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**RESEARCH PAPER**

# Core requirements of frailty screening in the emergency department: an international Delphi consensus study

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## Abstract

**Introduction:** Frailty is associated with adverse outcomes among patients attending emergency departments (EDs). While multiple frailty screens are available, little is known about which variables are important to incorporate and how best to facilitate accurate, yet prompt ED screening. To understand the core requirements of frailty screening in ED, we conducted an international, modified, electronic two-round Delphi consensus study.
**Methods:** A two-round electronic Delphi involving 37 participants from 10 countries was undertaken. Statements were generated from a prior systematic review examining frailty screening instruments in ED (logistic, psychometric and clinimetric properties). Reflexive thematic analysis generated a list of 56 statements for Round 1 (August–September 2021). Four main themes identified were: (i) principles of frailty screening, (ii) practicalities and logistics, (iii) frailty domains and (iv) frailty risk factors.
**Results:** In Round 1, 13/56 statements (23%) were accepted. Following feedback, 22 new statements were created and 35 were re-circulated in Round 2 (October 2021). Of these, 19 (54%) were finally accepted. It was agreed that ideal frailty screens should be short (<5 min), multidimensional and well-calibrated across the spectrum of frailty, reflecting baseline status 2–4 weeks before presentation. Screening should ideally be routine, prompt (<4 h after arrival) and completed at first contact in ED. Functional ability, mobility, cognition, medication use and social factors were identified as the most important variables to include.
**Conclusions:** Although a clear consensus was reached on important requirements of frailty screening in ED, and variables to include in an ideal screen, more research is required to operationalise screening in clinical practice.

**Keywords:** frailty screening, emergency department, older adult, Delphi consensus, older people

### Key Points

- An ideal emergency department (ED) frailty screening instrument should be brief to administer and ideally take <5 min to score.
- It should reflect baseline function in the immediate 2–4 weeks before the current presentation.
- Delphi participants agreed that a feasible and cost-effective, rather than ideal, screening instrument was most important.
- Frailty screening should be prompt and completed at the point of first contact in ED and within 4 h of ED attendance.
- Uncertainty concerning the feasibility, efficacy and cost-effectiveness of frailty screening are barriers to widespread use.

## Introduction

The proportion of people aged ≥60 years is growing, resulting in a greater number of complex presentations to emergency departments (EDs) [1, 2]. Frailty, an age-associated predisposition to adverse healthcare outcomes [3] is increasingly prevalent in this setting. A recent systematic review and meta-analysis reported a prevalence of 12% using any physical definition and 24% using the deficit accumulation model among community-dwellers aged ≥50 years across 62 countries [4]. Older adults living with frailty are at particular risk after an ED visit, with longer admissions, high rates of functional and cognitive decline, greater risk of readmission and institutionalisation after discharge and higher mortality [5, 6]. Frailty is also common among older ED attendees with studies suggesting up to 60% are frail [6, 7]. Identifying frailty early is important to triage people to appropriate care pathways and more detailed comprehensive geriatric assessment (CGA) to improve outcomes [8]. Screening for frailty helps creates awareness among healthcare professionals regarding the complexity of older adults, which leads to more holistic, person-centred care [5]. Frailty risk stratification also allows faster and more efficient use of time and resources in a busy ED [5].

The development of geriatric emergency medicine (GEM) as a discipline within emergency medicine has paralleled awareness of the impact of frailty on older people attending ED. Indeed, the need to better understand the effectiveness and feasibility of frailty screening and the tools used to stratify risk among these patients are highlighted in a recent list of the 10 high priority research questions in European GEM [9]. However, it remains unclear how to best identify and triage frailty in ED in 'real time' and in particular how to differentiate between low- and high-risk individuals in ED [10]. Despite a multitude of published studies, there is an absence of high-accuracy screening instruments validated for use in ED [11]. Few have been validated against 'gold standard' frailty assessments as determined by CGA [12] and the optimal domains and variables to include in such instruments to predict adverse outcomes is unknown [13]. Ideal instruments should be accurate at diagnosing frailty across a variety of patients with different presentations, without requiring any extra equipment, personnel or time to administer [14]. Many other important questions remain unclear including whether the focus should be on case-finding rather than screening and which staff should screen and when [14]. Given the wide range of health care professionals involved in GEM care, future research connecting these relevant professionals is also highlighted as a priority [9].

The Delphi consensus technique is a well-established approach to answering complex research questions by attaining a consensus view across subject and context experts [15]. The Delphi consensus process has been used successfully to identify and examine definitions of frailty [16, 17] and to describe optimal approaches to assess frailty in inpatient (acute medical care) settings [18]. The objective of this paper was to conduct an international electronic Delphi (e-Delphi) consensus study to identify the core requirements of an ideal frailty screening instrument, exploring important principles, practices and logistics to facilitate accurate and timely screening of frailty in ED.

## Methods

### Design and participants

The Delphi process is based on a series of 'rounds', where a group of experts are asked opinions on a particular issue. The questions for each round are based in part of the findings of the previous one, allowing the study to evolve over time in response to earlier findings [15]. Participants can view the results of previous rounds, allowing time to reflect on the views of others and reconsider their own opinions accordingly. Finally, the findings of each round are always shared with the broader group anonymously, to reduce bias. Thus, the Delphi process is designed to allow the development of a consensus view that answers the research question [15]. This study employed a modified e-Delphi design, incorporating two rounds of surveys circulated electronically. The process is outlined in Figure 1. Thirty-nine international experts with different professional backgrounds from 10 countries were invited to participate in the study with the aim of gathering a broad range of opinions. Participants were selected based on their professional expertise relating to frailty in acute care settings, particularly authors of peer-reviewed publications examining the acute management of frailty or those with membership of international frailty or GEM associations. These associations included the specialist interest group of the European Union Geriatric Medicine Society and the International Federation of Emergency Medicine. Participants ideally had to have published peer-reviewed research papers within the last 5 years in this area. There was also a focus on interdisciplinarity. Participants included physicians, academic researchers, frailty educators, health and social care professionals, senior nursing professionals and public health experts. This was to ensure that the Delphi group reflected the diversity of frailty domains and the interprofessional collaborative nature of GEM. The core steering group (EM, RO'C of University College Cork and the Mercy University Hospital, Cork, and SC of the University College London) selected participants. All participants provided informed consent. Ethical approval was granted in advance from the Clinical Research Ethical Committee of University College Cork (ECM 3 (bbb) 11/05/2021).

### Questionnaire development and circulation

Before this Delphi study, a systematic review was conducted to identify published frailty screening instruments used in ED (PROSPERO trial registration number CRD42020216780) [12]. The questions, items and other details along with their psychometric and clinimetric properties (target sample, administration time, etc.) were

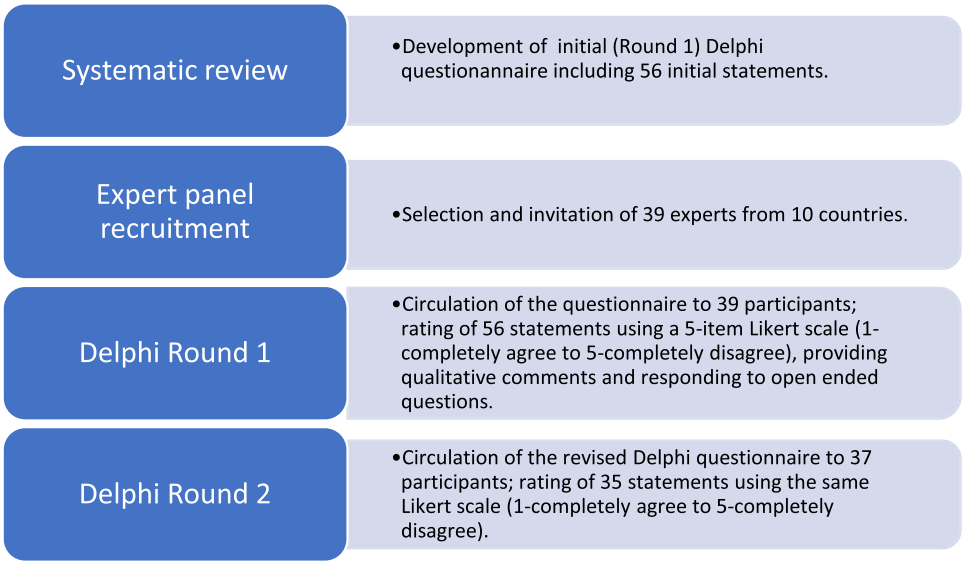


**Figure 1.** Methods flow chart.

directly extracted as text. Statements for Round 1 were subsequently synthesised from these data by reflexive thematic analysis. Reflexive thematic analysis is an easily accessible and theoretically flexible interpretative approach to qualitative data analysis that facilitates the identification and analysis of patterns or themes in a given dataset [19]. Through the reflexive approach, themes are not predefined in order to find codes [19]. Themes are produced by organising codes around a central organising concept using the six-stage analytical process defined by Braun and Clarke [19]. From this process, a list of statements was generated based on the question: 'What are the core requirements of frailty screening in the emergency department?'. Data extracted from the included studies were analysed by two authors (EM, RO'C), before being reviewed and confirmed by an external expert (SC). Following this feedback, further synthesis included merging the most common codes and grouping themes under major categories, including adaptations of relevant existing research on frailty variables and domains by Soong, Van Oostrom and Carpenter, respectively [18, 20, 21]. The reflexive thematic analysis resulted in an initial list of 56 statements that were incorporated into the first round of the e-Delphi survey, according to three main themes (categories) illustrated in a concept map in the Supplementary Appendix. In summary, the themes were grouped as follows:

1. The 'principles' of frailty screening in ED;
2. The 'logistics' of frailty screening in ED;
3. The 'domains' of frailty (physical, psychological, cognitive and social).

Participants had 2 weeks to respond and complete each round. To improve response rates, individualised reminders were sent. An online survey software tool (SurveyMonkey™, Momentive Inc., San Mateo, CA, USA) was utilised to facilitate the survey, which was administered in English.

### Delphi rounds

The first round was circulated between 19 August 2021 and 3 September 2021 and the second round between 11 October 2021 and 26 October 2021. Participants rated each statement on a 5-item Likert scale indicating whether from one 'Strongly Agree' to five 'Strongly Disagree'. An option was also provided to add free-text comments after each section. An agreement level of 80% was applied for accepting statements, i.e. those rated as one 'Strongly Agree' or two 'Agree' by ≥80% of participants [22–29]. Statements not meeting this criterion were automatically excluded. Tabulated feedback was shared with participants after Round 1. Feedback entered in the open-ended comments section in Round 1 was collated and mapped under existing statements or refined for Round 2 as below:

- Edited statement: Round 1 statement that reached 80% group consensus agreement with the refinement of the wording of the statement to reflect group feedback.
- New statements: Based on qualitative comments and responses from free text sections in Round 1.
- Statements that did not reach agreement in Round 1 but were revised and re-circulated following editing according to feedback in open-ended comments sections.
- Merged statements: Statements accepted by 80% group consensus in R1, independently of each other, and combined due to overlapping in content, aim or objective.

Prior to synthesising, the core steering group (EM and RO'C), reviewed the final list of statements, alongside the 17 comments received from participants. Based on these, statements were grouped by theme, condensed where required and the wording refined. The final set of statements was forwarded to all participants at the end of the two Delphi rounds.

**Table 1.** Characteristics of all Delphi participants ($n = 37$).

| Characteristics | Number | % |
|---|---|---|
| **Sex** | | |
| Female | 24 | 62% |
| Male | 13 | 35% |
| **Area of expertise** | | |
| Emergency medicine physician (clinical) | 6 | 16% |
| Emergency medicine physician (academic) | 5 | 14% |
| Geriatric medicine physician (clinical) | 4 | 11% |
| Geriatric medicine physician (academic) | 6 | 16% |
| Health and social care professional | 7 | 19% |
| Nursing | 5 | 14% |
| Health sciences/public health | 4 | 10% |
| **Country** | | |
| Ireland | 16 | 43% |
| Canada | 5 | 14% |
| USA | 4 | 10% |
| Australia | 4 | 10% |
| Netherlands | 2 | 5% |
| Italy | 2 | 5% |
| Belgium | 1 | 2% |
| UK | 1 | 2% |
| China | 1 | 2% |
| Thailand | 1 | 2% |

## Results

### Round 1

In all, 37/39 participants from ten countries completed Round 1 (response rate 95%). Table 1 provides details on the characteristics of all 37 invited participants from 10 countries. More than half were female ($n = 24$, 62%), the largest proportion worked in emergency medicine ($n = 11$, 30%). Approximately half were from Europe ($n = 22$, 56%) and half from other parts of the world, predominantly North America.

From the initial questionnaire circulated, 13/56 (23%) of the statements were accepted in Round 1. Seven were accepted outright, three were revised based on feedback and three other statements, though reaching the ≥80% threshold, were merged with three other statements with which they overlapped. In total, 45 responses were received in the open-ended comments sections, which contributed to the development of 22 new statements for Round 2. Hence, 43/56 statements were rejected or merged, mainly comprising logistical and frailty risk factor statements. In total, 35 statements were forwarded to be rated in Round 2.

### Round 2

Thirty-two individuals participated in Round 2 (response rate 86%). Seventeen comments were received in the open-text comments sections, the majority regarding the principles of frailty screening. Finally, 19/35 (54%) statements were accepted. The distribution of survey responses and details of the specific statements included and excluded are provided in the Supplementary Appendix. Each round is summarised in Figure 2. The final 19 statements are presented in Table 2. The list of rejected statements (combined percentage who disagreed or strongly disagreed with each) are presented in Table 3.

## Discussion

This paper is the first, to our knowledge, to present the results of an e-Delphi consensus study examining the core requirements of frailty screening in the ED with a focus on important principles and practicalities (logistics), as well as the central domains to include in an ideal, short, ED-specific frailty screening instrument. The study brought together international participants with expertise in frailty and its identification and management in ED. The diverse panel provided a broad understanding of the concept and the requirements to deliver screening in this complex and often challenging environment. This study signposts ways that these can be overcome. It also indicates areas where currently little or no consensus exists. The 19 statements accepted by the participants can be grouped by three overarching themes as follows.

### Principles of frailty screening in ED

This Delphi highlights that a short frailty screen for use in ED should be multidimensional, measuring recent premorbid frailty status, ~2–4 weeks before the current illness, and be capable of identifying patients at high risk of adverse outcomes. Participants highlighted that early frailty screening will help to streamline comprehensive frailty assessments to provide tailored intervention plans that are actionable in ED. They also accepted that frailty screening in ED, was in principle, cost-effective [30]. This is despite there being as yet, insufficient data to support this, albeit there is emerging evidence in other settings, provided there is geriatric medicine support [31, 32]. Economic policy considerations for more intensive hospital-based frailty screening are being discussed internationally [33, 34]. In Canada, a health advisory group has recommended scaling up frailty screening in view of the public health benefits of early frailty intervention [33]. In Europe, significant financial investment in hospital 'front door' frailty services has occurred in several countries [34]. Delphi participants also reiterated that an ideal frailty screening instrument should be acceptable to patients and should be possible to perform or administer safely, affordably and efficiently [35].

### Logistics of frailty screening in ED

Limited consensus on the practical elements of frailty screening was reached. Most agreed that screening should be initiated promptly. The 4-hr screening window, from arrival to completion, chosen by the Delphi participants reflects acute care recommendations by the American College of Emergency Physicians (2013) and similar guidelines that

| Round (no. of participants) | Number of Statements | Details |
|---|---|---|
| **Round 1 (n=37)** | **56 statements** | **Start** |
| | 7 statements | *Accepted Statements*<br>Reached ≥80% agreement: of these one was edited slightly for content based on feedback in the comments box. |
| | 3 statements | *Merged Statements*<br>Six reached agreement but three were merged as were overlapping in content, aims or objectives. |
| | 3 statements | *Revised Statements*<br>Did not reach agreement but were revised and re-circulated following editing based on comments feedback. |
| Subtotal | 13 statements | *Proceeded to Round 2*<br>*Accepted* (included from Round 1) |
| | 43 statements | *Rejected/Merged Statements*<br>40 did not reach agreement & were excluded.<br>3 were merged with 3 accepted statements. |
| | 22 statements | *New Statements*<br>Added as new statements based on the qualitative comments and responses in the comments box. |
| **Round 2 (n=32)** | 35 statements | Number of statements circulated in Round 2 (13 accepted from Round 1 and 22 new statements). |
| | 16 statements | Failed to reach agreement and rejected. |
| **Final Consensus Statements** | **19 statements** | Reached ≥80% agreement and accepted for incorporation into final consensus statement. |

**Figure 2.** Summary results of Rounds 1 and 2 of the e-Delphi consensus.

emphasise the importance of early identification to improve older adult outcomes [36]. As no consensus currently exists on the optimal time to screen for frailty in ED, the 4-hr time-point, suggests a pragmatic choice by the Delphi participants, recognising the priority to stabilise patients and ED resource limitations.

Overly lengthy administration time is often identified as a key barrier to the use of frailty screening tools by ED staff, with some tools requiring 30–40 min to complete [37]. Given resource constraints, frailty screens should be quick to administer, ideally taking <5 min. Although no consensus was reached on the most appropriate location for frailty screening, participants indicated that it should be conducted at the first point of contact in ED, where possible. This is usually triage. Approximately half (47%) of respondents indicated that triage was a suitable area. A previous Delphi consensus on frailty assessment in hospital conducted in the UK indicated that acute medical units or geriatric medicine wards might be the optimal settings for frailty screening [18]. This previous study suggested that screening should ideally happen within the first 24 h, which may reflect that the majority of emergency medical admissions in the UK occur via acute medical units. That Delphi consensus differs from this current work as it was not ED specific and included only UK-based healthcare professionals. Further, ED staff were not represented in that Delphi. In our study, participants agreed that automation and incorporation into existing information technology systems were needed to facilitate routine screening. Whole group consensus (100% agreement) was reached on the importance of frailty education initiatives for ED staff. This reinforces the results of studies suggesting that many ED staff report limited frailty training, relying on clinical judgement rather than objective screening tools to identify frailty-associated deficits [5, 38–40]. Educating the clinical workforce on the specific needs and considerations of those with frailty in ED is highlighted as a key goal for age-attuned hospital environments [41].

**Table 2.** Final consensus statements on the core requirements of frailty screening in the emergency department (ED) ($n$ = 19 accepted statements) R1 = Round 1.

| Theme | Statement | % Agreement |
|---|---|---|
| **1. Principles of frailty screening in ED** | 1. Frailty screening in ED should measure the overall general baseline pre-morbid frailty status of people shortly before ED presentation (i.e. their recent status—approximately 2–4 weeks before the current illness that resulted in their presentation to ED). (accepted but edited statement in R1) | 97% |
| | 2. Screening for frailty in ED is cost-effective (i.e. that the benefit to patients and hospitals outweighs the associated monetary/financial and time/opportunity costs). (New statement) | 81% |
| | 3. Frailty screening in the ED should be part of a broader ED protocol or pathway to account for the special care needs of older adults. (New statement) | 97% |
| | 4. Where frailty is identified in ED after screening and confirmed (subsequent assessment or already documented status), it is feasible to start individualised interventions in ED (i.e. tailored to the individual person's characteristics or needs rather than taking a broad, more generalised 'one-size-fits-all' approach). (New statement) | 94% |
| | 5. It is more important to have a feasible ED frailty screening instrument than an ideal frailty screening instrument. (New statement) | 94% |
| | 6. Short, rapid, frailty screening instruments in ED should identify older adults at high risk of adverse outcomes (e.g. predictive of hospital re-admission, prolonged length of stay, death). (Accepted statement in R1) | 97% |
| | 7. Frailty screening instruments for use in ED should be well-calibrated across the spectrum of frailty severity, disability and socioeconomic strata accounting for different levels of health literacy. (new statement) | 81% |
| | 8. A short frailty screening instrument for use in ED should be multidimensional, incorporating questions targeting different domains (e.g. two or more, including cognition, function in activities of daily living, healthcare utilisation, nutrition, physical status). (Accepted statement in R1) | 97% |
| **2. Logistics of frailty screening in ED** | 9. Frailty screening should be completed within 4 h of a patient attending ED. (Accepted statement 1e in R1) | 88% |
| | 10. The administration time of a short frailty screen for ED should be under 5 min. (Accepted statement in R1) | 94% |
| | 11. Frailty screening should be undertaken at point of first contact in ED, where it is appropriate (i.e. patient is sufficiently stable and capable of being screened) and provided ED resources allow. (New statement) | 81% |
| | 12. ED frailty screening should be conducted 24/7 (i.e. all the time) as part of routine ED practice. (New statement) | 88% |
| | 13. Frailty education initiatives for staff are required to support frailty screening in the ED. (New statement) | 100% |
| | 14. Short frailty screening instruments for use in ED need to be incorporated into the ED IT system to support routine, automatic mandated frailty screening. (New statement) | 97% |
| **3. Important domains to include in frailty screening instruments in ED** | 15. Functional ability (i.e. presence or absence of full functional capacity to undertake activities of daily living—e.g. washing, dressing, toileting, feeding, mobility, transferring, managing finances etc.). (Merged 3d/4w statements in R1) | 94% |
| | 16. Mobility factors (e.g. use of walking aids/frame, balance issues, falls history, etc.). (Merged 3e/4n statements in R1) | 100% |
| | 17. Cognition (e.g. any history of cognitive impairment, dementia, delirium, memory concerns, attention issues, deterioration in decision making, etc.). (Merged 3 g/4q statements in R1) | 97% |
| | 18. Medication use (e.g. polypharmacy, number or types of medication etc.). (Accepted statement in R1) | 81% |
| | 19. Social factors (e.g. Living situation alone or with others, sheltered housing, socio-economic status, social connections, such as social network or trusted people and family/friend supports etc.). (Accepted statement in R1) | 94% |

## Frailty screening domains

The time-accuracy trade-off principle should be considered when selecting items/subtests to include in a screening instrument, i.e. the number incorporated must be balanced with administration tim [42]. Shorter instruments forego some diagnostic accuracy, while those that do not capture the full scope of frailty have lower diagnostic accuracy [43]. Starting with a list of domains containing 11 variables, participants reached consensus on five (functional ability, mobility, cognition, medication use and social factors), reflecting the broad biopsychosocial model of frailty. There is robust evidence for their inclusion. Older adults report functional independence as the most important factor in a universal health outcome ranking and functional assessments accurately predict adverse events post-discharge including ED re-attendance [44, 45]. Similarly, mobility assessments are recommended in many GEM guidelines to ensure safe discharge from ED [46], although the most suitable mobility assessments in this setting are unclear [47]. Screening for polypharmacy in ED is also

**Table 3.** Rejected statements (combined % that either disagreed or strongly disagreed with the statement) R1 = Round 1.

| Number | Statement | % Rejection |
|---|---|---|
| 1 | Current short frailty screening instruments are not sufficiently accurate to justify their use as frailty screens in the ED. (New statement) | 69% |
| 2 | The most important outcome that frailty screening instruments used in ED should predict is mortality (new statement) | 59% |
| 3. | The most important outcome that frailty screening instruments used in ED should predict is re-attendance to ED or re-admission to hospital (new statement) | 59% |
| 4. | The most important outcome that frailty screening instruments used in ED should predict is prolonged length of stay after admission (new statement) | 56% |
| 5. | Interventions following on from frailty screening in ED should prioritise prevention (low resource interventions for early-stage frailty or at-risk individuals) rather than those with established frailty (more high resource complex interventions) (new statement) | 53% |
| 6 | Triage is not an appropriate environment to use a short frailty screening instrument (new statement) | 47% |
| 7 | The focus of identifying frailty in the ED should be on case finding (targeting suspected at-risk individuals only usually based on clinical judgement as to potential benefit) rather than screening (unselected systematic approach for all those attending in a certain population, e.g. over a certain age, etc. including those who may not appear overtly frail) (new statement) | 38% |
| 8 | ED is not an appropriate setting to undertake a test of strength (e.g. hand grip strength and/or objective test of mobility (e.g. timed get up & go) as part of a short frailty screening instrument (revised statements 4i&4 L in R1) | 34% |
| 9. | Frailty screening in ED should target across the spectrum of risk, aiming to identify both low and high-risk older adults, even if this reduces the accuracy of the instrument for frailty and subsequent adverse outcomes (new statement) | 28% |
| 10. | There is sufficient research evidence to justify frailty screening in ED (i.e. that the level of evidence published to date strongly supports that this approach benefits patients e.g. improves health outcomes) (new statement) | 22% |
| 11. | A collateral history from an active caregiver must be sought to facilitate frailty screening in ED (revised statement 2 h in R1) | 19% |
| 12. | ED Frailty screening should not be assigned exclusively to one particular healthcare group (e.g. only nursing staff), but should be undertaken by all healthcare staff providing care to patients in ED (revised statement 2e in R1) | 16% |
| 13. | A one-size-fits-all approach to frailty screening instruments should be used in the ED (i.e. EDs should use a single common screening instrument for all presentations) (new statement) | 10% |
| 14. | All healthcare staff who provide care in ED should be competent in undertaking frailty screening (new statement) | 10% |
| 15. | Routine hospital medical data (electronic or other) should be included in an ED frailty screen to help assess pre-discharge risk in ED settings in 'real-time' (new statement) | 10% |
| 16. | Frailty screening (paper-based or electronic) in the ED should not require any additional equipment (e.g. manometer or sensors etc.) (new statement) | 6% |

recommended as older adults admitted to EDs are high-risk for adverse drug reactions [48], with at least 40% of older attendees having polypharmacy (≥5 prescribed medications) that is associated with increased mortality [5]. The prevalence of impaired cognition among older ED patients ranges from 20% to 40%; it is an important indicator of other comorbidities and occult frailty [49]. Cognitive impairment in older ED patients, irrespective of its cause, is associated with functional decline and/or mortality after 3 and 12 months [48, 50, 51]. Finally, social factors, such as living arrangements are central to a holistic integrated view of older adults and likewise associated with adverse outcomes [52]. Older adults who live alone are 60% more likely to visit the ED than those who lived with their spouses [52].

### Rejected statements

Forty statements were rejected in Round 1 and sixteen in Round 2. No statement was universally (100%) rejected. The highest rejection rate from Round 1 related to statements regarding the logistics of screening (e.g. screening should take place in an inpatient ward, outpatient or family physician clinic and screening should be undertaken by the admitting speciality team). Other statements that did not reach agreement related to outcomes/metrics that should be the focus of screening (e.g. mortality, ED re-attendance and length of stay) and whether prevention should be prioritised over complex management. In this sense, respondents appear to support the routine identification of frailty to inform clinical practice rather than case-finding individuals at high risk for specific adverse outcomes. Accurate prediction of adverse outcomes among individual adults attending ED is difficult [5], and at present it may be more pragmatic to prioritise frailty screening to create awareness and prompt further assessment than predict healthcare utilisation or future mortality. The Delphi group did not agree that all healthcare personnel should be responsible for undertaking frailty screening in ED. This decision is not unexpected given moves to develop dedicated multi-disciplinary frailty intervention teams in ED, with dedicated time and expertise to screen for frailty and highlight people suitable for CGA [53].

### Strengths and limitations

A high participation rate was maintained throughout the Delphi rounds, with extensive feedback received from the group. A high level of agreement (80%), was required for statements to be accepted. Barrios *et al.* [54] report that consensus increases after feedback indicates at least 75% group agreement. This higher level of agreement was chosen to ensure a clear alignment of opinion among the group. Despite attempts to include a broad range of different professional skills from culturally diverse areas, the results represent opinions from a limited number of geographical regions, predominantly from western countries, with most from Europe and North America. This may have resulted in some important perspectives not being included. The largest contribution was from Ireland, which could be viewed as selection bias as the first author's team work in the Irish healthcare system. The selection of experts, while consistent with similar Delphi studies, is essentially subjective [16, 17]. Such selection bias could mean that the consensus lacks breadth and is less generalisable. Selection bias is a risk inherent to the Delphi methodology. The authors acknowledge the final participant group comprised a limited numbers of nursing and health and social care professionals, despite wider recruitment efforts. Therefore, the consensus guidelines generated in this study will require further validation and evaluation with a more diverse Delphi membership panel. Another limitation is that members of the Delphi panel were provided with pre-written statements which creates an anchoring effect and subsequent bias. In this study, we did not facilitate a final consensus meeting. Rowe *et al.* [55] suggests that a majority opinion exerts considerable influence on minority opinion even when the majority holds an incorrect answer, and anonymity helps contributors focus on content; a final consensus meeting may have changed the nature of the consensus.

### Implications of this research

Consideration can be given to integrating these Delphi findings into national and international clinical practice recommendations to guide clinicians and policymakers in these regions. They could also contribute to international research standards for GEM to standardise future reporting of frailty screening and management studies [13]. This should lead to higher quality and larger databases to analyse existing frailty screening instruments and processes. Indeed, the transdisciplinary nature of this Delphi participants group produced much discussion on the requirement for collaborative agreement on frailty definitions and outcome measures in clinical studies to standardise reporting across studies, settings and specialities. The findings also confirm the need for additional studies examining optimal management processes and pathways arising from the screening process, supporting calls to shift the focus from identification and stratification to evidence-based management, including transitional and integrated care interventions for frail patients attending ED [56]. However, it must be cautioned that given the make-up of the Delphi panel some findings may be less generalisable, especially to Asian, African and South American healthcare systems.

## Conclusions

This consensus suggests that an ideal ED frailty screening instrument should be brief to administer and ideally take <5 min to score. It should reflect baseline function in the immediate 2–4 weeks before the current presentation. Delphi participants agreed that a feasible and cost-effective, rather than ideal, screening instrument was most important. It is proposed that frailty screening should be prompt and completed at the point of first contact in ED and within 4 h of ED attendance. The consensus also provides guidance on which items should ideally be included in frailty screening instruments for use in ED to capture important elements of frailty (i.e. questions or measures of functional ability, mobility, cognition, medication burden and social factors such that these could be incorporated into a new frailty screen and compared with existing instruments in a future study. Uncertainty concerning the feasibility, efficacy and cost-effectiveness of frailty screening combined with the lack of routine frailty education for ED staff are barriers to be overcome. Further research is now needed to operationalise and examine frailty screening models and pathways in ED.

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