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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

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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.

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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.¹⁻³ 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’.⁴ 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.^{5,6} 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.³

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.^{7,8} 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.⁹⁻¹¹ 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.^{5,12} 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.¹³

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.^{14,15} At the same time, it is not clear how and why EV influence the decision-making processes and ultimately prescribing behaviours of clinicians.^{1,16,17} 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.^{13,18} 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,¹⁹ and report against RAMESES standards.²⁰ 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.¹ 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.^{1,3,8,21} Drawing on the authors’ practical experience in educational visiting and training of educational visitors, EV programme and training materials or documentation,²²⁻²⁴ theoretical papers and editorials were reviewed for explicitly or implicitly expressed additional theories underpinning

the principles.^{1 3 9 10 17 21 25–29} 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.^{30–33} 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.^{5 34}

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’.³⁵ 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).³⁶ 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.³⁷

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,^{38–41} builds on understanding of the target audience's practice and barriers to practice change^{12 41 42} 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.^{43–45} In combination, these increase the overall appeal and relevance of the programme and clinician engagement,^{11 12 46 47} 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.^{2 48–51}

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).^{12 38 52 53} This is achieved most easily when visits are scheduled in the clinicians' practice environment at their convenience and one-on-one.^{2 11 43 50 54}

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.^{11 12 16 51 55–57} 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,^{11 12 39 40 42 43 52 58–63} which also inform the design of support materials and preparation of the visitor.^{45 60} Providing clinicians with balanced information, acknowledgement of controversies and uncertainties in evidence contributes to transparency and conveys an understanding of greyiness and complexity in clinical practice.^{2 12 38 48 52 53 56} 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.^{12 51 64}

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.^{12 38 41 43 65} Information about practice-gaps and recommendations that support patient care may assist in overcoming barriers to practice change by facilitating reflection and cognitive dissonance.^{12 39 66} Not all visitors see it as their role to provide recommendations, but to present evidence only, which jeopardises the overall effectiveness of a programme.¹²

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.^{38 51 52 64 67} Some provided lengthy summaries of evidence or were guidelines but a short summary when added to more comprehensive booklets increases overall usefulness.^{12 16 43 44 49 50 63 68} Educational materials often state and repeat programme objectives and support visitors in their discussions.^{11 39 45 69} Visitors' sense-making through discussion of and guidance through materials seems to contribute to their later use rather than just presenting them.^{52 70} Attractive, professional design of educational materials, with a clear layout, make them easy to follow and increases perceptions of credibility.^{11 45 48 50 61 66 68}

Training of visitors (CMOCs 11–12)

Visitors have to be well prepared and usually undergo extensive training.^{51 53 63 68 71–73} Training mostly occurred through established training organisations, for example, NaRCAD (USA), DATIS (Australia), Dalhousie University (Canada), Farmaka (Belgium) and experienced academic detailers.^{11 12 16 44 49 50 52 58 61 66 68} 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.^{11 12 39 44 53 55 56 58 60 63 66 72–74} 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.^{38 55}

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.^{12 67} Rapport can be built through active listening, respect and empathy for the practice of the clinician, creating a relaxed atmosphere.^{50 68} Rapport and relationships have to be built throughout a visit and over time with regular repeat visits and continuity of the visitor.^{12 40 44 52 55 63} Visitors and clinicians find that building or established relationships enhance the interaction and educational exchange and increase the trust between them.^{55 62 75}

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.^{50 52 53 58 68 73 76} It also enables the visitor to identify potential barriers to practice change and facilitators to negotiate these.^{12 39} Needs (based around knowledge, attitudes, behaviours) can be assessed formally, using scenarios and agreeance to statements or informally through open-ended questions and conversation.^{2 45 48 53} Eliciting needs is easier during one-on-one visits.⁶⁴

Tailoring content (CMOCs 18–20)

Generally, clinicians value an interaction which meets their needs.^{38 45 55 64} 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.^{12 38 39 44 52 53 61 68 69 74} 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).^{38 44 64 70 77} Tailoring includes making practical recommendations relevant to the clinical practice of an individual, which provides a service, builds trust and rapport and extends relationships.^{12 60 63 64}

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).

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.^{2 11 12 48 66 76} Discussion of balanced information and uncertainties aims to encourage clinicians to make judgements based on thinking critically about the available evidence.^{39 60} 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.⁶⁰ 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,^{16 41 59} in line with Theory of Planned Behaviour.³² Both were mainly self-reported via surveys of clinicians' or visitors' perceptions^{55 61 62 64 76} 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.^{16 38 40 47 51 68} 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.^{48 59}

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.^{11 12 42 44 49 60 76} The

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).

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.^{2 40 51 68} 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.^{1 3 78} 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.⁷⁹ 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.⁸⁰ 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.⁸¹ 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.⁸² There are significant differences between these two social learning QI activities. Quality circles work well when

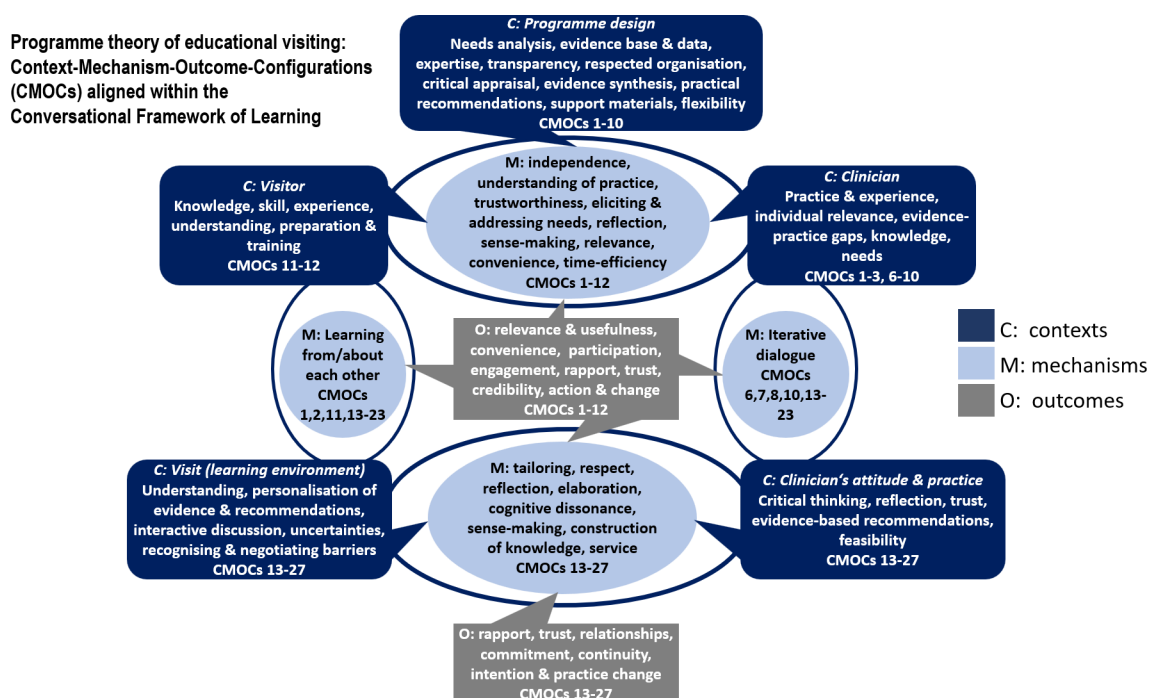


Figure 1 Programme theory of educational visiting.

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.⁸² 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.⁸³ 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.

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Supplementary file 1: Initial programme theory

The initial programme theory was developed based on the principles of academic detailing (AD) employed in educational visits (EV) as described by Soumerai and Avorn and others, AD programme and training materials or documentation. Also drawn from this literature are observed or proposed outcomes for each principle and why these may have been achieved. Theoretical papers and editorials were then reviewed for explicitly or implicitly expressed additional theories underpinning the principles. A number of theories have been propositioned to explain behaviour changes achieved by AD/EV and frame AD training and practice, for example, cognitive and behaviour change theories like social cognitive theory (SCT), the trans-theoretical model of change, Theory of Planned Behaviour (TPB) and Diffusion of Innovations theory (DOI), in addition to integration of a social marketing (SM) framework and an adult learning approach.

Academic detailing principle	What is its application supposed to achieve? Outcomes	Why is it supposed to work?	Proposed theory/ framework
Preparation - content			
Designing programs to meet the needs of specific doctor targets. Developing clear objectives.[1]	Identify evidence-practice gaps. Define which evidence-practice gaps to address and how.	Relevance to practice raises interest from clinicians, increases applicability of content.	Adult learning theory
Literature on efficacy, risk, and cost-effectiveness is systematically and critically evaluated by a clinical team with no personal financial ties to any drug maker. ² Establishing credibility of the information and the visitor through respected organisational identity.[1]	Establish best available evidence to inform clinical practice. Establish evidence-based strategies which have potential to improve practice and people's health (close evidence-practice gaps). Establish credibility.	Defines 'norms' or models of practice. Independence respected by clinicians. Credibility facilitates consideration and acceptance of messages.	Social marketing framework (SM) – defining the 'product'
Develop concise educational materials.[1] Literature condensed and “packaged” into a format that is easily accessible, clinically relevant, rigorously sourced, and	Facilitate presentation of content, provide initial structure to guide EV conversation.	Facilitates clinicians' understanding of and engagement with evidence.	Social cognitive theory (SCT) - increase knowledge, support self-efficacy SM – designing the 'product'

compellingly formatted, making use of engaging graphics, headlines, and illustrations.[2]	Provide reference points for later reflection or practice. Indirect re-iteration of messages. Materials and information as ‘gift’.	Creates positive impression and enhances credibility.	Social exchange theory
Messaging acknowledges both sides of controversial issues.[2]	Provide balanced information and acknowledgement of uncertainties in clinical practice. Demonstrates credibility and independence.	Facilitates reflection on evidence base. Respects clinicians’ own judgement and professional autonomy.	Reflective learning
Making practical recommendations that are immediately applicable to improving real-world patient care decisions. ² The message is concise and clearly relevant to patient care.[3, 4]	Increase utility of content. Enable translation of knowledge / evidence into practice. Improvement of patient care.	Enhances clinician self-efficacy.	SCT - support self-efficacy Adult learning
Training – visitors delivering the educational visit:			
Train clinicians (e.g. pharmacists, physicians, nurses) to serve as the academic detailers.[2, 5]	Ensures baseline clinical knowledge and understanding of clinician’s practice.	Shared understanding of the reality of clinical practice. Potentially enhances credibility of visitor.	DOI: homophily between visitor and clinician.
The following aspects of training are based on training and program documents of established AD services: DATIS, NaRCAD, Canadian training programs.[3, 5] Training entails [2]: Academic detailing (underpinning theories, process, role play, execution). Communication, networking & interpersonal skills. Behaviour change & persuasion.	Visitors have appropriate clinical, content knowledge, communication and interpersonal skills and understanding of communication and learning theories, awareness and understanding of clinicians’ practice. ²	Enhances credibility of visitor. Acceptance by clinicians. Confidence of visitors to conduct interactive topic discussions.	Experiential and adult learning Communication theories

Solid grasp of the clinical issues, most current evidence base underlying a given set of recommendations. Resources and interventions being offered by the program.			
Educational exchange – communication process:			
Timing and location is at clinician's convenience and he/she does not need to interrupt the normal routine of the working day.[3,4]	Clinician is on her/his own ground, practice setting. Increases chances of participation and engagement.	Facilitates reflection on practice in context of and translation of content into practice. Convenience of visit.	Social exchange theory: favour of convenience
Detailer establishes rapport with clinician.[3]	Facilitate open dialogue and sharing of information. Acknowledge clinician's unique situation and practice.	Builds a relationship and trust.	Communication theories
Detailer elicits the clinician's baseline knowledge, attitudes, and practices. An adept academic detailer (like an experienced sales rep) ascertains how a clinician approaches medication use for a given clinical problem.[2]	Recognise information / learning needs of clinician.	Allows to meet needs.	SCT, learning theories
Topic/messages can be tailored to the prescriber's current understanding and behavior.[2] Tailored based on the clinical context of the practice or provider and on specific barriers faced by the practice or provider.[5]	Adjusts the conversation to address personal learning opportunities. ² Ensures relevance of recommendations to clinician's needs and practice.	This 'tailored' approach makes the health professional feel heard and, in turn, creates an environment where they are more receptive to the information. ⁵	Communication theories
Detailer has a series of highly interactive discussions with individual clinicians.[7,8]	Identification of barriers and enablers for change. Active participation ensures engagement.	Reflection on practice creates potential for practice change. Encourages elaboration on messages.	Learning & communication theories

Repetition of key messages and providing reinforcement through repeated visits. ¹ The importance of clinician reminders in academic detailing intervention.[5]	Uptake of messages. Repeat visits show commitment by academic detailer and clinician.	Reminders of previous visits and discussions.	Learning theories
Elicit commitment to change.[3, 5]	Precursor to actual change.	Change in attitude and beliefs.	Theory of Planned Behaviour
Follow-up, continuing service			
Provision of resources and information to clinician.[1, 3, 6]	Building relationships and establishing service, support clinical practice, extension of visit Demonstrate commitment.	Establishes reciprocity.	Social exchange theory
Detailer develops a sustained relationship.[7, 8] The importance of the number of academic detailing visits a detailer makes to the same provider.[5]	Building relationships and establishing service	Builds trust in messages.	Repeat visits - Social exchange theory

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Supplementary file 2

1. Matrix of how individual, included articles support the refinement of the initial programme theory by describing principles of academic detailing and educational outreach visiting and whether they support their relation to changes in prescribing (or not).Outcomes: intended change in prescribing *qualitative studies in italics*Outcomes: equivocal / no change *qualitative studies in italics*

Articles in chronological order	Design programs to meet needs	Evidence-based approach Establish credibility	Concise educational materials	Acknowledged controversial issues.	Make practical recommendations	Hire and train clinicians	Training	Timing and location	Establish rapport	Elicit needs	Tailor EV	Interactive discussions	Repeat key messages	Elicit commitment	Provide resources	Sustain relationship
Avorn and Soumerai 1983 [2] / USA				X		X	X	X				X			X	X
Soumerai and Avorn 1987 [75] / USA										X						X
Yeo, de Burgh et al. 1994 [68] / Australia			X			X	X		X	X				X	X	
de Burgh, Mant et al. 1995 [66] / Australia			X		X	X	X									
Alvarez, Larmour et al. 2001 [49] / Australia	X		X				X								X	
Watson, Gunnell et al. 2001 [73] / UK		X				X	X				X					X
van Eijk, Avorn et al. 2001, van Eijk, Belitser et al. 2002 [69] / Netherlands			X								X		X			X
Freemantle, Eccles et al. 1999 [65], Freemantle, Nazareth et al. 2002 [71],		X	X		X	X	X		X		X					

Nazareth, Freemantle et al. 2002 [63] / UK																
Fretheim, Oxman et al. 2003 [42], Fretheim, Aaserud et al. 2006 [72] / Norway	X					X	X									X
Habraken, Janssens et al. 2003 [60] / Belgium		X	X		X	X	X					X			X	
McDonald, Winkle et al. 2003 [62] / Australia		X														X
Coenen, Van Royen et al. 2004 [39] / Belgium	X	X	X		X	X				X	X	X	X			
<i>Janssens, De Meyere et al. 2005 [56] / Belgium</i>		X										X				
Simon, Majumdar et al. 2005 [48], Simon, Rodriguez et al. 2007 [54] / USA	X	X	X	X		X	X			X		X	X			
<i>Allen, Ferrier et al. 2007 [43] / Canada</i>	X	X	X		X	X		X							X	
<i>May, Simpson et al. 2009 [52] / USA</i>		X	X				X	X	X	X	X		X		X	
Patel and Afghan 2010 [40] / UK	X	X	X			X	X						X	X	X	X
<i>Chhina, Hall et al. 2013 [24], Maltais, Schmidt et al. 2014 [46], Chhina, Hall et al. 2017 [38] / Canada</i>	X	X	X	X	X	X		X			X			X		
Carr, Patel et al. 2015 [47] / UK	X	X	X		X	X	X		X	X	X				X	X
Behar, Rowe et al. 2017 [61] / USA	X	X			X		X				X			X		

<i>Morrow, Tattelman et al. 2016 [55] / USA</i>		X				X	X		X		X			X		X
Bounthavong, Suh et al. 2020 [70], Gale, Wu et al. 2019 [67] / USA		X	X			X										
<i>Vasudev, Lamoure et al. 2017 / Canada</i>	X	X	X			X	X							X	X	X
<i>Anthierens, Verhoeven et al. 2017 [12], Bruyndonckx, Verhoeven et al. 2018 [57] / Belgium</i>	X	X	X	X	X	X	X	X	X	X	X	X		X		
Midboe, Wu et al. 2018 [64] / USA		X			X		X			X	X			X		
<i>Pinto, Heleno et al. 2018 [53] / USA</i>	X		X	X		X	X	X		X	X			X		X
Riordan, Hurley et al. 2019 [50] / Ireland	X		X				X	X	X		X					
Dyrkorn, Langaas et al. 2019 [11] / Norway	X	X	X			X	X	X				X	X		X	
<i>Carvalho Borin, Kakehasi et al. 2020 [45] / Brazil</i>	X	X	X			X				X	X					
Saffore, Tilton et al. 2020 [58], Saffore, Pickard et al. 2020 [59], Saffore, Pickard et al. 2021 [76] / USA		X				X	X			X		X	X	X	X	
<i>Smart, Mandava et al. 2021 [44] / USA</i>	X		X			X	X				X	X				X
Ragan, Aikens et al. 2021 [74] / USA						X				X	X					X

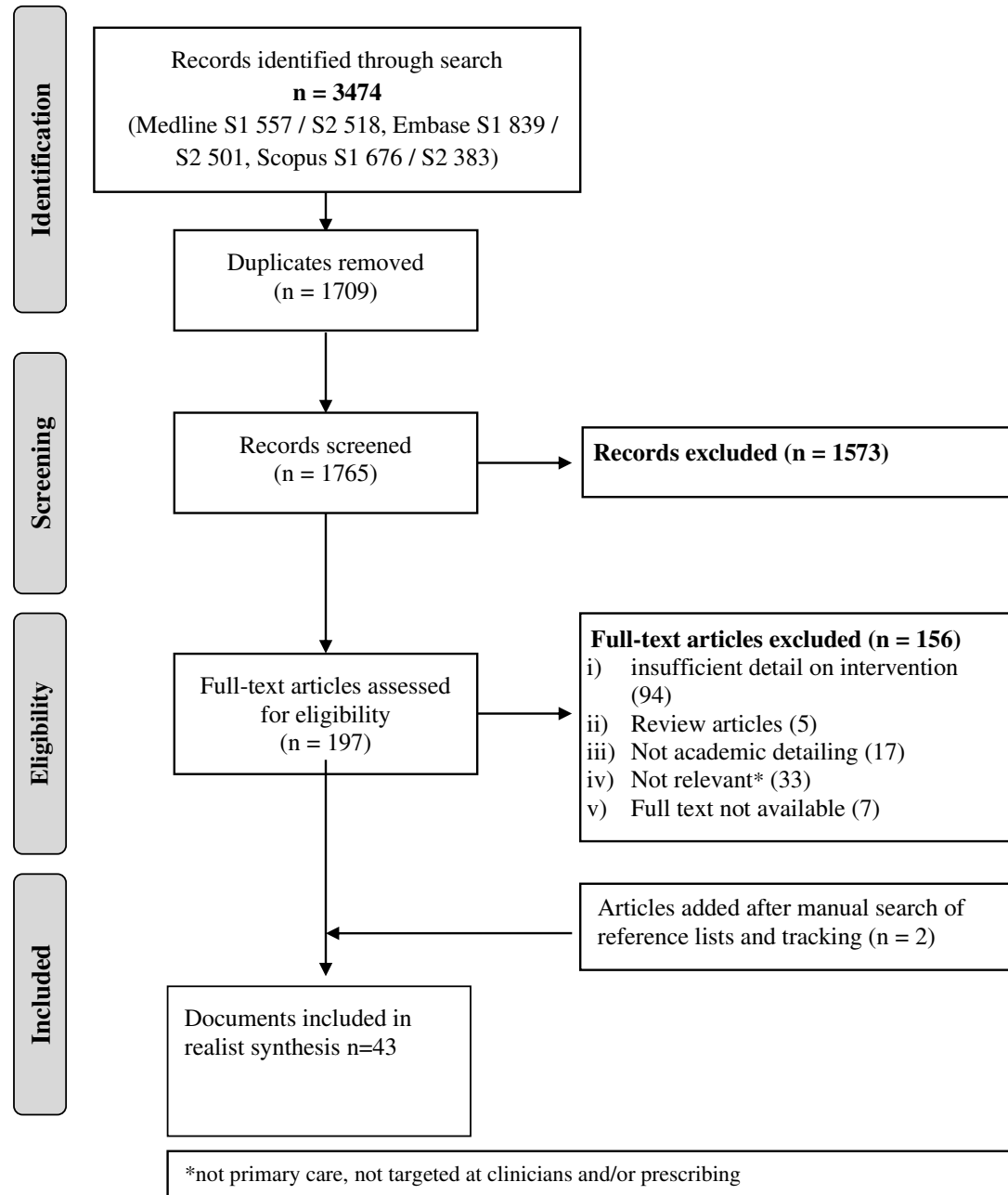
2. Timeline of main visiting topics described in included articles

Propoxyphene	BZD*	NSAIDs	Analgesics	Antihypertensives	Opioids
Vasodilators		Antibiotics	Antidiabetics	DOACs	Naloxone
Antibiotics		Antihypertensives	Antidepressants		NSAIDs
		Antidepressants			BZD
		Antiplatelets			bDMARDs
					Antibiotics
					Antipsychotics
1983	1995	2000-2005	2006-2010	2011-2015	2016-2022

BZD: benzodiazepines
NSAIDs: non-steroidal anti-inflammatory drugs
DOAC: direct oral anticoagulant
bDMARD: biologic disease modifying antirheumatic drug
* in bold EV topics covered in multiple studies

Supplementary file 3

PRISMA diagram



Supplementary file 4

Examples and quotes in support of Context-Mechanism-Outcome-Configurations (CMOCs) and programme theory

	Examples
Supporting and preparing the visitor, engaging clinicians	
<p>Programme design</p> <ol style="list-style-type: none"> 1. When programme developers undertake to understand the needs of educational visits (EV) recipients (C) programmes can be designed to have greater relevance for the target audience (O) because they 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 take place in a clinician's practice environment (C), they are more likely to participate (O) because participation is convenient (M). 	<p>Topics are selected by surveying FPs [family physician], by scanning the literature for areas of interest, and to complement other provincial health initiatives. For users, the 3 factors that most encouraged the use of academic detailing (AD) were the relevance of the topic.[43]</p> <p>The delivery of care for RA has been shown to be suboptimal. In British Columbia (BC), we found low rates of DMARD use and referral to rheumatologists. Previous studies revealed that many FPs lacked confidence to undertake early diagnoses of RA, and prescription of DMARDs, as well as the need for a shift in approaching RA care. ... FPs discussed the importance of ensuring that the content of the AD visit was relevant to their needs and clinical practice. Most FPs felt the topic was relevant because they had some RA patients, and relatively little knowledge of recent treatment guidelines and hence felt the need for updates.[46]</p> <p>Before developing the academic detailing interventions, we carried out a focus group among 8 practicing physicians from the 3 HCHP administrative divisions.[48]</p> <p>FP identified features the valued: Aspects of AD found convenient by participating FPs included: the flexibility of AD, the ability to incorporate CME into their working hours and plan visits according to their clinic schedules; not having to take time off or cancel their clinics; not having to travel for CME and the short duration of AD visits compared to other CME events.[38]</p> <p>Participants highlighted the convenience of the academic detailing session being carried out in their working environment.[50]</p>
<p>Evidence-based approach, credibility of programme and visitor</p> <ol style="list-style-type: none"> 1. 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 	<p>We research the evidence for each topic with the help of a drug evaluation pharmacist. A specialist physician and advisory board of 4 FPs ensure that the evidence-based information is clinically relevant. / For users and non-users, the 3 factors that most encouraged the use of AD were the evidence-based approach adopted in academic detailing, and the usefulness of the handout material.[43]</p> <p>Most providers appreciated having a service that would allow them to receive evidence-based assistance from qualified peers.[64]</p>

<p>(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).</p> <p>2. 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).</p> <p>3. 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).</p>	<p>When contrasting their own prescribing behavior with the EBM recommendations, the mismatches trigger them [GPs] to reflect on it.[12]</p> <p>We conducted one-on-one educational outreach meetings establishing - presenting both sides of controversial issues.[48]</p> <p>Even-handed acknowledgement of alternative points of view and uncertainty in clinical practice was a hallmark of each encounter.[52]</p>
<p>Practical recommendations</p> <p>4. When evidence and data are presented to clinicians 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).</p> <p>5. When evidence and data that are relevant to clinicians clearly indicate a change in practice is needed that they were unaware of (C) clinicians may initiate change (O) because of cognitive dissonance (M).</p>	<p>We demonstrated the mismatch between patients' expectations and GPs' perceptions of these, stressing that the latter are described as important determinants favouring antibiotic prescribing, and we instructed the GPs on how to make patients' expectations regarding antibiotic prescribing explicit, and provided different strategies for different patient expectations. To overcome an uncomfortable prescribing decision made for GP-related reasons, we stated that watchful waiting would prevent complications more effectively than antibiotics, and would not jeopardize the doctor-patient relationship. ... We thus tailored the interventions to overcome identified barriers.[39]</p> <p>FPs valued practical, as opposed to theoretical, information. The recent changes in RA guidelines were presented as practical "how to" information. Some FPs regarded the resource kit as facilitating information sharing with patients and increasing their involvement in care.[38]</p> <p>Each guideline contains clear recommendations for action linked explicitly to the best available evidence.[65]</p>

<p>Educational materials</p> <p>6. 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).</p> <p>7. When clinicians are guided through educational or support materials during a visit (C), they are likely to use them later in practice (O) because they become familiar and make more sense (M).</p>	<p>For users and non-users, the 3 factors that most encouraged the use of AD were the evidence-based approach adopted in academic detailing, and the usefulness of the handout material.[43]</p> <p>The FPs described the written material left behind and toolkit as useful because it reinforced their learning or could serve as future reference.... A number of FPs found the resource kit useful because it contained everything relevant to RA management, making it practical to use during clinic.[38]</p> <p>The distilled evidence-based material was presented in a four-page brochure. The most important content was broken down to 4–5 key messages, which were outlined on the front page of the brochure, while the rest of the brochure was used to provide the evidence behind the key messages, background information and reference citations.[11]</p> <p>The printed materials consist of evidence-based information on the prevalence of urinary incontinence, an overview of the pharmacological and non-pharmacological interventions, cost of drugs to treat the condition, and key messages. Participants said they liked the educational materials because they had a clear layout and were easy to follow. They reported that they valued the succinct nature of the key messages.[50]</p>
<p>Hiring and training of visitors</p> <p>8. When visitors come from a similar professional environment or background as the clinician (C), they more easily build rapport and discuss topic content because (O) they are familiar with the clinician's practice environment and/or they have a basic understanding of each other.</p> <p>9. 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).</p>	<p>They [GPs] view the ADs as knowledgeable professionals regardless of their educational background and regard them as equals even though they are not necessarily GPs. Some even see it as a bonus that the academic detailers have different background as this stimulates the discussion.[12]</p> <p>The detailers were trained by research team members who completed formal training from National Resources Center for Academic Detailing in April 2018. The standardized training included presentations related to AD, discussions on programme aims and logistics (i.e., scheduling visits and traveling details), and procedures for administering and filling out the instruments. Training also included visit simulations where detailer skills were assessed.[44]</p>
<p>The visit – interaction between visitor and clinician</p>	

<p>Building rapport & relationships</p> <p>10. When visitors establish rapport with the clinician (e.g. through active listening and empathising with their practice) (C) clinicians are at ease (O) because they feel non-judged, respected and understood (M).</p> <p>11. When an 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).</p> <p>12. When visitors build rapport continuously throughout their visit and over time (e.g. 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).</p>	<p>The detailers felt that building relationships while detailing made the educational process much easier.[55]</p> <p>The educational approach was receptive and respectful, not prescriptive—"their place, their time, their colleague". ... The interview then had three stages: personal contact was established through active listening by the visitor to the GP's views, experiences and management practices for anxiety and insomnia. Perhaps some understanding remark would be made about the doctor's difficulties.[68]</p> <p>Participants described the interaction between the GP and the academic detailer as being important to the success of the intervention. They reported that the session worked because it felt relaxed and free of pressure.[50]</p> <p>Other factors, such as establishing cooperation (rated 2) and rapport with the practices (rated 4) were also important. The pharmacists reported a good rapport in 100 (71.9%) of first visits and in 86 (86.8%) of follow-up visits. This indicated a significant improvement in rapport at the follow-up visits.[63]</p>
<p>Eliciting needs</p> <p>13. 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).</p> <p>14. When the needs, knowledge and practice of a clinician are known to the visitor (C), they can increase the personal relevance</p>	<p>Most detailers (N=7, 70%) described the importance of allocating sufficient time to prepare for provider visits, including conducting individual needs assessments to tailor sessions to individual providers' needs and those of their patient population.[64]</p> <p>The educational element of this method was a dialogue about perceived barriers to adhering to the guideline, either mentioned by the GP or elicited by the facilitator.[39]</p> <p>Visitors were trained to elicit and understand individual practitioner's needs so that when features of key messages were presented, benefits to individual practice could be perceived by the practitioner.[52]</p>

of the visit for the clinician (O) because they have the ability to tailor topics and messages accordingly (M).	As part of the designed academic detailing educational outreach visit, a needs assessment was performed by the academic detailer to identify any gaps in knowledge or barriers to prescribing behavior change related to this topic.[74] During each visit, detailers assessed the physician's educational needs and used these to tailor the delivery of educational contents.[53]
<p>Tailoring content</p> <p>15. 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).</p> <p>16. 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).</p> <p>17. 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.</p>	<p>Detailing discussions were not fixed but rather adapted to the interests of the provider receiving the detailing.[61]</p> <p>The structure of visits was always flexible and designed to meet needs of practitioners. Key message presentation was not didactic in nature but tailored to specific interests and needs of practitioners.[52]</p> <p>They [GPs] do find the structured suggestions in the presentation easy to apply in daily practice but acknowledge that GPs always need to balance out and discuss with their patient what is achievable or acceptable for them.[12]</p> <p>About two out of three physicians (67%) thought the academic detailer should give guidelines for practice.[5]</p> <p>Users also indicated they had made practice changes based on information from academic detailers.[43]</p> <p>Once mutual respect and rapport was established, the visitor could then introduce educational material, starting from items of interest to the GP. Generally they tried to make no more than three points.[68]</p> <p>During each visit, detailers assessed the physician's educational needs and used these to tailor the delivery of educational contents.[53]</p> <p>Some FPs commented on the usefulness of the balanced and targeted information, in contrast to other CMEs where they felt over-loaded with information. ... FPs valued practical, as opposed to theoretical, information.[38]</p>
<p>Interactive discussions of topic, uncertainty and controversy</p> <p>18. When visitors create interactivity of discussion in their visits (C), visitor and clinician can learn from each other (O)</p>	<p>The educational approach was receptive rather than prescriptive: general Practitioners gave their own views on benzodiazepines and other topics.[66]</p> <p>The focus of this dialogue was, however, on dealing with barriers within the individual prescriber, especially in dealing with diagnostic uncertainty.[39]</p> <p>The ADs view their role as providing an accurate, up-to-date synthesis of relevant information on a particular topic in a balanced and preferably engaging way. ... ADs put a lot of emphasis on</p>

<p>because they construct knowledge together (M).</p> <p>19. 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).</p> <p>20. When clinicians are encouraged to think critically about a topic (C), they are engaged with the visit and the topic (O) because they are participating actively (M).</p> <p>21. When visitor and clinician openly and constructively discuss evidence, controversial issues and uncertainties in practice (C), it fosters a critical attitude and culture of critical thinking (O) because clinicians get used to elaborate and form their own opinions (M).</p>	<p>informing GPs, making the evidence available to them and educating them in how to interpret the evidence. Encouraging a culture of critical thinking, they inform GPs of uncertainties and controversies in the interpretation of the evidence.[12]</p> <p>Even-handed acknowledgement of alternative points of view and uncertainty in clinical practice was a hallmark of each encounter.[52]</p> <p>The physician would be given the opportunity to present objections, which were addressed by the detailer.[53]</p> <p>... We explain these terms to the physicians and let them decide about the final two As (Apply the information as they think appropriate, and Assess the results.) Our goal is similar to that of Habraken et al whose underlying aim was to stimulate a critical attitude in physicians by discussing the results of studies.[43]</p> <p>Both sides of controversial issues were presented before recommendations were made.[2]</p>
<p>Commitment to change</p> <p>22. 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.</p> <p>23. When visitors are able to elicit a commitment to change (C), clinicians are more likely to actually change practice</p>	<p>The second round of visits provided an opportunity for coverage of aspects of the topic of particular interest to the practitioner and allowed subtle reinforcement of elements of key messages delivered at initial visits.[52]</p> <p>One high-exposure provider mentioned they were motivated to take action before meeting the detailer, but was a nice catalyst to help it come to fruition, enhance my motivation to bring forth a performance.[64]</p> <p>89% felt they would make changes that would benefit patients, 97% stated that they increased their use of ACEs/ARBs, or were already using them, and 98% felt the information was useful. All detailers reported a marked increase in their own use of ACEs/ARBs for their own patients.[55]</p>

(O) because their intention precedes behaviour (M).	The visitor obtained GPs' agreement to review five patients on long-term benzodiazepines; they also agreed to be telephoned 1 month later to give their assessment of the material and the patient review.[68] The AD intervention consisted of 2 scheduled face-to-face visits, approximately 6 weeks apart. The second AD visit was ... to reinforce the AD components delivered in the initial visit.[59]
After the visit	
Provision of resources 24. When visitors perceive clinicians may need help with actioning practice change (C) where possible they will provide them with resources (O) because they want to make the change as easy as possible for the clinician (M). 25. 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).	In a follow-up visit, the message of the first visit was repeated, questions asked during the first visit were answered, and the physician was asked for his opinion about the information given on NSAIDs.[60] If the academic detailer had been unable to answer specific questions during the visit, he or she brought the question back to the center to review the literature and/or discuss it with the team. Thereafter the answer was forwarded to the GP either by phone or by e-mail.[11] Questions raised by clinicians during the initial AD visit were collected by the detailers and shared with health system leadership to develop responses and provide an opportunity for system-wide improvements. The second AD visit was used as an opportunity to convey the health system leadership's responses to clinicians' questions and reinforce the AD components delivered in the initial visit.[2]

Supplementary file 5

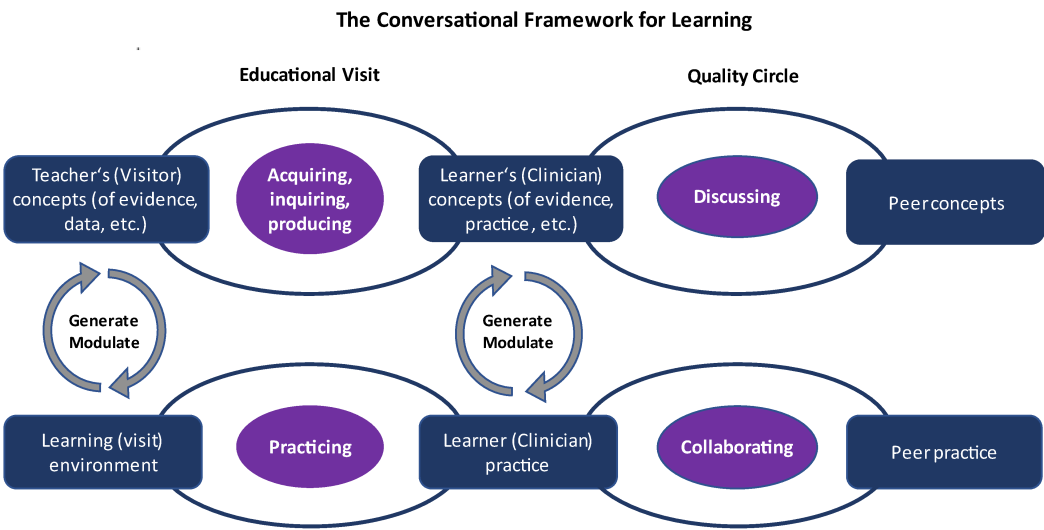
The Conversational Framework for Learning and Educational Visiting

Adapted from Diana Laurillard

From <https://www.futurelearn.com/info/courses/blended-and-online-learning-design/0/steps/191671> (accessed 4 January 2023)

In the upper left quadrant of the diagram, the dialogue between the ‘learner/teacher’ clinician and ‘teacher/learner’ visitor creates opportunities to construct new concepts (for EV these could centre on evidence, data, clinical and prescribing practice, uncertainties and controversies).

In the lower left quadrant, clinician and visitor share and model practice, again modulating and generating shared understanding through dialogue and feedback, to achieve the integration of new concepts and practices into routine practice.



Similar processes take place in Quality Circles, although discussions in the upper right quadrant may be less personalised to an individual clinician’s needs compared to EV. At the same time, learning from peer practice through collaboration, in the lower right quadrant, may be favoured by some clinicians.