Strategies for older people living in care homes to prevent urinary tract infection: the StOP UTI realist synthesis

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Scientific summary

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Scientific summary

Background

Urinary tract infection (UTI) is the most diagnosed infection in older people, accounting for more than 50% of antibiotic prescriptions in long-term care settings. It is a frequent reason for hospitalisation from care homes. Guidance about strategies for UTI prevention and recognition in care homes is limited and focuses on indwelling urinary catheters and catheter-associated urinary tract infections (CAUTIs). It does not account for the varying contexts in which care is delivered, the challenges presented by residents with complex health needs or the demands of care delivery by unqualified care staff with limited supervision from registered nurses. As little is known about the practicality of implementing interventions to prevent UTI in care homes in the UK, this review aimed to create an evidence-informed theoretical explanation of which strategies are effective (or not) in the prevention and recognition of UTI and CAUTI in older people in care homes.

Objectives

- To identify which interventions could be effective, the mechanisms by which these strategies work (or why they fail), for whom and under what circumstances.
- To understand what needs to be in place for the implementation of programmes to support the prevention of UTI and its recurrence in older people with and without a urinary catheter living in care homes in the UK.

Through identifying the active components of complex interventions designed to prevent UTI in older people living in care homes, we sought to help guide the development and successful delivery of future programmes. More specifically, we planned to produce actionable recommendations to underpin the prevention and recognition of UTI in older people of relevance to UK care homes.

Review methods

We used realist synthesis as its explanatory focus and emphasis on understanding how complex interventions work in context fitted with our aim and objectives. Multiple types of evidence were sought to construct programme theory through a four-stage process that involved a high degree of stakeholder engagement throughout, including scoping workshops with care home staff, residents and carers, teacher–learner interviews and a cross-system stakeholder event. Context–mechanism–outcome configurations (CMOcs) were developed to test initial programme theory propositions and explain how they might or might not work and in which contexts and circumstances. This provided a clear account of the mechanisms of action that were considered essential to understanding how interventions to prevent UTI can and should be delivered in UK care homes.

Evidence sources

The review drew on evidence from health and social care, including primary research relating to UTI prevention and recognition in older people in care homes and improvement project reports. In September 2020, during stage 1 of the research, a generic topic-based multipurpose search was undertaken and focused on evidence that directly addressed the prevention and recognition of UTI in older people in long-term care facilities. Bibliographic databases searched were MEDLINE, CINAHL, EMBASE, Cochrane Library, Web of Science Core Collection (including the Social Sciences Citation

Index), Sociological Abstracts, Bibliomap and National Institute for Health and Care Research (NIHR) Journals Library. Further searches were undertaken in October 2020 using key index studies (highly cited) to find 'sibling' studies/papers, for example, contemporaneous papers or studies that share a context by means of Google Scholar and 'Publish or Perish' software.

Additional supplementary searches were undertaken in stage 2 (July–December 2021) to address gaps in evidence and inform the realist synthesis. These were informed by the tentative programme theories with the aim of refining them. A targeted approach with purposive searches of academic and grey literature focused specifically on continence and UTI, hydration and UTI, non-antimicrobial strategies for recurrent UTI, recognition of soft signs and family involvement in older people's care in care homes.

Data extraction

Full-text papers were screened and reviewed to determine their relevance and rigour. Relevance was defined as the extent to which evidence contributed to theory building, testing and refinement and rigour as the extent to which methods used were credible and trustworthy. Data were extracted from included studies using a bespoke data extraction form to record explanations about how the interventions were considered to work (or not). The data were organised into evidence tables to enable comparison of findings and identification of patterns across studies that offered insight about the components of successful interventions.

In stage 3, we tested and refined the programme theory through nine 'teacher–learner' interviews with a range of participants. A mixture of purposive and convenience sampling was used to gain perspectives from individuals reflective of the different audiences likely to be interested in acting on the findings from this review. Semistructured interview schedules, guided by the content of the CMOc, were used to ensure the interviews focused on participants' perspectives of the theories as relevant to their role and expertise. In stage 4, further input was gained from an online stakeholder event that included participants from across the care system, commissioners and regulators of care.

Results

Fifty-six papers were included in the review. The scoping review and stakeholder engagement identified three theory areas that address the prevention and recognition of UTI and show what is needed to implement best practice. Nine CMOcs provided an explanation of how interventions to prevent and recognise UTI might work in care homes to reduce UTI: (1) recognition of UTI is informed by skills in clinical reasoning, (2) decision-support tools enable a whole care team approach to communication, (3) active monitoring is recognised as a legitimate care routine, (4) hydration is recognised as a care priority for all residents, (5) systems are in place to drive action that helps residents to drink, (6) good infection prevention practice is applied to indwelling urinary catheters, (7) proactive strategies are in place to prevent recurrent UTI, (8) care home leadership and culture foster safe fundamental care and (9) developing knowledgeable care teams.

The prevention of UTI in older people living in care homes requires attention to fundamental aspects of their physical and psychosocial needs with clear communication across the whole care team that is trusted and valued by residents and families. This necessitates a context of care with a culture of safety and person-centredness, promoted by commissioners, regulators and providers, where leadership and resources are committed to support preventative action by knowledgeable care staff. For the prevention of UTI to be fully realised in care homes, it is crucial to attend to the hydration needs of all residents, adhere to infection prevention measures in the care of indwelling urinary catheters and increase access to specialists to identify appropriate treatment options for residents with recurrent UTI.

Care staff need knowledge and skills to differentiate between UTI and other diagnoses using their knowledge of the resident and what is normal for them. Assumptions by staff about the inevitability of infection and tendencies to consider non-evidence-based signs and symptoms as being a UTI by default need to be challenged. Use of decision-support tools that enable staff to gather and convey accurate and relevant information about a resident's condition using a shared language helps them to feel that their knowledge of the resident is valued by healthcare professionals (HCPs) and that their concerns will be listened to. Protocols for active monitoring provide the opportunity to focus on preventative measures and permit a more reflective approach to the recognition and diagnosis of UTI, reducing the potential for inappropriate treatment.

Conclusion

At the outset of this review, we identified that the coherence and detail of what works for providers to prevent UTI in older people living in UK care homes was lacking. What we now know is that care home staff have a vital role in the prevention and recognition of UTI, which can be enabled through improved integration and prioritisation within the systems and routines of care homes and delivery of person-centred care. Promoting fundamental care as a means of facilitating a more holistic approach to prevention and recognition of UTI helps staff to recognise how they can contribute to antimicrobial stewardship and the recognition of sepsis. Challenging assumptions about UTI presentation is complex and requires education that facilitates 'unlearning' and questioning of low-value practices. Programmes to prevent UTI need to be co-designed and supported through active and visible leadership by care home managers. The involvement of specialist practitioners such as community matrons, specialist pharmacists, continence advisors and infection prevention specialists may help to create a network of practitioners that provides peer support for change.

Limitations

The COVID-19 pandemic required us to adapt our approach and work mainly online both in our interactions with stakeholders and as a research team. While this provided opportunities to extend our reach to a wider group of stakeholders, it also limited some of our engagement work. We wanted to have greater input from residents and their families, but this was not possible in the circumstances. The move to virtual meetings also had an impact on our intention to bring a wide range of stakeholders together, including representatives of care home residents, at a face-to-face event towards the end of the project with many preferring to meet virtually. We acknowledge that these adaptations may have limited the generation of insights and discussion to inform both the review and our strategies for development and dissemination of outputs. For this reason, we recognise the importance of continuing to engage with stakeholders as part of our ongoing work, reporting this process and any outcomes.

Studies focusing on the prevention of UTI and CAUTI in care home settings were predominantly from the United States of America (USA) and Europe where the regulatory and funding systems for the long-term care of older people has some differences, particularly in the USA where national reporting plays a significant role in driving improvements in care. Furthermore, care homes (also known as nursing homes) in the USA provide a range of medical services including post-acute care, rehabilitation, palliative and hospice care, as well as long-term care. The studies undertaken in the UK and Europe were primarily focused on interventions to reduce antimicrobial resistance through stewardship but had significant learning that was transferable to the prevention and recognition of UTI. Our synthesis tried to take account of these differences, but we are aware that we will not have reflected all realities.

Through the review, we identified several tools and resources that were being used by staff in care homes in addition to those reflected in the literature. It became clear from our teacher–learner interviews and stakeholder event that adding another set of tools would be unhelpful and that any

resource we developed would need to follow the principles of co-design to address some of the challenges faced by care home leaders. The difficulty in bringing stakeholders to achieve this was insurmountable within the period for this review.

Implications for practice

The review findings point towards actionable recommendations for UTI prevention and recognition in the care of older people living in care homes, which we describe in relation to organisational- and system-level actions. These centre on the need to align UTI prevention and recognition to the goals of person-centred, fundamental care and prioritise this in routine daily care to improve quality and safety. For example, understanding and targeting personal barriers to drinking more fluids, such as fears about incontinence and getting to the toilet, may assist in addressing poor fluid intake. This in turn can help to reduce falls, confusion and drowsiness, as well as UTI.

Care home providers

Best practice to prevent and recognise UTI in care home residents requires focusing on a set of evidence-informed actions as part of routine daily care with the involvement of the whole care team, including individual residents, their family carers and care home staff.

Preventative actions include:

- supporting each resident's hydration preferences and needs
- use of fluid intake monitoring systems that enable realistic targets and actions to be agreed for residents with poor fluid consumption
- accessing specialists who can support the care of residents with recurrent UTI
- applying infection prevention practice to the care and management of indwelling urinary catheters.

Accurate recognition of UTI requires:

- knowledge of the individual resident and what is normal for them
- understanding of evidence-based signs and symptoms of UTI
- use of structured tools that align with existing care processes and a shared language to convey accurate and relevant information to healthcare professionals.

Care home staff need opportunities to:

- develop knowledge and skills so they can interpret a resident's signs and symptoms and consider possible explanations for generalised changes in their condition
- reflect on practice and learn from each other about how to recognise a UTI and support preventative actions.

System level

A system-wide approach with regulatory and inspection frameworks aligned to evidence on prevention and recognition of UTI is vital to ensure that resources and infrastructure are available to enable care home managers and their staff to prioritise this as part of person-centred care.

There is a need to:

- integrate prevention of UTI with diagnostic and antimicrobial stewardship in the care of older people living in care homes
- harmonise the prevention and recognition of UTI decision and communication tools with those focused on recognising deterioration to facilitate adoption and integration in care homes
- use cocreative approaches to develop and implement resources and improvement initiatives that involve the whole care team, residents and family carers

- build a knowledgeable workforce of care home support workers and registered nurses who can deliver evidence-informed care and communicate their observations in a way that enables care to be reviewed before escalation
- improve access to expert practitioners and services to support the provision of personalised, multidisciplinary assessment and treatment plans for residents with recurrent UTI who have the greatest potential to benefit from effective treatment.

Research recommendations

Well-designed research to improve the prevention and recognition of UTI in older people living in care homes should address the following:

- perspectives and beliefs of residents and family carers relating to the prevention and recognition of UTI and the concept of active monitoring to avoid unnecessary treatment
- the effectiveness of specialist practitioners in supporting initiatives to recognise and prevent UTI, including expertise in facilitating improvement
- the effectiveness of preventative pharmacological and non-pharmacological interventions to manage recurrent UTI in care homes
- the effectiveness of non-traditional education interventions such as huddles or structured reflection to facilitate decision-making in care homes
- in cocreating interventions research should be explicit about the elements of an intervention that can be tailored to individual care homes and those which are important to deliver as intended.

Study registration

This study is registered as PROSPERO 2020 CRD42020201782.

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