

Perspective

Acute Medicine – Needs and Challenges: The Bangladesh Perspective

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Abstract:

Bangladesh has an ageing population, with increased multi-morbidity and polypharmacy. Acute care is becoming more complex, with increased admission numbers and little alternative to hospital attendance and admission. Alternative models of care are discussed, that include new ways of working and use of novel training techniques including technology such as point of care testing including ultrasound. The use of ambulatory care is also proposed, with rapid access and even virtual outpatient clinics. The development of specialist acute generalists can enable other clinicians to develop more specialised skills including managing separate gastrointestinal bleeding rotas and heart attack or stroke units. Standardised care at the front door can reduce variability in practice and promote excellence in acute care for all patients. The potential pros and cons of developing an acute (internal) medicine model in Bangladesh are discussed.

Keywords: Point of care, Ambulatory, SDEC, Ultrasound, Curriculum, AMU.

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Introduction

Acute Internal Medicine was originally designed as a specialty in UK to address the need to manage patients effectively at the front door and to deliver an effective and efficient solution to the ever increasing demands at the hospital front door. Formed in 2000, the Society for Acute Medicine (www.acutemedicine.org.uk) was established to help develop the specialty, and help those interested in establishing dedicated Acute Medical Units (AMUs).

The healthcare system of Bangladesh is vastly different and hence the design and delivery of an acute internal medicine-

based model of care would have to cater to the Bangladeshi healthcare system. Various complexities are associated with the Bangladeshi health system making it very different to the United Kingdom (UK) health system including, but not exhaustively, the following:

Different population demographics. According to 2022 census, the population of Bangladesh is 165 million where 50.5% are female and 49.5% are male. Median age of population is 27.1 years. Population growth rate is 1.22%. Around 31.51% people live in urban area and 86.49% population live in rural area.¹

In contrast in 2022 the UK only had 67.6 million, with a median age of 40.7 years.²

Up to 2022, total number of hospital beds in Bangladesh are 171,675 in the country with the number of government beds being 71,660 and the number of private beds being 99,975. One hospital bed for every 990 patients in Bangladesh.³

With devolution of care, each of the nations of England, Wales, Scotland and Northern Ireland have a certain amount of autonomy over their health systems. The total number of NHS hospital beds in England alone has halved over 30

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years, from 299,000 in 1987/1988 to 141,000 in 2019/2020. There is a proposal to increase these by a modest amount. In the same time, the number of patients treated has increased significantly.⁴

According to data published in September 2023 by Government of people’s republic of Bangladesh, Ministry of health and family welfare, density of doctor, nurse and midwife per 10000 is 12.78 while global standard is 44.5. In Bangladesh, health work force ratio (Physician: nurse & midwife: allied professional) is 1:0.75:0.74 while global standard is 1:3:5. Health work force ratio who are in government service is 1:1.14:0.36.⁵

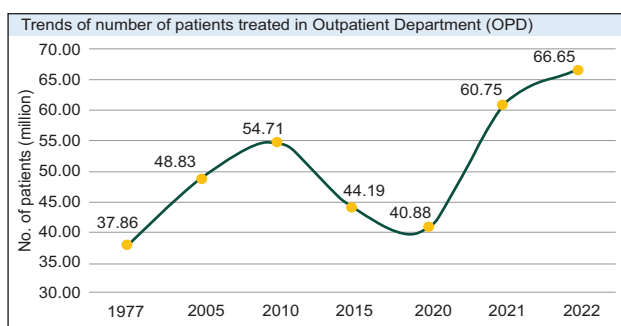
The Bangladesh government has introduced a new emergency service in public hospital in 2022 named OSEC; one stop emergency and casualty service. It is now working at six tertiary level hospitals but there is no trained manpower on emergency service in place. The lead workforce of OSEC are internists, surgeons and gynaecology & obstetrician specialists. Only one international standard emergency service is provided by a public hospital currently, at Cox’s Bazar Medical College. This would be standard in the majority of acute hospitals in the UK.

There is no emergency medicine or acute medicine postgraduate degree currently available in Bangladesh. In the UK there is an established training programme for Emergency Medicine, Acute Medicine (since 2006) and even subspecialty teams in acute oncology and acute geriatrics have gained momentum and share educational meetings.

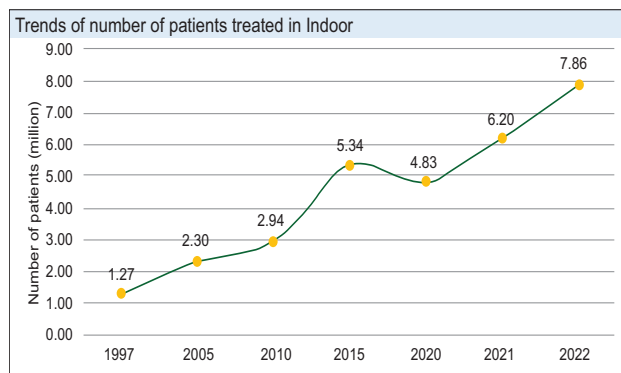
There is little data are available regarding the Bangladesh health service. Ahasan HAMN et al published article on death in initial hours of medicine wards during 2017. It revealed cerebrovascular disease (CVD), diabetes mellitus & its complications and chronic kidney diseases were the leading causes of death. About 20% of the deaths were in patients under 40 years⁶.

The number of OPD (outpatient department) patients are increasing every year in Bangladesh⁷.

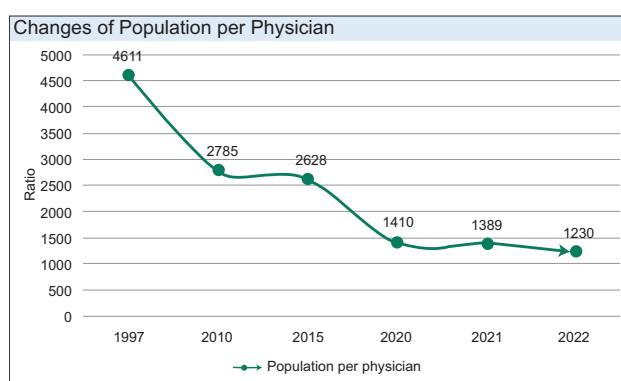
Health Services



Number of admitted patients are also increasing every year⁵.



However, one positive is that the population per physician is gradually decreasing in Bangladesh⁵.



In UK, the in comparison to other countries in the OECD, the proportion of doctors is lower, England has 2.9 per 1000 population, whereas Germany has 4.3. The average across European OECD nations is 3.7 per 1000.⁸ This is higher than Bangladesh at 0.8 (from diagram above).

In the UK, healthcare is free at the point of access for emergency and urgent care. Some individuals will need to pay for dental care, ophthalmic care and outpatient prescriptions. The number of private hospital beds is less well prevalent in the UK. It can be difficult to fully establish how many hospital beds they deliver to the system, but it is thought to be approximately 11,000. These are sometimes accessed by NHS organisations to help with waiting list initiatives.

In Bangladesh, healthcare is not completely free and patients have to pay for various aspects of their healthcare even if in governmental hospitals – including inpatient prescriptions, investigations including blood tests and radiography. In private hospitals, they will tend to pay for their whole stay. A lack of a coordinated primary care meaning patients often present to the hospital at various points of their disease processes, and meaning that an efficient coordinated interface between primary care and hospital based secondary care is extremely difficult.



Examples of conditions for inpatient care in Bangladesh highlighting some of the issues, and the need to change the way healthcare is delivered:

One of the first Acute Medicine Units in Bangladesh is co-located with the High Dependency Unit at the private Square Hospitals, Dhaka. The unit has its own ultrasound machine, cardiac monitors, isolation rooms and can provide advanced respiratory support. This shows that close integration is necessary with areas of higher level of care:

A team of doctors in Bangladesh starting to use Point of care ultrasound to direct care: many of these probes integrate with smartphones, reducing the size and cost of the technology.

A lack of a truly centralised health system exacerbates these issues. In Bangladesh, the prominence of a private healthcare system, running in parallel with the public healthcare system, and delivering not only elective and outpatient but also emergency and inpatient care means that the healthcare system is more ‘balanced’ than that in the UK between public and private providers.

To address the above complexities, it is imperative to first understand Acute Internal Medicine as a specialty and its scope of practice and then consider and explore how it may be adapted to reflect the system needs of the Bangladeshi health system.

Part 1: The Acute Internal Medicine (AIM) model

Acute Internal Medicine is a specialty which focuses on the initial assessment and management of adult patients with urgent medical conditions. Acute Medics look after patients with an undifferentiated but urgent medical problem and help to accurately diagnose, through appropriate assessments, and then manage such patients. Traditionally, the remit of acute medics was only within the hospital with the acute medics usually looking after such patients for the first 72 hours (this is a somewhat arbitrary figure and can vary between units) by which time the target is to differentiate the patient’s medical condition to a particular specialty (or group of

specialties, including general internal medicine) and also, at the same time, stabilise the patient. However, over the years, the remit of acute medicine has expanded to include ambulatory care medicine and, more recently, hospital at home medicine and a ‘virtual ward’ model based care. The advent of ambulatory care medicine, hospital at home medicine and virtual care have had a significant beneficial impact on patient journeys through their illness, giving them the opportunity to receive the necessary acute medical interventions while staying at their own home (or residence) and minimising the harmful effects and complications of a hospital admission. This has also significantly reduced the demands for hospital beds and inpatient resources hence helping hospitals to focus these resources to patients who need this the most.^{9,10}

Even though the UK is the pioneer in the set-up of acute medicine as a specialty, acute medicine may be comparable to the model of hospitalist care in the United States of America, or the model existing currently in a lot of secondary and tertiary care public and private hospitals in Bangladesh. For example, in a hospital like Dhaka Medical College Hospital (one of the largest public hospitals in Bangladesh), a patient presenting with an acute medical condition, after initial rapid triaging in the Emergency Department, will be referred to the department of internal medicine where they would have the initial required management and undergo the necessary stabilisation before being, if relevant, referred to onward specialties. However, important differences exist between the Bangladeshi model of providing acute medical care versus the UK model and these are summarised below:

Firstly, in Bangladesh, there is no formal interface of direct verbal communication and referral between the community (from where the patient is presenting acutely to the hospital), the emergency department and the internal medicine department. The absence of such a formal interface of communication also renders a safe but early discharge back to the community for ongoing community based care very difficult; an absence of facilities in the community to deliver such community based ongoing care also compounds this. As a result, patients often end up staying in the hospitals to receive their ongoing care. The absence of a formal interface of direct verbal communication between the community and the hospital also means that in a lot of cases, the onus is on the patient or their relatives to arrange the necessary logistics (e.g., transport) to bring the patient to the hospital after they are referred to the community. And once the patient arrives at the hospital, the receiving hospital has very little information about the patient apart from the history given by the patient and their relatives and any information written in a letter.

Secondly, the absence of acute medicine as a distinct specialty in the post graduate curriculum of Bangladesh, leads to a valuable loss of opportunity when it comes to providing extensive training in acute medicine to post graduate doctors. Hence, the skillsets of doctors in internal medicine providing acute care to the patients can be extremely varied in quality, depending on which hospital the patient has attended and the doctor looking after them.

Thirdly, there is no extensive MDT input in the current model of acute medical care in Bangladesh. In the UK, formal communication between medical staff and allied healthcare professionals including physiotherapists, occupational therapists, speech and language therapists, social workers, discharge coordinators, nursing team, etc. All this results in a high dependence on doctors as the main provider of acute medical care to patients and a far lower input of other healthcare staff. This also may magnify the variation in the quality of doctors in the patient journey.

Fourthly, the health system of Bangladesh is heavily centralised meaning patients who depend on public hospitals for their care often depend on a select few hospitals. This fact, coupled with all the challenges mentioned above, mean that there is a lot of pressure on these hospitals to deal with a massive patient load. These hospitals not being gifted with a formal communication between both themselves and the community as well as other referring hospitals. This significantly disrupts an efficient flow both into and out of these hospitals. This centralisation also means that there is immense variation in the quality of medical care that patients receive dependent on where they live.

And lastly, the Bangladeshi health system does not yet have the facility to deliver acute medical care away from hospitals including the model of care such as Urgent Treatment Centres (or minor injuries units, which are often staffed with community based General practitioners and advanced clinical practitioners (allied health practitioners who have attained further qualifications, such as to Masters level). Ambulatory care (for example Same Day Emergency Care) may be possible with one review, and perhaps follow up with virtual clinics including telemedicine. This may somewhat help to negate the issues with heavy traffic in the larger heavily populated urban areas, especially Dhaka.

In an ideal world, acute medicine works well when complemented by the following system, and where acute medicine sits as an invaluable part in the patient journey but is not the sole player in that journey:

- a. A patient with an acute medical condition is picked up in the community by either their primary care provider (in Bangladeshi health system, this may be a primary care

- physician or a physician working in a community clinic) or by the paramedics/ambulance staff (it is to be noted that Bangladesh lacks a centrally coordinated public system-run ambulance or paramedic system)
- b. The onus is then on the primary care physician or the paramedics to ensure the following: the patient is referred to the right hospital, the hospital prewarned of the patient, all arrangements are in place for the patient to be transported to that hospital (again, the lack of a central ambulance service is a challenge)
 - c. The patient is brought to the emergency department (or directly to the AMU depending on patient complexity and the pathway involved) where a designated person (the person responsible for taking referrals from the community) has already been made aware of the patient even before they have arrived to the hospital
 - d. The emergency department has all required facilities and skillsets available to stabilise the patient to whatever extent is necessary before the patient is referred to acute medicine
 - e. Acute medicine become involved in the patient care once the patient is referred to them and is placed under their care.
 - f. The acute medics have a team of health care professionals (not just doctors but the wider MDT) who have all the skills and knowledge required to stabilise the patient over the next 72 hours and make the correct diagnosis and start to coordinate discharge planning early in the patient journey. They are at the interface of community care, as well as specialty care and higher levels of care including Intensive Care (ICU), High Dependency (HDU) and Coronary Care Units (CCU). Dedicated access to diagnostics is necessary to ensure that care is delivered in a timely fashion, point of care diagnostics is integral to this pathway) to enable them to make the correct diagnosis and institute the correct management in a rapid and timely manner
 - g. Patients are then either referred to onward specialties for ongoing care or referred safely back to the community for ongoing community based care. The community has the facilities to provide this regardless of where the patient is living and there is an extensive system of communication between the acute medics and the community to ensure that the continuity of the needed care can be safely ensured even after discharge
 - h. If the patient's condition deteriorates where a higher level of care is needed for the patient, acute medicine has all necessary facilities to ensure an appropriate level

of care is delivered to the patient. This would be delivered through a combination of the following: the enhanced skillsets of the acute medics in dealing with the acutely deteriorating patient, access to all necessary urgent diagnostics and point of care testing, access to areas within hospitals run by acute medics called 'enhanced care units' which ensure close monitoring and higher level interventions and an excellent and detailed communication with the critical care team through which the patient can be rapidly referred to HDU or ITU if that is appropriate. The AMU, as a geographical location, as well as a team, can be considered somewhat of a hospital wicket keeper – they can provide in-reach to patients on other wards and in the Emergency department, as well as being seen as a place of safety with enhanced monitoring. Of note, in many hospitals in the UK, the Acute Medicine team can be a member of the Medical Emergency team (often called the cardiac arrest team or resuscitation service)

- i. A well-functioning ambulatory care unit or a hospital at home service would mean a lot of the above patients who do not necessarily need inpatient care but are still referred to the hospital can be managed through these alternative services, reducing pressure on hospital beds and enabling these to be more readily available to patients who definitely and urgently need them. This patient centred care is often also preferable to the patient, who resides in their usual place of habitation.

The imperative question for Bangladeshi health system is whether it wants the specialty of acute medicine to be playing the above described role or whether they see acute medicine as a specialty which only focuses on the management of a select few patients with narrowly defined acute states.

This is discussed in details later in the article.

Part 2: Clinical skills

In order to set up acute medicine as a specialty, one of the main questions to answer is 'what does the knowledge and skillset of a doctor specialising in acute medicine look like and what should their training be to help them achieve this?'

In the Bangladeshi context, there are two options to answer this question:

- a. Form a discreet specialty called 'Acute (Internal) Medicine' separate from 'General Internal Medicine' as a specialty, having its own post graduate curriculum and exit exam (e.g., FCPS/MD in Acute Medicine)
- b. Ingraining acute medicine training as just as a module into the 'General Internal Medicine' post graduate

curriculum (of note, in the UK, Acute Medicine was a subset of GIM from early 2000s until 2009 when it gained its own standalone curriculum, updated by a team including NM in 2021 to include amongst other things, point of care ultrasound)¹¹

For reasons obvious to anyone, if Bangladesh is to fully incorporate acute medicine as the key and main player in any patient's extensive journey through secondary care with a medical problem (as depicted earlier in the chapter), it makes sense to have acute medicine as a separate specialty altogether because only then can acute medics have the extensive and comprehensive skills to help develop the specialty and a key player in the hospital based delivery of care to the Bangladeshi patients with medical problems.

The skills which define the ideal acute physician includes the following:

- a. Ability to efficiently triage a patient and decide whether they can be discharged safely back to the community or if needs admission or needs referral to higher levels of care. As a further extension to this, ability to use well validated risk assessment tools to decide on the modality and place of care (there are very well validated international tools – for e.g., PE severity scores – but any such tools has to be amended to reflect the need of Bangladeshi patients)
- b. Ability to recognise unwell patients and institute appropriate management in a timely manner. This would include being able to not only have the required bedside clinical skills and knowledge, but also proficiency in interpreting data from lab and radiology studies, proficiency using point of care ultrasound and echocardiogram, and proficiency in doing emergency medical procedures (e.g., Central venous lines, arterial lines, chest drains, ascites paracentesis, us guided vascular access, setting up Non-invasive ventilation, continuous positive airways pressure or High flow oxygen delivery, direct current cardioversion, etc)
- c. Ability to exercise sound clinical knowledge and skills (as well as skills in clinical reasoning) in diagnosing the underlying medical condition(s) and be able to proficiently formulate a safe management plan. One of the main skills of acute medics is their knowledge and skills of how to assess and manage patients with the 'undifferentiated medical condition' hence acute medics are proficient more so than others in how to manage patients with an acute medical condition belong to any specialty (the 'multi-system' competence)

- d. Ability to proficiently work with the emergency department, other specialties, intensive care medicine as well as the wider MDT to provide a holistic care to patients.
- e. Proficiency in managing the community-hospital-specialty interface
- f. Sound leadership, management and communication skills. This is of paramount importance since acute medics will not just treat patients as 'individual doctors' rather will be expected to work as a part of a wider team and often will be expected to help design and run acute medicine services which can cater to the appropriate demand for acute medical care
- g. Proficiency in 'evidence based medicine'

Discussion:

In light of the above considerations, moving forward, for acute medicine to play any meaningful part in the Bangladeshi health system, the following questions will need detailed exploration:

- a. Where does Acute Medicine sit as a specialty in the overall health system of Bangladesh? Does it form an integral part of a centrally coordinated health system or it is just a specialty in hospitals where acute medics only look after a select few 'appropriately defined' sick patients?
- b. Where in the Hospital based patient treatment pathways do Acute Medicine Units stand? Will AMUs form the hub of the hospital (whereby all medical patients from either the community or, more commonly, the Emergency department who need further medical input including hospitalisation are referred to and admitted) or are acute medical units an isolated area within hospitals where only 'appropriately defined and triaged' sick patients are referred from ED or from within the hospital?
- c. What are the skillsets and resources that should be available in all established AMUs? This should include, but not exhaustively, consideration of both resources and facilities, for e.g., point of care diagnostics including bedside portable point of care ultrasound and echo machines, capillary blood glucose machines, blood ketone monitoring devices, venous/arterial blood gas analysis machines, cardiac monitors and facilities for providing high flow oxygen/CPAP/NIV. This would also need strict definition of what would be the minimum skillset of doctors, nurses and ward staffs who would work in such units as well as their roles and patient ratios.

- d. What would postgraduate curriculum in Acute Medicine look like? Would Bangladesh have an established separate post grad curriculum in Acute Medicine with its own exit exam (for e.g., FCPS/MD) or would acute medicine be incorporated into the already existing General Internal Medicine Curriculum. Should there also be an extrapolation for the curricula to be included in the undergraduate experience?

Whatever the answers, it is of prime importance that they are all aligned.

For example, if Bangladesh decides to have acute internal medicine as an integral and main key player in the overall journey of all patients throughout the journey of their acute medical condition, then AMUs need to be the hub of the hospitals, acute medicine needs to be a separate discreet specialty and extensive network of connections needs to be built between the acute medics in the hospital, the community health system, the emergency department and the other specialties and the wider MDT.

For the reasons explained already, Acute Medicine if practiced in an evidence based manner, has got the potential to make a massive beneficial impact on the overall health system of Bangladesh. It could reduce the cost of healthcare considerably (by ensuring the healthcare resources are spent in the most proficient manner); additionally patient outcomes can considerably improve through the improved skills of acute physicians, demands on hospital beds can reduce considerably and the hospital based inpatient resources can be delivered in a focused manner to patients who need them the most. A wider network of communication between the primary care and the acute medicine based secondary care can significantly improve the care patients receive no matter where they are located. It is important to note that the highest benefits of Acute Medicine when we go beyond seeing Acute Medicine as ‘just another specialty’, instead see it as an overall ‘philosophy’ or a ‘model of care’ which serves the national needs of the health system.

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