gatekeeping role to the health-care system and usually refer patients directly to hospital specialist units. Relatively few patients present directly to the ED as self-referral to hospital is not covered by health insurance without prior consultation with a GP.

## Emergency medicine (*spoedeisende geneeskunde*)

### *History*

In many respects emergency medicine in Holland mirrors the situation in Australasia 20 or 30 years ago. In 1995 a Governmental Inspectorate identified acute medicine as the weakest link in the Dutch health-care system. This prompted several senior specialists, mainly trauma surgeons, to create the discipline of emergency medicine (*spoedeisende geneeskunde*) similar to models that had evolved in USA, Canada, UK and Australasia.

In 1999, the Dutch Association of Emergency Physicians (*Nederlandse Vereniging van Spoedeisende Hulp Artsen – NVSHA*) was formed with membership open to all doctors with an interest in emergency medicine. This organization has no regulatory authority.

There is no Dutch College or Specialty Board for emergency medicine. However the Council for Emergency Medicine Training (*Stichting Opleiding Spoedeisende Geneeskunde – SOSG*) was established in 2004 to oversee training and curriculum development. This organization became a de facto credentialling body for emergency physicians and also accredited individual hospital training programmes. The first experimental 3 year training programmes commenced in 4 hospitals in 2000.

Specialty recognition and credentialling resides with the Medical Specialist Registration Committee (*Medisch Specialisten Registratie Commissie*) of The Royal Dutch Medical Association (KNMG). In 2009 emergency medicine achieved specialty recognition and this will be an important stimulus for its further development. SOSG will be replaced by a more formalized entity. Interestingly, intensive care medicine has yet to be granted specialty status.

### *ED (*Spoedeisende Hulp Afdelingen – *SEH)*

Historically the ED (SEH) has not been a major facility in Dutch hospitals, and most departments remain antiquated and under resourced.

A few hospitals have built new EDs. The OLVG is a major inner urban hospital in Amsterdam and has been at the vanguard of emergency medicine in the Netherlands (Figs. 6,7). Its new, spacious ED was opened in 2007 and is considered the best in the country yet still has major design flaws. For example there are only two small resuscitation rooms isolated from the main department, and there is no Observation Unit.

By contrast the AMC of the University of Amsterdam has been slower to introduce emergency medicine. AMC is a prestigious tertiary referral and regional trauma centre. Its trauma rooms are state of the art and include a track mounted CT scanner that enables full body scanning on the resuscitation table. Yet the rest of the ED is antiquated and emergency medicine training began only in 2007 with six trainees under the leadership of me, working at AMC half-time as an emergency physician (Figs. 2–5).

There is a fundamental difference between Australasia and the Netherlands in the perceived role of the ED. Whereas in Australasia ED are controlled and staffed by emergency physicians, in the Netherlands emergency physicians are often relegated to subsidiary roles, even in hospitals in which emergency medicine as a discipline is established.

Historically ED have been staffed by salaried *Poortartsen* ('Gate doctors') supported by *ANIO – Assistenten niet in Opleiding* ('Assistants not in training'), junior doctors 'marking time' whilst awaiting placement in specialty training programmes. Few of these doctors have received formal training in emergency medicine and they work largely unsupervised and refer all but the simplest cases directly to inpatient units.

Recently these doctors have been supplemented by locally trained emergency physicians and trainees but who are still generally restricted to seeing only those patients who self-refer to the hospital. Patients referred by GP are seen by *AIOS – Assistenten in Opleiding* ('Assistant doctors in training') equivalent to junior registrars from specialty units. Unfortunately they are frequently inexperienced even in their putative specialties, and have little concept of the principles of emergency medicine.

This is partially as a result of a dearth of emergency medicine and basic sciences in Dutch undergraduate courses. Furthermore, medical graduates go either directly into specialty training or into non-training posi-

tions until a specialty post becomes available. They do not have the breadth of experience that Australasian counterparts gain during their intern and junior house jobs and consequently acutely ill and injured patients are often inadequately assessed and treated. Clinical management tends to be formulaic and protocol driven, with independent thought neither encouraged nor permitted at this level. Important interventions such as timely analgesia are seldom addressed and outmoded and discredited practices persist.

In contrast, major trauma and non-trauma resuscitation are usually well managed at least in the bigger hospitals. Unfortunately emergency physicians are frequently marginalized as senior doctors from several disciplines will typically attend every patient in resuscitation rooms. It is usual for an intensivist to assume team leadership, even if the patient does not eventually go to the ICU.

Emergency nurses are generally well trained and play a primary role in patient management; they routinely place IV cannulae, apply plaster casts, perform sutures and wound care and initiate designated diagnostic and therapeutic pathways.

## Emergency medicine training

All Dutch medical specialty training follows a traditional European master-apprenticeship model and is locally rather than nationally based. Most specialties require 5 years' training but none mandate standardized objective assessment or examinations.

Emergency medicine was innovative in attempting to introduce a unifying national curriculum based on a 5 year training programme in order to define the core knowledge and competencies to be achieved. Unfortunately this drew considerable opposition from existing specialties and a strategic compromise saw the original comprehensive 5 year programme reduced to the 3 year curriculum that was eventually adopted in 2007. Although a major step forwards, this is nevertheless acknowledged as being inadequate. Further, even though the curriculum was mandated nationally, there remain significant disparities in its implementation between different hospitals.

Of 126 general hospitals across the Netherlands, 106 have an ED. There are only approximately 100 Dutch trained emergency physicians and standards vary greatly. Thirteen hospitals run accredited emergency medicine training programmes with a further 11 currently seeking accreditation for a total trainee population of around 120. Many training hospitals have only one or two trained emergency physicians providing both clinical service and the educational needs of the trainees. A few larger hospitals notably in Amsterdam, Rotterdam and The Hague have employed overseas emergency physicians, but overall too few trained emergency physicians are available and most directors of emergency medicine training are still surgeons.

Trainees spend the full 3 years at a single hospital where they might be one of only a handful of trainees, limiting their exposure to adequate scope of experience and supervision. This is compounded by training being heavily reliant on "stages"; namely rotations to different specialties in which the particular educational needs of emergency physicians are seldom addressed. Typically around 60% of total training time is spent in such rotations and less than a quarter actually in the ED. This is particularly worrying given the whole training time is so short. There is also relatively little exposure to anaesthesia and intensive care. Table 1 and Figure 1 give a comparison between a typical Dutch training programme (3 years) and a representative Australasian programme (5 years).

Although evidence-based medicine is widely taught, in practice, independent thought is discouraged. A culture of strict observance of protocols is pervasive in Dutch hospitals, and trainees (and nurses) feel obliged to conform, even though protocols might be idiosyncratic and not evidence-based. When questioned on clinical issues, trainees will often quote a protocol rather than volunteer any deeper understanding.

**Table 1.** Comparison of Australasian and Dutch emergency medicine training programmes

| Stage (rotation) | The Netherlands (weeks) | Australasia (weeks) |
|---|---|---|
| Emergency medicine | 32 | 121 |
| Anaesthesiology | 6 | 26 |
| Paediatrics | 6 | 26 |
| Intensive care | 16 | 26 |
| General practice | 10 | 0 |
| Other rotations (medical specialties, surgical specialties, ambulance, helicopter, forensics, psychiatry) | 73 | 26 |
| Research | 3 | 0* |
| Conference | 5 | 5 |
| Vacation | 15 | 30 |
| Total | 141 | 260 |

**No designated time provided for research project which must be completed during advanced training.*

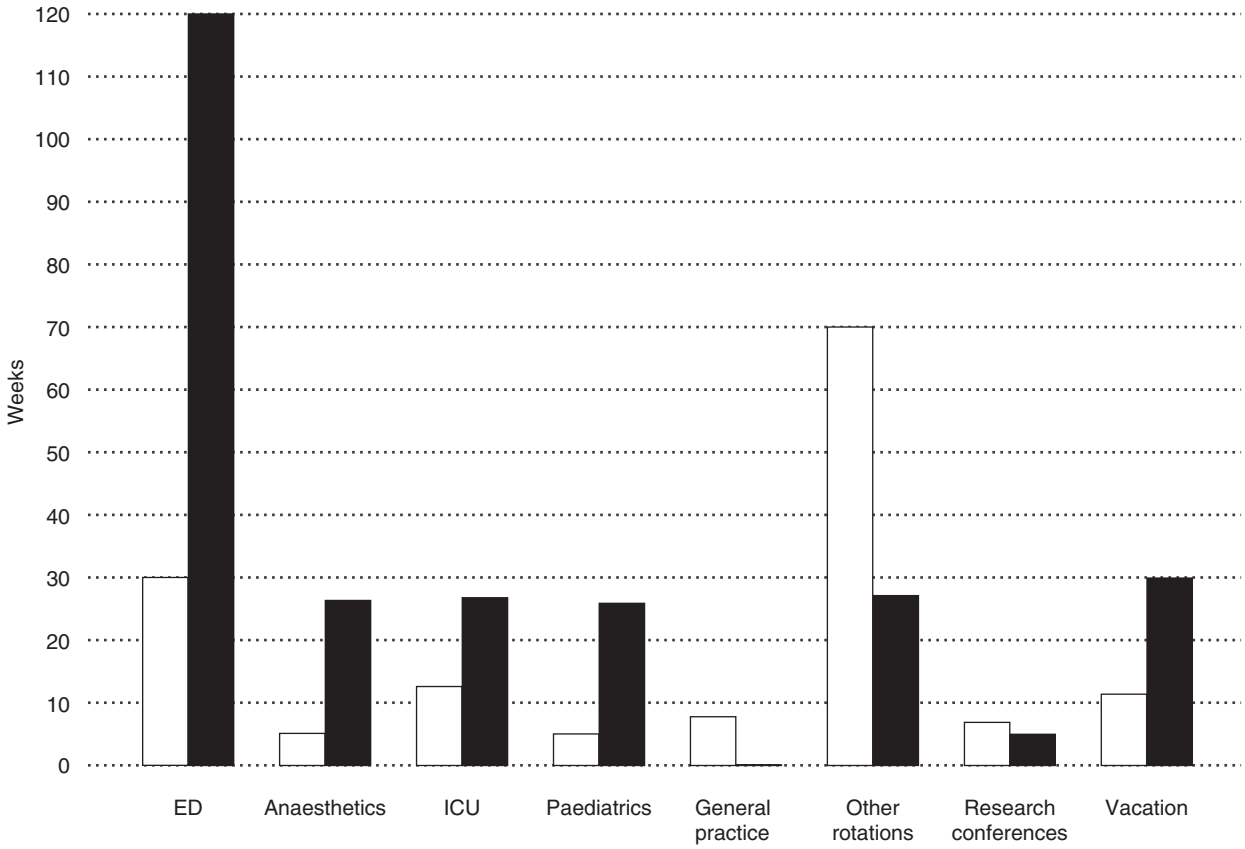


**Figure 1.** Typical emergency medicine training programmes in Australasia (■) and the Netherlands (□).

Clearly, despite the introduction of a national curriculum, current training is inadequate. It is fair to say that newly credentialed Dutch emergency physicians require considerable further experience and training to equip them to practise to a comparable level as their colleagues internationally. To their credit many recognize these shortfalls and try to gain additional experience and expertise overseas. Uniquely among Dutch medical specialties, emergency medicine is trialling a rudimentary objective assessment process for its trainees, although the infrastructure for a postgraduate system of theoretical and clinical qualifying examinations is a long way off. Another positive step recently instigated in Rotterdam is a short 'fellowship' programme for newly qualified emergency physicians, which focuses on business management, quality assurance and other non clinical issues.

*Other challenges confronting emergency medicine*

There is a patchy and variable implementation of the emergency medicine curriculum across the country. Triage is not universal and differs between institutions. Apart from trauma, urgency of disease is seldom appreciated or addressed; insidious severe illness such as sepsis is frequently not recognized or treated early. Much clinical practice in the Netherlands is process driven rather than focussing on the physical and psychological needs of patients.

Historically emergency medicine has lacked a defined role, and hospital administrators are ignorant of the benefits that accrue from a mature emergency medicine system. Thus at the institutional level there is little corporate vision for its development and little motivation to resource EDs. Disturbingly, there is resistance to change even among some non-specialist doctors and nurses who work in EDs.

Emergency medicine is neglected in Dutch undergraduate courses, although increasing numbers of medical students now spend elective terms in ED. Nevertheless, the ED is often perceived as providing an unsatisfactory and unfulfilling professional environment. Many departments have low patient numbers and restricted access to high-acuity patients.


**Figure 2.** Academisch Medisch Centrum, Amsterdam.


**Figure 3.** Entrance ED and First Heart Help, Academisch Medisch Centrum.

To some extent this explains the strenuous opposition to the concept of emergency medicine by the established specialties, although 'turf' protection undoubtedly plays a role. The commonest criticisms levelled at emergency medicine include: emergency physicians are not 'real' specialists; only cardiologists can understand hearts; only anaesthesiolgists can safely give sedating drugs; only paediatricians are qualified to treat children; the 3 year emergency medicine training programme is inadequate; emergency medicine generates unnecessary duplication of work and specialty residents will be deprived of acute experience. Similar criticisms were refuted many years go in Australasia.

It is also frequently claimed that emergency medicine is unnecessary in a system that already works well. The challenge is to demonstrate that the existing system is flawed. Unfortunately data collection and record keeping are poor in the acute care setting and there are few quality outcome data. Thus the contributions of emergency physicians to improved patient care are not self-evident and are hard to quantify. Together with a low rate of complaint and medicolegal accountability it is difficult to make an evidential case for change.

Opposition to emergency medicine manifests itself in tangible ways that reduce emergency physicians' professional satisfaction. In many hospitals emergency physicians cannot independently access advanced investigations or perform advanced procedures. A trained EP is obliged to gain approval from a junior in another 'specialty' to request CT scans, and lumbar punctures are rarely performed by emergency physicians as these are considered exclusive to neurologists. Many other impediments to emergency medical practice result in many patients being unnecessarily admitted to hospital whereas in Australasia they would be worked up and managed in the ED and quite possibly discharged.

Specialty units are under no pressure to protect inpatient beds and by admitting patients accrue funding under arrangements with insurance companies. This major source of income is largely unavailable to the ED whose financial base is generally insecure.

**Figure 4.** Trauma room, Academisch Medisch Centrum.

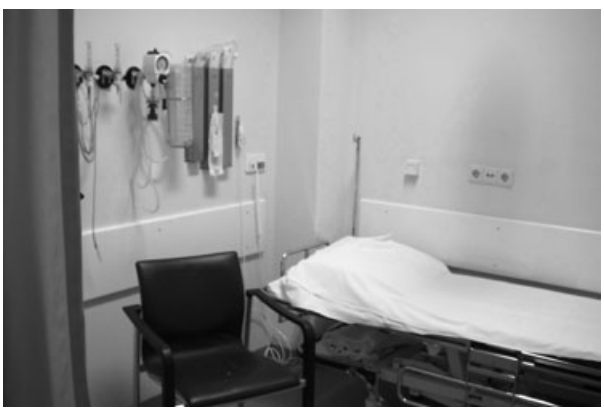

**Figure 5.** ED consulting room, Academisch Medisch Centrum.

## Fragmentation of emergency care

Many hospitals have separate 'emergency units' for different problem-based categories, most frequently *Eerste Hart Hulp* ('Heart First Aid'), *Eerste Hersen Hulp* ('Brain First Aid') and Paediatrics.

*Eerste Hart Hulp* is run by cardiologists for patients with actual or potential cardiac problems including undifferentiated chest pain. Streaming of such patients away from the ED carries the inherent risk of delayed diagnosis of non-cardiac chest pain. It is also a serious problem for Dutch emergency physicians as the management of chest pain and acute cardiac problems is 'core business' for emergency physicians elsewhere.

Stroke management is one area where fragmentation of acute care might be beneficial, at least in the Dutch context. Patients with possible strokes are taken to the *Eerste Hersen Hulp* ('Brain First Aid') where rapid assessment by a neurologist is followed by immediate CT scanning and has successfully led to the early and successful use of thrombolytics within the 3 h therapeutic window.

Despite this, fragmenting undifferentiated acute problems into presumed diagnostic streams prior to hospital undermines the whole *raison d'etre* of emergency medicine and represents one of the greatest threats to emergency medicine in the Netherlands.

## Achievements so far

Despite the significant challenges, there has been rapid growth in emergency medicine throughout the Netherlands in a relatively short period of time. This has been largely as a result of the enormous drive and belief of the founding specialists and the extraordinary enthusiasm and dedication of the young trainees who have embraced a career in emergency medicine, even at a time when there was no clear goal of specialty status to be achieved. Women comprise over 80% of Dutch trainees, and this reflects the increasing preponderance of female doctors in the Netherlands.

Onze Lieve Vrouw Gasthuis in Amsterdam has been at the forefront of the development of Dutch emergency medicine and was one of four hospitals that introduced formal emergency medicine training in 2000. Since 2000 it has also employed a succession of emergency physicians from the USA and Australia, and their input has been invaluable in creating a foundation for local emergency physicians to build on. In addition an infectious diseases physician works part time in the ED and is a useful liaison with internal medicine. A strong academic focus has been maintained with a full day set aside for education and training every fortnight to which all emergency trainees in the region are invited. The 3 year rotating academic programme at OLVG is based on and incorporates the 2007 Dutch emergency medicine curriculum.

The OLVG ED has also negotiated one day per week on which the emergency physicians and trainees have first access to most patients in the ED including those referred by GP. Unfortunately some house specialties remain uncooperative and do not permit ED doctors to see 'their' patients. Some advanced ED-based practices have been introduced including titrated i.v. opiate analgesia, procedural sedation, regional i.v. anaesthesia and invasive procedures such as central venous line insertion.

Major national achievements have been the introduction of a National Curriculum and the inauguration of the annual Dutch North Sea Emergency Medicine Con-


**Figure 6.** Onze Lieve Vrouw Gasthuis, Amsterdam.

**Figure 7.** New ED, Onze Lieve Vrouw Gasthuis.

gress that was first held in 2007 and has attracted both local and international speakers. Regional scientific meetings are regularly held around the country, and a comprehensive website provides an invaluable information resource for trainees.

## Conclusion

Currently no Dutch hospital achieves standards of emergency medicine practice comparable to any ACEM-accredited ED. With approximately 100 trained emergency physicians there are too few to service the 106 EDs around the country. There are fewer than 6 emergency physicians per million of population compared with Australasia's 40 per million of population. Thus to achieve comparable staffing ratios a sixfold to sevenfold increase in EP numbers would be required. However, the model that eventually emerges will of necessity reflect the realities of the Dutch health-care system and might not necessarily parallel emergency medicine systems in Australasia or elsewhere.

Clearly the challenges to Dutch emergency medicine are very great. Progress will come with evolution, not revolution and hopefully the current opposition to emergency medicine will recede as increasingly better trained emergency physicians demonstrate improved patient outcomes and satisfaction. The future will heavily depend on the new generation of emergency physicians currently emerging. Despite the substantial challenges, the future seems to be in good hands.

### Competing interests

None declared.

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