The barriers and facilitators to screening in emergency departments: a qualitative evidence synthesis (QES) protocol
[version 1; peer review: awaiting peer review]

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Abstract
Background: Early detection of adults at risk of adverse outcomes through systematic screening in the emergency department (ED) can serve to identify high risk groups in need of targeted assessment and early intervention in the hospital or community setting. However, issues such as time pressures, inadequate resources, poor integration of tools into clinical workflow and lack of staff training are cited among the barriers to successfully implementing screening tools in the ED. The aim of this qualitative evidence synthesis (QES) is to synthesize evidence pertaining to the barriers and facilitators to implementing screening tools in the ED.

Methods: A comprehensive literature search will be completed in the following databases Scopus, CINAHL, Medline, Embase, Pubmed and Cochrane library. Grey literature sources will also be searched. Qualitative or mixed methods studies that include qualitative data on the perspectives and experiences of stakeholders on the implementation of screening tools in the ED will be included. “Best fit” framework synthesis will be utilised to produce a context specific conceptual model to describe and explain how these barriers and facilitators may impact on implementation. An a priori framework of themes, formed from the existing evidence base, will inform the ultimate thematic analysis and assist in the organisation and interpretation of search results, ensuring the QES is built upon current findings. CASP will be utilised to quality appraise articles and GRADE CERQual will assess confidence in the QES findings.

Conclusions: This synthesis will offer a new conceptual model for describing the perspectives, perceptions and experiences of barriers and facilitators experienced by patients and key stakeholders involved
in the implementation of screening tools in the ED. The results of this review will inform practice and aid the development and implementation of change strategies to support the implementation of screening tools in the ED.

**Registration:** PROSPERO CRD42020188712 05/07/20

**Keywords**
Barriers and Facilitators, Emergency Care Settings, Screening, Screening Tools, Qualitative Evidence Synthesis, Stakeholder Experience, “Best Fit” Framework Synthesis
**Introduction**

The problem of ED crowding is well recognised and includes significant negative consequences, including adverse patient outcomes and staff's inability to adhere to evidence-based treatment (Morley et al., 2018). Older adults with complex and chronic conditions have emerged as drivers of ED crowding; however, chronic illnesses and complexities among diverse adult populations have also posed a problem (Morley et al., 2018). Identification of these complex patients who are at increased risk of adverse outcomes such as ED re-presentation, functional decline and unplanned hospitalisation may offer one solution to tackle the problem of ED crowding (Kirk et al., 2016).

Successful implementation of screening tools in ED settings would make it possible to identify those most at risk and target interventions for this vulnerable group (Kirk et al., 2016). Screening within the ED can assist staff in identifying frailty and frailty risk, sepsis risk, functional decline and risk of adverse outcomes and falls risk among adults. Screening can assist staff in identifying those most in need of referral and specialized intervention; however, in a busy ED environment the implementation of screening can be problematic (Asomaning & Loftus, 2014). Successful implementation is dependent on pre-implementation adaptation and testing and staff education (McCusker et al., 2007). It is also vital to identify barriers and facilitators to the implementation of screening tools to ensure adequate uptake among staff and ensure systematic screening (Kirk et al., 2016).

Studies have revealed that a lack of resources, poor adaptation of tools to local guidance and structure and a lack of distinction between screening and assessment tools have been significant barriers to the utilization of screening tools in the ED (McCusker et al., 2007). Implementation of new practices within the ED have also proved to be problematic due to perceived irrelevance of screening in such a critical environment, time pressures, practice demands and a high level of stress and unpredictability (Asomaning & Loftus, 2014; Creswick et al., 2009; Lavender et al., 2014). The emphasis of flow culture within the ED also presents as a barrier within the literature, with staff resisting screening tools that do not support the flow of patients (Kirk & Nilsen, 2015). Staff were lacking a long-term viewpoint where screening individuals for adverse outcomes and risk and intervening to reduce the incidence of readmission, in particular, should be favoured over moving patients through the ED quickly without adequate assessment and intervention.

Local culture has a significant impact upon professionals' roles, responsibilities and identity, actions and sense making and provides different ways to perceive barriers and facilitators linked to new screening tools (Kirk et al., 2016). According to Kirk et al. (2016), it is vital to understand the local culture before any implementation strategy linked to screening tools is planned. In addition, researchers must understand how new tools make sense in a cultural context before planning any strategies (Kirk et al., 2016). Research demonstrates that multiple factors impact upon the screening process, many of which need to be explored at a local level to ensure optimal implementation. A broader and updated perspective inclusive of organisational, professional and patient associated barriers and facilitators is warranted, justifying this broader review methodology inclusive of adult screening and multiple screening methods in the ED. This review will explore qualitative evidence that pertains to stakeholders' perspectives, perceptions and experiences of barriers and facilitators to implementing screening tools in the ED.

**Methods**

**Protocol design**

“Best Fit” framework synthesis (BFFS) produces context specific conceptual models which assist in explaining or describing the health behaviours or decision-making of patients or other groups using a pragmatic and transparent process (Dixon-Woods, 2011). In addition, this process can assist in generating programme theories relating to intervention effectiveness (Carroll et al., 2013). This method involves the creation of an *a priori* framework upon which thematic synthesis of primary research can be based. The framework is created utilising current models, theories and concepts that pertain to the topic under exploration; this framework is then utilised to inform the thematic synthesis of primary research studies identified during the review process (Carroll et al., 2013). This approach is often dependent on whether the framework is built upon emergent, established, refined or tentative theory and requires thoughtful consideration (Brunton et al., 2020).

This interpretive methodology is deemed to be advantageous as it is reproducible, based on the current evidence base and, therefore, directly applicable to those who wish to inform practice or policy. This allows the reviewer to build upon existing models, from a potentially different but relevant population, and interrogate the testability, internal logic and fit within the evidence base (Carroll et al., 2011; Kelly et al., 2010). In addition, BFFS is well suited to improvement work as an activity rich in theories, where behavioural, social, organisational and implementation theories and frameworks might all be considered relevant (Booth & Carroll, 2015). Two separate sets of inclusion criteria, searches and study selections must be established, one to identify models, theories and frameworks and one for populating the systematic review of primary qualitative research studies (Carroll et al., 2013) (Table 1). Both searches are conducted simultaneously but independently. At the framework synthesis stage, the two “strands” then join together. This process will be reviewed and supported by an independent reviewer and any conflicts will be reviewed by the wider review team.

**Identification of relevant models or theories**

Initially, a framework of *a priori* themes needs to be created. This will be achieved by employing the BeHEMoth strategy to identify relevant models and theories (Booth et al., 2013) (Table 2). CINAHL, MEDLINE, PsycINFO and PubMed will be interrogated using a combination of free text and database thesaurus/subject terms for the behaviour of interest and health context with terms for models and theories. Reviews, regression models or integrative models will be excluded by using database filters. Results will be dual screened (title and abstract) and the full text of potentially relevant publications will be retrieved and checked for relevance. Additional relevant
citations may be sourced in the reference lists of all papers satisfying the inclusion criteria. Reporting of the search strategies will be represented on PRISMA flowcharts (Moher et al., 2009). The a priori framework will be formed through secondary thematic analysis of findings from studies identified through the systematic search and screening process. The Braun & Clarke (2006) framework will be utilised. This form of inductive analysis is grounded in the data, interpretive and consistent with the process for the “best-fit” methodology. In addition, it more accurately reflects the data assisting in the identification of differences and similarities between models or theories and name them as themes (Carroll et al., 2013). Definitions, based on the elements of the original papers, will support these themes (Carroll et al., 2013). This process will then form “concepts”.

Inclusion and exclusion criteria primary research studies
As highlighted above, for the specific search for primary research studies, qualitative or mixed-methods will be eligible for inclusion. Studies must have used qualitative data collection (e.g. semi-structured interviews, observation) and analyses methods (e.g. thematic analysis, grounded theory). Peer reviewed journal articles or non-peer reviewed items including unpublished research articles and theses may be included. Grey literature sources including guidelines, reports and theses are also deemed suitable for inclusion and sourcing of these materials will be included in the search strategy. Quantitative studies, literature reviews and Non-English language studies are not deemed eligible for inclusion. Studies that pertain to the assessment/screening of adults (>18 years) will only be considered. Included studies must explicitly discuss factors that can impact on screening or the implementation of screening within the ED. If qualitative results can clearly be extracted from quantitative results, mixed-method/multiple-method studies can be included. To ensure the relevance and specificity of included articles, the formulation of inclusion and exclusion criteria was completed collaboratively by LB, PM and RG and is reflected in Table 3.

Search strategy primary and grey literature
In collaboration with a medical librarian, a systematic search strategy for six databases Scopus, CINAHL, Medline, Embase, Pubmed and Cochrane was formulated. Grey literature sources were also included and were Open Grey, Google Scholar, Lensus Irish Health Repository, Science.Gov and Embase Grey Literature sources. A multistep approach was used to source primary literature. This included keyword searching of electronic databases, using medical subject headings (MeSH) and specific database headings to further identify search terms, using truncation to broaden the search and ensure all appropriate key words were used (Booth, 2016). Literature published in journals between 2009 and 2020 were included. These dates were chosen to ensure the most up to date salient literature was sourced given the changes in healthcare and technology in recent years. Certain terms will be truncated to ensure all spellings are captured. Specific database features will be utilised to enhance the search strategy e.g. refining the search using CINAHL, search queries and adjacency searching in Cochrane. Please see Table 4 for sample Medline search string.

Screening search results
All references will be imported into Rayyan (Ouzzani et al., 2016) and duplicates removed. LB and a second independent reviewer (PM) will screen titles and abstracts independently. Where conflicts emerge LB and PM will resolve these collaboratively, RG will assist in decision-making should conflicts fail to be resolved. Full texts of the articles that remain will be retrieved for screening by LB and PM against the pre-defined

Table 1. Inclusion criteria.

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Models and theories</th>
<th>Primary research studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setting/population</strong></td>
<td>Emergency department or acute assessment units, healthcare providers</td>
<td>Emergency department or acute assessment units, healthcare providers</td>
</tr>
<tr>
<td><strong>Phenomenon of interest</strong></td>
<td>Barriers/facilitators to screening or implementing screening.</td>
<td>Barriers/facilitators to screening or implementing screening.</td>
</tr>
<tr>
<td><strong>Design, evaluation or research</strong></td>
<td>Publications exploring testing or creating frameworks, models or theories</td>
<td>Publications with a qualitative methodology e.g. focus groups, ethnography, interviews.</td>
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</tbody>
</table>

Table 2. BeHEMoth strategy.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be- Behaviour of Interest</td>
<td>Screening or Utilising/Implementing Screening Tools or Screening Measure* or Screening Instrument*</td>
</tr>
<tr>
<td>H- Health Context</td>
<td>Emergency Department*</td>
</tr>
<tr>
<td>E- Exclusions</td>
<td>Literature Reviews or Regression Models or Integrative Model.</td>
</tr>
<tr>
<td>MoTH- Models or Theories</td>
<td>Model or Models* Theory or Theories or Framework or Concept or Conceptual.</td>
</tr>
</tbody>
</table>
### Table 3. Detailed inclusion and exclusion criteria.

<table>
<thead>
<tr>
<th>Criteria for selection</th>
<th>Included</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of article</td>
<td>Primary research as publication</td>
<td>Descriptive articles, literature reviews, systematic reviews, QES and integrative reviews</td>
</tr>
<tr>
<td>Types of studies</td>
<td>Qualitative studies utilising qualitative methods of data collection and analysis</td>
<td>Quantitative research</td>
</tr>
<tr>
<td></td>
<td>Mixed method studies that include qualitative component utilising qualitative methods of data collection and analysis</td>
<td>Qualitative components of studies that do not have distinct qualitative methods of data collection and analysis</td>
</tr>
<tr>
<td></td>
<td>• Studies which pertain to paediatric screening or screening for domestic violence.</td>
<td>• Studies which describe screening for mental health disorders or suicide risk.</td>
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<td></td>
<td>• Studies which pertain to triage screening or categorisation.</td>
<td></td>
</tr>
<tr>
<td>Types of participants</td>
<td>Health care workers: Professionals (e.g. doctors, nurses, midwives, allied health professionals, pharmacists)</td>
<td>Informal carers/family members</td>
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<tr>
<td></td>
<td>Health care staff who do not have direct patient contact (e.g. laboratory staff)</td>
<td></td>
</tr>
<tr>
<td>Types of settings</td>
<td>Emergency departments, acute assessment units (MAU, SAU, AAU)</td>
<td>General wards</td>
</tr>
<tr>
<td></td>
<td>Non-workplace setting</td>
<td></td>
</tr>
<tr>
<td>Types of outcomes</td>
<td>Barriers and facilitators to screening/assessment/triage of adults &gt;18yrs</td>
<td></td>
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<tr>
<td></td>
<td>• Risk of adverse outcomes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Risk of functional decline</td>
<td></td>
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<tr>
<td></td>
<td>• Potential trauma/injury or readmission e.g. falls, functional decline, sepsis, frailty risk, pressure ulcer development, likelihood of readmission.</td>
<td></td>
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</tbody>
</table>

AAU, acute assessment unit; MAU, medical assessment unit; QES, qualitative evidence synthesis; SAU, surgical assessment unit.

### Table 4. Sample Medline search string.

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Barriers*(barriers or obstacles or challenges or difficulties or issues) OR Factors* (factors or causes or influences or reasons or determinants or predictors) OR Facilitators* (facilitators or motivators or enablers) OR Barriers OR facilitators OR

Screening* OR Screening Too* OR Screening Instru* OR Screening Mea* Assessment* OR Assessment Tools OR Assessment method OR Assessment Strategy OR Clinical Assessment OR Clinical Assessment Tools* OR

Emergency department* OR Emergency room OR Emergency Ser* OR Emergency Care* OR Emergency Medi* Accident and emergency OR Accident & emergency OR a&e OR a & e

qualitative OR experience* OR perception* OR perspective* OR case stud* OR interview* OR focus group* OR mixed methods OR participant observation OR transcript* OR ethnograph* OR phenomenol* OR grounded theor* OR grounded-theor* OR purposive sample OR lived experience* OR narrative* OR life experience* OR life stor* OR action research OR observational method OR thematic analysis OR narrative analysis OR field stud* OR field-notes OR video-recording
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inclusion/exclusion criteria. If required, authors will be contacted for further clarification and information. Similarly, any conflicts will be discussed and RG can assist with decision-making if conflicts cannot be resolved.

**Quality appraisal and data extraction**

The quality of all included studies will be assessed using the Critical Appraisal Skills Programme (CASP). Noyes et al. (2019) offered guidance on the critical aspects of the appraisal process from the Cochrane Qualitative and Implementation Methods Group. They advised that appraisal should include clarity with regards to research aims and questions, congruence between the research design and methodology and the research aim and question, rigor of case and/or participant identification, sampling and data collection to answer the research question and appropriate application of the methods, which includes
research reflexivity and richness/conceptualisation of the depth of findings. The appraisal will be carried out independently by the lead author (LB) and by a second independent reviewer (RG). Data for analysis will be extracted by either verbatim quotation from study participants or findings reported by authors that are clearly supported by study data. These data will be coded against the *a priori* concepts. Therefore, new themes are generated from evidence that was not already captured by this framework. These new themes will be based on reviewer’s interpretation of the evidence and comparison across studies. Dual checking for consistency of extraction across studies and coding of results data for all papers against the *a priori* concepts derived from the relevant conceptual model will also be undertaken by LB and PM. New themes for evidence or findings that could not be accommodated will be analysed using the **Braun & Clarke (2006)** thematic analysis framework.

**Synthesis and conceptual model**
The final list of concepts will be synthesised with reference to the extracted data from the included studies, to construct a new evidence based conceptual model regarding the barriers and facilitators to screening in the emergency department (**Carroll et al., 2013**). Data extraction will be facilitated within Google forms, where the *a priori* framework will be represented in individual categories. Themes and representative quotations from the primary research studies and grey literature sources will be categorised along with the *a priori* foundational themes. Firstly, a simple list of defined themes, underpinned by the evidence from the included studies, and any new themes generated by the thematic analysis of any primary research that falls outside of the *a priori* framework will form a conceptual framework. Relationships between individual concepts will then be explored with reference to the evidence; this will then lead to a clustering of concepts and the creation of a new conceptual model describing and reflecting the behaviour of interest, representing the foundational model and theory in conjunction with the themes and concepts extracted from the primary data (**Carroll et al., 2013**).

**Purposive sampling of included studies**
A QES aims for a greater variation of concepts through analysis and synthesis versus an exhaustive sample that avoids bias (**Ames et al., 2017**). Therefore, larger study numbers can negatively impact on the quality of analysis and synthesis in a QES (**Ames et al., 2017**). In addition, data saturation may be associated with the stage when the inclusion of further evidence provides little in terms of further themes, insights, perspectives or information in a qualitative research synthesis (**Suri, 2011**). Therefore, if larger numbers of studies are deemed suitable for inclusion after screening, a purposive sample from eligible studies may be taken after extraction of the relevant data. This can be undertaken collaboratively by three review team members, PM, LB and RG. If required, maximum variation sampling will be undertaken with the aim of achieving the broadest possible variation within the included studies (**Suri, 2011**). The sampling criteria and purposive sampling frame will then be formulated based on the results of the screening and data extraction. The ultimate goal is to ensure that rich data is captured and, consequently, that review objectives and aims are met. Employing maximum variation sampling can assist research synthesists in identifying essential and variable features of a phenomenon, as experienced by diverse stakeholders among varied contexts a QES (**Suri, 2011**).

**Confidence in QES findings**
The Grading of Recommendations Assessment, Development and Evaluation (GRADE) Confidence in Evidence from Reviews of Qualitative Research (CERQual) approach will be used to enhance transparency and confidence in reporting of QES findings. Its use is evidence-based and there are extensive resources to support reviewers in using this approach. GRADE CERQual supports the use of QES findings in decision-making, guideline and protocol development and to inform further research (**Houghton et al., 2017**). Four components are assessed during the GRADE CERQual process: Methodological Limitations, Coherence, Relevance and Adequacy.

The methodological limitations component will be satisfied using the CASP appraisal tool. This approach also assesses the coherence and relevance of individual review findings and in this case will indicate how major themes and sub-themes reported are grounded in the data included from primary studies and is applicable to the overall review aim (**McGrath, 2019**). The quantity and richness of the data supporting the review findings will also be assessed using this approach to ensure adequacy. The GRADE CERQual process will be undertaken by LB and PM and reviewed by RG, and areas of concern will be pin-pointed for each component (**Table 5**). RG will check individual review findings for adequacy, relevance and coherence. Each phase will be discussed by the reviewers and conflict resolution will be attained through discussion and consensus.

CERQual summary of findings tables will be populated for each review finding and will include the specific review finding under scrutiny, the assessment rating (very low, low, moderate or high confidence), rationale for this assessment and the number of studies that contributed to this review finding or theme (**Colvin et al., 2018; Glenton et al., 2018**). The applicable QES objective and the perspective taken in the synthesis will also be included in the table to give context to the analysis of each individual finding/theme. All findings are recommended to start off with high confidence and are rated down if there is any concern re CERQual components (**Lewin et al., 2015**). The reviewers will remain mindful of possible interactions across components and look iteratively to make a final assessment (**Lewin et al., 2015**).

**Reflexivity**
For the purposes of this synthesis, the findings will be considered in the context of research team members’ views and experiences (**Larkin et al., 2019**). All four authors have backgrounds in health science and health services research. The authors have operated within the Irish and other healthcare contexts.
The data underlying a review finding are not sufficiently rich or only come from a
Ames HMR, Glenton C, Lewin S: The primary studies underlying a review finding are shown to have problems in the way they are designed or conducted.

We are less confident that the finding reflects the phenomenon of interest when:
Some of the data contradicts the finding
Some of the data is ambiguous

The contexts of primary studies underlying a review finding are substantively different from the context of the review aim/question.

Table 5. GRADE CERQual component and concern.

<table>
<thead>
<tr>
<th>GRADE CERQual Component</th>
<th>Rationale/Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Methodological Limitations (CASP)</td>
<td>The primary studies underlying a review finding are shown to have problems in the way they are designed or conducted.</td>
</tr>
<tr>
<td>2. Coherence</td>
<td>We are less confident that the finding reflects the phenomenon of interest when:</td>
</tr>
<tr>
<td></td>
<td>• Some of the data contradicts the finding</td>
</tr>
<tr>
<td></td>
<td>• Some of the data is ambiguous</td>
</tr>
<tr>
<td>3. Adequacy</td>
<td>The data underlying a review finding are not sufficiently rich or only come from a small number of studies or participants.</td>
</tr>
<tr>
<td>4. Relevance</td>
<td>The contexts of primary studies underlying a review finding are substantively different from the context of the review aim/question.</td>
</tr>
</tbody>
</table>

 contexts, one in allied health (RG) and three in nursing and midwifery (LB, PM, SMT). All four authors have experience pertaining to qualitative evidence synthesis, with one author having particular expertise pertaining to QES (PM). RG has particular expertise pertaining to screening in the ED. In relation to analysis, the lead researcher conducting the analysis (LB) has experience pertaining to screening in the ED but works outside of the ED as a nurse researcher. Two authors have expertise and experience in ED clinical assessment, development of screening protocols and change management within the ED (DR, MOC). As reflected in this protocol, authors will discuss and examine and consider the significance of their beliefs, attitudes and preconceptions surrounding the research question and methodology during each stage of analysis (Larkin et al., 2019).

Dissemination of QES findings
Findings will be submitted to a peer-reviewed journal for publication. Dissemination of results among stakeholders and members of the research project team will be via oral presentation. Relevant international academic conferences in the areas of emergency and acute care and the care of older people will also be targeted. Dissemination of research findings to local and national health service management will be achieved through online platforms, video conferencing and targeted dissemination to key stakeholders via e-mail where appropriate.

Review status
Database searching for primary research studies is ongoing in conjunction with searching to formulate the a priori framework.

Data availability
Underlying data
No underlying data are associated with this article.

Reporting guidelines

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

References


Booth A, Carroll C: How to build up the actionable knowledge base: the role of ‘best fit’ framework synthesis for studies of improvement in healthcare.


Barry, 2020


Brunton G, Oliver S, Thomas J: Innovations in framework synthesis as a