Adult Emergency Medicine at a Glance

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Table of Contents

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Preface

Emergency Medicine has undergone a quiet revolution over the past twenty years due to a variety of factors that have changed the way medicine is practiced.

- Increasing demand and expectations of medical care.
- Reduction of junior doctors' hours.
- An ageing population.
- Fragmentation of out of hours care.
- Reduced hospital bed-stay.
- Sub-specialisation of inpatient medical and surgical practice.
- Litigation.

These factors have pushed expert decision-making towards the front door of the hospital so that the correct diagnosis and treatment start as soon as possible in the patient's journey. As other specialties have moved away from the acute assessment and treatment of patients, Emergency Medicine has expanded to fill the vacuum left, and in doing so has increased its realm of practice substantially.

Emergency Medicine is exciting and confronting, intimidating and liberating – it is the chance to exercise and hone your diagnostic and practical skills in a well-supervised environment. Clinical staff who work in the ED have all been through the inevitable feelings of fear, uncertainty and doubt that come with the territory, and want you to experience the enjoyment and satisfaction of working in an area of medicine that is never boring.

When trainees start Emergency Medicine, it is often the first time they have seen patients before any other staff. To use a traditional analogy, they have seen plenty of needles, and may be very good at recognising them, but now they are faced with haystacks, in which may be hidden a variety of sharp shiny objects.

Medical textbooks usually describe topics by *anatomy or pathology* (needles), e.g. heart failure, which tends to assume the diagnostic process. In this book we have tried to organise topics by *presentation* (haystacks), e.g. 'short of breath' , and have tried to articulate the key features that help us find the needles.

We are both great fans of the 'At a Glance' series, and have enjoyed the challenge of combining the breadth of practice of adult Emergency Medicine with the concise nature of the 'At a Glance' format. We hope you enjoy this book and find it useful as you explore this most dynamic area of medicine.

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In addition TH would like to thank: Professor Christopher Bulstrode who has been an inspiration and mentor and without whose support the book would not have happened. My family, and particularly my wife Marina for her support. My work colleagues for continuing to tolerate me most of the time, and Jackie and Tracey, the ED secretaries who keep me in order. Nic Weir, Rob Janas and David Bowden for their help in sourcing images and the final preparation.

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Thomas Hughes Jaycen Cruickshank

List of Abbreviations

AAA	abdominal aortic aneurysm
ABC	airway, breathing, circulation
ABCD^2	acronym to assess stroke risk in a patient with TIA
ABCDE	airway, breathing, circulation, disability, exposure
ABG	arterial blood gases
ACE	angiotensin-converting enzyme
ACh	acetylcholine
ACJ	acromioclavicular joint
ACL	anterior cruciate ligament of knee
ACS	acute coronary syndrome
ACTH	adrenocorticotrophic hormone
AD	aortic dissection
AF	atrial fibrillation
AIDS	acquired immunodeficiency syndrome
AMT4	four-point abbreviated mental test score
AP	antero-posterior
APL	abductor pollicis longus
AV	arteriovenous; also atrioventricular
AVN	atrioventricular node
AXR	abdominal X-ray
BDZ	benzodiazepine
BP	blood pressure
bpm	beats per minute
CAGE	acronym for alcohol screening questions

CAP	community-acquired pneumonia
cAMP	cyclic adenonsine monophosphate
CBRNE	chemical, biological, radiological, nuclear, explosive
CK	creatine kinase
CNS	central nervous system
CO	carbon monoxide
COHb	carboxyhaemoglobin
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airway pressure
CPP	cerebral perfusion pressure
CPR	cardiopulmonary resuscitation
CRAO	central retinal artery occlusion
CRP	C-reactive protein
CRVO	central retinal vein occlusion
CT	computed tomography
CTPA	CT pulmonary angiography
CURB-65	confusion, urea, respiratory rate, blood pressure, age over 65 (acronym for pneumonia severity factors)
CVP	central venous pressure
CXR	chest X-ray; also unit for X-ray dose, 1 CXR ≈ 3 days' background radiation
DIPJ	distal interphalangeal joint
DKA	diabetic ketoacidosis
DM	diabetes mellitus
DSH	deliberate self-harm
DUMBELS	diarrhoea, urination, miosis, bronchorrhoea/bron-chospasm, emesis,

	lacrimation, salivation (acronym for clinical effects of organophosphate poisoning)
DVT	deep vein thrombosis
ED	Emergency Department
EDTA	ethylene diamine tetraacetate
ELISA	enzyme-linked immunosorbent assay
ENT	ear, nose and throat
EPL	extensor pollicis longus
ESR	erythrocyte sedimentation rate
ETT	endotracheal tube
FAST	acronym for focused abdominal sonography in trauma; also face, arm, speech, time to call ambulance
FB	foreign body
FBC/FBE	full blood count/examination
FiO_2	fraction of inspired of oxygen (as %)
FFP	fresh frozen plasma
FOOSH	fall onto an outstretched hand
GA	general anaesthetic
GAβHS	group A â-haemolytic *Streptococcus*
GCS	Glasgow Coma Scale/Score
GI	gastrointestinal
GP	general practitioner
H1N1	swine flu virus
H5N1	avian flu virus
$HbA1_c$	glycated (glycosylated) haemoglobin
$HCO3^-$	bicarbonate ion
hCG	human chorionic gonadotrophin

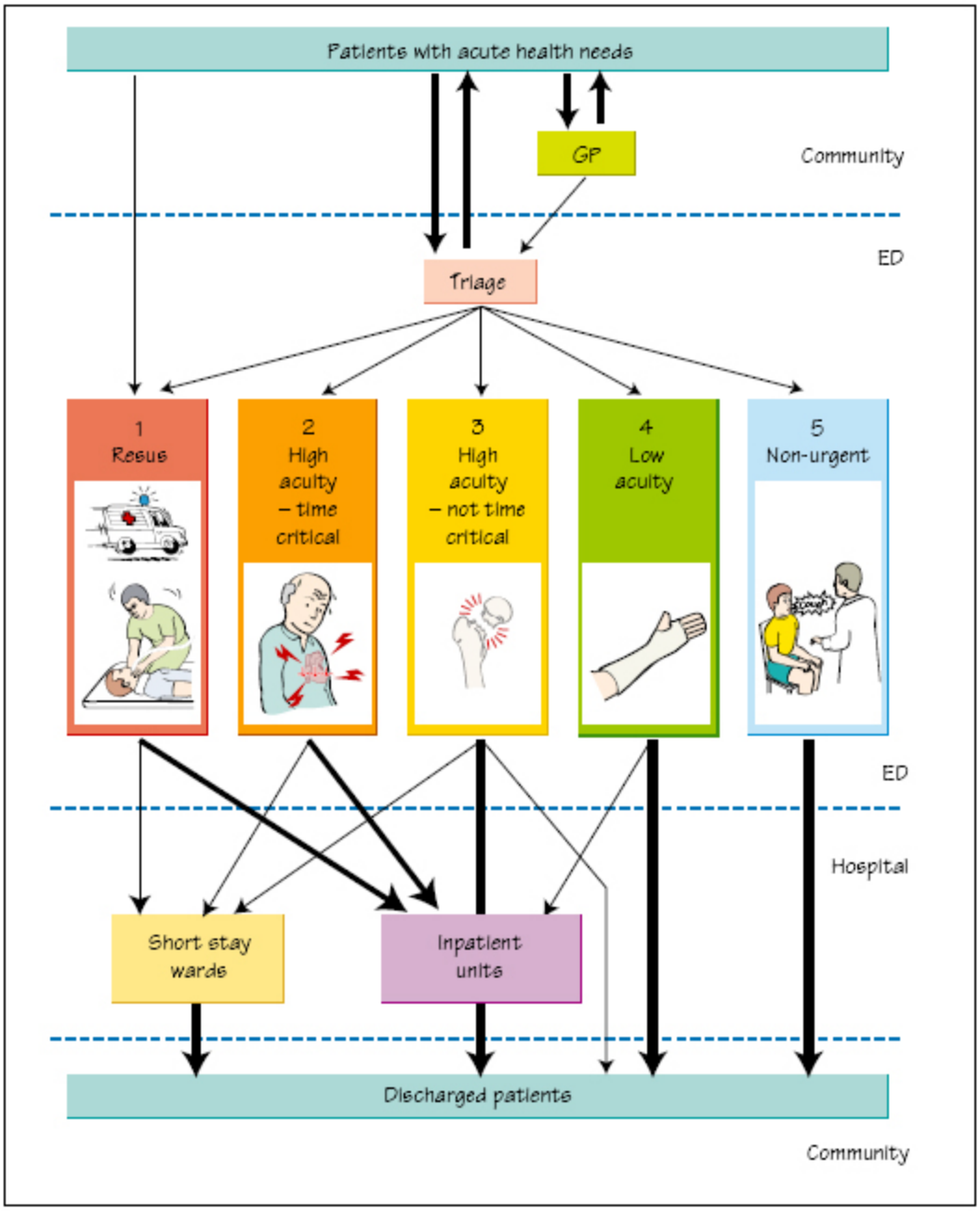
HDU	high dependency unit
HHS	hyperosmolar hyperglycaemic state
HIV	human immunodeficiency virus
HOCM	hypertrophic obstructive cardiomyopathy
HONK	hyperosmolar non-ketotic acidosis
HR	heart rate
HVZ	herpes varicella zoster
IBS	irritable bowel syndrome
ICP	intracranial pressure
ICU	intensive care unit
IgE	immunoglobulin E
IVDU	intravenous drug use
IVF	in vitro fertilisation
IVRA	intravenous regional anaesthesia
IVU	intravenous urogram
JVP	jugular venous pressure
KUB	kidneys, ureters and bladder
LA	local anaesthetic
LCL	lateral collateral ligament of knee
LFT	liver function test
LMP	last menstrual period
LNMP	last normal menstrual period
LOC	loss of consciousness
LP	lumbar puncture
LR	likelihood ratio
LRTI	lower respiratory tract infection
MAOI	monoamine oxidase inhibitor
MAP	mean arterial pressure

MCL	medial collateral ligament of knee
MCPJ	metacarpophalangeal joint
MDI	metered dose inhaler
MI	myocardial infarction
MR	magnetic resonance
N_2O	nitrous oxide
NAC	*N*-acetylcysteine
NICE	National Institute for Health and Clinical Excellence
NIV	non-invasive ventilation
NNT	number needed to treat
NNH	number needed to harm
#NoF	fractured neck of femur
NSAID	non-steroidal anti-inflammatory drug
NSTEMI	non-ST segment elevation myocardial infarction
OD	overdose
OP	organophosphate
OPG	oral pantomogram
ORIF	open reduction and internal fixation
PA	postero-anterior
PCL	posterior cruciate ligament of knee
PE	pulmonary embolism
PEA	pulseless electrical activity
PEF	peak expiratory flow
PEFR	peak expiratory flow rate
PID	pelvic inflammatory disease
PPCI	primary percutaneous coronary intervention

PPI	proton pump inhibitor
PPM	permanent pacemaker
PR	per rectum
PT	prothrombin time
PV	per vaginam
RA	regional anaesthesia
RBBB	right bundle branch block
RoSC	return of spontaneous circulation
SAH	subarachnoid haemorrhage
SAN	sinoatrial node
SARS	severe acute respiratory syndrome
SDH	subdural haematoma
SoB	short(ness) of breath
SOCRATES	acronym for pain history
SOL	space-occupying lesion
SSRI	selective serotonin reuptake inhibitor
STD	sexually transmitted disease
STEMI	ST segment elevation myocardial infarction
STI	sexually transmitted infection
SVT	supraventricular tachycardia
TBSA	total body surface area
TCA	tricyclic antidepressant
TFT	thyroid function test
TIA	transient ischaemic attack
TIMI	thrombolysis in myocardial infarction
TMT	tarsometatarsal
tPA	tissue plasminogen activator
U + E	urea and electrolytes

UA	unstable angina
URTI	upper respiratory tract infection
UTI	urinary tract infection
VBG	venous blood gases
VF	ventricular fibrillation
V/Q	ventilation/perfusion
VT	ventricular tachycardia
VVS	vasovagal syncope
WCC	white cell count

1
Life in the Emergency Department



This chapter describes the way the Emergency Department operates, and some of the unwritten rules. The prevalence

of Emergency Department-based drama generates plenty of misconceptions about what occurs in the Emergency Department. For instance, it is generally inadvisable to say ‘stat’ at the end of one’s sentences, and neither of the authors has been mistaken for George Clooney!

What happens when a patient arrives at the Emergency Department?

Alert phone

Also known as the ‘red phone’ or sometimes ‘the Bat-phone’ , this is the dedicated phone line that the ambulance service uses to prewarn the Emergency Department of incoming patients likely to need resuscitation.

Triage

The concept of triage comes from military medicine – doing the most good for the most people. This ensures the most effective use of limited resources, and that the most unwell patients are seen first.

Nurses rather than doctors are usually used to perform the triage because doctors tend to start treating patients. Systems of rapid assessment and early treatment by senior medical staff can be effective, but risk diverting attention from the most ill patients.

Reception/registration

The reception staff are essential to the function of the Emergency Department: they register patients on the hospital computer system, source old notes and keep an eye on the waiting room. They have to deal with difficult and demanding patients, and are good at spotting the sick or deteriorating patient in the waiting room.

Waiting room

Adult and paediatric patients should have separate waiting rooms, and some sort of entertainment is a good idea. Aggression and dissatisfaction in waiting patients has been largely eliminated in the UK by the 4-hour standard of care: all patients must be seen and discharged from the Emergency Department within 4 hours.

Treatment areas in the Emergency Department

Resuscitation bays

Resuscitation bays are used for critically ill and unstable patients with potentially life-threatening illness. They have advanced monitoring facilities, and plenty of space around the patient for clinical staff to perform procedures. X-rays can be performed within this area.

High acuity area

This is the area where patients who are unwell or injured, but who do not need a resuscitation bay, are managed. Medical conditions and elderly patients with falls are common presentations in this area.

Low acuity area

The ‘walking wounded’ – patients with non-life-threatening wounds and limb injuries – are seen here. Patients with minor illness are discouraged from coming to the Emergency Department, but continue to do so for a variety of reasons.

There is a common misconception that patients in this area are similar to general practice or family medicine patients.

Numerous studies have found that there is an admission rate of about 5% and an appreciable mortality in low acuity patients, whereas only about 1% of GP consultations result in immediate hospital admission.

Other areas

Imaging

Imaging, such as X-rays and ultrasound, are integral to Emergency Department function. Larger Emergency Departments have their own CT scanner.

Relatives' room

When dealing with the relatives of a critically ill patient and breaking bad news, doctors and relatives need a quiet area where information is communicated and digested. This room needs to be close to the resuscitation area.

Observation/short stay ward

This is a ward area close to the Emergency Department, run by Emergency Department staff. This unit treats patients who would otherwise need hospital admission for a short time, to enable them to be fully stabilised and assessed. The function of these units is described in Chapter 28.

Hospital in the home

Some hospitals run a 'hospital in the home' programme for patients who do not need to be in hospital but who need certain therapy, e.g. intravenous antibiotics, anticoagulation. The Emergency Department is the natural interface between home and hospital.