Application of health psychology: Development of a practitioner training intervention in anaphylaxis

Abstract

Adrenaline auto-injectors (AAIs) improve outcomes and reduce fatalities in patients with anaphylaxis, but many patients neither carry them nor know how to use them. Practitioner training in evidence-based strategies designed to increase patient adherence could improve the likelihood of AAI adherence, as well as increase confidence amongst practitioners to initiate discussions about practical and perceptual barriers to AAI adherence. This paper reports the development of a new practitioner training intervention, grounded in health psychology theory and evidence designed for practitioners in contact with patients with anaphylaxis to encourage adherence to AAIs. Potential implications for the design, implementation and evaluation of future practitioner training in strategies they can use to encourage anaphylaxis patients’ AAI adherence are discussed. Although designed for those working with anaphylaxis patients, this step-by-step process to encouraging adherence could be adapted for practitioners working with patients living with other long-term conditions.

Keywords: Anaphylaxis, adrenaline auto-injectors, adherence, behaviour change intervention, practitioners
Problem Statement

Anaphylaxis is a “severe, life-threatening generalised or systemic hypersensitivity reaction”.¹ p. 835 Hospital admission data indicates a UK population prevalence of 7 per 100,000 people, an increase of 615% from 1992-2012.² Early and appropriate intervention with adrenaline auto-injectors (AAIs) improves outcomes and reduces fatalities.³ Despite this, patients with anaphylaxis frequently do not adhere to essential self-care behaviours; evidence suggests less than 30% of patients carry their AAI at all times and only 44% are able to demonstrate correctly how to use them.⁴ Furthermore, healthcare practitioners including physicians and pharmacists are frequently unable to demonstrate the correct procedure for AAI use.⁵ Patients and practitioners both report numerous practical, psychological and organisational barriers to adherence to anaphylaxis self-care and/or treatment behaviours.⁶–⁹ Specialist Allergy staff may feel ill-equipped to manage the psychological aspects associated with anaphylaxis, including adherence, reporting time pressure, lack of clinic space and lack of confidence as key barriers.⁹ This issue is not unique to anaphylaxis since approximately half of healthcare practitioners perceive they have insufficient skills and confidence to promote behaviour changes in their patients.¹⁰

Recent guidelines from the European Academy of Allergy and Clinical Immunology state that current approaches to prescription and instruction for AAI use are generally insufficient to promote patient adherence.¹¹ Given the vital function of AAIs in reducing anaphylaxis-related fatalities³, improving the delivery of AAI training and evaluating the
impact on subsequent behaviour change (adherence) is a priority for research.\textsuperscript{11}
Evidence-based training interventions designed to support specialist and general
practitioners to work alongside patients to deliver AAI training and promote AAI
adherence are required urgently.

\section*{Solution}

Health psychology involves the application of psychological theory and evidence to
health and healthcare delivery.\textsuperscript{12} A key objective of this rapidly expanding discipline is
the development and evaluation of evidence-based behaviour change interventions to
enhance the physical and psychological health of patients living with long-term
conditions. Approaches such as Intervention Mapping (IM) outline step by step
procedures to identify the behavioural indicators associated with change, to develop,
then evaluate behaviour change interventions.\textsuperscript{13}

This paper outlines how a health psychology informed approach was used to develop a
practitioner training workshop and focusses in detail on the processes involved with
adopting such an approach to develop training to enhance patient adherence to AAIs,.\textsuperscript{9}
This was informed by the principles of IM, a recently published guide to intervention
development for health behaviour change \textsuperscript{13-14} and grounded in previous qualitative
research conducted by the team, who comprised colleagues with academic and clinical
expertise in the area. The IM approach is comprised of six steps as shown in Figure
1.
IM was used because evidence suggests interventions developed using it have greater uptake of the behaviours being promoted compared to interventions developed using alternative models. Additionally, unlike other models of health promotion such as PRECEDE/PROCEED and logic models, IM provides a step-by-step protocol that health promotion and education planners can use to develop behaviour change interventions based on available theory and empirical evidence. The IM protocol starts with an early assessment of the health behaviours associated with the problem, which are then mapped to relevant health behaviour change theories that can be applied to underpin the subsequent intervention for development and evaluation.

Step 1 in developing this training intervention comprised of a needs assessment. A multi-disciplinary working group, including representatives from health psychology, allergy, clinical immunology and general practice was set-up to conduct this assessment specifying (1) the target population, (2) defining the health problem and (3) the behaviour(s) associated with the problem/s as defined. The target population in this case were:

1. Primary and secondary healthcare staff who train adults, adolescents and parents of children with a diagnosis of anaphylaxis (any trigger) to use AAIls.

To understand the health problem, a definition of poor anaphylaxis self-care management was identified from the literature:
(2) Approximately 7 in 100,000 people experience anaphylaxis in the UK. Of these, less than 30% carry an AAI at all times. Poorly managed anaphylaxis includes failure to carry, use and maintain AAIs and continuation of exposure to known, avoidable triggers. The consequences of poorly managed anaphylaxis include A&E admission, fatality (approximately 2% of cases) and psychological distress. Finally, the problematic patient health behaviours which the intervention would target were identified as:

(3) Failure to carry an AAI at all times, check AAI in date/ renew prescriptions at appropriate intervals, use the device when experiencing anaphylaxis and follow the correct step-by-step procedure for use.

Due to the target population for the proposed intervention, problematic practitioner behaviours were also identified:

Failure to ask patients about barriers to carrying and using AAIs, and use established behaviour-change techniques in training delivery

Step 2 involved identifying determinants of the problematic patient and practitioner behaviours to target in the training intervention. To identify key determinants, research completed and published by the authors was used, followed by consultation with patients and healthcare practitioners working in primary and secondary care. Thus, a range of evidence informed the final framework of determinants. Identified determinants were then integrated and grouped according to theories of behaviour change, including the Theoretical Domains Framework (TDF) and the COM-B model. The COM – B model is a supra – theory that proposes individuals need capability, opportunity and
motivation to perform a health behaviour. The Theoretical Domains Framework (TDF) is a more granular description of the components which comprise the COM – B model, including the specific behavioural domains and determinants of a target health behaviour. The TDF was applied in this instance given that it has previously served as a practical guide for developers of health behaviour change interventions.

The determinants of the problematic patient and practitioner AAI behaviour as identified within Step 2 can be found in Table 1.

Step 3 comprised of identifying, then setting objectives for the training intervention for patients and practitioners. Select determinants were mapped against key performance objectives to create a series of change objectives. An example of this mapping exercise can be found in Table 2:

Step 4 comprised of the identification of behaviour change techniques (BCTs) which could help practitioners to target problematic behaviour, ready for inclusion in the training intervention. BCTs are known as the active ingredients of interventions or mechanisms of change within specified behaviour change theories. The TDF specifies and defines 93 potentially relevant BCTs developed using a consensus method, for example goal setting, action planning and habit formation. In the current intervention,
15 relevant BCTs were selected on the basis of having reviewed the 93 BCTs and selecting those relevant to the specific target problem behaviours of this project.

In step 5 practical plans were developed to translate these BCTs into a feasible training package for practitioners. Feedback from the consultation with patients and staff was taken into consideration, for example, practitioners suggested that the training be delivered at their work place, over a lunch-time to maximise engagement. The final intervention comprised of an interactive workshop delivered in a 90 minute session by a trainee Health Psychologist. Four workshops were delivered in total across three sites to mixed groups of specialist and non-specialist nurses, GPs and pharmacists. The presentation and supporting manual for the workshop incorporated brief lectures, application of principles to case studies and reflective exercises and was organised into 4 sections:

1. What is adherence and why do we need to improve it for AAI? (a brief 15 minute lecture)
2. Barriers and facilitators to behaviour change (a brief 15 minute lecture)
3. Theory-based AAI training using behaviour change techniques (a brief 15 minute lecture followed by the application of techniques to two case studies with attendees working in groups of 3-5 individuals lasting 25 minutes) and
4. Reflection and taking things forward (discussion of how the techniques learnt could be applied in attendees practice with attendees working in groups of 3-5 individuals lasting 20 minutes).
Additional worksheets were developed to support the workshop (introduced at (3)) but also to guide practitioners with their strategies with patients following the workshops. The worksheets included an “AAI training checklist” and “Anaphylaxis management plan”. The AAI training checklist detailed a step by step approach to patient training in AAI use linked to the identified BCTs and supporting resources. The management plan was designed to facilitate the delivery of specific BCTs such as action planning, goal setting and problem solving. All materials were developed in consultation with patients and practitioners and were informally piloted to check for suitability.

In step 6 the evaluation of the intervention is described to provide an example of how an evaluation could be undertaken in line with the IM approach. Evaluations of any behaviour change training intervention should not rely solely on the assessment of effectiveness or outcomes, but also consider mechanisms involved in the process of change and the acceptability of the training. A mixed-methods evaluation designed for a ‘real-world’ setting (i.e. without randomisation) was deemed the most suitable approach that could be used to evaluate an intervention of this nature. Given the focus on adherence and any change in practitioner behaviour, self-reported outcome measures for practitioners and patients, designed to capture any behaviour changes as targeted by the intervention, were identified as important to evaluate. A mixed methods evaluation of this type could provide an opportunity for qualitative feedback from participant groups to enhance understanding of any quantitatively estimated outcomes. Such approaches move beyond the traditional ‘black box’ evaluation of pre- and post-outcomes, accounting for detailed feedback about the ‘why’ and ‘how’ of
outcomes. Evaluators are increasingly considering how to evaluate longer-term impact of training on practice. Given the desire to capture longer-term impact of such interventions, evaluators should consider how to ‘contract’ participants to the provision of ongoing feedback – for example the sharing of contact details for online survey contact or invitations to focus group sessions. Project leads also need to consider how to accommodate longer-term evaluations within their own training and project planning. Disseminating early findings from evaluations, with participants and other stakeholders, can be another mechanism to engender longer-term commitment to evaluation.

Adoption of an Action Research-type cycle to evaluation, where the trainers evaluate and amend their intervention work in line with feedback iteratively, rather than as a pre-post model, could be another method for consideration. This approach could potentially help evaluators fully account for any practical, as well as any psychological, barriers to the implementation of behaviour changes into practice. The evaluation proposed for this particular intervention is provided here as a guide and shown in Table 3:

<Insert table 3 here>

The approach outlined demonstrates in detail the step-by-step development of a comprehensive, evidence-based practitioner training intervention designed to support practitioners and patients with strategies to encourage AAI adherence. The application of health psychology theory (via the COM-B model and TDF) are crucial in providing a clear framework to enable multi-disciplinary teams to articulate the target problem and
target population, then to identify the potential mechanisms associated with desired
behaviour change and relevant behaviour change techniques. The use of consultation
with practitioner and patient groups helps to ensure the training has face validity in
terms of targeted relevant problematic behaviours. Consultation is also vital to ensure
training amongst the target population is delivered in an acceptable, practical format
that is relevant for a ‘real-world’ rather than research environment. The multi-
disciplinary input (e.g. health psychology, allergy and clinical immunology, general
practice) and subsequent consensus approach enables synthesis of expertise to inform
the development of the training intervention. It is anticipated that the consensus
approach will increase the likelihood that the intervention as developed will be adopted,
implemented and sustained over the longer-term, embedding into routine practice.

Whilst there are many advantages to this approach, a potential limitation relates to
resources. This approach to the design of training is time consuming. The development
of the intervention reported here took around 8 weeks to complete using steps 1 – 6 of
the IM protocol. In addition, the IM approach captures context specific information to
identify determinants of the target problem health behaviours, and health education and
promotion developers would need to start the design process from step 1 each time in
order to develop a training intervention with contextual relevance. Furthermore,
opportunities for trainees to practice the learnt behaviours are important for effective
interventions but not included as part of the design reported. Specialist health
psychology expertise is also needed in following through this complex approach to
intervention design. Therefore, use of the COM – B Model and TDF must be planned
and resourced carefully. This may present a challenge to implementation in practice but
should be weighed against evidence that traditional CPD activities are often ineffective
at improving healthcare practitioner and/or patient outcomes.\textsuperscript{30} Evidence-based, multi-
disciplinary approaches to training, which incorporate methods for overcoming barriers
to change, are required for successful knowledge translation.\textsuperscript{30} Where time is
particularly limited for the development period, lengthy processes such as identifying
determinants can be shortened using existing literature reviews and greater emphasis
on clinical experience.\textsuperscript{14} A lack of consensus between patients and staff feedback on
the proposed intervention is a key risk associated with this approach, particularly at the
earliest stage of intervention development. For those adopting this method, the
sensitive management of expectations and regular communication is vital.

\textbf{Conclusion}

Health psychology approaches to intervention development can be applied to the
design and evaluation of healthcare staff training. However, they take time to carry out
and require stakeholder investment at each stage. Although the training intervention in
this case was developed for a specific target population and health problem, there are
key areas of transferability for the development of accessible, evidence-based CPD
training, particularly for staff working alongside patients with long-term conditions who
commonly experience challenges associated with self-care behaviours, including
adherence to prescribed treatments.\textsuperscript{31}
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**Lessons for practice**

- CPD training designed to tackle adherence in relation to AAIs could be enhanced by utilizing the principles of Intervention Mapping when developing new materials.

- Intervention Mapping principles provide step-by-step guidance around the development, implementation and evaluation of programmes, including those developed for multi-disciplinary audiences.

- Drawing together behaviour change techniques, staff expertise and experience from practice, with the principles of Intervention Mapping to inform training content, design, delivery, and the acceptability of CPD opportunities for staff could be enhanced, maximizing the potential for impact on practice.