

1 INTRODUCTION, SERIES SUMMARY, THE SYSTEM OF CARE

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In the UK and in other countries there is a growing shortage of trained clinicians to meet the need for immediate assessment and treatment of urgent medical problems in primary care. Traditionally doctors have been the main providers of this care but already nurses, paramedics, and other healthcare professionals are extending their role to include clinical assessment, decision making, and treatment.^{1,2} Our aim is that this series will be a useful update for general practitioners experienced in this field and also serve as an introduction to those new to emergency clinical decision making.

The series will describe the management of non-traumatic emergencies commonly encountered in community emergency care. The objective is to provide a clear and easily followed system of assessment and management of the ill patient.

This system will teach a method for the rapid identification and treatment of immediately life threatening problems or conditions that require urgent hospital care. However, the focus of the series is patients with less serious problems who can be managed without referral to hospital.

The series will use *presentations* rather than diagnoses as the starting point, for example the approach to the breathless patient rather than the treatment of asthma; the care of the disturbed patient rather than the diagnosis of specific mental illness.

Where possible the series will try to make recommendations based on evidence. The field of emergency medicine is not rich in scientific analysis and community emergency care even less. We will interpret and transfer as much of the evidence as possible into the community emergency care setting.

Lastly and perhaps most importantly, the series sets the immediate management in the context of the start of the patient's journey. The key principle is—*what is right for this patient, in this setting, with my skills, at this time*. There is evidence that some prehospital interventions may make patient outcomes worse. Just because a particular line of management *can* be practiced out of hospital it does not necessarily mean that it *should* be done.

Key points

- ▶ Immediate treatment is often only the first part of the patient's care. The immediate management must be seen as part of the continuum of care.
- ▶ Just because an intervention *can* be carried out does not mean that it is always in the patient's best interests to do so.

SERIES SCOPE

The series outline is given in box 1. This encompasses most of acute emergency medicine. Trauma is occasionally mentioned as it can be part of the presenting complaint (for example, in a collapse with an injury) or a possible cause (for example, in chest pain). However we will not deal with serious trauma as this is well covered in other texts.

Series format

The articles in the series will start with a list of objectives then go on to discuss the care of the "primary survey positive" patient, identify the types of serious problems requiring hospital admission and, concentrate on describing the assessment and management of patients who might be treated at home.

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Box 1 Series outline

- ▶ Introduction
- ▶ The system of assessment and the resuscitation of the primary survey positive patient.
- ▶ Airway and breathing problems
- ▶ Chest pain
- ▶ Neurological abnormalities and poisoning
- ▶ ENT/dermatological conditions
- ▶ Falls and the elderly population
- ▶ Gynaecology and obstetrics/abdominal pain
- ▶ The acutely disturbed patient/mental health
- ▶ Fever/nausea and vomiting in the unwell adult
- ▶ The assessment of the unwell child
- ▶ Paediatric presentations
- ▶ Musculoskeletal problems
- ▶ Systems design, communications, ethics

THE THREE STEP SYSTEM OF CARE**Overview**

The series will describe a *three step system of care*. The first step is to identify those patients with immediately life threatening problems, the second is to identify those patients who will need to go to hospital, and the third to fully assess that majority of patients encountered in community emergency care who will not require hospital referral. There may be no single "right answer" to the immediate management of each of these problems. The variables in levels of training, distance or time to definitive care will influence the decision on the right management for this patient at this time and in this place (see below).

In the series we will designate a patient as PRIMARY SURVEY POSITIVE if a potentially life threatening problem is identified. In such cases the two major objectives are to administer those treatments or interventions that are absolutely essential and to prepare the patient for transport.

Box 2 The system of care. Figures from out of hours contacts to primary care in the UK indicate that only 1%–2% of patients will require resuscitation. Most patients will have conditions that can be managed at home

- ▶ **Step 1** to identify those patients with immediately life threatening problems, provide essential initial resuscitation and transport
- ▶ **Step 2** to identify those patients with conditions requiring immediate hospital care, provide essential treatment and transport
- ▶ **Step 3** to fully assess all other patients and decide on the appropriate management of the patient

Step 1

The first step is to identify those patients who are "primary survey positive". This process will usually take less than 30 seconds. If the patient is talking in full sentences, is fully orientated, their respiratory rate is between 10 and 29 breaths per minute, the pulse rate between 50 and 120, and the patient is not cold and sweating, then it is unlikely they need immediate resuscitation (box 3).

Box 3 Quick assessment of the primary survey in adults. Patients fulfilling all these criteria are unlikely to have an immediately life threatening problem

- ▶ The patient can talk in complete sentences.
- ▶ They are fully alert.
- ▶ The respiratory rate is between 10 and 29 breaths per minute.
- ▶ The pulse is between 50 and 120 beats per minute.
- ▶ The patient is not cold, clammy, or sweaty.

Step 2

The next step is to identify the patient who obviously needs hospital admission, especially if the treatment needs to be given as soon as possible to reduce risk to life or limb (box 4). Examples would be acute myocardial infarction, bleeding, suspected aortic aneurysm or imminent childbirth. In these patients essential treatment should be provided and transport to the appropriate hospital arranged.

Box 4 Criteria that identify patients requiring immediate lifesaving intervention

- ▶ A—potential airway compromise
 - ▶ unconscious patient/stridor/anaphylaxis/Hx of FB
- ▶ B—severe respiratory distress
 - ▶ respiratory rate >10 or greater than 29 (adult)
 - ▶ O₂ sats <93% on air
- ▶ C—clinical signs of shock
 - ▶ pulse <50 or >120 (adult)
 - ▶ systolic BP less 90 mm Hg
- ▶ D—GCS less 12 (acute deterioration)
 - ▶ (acute stroke)
- ▶ Obstetric emergency (not routine childbirth)

Step 3

Most patients will need a full assessment to reach a decision about treatment and ongoing care. A system to aid this assessment is outlined later in the article. The overall approach to community emergency care is illustrated as a decision tree in figure 1.

PRIMARY SURVEY POSITIVE**What treatment does the patient need now?**

There are some conditions that demand immediate treatment. For example, the outcomes of cardiac arrest are dependent on the time to defibrillation; anaphylaxis needs epinephrine, and an obstructed airway requires urgent attention. However, in many other conditions the evidence is not so clear. The principle should be to do the minimum necessary while preparing for transport and to continue treatment en route. Life threatening asthma would be a good example. Starting an oxygen driven salbutamol nebuliser and ensuring there were no signs of a tension pneumothorax would be the main on scene interventions. Rapid transport to hospital would be the next priority with en route treatment and evaluation as necessary.

Primary survey positive

Action GET TRANSPORT ARRANGED NOW PROVIDE ESSENTIAL TREATMENT

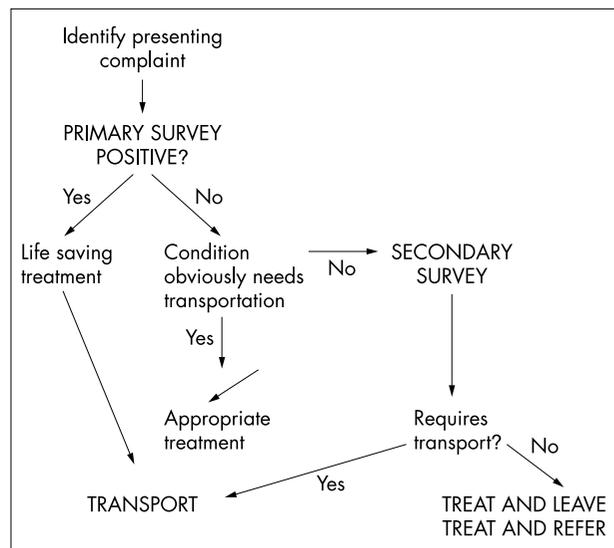


Figure 1 Decision tree for the system of care.

Do I need to transport immediately?

For most patients with a critical illness the best treatment is transfer to a facility capable of critical care. It can be tempting to try and “stabilise the patient” but vital minutes can be lost. The patient with the life threatening asthma needs to be in an environment where emergent ventilation and cardiovascular support can be provided safely and quickly.

Do I need back up?

If the patient has a critical problem there will be very few situations where you will require back up to travel to you. The time involved in mobilising such assistance may outweigh any treatment gains.

IMMEDIATE TRANSFER NEEDED?

Patient obviously requires hospital treatment

Many patients will have conditions requiring hospital care. Box 5 lists some that need emergency transfer. However, the patient with a fracture neck of femur requires a brief history, vital signs, pain relief and written notes including a treatment plan. This allows their care in hospital to be a continuum rather than simply repetition of the prehospital assessment (see section on notes).

Box 5 Any of these criteria would mark the patient as requiring immediate transfer to hospital

- ▶ Suspected acute MI
- ▶ Suspected acute blood loss (for example, GI or aortic aneurysm)
- ▶ Suspected acute vascular occlusion

SECONDARY SURVEY

Patient stable, no immediate reason for hospital transport-

The decision to assess, treat, and leave requires much more care and judgement than the decision to transfer to hospital. It also carries higher risk. Equally the whole system would be swamped if all patients were sent to hospital. In some presenting complaints, for example chest pain, a high

proportion of patients will require hospital evaluation. Other complaints such as a sore throat will rarely need anything other than advice or simple treatment. To minimise the risk it is essential that clinicians carry out a systematic assessment. We outline one such system SOAPC³ (box 6). There are many others. It is not important which you use, as long as you use a system that looks at all the key elements.

Box 6 Secondary survey, treatment, and on going care

- ▶ **Subjective information**—presenting complaint(s), history of complaint(s), previous history, social information
- ▶ **Objective information**—general exam, targeted specific exam, other exam, tests, vital signs
- ▶ **Analysis**—differential diagnosis: most likely, most serious, common pitfalls
- ▶ **Plan**—treat and transport, treat and refer, treat and leave.
- ▶ **Communication**—patient explanation/understanding/questions/choice/safety netting/receiving unit/responsible adult carer

Subjective information gathering: the history

Where there is a definite pathology, a full understanding of the history of the patient’s problem will give very clear pointers to the diagnosis in the majority of cases.⁴ Examination and tests may help confirm the provisional diagnosis but the history remains the key tool of the emergency care clinician.

S—Subjective information gathering

The process of history taking can be conveniently broken down into the components shown in box 7. Elicit and record the patient’s chief complaint. This will often direct the clinician down a particular line of thought or specific care pathway. However, always be willing to change direction as other evidence is obtained. It is very common for presenting complaints to change over time as a disease develops. The initial symptoms of influenza, meningitis, and pneumonia may be identical making the diagnosis difficult or impossible. Within six hours the patient may have developed the rash, photophobia and neck stiffness or the pleuritic chest pain breathlessness and green sputum that would allow a layman to make the diagnosis. The initial consultation assesses the patient at one point in the disease process, the emergency care clinician can return to re-assess the patient’s progress.

The detailed inquiry into the onset and progress of these symptoms often gives a clear mental picture of the patient’s problem. Associated symptoms also need to be recorded and, in some conditions, a targeted systematic inquiry is carried out. For example, in the patient with pleuritic chest pain you should ask about shortness of breath/sputum/haemoptysis/leg pain.

Box 7 Key parts of the history

- ▶ Presenting complaint(s), symptom onset, progress of symptoms, associated symptoms, previous treatment for this episode.
- ▶ Previous history of similar symptoms
- ▶ Other medical history
- ▶ Drugs/allergies
- ▶ Social history/circumstances/tobacco-alcohol-drugs

This may not be the first time the patient has sought advice for this problem. This can be a danger in healthcare systems that are becoming increasingly complex with many access points to care. Beware of simply confirming a diagnosis given by another health professional. Be extra vigilant if this is the third call for help for the same problem.

Medical history, current medications, and allergies should be recorded. This is made easy by using a proforma history sheet (see later).

Social history is an ever increasing factor in the assessment of the emergency care needs of patients. The elderly population living at the margins of society often have greater social care requirements than medical needs.

The holistic care of the emergency patient is the hallmark of an integrated emergency care system.

A final word of warning. Where there are problems in obtaining a clear history take extra care in your assessment and treatment planning. This is such a vital part of the decision making process that without a clear history the confidence of any particular diagnosis will be greatly reduced. The very young, the very old, those with language problems or learning difficulties are some of the situations where the lack of history causes clear problems.

Pitfall

Lack of history increases assessment problems in

- ▶ Babies and infants
- ▶ The older patient
- ▶ Patients with learning problems
- ▶ Patients whose first language is not English

Objective information gathering Examination

Vital signs (temperature, pulse, blood pressure, respiratory rate and oxygen saturation) are often the first and most important indicator of the severity of a patient's illness. They provide an objective measure of the patient's physiology at the time of the examination. As noted in box 3 vital signs are key in spotting those patients who are primary survey positive. While vital signs may be normal in many life threatening situations (acute MI is the obvious example), a patient's condition can change rapidly. Fail to record vital signs, or to take heed of abnormal readings at your peril.

General examination focuses on the systemic signs of disease. Identifying the unwell patient is one of the key skills for any emergency clinician. It is hard to describe the grey, anxious, and slightly dehydrated appearance of the patient with serious illness but clues are to be observed in the general demeanour, the face and eyes, the tongue, skin colour, and turgor (see box 8).

Box 8 System of examination

- ▶ Vital signs—pulse, blood pressure, respiratory rate oxygen saturation, temperature, GCS, (AMTS).
- ▶ General—is the patient unwell. Colour, rash, sweaty, hydration, eyes, mouth.
- ▶ Complaint specific—careful examination of the system(s) involved.
- ▶ Associated systems—other examinations, perhaps remote from site of the presenting complaint.
- ▶ Other systems—general screening.

Complaint specific examination concentrates on the system(s) indicated by the history. There are many books on physical examination and the second article in the series provides a reasonable standard for community emergency care. Develop a system of examination such as “look, feel, listen” or “look, feel, move” appropriate to the part of the body being examined.

Associated systems may need to be examined as part of the routine in specific complaints. Consequently an elderly patient with back pain should have their abdomen examined, their peripheral pulses checked, and a neurological examination of the legs.

It is impossible to perform a full detailed physical examination of every system in the patient's home.

Tests

There are few investigations currently available in the community emergency care setting. The most common are listed in box 9. The 12 lead electrocardiograph (ECG) is perhaps the most useful. Do not place too much reliance on a single test. For example, in acute chest pain the initial ECG will be normal in 50% of patients who are having an acute myocardial infarct.³ If someone has a very typical history of ischaemic chest pain then there is a very high *clinical suspicion* (high pre-test probability) of ischaemic heart disease. In such cases a normal ECG would not influence the referral to hospital. Investigations are probably more important in patients who are going to be left at home. The types and scope of such investigations is likely to increase in the future.

Box 9 Common community emergency care investigations

- ▶ Electrocardiograph
- ▶ Peak expiratory flow rate (PEFR)
- ▶ Blood glucose
- ▶ Urine

Analysis—differential diagnosis

Use the information gathered in the history and examination to assess the likely cause of the patient's problem. It may not be possible to reach a definite “diagnosis” but this is not important if the patient is being referred to hospital. In contrast, where the patient is being left at home, a working diagnosis is essential. There is often a degree of uncertainty around any initial diagnosis so try to keep an open mind on alternatives. For example, the patient with sudden onset of severe headache will most likely have a migraine or a tension headache but they might have a sub-arachnoid haemorrhage. In the series we will try to list the most common diagnoses for each presentation along with some of the key pitfalls where it is recognised that a serious diagnosis is often overlooked.

Pitfall

- ▶ The early signs and symptoms of meningococcal septicaemia are identical to those of influenza.

Plan—treatment and on going care Treat and transport

Patients requiring a journey to hospital for further investigation or treatment need an explanation, necessary prehospital

treatment, and preparation for transfer. Ensure that the notes are completed including a suggested further treatment plan. Local guidelines should enable you to refer the patient to the appropriate department.

Treat and refer

Such patients have a problem that does not need hospital treatment but do require further assessment or treatment. Common examples are the older patient with social care needs or patients requiring community nursing support. Each health system will need to develop a range of clearly defined pathways for referral. Again documentation and a clear treatment plan are essential.

Treat and leave

Many patients will not require transport or referral. These patients will have minor self limiting illnesses or illnesses that can be easily treated at home. The patient should feel that they can seek further advice and assessment if the condition does not improve.

Communication. Patient and carer

In all encounters in emergency care there is a duty to communicate effectively with the patient. The patient should understand the treatment plans and be given an opportunity to ask questions. It is good practice to confirm that the patient and carers agree with the plan but it may not be possible to comply with all their wishes. Most health systems have constraints on what can be provided. Alternatives might be to refer the patient to the primary care team for further evaluation.

The patient should feel confident that if their condition deteriorates or does not improve as predicted they can seek further help, preferably from the same service.

Communication and records

Keeping good records is one of the key duties of healthcare professionals. In the past records have often been minimalist. In the UK there is a move to electronic patient records but it is likely that paper records will be the norm in many areas for the foreseeable future. The use of semi-proforma records may help the recording of assessments, treatments, and care plans. An example of such a proforma is available on the journal web site (<http://www.emjonline.com/supplemental>).

THE VARIABLES IN COMMUNITY EMERGENCY CARE

The patient

From the new born child to the 100 year old woman, from the fit young man having a cardiac arrest playing sport to the dangerously overweight patient on multiple medications, the community emergency care practitioner has to deal with all situations as they present. There is no immediate access to paediatricians, surgeons, or the intensive care specialist. The community emergency care practitioner has only their own skills and judgement and training. Increasingly they may be able to use telemedicine or even the humble telephone for a second opinion but they are the clinicians on the spot. Throughout the series there will be many occasions where a patient variable might dictate a particular intervention. Where this is the case then this will be highlighted by the use of *warning boxes*.

The disease (or co-existing diseases)

Airline pilots have it easy. They deal with systems that are mostly predictable, well maintained, and have time and assistance to carry out cross checks, but even they make significant errors. Patients are heterogeneous, the response to disease is hugely variable, and co-existing diseases modify presentation or treatment. In community emergency care there cannot be cross checks on every action and decision.

Where an important complicating factor in assessment and treatment needs to be highlighted then a warning box will appear.

Co-existing disease

- ▶ Patients with a history of chronic obstructive airway disease require close monitoring when receiving oxygen therapy.

The level of competency/the level of empowerment

The old demarcations between healthcare professionals are disappearing and are likely to disappear as new ways of delivering health care become established. However, for the foreseeable future emergency care will be delivered by healthcare professionals with different levels of training and working to different levels of empowerment. The treatment of an acute myocardial infarction epitomises this diversity. A paramedic trained in thrombolysis will be competent to deliver this therapy in the patient's home but an urban general practitioner, who has not obtained such training or experience, will not be able to do so. Throughout the series there will be conditions and treatment that will vary depending on the training/skills/empowerment of the individual practitioner. This will be denoted by a warning box.

Empowerment

- ▶ If able to administer thrombolysis, do so.
- ▶ If not, do not delay, transfer immediately and pre-warn the receiving unit.

The emergency care system, the environment, distance to definitive care

As if the decisions in emergency medicine were not complicated enough, the effects on patient management because of the environment and transport availability and transit time add further difficulties. The priorities in managing a patient with an acute MI in the middle of a snowstorm on the Cairngorm Plateau will be very different to those if that patient were at home, five minutes from a major A&E department. Where these factors influence treatment then a further type of box will point out alternative treatment priorities.

Environment/distance

- ▶ If an acute receiving hospital is only a few minutes away and the patient has signs of hypovolaemic shock do not delay on scene. IV access can wait until you reach hospital.
- ▶ For journey times of more than 15 minutes attempt IV access on route.

SUMMARY

Community emergency care represents a highly complex situation in which a very wide variety of conditions are managed by different types of practitioners with a range of competences.

A systematic approach to assessment and management is therefore essential to ensure patients are receiving the correct care, in the correct place, at the correct time.

This article, and the series that follows, describes one such systematic approach.



An example of a form for recording assessments, treatments, and care plans is available on the journal web site (<http://www.emjonline.com/supplemental>).

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