Refreshing the emergency medicine research priorities

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ABSTRACT

Background The priorities for UK emergency medicine research were defined in 2017 by a priority setting partnership coordinated by the Royal College of Emergency Medicine in collaboration with the James Lind Alliance (JLA). Much has changed in the last 5 years, not least a global infectious disease pandemic and a significant worsening of the crisis in the urgent and emergency care system. Our aim was to review and refresh the emergency medicine research priorities.

Methods A steering group including patients, carers and healthcare professionals was established to agree to the methodology of the refresh. An independent adviser from the JLA chaired the steering group. The scope was adult patients in the ED. New questions were invited via an open call using multiple communications methods ensuring that patients, carers and healthcare professionals had the opportunity to contribute. Questions underwent minisystematic (BestBETs) review to determine if the question had been answered, and the original 2017 priorities were reviewed. Any questions that remained unanswered were included in an interim prioritisation survey, which was distributed to patients, carers and healthcare professionals. Rankings from this survey were reviewed by the steering group and a shortlist of questions put forward to the final workshop, which was held to discuss and rank the research questions in order of priority.

Results 77 new questions were submitted, of which 58 underwent mini-systematic review. After this process, 49 questions (of which 32 were new, 11 were related to original priorities and 6 unanswered original priorities were carried forward) were reviewed by the steering group and included in an interim prioritisation survey. The interim prioritisation survey attracted 276 individual responses. 26 questions were shortlisted for discussion at the final prioritisation workshop, where the top 10 research priorities were agreed.

Conclusion We have redefined the priorities for emergency medicine research in the UK using robust and established methodology, which will inform the agenda for the coming years.

INTRODUCTION

The priorities for emergency medicine research were established in 2017 by a priority setting partnership (PSP) including patients, members of the public and clinicians, coordinated by the Royal College of Emergency Medicine (RCEM) in collaboration

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The top 10 research priorities for emergency medicine were published in 2017 following a James Lind Alliance Priority Setting Partnership. Significant change has taken place in emergency medicine over this time, and research is underway (or in some cases complete) to address six of the top 10 priorities.

WHAT THIS STUDY ADDS

⇒ This is the first research priority refresh which has taken place in the UK. The refreshed top 10 research priorities for emergency medicine are described, and include the management of frail elderly trauma patients, head injuries, acute low back pain and the use of biomarkers in sepsis. Four of the original top 10 priorities remain, relating to mental health, end-of-life care, crowding and staff retention.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Research prioritisation is an important collaboration between patients, healthcare professionals and researchers. The research priorities play an important role in developing emergency medicine research capacity and attracting funding.

with the James Lind Alliance (JLA).[1] From over 200 initial questions submitted, a longlist of 72 unanswered research priorities was then refined (by online ranking survey) to 30 questions that were taken to a final workshop, where the top 10 priorities were agreed.

The JLA works closely with health research funders to make them aware of the issues that matter most to patients and clinicians in areas where funding might be allocated. Indeed, the National Institute for Health and Care Research (NIHR) has a specific rolling funding call inviting grant applications that directly address research questions that have been prioritised during a JLA PSP.[2] While it would be difficult to prove a direct causal link to securing research grants, one of the outputs of a PSP is to report to funding and research agenda setting organisations such as the NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC). In addition, observers from NETSCC and other

Table 1 Examples of studies funded and undertaken to address the 2017 top 10 emergency medicine research priorities[1]

Research priority	Study title	Funding body and award	Status of research project
Priority 1 What is the best way to reduce the harms of ED crowding and exit block?	Refining the National Emergency Department Overcrowding Scale (NEDOCS) as an automated real-time ED crowding tool[6]	RCEM research grant £8568	Project complete
Priority 4 With regard to how ED staff development is managed, what initiatives can improve staff engagement, resilience, retention, satisfaction, individuality and responsibility?	Trainee-led evaluation of the need for Inter-Shift Recovery among Emergency Department doctors in the United Kingdom (TIRED) study[7–9]	RCEM via Trainee Emergency Research Network funding	Project complete
Priority 6 The effects of implementing new techniques in assessing patients with chest pain in practice. Would patients like a say in what is an acceptable risk, and should these tools be used alongside shared decision-making to provide safe and appropriate care, minimise unnecessary risk and inconvenience for patients?	Manchester Acute Coronary Syndromes (T-MACS) Choice Pilot Feasibility Trial[10]	RCEM research grant £9369	In progress, April 2020 to present
Priority 8 Do early undifferentiated (broad spectrum) antibiotics in suspected severe sepsis have a greater benefit and cause less harm to patients than delayed focused antibiotics in the ED?	PROcalcitonin and NEWS evaluation for Timely identification of sepsis and Optimal use of antibiotics in the Emergency Department (PRONTO)[11]	NIHR HTA programme £2 360 235	In progress, December 2019 to June 2024
Priority 9 In adults who are fully alert (GCS 15) following trauma, does cervical spine immobilisation (when compared with no cervical spine immobilisation) reduce the incidence of neurological deficit, and what is the incidence of complications?	Spinal Immobilisation Study (SIS)[12]	NIHR HTA programme £3 497 768	In progress, May 2022 to October 2025
Priority 10 Which trauma patients should be transferred to a major trauma centre rather than going to another hospital first?	A national prehospital major trauma tool/process—the Major Trauma Triage Tool Study (MATTS)[13–15]	NIHR HTA programme £1 211 034	In progress, October 2018 to June 2023

HTA, Health Technology Assessment; NIHR, National Institute for Health and Care Research; RCEM, Royal College of Emergency Medicine.

research funding bodies were present at the final workshop in 2017. Furthermore, the NIHR launched a themed call across all of their funding streams addressing 'injuries, accidents and urgent and emergency care' in December 2019.

Since the original emergency medicine PSP was conducted, the NIHR and other research funders have awarded over £8 million to projects directly addressing some of these research priorities.[3–5] Table 1 highlights some of these projects and the original research addressing the top 10 questions.[6–15]

Much has changed in the last 5 years, not least a global infectious disease pandemic and a significant worsening of the crisis in the urgent and emergency care system in the UK. Despite these challenging circumstances, academic emergency medicine has gained momentum, performing large prospective randomised controlled trials alongside initiatives to support and engage developing researchers, such as the launch of the UK Trainee Emergency Research Network and NIHR Emergency Care Incubator.

As demonstrated, some of the research questions in the original list have been or are being addressed. The aim of this project was to review and refresh the research priorities after a 5-year period.

METHODS

Protocol development

In collaboration with the JLA, a steering group including patients, carers and healthcare professionals was established to agree to the methodology of the refresh (the first refresh of its kind among PSPs).[16 17] An independent adviser from the JLA chaired the steering group. The scope was defined as relating to adult patients in the ED. Separate research prioritisation has been completed for prehospital emergency care,[18] one is in progress for major trauma and another is planned specifically covering paediatric emergency medicine.

Measures were taken to minimise bias and conflicts of interest throughout the process and this was monitored by the independent JLA chair. The steering group included representatives

from diverse backgrounds and with a range of experiences of emergency medicine. The stepwise and sequential process of the prioritisation, together with the independent JLA facilitators, ensured that no one question had an advantage over another.

Survey participation and distribution

A broad approach was taken to contacting stakeholders (clinicians and patients or members of the public) to submit clinical uncertainties and unanswered questions via an online survey. An open invitation to participate was widely publicised on the RCEM and JLA website and through social media, direct email requests and promotional material, which was sent to steering group members to be displayed in EDs. Members of the steering group, JLA and RCEM staff, along with a partner organisation, the Faculty of Emergency Nursing, were additionally asked to identify any relevant patient groups or organisations they were aware of to assist in dissemination. We also approached the RCEM Lay Committee, the Equality, Diversity and Inclusion Committee and the Women in Emergency Medicine Special Interest Group. This process is summarised in table 2.

The online survey was open for 3 months from February to April 2022. Patients, carers and members of the public were invited to submit questions relating to their experience and

Table 2 Methods used for engagement and dissemination of the survey

Method 1	Use an online survey for submission of questions.
Method 2	Ensure diverse representation in the steering group for wider and inclusive dissemination of the survey.
Method 3	Develop a communications plan with RCEM including a communications pack to facilitate wider dissemination of the survey.
Method 4	Engage existing patient group networks.
Method 5	Reach out to partner organisations with a view to dissemination of the survey.

RCEM, Royal College of Emergency Medicine.

clinicians were asked to identify uncertainties immediately relevant to treating a patient in an ED. Survey respondents submitted a research question or topic in free text with the option to provide specific details in Population-Intervention-Comparator-Outcome format. Additional questions based on respondent role, region, age, ethnicity and gender identity were included in the survey. Submitted questions were tabulated, combined where applicable and categorised under themes by members of the steering group.

Data processing and refining the questions

Each question underwent a mini-systematic review using Best-BETs methodology by two reviewers to establish whether evidence already existed.[19] BestBETs methodology consists of a three-part question: (1) patient characteristic; (2) intervention(s) or defining question; and (3) relevant outcome(s), and a structured approach to finding and reviewing the literature. Volunteers from the emergency medicine community (including medical students and emergency medicine registrars) undertook the reviews. The outcomes of the minisystematic reviews were reviewed by members of the steering committee; if the research question was determined to be answered then the question was not included in the prioritisation survey. A review of the existing top 30 questions was also undertaken by the steering group and the team at the JLA to establish research completed (or underway) that answered the question.[20]

On confirmation that submitted questions remained unanswered, and removal of duplicates, all unanswered questions, including those from the 2017 JLA PSP, were included in an interim list of questions. The steering group produced lay summaries of each along with a glossary of terms. Any questions identified by committee members as being out of scope were removed.

Prioritisation: interim and final

The questions then underwent interim prioritisation via an online survey, which was distributed to stakeholders including patients, carers and healthcare professionals, in a similar open call to the initial invitation to participate (online supplemental material 1). Participants were provided with the full list of research questions and asked to rank them based on their own perspective. Subsequently, two ranked lists of questions, one for each participant group, were produced based on the number of votes. The two lists ensured that equal weight could be given to participating groups (namely patients, caregivers/family, healthcare professionals), irrespective of the number of people participating in the prioritisation.

To generate a shortlist of 20–30 questions to take forward to the final prioritisation workshop, the steering group reviewed the top-ranking questions in each participating group. As several questions overlapped between participating groups, runner-up questions were then considered. Criteria for inclusion of other questions were those where the theme of the question was ranked highly but had not been covered in the existing list.

Independent JLA facilitators led the final prioritisation meeting in September 2022 in London, involving 16 participants who discussed and ranked the 26 questions on the shortlist to produce a top 10. Participants were a mix of patients, carers, lay members and clinicians. The workshop consisted of two rounds of small group discussions and a whole group session. Each group included representatives from all participant groups. Prior to attending, participants were provided with the 26 questions, in no particular order, to rank. Participants shared their
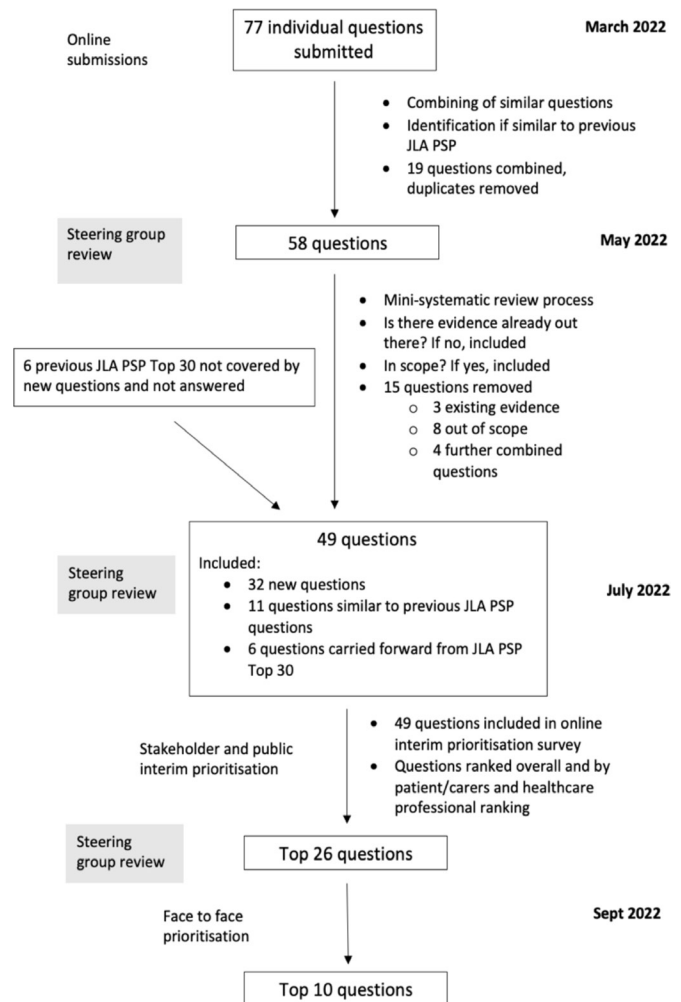

Figure 1 JLA PSP, James Lind Alliance Priority Setting Partnership.

ranking in the first small group round and through discussion, the small group agreed to rankings. After the first round, the small group rankings were aggregated using a simple arithmetic mean and checked using the geometric mean. The combined ranking formed the basis for the second round, in which newly formed groups provided the opportunity for participants to hear different voices and perspectives to reconsider their own and the group priorities. A final review of the combined ranking, led by a JLA facilitator, was undertaken with all participants present, providing opportunity for all to voice their views, and reach a consensus on the top 10. Any proposals for changing the top 10 at the final review were discussed, and if necessary, a vote was taken.

RESULTS

Seventy-seven questions were submitted and categorised into eight themes (eg, trauma, mental health) (figure 1). Once similar questions were combined, 58 questions underwent minisystematic review. After this process, 49 questions were reviewed by the steering group and included in the interim prioritisation survey.

The interim prioritisation survey attracted 276 individual responses, 227 from healthcare professionals, 39 from patients or carers with 10 not specified. Analysis produced overall question ranking with additional information on ranking by stakeholder demographics, for example, patients, the public and clinicians (available in online supplemental material 2). Following steering

Table 3	The refreshed top 10 emergency medicine research priorities
1*	How can care for mental health patients be optimised, whether presenting with either/both physical and mental health needs; including appropriate space to see patients, staff training, early recognition of symptoms, prioritisation and patient experience?
2	In older frail patients with injury, how can assessment (including specific trauma assessment/call activation), management, clinical outcomes and patient experience be optimised?
3	What is the optimal management strategy for patients taking antiplatelets and anticoagulants who sustain head injuries?
4	In patients with acute low back pain, are there signs and symptoms which should lead to emergency magnetic resonance imaging (MRI) being performed to rule out cauda equina syndrome, a condition which requires urgent management?
5*	How can excellence be achieved in delivering end-of-life care in the ED? How can patients, families and staff be best supported with handling bereavement issues?
6*	What measures and interventions can be used to reduce the harms of crowding in the ED and prioritise patient care most effectively?
7	How can patients who present to the ED with acute aortic syndrome be identified, and are there decision tools which can reduce overuse of CT scans to identify these patients?
8	In patients suffering traumatic injuries where bleeding is suspected, what are the most effective treatments in the ED setting to improve survival?
9	Can a blood test (biomarker) help identify those patients who present with sepsis to the ED that require early treatment and improve patient outcomes?
10*	How can work/life balance be improved among ED staff to better retain our staff, including rota design and other working conditions, and with regard to how ED staff development is managed, what initiatives can improve staff engagement, resilience, retention, satisfaction, individuality and responsibility?

*Denotes a question that was in the original top 10 emergency medicine (EM) research priorities.

group review, 26 questions were shortlisted for discussion at the final prioritisation workshop, where a top 10 were agreed (table 3). The refreshed top 10 includes four questions that were in the original top 10 priorities.

DISCUSSION

This research priority refresh is the first of its kind to update the priorities from an earlier PSP. It is likely the methodology and lessons learnt from this refresh process, and a later Cystic Fibrosis PSP refresh in November 2022, will support other similar efforts in the future. We have defined the priorities for emergency medicine in the UK using robust and established methodology drawing on the existing protocols of the JLA, which will hopefully inform the research agenda for the coming years.

One of the key learning points from this process is how we might achieve meaningful and purposeful engagement with patients and carers to direct future research. Research prioritisation should be driven by all relevant stakeholders and ranking from our interim survey demonstrated a variation in prioritisation between patient/carers and healthcare professionals. In both the original PSP and its refresh, it was challenging to ensure appropriate patient engagement throughout the process, as it was not possible to target a specific patient advocacy group focused on a specific medical condition, unlike many other PSPs. Initiatives within specific EDs and regions to form emergency care patient groups have recently developed further patient and carer engagement opportunities.[21] We were more successful in engaging patients, caregivers and the public in the ranking of research questions than submitting the questions themselves.

Within any research prioritisation process, there is a risk of bias from researchers or organisations with an interest in a particular topic. By adapting the rigorous JLA processes for this refresh, bias was minimised. Measures taken included reviewing any conflicts of interest for the steering group members, the use

of online open ranking during the interim survey and the input of independent JLA advisers throughout the process.

Several topics have remained in the top 10, including mental health, care of injured older frail patients, end-of-life care, crowding and staff well-being. These priorities reflect the current experiences and challenges within emergency medicine and signify concerns for clinicians and patients alike. They are challenging to research as they are complex and multifactorial, and often require a whole system healthcare approach. These questions may not be answerable with randomised controlled trials but may be more suited to observational or qualitative research methods. Often obtaining funding for this type of research is more challenging, but as a result of being highlighted by this prioritisation process, these topics may gain more prominence and funding to support research.

Mental health has now become the top research priority for emergency medicine, increasing from priority 3 in 2017, reflecting the rising number of mental health cases seen in EDs, on a background of increased population prevalence of alcohol and drug misuse, homelessness and acute mental health illness.[22] Furthermore, patients with mental health problems are likely to experience delays to their care and are twice as likely to spend 12 hours or more in an ED compared with other patients.[22] The academic community can play an important role in identifying evidence-based interventions and best practice for this group of patients.

Crowding and end-of-life care remain research priorities and continue to be key concerns for patients and clinicians alike. Both are complex challenges and are significantly impacted by external and internal factors. For end-of-life care, the impact of crowding and exit block leads to inability to care for patients in appropriate environments, exacerbating an already difficult situation to manage in an emergency setting. A recent RCEM report recommends that evidence-based interventions should be used to tackle overcrowding and research plays a central role in achieving this.[23]

New questions highlight the management of older frail trauma patients and effective treatments for traumatic injury and bleeding. Reflecting the changing demographic and increased use of direct oral anticoagulation and antiplatelet therapy, a common clinical question pertaining to investigation following minor head injury in this patient group is also included.[24] Two new refresh priorities relate to low-frequency but high-impact presentations, where clinicians may be concerned about potential missed diagnosis. Acute aortic syndrome and cauda equina syndrome are rare but devastating diagnoses—indeed, aortic dissection and spinal cord compression were recently reported to be in the top five conditions accounting for 39% of serious misdiagnosis-related harms in the USA, and a key factor in high-value clinical negligence claims in EDs in England from 2014 to 2018.[25 26] Alongside an increase in clinical negligence claims, rising public expectation and unprecedented demand, it is perhaps unsurprising that these priorities have reached the top 10 as clinicians look for answers to help them define risk in these presentations.

Following completion of the JLA PSP refresh, the next step is to review the priorities and define focused research questions from the broader topic areas, which might be developed as potentially fundable research studies in the future.

CONCLUSION

This research priority refresh has allowed us to determine which research priorities remain unaddressed as well as new ones that

have arisen due to changes and advances in healthcare. These priorities for emergency medicine in the UK, determined using robust and established methodology, will inform the research agenda for the coming years.

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