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# A realist synthesis of educational outreach visiting and integrated academic detailing to influence prescribing in ambulatory care: why relationships and dialogue matter

Karen Luetsch ,<sup>1</sup> Geoff Wong ,<sup>2</sup> Debra Rowett<sup>1</sup>

► Additional supplemental material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/bmjqs-2022-015498>).

<sup>1</sup>Clinical and Health Sciences, University of South Australia, Adelaide, South Australia, Australia

<sup>2</sup>Primary Care Health Sciences, University of Oxford, Oxford, UK

## Correspondence to

Dr Karen Luetsch, Clinical and Health Sciences, University of South Australia, Adelaide, SA 5000, Australia; [karen.luetsch@unisa.edu.au](mailto:karen.luetsch@unisa.edu.au)

Received 29 August 2022

Accepted 19 April 2023

Published Online First

4 May 2023



Check for updates

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**To cite:** Luetsch K, Wong G, Rowett D. *BMJ Qual Saf* 2024;**33**:43–54.

## ABSTRACT

**Background** Many quality improvement initiatives in healthcare employ educational outreach visits, integrating academic detailing to bridge evidence-practice gaps and accelerate knowledge translation. Replicability of their outcomes in different contexts varies, and what makes some visiting programmes more successful than others is unclear.

**Objective** We conducted a realist synthesis to develop theories of what makes educational outreach visiting integrating academic detailing work, for whom, under which circumstances and why, focusing on the clinician-visitor interaction when influencing prescribing of medicines in ambulatory care settings.

**Methods** The realist review was performed in accordance with RAMESES standards. An initial programme theory was generated, academic databases and grey literature were screened for documents with detail on contexts, intervention and outcomes. Using realist logic of analysis, data from 43 documents were synthesised in the generation of a refined programme theory, supported by additional theoretical frameworks of learning and communication.

**Results** Twenty-seven interdependent context-mechanism-outcome configurations explain how clinicians engage with educational outreach visits integrating academic detailing through programme design, what matters in programme design and the educational visitor-clinician interaction and how influence extends beyond the visit. They suggest that in addition to relevance, credibility and trustworthiness of a visit's contents, communication and clinical skills of educational visitors, the relationship between the educational visitor and clinician, built on a dialogue of learning from and sense-making with each other, creates conditions of critical thinking which are conducive to facilitating prescribing practice change when necessary.

**Conclusion** This realist synthesis elucidates that the quality of clinician-educational visitor interactions is pivotal to educational outreach visiting programmes. Building and sustaining relationships, and establishing an open dialogue are important; neglecting these undermines the impact of visits. Educational visitors can facilitate clinicians' reflection on practice and influence their prescribing. Clinicians value the

## WHAT IS ALREADY KNOWN ON THIS TOPIC

- ⇒ Educational outreach visits (EV) are a complex and effective strategy employed internationally to influence the prescribing behaviour of clinicians and are increasingly used in other quality improvement initiatives, for example, to improve adoption of clinical practice guidelines.
- ⇒ Outcomes can be variable and existing empirical research does not comprehensively explain when, how and why educational outreach visiting is effective in influencing prescribing.

## WHAT THIS STUDY ADDS

- ⇒ This realist synthesis shows that educational visitors need to commit to building and sustaining relationships with clinicians.
- ⇒ Thoughtful programme design and thorough preparation support them in conducting an evidence-based dialogue with clinicians during an EV.

## HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- ⇒ EV work when they are not just about giving information but are tailored to the needs of clinicians.
- ⇒ EV are more likely to be effective when educational visitors and clinicians can meet in an environment that enables them to co-create understanding and knowledge about necessary changes to practice.

discussion of individualised, tailored information and advice they can translate into their practice.

**PROSPERO registration number** CRD42021258199.

## INTRODUCTION

Educational outreach visits (EV) to individual or small groups of clinicians have been adopted into many quality improvement (QI) programmes in healthcare. First developed by Soumerai and Avorn as academic detailing (AD) in the early 1980s, the terms AD and EV are now often used interchangeably, although not all EV programmes employ AD as their main communication and behaviour change strategy, with some using outreach visits to disseminate or present information.<sup>1-3</sup> The Cochrane Effective Practice and Organisation of Care (EPOC) Review Group defines EV inclusive of AD principles as ‘personal visits by a trained person to health workers in their own settings, to provide information with the aim of changing practice’.<sup>4</sup> The EPOC definition classifies EV as a strategy to achieve behaviour change in QI and not as a primarily educational activity.

Systematic reviews of EV/AD identify them to be consistently successful in communicating evidence-based, clinical information and negotiating practice changes, although effect sizes can vary considerably.<sup>5,6</sup> EV have traditionally been employed to influence prescribing and are extended into other areas of healthcare with the aim of improving general patient care through adoption of clinical practice guidelines, increasing or reducing the rate of screening and diagnostic testing.<sup>3</sup>

This realist synthesis explores how and why EV integrating AD principles (referred to henceforth as EV) may influence prescribing behaviour of clinicians in ambulatory care settings and when and how EV drives QI. The magnitude of practice change varies significantly between individual studies, which most likely is related to the complexity of the behavioural change required, support and resources available to clinicians and possibly adaptations to new technologies, changing evidence for best practice, regulatory and funding pressures and, lately, pandemic restrictions.<sup>7,8</sup> The diversity of implementation settings and variations in the taxonomy and nomenclature used to describe EV interventions pose a challenge for evaluation, research and implementation of EV programmes.<sup>9-11</sup> Those who deliver the programmes and EV, the educational visitors, will naturally modify their interactions with clinicians, develop divergent understandings of the purpose of their role, the desired and achievable outcomes, which may contribute to the heterogeneity of programme outcomes as described in the literature.<sup>5,12</sup> This potentially leads to the personal characteristics of the educational visitor playing a greater role in the success of an EV programme than in many other educational or behaviour change interventions.<sup>13</sup>

Many government agencies concerned with QI and assurance in healthcare recommend and fund AD/EV as a strategy for implementing evidence-based guidelines into practice, for example, the Agency for Healthcare Research and Quality Practice or the Centre for

Disease Control and Prevention.<sup>14,15</sup> At the same time, it is not clear how and why EV influence the decision-making processes and ultimately prescribing behaviours of clinicians.<sup>1,16,17</sup> Studies reporting on outcomes achieved through EV programmes often do not make underlying assumptions of success explicit and/or describe the exact details of the intervention and the context in which it was delivered.<sup>13,18</sup> This becomes even more complex when EV are only one intervention in multifaceted programmes. To account for the complexity of EV as an intervention and the varying contexts of its implementation, a realist synthesis was chosen as a method for reviewing how and why EV facilitate expected and unexpected prescribing outcomes.

## METHODS

We conducted a realist synthesis of published and grey literature, AD programme and training documents, following stages suggested by Pawson,<sup>19</sup> and report against RAMESES standards.<sup>20</sup> The synthesis protocol was registered with PROSPERO (CRD42021258199).

### Stage 1: objectives, research questions, initial programme theory

#### Objectives

To conduct a realist synthesis to understand how EV integrating the principles of AD influence prescribing behaviour by clinicians in ambulatory healthcare settings.

#### Research questions

This synthesis investigates the (intended and unintended) outcomes achieved by EV integrating AD with respect to healthcare providers’ medication prescribing behaviour. It explores the mechanisms causing changes to prescribing behaviour and the contexts which influence whether mechanisms produce these changes.

#### Development of initial programme theory

We developed an initial programme theory (IPT) (online supplemental file 1) of what makes an EV work, integrating the principles of AD originally described by Soumerai and Avorn as a framework.<sup>1</sup> These describe the preparation for and the conduct of an EV, have been implemented in programme design and visitor training, are widely quoted and include: employing social marketing techniques, engaging clinicians in their own practice environment, synthesising and discussing evidence-based information, educational visitors establishing relationships, tailoring information to the needs of individual clinicians and stimulating interactive discussions.<sup>1,3,8,21</sup> Drawing on the authors’ practical experience in educational visiting and training of educational visitors, EV programme and training materials or documentation,<sup>22-24</sup> theoretical papers and editorials were reviewed for explicitly or implicitly expressed additional theories underpinning

the principles.<sup>1 3 9 10 17 21 25–29</sup> Each of the principles was linked to underlying assumptions and theories which have been propositioned to explain their role and relevance in achieving behaviour changes through EV and AD training and practice.<sup>30–33</sup> Making explicit what each principle is supposed to achieve and why they may be integral to the success of an EV potentially points to mechanisms and informs necessary steps for the refinement of programme theory.

## Stage 2: literature search and inclusion

### Literature search

To test and refine the IPT, a literature search was designed in collaboration with a specialist librarian. Exploratory searches established that the most obvious search using terms like ‘academic detailing OR educational visit OR educational outreach visit’ yielded too many results relating to school outreach visiting and educational settings, whereas combining these terms with the behaviour of interest, prescribing/prescription, omitted some of the more theoretical papers on AD. To maintain scope but focus the search and increase the relevance of results, two searches were performed. The following databases were searched in January 2022, with no start date, with alerts ensuring articles indexed up to 30 June 2022 were included: Medline (via EbscoHost), Embase, Scopus, OpenGrey and Trove, with the search terms ‘academic detailing’ for search 1 and ‘(academic detail\* OR education\* visit OR education\* outreach) AND prescrib\*’ for search 2, limited to title/abstract/keyword.

After import into Endnote 20, duplicates for the two searches in each database were removed, before combining search results and removing duplicates between databases.

Reference lists of systematic reviews were screened, websites as well as publicly and privately available documents from professional organisations and government agencies were assessed for relevance.<sup>5 34</sup>

### Screening and inclusion

The inclusion criteria for the review focused on AD or EV performed in ambulatory care settings (eg, primary care, outpatient clinics), which had the purpose of influencing prescribing of medicines by licensed prescribers, for example, doctors, pharmacists, nurses. Visiting programmes or visits conducted in inpatient hospital or aged care settings were excluded. Documents describing AD or EV were included even if these were not the sole intervention. Articles discussing theoretical aspects of AD or EV (independently of prescribing) were included to inform the IPT. Programme evaluation reports, policy documents, procedures and further training guidelines by organisations funding, implementing or training for EV programmes were identified to add conceptual and contextual richness.

Backward and forward reference tracking of included articles was performed and sibling papers identified, which are ‘studies that derive from the same parent study but that report a particular slice of the data identified’.<sup>35</sup> Multiple papers or reports could be related to the same original study and reported in conference abstracts, full research and evaluation reports.

One member of the research team (KL) screened titles and abstracts for inclusion for full-text review, with DR screening a 20% random sample independently to check for systematic errors. Any discrepancies in screening were resolved through discussion. KL and DR read all full-texts.

## Stage 3: quality appraisal

In line with realist approaches to data collection any publication or document with potential to test (ie, confirm, refute or refine) any aspect of the IPT was considered, which included policies and procedures of established EV programmes, general discussion papers and editorials. Full-text articles were assessed for relevance; they had to provide detail on the actual EV (intervention) in terms of contexts, outcomes and potential mechanisms to potentially contribute to development or testing of context-mechanism-outcome configurations (CMOCs) and programme theory. Context was conceptualised as both the background or setting in which an EV takes place and the relational dynamics and interactions between individuals (eg, how and by whom programmes and EV were developed or delivered, the individuals involved, their relationships), with a focus on communication and interactions during an EV (eg, whether discussions were structured or tailored, needs assessed).<sup>36</sup> We made judgements about the trustworthiness of the data to be included. Data were judged to be more trustworthy if they had been generated empirically; the methods used to generate data were appropriate and rigorously applied and findings matched those of similar studies.<sup>37</sup>

## Stage 4: data extraction

Data relating to outcomes, interventions and context were extracted by KL from each of the included empirical studies for an initial overview. Then any statements in the articles which either related to, described aspects of, confirmed or disputed the AD principles of the IPT were extracted and mapped. Online supplemental file 2 lists articles which contributed data to refine each principle of the IPT, the country in which they were conducted as well as a timeline of the EV topics, which reflects how public health priorities and evidence for prescribing changes over time.

## Stage 5: data synthesis and refinement of programme theory

KL produced a summative narrative of the extracted data (text excerpts) mapped against each of the

principles outlined in the IPT, which facilitated identifying patterns and establishing potential mechanisms. For each of the principles identified in the IPT, configurations of contexts, mechanisms and outcomes into CMOCs were developed through combining the narratives and the tabulated, extracted data. This process was facilitated through regular discussions of emerging findings between the authors. While configuring contexts, mechanisms and outcomes, the focus on the visitor and clinician suggested a categorisation of CMOCs within a framework which outlines how the visitor is prepared for and supported during their visit, clinicians encouraged to engage, the interaction between visitor and clinician and the follow-up and support provided after a visit, in short, what happens before, during and after a visit. In addition to theories already associated with EV, as described in the IPT, further substantive learning and communication theories were considered and discussed when they seemed to substantiate the evolving programme theory established through CMOCs.

## RESULTS

A total of 3474 articles were screened, leading to full-text review of 197 publications. The IPT was based on principles of AD and underlying theoretical frameworks as described by Soumerai and Avorn. These principles were usually only referred to and cited in the literature, only 43 of the screened articles provided sufficient detail on whether and how they were applied in practice to contribute to the development of a programme theory of why and how EV may facilitate a change in prescribing (see Preferred Reporting Items for Systematic Reviews and Meta-Analyses diagram, online supplemental file 3). Many studies were excluded even though they may have discussed EV/AD in a theoretical sense, for example, in their introduction, because detail on how theory was actioned in practice and differentiation of context was lacking. Of the 32 studies (some published over multiple papers), 10 were conducted in the USA, 4 each in Australia, Belgium and the UK. Twenty-seven achieved the desired outcome of prescribing change and five showed no effect on prescribing (see online supplemental file 2). Twenty-seven CMOCs were configured to develop the final programme theory.

### Developing the programme, preparing and supporting the visitor and engaging clinicians

CMOCs explaining how clinicians can be engaged to participate in EV and visitors are prepared through programme design features are described in [box 1](#).

#### Programme design (CMOCs 1–3)

Programme design features significantly influence their relevance to the practice of clinicians, their engagement and whether desired changes in prescribing are achieved. Successful programme design

### Box 1 Context-mechanism-outcome-configurations (CMOCs): supporting the visitor, engaging clinicians

#### Programme design

1. When programme developers undertake to understand the needs of educational visit (EV) recipients (C) programmes can be designed to have greater relevance for the target audience (O) because they have the necessary knowledge to meet needs and address potential barriers (M).
2. When programmes are designed to meet the needs of specific clinicians (C) they are more likely to engage (O) because personal relevance is increased (M).
3. When visits are offered flexibly, for example, in a clinician's practice environment (C), they are more likely to participate (O) because participation is convenient (M).

#### Evidence-based approach, credibility of programme and visitor

4. When a programme and visitors are affiliated with an organisation respected by clinicians (C1) and/or build on evidence that has been rigorously and transparently developed (C2) and/or has been endorsed by peers or experts (C3) and/or when participants do not suspect a programme has a 'hidden agenda' (C4) their credibility with and acceptance by clinicians increases (O) because both are perceived as independent, and free of bias and vested interests (M).
5. When information is balanced and controversy and uncertainty around latest evidence are acknowledged and discussed (C), the credibility of programmes and visitors is enhanced (O) because it demonstrates an understanding of complexity in clinical decision-making (M).
6. A discussion of synthesised, appraised evidence during visits (C) makes the visit useful for clinicians (O) because they are perceived as a time-efficient way to gain knowledge and access to information (M).

#### Practical recommendations

7. When evidence, data and recommendations are presented to clinicians, either verbally by visitors or through support materials, in a format that relates them to their practice (C), they are more likely to act on it (O), because it is clearer to the clinician what they could do (M).
8. When relevant evidence, data and recommendations clearly indicate a change in practice is needed that clinicians were unaware of (C) they may initiate change (O) because they experience cognitive dissonance (M).

#### Educational materials

9. When visitors can use professionally designed material during a visit (C), clinicians are more likely to engage (O) because materials and visitors are perceived as credible (M).
10. When clinicians are guided through educational or support materials during a visit (C), they are likely to use

Continued

## Box 1 Continued

them later in practice (O) because they become familiar and make more sense (M).

**Hire and training of visitors**

11. When visitors come from a similar professional environment or background as the clinician (C), they more easily build rapport and discuss topic content (O) because they are familiar with the clinician's practice environment and/or they have a basic understanding of each other (M).  
12. When visitors are well prepared (C), clinicians are more likely to participate and engage in visits (O) because they perceive visitors as credible and trustworthy (M).

integrates current evidence practice gaps,<sup>38–41</sup> builds on understanding of the target audience's practice and barriers to practice change<sup>12 41 42</sup> and then mindfully takes this knowledge, understanding, attitudes, behaviours and needs of its audience into account, which assists to anticipate potential barriers to and enablers for suggested change.<sup>43–45</sup> In combination, these increase the overall appeal and relevance of the programme and clinician engagement,<sup>11 12 46 47</sup> and are supported by the involvement of clinicians or topic experts in programme design, the utilisation of (local) prescribing data and needs assessments via surveys or interviews.<sup>2 48–51</sup>

The timing and location of visits was linked to uptake and some of the usefulness and positive perceptions of EV were influenced by location, timing, flexibility and fitting into usual practice (eg, length of appointments).<sup>12 38 52 53</sup> This is achieved most easily when visits are scheduled in the clinicians' practice environment at their convenience and one-on-one.<sup>2 11 43 50 54</sup>

Evidence-based approach, credibility of programme and visitor (CMOCs 4–6)

For programmes to be seen as credible and acceptable clinicians need to perceive them as being independent and free of bias. Transparent evidence-based synthesis and presentation of a topic influences their views of the credibility and usefulness of an EV which can be tainted by perceptions of cost cutting.<sup>11 12 16 51 55–57</sup> Programme designers should develop topic content and materials based on critical appraisal and systematic synthesis of evidence by clinicians (peers or experts), use of (local) data and identification of evidence-practice gaps,<sup>11 12 39 40 42 43 52 58–63</sup> which also inform the design of support materials and preparation of the visitor.<sup>45 60</sup> Providing clinicians with balanced information, acknowledgement of controversies and uncertainties in evidence contributes to transparency and conveys an understanding of greyness and complexity in clinical practice.<sup>2 12 38 48 52 53 56</sup> In combination with respecting clinicians' dilemmas in translating population-derived evidence to decision-making

about individual patients, these factors contribute to programme and visitor credibility and effectiveness. Synthesised, appraised evidence (or handout material) supports the visitor in discussions which are perceived as a shortcut to the evidence and allows clinicians to reflect on their prescribing in relation to evidence-based best practice recommendations.<sup>12 51 64</sup>

Practical recommendations (CMOCs 7–8)

Translation of evidence into practical advice as part of programme design is valued by clinicians. Recommendations supplementing evidence summaries or made verbally by the visitor have to be applicable to and easy to action in daily practice and action has to lie within the control of clinicians.<sup>12 38 41 43 65</sup> Information about practice-gaps and recommendations that support patient care may assist in overcoming barriers to practice change by facilitating reflection and cognitive dissonance.<sup>12 39 66</sup> Not all visitors see it as their role to provide recommendations, but to present evidence only, which jeopardises the overall effectiveness of a programme.<sup>12</sup>

Educational materials (CMOCs 9–10)

Written summaries of evidence syntheses are perceived as useful by clinicians, reinforcing topic content and learning, and at times were used as reference materials after the visit.<sup>38 51 52 64 67</sup> Some provided lengthy summaries of evidence or were guidelines but a short summary when added to more comprehensive booklets increases overall usefulness.<sup>12 16 43 44 49 50 63 68</sup> Educational materials often state and repeat programme objectives and support visitors in their discussions.<sup>11 39 45 69</sup> Visitors' sense-making through discussion of and guidance through materials seems to contribute to their later use rather than just presenting them.<sup>52 70</sup> Attractive, professional design of educational materials, with a clear layout, make them easy to follow and increases perceptions of credibility.<sup>11 45 48 50 61 66 68</sup>

Training of visitors (CMOCs 11–12)

Visitors have to be well prepared and usually undergo extensive training.<sup>51 53 63 68 71–73</sup> Training mostly occurred through established training organisations, for example, NaRCAD (USA), DATIS (Australia), Dalhousie University (Canada), Farmaka (Belgium) and experienced academic detailers.<sup>11 12 16 44 49 50 52 58 61 66 68</sup> The necessary levels of preparedness and topic knowledge are more likely to be achieved by a health professional with clinical knowledge in the topic area and a common understanding of background and work environment, which may explain why the majority of visitors were pharmacists or medical doctors.<sup>11 12 39 44 53 55 56 58 60 63 66 72–74</sup> Whether clinical experience increases their capability in knowledge building and credibility with clinicians is unclear, but credibility and trustworthiness are mentioned

frequently as relevant factors for acceptance of visitors by clinicians.<sup>38 55</sup>

Examples of literature excerpts illustrating CMOCs are provided in online supplemental file 4.

### The educational visit: interaction between visitor and clinician

CMOCs developed regarding the interaction between visitor and clinician are listed in [box 2](#).

#### Building rapport and relationships (CMOCs 13–15)

Establishing rapport and trust between visitors and clinicians facilitates more engaged topic discussions and reflection, particularly during one-on-one visits.<sup>12 67</sup> Rapport can be built through active listening, respect and empathy for the practice of the clinician, creating a relaxed atmosphere.<sup>50 68</sup> Rapport and relationships have to be built throughout a visit and over time with regular repeat visits and continuity of the visitor.<sup>12 40 44 52 55 63</sup> Visitors and clinicians find that building or established relationships enhance the interaction and educational exchange and increase the trust between them.<sup>55 62 75</sup>

#### Eliciting needs (CMOCs 16–20)

Needs for information and advice vary between clinicians and eliciting their needs, baseline knowledge, attitudes and practices allows the visitor to gain an understanding of what may be relevant and of interest to an individual and their practice, enabling the choice of topic content that is most pertinent, making best use of available time.<sup>50 52 53 58 68 73 76</sup> It also enables the visitor to identify potential barriers to practice change and facilitators to negotiate these.<sup>12 39</sup> Needs (based around knowledge, attitudes, behaviours) can be assessed formally, using scenarios and agreeance to statements or informally through open-ended questions and conversation.<sup>2 45 48 53</sup> Eliciting needs is easier during one-on-one visits.<sup>64</sup>

#### Tailoring content (CMOCs 18–20)

Generally, clinicians value an interaction which meets their needs.<sup>38 45 55 64</sup> When the content of visits is tailored based on needs and focuses on clinicians' specific interests, they are perceived as useful (often expressed in terms of 'efficient, saving time') and more relevant.<sup>12 38 39 44 52 53 61 68 69 74</sup> One-on-one interactions (in person or virtual) make tailoring and meeting individual interests easier for visitors and often are preferred by clinicians (also see CMOCs above).<sup>38 44 64 70 77</sup> Tailoring includes making practical recommendations relevant to the clinical practice of an individual, which provides a service, builds trust and rapport and extends relationships.<sup>12 60 63 64</sup>

#### Interactive discussions of topic, uncertainty and controversy (CMOCs 21–23)

Interactive discussions in contrast to presentations set up a dialogue between visitor and clinician, in which they learn with, about and from each other. Dialogue

## Box 2 Context-mechanism-outcome-configurations (CMOCs): the visit, interaction between clinician and visitor

### Building rapport and relationships

13. When visitors establish rapport with the clinician (eg, through active listening and empathising with their practice) (C) clinicians are at ease (O) because they feel non-judged, respected and understood (M).

14. When an (educational visit) EV occurs one-on-one (C), the visitor can more easily adjust communication style and establish rapport and relationships with the clinician (O) because this is easier to do on an individual basis (M).

15. When visitors build rapport continuously throughout their visit and over time (eg, through paying attention to clinicians' needs, dialogue, learning from each other) (C), a relationship of trust develops (O) because clinicians perceive visitors as wanting to be of service (M).

### Eliciting needs

16. When an EV occurs one-on-one (C), the visitor has an opportunity to gain a better understanding of the clinician's knowledge, attitudes, practice and information needs (O) because it is easier to do on an individual basis (M).

17. When the needs, knowledge and practice of a clinician are known to the visitor (C), they can increase the personal relevance of the visit for the clinician (O) because they have the ability to tailor topics and messages accordingly (M).

### Tailoring content

18. When visitors have elicited baseline knowledge and practice (C), they can assist individual clinicians to find suitable solutions to potential barriers (O) because they know what is relevant and achievable in a clinician's practice (M).

19. When visitors provide clinicians with evidence-based options for action that are feasible and reasonable for the individual (C), action is more likely to occur (O) because clinicians perceive these as achievable (M).

20. When a visit is tailored to a clinician's need and addresses potential barriers (C), commitment to change is more likely (O) because they are encouraged to elaborate on what and how they may change (M).

### Interactive discussions of topic, uncertainty and controversy

21. When visitors create interactivity of discussion in their visits (C), visitor and clinician can learn from each other (O) because they construct knowledge together (M).

22. When visitors encourage and engage in discussion on areas of controversy with clinicians (C), they increase their credibility (O) because the clinicians perceive them as open-minded, informed and independent (M).

23. When clinicians are encouraged to think critically about a topic and/or visitor and clinician openly and

Continued

**Box 2 Continued**

constructively discuss evidence and uncertainties in practice (C), clinicians develop a critical attitude and culture of critical thinking (O) because they are participating actively and get used to elaborating and forming their own opinions (M).

**Commitment and motivation to change**

24. When topic messages are repeated by visitors at follow up visits (C), a sense of continuity and familiarity is created (O) because clinicians are reminded of previous visits and commitments (M).

25. When visitors are able to elicit a commitment to change (C), clinicians are more likely to actually change practice (O) because their intention precedes behaviour (M).

**Box 3 Context-mechanisms-outcome-configurations (CMOCs): provision of resources and follow-up**

26. When visitors perceive clinicians may need help with actioning practice change (C) where possible they should provide them with resources (O) because they want to make the change as easy as possible for the clinician (M).

27. When questions left unanswered during visits are followed up later (C), credibility of visitors and their service is increased (O) because they demonstrate reliability and commitment (M).

builds rapport, identifies potential barriers and facilitators to change, encourages critical thinking about practice and visit topic content and stimulates reflection; the latter two are precursors to potential change in intentions and behaviour.<sup>2 11 12 48 66 76</sup> Discussion of balanced information and uncertainties aims to encourage clinicians to make judgements based on thinking critically about the available evidence.<sup>39 60</sup> Although not mentioned as frequently as other aspects of EV, presenting both sides of any controversial issues seems to stimulate discussion and engagement with the topic and the visitor as well as critical thinking about topic content.<sup>60</sup> Effective communication skills are necessary to establish a conversational, educational exchange and two-way interactions.

**Commitment and motivation to change (CMOCs 24–25)**

A commitment or intention to change practice is a precursor to actual change in prescribing,<sup>16 41 59</sup> in line with Theory of Planned Behaviour.<sup>32</sup> Both were mainly self-reported via surveys of clinicians' or visitors' perceptions<sup>55 61 62 64 76</sup> and often described in non-specific terms (general intention to change practice), not explicitly related to actual programme messages and intentions, or specified as a commitment to review patients, change prescribing, implement agreed actions.<sup>16 38 40 47 51 68</sup> Repetition of key messages and follow-up on previous topics is supposed to reinforce messages, deepen learning and support change and reminds of (previous) discussions and commitments.<sup>48 59</sup>

**Extending relationships and providing a service**

The effects of follow-up after a visit (CMOCs 26–27) are detailed in [box 3](#).

Visitors provide a service when following up remaining questions or fulfilling (topic unrelated) information needs, which can extend and sustain their relationship with clinicians.<sup>11 12 42 44 49 60 76</sup> The

provision of resources in addition to the programme-designed educational materials serves several purposes, for example, they may be useful to patient care or add support material or information to achieve EV objectives.<sup>2 40 51 68</sup> This potentially makes any practice change as easy as possible and builds the credibility of the visitor and programme.

While programme credibility may extend to visitors (CMOCs 4 and 5), they have to also establish personal credibility with clinicians as demonstrated by CMOCs 22 and 27.

**DISCUSSION**

This realist synthesis identifies how and why educational outreach visits integrating AD can influence the prescribing of clinicians, providing empirical evidence and a theoretical foundation to how its workings have been described in the literature.<sup>1 3 78</sup> It outlines the programme design and visitor skills which assist clinicians in translating population-derived evidence into decisions about individual patients by making evidence syntheses and data relevant to individual practice and motivating a transition from knowledge and attitude to intention and behaviour (action).

In preparation for EV, programme design needs to consider the evidence base for prescribing of medicines in a systematic, objective, transparent and independent manner. Topics and design are ideally validated through the analysis of localised data and involvement of stakeholders to increase relevance. CMOCs 1–12 explain how programme design features activate mechanisms which foster clinician engagement, for example, credibility, relevance and usefulness of their topic content. Similar rigour and independence as well as professional layout applied to the design of programme resources ensures their attractiveness, acceptance and subsequent use.

The interaction between clinicians and an educational visitor differentiates EV from other QI activities. During effective EV, visitors curate and personalise content and messages to meet individual clinicians' needs for information, support or solutions. EV work when visitors establish a dialogue which fosters co-construction and integration of new knowledge

with existing knowledge. This creates a safe, social learning environment of reflection which stimulates critical thinking, consideration of arguments and propositions, for example, evidence and practice recommendations. It is predicated on visitors establishing rapport, personal credibility and a relationship of trust which is built in stages. As CMOCs 13–27 show EV can create a learning environment for clinicians and visitors which is conducive to reflection on, exchange and challenge of each other’s understanding and the conceptualisation of individualised strategies to optimise prescribing. Ultimately, it is the interactive learning environment of a well-conducted EV that stimulates a more critical evaluation of evidence and recommendations by clinicians, creating conditions for higher order thinking and changes in attitude and behaviour.

In a realist synthesis, the confidence we can have in any causal explanations is strengthened by the use of substantive theory.<sup>79</sup> Our finding that an interactive learning environment between the visitor and clinician is pivotal to well-conducted EVs is supported by the Conversational Framework for Learning, which also extends our discussion from generally accepted learning theories in clinical education already supporting the IPT. The Conversational Framework coherently explains how the exchange and co-construction of knowledge unfold in the social learning environment of EV.<sup>80</sup> Originally developed for higher education, it centres around the learner and describes learning as the integration of concepts and practices, continuously modified through feedback, dialogue and knowledge co-construction between learner and

teacher. In EV, the teacher-learner role is fluid, clinicians may learn from visitors and vice versa, visitors learn from clinicians. The Conversational Framework provides the theoretical background for the interpersonal circumstances and other contexts conducive to clinicians changing their attitude, intention and ultimately practice, and explains mechanisms which frame EV more as a behaviour change strategy rather than an educational activity. Theory such as the elaboration likelihood model could further explain how cognitive processing determines changes of attitudes in response to arguments discussed during an EV.<sup>81</sup> Online supplemental file 5 provides more explanation of the Conversational Framework and shows its original form with more detail of how it applies to the visitor-clinician learning interaction. Figure 1 illustrates the overarching programme theory of how CMOCs are inter-related within the overarching framework provided by the Conversational Framework.

The Conversational Framework also applies to peer learning like quality circles, another commonly employed, data-driven and evidence-driven reflective clinical QI activity, and congruently supports how guided reflection and critical thinking may influence practice (see online supplemental file 5). A recent realist review showed that for quality circles to work credibility and trustworthiness of data and evidence, a safe environment for reflection and sharing of practice and knowledge, often enhanced by external expertise in evidence appraisal and clinical content, are similarly important for clinicians as in EV programmes.<sup>82</sup> There are significant differences between these two social learning QI activities. Quality circles work well when

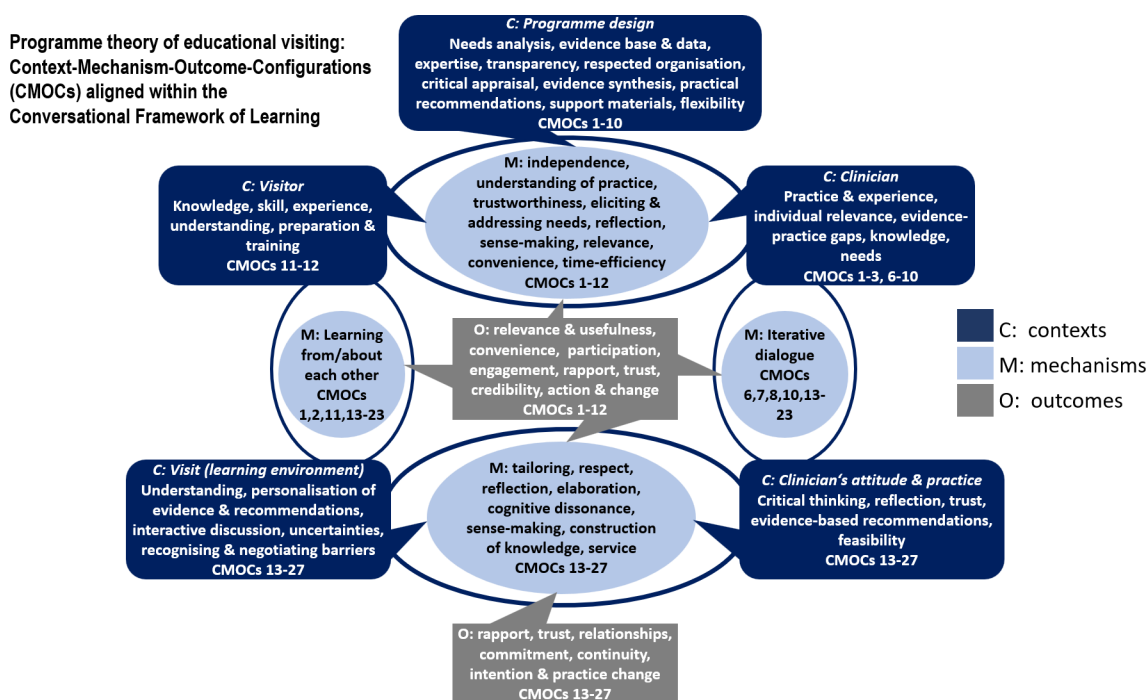


Figure 1 Programme theory of educational visiting.



their discussion topics are autonomously decided on, but they rely on favourable group dynamics, clinicians' insight, self-directed preparation, protected time and long-term commitment as well as facilitator expertise.<sup>82</sup> The preparation of a successful EV programme to influence prescribing may require more resources to start with to ensure the relevance and trustworthiness of its recommendations, but importantly EV demand less time of participating clinicians. Eliciting a clinicians' need for information or advice in an empathetic and non-judgemental manner during an EV, gaining an understanding of what is important to them in their practice, and then tailoring programme information, topic content and recommendations for action to meet and match these is a highly efficient way to negotiate necessary changes to prescribing. Clinicians regard the guided elaboration on evidence and sense-making of resources as time-efficient to gain new and integrate existing knowledge into practice. For these reasons, EV may be a more suitable QI intervention than quality circles when clinicians experience work pressures.

Our findings have important implications for policy and practice. High-quality EV integrating AD affects changes to prescribing of medicines. The most efficient use of EV services will be in areas where necessary prescribing changes are more challenging, for example, where change is impeded by uncertainty and controversy in evidence and/or diminished clinician self-efficacy. The programme theories developed with this synthesis show how EV relies on highly developed communication, and negotiation skills in addition to content knowledge, as well as curiosity, empathy and a service-approach by the educational visitor to facilitate a change in attitude or practice. Although the term EV implies an educational focus, this is insufficient (though necessary) to achieve sustainable changes to prescribing of medicines, with visitor-clinician dialogue and relationships being central to the success of EV.<sup>83</sup> Educational visitors need to be prepared and enabled to invest time and effort into building relationships, engaging in dialogue with the clinicians they visit and to provide a continuity of service. Their work establishing these may be hidden and undervalued but its neglect potentially undermines carefully designed educational visiting programmes. 'Short-cuts', for example, shortening visits or simply presenting information or 'lecturing' clinicians, are likely to considerably blunt their impact.

### Strength and limitations

A strength of this synthesis is the inclusion of a broad range of evidence, created over a long period of time in various contexts, with EV programmes designed as long-term services or one-off interventions, which supports the transferability of the programme theory to one-on-one, interactive EV.

The contexts and mechanisms of the programme theory of how EV work and why relate predominantly

to one-on-one visiting. Although some studies included data on visits to groups, they provided insufficient descriptive differentiation between the two. This and the exclusion of studies which exclusively conducted group visits did not allow us to come to conclusions about how these may work. Similar limitations also extend to virtual one-on-one visits. EV are often one aspect of multifaceted programmes and while programme design aspects supporting an EV have been included in this synthesis, other programme interventions which may have contributed to its effectiveness in achieving desired outcomes have not been considered. While this synthesis focused on EV influencing prescribing, these findings are likely to be relevant for any EV programme linked to QI initiatives, for example, in the implementation of guidelines.

### CONCLUSION

This realist synthesis provides causal arguments of when, how and why an educational outreach visit influences prescribing by clinicians and explains why building and sustaining relationships, creating a safe space for open and reflective dialogue are central to successful personalised one-on-one interaction. The complex interplay of relevant contexts and important mechanisms of the refined programme theory shows how they build and rely on each other, elucidating that due attention needs to be paid to all of them for EV to generate maximum impact. At a time when easy access to information and evidence seems a panacea to translation of evidence into ever more complex practice, sense-making through dialogue and relationships established with EV will be more important than ever.

**Contributors** KL and DR conceived the idea and designed the review. KL and DR designed, piloted and built the search. KL, DR and GW contributed to the interpretation of data and findings. KL drafted the initial manuscript, and DR and GW contributed to the final manuscript. KL acts as guarantor for the manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent for publication** Not applicable.

**Ethics approval** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** All data relevant to the study are included in the article or uploaded as supplementary information. Not applicable.

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#### ORCID iDs

Karen Luetsch <http://orcid.org/0000-0002-6037-5133>

Geoff Wong <http://orcid.org/0000-0002-5384-4157>

#### REFERENCES

- Soumerai SB, Avorn J. Principles of educational outreach ('academic detailing') to improve clinical decision making. *JAMA* 1990;263:549–56.
- Avorn J, Soumerai SB. Improving drug-therapy decisions through educational outreach. A randomized controlled trial of academically based 'detailing.' *N Engl J Med* 1983;308:1457–63.
- Rowett D. Evidence for and implementation of academic detailing. In: Weekes LM, ed. *Improving use of medicines and medical tests in primary care*. Singapore: Springer, 2020: 83–105.
- Cochrane effective practice and oragnisation of care [EPOC taxonomy]. 2015. Available: <https://epoc.cochrane.org/epoc-taxonomy> [Accessed 21 Jul 2022].
- O'Brien MA, Rogers S, Jamtvedt G, *et al*. Educational outreach visits: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2007;2007:CD000409.
- Qureshi N, Allen J, Hapgood R. A systematic review of educational outreach visits for non-prescribing interventions in general practice. *Eur J Gen Pract* 2002;8:31–6.
- Hoffman JD, Shayegani R, Spoutz PM, *et al*. Virtual academic detailing (E-detailing): a vital tool during the COVID-19 pandemic. *J Am Pharm Assoc* 2020;60:e95–9.
- Baldwin L-M, Fischer MA, Powell J, *et al*. Virtual educational outreach intervention in primary care based on the principles of academic detailing. *J Contin Educ Health Prof* 2018;38:269–75.
- Van Hoof TJ, Harrison LG, Miller NE, *et al*. Characteristics of academic detailing: results of a literature review. *Am Health Drug Benefits* 2015;8:414–22.
- Yeh JS, Van Hoof TJ, Fischer MA. Key features of academic detailing: development of an expert consensus using the Delphi method. *Am Health Drug Benefits* 2016;9:42–50.
- Dyrkorn R, Langaas HC, Giverhaug T, *et al*. Academic detailing as a method of continuing medical education. *Adv Med Educ Pract* 2019;10:717–25.
- Anthierens S, Verhoeven V, Schmitz O, *et al*. Academic detailers' and general practitioners' views and experiences of their academic detailing visits to improve the quality of analgesic use: process evaluation alongside a pragmatic cluster randomized controlled trial. *BMC Health Serv Res* 2017;17:841.
- McCormack B, Rycroft-Malone J, Decorby K, *et al*. A realist review of interventions and strategies to promote evidence-informed healthcare: a focus on change agency. *Implement Sci* 2013;8:107.
- Agency for Healthcare Research and Quality. Module 16. academic detailing as a quality improvement tool. Rockville, MD Agency for Healthcare Research and Quality; 2013. Available: <https://pcmh.ahrq.gov/sites/default/files/attachments/pcpf-module-16-academic-detailing.pdf> [Accessed 21 Jul 2022].
- Carroll JJ, Green TC, Noonan RK. Evidence-based strategies for preventing opioid overdose: what's working in the United States [National Center for Injury Prevention and Control]. 2018. Available: <https://www.cdc.gov/drugoverdose/featured-topics/evidence-based-strategies.html>
- Bounthavong M, Christopher MLD, Veenstra DL, *et al*. Exploring providers' perception to naloxone education for opioid overdose after receiving academic detailing at the U.S. department of veterans affairs. *J Pharm Pract* 2021:8971900211053282.
- Van Hoof TJ, Meehan TP. Using theory and evidence to guide the use of educational outreach to improve patient care. *Am J Med Qual* 2012;27:467–71.
- Van Hoof TJ, Miller NE, Meehan TP. Do published studies of educational outreach provide documentation of potentially important characteristics? *Am J Med Qual* 2013;28:480–4.
- Pawson R. *Evidence-based Policy. A realist perspective*. London: Sage, 2006.
- Wong G, Greenhalgh T, Westhorp G, *et al*. RAMESES publication standards: realist syntheses. *BMC Med* 2013;11:21.
- Avorn J. Academic detailing: 'marketing' the best evidence to clinicians. *JAMA* 2017;317:361–2.
- National Resource Center for Academic Detailing (NaRCAD). Available: <https://www.narcad.org/> [Accessed 23 Jan 2023].
- Alosa Foundation. Alosa health. Available: <http://alosafoundation.org/> [Accessed 23 Jan 2023].
- Dalhousie University, Faculty of Medicine. Continuing professional development & medical education. Available: <https://medicine.dal.ca/departments/core-units/cpd/programs/academic-detailing-service.html> [Accessed 23 Jan 2023].
- Bacovsky R, Maclure M, Nguyen A, *et al*. Canadian academic detailing collaboration: evaluating processes and outcomes of academic detailing. *Can Pharm J* 2006;139:54–7.
- Avorn J. Improving the quality and cost-effectiveness of prescribing. *Pharmacoeconomics* 1992;1:45–8.
- Avorn J, Fischer M. 'Bench to behavior': translating comparative effectiveness research into improved clinical practice. *Health Aff (Millwood)* 2010;29:1891–900.
- Fischer MA, Avorn J. Academic detailing can play a key role in assessing and implementing comparative effectiveness research findings. *Health Aff (Millwood)* 2012;31:2206–12.
- Valenti WM, Voisine R. Academic detailing: focus is on appropriate care. *Drug Benefit Trends* 2008;20:140–2.
- Bandura A. *Social foundations of thought and action*. Englewood Cliffs, NJ, 1986: 23–8.
- Prochaska JO. Decision making in the transtheoretical model of behavior change. *Med Decis Making* 2008;28:845–9.
- Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process* 1991;50:179–211.
- Rogers EM. *Diffusion of Innovations*. New York: Free Press, 1995.
- Chhina HK, Bhole VM, Goldsmith C, *et al*. Effectiveness of academic detailing to optimize medication prescribing behaviour of family physicians. *J Pharm Pharm Sci* 2013;16:511.
- Booth A, Harris J, Croot E, *et al*. Towards a methodology for cluster searching to provide conceptual and contextual 'richness' for systematic reviews of complex interventions: case study (cluster). *BMC Med Res Methodol* 2013;13:118.

- 36 Greenhalgh J, Manzano A. Understanding 'ontext' in realist evaluation and synthesis. *Int J Soc Res Methodol* 2022;25:583–95.
- 37 Wong G. Data gathering in realist reviews: looking for needles in haystacks. In: Emmel N, Greenhalgh J, Manzano A, et al, eds. *Doing realist research*. London: SAGE Publications Ltd, 2018: 131–46.
- 38 Chhina H, Hall W, Kaczorowski J, et al. Qualitative insights into family physicians' perceptions of academic detailing for rheumatoid arthritis. *Qual Prim Care* 2017;25:63–72.
- 39 Coenen S, Van Royen P, Michiels B, et al. Optimizing antibiotic prescribing for acute cough in general practice: a cluster-randomized controlled trial. *J Antimicrob Chemother* 2004;54:661–72.
- 40 Patel B, Afghan S. Effects of an educational outreach campaign (impact) on depression management delivered to general practitioners in one primary care trust. *Ment Health Fam Med* 2010;6:155–62.
- 41 Barbosu CM, Alcántara L, Sharma S, et al. The implementation of a state-wide rapid initiation of antiretroviral therapy as a best practice in primary care practices using an academic detailing approach: lessons learned from New York state, United States. *Int J MCH AIDS* 2022;11:e539.
- 42 Fretheim A, Oxman AD, Treweek S, et al. Rational prescribing in primary care (rapp-trial). A randomised trial of a tailored intervention to improve prescribing of antihypertensive and cholesterol-lowering drugs in general practice [ISRCTN48751230]. *BMC Health Serv Res* 2003;3:5.
- 43 Allen M, Ferrier S, O'Connor N, et al. Family physicians' perceptions of academic detailing: A quantitative and qualitative study. *BMC Med Ed* 2007;7.
- 44 Smart MH, Mandava MR, Lee TA, et al. Feasibility and acceptability of virtual academic detailing on opioid prescribing. *Int J Med Inform* 2021;147:104365.
- 45 Carvalho Borin M, Kakehasi AM, Dartnell J, et al. Academic detailing program for rheumatoid arthritis: a contribution to Brazilian public health system sustainability. *J Pharm Health Serv Res* 2020;11:249–54.
- 46 Maltais R, Schmidt T, Chhina H, et al. Academic detailing to optimize care for RA by family physicians-results of a satisfaction survey. *J Rheumatol* 2014;41:1494–5.
- 47 Carr P, Patel B, Chapman S. A service evaluation of educational outreach campaigns delivered by primary care pharmacists. *Int J Pharm Pract* 2015;23:105.
- 48 Simon SR, Majumdar SR, Prosser LA, et al. Group versus individual academic detailing to improve the use of antihypertensive medications in primary care: a cluster-randomized controlled trial. *Am J Med* 2005;118:521–8.
- 49 Alvarez SJ, Larmour I, Tapley N, et al. Education outreach to the community: does Hospital pharmacy have a role? *The Australian Journal of Hospital Pharmacy* 2001;31:13–7.
- 50 Riordan DO, Hurlley E, Sinnott C, et al. Pharmacist-led academic detailing intervention in primary care: a mixed methods feasibility study. *Int J Clin Pharm* 2019;41:574–82.
- 51 Vasudev K, Lamoure J, Beyaert M, et al. Academic detailing among psychiatrists-feasibility and acceptability. *Int J Health Care Qual Assur* 2017;30:79–88.
- 52 May F, Simpson D, Hart L, et al. Experience with academic detailing services for quality improvement in primary care practice. *Qual Saf Health Care* 2009;18:225–31.
- 53 Pinto D, Heleno B, Rodrigues DS, et al. Effectiveness of educational outreach visits compared with usual guideline dissemination to improve family physician prescribing-an 18-month open cluster-randomized trial. *Implement Sci* 2018;13:120.
- 54 Simon SR, Rodriguez HP, Majumdar SR, et al. Economic analysis of a randomized trial of academic detailing interventions to improve use of antihypertensive medications. *J Clin Hypertens* 2007;9:15–20.
- 55 Morrow RW, Tattelman E, Purcell JM, et al. Academic peer detailing—the preparation and experience of detailers involved in a project to Disseminate a comparative effectiveness module. *J Contin Educ Health Prof* 2016;36:123–6.
- 56 Janssens I, De Meyere M, Habraken H, et al. Barriers to academic detailers: a qualitative study in general practice. *Eur J Gen Pract* 2005;11:59–63.
- 57 Bruyndonckx R, Verhoeven V, Anthierens S, et al. The implementation of academic detailing and its effectiveness on appropriate prescribing of pain relief medication: a real-world cluster randomized trial in Belgian general practices. *Implement Sci* 2018;13:6.
- 58 Saffore CD, Tilton ST, Crawford SY, et al. Identification of barriers to safe opioid Prescribing in primary care: a qualitative analysis of field notes collected through academic detailing. *Brit J Gen Pract* 2020;70:e589–97.
- 59 Saffore CD, Pickard AS, Crawford SY, et al. Practice change intentions after academic detailing align with subsequent opioid prescribing. *J Am Pharm Assoc (2003)* 2020;60:1001–8.
- 60 Habraken H, Janssens I, Soenen K, et al. Pilot study on the feasibility and acceptability of academic detailing in general practice. *Eur J Clin Pharmacol* 2003;59:253–60.
- 61 Behar E, Rowe C, Santos G-M, et al. Academic detailing pilot for naloxone prescribing among primary care providers in San Francisco. *Fam Med* 2017;49:122–6.
- 62 McDonald PK, Winkle CA, Askew D. Evaluation of academic detailing within a coordinated care trial. *J Pharm Pract Res* 2003;33:114–6.
- 63 Nazareth I, Freemantle N, Duggan C, et al. Evaluation of a complex intervention for changing professional behaviour: the evidence based out reach (EBOR) trial. *J Health Serv Res Policy* 2002;7:230–8.
- 64 Midboe AM, Wu J, Erhardt T, et al. Academic detailing to improve opioid safety: Implementation lessons from a qualitative evaluation. *Pain Med* 2018;19:S46–53.
- 65 Freemantle N, Eccles M, Wood J, et al. A randomized trial of evidence-based outreach (EBOR): rationale and design. *Control Clin Trials* 1999;20:479–92.
- 66 de Burgh S, Mant A, Mattick RP, et al. A controlled trial of educational visiting to improve benzodiazepine prescribing in general practice. *Aust J Public Health* 1995;19:142–8.
- 67 Gale RC, Wu J, Erhardt T, et al. Comparison of rapid vs in-depth qualitative analytic methods from a process evaluation of academic detailing in the Veterans health administration. *Implement Sci* 2019;14:11.
- 68 Yeo GT, de Burgh SP, Letton T, et al. Educational visiting and hypnosedative prescribing in general practice. *Fam Pract* 1994;11:57–61.
- 69 van Eijk ME, Avorn J, Porsius AJ, et al. Reducing prescribing of highly anticholinergic antidepressants for elderly people: randomised trial of group versus individual academic detailing. *BMJ* 2001;322:654–7.
- 70 Bounthavong M, Suh K, Christopher MLD, et al. Providers' perceptions on barriers and facilitators to prescribing naloxone for patients at risk for opioid overdose after implementation of a national academic detailing program: a qualitative assessment. *Res Social Adm Pharm* 2020;16:1033–40.

- 71 Freemantle N, Nazareth I, Eccles M, *et al.* A randomised controlled trial of the effect of educational outreach by community pharmacists on prescribing in UK general practice. *Br J Gen Pract* 2002;52:290–5.
- 72 Fretheim A, Aaserud M, Oxman AD. Rational prescribing in primary care (Rapp): economic evaluation of an intervention to improve professional practice. *PLoS Med* 2006;3:e216.
- 73 Watson M, Gunnell D, Peters T, *et al.* Guidelines and educational outreach visits from community pharmacists to improve prescribing in general practice: a randomised controlled trial. *J Health Serv Res Policy* 2001;6:207–13.
- 74 Ragan AP, Aikens GB, Bounthavong M, *et al.* Academic detailing to reduce sedative-hypnotic prescribing in older veterans. *J Pharm Pract* 2021;34:287–94.
- 75 Soumerai SB, Avorn J. Predictors of physician prescribing change in an educational experiment to improve medication use. *Med Care* 1987;25:210–21.
- 76 Saffore CD, Pickard AS, Crawford SY, *et al.* Secondary effects of an opioid-focused academic detailing program on non-opioid controlled substance prescribing in primary care. *Subst Abuse* 2021;42:962–7.
- 77 Bounthavong M, Shayegani R, Manning JM, *et al.* Comparison of virtual to in-person academic detailing on naloxone prescribing rates at three U.S. veterans health administration regional networks. *Int J Med Inform* 2022;161:104712.
- 78 Kennedy AG, Regier L, Fischer MA. Educating community clinicians using principles of academic detailing in an evolving landscape. *Am J Health Syst Pharm* 2021;78:80–6.
- 79 Duddy C, Wong G. Grand rounds in methodology: when are realist reviews useful, and what does a 'good' realist review look like? *BMJ Qual Saf* 2023;32:173–80.
- 80 Laurillard D. Rethinking University teaching 2ND edition. In: *Rethinking University teaching: A conversational framework for the effective use of learning Technologies*. Abingdon, UK: Routledge Palmer, 2002.
- 81 Petty RE, Wegener DT. The elaboration likelihood model: current status and controversies. In: Chaiken S, Yaacov T, eds. *Dual-process theories in social psychology*. London, UK: Guilford Press, 1999: 37–72.
- 82 Rohrbasser A, Wong G, Mickan S, *et al.* Understanding how and why quality circles improve standards of practice, enhance professional development and increase psychological well-being of general practitioners: a realist synthesis. *BMJ Open* 2022;12:e058453.
- 83 Soong C, Shojania KG. Education as a low-value improvement intervention: often necessary but rarely sufficient. *BMJ Qual Saf* 2020;29:353–7.