Royal College of Emergency Medicine

Service Design and Configuration Committee

The Management of Emergency Department Crowding

January 2024

Table of Contents

Executive Summary

1. This is guidance we should not need to write. Crowding is not inevitable.
2. Crowding kills patients and is having a significantly negative impact on Emergency Department teams and the speciality of Emergency Medicine.
3. Emergency Department crowding occurs when the demands on an Emergency Department exceed the capacity of the department, and hospital or health system, to meet them. It manifests most obviously as delays to offloading ambulances, delays to be assessed and treated, and as long waits for admission with patients often situated in corridors or other inappropriate spaces.
4. Crowding represents a persistent, toxic and existential threat to the delivery of timely patient care to patients in Emergency Departments and healthcare systems in the UK.
5. Harm caused by crowding affects patients in terms of worsening mortality, morbidity, reduced quality of care, and poor patient experience.
6. Harm due to crowding also affects staff and has a serious adverse effect on staff experience, leading to moral injury, burnout, and lack of staff retention. This places the future of the emergency medicine workforce at risk.
7. Crowding is a marker of failure in health policy and leadership. Responsibility for solving this issue lies first with health service policy makers and national leaders, and then local system and organisational leaders. With responsibility should come accountability.
8. Potential solutions to the problem of Emergency Department crowding must be viewed as whole system interventions and do not sit solely, or even largely, within the Emergency Department.
9. Causes and interventions with respect to crowding can be considered in terms of
    a. Output: Emergency Department outflow.
        i. The inability of patients to leave the Emergency Department, once their care is completed and they ready for admission, is called Exit Block.
    b. Throughput: This relates to processes within the Emergency Department.
    c. Input: This describes influences before the patient arrives at Emergency Department.

    The key determinant of crowding is output. Throughput is important, but improvements in processes will have a limited effect if there is significant exit block. There is no convincing evidence that focusing attention and investment on input interventions has a meaningful effect on the harm resulting from Emergency Department crowding.
10. Escalation policies should be designed to work at all times of the day and week, and should be effective on the ground, rather than just on paper.
11. In selected situations uncomfortable short-term actions may be justified to reduce the risk from crowding. This does not imply acceptance or tolerance of crowding and should not be used as a substitute for effective escalation, or implementation of longer-term solutions.

Scope

This guidance replaces and updates the RCEM Crowding Guidance from 2014. Its objective is to assist in the understanding of the causes and effects of crowding and to provide options for health systems, focused on improving patient safety, and patient and staff experience. It also contains recommendations for policy and research.

Introduction

Emergency Department (ED) crowding represents the greatest threat to the timely delivery of emergency care in the UK and across the world[1]. It is present to a greater or lesser extent in many healthcare systems. Although not a new phenomenon, it has been steadily worsening over time. This does not make it inevitable. Causes of crowding are complex and can vary between different health systems, hospitals, and over different time periods. It is a source of considerable frustration to Emergency Physicians when crowding is framed as an "ED problem." The consistent factor in ED crowding is that the causes are in the unscheduled healthcare *system*, and that the solutions lie, for the most part, outside of the ED.

Definition of crowding

ED crowding occurs when the demands on an ED exceed the capacity of that service, hospital, or health system to meet them. It manifests most visibly as delays to offloading ambulances, delays to be assessed and treated, and as long waits for admission with patients often situated on trolleys in corridors or in other inappropriate spaces. Less visible, but well recognised and more important, are increased morbidity and mortality for patients, and moral injury, burnout and reduced retention and recruitment for ED staff.

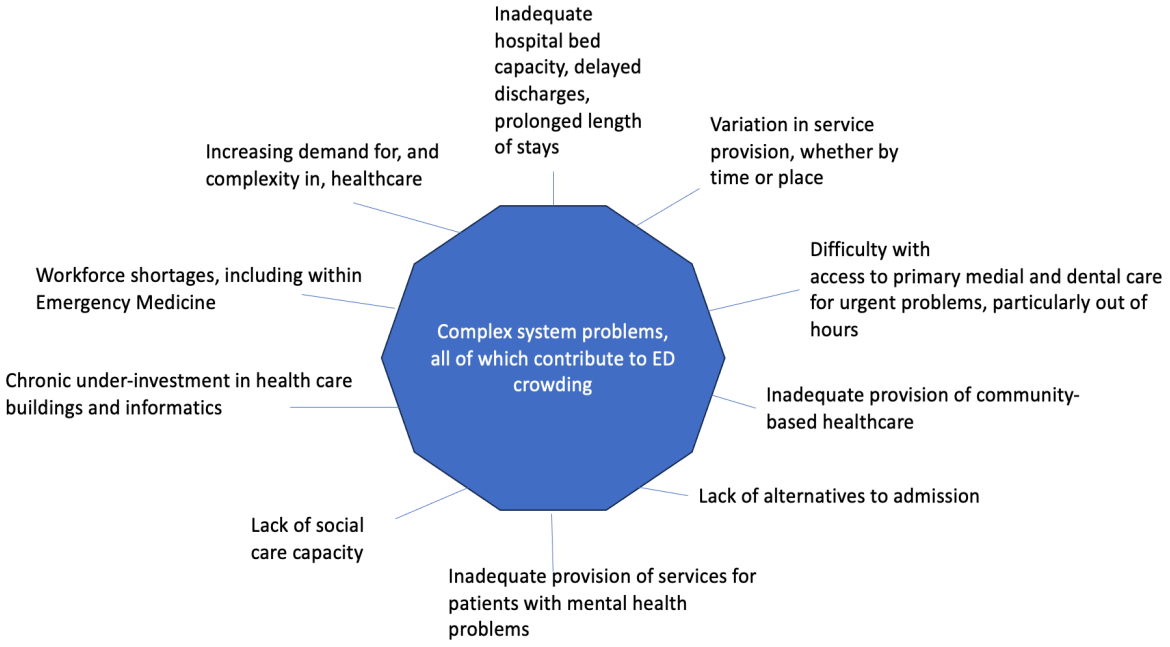
Crowding as a system problem

Crowding should not be normalised or accepted, by anyone.

Crowding is a marker of failure in health policy and of health service leadership. In the UK overall failure rests at political level and at the level of national leadership of health services. More locally, responsibility lies with leaders working across organisational boundaries, such as within the new Integrated Care Boards in England. Finally, organisational leaders carry some responsibility. This applies whether we consider the need to adopt good practice and reduce unwarranted variation, or the need to work together with a shared purpose. With responsibility should come accountability and we recommend that this is made clear[2].

RCEM has made a number of policy recommendations around crowding[3]. These focus on improvements in system-wide capacity and hospital occupancy, staffing across the emergency and urgent care system, and on the use of meaningful and transparent metrics that are owned across the system, and not just by EDs.

As a complex problem, crowding can only be approached using systems-based leadership. The agenda surrounding crowding, whether it is viewed through the lens of delayed ambulance offloads, corridor care, staff sickness and retention, high hospital occupancy, delayed discharges or increased patient morbidity and mortality, should be the focus of those who are appointed to lead systems. These individuals are responsible for leading the collaborative actions of all relevant partners. There is a paradox in that by acknowledging crowding as a system problem, leaving responsibility and accountability with "the system" can mean that nobody knows who is responsible, and accountable, for what. This is especially true in the face of health service reorganisation. This is for national leaders to clarify since they are responsible for the overall system and how well it works.



Effects of Crowding

Measurement of the effects of crowding has rightly focussed on harm to patients and associated morbidity and mortality. However, it is increasingly acknowledged that staff harm (e.g., moral injury, burnout) is also an important consequence of ED crowding.

The RCEM Acute Insight Series document "Crowding and its Consequences," provides a detailed assessment of the detrimental effects of crowding on patients, relatives, and staff within the ED and beyond [3]. The demonstrable effects of crowding include those summarised in Table 1 below.

Table 1 - Effects of Crowding

Effect on Patient	Effect on Staff	Effect on System
Worsening morbidity and mortality	Increased stress / moral distress and injury / burnout / sickness	Increased ED length of stay
Delayed Assessment and treatment	Increased exposure to violence and aggression, along with conflict with other colleagues within the healthcare system	Increased hospital length of stay for non-elective patients
Receiving treatment that does not conform to guidelines	Increased workload due to number of patients requiring treatment exceeding capacity, or because shifts are denuded of staff due to poor retention and recruitment	Reduced elective capacity
Reduced patient satisfaction	Reduced ability to take breaks when on shift, and reduced quality of those breaks	Difficulty recruiting and retaining staff
Increased exposure to risk of error	Increased risk of receiving complaints or of being the subject of legal action	Increased cost, for instance paying locum / agency staff, or due to administration associated with complaints and legal action, or due to unnecessary admissions
Increased risk of readmission		Damage to the reputation and brand of EDs, hospitals, and the NHS
Increased risk of seeking to access complaints and legal processes		

Recently published evidence has found a linear increase in mortality from 5 to 12 hours (after arrival) for admitted patients. It is likely this effect is even greater for elderly patients and ED lengths of stays exceeding 12 hours[4,5].

All patients find crowded environments stressful, but some groups find it particularly so. This includes the elderly, but other examples include patients with dementia or acute confusion, learning difficulties, sensory difficulties, mental health problems, and children.

Measurement of Crowding

It is important to understand the severity (and thus the effect) of crowding in individual systems, not least so that any improvement associated with specific interventions can be demonstrated. Emergency Medicine teams and their patients know crowding when they see it. Objective measurement is more difficult. There have been several crowding scales described in the literature, however none have been adequately validated and there is no consensus on which one is most appropriate to use[6].

In the absence of a universally accepted crowding scale, various locally attainable data sources can be used. These include:

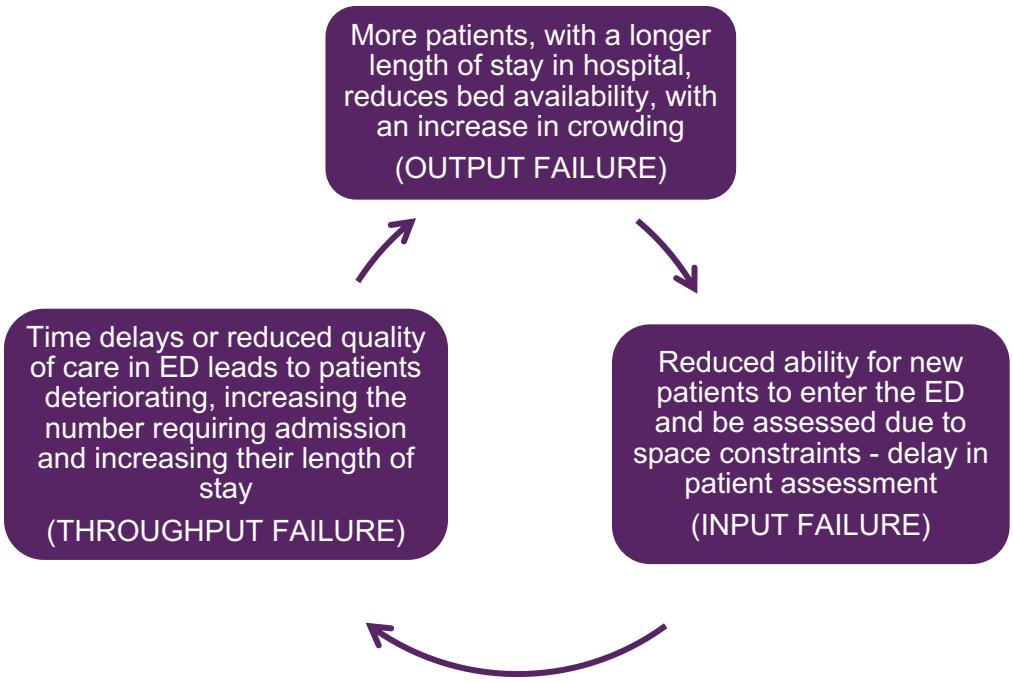
- Ambulance offload times - usually a good measure of ED crowding, if there is nowhere to put the arriving emergency patients.
- Delays for assessment and treatment. In crowded EDs processes break down, causing delays.
- Occupancy of trolley, cubicle, or treatment spaces– a crowded department will have a greater number of patients requiring such spaces than there is space available for them.
- Waiting room occupancy: In a crowded ED a greater number of patients will default to the waiting area (even if they would be more appropriately cared for on a trolley or in an ambulatory care space).
- Length of stay in the department, particularly for referred and admitted patients – exit block is *the* most significant determinant of crowding in most EDs.

In addition to the locally attainable measurements above, the (England-specific) Getting It Right First-Time programme (GIRFT-EM) has proposed several metrics for individual EDs such as the Admitted Patient Delay (APD) used to measure exit block[4]. These have not been formally validated but may provide useful benchmark comparisons.

The Crowding "Vicious Circle"

The presence of ED crowding in an unscheduled healthcare system is self-perpetuating and the cycle can be difficult to break. Patients waiting longer for admission from the ED, or receiving lower quality of care due to crowding, can clinically deteriorate and therefore require additional medical intervention which further delays their stay. This increases the number of patients with a prolonged stay in the department, which in turn prevents other patients accessing the clinical resources (both physical space and staff time). The presence of greater numbers of patients waiting to be seen and the associated delay can lead to further deterioration in their condition, an increased likelihood of admission, or longer lengths of stay once admitted. This fuels further crowding associated with exit block.

Figure 1: The Crowding Vicious Circle



Productivity

It should be noted that this is not the only vicious circle at work. In the crowded ED efficiency is severely affected which impacts upon throughput. This will affect measured productivity and contribute to the issues described above. As so often happens, the solution to this is not to blame ED teams, or to put them under a microscope without looking at the problem in the round. The right approach is to find ways to support ED teams to work effectively.

ED Crowding – interventions

The management of ED crowding is a whole system responsibility[1]. It is vital to understand that Emergency Medicine services cannot solve this on their own. Interventions are complex, requiring whole system engagement and understanding. Solving a problem in one part of system can create another problem elsewhere. This is about balancing risk and needs active engagement from senior leaders across the health and social domains.

There is an extensive scientific literature about interventions to reduce Emergency Department crowding[7]. However, this is limited by variable quality in the studies and therefore some of the advice described below is based on expert opinion.

The study of, and interventions associated with, crowding can be divided into Input, Throughput and Output[8]. One issue with this commonly quoted model is that it is the wrong way round when describing the importance of potential solutions. It also fails to emphasise the crucial role of health policy. The priorities are output, and then throughput. There is little evidence that input solutions have a significant impact on crowding and on the harmful effects of crowding, yet they continue to be the focus of many significant interventions. The value of this investment is unclear[9]. We have inverted the usual order of play to emphasise this.

- **Output** – ED outflow. Overwhelmingly this is a lack of hospital beds for patients needing them. The inability to admit patients to inpatient beds when needed is also described as access block or exit block. Output interventions are the responsibility of leaders and commissioners of services required to provide alternatives to the ED, and of services designed to facilitate patient discharge and reduce inpatient bed occupancy. It will require health policy changes, strategic investment, and changes in the way systems work to increase hospital, social care and community-based capacity.
- **Throughput** – what happens within the ED. Determined by factors such as physical space, informatics, people, and processes. Throughout solutions can be influenced by the ED team, but also by other clinical and management teams.
- **Input** – referring to influences before the ED such as patterns of demand, demand management strategies, pre-hospital interventions etc. Input interventions are within the remit of commissioners of community and other out-of-hospital services and commissioners.

Output Interventions

- System and organisational leaders should ensure that bed occupancy is maintained at a level that delivers patient flow and thus avoid crowding. This is typically described as around 85%, however the beds need to be available in the correct place at the correct time. This includes evenings, weekends, and bank holidays.
    a. If speciality admissions pass through assessment units, then there must always be sufficient capacity on those units to accommodate admissions from the ED.
- Organisations should ensure that hospital bed management teams are supported by effective real time information systems.
- Organisations should ensure that there are sufficient medical, nursing and AHP staff within the inpatient teams to enable them to respond to patients with urgent and emergency care needs, and to establish systems to maintain and progress care for admitted patients over extended hours and across the 7-day week. Inpatient teams need access to investigations,

pharmacy, discharge facilitation and logistical support when their patients need it, in order to work effectively. Theatre and other procedural lists should be accessible in a timely manner.

- Delayed hospital discharges must be avoided as these will contribute to crowding. This is a complex system issue which includes community-based services across a wide range of fields. This is the responsibility of system level leaders.
    a. Effective ward discharge processes must occur at weekends and over bank holidays.
- Organisations should ensure that both the ED and speciality teams have access to viable alternatives to admission such as evaluation of frail patients by multidisciplinary teams, short stay and Same Day Emergency Care facilities, and rapid access clinics. The role of virtual wards is not yet known. This access needs to be extended hours and across the 7-day week.
    a. Clinical Decision Units managed by Emergency Medicine services are acceptable if used for appropriate short stay (maximum 24 hours) and ambulatory care. Organisations should ensure that they add clinical or operational value or improve patient experience. Operational managers should ensure that they are not used solely to avoid breaching time standards. They should not function as frailty units, psychiatric assessment or holding units, or to avoid addressing disagreements over responsibility for care of other patient groups.
- Organisations should ensure that they have agreed Internal Professional Standards and/or referral guidelines. These should include ED-to-specialty admission rights to ensure that patients are admitted under the appropriate clinical team in a timely manner. They need to be based within a culture of civility and respect, and form part of whole-organisation approaches, rather than focusing solely on the ED interface.
- All teams to which the patient is referred must *own* the acutely unwell patient and their pathway of care. A "pull" mentality within those teams is essential to support patient flow.
- Continuous Flow models[10] are cautiously supported by RCEM. They represent an output intervention designed to move Full Capacity Protocols used as part of escalation to a more hard-wired approach based on predicted demand for beds. The point is to match flow with known demand to proactively prevent ED overcrowding building up to dangerous levels, rather than to reacting after the fact. Such models appear attractive as they use data to calculate the bed requirements over the 24- hour period and move patients through the system in a continuous way. It may involve boarding of patients (see below). See appendix 2 for one example.
- Organisations should consider the practicalities of patient transfer e.g., portering supply and demand.

Throughput Interventions

1. Adequate nursing, AHP and medical staffing is likely to be the most powerful throughput intervention in reducing ED crowding. Executive teams should ensure that staffing levels are in line with published guidance. Staffing must be carefully matched with demand and will vary between departments. RCEM general medical workforce guidance exists and was updated for smaller departments in 2023, RCEM Consultant and senior medical staffing guidance was updated in 2019 and nursing staffing guidance was published in 2020[11-14]. Staffing requirements are based on the requirements of a non-crowded ED and will need adjustment for a persistently crowded department.

    a. It should be noted that in the crowded ED efficiency is severely affected. This will affect measured productivity and further impact upon staffing requirements. There will be limited (if any) yield from focusing on ED staff productivity if they are being expected to work in a crowded ED.

2. Organisational leaders should ensure that physical space and functional design is adequate for activity. The presence of exit block and crowding will significantly increase the requirement for space to process patients, compared with a functional ED. This space requirement is locally determined and will vary depending on the staff and processes that are in place within each ED.
    a. When planning new builds, it is important to remember that once adequate space for expected demand is included, increasing space further is not a cure for crowding. Building a bigger ED will eventually result in a bigger, crowded, ED, unless the supporting staffing, processes and flow also change.
3. Organisational leaders should ensure that their staff are provided with modern informatics and communication systems, integrating with in-hospital and community systems.
4. Initial Assessment processes should be in line with NHSE / RCEM guidance[15]. This may involve redirection of patients to other services.
    a. Re-direction of patients away from the ED, either to co-located services (e.g., UTCs), or to off-site providers, should occur only when clinically safe and appropriate. It must not be performed by non-clinical staff.
    b. Appropriate patients should be directed as soon as possible to the appropriate specialty operating in a physical space outside the ED e.g., direct admissions or those following agreed fast-track pathways.
5. Front-loading of focused assessment and investigations should be performed in, for example, a Rapid Assessment process.
6. There should be an Emergency Physician in Charge (EPIC)[16] and Nurse in Charge role to oversee the entire department. Dedicated management and administrative support renders clinical and operational coordination much more effective and allows better use of clinicians' time.
7. Internal Professional Standards described above should agreements on responsibility for care of patients in the ED[17]
8. Clinical services should ensure that senior decision makers are freed up from other commitments such as operating and clinics and are able to respond rapidly to requests for opinions/patient review, within agreed time frames.
    a. Senior specialist review as early as possible for patients in the ED may be helpful where there is exit block. This will need to be supported by appropriate access to investigations, multidisciplinary team involvement in care, and access to alternative pathways. It is almost certainly better to have onward care started early, than to wait until patients are in the "right" clinical area.
9. Commissioners should ensure that there is effective in-reach support to the ED from mental health teams 24/7.
10. Organisational and clinical leaders should ensure that both the ED and speciality teams have access to viable alternatives to admission such as evaluation of frail patients by multidisciplinary teams, short stay and Same Day Emergency Care facilities, and rapid access clinics. The role of virtual wards is not yet known. Access to such alternatives needs to be extended hours, seven days a week.
11. Organisational leaders should ensure that service level agreements are in place to support rapid turnaround for laboratory and radiological investigations.

12. Clinical teams should work together to reduce duplication in processes between ED and admitting teams to improve safety, efficiency, and patient experience.
13. Systems need to be in place to recognise that the ED may be under significant pressure, even when hospital wide metrics may not reflect this (for instance in the early phases of a demand spike). Escalation invariably needs to be delivered early rather than "after the horse has bolted".
14. Operational management teams should ensure that escalation policies are in place, and are effective (see section below)
    a. There has been an increasingly observed need for escalation policies to clear a resuscitation bed when required, and to clear ambulances for high priority calls.
15. The hospital or system quality, safety and risk team must make themselves aware of the potential for ED crowding to cause real harm to patients and staff and act accordingly. Crowding and its associated patient safety risk should be documented using the hospital systems whenever it occurs. Organisations should be transparent about the effect of crowding on patient care and on staff health and where it has contributed to poor outcomes, be open about that also.
16. Major incident responses should be re-evaluated by senior leadership teams in the context of high ED and hospital occupancy levels, and reduced system resilience.

Input Interventions

It should be re-emphasised that the effect of input interventions on crowding is not fully understood, and that there is a need for an evidence base to support relative investment. However, many of the interventions described make sense from a quality of care, use of resource, and clinical effectiveness perspective.

1. Re-direction of low acuity patients from the ED has not been shown to reduce crowding[8]. However, ensuring that patients are seen by the most appropriate clinicians is desirable, and may help take pressure off EDs and their clinical teams, allowing them to focus their skills on patients who will most benefit from their specialised skill set.
2. System leaders should ensure that there are real time information systems in place which allow information sharing across providers, and which show demand across the system.
3. Access to primary care and other community-based services, whether in or out of hours, is increasingly cited as a driver for ED demand. The contribution to crowding is not known although where demand outstrips capacity long waits will occur for low acuity patients. This consumes ED resource. Health system leaders should ensure that 24/7 access to primary care is maintained for local populations, including vulnerable groups such as the homeless, refugees and asylum seekers, or for patients in more deprived areas.
4. Health system leaders should ensure that there is provision of access to advice and alternatives to ED care that can be easily accessed by community, primary care, ambulance service and ED teams across extended hours, and 7-days e.g., community-based interventions, urgent clinic appointments, Same Day Emergency Care (SDEC).
5. Organisations should ensure that there is provision of clinical support for health care professionals (e.g., paramedics) involved in direction of patients to other services. Increased clinical input to telemedical services such as NHS111 (in England) and other pre-hospital patient assessment and streaming services is cautiously supported, although the effect on crowding is not known. The expectation is that this intervention will support direction of patients to services other than the ED where appropriate.

    a. For this to be effective there need to be effective alternative pathways for patients, that accessible when patients need them (see above), and the underpinning information systems to support this (see above). They also need to be the simplest options. Default to ED should be an option of last resort, rather than of availability or convenience.

6. Commissioners should ensure that there is decision-making clinical support to nursing and residential homes. There is emerging evidence that this can be effective in managing complex frail (or end of life) patients in a more appropriate way than conveyance to the ED.
7. Investment in community mental health services (and inpatient beds if required), is desirable.
8. Investment in, and access to, community-based services for the frail elderly, with attention to falls, and to end of life care planning and interventions, is desirable.
9. If redirection strategies from ED are being implemented, co-location of urgent care services with the ED is recommended, provided there is the ability to easily stream appropriate patients safely and directly to the service. Evidence around the effectiveness of these services is not yet robust[18].
10. Ambulance diversion, is used frequently as a re-direction technique. Whilst it can relieve pressure on an ED in the very short term it does not address the underlying causes of crowding in a sustainable way and causes problems for patients and staff at the receiving unit. It should therefore be viewed more as an escalation measure.
    a. The value of intelligent conveyancing is unclear in the context of crowding. Ensuring patients are treated in the right facility for their needs, from the outset, is clearly worthy, but there is at times lack of clarity about the balance between this objective, and attempts to manage demand.

Reducing risk when there is crowding

The need to reduce risk in the face of crowding places ED teams in an unenviable position. On the one hand there is a responsibility to do their utmost to reduce the inevitable harm to patients, and to support staff. On the other hand, their efforts could be interpreted as accepting normalisation of substandard care, and acceptance of crowding itself. We have, somewhat reluctantly, included options for risk reduction as appendices. This is to provide advice and support to Emergency Medicine teams. Inclusion in no way acknowledges that crowding, and the need to consider these strategies, is in any way acceptable.

Escalation

- At times of surge in demand, or when agreed triggers within the system show that crowding is predicted, there should be an effective system of escalation (both within the hospital and across the wider healthcare system).
- Escalation must be pre-planned, proactive, and dynamic.
- Escalation should have well-defined and meaningful responses, and be designed with both acute decompression and sustained effect in mind.
- Escalation policies should be designed on the assumption that they will be called upon in the evenings, at night, or over weekends and bank holidays.

- Escalation is not “business as usual”. Those involved in the escalation process must act differently from normal. The response must be non-negotiable with pre-determined actions by the respondents akin to a Major Incident scenario.
- Escalation processes should identify service failure and deliver service recovery.
- Escalation triggers are supported through a live system tool displaying those triggers throughout the organisation.
    - Triggers are site and organisation specific and must be meaningful.
    - Triggers are based on demand, capacity, and flow.
- Escalation must be initiated by individuals with hospital or system wide oversight.
    - The ED senior team (EPIC/Nurse in Charge) are **NOT** the most appropriate people to coordinate the overall hospital response given the pressures within the ED.
- Continuous review of real time escalation status and communication is essential to pro-actively address service needs and identify impending pressures.
- The responsibility/accountability of the coordination of escalation sits with the Hospital executive team and with relevant system leaders.
- Escalation will typically involve activation of a full capacity protocol as described.
- Escalation should consider a wider healthcare community response with increasing availability of non-acute (e.g., via spot-purchasing) and mental health bed-stock.
- Clear de-escalation protocols must be available. This is not business as usual.
- If escalation is a frequent occurrence, an urgent review of demand and capacity, processes and systems is required.

Patient Boarding in inpatient areas

Boarding on wards is the process whereby patients are moved to wards before beds are available for them. It is not a solution to crowding, it is a response to it.

The guiding principles are that:

- The (post-initial assessment and treatment) patient who is boarding in a ward environment most likely represents a lower overall risk compared with the accumulation of unassessed and untreated patients in ambulances outside, or on trolleys and chairs inside, a crowded ED.
- The safest approach when an organisation is failing to cope is to use all the resources across the hospital to manage the problem.

The practice is not without controversy, with concerns from ward areas including anxiety about shifting the crowding problem to less well staffed clinical areas, and not tackling root causes such as delayed discharge and hospital exit block. The counter argument is that the use of boarding enables appropriate dissemination of risk and workload throughout the system and allows selection of lower risk patients to move on from the ED, generating physical space for newly arriving undifferentiated patients. The amount of time patients spend boarding in ward corridors may be less than expected if all the other measures are executed in parallel.

RCEM cautiously supports the practice of boarding, and of Full Capacity Protocols, as “least-worst” options, with a recognition of the cautions listed, and as part of a suite of measures to tackle ED (and hospital) crowding. They may represent part of a more honest appraisal of, and response to, the mismatch of capacity and demand in the acute and emergency care system.

Full Capacity Protocol

This describes a triggered escalation process of sending patients to the wards where they are to be admitted prior to a physical bed becoming available for them[19]. First described in Stoney Brook hospital in New York in the early 2000s.

Ideally it should be a time limited policy designed to deliver improved delivery of hospital discharges. Like boarding, it is not a solution for crowding, rather a response.

Examples of interventions include opening escalation areas, moving patients earlier to the discharge lounge, expedited bed cleans, incentive pay rates for additional nurses, opening beds previously closed due to staffing ratios, boarding patients on ward corridors, and cancelling elective cases.

The detail must be determined locally (e.g., maximum number of patients on each ward). There must be an assessment of the balance of risk. This assessment will consider medical and nurse staffing and physical ward environment. Once transferred to the ward the patient becomes the responsibility of the admitting team.

Standards around crowding

There has been considerable debate around the 4-hour access standard in the UK, along with a pilot of alternative standards which was not taken forward.

RCEM recommends the following basic standards:

1) Where hospitals accept emergency admissions, bed occupancy should be around 85%. The optimal figure will vary between organisations.
2) RCEM Emergency Department design, informatics, workforce and sustainable working standards should be met by organisations with a type 1 ED.
3) Patients should spend no longer than 15 minutes in an ambulance following arrival at the ED.
4) Every ED should have the ability to create a resuscitation bed, and a high dependency adult and paediatric bed, at very short notice, and at all times.
5) Initial assessment processes should meet RCEM standards.
    a. Patients should ideally receive initial assessment by a specifically trained clinician within 15 minutes of arrival.
    b. Patients will ideally receive a full clinical assessment within an hour of arrival. However, it is acceptable to prioritise patients with higher triage categories or other markers of urgency / acuity where demand outstrips resources.
6) The 4-hour emergency access standard threshold is an NHS constitutional standard. The threshold should remain at 95% subject to formal, scientific, review.
7) For emergency departments to be able to deliver the 4-hour emergency access standard, no more than 10% of their cubicles should be occupied by patients waiting for admission or who have been referred.
8) No patient should be in an ED for more than 12 hours after arrival. This should be measured and reported publicly, in a timely fashion.

Recommendations

The following recommendations must be adopted in order to support the delivery of the standards around crowding:

UK & Devolved Governments:

- Resource the health and social care system so that there is capacity and capability to meet the 85% occupancy and 95% site-specific four-hour standards in the long term.
    - This will require strategic and long-term policy development and investment in hospital facilities, workforce, and informatics.
        - Prioritise high-risk hospitals within the maintenance backlog. This will enable urgent repairs and replacements, ensuring safer conditions and better care for patients and staff.
    - Additional investment is required into community and social care in order to ensure patients are only admitted when care cannot be provided elsewhere, and are discharged safely and promptly when their medical care is complete.
        - The care of patients with mental health problems requires specific prioritisation.

National NHS bodies:

- Publish key performance metrics relating to crowding by hospital, rather than, for example, Trust or Board.
    - Off-site facilities such as UTCs should not be used to dilute the performance metrics for a whole organisation.
- Ensure that there are enough appropriately staffed hospital beds available, so hospitals have the space and resources available to be able to care for patients needing emergency admission and can run at appropriate occupancy.
- Develop numerated and evidence-based workforce plans. Ensure workforce planning takes less than full time working into account, sustainable working practices, changing population health needs. Workforce plans must contain details relating to each specialty, including Emergency Medicine.
- Ensure that investment choices, and energy, are directed where there is evidence of improved clinical care, or of reduction in the harm associated with crowding.
    - Prioritise output interventions and improving throughput, rather than focusing on demand management strategies.

Local Health Systems and Hospitals:

- ED design, workforce configuration, and sustainable working practices should be in line with RCEM guidance.
- Informatics systems should be integrated across systems. Within hospitals they should support ED operational and clinical function and be aligned with RCEM guidance.
- Output, throughput, and input interventions detailed in this document should be adopted, with the priority in that order, and the focus on higher impact interventions.
- Escalation policies should be effective and in line with guidance provided here. The use of boarding and of full capacity protocols is cautiously supported by RCEM.

Research Recommendations

There remain many opportunities for further research into ED crowding: causes, effects measurement scales and potential solutions.

- With regard to hospital occupancy, research into optimal occupancy for differently sized and configured hospitals is required, along with improved ways to measure occupancy itself.
- With regard to the 95% 4-hour standard systematic review of whether different thresholds achieve a more appropriate balance between the need to drive flow to reduce crowding, and the need to optimise the ability of EDs to effectively manage patients without the need for admission, is needed.
- Research on continuous flow models and full capacity protocols would also be welcome to inform future policy.
- Research studies into crowding should use a validated measure of crowding, such as NEDOCS, EDWIN, ICMED, occupancy, or length of stay. No particular tool has

demonstrated better validity in measuring crowding, but a consistent problem in the literature the lack of use of validated measures.

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Review

Three years or sooner if important information becomes available.

Conflicts of Interest

Nil

Disclaimers

RCEM recognises that patients, their situations, Emergency Departments and staff all vary. This guideline cannot cover all possible scenarios. The ultimate responsibility for the interpretation and application of this guideline, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Key words for search

Emergency Department, Crowding, Exit (access) block

Appendix 1: Risk reduction strategies in the face of crowding

Reducing risk when there are delayed ambulance offloads or long waits to be seen.

Difficulties accessing the ED causes patient harm. Although the root cause of crowding in all systems should be identified and managed, it is reasonable to act outside traditional professional boundaries *in extremis* to keep patients safe. Increased ambulance delays in particular pose a risk to safety as patients with emergency healthcare needs are also unable to access ambulance assessment and transportation to ED when needed.

The joint RCEM/College of Paramedics statement from 2021[20] describes potential options that may be considered in the scenario where ambulances cannot be off-loaded at the ED. This results in increased pressure on ambulance services and particularly affects their ability to respond to patients in the community. This document does NOT recommend ambulance diversion, pre-ED cohorting, or care in corridors. Post-ED cohorting is supported as a least-worst option.

In addition to the information contained within that document, RCEM believes the following actions are reasonable in the context of critical crowding:

1. Provision of information for patients of waiting times, and potential alternative avenues to access care where appropriate.
2. ED staff reviewing, investigating and treating patients in ambulances if there is a time-critical need (e.g., assessment for suspected sepsis). These arrangements should also consider how to provide basic care for patient needs such as warmth, comfort, toileting, hydration, food. This should be accompanied by robust local governance arrangements involving nursing and medical staff. Staff should document why they are seeing patients in ambulances, and any constraints, in the notes. It should not be considered “business as usual”.
3. ED teams working with the local ambulance service in order to free up as many vehicles as possible to reduce the risk to the unassessed critically unwell patients that are unable to self-present to services. The NIC and EPIC are best placed to make decisions around offload priority, these are not managerial decisions.
4. Additional oversight of the ED waiting area. At times of surge or pressure due to crowding it is likely that the threshold for patients being housed in the waiting area, rather than on trollies, will alter. As a result, the cohort of patients in the waiting area are likely to be sicker and require closer supervision.
5. Where ED staff are being asked to work in ambulances they should be provided with appropriate environmental protection, and efforts should be made to reduce physical risk. They should also be well supported. Clinical assessment in this environment is challenging. Inexperienced staff should not be expected to undertake this work.

Reducing risk where there is care delivery in non-clinical spaces – general considerations.

Looking after patients on trollies (or chairs) in non-clinical spaces in, or near to, the ED, has become increasingly prevalent over the last few years.

Corridor care is harmful to patients and staff alike: the environment may represent additional risk to the patient in terms of difficulty with observation or monitoring, difficulty with administration of treatment (e.g., intravenous infusions or medications), environmental temperature control, risk of injury from other trollies, infection risk etc. There is also direct risk to staff with respect to basics around health and safety (ergonomics, access to the patient), but also “moral injury” from being unable to deliver safe and humane care.

In terms of reducing risks of harm to these patients recommended actions include:

- Removing vulnerable patients from non-clinical areas wherever possible.
- Ensuring appropriate higher intensity supervision for vulnerable patients.
- Ensuring that patients receive basic nursing care in the way they would if managed in an ED cubicle (e.g., dedicated nursing resource, nutrition, and hydration, washing and toileting facilities etc.).
- Compliance with basic infection control procedures with the understanding that these patients will be at higher risk than those managed in a cubicle.
- Dynamic approaches to risk with monitoring of patients, and response to change
- Increasing staff levels to manage the number of patients, particularly nursing and support staff such as porters, cleaners, and catering staff.
- Attention should be paid to staff needs such as rest, hydration, food, and safety.
- The risk of cognitive overload for senior staff managing crowded departments should be considered and efforts made to reduce this. This may require funding to achieve (for instance splitting supervisory roles).
- Staff should be supported when working in crowded environments, with the difficulties appreciated and expectations adjusted accordingly. The effect of visible senior management, whether departmental or organisational, should not be overlooked.
- Proactive strategies aimed to identify and psychological distress, and proactive support staff, should be funded and implemented.

Reducing risk where there is care delivery in non-clinical spaces – practical considerations

Departmental Level

- Prioritise staff for ambulance offloads (2nd victim) where possible. (https://rcem.ac.uk/wp-content/uploads/2022/03/Ambulance_Handover_Delays_Joint_Statement_March_2022.pdf)
- Initial assessment / triage as soon as ambulance arrives even if you cannot offload. Identify 'fit to sit' cohort as early as possible. If staffing resource allows prioritise early rapid assessment by a senior decision maker to direct time critical interventions and investigations.
- Prioritise patients according to acuity or a validated triage tool not just waiting times. Manage expectations of patients in waiting areas especially if low acuity / triage priority.
- Silver standard vs gold standard care, 'doing the most for the most' with the available resources (staff, physical environment). An example of this at an individual patient level might be for safety, staffing and privacy reasons not performing a fascia-iliacus block in a patient with a fracture femur but ensuring the patient has adequate access to other forms of analgesia.
- The effect of crowding and the need to implement care in non-clinical areas can be to push patients who ordinarily would have been cared for in ED cubicles into a waiting area. Consider active mitigations for this including assigning staff to perform regular checks of patients in waiting areas, consider whether those patients waiting beyond a set period of time (eg. 4-hours) require a repeat of the initial assessment process (including vital signs). Consider whether staffing ratios and seniority need to be altered to deal with the likely increased acuity and dependency of these patients.
- Keep electronic tracking systems up to date. The departmental oversight of a senior nurse and doctor is more important than ever. Consider regular safety huddles to ensure departmental awareness as well as escalation of concerns out of the department.
- Check staff / team welfare. Acknowledge this is not the care we want to be providing but in the circumstances we are still making a massive difference. Ensuring staff take regular breaks becomes even more important.

Patient Level

- Prioritise the regular recording of vital signs, time critical medications (see box 1).
- Ensure early assessment and documentation of pressure areas in those patients at risk.
- Prioritise the early assessment of patients who are immobilised for any reason.
- Prioritise ECG recording for patients with chest pain, aim for ECG performed and clinician review within 15 minutes of identifying chest pain as a presenting complaint.
- Prioritise assessment of urinary βhCG for female patients 12-55yrs presenting with abdominal pain. Request for sample should be part of initial assessment process.
- Patients receiving oxygen (as new requirement) in non-clinical areas, from portable cylinders should have documented regular checks regarding the volume of oxygen left in the cylinder as well as being subject to continuous oxygen saturation measurements.
- Patients placed in non-clinical areas should be clear on how to get urgent help if required.
- There must be clear processes in place to allow patients who are being cared for in non-clinical areas to use the toilet with the maximum amount of privacy.
- Consider using volunteers to ensure patients have adequate food and drink and those patients who might struggle to feed or hydrate themselves are helped to do so.

Reducing risk: time critical medications in the ED: “MISSED” doses

ALL medicines used in emergency situations. e.g., resuscitation drugs plus “MISSED” doses

- Movement Disorders: Parkinson’s and myasthenia meds
- Immunomodulators including HIV medications
- Sugar: Diabetes medications
- Steroids: Addison’s and adrenal insufficiency medications
- Epilepsy medications
- DOACs and warfarin

Appendix 2: The North Bristol Continuous Flow Model

Flow from ED to Acute Medical Unit (AMU) and Acute Frailty Unit (AFU)

It was established that there were about 22 patients per day admitted to the AMU and 12 to the AFU. On this basis it was decided to transfer one patient per hour to AMU and one every 2 hours to the AFU.

One benefit of this is that ED staff can make sure the patient is ready to go in an organised way: procedures and medicines given, notes scanned, porter available, admitting ward expecting specific features e.g., known infections or needs a cardiac monitor. This is much safer and more efficient than being told there are no beds for 8 hours then being asked to transfer 8 patients all at once.

Prior to CFM, the peak time for transfers to AMU was midnight to 2am. Now it is evenly spread throughout the day.

The aim is to keep up with flow in real time and always have an empty Majors cubicle for the next ambulance to bring a patient into without delay. Ambulance handover times, length of stay in the ED for admitted patients and overall safety are much improved.

Transfers from AMU / AFU to Inpatient Wards

The numbers of patients moving from the AMU to inpatient wards are lower and more subject to day-to-day variation than from the ED to AMU but are still predictable to an extent and regular planned flow can be built in. One major challenge is that while decision to discharge is typically at 9:30am, patients usually leave at 6pm.

A ward that takes on average 5 patients each weekday will very reliably take 3. Those first 3 transfers can be built in as a predictable part of the day and moved earlier in the day e.g., at 8am, 10am and Midday. Operations teams and Medical Matrons can then liaise with the ward to see whether they can only take 3, expect to reach the normal 5, or are having a good day and can take 7 in total.

This built in, predictable flow out of AMU every morning sets them up for the day to be operating on the front foot and to be able to take ED and GP admissions which peak in the afternoons. Wards can plan ahead, knowing when the next patient will arrive.

What About When There Are No Beds?

All the coordinated measures of the Full Capacity Protocol are used – escalation areas, increased use of the discharge lounge, even boarding. The aim is not to make boarding normal however, but to have it in the toolbox as a temporary measure for an hour while the bed is being cleaned for example. Boarding overnight is extremely rare.

Establishing a CFM means patients avoid long delays waiting for an ambulance at home on the floor, waiting to offload into the ED or waiting in an ED corridor for a hospital bed. These patients deteriorate less and their length of stay in hospital is shorter as a result, this in turn makes it easier to maintain flow for subsequent patients.

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