STOPP/START interventions to improve medicines management for people aged 65 years and over: a realist synthesis

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Scientific summary

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Background

Drug-related problems and potentially inappropriate prescribing can lead to adverse drug events, hospitalisation and death, thereby imposing a huge burden on patients and the health-care system. Discontinuation of inappropriate medications through early detection can trigger a cascade of positive effects from the improvement of care quality and reduction of adverse drug events to the improvement of the cost-effectiveness of pharmacological therapeutic plans and quality of life of older people. The most widely used tools for appropriate prescription in older adults in England and in other European countries are the Screening Tool of Older People's Prescriptions (STOPP)/Screening Tool to Alert to the Right Treatment (START) tools, which have been specifically developed for supporting medicines optimisation for older adults. A deep understanding of how interventions based on the use of these tools work, for whom they work, in what contexts and why is currently lacking. This study aimed to use a realist approach to synthesise the evidence on the interventions based on STOPP/START tools.

Aims and objectives

Our aim was to understand how, when and why interventions based on the STOPP/START tools improve medicines management in older people. Our objectives were as follows:

- to identify the ideas and assumptions (programme theories) underlying how interventions based on the STOPP/START tools are intended to work, for whom, in what circumstances and why, and to test and refine these programme theories to explain how contextual factors shape the mechanisms through which the STOPP/START tools produce better outcomes for patients
- to identify and describe the resource use and cost requirements or impacts of the different context–mechanism–outcome configurations.

Methods

Searches were conducted in bibliographic databases, websites and the sets of citations of included studies to identify and test programme theories about how interventions based on use of the STOPP/START tools work. In phase 1 we identified programme theories that explain how interventions were supposed to work and in what circumstances to capture in detail the reasoning that underlies these interventions. Subsequently, in phase 2, we reviewed the empirical evidence to determine the extent to which these expectations were met in practice. A project reference group comprising health-care professionals, NHS decision-makers, older people, carers and members of the public was set up to ground the study in real-life experience. In phase 1 we identified programme theories about STOPP/START-based interventions on how, for whom, in what contexts and why they are intended to work, and whether or not patients are being involved in shared decision-making in stopping or starting medicines. We conducted electronic searches of grey literature to identify generic guidance and policy documents, and electronic searches of the peer-reviewed literature to identify position pieces, comments, letters, editorials and critical pieces relevant to the research questions, as well as reports of studies using the tools. Interviews with experts in the field in our reference group contributed to the identification and refinements of programme theories. In phase 2 we tested the programme theories. We reviewed and synthesised relevant published and unpublished empirical evidence.

Results

We developed a single logic model structured around three key mechanisms (embedded within specific sets of context–mechanism–outcome configurations) through which STOP/START tools were thought to work: (1) personalisation (i.e. the degree to which the medication review is tailored to each patient), (2) systematisation (i.e. the degree to which the medication review is systematically implemented) and (3) evidence implementation (i.e. the degree to which the intervention focuses on promoting the dissemination and use of the best available evidence). In addition, we identified mechanism-specific outcomes and prioritised specific theories, as supported by our patient and public involvement advisory team.

Forty studies were identified for testing the programme theory. These studies evaluated the impact of STOPP/START-based interventions, mostly in hospital settings but also in nursing homes and primary care. None of these studies was primarily oriented to study the pathways to impact for the interventions. Most of the interventions were designed to target multiple mechanisms. No distinct pattern of configuration of mechanisms was identified as specific of interventions for each type of setting. In hospitals and nursing homes, the interventions usually involved both a pharmacist and a specialist doctor, whereas in primary care settings, only a general practitioner was involved. Most interventions did not involve patients and carers in the review process.

We found evidence providing some support for the impact of the personalisation mechanism of STOPP/START-based interventions on the specific outcomes of patient satisfaction and adherence. We could not test the prioritised theories for this mechanism because of the lack of studies reporting on relevant aspects.

We did not find any evidence providing support for an impact of the systematisation mechanism of STOPP/START-based interventions on any of the specific outcomes in the logic models. Lack of studies reporting on relevant aspects also prevented testing of the prioritised theories for this mechanism.

We found evidence providing support for an impact of the evidence implementation mechanism of STOPP/START-based interventions on appropriateness of prescribing/deprescribing, adverse drug events and quality of life, some support for a reduction in falls, and consistent evidence on the lack of impact on health-care use and mortality. We also found evidence in support of two of the prioritised theories for this mechanism, and were able to confirm the theory that reduction of adverse outcomes was the result of improvement in medication appropriateness and to refute the theory that administrations by non-geriatricians and non-clinical pharmacists was linked with negative results. We could not test other theories because of the lack of evidence.

We observed that the impact of interventions was linked to the proximity of the selected outcomes to the intervention in the single logic model (i.e. more clear benefit on appropriateness of prescribing, adverse drug events and prescription costs), but that the impact was not related to what mechanisms had been targeted, nor to the setting. We did not find any evidence that studies targeting more mechanisms achieved better outcomes than those targeting fewer, nor was any other configuration linked with better outcomes.

Owing to the nature of the available evidence, it was not possible to conduct a realist economic synthesis. We did, however, identify the following key drivers of costs:

- time
- pay rates and additional training required for health professionals to use and interpret STOPP/START tools
- costs of information technology systems or software
- the complexity and comprehensiveness of the decision-making process

- how many medications per patient are inappropriate/harmful/unnecessary compared with how many medications per patient are indicated/omitted/needed and currently not being taken
- the cost of these medications
- the rates of adherence to prescribed or recommended medicines, and the benefits of those medications (harms/adverse reactions avoided and health improvements)
- the related cost savings/impacts linked to these.

In addition, we determined the potential cost savings and impacts linked to these medication review-based interventions.

One intervention looked particularly promising and relevant to the UK context. In this intervention, patients were invited by the community pharmacy team to hold regular consultations with a pharmacist to review their medication using STOPP/START tools and to discuss risk of falls, pain management, adherence and general health. The design of the intervention targeted all three proposed mechanisms and found positive evidence for improved adherence to medical treatment, improved quality of life and a reduction in falls, with costs per quality-adjusted life-year estimates that ranged up to £32,466.

Conclusions

Current evidence on the impact of these interventions does not support the superiority of any particular configuration of the interventions for any given setting. Future studies aiming to uncover the underlying mechanisms can contribute to designing potentially more effective configurations of STOPP/START interventions.

Study registration

This study is registered as PROSPERO CRD42018110795.

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