Acute Medicine
Acute Medicine
A practical guide to the management of medical emergencies

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FIFTH EDITION
For Natasha and Helen
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For the medical patient presenting with an undifferentiated emergency, the best outcome is achieved when initial assessment is by an experienced generalist, and subsequent care, if needed, by the appropriate specialist.

This book is written for the generalist: it aims to guide the trainee and provide an aide-memoire for the more experienced physician, to diagnose and manage the broad range of problems and diseases encountered in the emergency department, ambulatory care centre, acute medical unit or on the wards.

For this edition, we have enlisted experts to write or revise chapters; as previously, our intention has been to produce a step-by-step practical guide to the management of medical emergencies, grounded in national and international guidelines. The emphasis is on care of the patient in the first 24 hours, but guidance beyond this is also provided, as well as instructions on how to perform practical procedures. Clear advice on when to call for specialist help is given. Bed-side ultrasonography is beginning to transform acute medicine, and a new chapter summarizes its uses.

David Sprigings
John B. Chambers
Evolution of acute medicine: the development of ambulatory emergency care

VINCENT CONNOLLY

Acute medicine as a specialty

The specialty of acute medicine was developed to streamline the assessment and care of patients with acute illness or exacerbations of long-term conditions. Patients accepted on an acute medical unit (AMU) are assessed on arrival by a senior doctor and assigned to one of four streams of care:

- Ambulatory emergency care, for same-day treatment and discharge without using a hospital bed
- Short-stay (<72 hours) inpatient care
- Organ-specific disease requiring inpatient care from a specialist team
- Frail older patients, for whom comprehensive geriatric assessment (Chapter 31) is needed.

An acute physician requires the clinical skills to manage patients with a broad range of clinical problems, and in each of the care streams described above. This chapter focuses on ambulatory emergency care (Box 1).

Ambulatory emergency care (AEC)

- This is usually run by specialists in acute medicine, but can also be part of emergency medicine, surgery or paediatrics. Delivery requires rapid assessment by a senior physician, usually a consultant.
- Referrals are accepted from (Figure 1):
  - The emergency department
  - General practitioners and community nurses
  - Inpatient wards as part of a step-down approach to discharge
  - Other hospitals and clinics

Box 1 Ambulatory emergency care (AEC)

An effective AEC service can improve patient care and system efficiency. The essentials for a highly functioning service are:

- Senior clinician presence throughout the opening hours
- Clear patient-selection criteria
- Agreed pathways for high-volume clinical presentations
- Access to a multi-disciplinary team to support care plans for older people
- Appropriate infrastructure to meet the demand, particularly staffing
• If suitable for AEC, the patient and relatives or carers must be informed that the plan is for same-day care then discharge, since the initial expectation after referral is often that an inpatient admission will be needed.
• The initial assessment must establish suitability for AEC.

**Is the clinical condition suitable for AEC?**

Is the patient actually well enough for early outpatient review? Alternatively, is the patient sick enough to require inpatient admission? National Early Warning Score (NEWS) can help (Table 1.2), but must be interpreted individually in the clinical context and working diagnosis. For example, a patient on long-term domiciliary oxygen may have a high NEWS but be clinically stable and suitable for AEC; a young person with low oxygen saturation levels may not trigger concern, even with a sub-massive PE.

The Amb score (Table 1) is also useful. A composite score of 5 or more suggests that the patient is suitable for AEC. The Amb score can be a particularly useful tool when less experienced staff are responsible for streaming, to help build confidence in the process.

**Can the AEC unit deliver the required care?**

Is there access to required back-up services: diagnostics; support by a community heart failure team; and ability to give parenteral antibiotics seven days a week.

Are staffing levels adequate in the face of current patient load and concerns like sickness and annual leave?
Can the AEC unit cope with the patient’s personal needs?
These include feeding, toileting and behaviour. It is possible to manage frail older people with confusion or delirium in the AEC unit if the appropriate support is available.

Patient presentations to AEC

The clinical scenarios suitable for management in the AEC unit are in four main categories.

Diagnostic exclusion
Examples include:
- Chest pain with no acute ECG changes and low coronary risk. The patients can await troponin assays on AEC.
- Sudden onset severe headache in the absence of other neurological symptoms or signs. Exclusion of subarachnoid haemorrhage or other potentially serious diagnoses, with a CT of the brain and possibly a lumbar puncture, can be delivered in AEC.
- Suspected pulmonary embolism if haemodynamically stable. A CTPA (see Chapter 57) according to clinical scores can be performed.
- Non-specific abdominal pain.

Management of specific conditions
Patients may present with an easily recognizable diagnosis, for example DVT, cellulitis, atrial fibrillation, for which the patient requires a clinical management plan. There is often a need for confirmatory diagnostic tests, which should be readily available, or in the case of cellulitis, an outpatient parenteral intravenous antibiotic service. The patient may need to return to the AEC service for ongoing management or referral to another service for follow-up.

Management after risk-stratification
This group of clinical scenarios uses validated risk stratification tools to identify suitable patients for AEC. Examples include the Glasgow-Blatchford score for acute upper gastrointestinal bleeding, the Hestia score for suspected pulmonary embolism and the CURB-65 score for pneumonia. These scoring systems stratify patients as to their suitability for an AEC management pathway. This supports clinical decision making but is not a substitute for it. The stratification tools should be readily available for use, with the result recorded in the healthcare records.

---

**Table 1** The Amb Score.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female sex</td>
<td>1 if applicable, 0 if not applicable</td>
</tr>
<tr>
<td>Age &lt;80 years</td>
<td></td>
</tr>
<tr>
<td>Has access to personal/public transport</td>
<td></td>
</tr>
<tr>
<td>IV treatment not anticipated</td>
<td></td>
</tr>
<tr>
<td>Not acutely confused</td>
<td></td>
</tr>
<tr>
<td>National Early Warning Score = 0</td>
<td></td>
</tr>
<tr>
<td>Not discharged from hospital within previous 30 days</td>
<td></td>
</tr>
<tr>
<td>Total Amb score</td>
<td>0–7</td>
</tr>
</tbody>
</table>

A score of 5 or more suggests the patient is suitable for AEC.
Procedures
Some important clinical procedures can be performed, for example drainage of pleural effusions, knee aspiration and paracentesis. These may not be true emergencies, but are needed quickly for therapeutic or diagnostic purposes. Referrals in the evening can be seen the next day for the procedure, with follow-up investigations and referral as individually appropriate.

The procedures should always be carried out or directly supervised by a competent senior clinician. Another benefit of this model is that it is a training opportunity for junior medical staff.

The frail older patient
Frail older people are often admitted to hospital beds, although the clinical presentation with significant functional decline does not suggest serious illness. The involvement of a multi-disciplinary team within AEC can support the patient’s needs. For example, an elderly patient who has fallen and fractured the inferior pubic ramus requires analgesia, walking and toileting aids at home and regular home visits until their functional status has returned to normal. This can all be initiated in an AEC service without hospital admission.

Many AEC services do not care for confusion or delirium, but some tailor their resources to support management at home.

AEC infrastructure and processes
Location
Many of the lessons concerning the development of AEC mirror those learned in the development of day surgery.

The unit consists of offices and trolleys and placing it close to the emergency department or acute medicine unit increases referrals.

Staffing
Adequate staffing capacity to match the demand for services. Typically a consultant should be available for 12 hours per day with support from junior medical staff. There will be a mix of nurse practitioners, staff nurses and healthcare assistants. Some units combine medical and surgical AEC by sharing the facilities and nursing staff.

Diagnostic support
Diagnostic support for the AEC service is needed, for example designated slots for Doppler ultrasound for DVT, CT pulmonary angiograms for suspected pulmonary embolism or an agreement to provide imaging within specified time scales, such as CT head scans within one hour of request. The time scales for diagnostics need to reflect the overall timescales for effective operation of the AEC unit; this should include the reporting of any imaging.

Pathways and checklists
Local pathways for common clinical scenarios reduce variability of care and increase speed and efficiency. Exclusion criteria should be minimized.

A safety checklist incorporated into the healthcare records helps to ensure that vital checks are carried out, for example:

- NEWS check
- Pain management
- Cannula check
- Radiology results
- Medication advice

Follow-up arrangements should be agreed.
Table 2 Clinical teams in the ambulatory emergency care network.

- Chronic obstructive pulmonary disease outreach team
- Rapid access chest pain clinic
- Transient ischaemic attack/stroke clinic
- Pleural diseases clinic
- Pain management team
- Falls clinic
- Multi-disciplinary functional assessment team
- Rapid response team
- Diabetes nurse specialist
- Palliative care team
- Heart failure team

**Patient information**

Patients should be provided with a simple information booklet explaining the AEC service, the working diagnosis, treatment plan and follow-up arrangements. The booklet should include what to do in the event of symptom recurrence or treatment complications, with a contact telephone number for in hours and out of hours. This provides a safety net for the patient and feedback for the team.

**Networking**

The back-up network of services (Table 2) should be made aware of the AEC service, in particular where it is and how it operates. The option of being able to make direct patient referrals especially out of hours and at weekends can significantly improve the quality of patient care. These services contribute to educating the patient about their chronic conditions.

**Audit**

Audit data should be collected to monitor the AEC unit's safety and effectiveness:

- **Outcome metrics:**
  - Mortality rate in acute medicine
  - Proportion of patients returning directly to their own home
- **Process metrics:**
  - Percentage of patients assessed within 15 min of arrival
  - Percentage of patients that have a medical assessment within 60 min
- **Balancing metric:**
  - Percentage of patients re-attending or re-admitted within seven days

**Further reading**


SECTION 1
Presentations in Acute Medicine