

Setting up an Emergency Medicine Training Program

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Erratum: There were misplaced abstract and references in the previous publication. This article is the corrected version of already published article on: J Nepal Health Res Counc 2011 April;9(18):82-5.

ABSTRACT

This article presents the foundations for building an emergency medicine training program, particularly in an environment with limited resources. It describes the history of the development of EM, what it is, how EM is practised in a typical hospital emergency department and who else is building EM training programs. The experience of establishing EM training in Papua New Guinea provides a model for development in other resource-limited environments. Strategies to establish training and to build the credibility and role of EM within the health system are described.

Keywords: emergency medicine; resource-limited environments; training.

INTRODUCTION

The foundations for setting up an Emergency Medicine (EM) training program include: an appreciation of the history of the development of EM elsewhere; what EM is in the broadest sense; how EM is practised in the typical hospital Emergency Department (ED); who else is building EM programs; and how others have structured their programs. From there one can start building.

HISTORY

In 1962 in Britain the Platt Report recommended that 'Casualties' have a full-time director. Casualty directors established the Casualty Surgeons Association in 1965, and launched specialist examinations in 1982. There was a period of improving organization, with the eventual establishment of "The College" in 2008.¹

In the USA the American College of Emergency Physicians (ACEP) was established in 1967. ACEP achieved Medical Board recognition in 1977 and Emergency Medicine became an autonomous primary specialty in 1989.

The Canadians established an Association of Emergency Physicians in 1978, achieved specialty recognition in 1979 and established a training program in 1981.

In Australia and New Zealand the first full time director of a 'Casualty' was appointed in 1967. The Australasian College for Emergency Medicine (ACEM) was founded in 1984, eventually achieving specialty recognition in 1993 in Australia and in 1995 in New Zealand.^{2,3}

What is Emergency Medicine?

The International Federation for Emergency Medicine has defined EM as:

"A field of practice based on the knowledge and skills required for the prevention, diagnosis, and management of acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of episodic undifferentiated physical and behavioural disorders. It further encompasses an understanding of the development of pre-hospital and in-hospital medical systems and the skills necessary for this development"⁴

To summarise, EM is a horizontally oriented discipline, crossing all specialties, dealing with acute illness and injury of all sorts for a limited time period

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How is hospital EM practised?

There are six major components: EM deals with resuscitation, undifferentiated illness and injury, a range of responses to known illness and injury, gate-keeping, management and discharge, and short stay management.

1. Resuscitation is about providing an immediate attention to life threats, with skills and equipment on site. Attention is focused on airway, breathing, circulation. Common conditions requiring rapid circulation resuscitation include hypovolaemia, anaphylaxis, arrhythmia and myocardial infarction.
2. Examples of undifferentiated illness that require differentiation in the ED include collapse with or without depressed consciousness, chest pain, shortness of breath and abdominal pain. The last can be surgical, gynaecological, urological, nephrological, vascular, endocrine, cardiac, respiratory, medical, neurological or psychiatric in origin, so differentiation is important.
3. EDs provide a range of responses to known illnesses and injuries. For example, asthma can present anywhere in the spectrum from a minor exacerbation requiring only spacer or nebulised salbutamol and discharge, to a life threatening event requiring IV adrenaline, intubation and intensive care.
4. Gate-keeping is the business of effectively determining which patients need to come into hospital. There is a wide spectrum of illness and injury that can be assessed and managed by an Emergency Department. Appropriate identification and care reduces hospital admissions. An example might be a knee joint effusion, which might be because of osteoarthritis, gout, or sepsis: each requires a different response.
5. There is a wide spectrum of illness and injury that can be managed efficiently in ED and the patient discharged. This spectrum includes many toxicology presentations, many infections, allergic reactions, lacerations, soft tissue injuries, and fractures not requiring surgery.
6. Short stay management can be provided in a dedicated short stay unit run by ED, admitting patients for up to 24 hours of care (some go as far as 72 hours). Conditions include toxicology not requiring ICU; infections such as pyelonephritis, pneumonia, cellulites; minor trauma for mobilisation, minor head injury; asthma, migraine, labyrinthitis, renal colic, and diarrhoea& vomiting.

Who is building EM programs?

The International Federation for Emergency Medicine (IFEM) was inaugurated in 1991 (4). It was founded by the UK, Australia, USA and Canada following international

meetings in London in 1986 and in Brisbane 1988. By 2010 more than forty countries and organizations had joined IFEM. The secretariat and president are in Australia.

Full IFEM members include: Australia, Bahrain, Canada, China, Colombia, Hong Kong, Hungary, Ireland, Israel, Korea, Netherlands, Mexico, Poland, Singapore, South Africa, South Pacific (PNG), Sweden, Taiwan, Thailand, Trinidad and Tobago, Turkey, UK, USA, and Venezuela.

Affiliate members include: the US organisations AAEM and ACOEP, Argentina, Brazil, Czech Republic, Denmark, India, Lebanon, Madagascar, Spain, Sri Lanka.

Ex-officio members include the Asian Society for Emergency Medicine, the Latin American Association for Emergency and Disaster Medicine, and the European Society for Emergency Medicine

How are EM programs structured?

There are variations in the structured EM program (Table 1).

Table 1. EM Program.

| Country | PG Years prior to entry | Years of EM program | National (N) or Institutional (In) |
|------------------|-------------------------|-----------------------------------|------------------------------------|
| Australasia | 2 | 4 | N (college) |
| UK | 2 | 6 | N (college) |
| USA | None or 1 | 3 or 4 | In, N exams |
| Canada | | 5 3 (2 GP, 1 EM) | N (colleges M&S) N (college FM) |
| Hong Kong | 2 | 4 | N (college) |
| Singapore | 2 | 3 + 3-6 | N (college) |
| Malaysia | 3 | 4 | In (x3) |
| Papua New Guinea | 4 | 4 | In (x1) |
| China | 3 + | 3 (post doc.) 5 (post masters) | In |
| South Africa | 2 | 4 | N (college) and In |

Nepal is now in the enviable position of being able to learn from many others, perhaps to avoid the difficulties others have had and perhaps to use how others have been successful.

How do you go about starting EM?

The critical thing is to just GetStarted! Expect to develop your program as you learn and as the specialty develops.

I started in New Zealand in 1986. In 1989 I became the first emergency physician through ACEM exams in NZ and set about building an EM program. The advantage I had was that I was able to import what was happening in Australia. EM was recognized as a specialty in 1995. It took ten years to really get EM well founded and on its way.

The ACEM program has been in continual evolution since the 1980s and now looks quite different from the original version we started with.^{5,6}

I then became involved in Papua New Guinea in 2001. PNG was also able to import from Australia. But conditions are very different in the South Pacific, and PNG built its own program to produce specialists who could function as hospital generalists, providing anaesthesia, undertaking laparotomies and caesarian sections, managing complicated deliveries, providing intensive care for sick children, and more:⁷

The essentials of the PNG program are:

- Undergraduate - 5 years;
- PGY 1, 2 - "intern" pre-registration years;
- PGY 3, 4 - junior MO hospital rotations, rural medicine, ED;
- PGY 5 - 1 year foundation in surgery, Part 1 common core and surgery exams
- PGY 6-8 - rotations of minimum 4 months medicine, paediatrics, O&G, anaesthesia; 1 month ENT, ophthalmology, radiology, psychiatry; Diplomas in anaesthesia and/or child health and/or obstetrics and gynaecology
- Finally, a 1 year rotation to an Australian ED.

All up, a PNG doctor is likely to achieve Master of Medicine in EM in about PGY 10.

The Solomon Islands, neighboring PNG, are now putting doctors through this PNG program.

BUILDING A PROGRAM

Once there is a foundation there are three requirements:

1. to have institutional support - how this is set up will be peculiar to Nepal,
2. to have the support of the major disciplines for rotations, and
3. to recruit trainees.

When there are trainees a fundamental is to build credibility, whatever the environment and whatever is expected of EM graduates. Keys to credibility include:

1. Building a program for local priorities. No other country's program is ideally suited to another place. And a new place will want to do better than others.
2. Involving local specialists - surgeons, physicians, paediatricians, gynaecologists, et al, in the training program.
3. Getting trainees to do local diplomas, if available, such as in anaesthesia, child health, obstetrics and gynaecology. These programs have EM trainees 'rubbing shoulders' with other trainees, where they demonstrate comparable competence.
4. Having EM provide a multi-disciplinary course. For example, in PNG the Primary Trauma Care course is provided by Emergency Medicine.
5. Having EM trainees included as instructors for established courses, eg ACLS, ATLS, APLS, CRRISP, ALSB, ELS, etc
6. Having EM trainees present at grand rounds, at specialty meetings and at conferences
7. Having visitors from established EM programs spend time in the ED, meet specialists in other disciplines and present at rounds.

A CURRICULUM

Building a curriculum is relatively easy these days. Many have done it, and there are now many EM textbooks. The table of contents of a standard text book is a good way to get a ready-made curriculum. Then it is tailored for the local circumstances, case-mix and resources, emphasising some areas and reducing others.

The IFEM has produced a model curriculum for medical student education in EM. It has been published in the 'Canadian Journal of EM' and reproduced in the journal 'EM Australasia'. This is actually a suitable starting point from which to build a postgraduate program too. The IFEM has also published a model postgraduate curriculum.

The focus of an EM program needs to be different from that of other specialties. There needs to be a focus on how patients present.

In the resuscitation room patients present with threats to

- Airway: such as obstruction - in airway, in tissues, trauma, depressed consciousness
- Breathing: such as tension pneumothorax, major pneumo/haemothorax, sucking wound
- Circulation:

Shock can be *hypovolaemic*: such as acute blood loss or acute fluid loss, which can internal or external; *cardiogenic*: such as disorders of rhythm, muscle, valves, chambers, the pericardial sac; *obstructive*: such as pulmonary embolus; or *distributive*: such as anaphylactic, septic, toxic shock.

Depressed consciousness can be from a host of causes:

trauma (subdural, extradural, diffuse axonal injury); *cerebro-vascular* (infarction, haemorrhage, subarachnoid haemorrhage); *seizures* (epilepsy, infection, drugs, metabolic); *toxicology* (overdose, recreational drug); *hypotension* (all the causes of shock)

Chest pain can originate in several sites:

heart (muscle, pericardium); *vessels* (aortic dissection); *oesophagus* (reflux); *lungs* (pulmonary embolus, pneumothorax); *pleural cavity* (infection, infarction, pleurisy); *chest wall* (musculoskeletal, neurological eg Zoster).

So can shortness of breath:

airway (obstruction: epiglottitis, croup); *lungs* (infection, infarction, embolus, obstructive airway disease); *heart* (heart failure, arrhythmia, myocarditis, bacterial endocarditis, effusion); *circulation* (all causes of shock); *acidosis* (diabetic ketoacidosis, lactic acid); *psychological* (hyperventilation).

Abdominal pain can be from a host of causes, spanning the domains of many specialties:

surgical (appendicitis, perforation); *gynaecological* (ectopic pregnancy, torsion of ovary); *urological* (renal colic, torsion of testis); *nephrological* (pyelonephritis); *vascular* (mesenteric ischaemia, aortic aneurysm); *endocrine* (diabetic acidosis); *cardiac* (inferior myocardial infarction, myocarditis); *respiratory* (lower lobe pneumonia); *medical* (porphyria); *neurological* (Herpes Zoster, radicular pain); *psychiatric* (somatisation).

This is why abdominal pain should not be referred straight to surgeons.

EM training is conducted in the ED and on rotations.

In the ED there is 'on the job' training that is experiential, with supervision and guidance. There is also a formal training program that includes a general EM curriculum and exam preparations.

Rotations have two aspects: the training requirements of the EM trainee; and the service expectations of the rotation. Each institution will have to find its own balance of these sometimes competing demands.

Examinations

In the early years of a program it is useful to include examiners from other disciplines within the institution, and visiting examiners from a more established EM program.

In conclusion, Nepal is now enviably positioned to take advantage of a good deal of experience in building emergency medicine training programs in other parts of the Asian region. Pathways are understood. It is time to get started.

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