

## Central Lancashire Online Knowledge (CLoK)

Title	Reducing frequent caller use of ambulance services: a review of effective strategies
Type	Article
URL	<a href="https://clock.uclan.ac.uk/id/eprint/54245/">https://clock.uclan.ac.uk/id/eprint/54245/</a>
DOI	10.12968/jpar.2024.0031
Date	2025
Citation	Jones, David, Massey, Hollie, Smith, Chris, Freeman, Antony and Jones, Emma (2025) Reducing frequent caller use of ambulance services: a review of effective strategies. <i>Journal of Paramedic Practice</i> , 17 (4). pp. 158-166. ISSN 1759-1376
Creators	Jones, David, Massey, Hollie, Smith, Chris, Freeman, Antony and Jones, Emma

It is advisable to refer to the publisher's version if you intend to cite from the work.  
10.12968/jpar.2024.0031

For information about Research at UCLan please go to <http://www.uclan.ac.uk/research/>

All outputs in CLoK are protected by Intellectual Property Rights law, including Copyright law. Copyright, IPR and Moral Rights for the works on this site are retained by the individual authors and/or other copyright owners. Terms and conditions for use of this material are defined in the <http://clock.uclan.ac.uk/policies/>

## **Reducing frequent caller utilisation of ambulance services: A literature review of effective strategies**

### **Abstract**

**Background:** Frequent callers to have been identified as placing significant strain on ambulance services through decreased system efficiency and increased costs. Frequent callers often have interconnected complex physical, mental, and social needs, bringing them in to contact with ambulance services.

**Aims:** This review synthesised evidence on strategies to mitigate frequent caller impact on ambulance services while meeting callers' person-centred needs.

**Methods:** Major databases were systematically searched for relevant studies and critically appraised. Main themes were analysed and reported on.

**Findings:** Preliminary evidence indicates mass distribution letters, case management, and caller management systems may reduce frequent caller impact. Clear definitions and identification systems are essential for ambulance services, in addition to information sharing across services and exploring multi-component strategies. Understanding reasons behind calls can enable more personalised, effective care.

**Conclusion:** Initial evidence points to promising frequent caller reduction strategies, however further high-quality research is urgently needed to confirm effectiveness and support implementation.

## **Key points**

1. Frequent callers can place strain on ambulance services through decreasing efficiency and increasing costs due to their complex interconnected health and social needs driving repeated ambulance service calls.
2. This review synthesised evidence on interventions designed to mitigate frequent caller impact on ambulance services while improving caller care.
3. Major strategies include mass distribution letters, case management, and caller management systems, which show preliminary promise for reducing high-frequency ambulance use if tailored based on population and context.
4. Use of control groups may better evaluate intervention effectiveness by enabling comparisons, while analysing reasons behind calls can facilitate more personalised, targeted approaches.
5. Further research through controlled studies is critically needed to confirm effectiveness of strategies prior to implementation in order to relieve the strain on currently overburdened ambulance services.

## **Reflective questions**

1. What evidence from this review could help strengthen your existing approaches to managing frequent ambulance callers?
2. How can you explore reasons driving repeated calls from high-frequency callers, and how could you dig deeper to understand their perspectives?
3. Do you currently have mechanisms to track the effectiveness of any existing frequent caller interventions? If not, what feasible methods could you implement?
4. Which of the strategies discussed in this review (e.g. education, case management, alternative pathways) could be most relevant or practical to trial in

your practice context? What might implementation involve and are there any foreseeable barriers you would need to address?

## **Background**

In recent years, the increased demand for ambulance services has brought attention to the phenomenon of 'frequent callers', who, although representing a small subset of service users, accounts for a disproportionately high volume of calls (Aslam et al., 2022; Scott et al., 2014a; 2023). Frequent callers often request ambulance services for non-emergency reasons, resulting in increased costs, reduced availability of ambulances for other people, and subsequently lower quality of care for those needing emergency care (Snooks et al., 2019). The consequences of frequent callers highlight the importance of effective strategies that can be introduced to reduce such calls.

The definition of frequent callers to ambulance services has previously varied across the evidence base (Edwards et al., 2015; Smith and McNally, 2014). Variability in definitions can significantly impact research findings and real-world applications (Middleton et al., 2014; Scott et al., 2023). Hence, the Frequent Caller National Network (FreCaNN) established in 2013, define a frequent caller as one who generates five or more calls in one month or twelve calls in a three-month period (FreCaNN, 2022). Although criticised for limiting the definition to those who call themselves, missing other calls (Harring et al., 2024), the FreCaNN definition aims to provide consistency, share best practice and inform local and national policy on the standardised management of frequent ambulance callers.

Ambulance service frequent callers are a substantial challenge for healthcare systems such as the NHS, they reportedly strain resources and may negatively impact the quality of care for other people (Snooks et al., 2019). Due to this, such callers can experience stigmatisation and lack of understanding of their circumstances from health care professionals (Evans et al., 2024; Snowdon, 2022; Stangl *et al.*, 2019). Frequent callers often have interconnected complex physical, mental, and social needs, bringing them in to contact with ambulance services (Snowdon, 2022). Various strategies have been developed and implemented to reduce the impact of frequent callers, such as case management (Snooks et al., 2019), mass distribution letters (McDonnell et al., 2022), levelled intervention management systems (Smith and McNally, 2014) or outreach teams in the USA (Tangherlini et al., 2016). By analysing the strategies employed to manage this population and evaluating their effectiveness could inform and instigate policy and practice updates. Snooks et al. (2019) review of United Kingdom (UK) ambulance trusts highlighted that there are limited reduction strategies in place, thus highlighting a gap in the evidence base.

### Aim

This literature review aimed to analyse primary research articles that explore strategies to reduce frequent ambulance callers, evaluating their effectiveness in terms of reducing call volume, to help alleviate the pressures on ambulance services, and improve caller outcomes. By providing an overview of the current knowledge base and identifying the most effective interventions, this review will contribute to a better understanding of the most promising approaches for managing this complex issue and offer recommendations for future research and practice.

## **Research design and methods**

### Search strategy

An integrative review was undertaken, utilising a systematic method and thorough search strategy including studies with diverse methodologies to enable a comprehensive overview of the literature and understanding of the topic area (Noble & Smith, 2018). The search was completed in September 2024. Databases searched included MEDLINE with Full Text, Academic Search Complete, AMED - The Allied and Complementary Medicine Database, APA PsycArticles, APA PsycInfo, CINAHL Ultimate, chosen as they are the most relevant comprehensive health-focused databases that provide access to a wide range of articles related to nursing, paramedicine, allied health, biomedicine and healthcare (Alving, Christensen and Thrysøe, 2018). Google scholar was additionally used to conduct snowballing. Alternative search terms were utilised to ensure robustness of the search strategy (Table 1). Boolean operators were used in a systematic manner to develop a search strategy that began with a broad scope and gradually became more targeted. The search incorporated the use of "OR" to connect terms or phrases, ensuring that at least one of them would be present in the search results. To search for multiple terms or phrases simultaneously, "AND" was used as a connector. The asterisk (\*) served as a wildcard symbol, allowing for a range of variations of the search term or phrase. Lastly, quotation marks (") were used to search for an exact phrase instead of individual words within the phrase. Various terms to describe 'frequent caller' were included to ensure inclusion of all relevant research, as different terms are used. 'Frequent attenders' or 'frequent users' were included to ensure no appropriate articles were missed, however are terms used to identify those who may frequently attend

emergency departments, though may not have contact with ambulance services, the focus of this review.

Peer reviewed primary research was included, defined as research reviewed by peers through journal academic peer review processes (Willis, 2024). This is a limiter on EBSCO database. Primary studies conducted in the UK were chosen due to differences in healthcare services across the globe (Elston et al., 2022). 2014-2024 time range was chosen to ensure current evidence, in addition to the Frequent Caller National Network (FreCaNN) being established in 2013. Full review was undertaken of any key papers included in relevant reviews and any primary studies meeting the search strategy were reviewed for inclusion (Alruwaili et al., 2024). Other reviews have focused on frequent attenders to emergency departments (Hudon et al., 2016; Kumar and Klein, 2013; Memedovich et al., 2024; Moe et al., 2017; Soril et al., 2015), not specifically focused on ambulance callers. There is a planned Cochrane review of case management or planning for frequent attenders at emergency departments, rather than callers to ambulance services, it will exclude any non-randomised trials or studies without a comparison control group (Budhwani et al., 2022). This review considers all interventions and all methodologies, focused on ambulance callers and all callers rather than specific groups like people specifically with mental health issues (Gabet et al., 2023; Stergiopoulos et al., 2017) or homelessness (Smith and Moyer, 2021). Hence the gap in the evidence base and need for this review.

Table 1: Search term table

<b>Population 1</b>	<b>AND Population 2</b>	<b>AND Intervention</b>	<b>AND Outcome</b>
---------------------	-----------------------------	-----------------------------	------------------------

Frequent Callers OR	Ambulance services OR	Strategies OR	Reduce the volume OR
“frequent caller*” “frequent user*” “repeat caller*” “high intensity user*” “frequent attendance*” “repeat visit*” “high acuity patient*” “frequent attender*” “high call volume”	“ambulance service*” “emergency service*” “paramedic*” “emergency ambulance*” “health service*” “emergency medical service*” “EMS” “paramedicine” “999” “emergency department*”	“strategy*” “strategies” “procedure*” “policy*” “intervention*” “case management” “letter” “community health service*” “community program*” “integrated care system*” “management system*” “care pathway*” “safeguarding” “holistic assessment*” “outpatient care” “outreach team*”	“effectiveness” “reduce call*” “reduce call volume*” “productivity” “reduction in/of call*” “hospitalisation rate*” “treatment engagement” “engagement” “service usage” “proactive engagement” “reduce emergency call*” “treatment engagement” “intensive engagement”

Table 2: Inclusion/exclusion criteria

Inclusion	Exclusion
2014-2024	Not children (0-18)
UK	Other countries than UK
Full text	Focus on other emergency services other than ambulance services, including focus on frequent attenders at emergency departments which may not encompass ambulance service input
Written in English	Not frequent callers
Adults 18+	Not focused on strategies
Focused on ambulance services	Not peer reviewed
Focused on frequent callers	Focus only on one patient group eg. mental health, homelessness, chronic illness
Focused on management strategies	
Peer reviewed primary research	

## **Results**

### Database search outcome

Upon completing the database search using the key terms (Table 1) and following the removal of duplicates, 256 pieces of evidence were identified for screening. Through further reduction from reviewing titles and abstracts and relevance to the research question using inclusion and exclusion criteria outlined in Table 2, three articles were identified from the database search. Snowballing was utilised to search for related literature and 105 others were identified, one included (Snooks et al., 2019). Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) was completed (Page et al., 2021) (see Table 3).

### Critical appraisal

To appraise the four articles found through the search strategy, The Critical Appraisal Skills Programmes (CASP) was utilised. To analyse the selected papers using relevant CASP tools, CASP Qualitative Checklist (2024b) was used for Snooks et al. (2019). There is not a specific CASP tool for service evaluation however as an open national survey was used this was the most appropriate tool. The other three articles were all cohort studies without a comparator, so the cohort study CASP tool (2024a) was used for these.

Table 3: PRISMA 2020

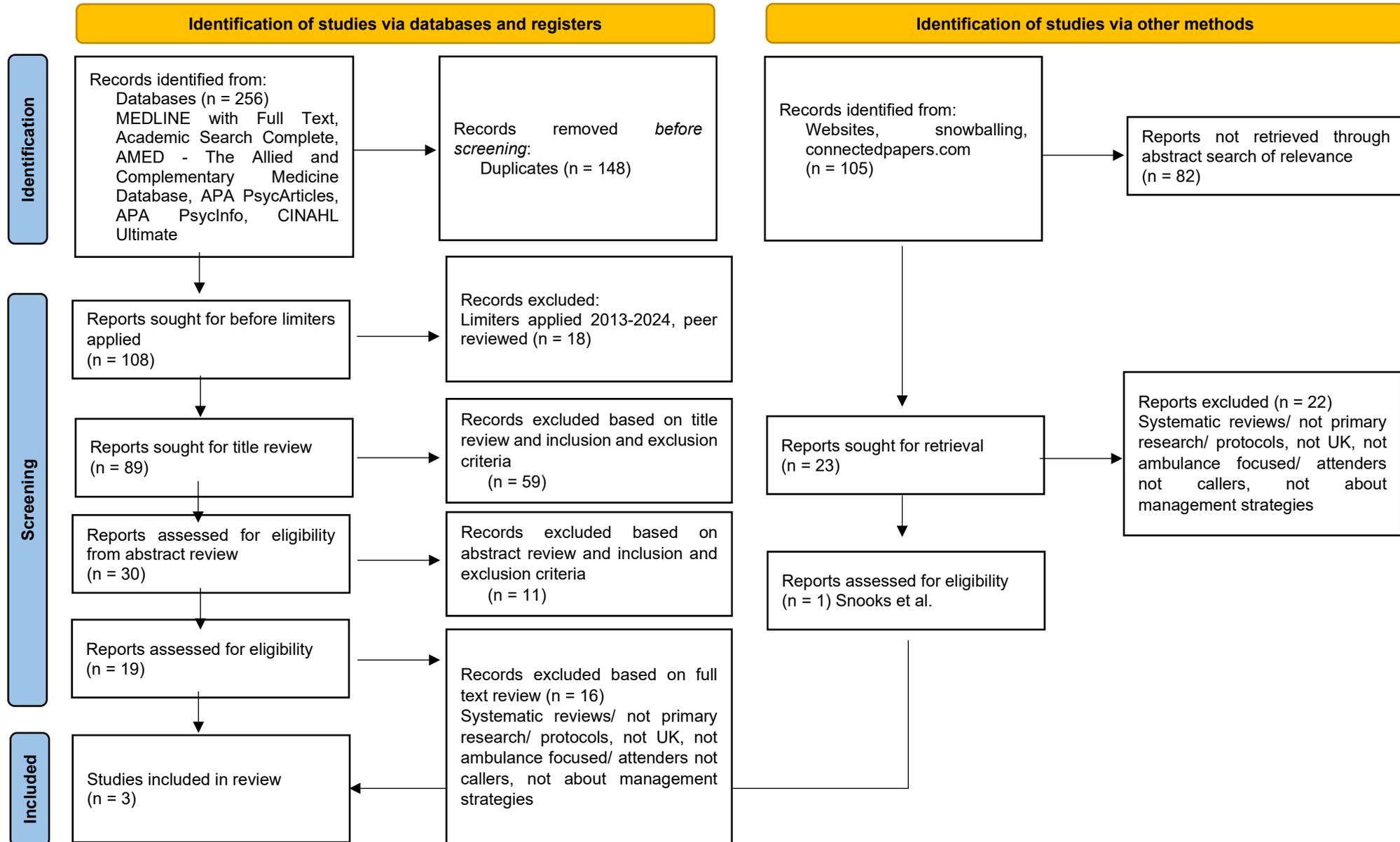


Table 4: Key paper table

<b>Author(s) &amp; Year</b>	<b>Title</b>	<b>Journal</b>	<b>Aim/Objective</b>	<b>Methodology</b>	<b>Sample size</b>	<b>Key Findings Implications/ Recommendations</b>	<b>Strengths</b>	<b>Limitations</b>
Edwards et al. (2015)	Frequent callers to the ambulance service: patient profiling and impact of case management on patient utilisation of the ambulance service	Emergency Medicine Journal	To profile frequent callers and evaluate the impact of case management on their utilisation of ambulance services	Retrospective cohort study without a comparator	110 callers	Reduced ambulance service utilisation through case management. Case management can be an effective intervention for frequent callers.	Over 12 month period Robust design	Limited generalisability
McDonnell et al. (2022)	A mass distribution letter as an early intervention for potential frequent callers	Journal of Paramedic Practice	To assess the effectiveness of mass distribution letters as early interventions for potential frequent callers	Cohort study without a comparator	96 callers	A significant decrease in calls from potential frequent callers after the distribution of letters. Mass distribution letters could serve as an early intervention for potential frequent callers.	Novel intervention studied	Review of single intervention strategy
Smith & McNally (2014)	Delivering enhanced safety, productivity, and experience: early results from a frequent caller management system	Journal of Paramedic Practice	To evaluate the early results of a frequent caller management system	Pilot prospective cohort study without a comparator	624 callers	The management system reduced call volume, costs, and improved caller experience. Implementing a frequent caller management system can benefit both callers and ambulance services.	Combines data analysis, targeted actions, and continuing evaluation	Limited generalisability

Snooks et al. (2019)	What are emergency ambulance services doing to meet the needs of people who call frequently? A national survey of current practice in the United Kingdom	BMC Emergency Medicine	To investigate the strategies employed by ambulance services in the UK to address the needs of frequent callers	Service evaluation using a national survey	13 ambulance services	Variability in the definition of frequent callers, management strategies, and the lack of a standardised approach. Need for a consistent definition of frequent callers, and a standardised approach for management.	Included all UK ambulance services Application of interventions	Response rate
----------------------	--	------------------------	---	--	-----------------------	--	--	---------------

## Discussion

Three main themes emerged concerning frequent users of ambulance services and strategies to reduce calls.

1. Identifying frequent callers and understanding their needs
2. Implementing interventions for frequent callers
3. Evaluating the effectiveness of interventions

1. Identifying frequent callers and understanding their needs

It is important to identify frequent ambulance callers and understand reasons behind their high utilisation in order to implement effective strategies. By profiling these individuals, ambulance services can better recognise their unique needs, utilise resources effectively, and develop tailored interventions (Kwame and Petrucka, 2021).

FreCaNN (2022) in the UK provides a definition of what constitutes a frequent caller as five in one month and twelve in three. This definition was used in Smith and McNally's (2014) frequent caller management system, and as identified by Snooks et al., (2019) review of UK ambulance service frequent caller strategies, most UK ambulance services used this nationally agreed system. However, prior to the establishment of FreCaNN, ambulance services such as the London Ambulance Service (LAS) in Edwards et al., (2015) retrospective study completed pre 2012, they defined a frequent caller as an individual who called the ambulance service 10 times per month for 3 months and/or where the quantity of calls was considered to have a significant impact on resources. McDonnell et al., (2022) initially identified potential

frequent callers as calling 3 times in a month, two less than the FreCaNN as the focus was for potential frequent callers, they were then monitored over 10 weeks.

A clear and consistent definition encourages robust analysis of large amounts of data across various demographics to ensure reliable reporting and subsequent management of frequent callers (Smith and McNally, 2014), in addition to assessing the effectiveness of intervention strategies (Snooks et al., 2019). The implementation of FreCaNN (2022) defining criteria should benefit future identification and the process of assessing caller needs to help reduce call volumes.

The key papers outlined methods to identify frequent callers. Most relied on analysing call data and caller demographics to identify frequent callers. Smith and McNally (2014) used an automated computerised report, McDonnell et al., (2022) also used a computer system. As found by Snooks et al. (2019) most UK ambulance services have electronic systems which flag potential frequent callers and subsequent calls are then identified. Edwards et al., (2015) identified frequent callers through practitioner referrals and through call data as reviewed by a specialist team.

Smith and McNally (2014) emphasise the importance of data-driven systems for identifying frequent callers and addressing their needs through personalised and targeted interventions and support, which are essential for addressing the unique needs of frequent callers (Scott et al., 2014b; 2023). A study by Elston et al., (2022), that explored frequent attenders at emergency departments, utilised a predictive

artificial intelligence algorithm to identify frequent attenders, a further option for future research around frequent callers.

Definitions of frequent callers can ensure reliable reporting and management. There are different methods for identifying frequent callers, through computer systems, practitioner referral or specialist review. Nevertheless, however frequent callers are defined and subsequently identified, all included articles emphasise the importance of robust implementation of interventions to manage pressures on ambulance services and improve caller care.

## 2. Implementing interventions for frequent callers

Various interventions and strategies aim to reduce the number of calls from frequent ambulance callers. Snooks et al. (2019) explore the policies and management systems implemented by UK ambulance services, Smith and McNally (2014), Edwards et al. (2015) and McDonnell et al. (2022) focus on the interventions themselves. These interventions include case management (Edwards *et al.*, 2015), mass distribution letters (McDonnell et al., 2022) and frequent caller management systems (Smith & McNally, 2014). Targeted interventions need to be implemented to manage the demand for emergency services and improve caller outcomes.

Edwards et al. (2015) study offers valuable insight into the potential benefits of case management for frequent callers, emphasising the importance of caller profiling and a multidisciplinary approach. It contributes to the development of targeted interventions aimed at reducing demand for emergency care and improving caller outcomes. Aslam

et al., (2022) protocol outlines a large study planned to evaluate case management for frequent ambulance callers in the UK to add to evidence for this approach. Case management has also been found to be effective for frequent attenders in emergency departments (Elston et al., 2022; Grazioli et al., 2016; Hudon et al., 2017), hence the planned Cochrane review (Budhwani et al., 2022).

McDonnell et al. (2022) reviewed mass distribution letters as an effective strategy to reduce frequent callers. However, frequent callers have a broad spectrum of reasons for calling, ranging from co-morbidities, loneliness (Moseley et al., 2024), mental health (Gabet et al., 2023), and mobility problems (Aslam et al., 2022; Agarwal et al., 2019; Scott et al., 2023). Hence highlights the need for person-centred approaches to manage frequent callers effectively, rather than standardised approaches for all frequent callers. There has been some effectiveness of person-centred approaches like assertive outreach for alcohol-related emergency department attendance specifically (Blackwood et al., 2020; Mak et al., 2022). Also, case management and care plan interventions for frequent attenders with mental health problems (Gabet et al., 2023).

Although the outcome of McDonnell et al. (2022) mass distribution letter appears to have reduced call volume, this may be due to various factors, and there may be unintended consequences that put some callers at risk. After receiving the letter, some might hesitate to call an ambulance in an emergency due to fear of being labelled as a frequent caller, potentially leading to negative health outcomes (Skogevall *et al.*, 2022). The mass distribution letter does however educate frequent callers on the

available and appropriate services that they can access instead, further educating them on what they should be utilising instead of ambulance services.

There is also a risk that callers who receive letters may feel stigmatised or singled out, which could have negative psychological effects (Snowdon, 2022; Stangl *et al.*, 2019). However, since McDonnell *et al.* (2022) used a mass distribution method, it may minimise the risk of stigmatisation as callers may be less likely to feel personally targeted if they are aware of the criteria for people receiving the letter. While the mass distribution letter approach may be cost-effective, it may not be as tailored to individual needs as case management or caller management systems. Edwards *et al.* (2015) highlight the importance of tailoring interventions to the specific needs of individual callers to better address their diverse needs and improve caller outcomes. However, this is more expensive and time consuming than McDonnell *et al.* (2022) approach.

Smith and McNally (2014) found that the implementation of a frequent caller management system can lead to improved caller outcomes, reduced call volume, and better resource utilisation. Aligning with that of Edwards *et al.* (2015) with the broader theme of implementing targeted interventions for frequent callers, emphasising the need for personalised, data-driven strategies to understand and address the diverse needs of this caller demographic effectively. Smith and McNally (2014) describe a staged approach to the management of frequent callers, beginning with low-level interventions such as a letter like McDonnell *et al.* (2022) or phone call and escalating to multi-disciplinary meetings if these are not effective. This approach is tailored towards the needs of the caller, not the service.

Snooks *et al.* (2019) evaluated strategies employed via a survey identifying policies or pathways used by UK ambulance services to manage frequent callers. They reveal multiple strategies and interventions aimed at managing and reducing the frequency of calls from frequent callers to ambulance services. These strategies mainly involved some form of case management approaches like Edwards *et al.*, (2015), in addition to multi-disciplinary approaches and home visit assessments. The key emphasis in all these strategies was the provision of interventions to manage the demand for ambulance services and improve caller outcomes.

Snooks *et al.* (2019) stress the need for any frequent caller interventions to have a person-centred approach to manage their complex needs more effectively. The effectiveness of interventions is dependent on the caller's context and individual needs, highlighting the need for further research to refine and develop these strategies.

### 3. Evaluating the effectiveness of interventions

It is essential to evaluate the effectiveness of implemented interventions on reducing ambulance services use by frequent callers. While some studies report positive results, such as decreased call frequency (Edwards *et al.*, 2015) and improved caller experience (Smith & McNally, 2014), there is an emphasis on the need for further research and assessment of interventions' effectiveness in a broader context (Snooks *et al.*, 2019; McDonnell *et al.*, 2022).

Interventions in studies by McDonnell (2022), Edwards *et al.* (2015), and Smith and McNally (2014), all resulted in a reduction in call volume, consistent with other studies

noting a reduction of frequent attenders to emergency departments following similar interventions (Elston et al., 2022; Hudon et al., 2022; Sillero-Rejon et al., 2023). Smith and McNally (2014) identified that short-term improvements in safeguarding, productivity, caller experience, and outcomes as significant indicators of success, although, they do not state how this was evaluated outside of the reduced call volume. McDonnell et al. (2022) relied on a single intervention without considering other approaches or a control group, hence limits the ability to assess the full effect of the mass distribution letter on call volumes accurately.

Snooks et al. (2019) show that out of thirteen UK ambulance services seven services did not audit or evaluate frequent call data at that time, three did not respond or said the survey was not applicable and the other three services either only reviewed individual cases or pilot schemes. This demonstrates a paucity of evaluation of data from UK ambulance services, supported by Zayed *et al's.* (2020) study based on a service review of ambulance service management of callers who have self-harmed, also showing a lack of follow up and evaluation of data from UK ambulance services. Snooks et al. (2019) supports the need for implementing tailored approaches to meet person-centred needs, in addition to further research to determine the efficacy of the identified interventions in reducing the impact on ambulance services. In order to ensure that best practices are shared and that resources are used more effectively, collaboration and information sharing among ambulance services is essential (Skogevall et al., 2024).

Edwards et al. (2015) identifies that evaluating and auditing ambulance service data regarding frequent callers is important for several reasons. It helps to understand caller characteristics and needs and enable data analysis. Ambulance services can then identify patterns and trends to develop interventions and strategies to address frequent callers' needs and address gaps in care. Some frequent callers may contact ambulance services if they are not receiving adequate medical care elsewhere, rather than for vexatious reasons, they need compassion and empathy from practitioners (Snowdon, 2022).

Multi-component interventions or a combination of interventions tailored to individual needs may be more effective in addressing the issue of frequent callers, however, longer post study observation periods are needed to assess the longevity of such interventions. Evaluation of current practices can provide crucial insights and learnings that can help in the implementation of more effective interventions (Clarke *et al.* 2019; Snooks et al., 2019). Understanding these practices can shed light on the challenges faced and areas that require improvement (Schultes, 2023). The goal would be to meet the needs of frequent callers more effectively while ensuring ambulance services can operate efficiently and support all callers who require emergency care.

### **Limitations**

There appears to some promising evidence to support strategies to reduce the impact of frequent callers to ambulance services. However, there is limited research exploring interventions for frequent ambulance callers specifically and a lack of control groups limiting analysis and preventing firm conclusions of efficacy. In addition to this, the

impact of frequent callers and their needs are complex, hence the need for further research to enhance service provision and care of this caller group.

## **Conclusions**

This literature review adds to the evidence base demonstrating that frequent callers pose a unique challenge to ambulance services and there is a strong need for investment into interventions to help meet their needs and reduce impact on services. Clear definitions and identification systems are essential for ambulance services, in addition to information sharing across services and exploring multi-component strategies. Evidence on current strategies have been explored to gain deeper understanding of frequent ambulance caller needs to support the transformation of management approaches. Strategies such as case management, mass distribution letters and frequent caller management systems all show promising results for addressing and reducing the impact of frequent callers, in addition to ensuring person-centred care.

## **Implications for practice**

There are potential issues implementing identification systems and strategies, such as resource availability and cost. Multi-disciplinary cooperation and sharing information to benefit services in addition to callers is essential. Despite promising results of the strategies reviewed on reducing frequent ambulance callers, further research is required to evaluate long-term effectiveness and sustainability of these strategies prior to inclusion in guidance or policy. A staggered approach combining various strategies may be effective, initially with mass generated letters to educate frequent callers on appropriate use of services, progressing to more costly and time-consuming

personalised approaches and interventions such as phone calls, case management and caller management systems.

## References

- Agarwal, G., Lee, J., McLeod, B., Mahmuda, S., Howard, M., Cockrell, K. and Angeles, R. (2019) 'Social factors in frequent callers: a description of isolation, poverty and quality of life in those calling emergency medical services frequently', *BMC Public Health*, 19, pp. 1-8.
- Alruwaili, A., Alanazy, A., Alanazi, T. M., Alobaidi, N., Almamary, A. S., Faqihi, B. M., Al Enazi, F. H., Siraj, R., Almukhlifi, Y., Al Nufaiei, Z. F., & Alsulami, M. (2024). Managing High Frequency of Ambulance Calls in Hospitals: A Systematic Review. *Risk management and healthcare policy*, 17, 287–296. <https://doi.org/10.2147/RMHP.S436265>
- Alving, B.E., Christensen, J.B. and Thrysoe, L. (2018) 'Hospital nurses' information retrieval behaviours in relation to evidence based nursing: a literature review', *Health Information & Libraries Journal*, 35(1), pp. 3-23.
- Aslam, R. W., Snooks, H., Porter, A., Khanom, A., Cole, R., Edwards, A., Edwards, B., Evans, B. A., Foster, T., Fothergill, R., Gripper, P., John, A., Petterson, R., Rosser, A., Tee, A., Sewell, B., Hughes, H., Phillips, C., Rees, N., Scott, J., ... Watkins, A. (2022). STRategies to manage Emergency ambulance Telephone Callers with sustained High needs: an Evaluation using linked Data (STRETCHED) - a study protocol. *BMJ open*, 12(3), e053123. <https://doi.org/10.1136/bmjopen-2021-053123>
- Blackwood, R., Wolstenholme, A., Kimergård, A., Fincham-Campbell, S., Khadjesari, Z., Coulton, S., Byford, S., Deluca, P., Jennings, S., Currell, E., Dunne, J., O'Toole, J., Winnington, J., Finch, E., & Drummond, C. (2020). Assertive outreach treatment versus care as usual for the treatment of high-need, high-cost alcohol related frequent attenders: study protocol for a randomised controlled trial. *BMC Public Health*, 20(1), 1–10. <https://doi.org/10.1186/s12889-020-8437-y>
- Budhwani, N., Capanna, M. V., Baban, A., Isetta, M., Oldman, A. H., Daniels, N., Goddard, R., Hayhurst, C., Lee, W., & Thomson, A. B. (2022). Care planning or case management for frequent emergency department attendance in adults. *The Cochrane Database of Systematic Reviews*, 2022(6), CD014662. <https://doi.org/10.1002/14651858.CD014662>
- Choi, B.Y., Blumberg, C. and Williams, K. (2016) 'Mobile integrated health care and community paramedicine: an emerging emergency medical services concept', *Annals of Emergency Medicine*, 67(3), pp. 361-366.

Clarke, G.M., Conti, S., Wolters, A.T. and Steventon, A. (2019) 'Evaluating the impact of healthcare interventions using routine data', *British Medical Journal* 365.

ConnectedPapers.com (2024) Connected papers: About. Accessed at URL <https://www.connectedpapers.com/about>

Critical Appraisal Skills Programme (2024a). CASP (For Cohort Studies) [online] Accessed <https://casp-uk.net/casp-tools-checklists/>

Critical Appraisal Skills Programme (2024b). CASP (For Qualitative Research) [online] Accessed <https://casp-uk.net/casp-tools-checklists/>

Edgren, G., Anderson, J., Dolk, A., Torgerson, J., Nyberg, S., Skau, T., . . . Öhlen, G. (2016). A case management intervention targeted to reduce healthcare consumption for frequent Emergency Department visitors: results from an adaptive randomized trial. *European Journal of Emergency Medicine*, 23(5), 344-350. doi:10.1097/mej.0000000000000280

Edwards, M.J., Bassett, G., Sinden, L. and Fothergill, R.T. (2015) 'Frequent callers to the ambulance service: patient profiling and impact of case management on patient utilisation of the ambulance service', *Emergency medicine journal*, 32(5), pp. 392-396.

Evans, B. A., Khanom, A., Edwards, A., Edwards, B., Farr, A., Foster, T., ... & Watkins, A. (2024). Experiences and views of people who frequently call emergency ambulance services: A qualitative study of UK service users. *Health Expectations*, 27(1), e13856.

Frequent Caller National Network. (2022). Frequent Caller National Network. Retrieved from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://committees.parliament.uk/writtenevidence/113035/pdf/

Gabet, M., Armoon, B., Meng, X., & Fleury, M.-J. (2023). Effectiveness of emergency department based interventions for frequent users with mental health issues: A systematic review. *The American journal of emergency medicine*, 74, 1-8. doi:10.1016/j.ajem.2023.09.008

Grazioli, V. S., Moullin, J. C., Kasztura, M., Canepa-Allen, M., Hugli, O., Griffin, J., ... Bodenmann, P. (2019). Implementing a case management intervention for frequent users of the emergency department (I-CaM): an effectiveness-implementation hybrid trial study protocol. *BMC Health Services Research*, 19(1), 28. doi:10.1186/s12913-018-3852-9

Harring, A. K., Graesli, O., Häikiö, K., Hjortdahl, M., & Jørgensen, T. M. (2024). Frequent contacts to Emergency Medical Services (EMS): more than frequent callers. *BMC Emergency Medicine*, 24(1), 190.

- Hudon, C., Chouinard, M.-C., Lambert, M., Dufour, I., & Krieg, C. (2016). Effectiveness of case management interventions for frequent users of healthcare services: a scoping review. *BMJ open*, 6(9), e012353. doi:10.1136/bmjopen-2016-012353
- Hudon, C., Chouinard, M.-C., Lambert, M., Diadiou, F., Bouliane, D., & Beaudin, J. (2017). Key factors of case management interventions for frequent users of healthcare services: a thematic analysis review. *BMJ open*, 7(10), e017762. doi:10.1136/bmjopen-2017-017762
- Hudon, C., Chouinard, M. C., Bisson, M., Brousselle, A., Lambert, M., Danish, A., . . . Sabourin, V. (2022). Case Management Programs for Improving Integrated Care for Frequent Users of Healthcare Services: An Implementation Analysis. *Int J Integr Care*, 22(1), 11. doi:10.5334/ijic.5652
- Kumar, G. S., & Klein, R. (2013). Effectiveness of Case Management Strategies in Reducing Emergency Department Visits in Frequent User Patient Populations: A Systematic Review. *Journal of Emergency Medicine* (0736-4679), 44(3), 717-729. doi:10.1016/j.jemermed.2012.08.035
- Kwame, A. and Petrucka, P.M. (2021) 'A literature-based study of patient-centered care and communication in nurse-patient interactions: barriers, facilitators, and the way forward', *BMC nursing*, 20(1), pp. 1-10.
- McDonnell, A.J., McLaughlin, R., O'Neill, R., Wolfe, J., Sinclair, N. and Ruddell, N. (2022) 'A mass distribution letter as an early intervention for potential frequent callers', *Journal of Paramedic Practice*, 14(11), pp. 449-454.
- Mak, C. C. M., Mao, D. R. H., Siddiqui, F. J., Lim, A., Davamoni-Thomas, J., Tang, J. P., Bachik, R., Ng, C. W. L., Kandasami, G., & Lee, C. (2022). A new paradigm in management of frequent attenders to emergency departments with severe alcohol use disorder-A pilot study for assertive community treatment in Singapore. *Frontiers in Health Services*, 2, 1029455. <https://doi.org/10.3389/frhs.2022.1029455>
- Memedovich, A., Asante, B., Khan, M., Eze, N., Holroyd, B. R., Lang, E., . . . Clement, F. (2024). A mapping review of interventions to address patients who frequently seek care in the emergency department. *BMC Emergency Medicine*, 24(1), 49. doi:10.1186/s12873-024-00970-7
- Middleton, A., Gunn, J., Bassilios, B. and Pirkis, J. (2014) 'Systematic review of research into frequent callers to crisis helplines', *Journal of telemedicine and telecare*, 20(2), pp. 89-98.
- Moe, J., Kirkland, S. W., Rawe, E., Ospina, M. B., Vandermeer, B., Campbell, S., & Rowe, B. H. (2017). Effectiveness of interventions to decrease emergency department visits by adult frequent users: a systematic review. *Academic Emergency Medicine*, 24(1), 40-52.

- Moseley, L., Scott, J., Fidler, G., Agarwal, G., Clarke, C., Hammond-Williams, J., Ingram, C., McDonnell, A. and Collins, T. (2024), 'If It Was Easy Somebody Would Have Fixed It': An Exploration of Loneliness and Social Isolation Amongst People Who Frequently Call Ambulance Services. *Health Expectations*, 27: e14167. <https://doi.org/10.1111/hex.14167>
- Noble, H., & Smith, J. (2018). Reviewing the literature: Choosing a review design. *Evidence Based Nursing*, 21(2), 39-41.
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A. and Brennan, S.E. (2021) 'The PRISMA 2020 statement: an updated guideline for reporting systematic reviews', *International journal of surgery*, 88, pp. 105906.
- Peate, I. (2014) 'Ethical recruitment and employment of internationally educated paramedics', *Journal of Paramedic Practice*, 6(10), pp. 500-501.
- Schultes, M. (2023) 'An introduction to implementation evaluation of school-based interventions', *European Journal of Developmental Psychology*, 20(1), pp. 189-201.
- Scott, J., Pakpahan, E., Marlow, B., & Daxner, N. (2023). Defining a threshold above which an adult can be considered to frequently use ambulance services: a retrospective cross-sectional study of emergency calls to an ambulance service in England. *British paramedic journal*, 7(4), 35-45.
- Scott, J., Strickland, A.P., Warner, K. and Dawson, P. (2014a) 'Describing and predicting frequent callers to an ambulance service: analysis of 1 year call data', *Emergency Medicine Journal*, 31(5), pp. 408-414.
- Scott, J., Strickland, A.P., Warner, K. and Dawson, P. (2014b) 'Frequent callers to and users of emergency medical systems: a systematic review', *Emergency Medicine Journal*, 31(8), pp. 684-691.
- Sillero-Rejon, C., Kirbyshire, M., Thorpe, R., Myring, G., Evans, C., Lloyd-Rees, J., Bezer, A., & McLeod, H. (2023). Supporting High-impAct useRs in Emergency Departments (SHarED) quality improvement: a mixed-method evaluation. *BMJ open quality*, 12(4), e002496. <https://doi.org/10.1136/bmjog-2023-002496>
- Skogevall, S., Blomberg, H., Kaminsky, E., Håkansson, J., Pörhö, M., Spangler, D., & K Holmström, I. (2024). Optimizing Healthcare for Frequent Callers to an Emergency Medical Dispatch Center-a Mixed Method Intervention. Pre Print <https://ssrn.com/abstract=4966586> or <http://dx.doi.org/10.2139/ssrn.4966586>
- Skogevall, S., Kaminsky, E., Håkansson, J. and Holmström, I.K. (2022) 'One for all or all for one? An integrative review of research on frequent callers', *PEC Innovation*, 1, pp. 100070 Available at: 10.1016/j.pecinn.2022.100070.

Smith, D.P. and McNally, A. (2014) 'Delivering enhanced safety, productivity and experience: early results from a frequent caller management system', *Journal of Paramedic Practice*, 6(12), pp. 634-641.

Smith, M., and Moyer, D. (2021). Frequent User System Engagement: A Quality Improvement Project to Examine Outcomes of a Partnership to Improve the Health of Emergency Department Frequent Users. *Journal of Nursing Care Quality* 36(4):p 376-381. DOI: 10.1097/NCQ.0000000000000534

Snooks, H.A., Khanom, A., Cole, R., Edwards, A., Edwards, B.M., Evans, B.A., Foster, T., Fothergill, R.T., Gripper, C.P. and Hampton, C. (2019) 'What are emergency ambulance services doing to meet the needs of people who call frequently? A national survey of current practice in the United Kingdom', *BMC Emergency Medicine*, 19(1), pp. 1-8.

Snowdon, K. (2022). Frequent callers and frustrated clinicians. *Journal of Paramedic Practice*, 14(7), 1-7.

Soril, L. J. J., Leggett, L. E., Lorenzetti, D. L., Noseworthy, T. W., & Clement, F. M. (2015). Reducing Frequent Visits to the Emergency Department: A Systematic Review of Interventions. *PloS one*, 10(4), 1-18. doi:10.1371/journal.pone.0123660

Stangl, A.L., Earnshaw, V.A., Logie, C.H., Van Brakel, W., C. Simbayi, L., Barré, I. and Dovidio, J.F. (2019) 'The Health Stigma and Discrimination Framework: a global, crosscutting framework to inform research, intervention development, and policy on health-related stigmas', *BMC medicine*, 17, pp. 1-13.

Stergiopoulos, V., Gozdzik, A., Tan de Bibiana, J., Guimond, T., Hwang, S. W., Wasylenki, D. A., & Leszcz, M. (2016). Brief case management versus usual care for frequent users of emergency departments: the Coordinated Access to Care from Hospital Emergency Departments (CATCH-ED) randomized controlled trial. *BMC Health Serv Res* 16, 432. <https://doi.org/10.1186/s12913-016-1666-1>

Tangherlini, N., Villar, J., Brown, J., Rodriguez, R.M., Yeh, C., Friedman, B.T. and Wada, P. (2016) 'The HOME team: evaluating the effect of an EMS-based outreach team to decrease the frequency of 911 use among high utilizers of EMS', *Prehospital and Disaster Medicine*, 31(6), pp. 603-607.

Willis, L. D. (2024). The Peer Review Process. *Respiratory care*, 69(4), 492–499. <https://doi.org/10.4187/respcare.11838>

Zayed, M.G., Williams, V., Glendenning, A.C., Bulger, J.K., Hewes, T., Porter, A., Snooks, H. and John, A., (2020). Care-pathways for patients presenting to emergency ambulance services with self-harm: national survey. *Emergency medicine journal*, 37(12), pp.752-755.