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

References

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