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Title

Paper-based and web-based Intervention Modelling Experiments identified the same predictors of general practitioner antibiotic prescribing behaviour: an evaluation of the Intervention Modelling Experiment methodology.

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Abstract

Objectives: To evaluate the robustness of the Intervention Modelling Experiment (IME) methodology as a way of developing and testing behavioural change interventions prior to a full-scale trial by replicating an earlier paper-based IME.

Study design and setting: Web-based questionnaire and clinical scenario study. General practitioners across Scotland were invited to complete the questionnaire and scenarios, which were then used to identify predictors of antibiotic prescribing behaviour. These predictors were compared with the predictors identified in an earlier paper-based IME and used to develop a new intervention.

Results: 270 general practitioners completed the questionnaires and scenarios. The constructs that predicted simulated behaviour and intention were: attitude, perceived behavioural control, risk perception/anticipated consequences and self-efficacy, which match the targets identified in the earlier paper-based IME. The choice of persuasive communication as an intervention in the earlier IME was also confirmed. Additionally, a new intervention, an action plan, was developed.

Conclusions: A web-based IME replicated the findings of an earlier paper-based IME, which provides confidence in the IME methodology. The interventions will now be evaluated in the next stage of the IME, a web-based, randomised controlled trial.

Keywords: intervention modelling experiments, behaviour change, randomised controlled trials, prescribing, primary care

Running title: WIME predictors

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What's new?

- A web-based Intervention Modelling Experiment (IME) replicated the findings of an earlier paper-based IME on general practitioners' antibiotic prescribing behaviour, which provides confidence in the IME methodology.
- The constructs that predicted both simulated behaviour and intention were attitude, perceived behavioural control, risk perception/anticipated consequences and self-efficacy, which matched those identified in the earlier paper-based IME.
- The web-based IME replicated the earlier finding that a persuasive communication would target identified predictors of general practitioners' antibiotic prescribing behaviour. A new intervention, an action plan, was also indicated.
- The IME methodology is a robust choice for exploratory work developing and evaluating complex behaviour change interventions prior to evaluating them in a full-scale trial.

Background

Improving healthcare is not only about developing new treatments and therapies but also requires that existing knowledge of effective interventions be put into clinical practice. This can be challenging. Without active implementation there is a danger that potentially useful research evidence will languish in obscurity (the 'bench to bookshelf' phenomenon), or will diffuse only very slowly into practice [1]. While some interventions have been shown to be effective in changing the behaviour of health professionals [1-4], the literature provides little information to guide the choice, or to optimise the components, of these interventions for use in different contexts [5,6]. Interventions can be effective (eg. reminder systems, audit) but the evidence is conflicting and the reason for this is largely unknown [2]. However, many interventions are developed without an explicit theoretical rationale for why and how the intervention might be expected to have an effect, which may help to explain why the effectiveness of behaviour change interventions can appear somewhat hit and miss. To address this, the UK Medical Research Council (MRC) framework for developing and evaluating complex interventions has argued for more and better theoretical and exploratory work prior to a full-scale trial as a means of improving intervention development [7].

One way of carrying out this exploratory work is to use an intervention modelling experiment (IME) [8]. In an IME key elements of the intervention are delivered (using a randomised design) in a manner that approximates the real world but where the measured outcome is generally an interim outcome, a proxy for the clinical behaviour of interest. To date IMEs have been conducted using paper-based materials [8-10] but this may limit their efficiency, acceptability and ecological validity. Web-based IMEs have the potential to provide much richer simulations of clinical encounters (e.g. through presentation of video

clips of patient/physician consultations) and allow easy measurement of key process variables such as time taken to make a decision.

To evaluate the robustness of the IME methodology, we conducted a web-based intervention modelling experiment study [11] that replicated an earlier paper-based IME , which evaluated theory-based interventions to reduce antibiotic prescribing for upper respiratory tract infections (URTI) in primary care [9,10]. We will refer to the earlier study [9] as ‘the paper-based IME’ throughout this paper; we will call the web-based study ‘WIME’. This paper describes the process we used to identify predictors of prescribing behaviour in the WIME, a comparison of these with the predictors identified in the paper-based IME [9] and how we used predictors from WIME to develop a new intervention.

Specifying the target behaviour and selecting a theoretical framework

The IME methodology has been described elsewhere [9-11]. Briefly, there are three stages. The first usually involves qualitative work to provide information on the range of perceptions and beliefs among future participants (eg. GPs) about the behaviour of interest (eg. managing patients with URTI without using antibiotics). These beliefs are used in the second stage to develop theory-based questionnaire items relevant to the behaviour, together with clinical scenarios that can be used to simulate situations in which the target behaviour may be performed. The responses of individuals to the questionnaire and scenarios are used to identify predictors of the behaviour of interest and an intervention that targets these is developed, based on the identified theories and their evidence base. The final stage of the IME is to evaluate the new intervention in a randomised trial, again using a questionnaire and clinical scenarios. This paper describes the second stage of an IME, identifying predictors of GPs’ antibiotic prescribing behaviour

and developing an intervention. Stage 1 was done in the earlier work [9] and stage 3 will be the focus of a future publication.

As we were seeking to replicate, as far as possible, the paper-based IME, we were interested in the same target behaviour as that used by Hrisos and colleagues [9]: *'managing patients presenting with uncomplicated URTI without prescribing an antibiotic'*. The authors identified three theories that included factors predictive of GPs' prescribing behaviour for URTI: Theory of Planned Behaviour [12], Social Cognitive Theory [13, 14] and Operant Learning Theory [15]. Together, these theories explain behaviour in terms of factors that influence motivation (through "pre-intentional processes") and action (through "post-intentional processes") [16]. They also explain behaviour in terms of factors that are amenable to change (e.g. attitude, self-efficacy); and they include non-volitional components (e.g. external constraints) that acknowledge that individuals do not always have complete control over their actions. A summary of the theories and constructs is given in Table 1, together with the WIME questionnaire items linked to them. The full questionnaire is available in the supplemental information, together with a list of questionnaire items used to operationalise each construct.

The paper-based IME included two interventions, a persuasive communication and a graded task [9]. The persuasive communication addressed beliefs about the consequences (e.g. including 'attitude' from the Theory of Planned Behaviour and 'outcome expectancies' from Social Cognitive Theory) of managing patients with uncomplicated URTI without prescribing antibiotics. It was effective in reducing the number of antibiotic prescriptions in the paper-based IME's prescribing scenarios. The format of this intervention can be translated entirely for web delivery, therefore repeating it in the current study would address questions about both effectiveness and the relative

effectiveness of paper versus web-based delivery of intervention materials [11]. However, we did not repeat the delivery of the paper-IME's second intervention, a graded task, because it did not influence prescribing decisions, or the proposed mediating construct, self-efficacy [10]. Instead, we developed a new intervention using the predictors identified in the WIME. In this way we build on the results of the paper-based IME by replicating a previously effective intervention (the persuasive communication, which we would expect to be suggested again by the WIME predictor work and to then be effective in a WIME randomised trial) and by developing a new intervention using the predictor techniques used in the paper-based IME. If the techniques are robust, we would expect the new intervention to be effective in a later WIME trial.

Methods

The development of theory-based interventions to change behaviour involves at least four steps [9,17,18]:

1. Specifying the target behaviour.
2. Selecting a theoretical framework to guide an empirical investigation.
3. Conducting a predictive study to identify the key theoretical constructs (e.g., attitude, self-efficacy) that predict the target behaviour.
4. Using a 'mapping' process to select intervention components that are proposed to change the predicting constructs.

As we were replicating earlier work, steps 1 and 2 had already been done and we focused on steps 3 and 4, which in the context of our WIME study meant:

3. Conduct a predictive study with GPs to identify constructs that predict the targeted behaviour and which are, potentially, modifiable.
4. Map the selected constructs onto behaviour change techniques that are known to (or likely to) change the predicting constructs and which are feasible to operationalise in a primary care context.

The earlier interview work [9] provided information on the range of perceptions and beliefs among GPs about managing patients with URTI without using antibiotics. These beliefs were used to develop questionnaire items which were relevant to the behaviour, and which operationalised the constructs of our chosen theories (eg. Theory of Planned Behaviour: the questionnaire had an item asking GPs whether they thought patients expected them to prescribe an antibiotic, which is linked to the theory's 'subjective norm' construct). Constructs such as attitude and perceived behavioural control were measured 'indirectly' by asking GPs about their specific beliefs (e.g. prescribing antibiotics may reassure the patient; may increase the likelihood of antibiotic resistance in the community) and 'directly' by asking GPs to report their beliefs at a more general level (e.g. Do the benefits of managing patients with URTIs without prescribing antibiotics outweigh the harms).

These constructs were used to predict two outcomes:

1. *Behavioural intention* - strength of motivation, or intention to perform the target behaviour).
2. *Behavioural simulation* - clinical decisions in the context of simulated clinical situations that were presented as a set of eight clinical scenarios.

In addition to the scenarios, the questionnaire asked 20 questions about prescribing behaviour and finished with four general questions about the GP's background. We took these materials and put them into a web-based delivery system. We did not modify the content of the materials although we did make minor changes to formatting to better fit electronic rather than paper delivery. A pdf file containing a full set of screenshots of the web-delivered questionnaire is available in the supplemental material.

Sample size

The sample size strategy was driven by the subsequent intervention study for which we needed to recruit 250 GPs. For the intervention development and predictive study we assumed that we would need an adequate sample size for a multiple linear regression with at least 14 predictor variables. We allowed for 14 predictor variables to facilitate incorporating additional variables, slightly more than the 11 included predictor variables in Hrisos *et al* [9], due to the potential for empirical evidence of multiple latent constructs within our proposed theoretical constructs. The rule of thumb from Green [19] recommends that the minimum sample size required is $50 + 8$ times the number of predictor variables which was 162 ($50 + 112$) in this case. As such the recruitment target of the subsequent intervention study meant the sample size was more than adequate for the predictive modelling aspect being reported here.

Recruitment

GPs from 12 Scottish Health Boards were identified by the Scottish Primary Care Research Network (SPCRN; www.sspc.ac.uk/spcrn/) using a combination of publicly available information provided by Information Services Division (ISD) Scotland (<http://www.isdscotland.org/isd/3793.html>) and restricted information held on the NHS.net database, the latter to provide e-mail addresses. It was not clear whether GPs would be more likely to respond to a postal or an e-mail invitation so we embedded a

methodological study of how best to contact GPs by randomly allocating GPs to either postal or e-mail invitation. The results of that study are published elsewhere [20] but, in summary, emails were as effective as postal invitations and were quicker and cheaper to send.

The study statistician (GM) generated a list of random numbers and participant IDs were broken down into mailing blocks, which SPCRN used to randomly allocate GPs (on a 1:1 basis without stratification) to receive either an email or a postal invitation. Blocks of invitations were sent out until the number of GPs recruited met or exceeded the required sample size of 250 GPs. All research staff, except SPCRN staff, were blinded to GP recruitment allocation until the study database was locked.

The invitations all contained a one-page letter and a two-page information sheet, or a link to the information sheet in email invitations. Together with general information, the letter contained a uniform resource locator (URL) to the WIME questionnaire. We sent two reminders to non-responders at two and four weeks, using the same contact method as used for the initial invitation. Finally, GPs were offered a £20 gift voucher for completing the questionnaire.

Statistical analysis for the predictor study

Categorical data were described using numbers and percentages, continuous data using mean (standard deviation) and/or median (inter-quartile range) where appropriate. Internal consistency was assessed using Cronbach's alpha. Correlation between constructs and the two outcomes (behavioural simulation and intention) was assessed using Pearson's correlation coefficient. Analysis was carried out using Stata 12 (StataCorp. 2009. Stata

Statistical Software: Release 11. College Station, TX: StataCorp LP) and PASW Statistics 18.

We used least angle regression to reduce the set of constructs to a subset that explained the maximum variation in behavioural simulation scores. We then took the construct that had the strongest relationship with behavioural simulation and broke it down to the item level to explore which item or items had the greatest influence on behavioural simulation. These would then be targeted by the new intervention.

Intervention development: Using the Theoretical Domains Framework to identify behaviour change strategies

We used the methods proposed by Michie and colleagues to map constructs onto behaviour change techniques [21]. First, we classified the constructs identified as predictors of behaviour into 'theoretical construct domains' [22,23]. Theoretical domains (e.g., beliefs about consequences; knowledge; social influence) are clusters of similar constructs and constructs within a domain are likely to be modifiable using the same behaviour change techniques. Behaviour change techniques proposed to affect each domain have been identified from an expert consensus process and presented as a tool for intervention developers [21]. We used the tool to select behaviour change techniques that could change the constructs identified as predictors of our target behaviour of not prescribing an antibiotic. These behaviour techniques then became the basis of intervention components. This was expected to lead to one or more potential interventions for evaluation.

We then operationalised the selected behaviour change techniques in a form that could be delivered using web-based materials. The clusters of techniques were thus planned to be delivered together as a complex (i.e., multifaceted) intervention.

Results

Two hundred and ninety-three GPs logged onto the WIME system, of which 270 completed the WIME materials for the predictor study. Further details on recruitment are published elsewhere [20].

The constructs that predicted both simulated behaviour and intention were: attitude, perceived behavioural control, risk perception/anticipated consequences and self-efficacy (Table 1). These targets match those identified in the earlier paper-based IME for simulated behaviour and intention. In order to determine the appropriate behaviour change strategy, these constructs were mapped onto the Theoretical Domains Framework (TDF). The results are presented in Table 2, along with their associated behaviour change strategy (selected using a published mapping tool [21]), chosen by expert consensus (DB and JJF) as likely to be feasible to operationalise within the constraints of an IME.

The results suggested that the theoretical domains to target in the new intervention were beliefs about consequences, beliefs about capabilities and behavioural regulation. A behaviour change technique known to influence the last two of these three domains is action planning. An action plan is an explicit statement of where, when, and how a behaviour will be performed. Action plans are proposed to work by setting up environmental cues to remind an individual to perform the behaviour [24]. Furthermore, repeated performance of a behaviour in response to the cue increases the likelihood that a behaviour may become a 'good' habit.

In addition to action planning we included the following behaviour change techniques (as defined in a recent taxonomy [25, 26]):

- Goal setting (behaviour) (targeting **behavioural regulation**)
- Prompts/cues (targeting **behavioural regulation**)
- Feedback on behaviour (targeting **beliefs about capabilities and behavioural regulation**)
- Self-monitoring of behaviour (targeting **behavioural regulation**)

The results suggested that this intervention should also include:

- Behavioural practice/rehearsal (targeting **perceived behavioural control/beliefs about capabilities**)
- Modelling (targeting **perceived behavioural control/beliefs about capabilities**)
- Social reward (targeting **attitude/beliefs about consequences**)

These behaviour change techniques were operationalised as follows: GPs were asked to devise an action plan for the two scenarios from the baseline questionnaire that gave the greatest variation in their scores:

1. A patient with an URTI specifically asks for an antibiotic, or clearly expects to be prescribed an antibiotic.
2. A patient with an URTI (or the patient's parents if the patient is a child) are very distressed about his or her symptoms.

Some examples of action plans were given. These examples were not just a template for an action plan but also described some behaviours that could be alternatives to antibiotic prescribing in these situations (see the action plan in the supplemental files). The

presentation of the intervention was designed as a manageable one screen/one page of A4 length.

Discussion

We aimed to test the IME methodology as well as developing and evaluating a new intervention to influence GPs' antibiotic prescribing behaviour for upper respiratory tract infections [11]. Our key research interest with regard to IME methodology is whether the delivery mechanism of the IME (paper or web) affects predictors of GP behaviour. This is important information because for the IME methodology to be useful, it needs to be a robust and reliable method to support trialists with their intervention modelling work. This is indeed what we found: our results involving 270 GPs from around Scotland showed that the web-based IME identified 8/10 of the predictors of prescribing behaviour identified in the paper-based IME. For the remaining two constructs, attitude (indirect) and perceived behavioral control (direct), disagreement was not complete because they did agree for prediction of intention. Why the paper-based IME and WIME should differ for the perceived behavioral control (direct) construct is unclear, although it is not too difficult to imagine that this reflects some real difference in GPs from different parts of the UK taking part in studies five years apart. On the other hand, it is possible that scores for perceived behavioural control would be related to generalised self-efficacy and that GPs with higher self-efficacy may have been more inclined to take part in a web-based IME than a paper-based IME. However, if this were the case it would in a sense strengthen the main findings, as two samples with different self-efficacy nonetheless show very similar patterns of prediction overall.

One element of the original paper-based IME could not be compared in the WIME study, which was outcome expectancies. In the paper-based IME, outcome expectancies were addressed using factor analysis to explore potential empirical factor loadings within the items. This resulted in two factors being derived, neither of which was considered a suitable candidate construct to develop an intervention and which also had problems with internal consistency. In the WIME study when we were faced with the same problem, we considered three options 1) replicating the paper-based IME factor analysis approach; 2) using the factors identified in the paper-based IME report as constructs; or 3) grouping the items together using a theoretical rationale to create theory-based sub-constructs of outcome expectancy. We attempted to stay as close to the original paper-based study as possible, simply adding one more dimension to it (ie; splitting it three ways rather than two) in the hope that this would overcome the internal reliability and consistency issues of this measure. This alternative approach did not generate factors with desirable psychometric properties. Thus, similarly to the paper-based IME, outcome expectancy was not flagged as a potentially suitable candidate construct to develop an intervention.

The WIME study also replicated the paper-based IME's finding that a persuasive communication would be a sensible choice of intervention. By identifying beliefs about consequences (in the form of attitude and risk perception) as a domain that was key to prediction of intention, persuasive communication was once again identified as a potentially effective technique for change. The design of the new intervention, the action plan, involving 'post-intentional' processes comes straight from the predictor data (see Tables 1 and 2) and a rigorously-developed tool for mapping predictors of behaviour to behavioural change techniques known to affect those predictors [21]. This is important because it provides a rationale with which to explain 'why and how' we expect the intervention to have an effect and which will help us to interpret the results of the next

stage of the WIME project, a trial of the persuasive communication and action plan against a 'no intervention' comparator.

Conclusion

We have replicated, in a web-based system, an IME delivered initially on paper and we found high levels of agreement between the two predictive studies in terms of the predictors of behaviour they identified. This gives us confidence in the IME methodology. A web-based IME system opens up more possibilities for choice of behaviour change techniques (eg. we were able to use social reward in response to an action, which is not possible with paper-based systems) and how intervention components are put together. We propose that the web-based IME system will reduce the overall cost of trials by requiring fewer iterations of full-scale trial/analysis/revisions before an optimised intervention is produced, thereby making better use of limited research budgets for trials. Finally, a web-based system means individuals from further afield, and/or more of them, can be involved since the cost of doing so is minimal, expanding the range of opinions available for intervention design and development, and enhancing both the generalisability of IMEs and the implementation potential of quality improvement initiatives.

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Ethical approval

WIME was approved by the Tayside Committee on Medical Research Ethics A, Research Ethics Committee reference 10/S1401/54 and received NHS Research & Development approval from the 12 National Health Service (NHS) Health Boards involved.

The trial of which this study is part is registered: ClinicalTrials.gov number NCT01206738.

Authors' contributions

All authors contributed to the design of the study. KB and GM did the analysis of predictor data. KB, GM, DB, JJF and ST discussed the results and DB and JJF designed the new intervention. All authors contributed to a discussion of intervention development. ST was chief investigator of the study and wrote the first draft of the paper. All authors contributed to the final version. All authors have approved the final manuscript.

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Table and figure legends

Table 1 Summary of the internal consistency of constructs (alpha) and correlations with behavioural simulation and intention. This table corresponds to Table 3 in the original paper-based IME [9].

Table 2 Behaviour change techniques by theoretical domains identified as intervention targets.

Questionnaire items used to operationalise each construct

Intention

Section 1, Q16

Section 1, Q17

Section 1, Q18

Past behaviour

Section 1, Q1

Attitude Direct

Section 1, Q12a

Section 1, Q12b

Section 1, Q12c

Attitude indirect

Behavioral beliefs were:

Section 1, Q3h

Section 1, Q3g

Section 1, Q3f

Section 1, Q3e

Section 1, Q3d

Section 1, Q3c

Section 1, Q3b

Section 1, Q3a

Outcome evaluations were:

Section 1, Q13a

Section 1, Q13b

Section 1, Q13c

Section 1, Q13d

Section 1, Q13e

Section 1, Q13f

Section 1, Q13g

Section 1, Q13h

Subject Norm indirect

Normative Beliefs were:

Section 1, Q2a to Section 1, Q2e

Motivation to comply were:

Section 1, Q14a to Section 1, Q14e

PBC Indirect

Section 1, Q9c

Section 1, Q9b

Section 1, Q9a

Section 1, Q10c

Section 1, Q10b

Section 1, Q10a

PBC Direct

Section 1, Q11a

Section 1, Q11b (but this was dropped)

Section 1, Q11c

Section 1, Q11d.

Risk Perception

Section 1, Q4a

Section1, Q4b

Section1, Q5

Outcome expectancy

Patient:

Section 1, Q3e

Section 1, Q3d

Section 1, Q3c

Section 1, Q3b

Section 1, Q3a

Procedure:

Section 1, Q3i

Section 1, Q3g

Clinical:

Section 1, Q3h

Section 1, Q3f

Self efficacy

Section 1, Q6a

Section 1, Q6b

Section 1, Q6c

Section 1, Q15a

Section 1, Q15b

Section 1, Q15c

Habitual behaviour

Section 1, Q7a

Section 1, Q7b

Section 1, Q7c

Anticipated consequences

Section 1, Q19c

Section 1, Q19b

Section 1, Q19a

Introduction

There may be situations where you feel under pressure to prescribe an antibiotic. Having a specific plan for what you will do instead of prescribing an antibiotic in these situations will help you to end a consultation without prescribing and thus follow more evidence-based practice. Below are two situations that GPs in this study have said to be more difficult ones in which to avoid prescribing. In the column beside these situations are examples of action plans which could help reduce inappropriate prescribing in these situations.

Target: Reduce prescribing of antibiotics for URTIs

Situation	Example of action plans to avoid prescribing an antibiotic in these situations		
1. A patient with an URTI specifically asks for an antibiotic, or clearly expects to be prescribed an antibiotic	<i>If a patient asks for an antibiotic, then I will provide them with a clear reason for not prescribing which emphasises my professional expertise e.g. <i>Your URTI is likely to be caused by a virus and an antibiotic won't help. You are more likely to have side-effects than benefits if I prescribe an antibiotic.</i></i>		
2. A patient with an URTI (or the patient's parents) are very distressed about their symptoms	<i>if a patient (or parent) is distressed about their symptoms, then I will a) reassure them by stressing that they will recover b) tell them that an antibiotic will not help them and c) I will give them something to do so they can feel more in control and relieve symptoms (e.g. <i>drink hot water with lemon and honey as necessary through the day</i>)</i>		
How is progress/success of the action plan to be monitored? I will count the number of times I succeed in managing an URTI without prescribing an antibiotic	When will this happen? Daily for one week	Who in the practice will monitor plan progress? I will	

Using the box below, please feel free to write down an action plan you think you could follow when you are in these situations. If you prefer (or already have) different plans from those in the examples, please follow a similar format when writing them out i.e. **if / then**; or When [x happens] /then [I will do..]. Another space is provided to write an action plan for a different situation where you may feel under pressure to prescribe an antibiotic for an URTI.

Since plans need to be monitored to be most effective, it is also important that you also complete the last row of these action plan tables where there is a space for recording how, when, and who will check to see if you are managing to implement your plans. If you are not managing to implement the plans you have made in the timeframe you choose, then you may need to change your plan at a later date to be more achievable.

Target: Reduce prescribing of antibiotics for URTIs

Situation	Example of action plans other GPs have made to avoid prescribing an antibiotic in these situations		
1. A patient with an URTI specifically asks for an antibiotic, or clearly expects to be prescribed an antibiotic	<i>If a patient asks for an antibiotic, then</i>		
2. A patient with an URTI (or the patient's parents) are very distressed about their symptoms	<i>if a patient (or parent) is distressed about their symptoms, then</i>		
3	<i>if then</i>		
How is progress/success of the action plans to be monitored?	When will this happen?	Who in the practice will monitor plan progress?	

Mackenzie Intranet x HIC - School of Medicine - x Google x My Intervention :: Welcome x

www.lifeguideonline.org/player/play/UrtiShow caseDemo

- ,... The Scottish School of Primary Care

CHIEF SCIENTIST OFFICE

Better understanding of clinical practice: The management of URTIs

Thank you very much for participating in this project. This questionnaire refers to factors influencing the management of patients presenting for the first time, with an upper respiratory tract infection (URTI) in general practice.

For the purpose of this questionnaire, URTI includes sore throat, nasal discharge and coughs.

The questionnaire has two sections. The first contains a series of clinical management questions and the second a number of case scenarios. Based on our pilot, it will take you between 15 and 30 minutes to complete the full questionnaire.

Please complete both sections and remember, the questionnaire *is not a test*, we are interested in your opinions. Finally, please only complete the questionnaire once.

Please enter the ID number given on your invitation into the box: 1

UNIVERSITY OF ABERDEEN southampton

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.... The Scottish School of Primary Care



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To reduce the amount of work you need to do, we are not obtaining written consent from participants. By completing the questionnaire we assume that you are giving your consent to take part in the study. See the [Participant Information Sheet](#) (v1.2, 16/11/2010) for more details.

This approach has been approved by The Tayside Committee on Medical Research Ethics.

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Thanks for your time!

We realise that you have lots of demands on your time so by way of thanks we would like to send you a £20 voucher. You can choose an Amazon, Argos, Boots, iTunes, Love2Shop, M&S, or Starbucks voucher by clicking on the appropriate picture below. We will do our best to make sure that you receive your voucher within two weeks of completing this questionnaire

amazon.co.uk

Boots

iTunes

Love2shop
The high street gift voucher

M. 8

Starbucks COFFEE

- e> Amazon
- e> Argos
- e> Boots
- e> iTunes
- e Love2Shop
- e Marks and Spencers
- @ Starbucks
- e No voucher required
- e> Sorry I'm not interested in taking part

Voucher Confirmation

You selected a Starbucks voucher.

Is this correct?

Yes No

on.co.uk 8 iTunes

Love2sho
Thehigh_goff_

M 8 ●

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Most questions are answered by selecting one number; a few require more time to answer.
Some questions are worded very similarly but they are different and it is important for the study that you answer them all.
Please try not to take too long over each response as we would like to know your immediate views and experiences.
Your answers are completely confidential.

1. From memory, approximately how many of the last 10 patients who presented with an URTI for the first time, did you manage without prescribing an antibiotic

0 1 2 3 4 5 6 7 8 9 10
e> e> e> e> e> e> e> e> e> e>

2. I feel under pressure to manage patients with URTIs without prescribing an antibiotic:

- a) from patients
- b) from secondary care colleagues
- c) from colleagues within the practice
- d) from feedback provided by PACT
- e) from published literature

	Strongly disagree	1	2	3	4	5	6	7	Strongly agree
a) from patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) from secondary care colleagues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) from colleagues within the practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) from feedback provided by PACT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) from published literature	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. In general, managing a patient with an URTI without prescribing an antibiotic would:

- a) Reassure them
- b) Alleviate their symptoms
- c) Increase their satisfaction with my care
- d) Make them less likely to expect an antibiotic for a URTI in the future
- e) Mean that the patient will re-consu for the same URTI episode
- f) Increase the time taken for their URTI to resolve
- g) Reduce the length of the consu ation
- h) Decrease the likelihood of antibiotic resistance in the community
- i) Mean that the patient will consu with a different doctor in subsequent episodes

	Strongly disagree			Strongly agree			
	1	2	3	4	5	6	7
a) Reassure them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Alleviate their symptoms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Increase their satisfaction with my care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Make them less likely to expect an antibiotic for a URTI in the future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Mean that the patient will re-consu for the same URTI episode	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Increase the time taken for their URTI to resolve	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Reduce the length of the consu ation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Decrease the likelihood of antibiotic resistance in the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Mean that the patient will consu with a different doctor in subsequent episodes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. If I routinely manage patients with URTIs without prescribing antibiotics then:

- a) On balance, my life as a GP will be easier in the long run
- b) On balance, the consequences for me as a GP (eg stress, time, future consultations etc) will be worse in the long run

	Strongly disagree			Strongly agree			
	1	2	3	4	5	6	7
a) On balance, my life as a GP will be easier in the long run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) On balance, the consequences for me as a GP (eg stress, time, future consultations etc) will be worse in the long run	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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5. It is highly likely that patients with an URTI will be worse off if I manage them without prescribing an antibiotic

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. How confident are you in your ability:

a) To manage patients with URTIs without prescribing an antibiotic?

	Not at all confident						Extremely Confident
	1	2	3	4	5	6	7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b) To end a consultation for a patient with an URTI who you have managed without prescribing an antibiotic?

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

c) To manage a patient whose URTI symptoms are distressing to them, without prescribing an antibiotic?

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

7. a) When I see patients with URTIs, I automatically consider managing them without prescribing an antibiotic

	Strongly disagree						Strongly agree
	1	2	3	4	5	6	7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

b) It is my usual practice to manage patients with URTIs without prescribing antibiotics

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

c) I aim to manage patients with URTIs without prescribing an antibiotic

	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
--	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

8. Given 10 patients presenting for the first time with an URTI, how many patients would you intend to manage without prescribing an antibiotic?

0 1 2 3 4 5 6 7 8 9 10

9. I find it difficult to manage patients presenting with an URTI without prescribing an antibiotic who:

- a) Have already tried to self medicate for an URTI
- b) Expect me to prescribe an antibiotic
- c) Have a past history of an Chronic Obstructive Airways Disease

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

10. Generally I find it difficult:

- a) To manage patients with URTIs without prescribing an antibiotic
- b) To end a consultation for a patient with an URTI who I have managed without prescribing an antibiotic
- c) To manage a patient whose URTI symptoms are distressing to them without prescribing an antibiotic

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

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	Strongly disagree			Strongly agree			
	1	2	3	4	5	6	7
11. a) I would like to manage patients with URTIs without prescribing an antibiotic, but I don't really know if I can	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Whether I manage patients with an URTI without prescribing antibiotics is entirely up to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I am confident that I can manage patients with URTIs without prescribing an antibiotic whenever I want to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) I can overcome all obstacles, whatever they may be, in managing an URTI without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12.1 in general:

	Strongly disagree			Strongly agree			
	1	2	3	4	5	6	7
a) The benefits of managing patients with URTIs without prescribing antibiotics outweigh the harms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Managing patients with URTIs without prescribing antibiotics is more often bad practice than good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Managing patients with URTIs without prescribing antibiotics is more often unsatisfying than satisfying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13.1n general:

- a) Reassuring patients is _____
- b) Alleviating patient symptoms is _____
- c) Increasing patient satisfaction with my care is _____
- d) Reducing their expectation of an antibiotic for a URTI in the future is _____
- e) Reducing the likelihood that the patient will consun againfor the same URTI episode is _____
- f) Reducing the time taken for a patient's URTI to resolve is _____
- g) Reducing the length of the consunations for URTis is _____
- h) Reducing antibiotic resistance is _____

Unimportant							Important	
1	2	3	4	5	6	7		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. How motivated are you to do what:

- a) Patients think you should _____
- b) Secondary care colleagues think you should _____
- c) Colleagues in primary care think you should _____
- d) PACT feedback states that you should _____
- e) The published literature states that you should _____

Not at all							Very Much	
1	2	3	4	5	6	7		
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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15. Without an antibiotic, how confident are you in your ability to manage patients with URTI who:

	Not at all confident							Extremely confident						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
a) Have already tried to self medicate for an URTI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Expect you to prescribe an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Have a past history of Chronic Obstructive Airways Disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly disagree							Strongly agree						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
16. When a patient presents with an URTI, I have in mind to manage them without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I intend to manage patients who present with an URTI without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Currently my standard method of managing patients with an URTI involves managing them without prescribing an antibiotic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. I have a clear plan of:

- a) how I will manage patients with an URTI without prescribing an antibiotic.
- b) when I will manage patients with an URTI without prescribing an antibiotic.
- c) under what circumstances I will manage patients with an URTI without prescribing an antibiotic

	1	2	3	4	5	6	7
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strongly agree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. If you have a plan, could you please describe it:

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The following pages contain a series of scenarios which include elements that may influence your management of patients presenting for the first time with an URTI.

We would like you to consider each scenario in the context of a routine morning surgery.

You have 8 patients to see and two routine house calls pending.

It is February and there hasn't been an influenza epidemic

We appreciate the observational and communication skills you may normally draw on during an actual consultation cannot be a factor in your decision.

Please try to consider each scenario based on the information presented, then, in the space provided, record your decisions relating to:

- Diagnosis
- Management
- How difficult it was for you to decide your management of each scenario.

A worked example is provided on the next page.

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Worked Example

No. 000. Master Adam Simpson, 23 George Street, Othertown Age 8 years

Active Problems :Nil Current medication :Nil Smoker :Not recorded
 Significant past :Nil 1. Refer to presenting complaint | Occupation :Not recorded

HISTORY :3 days cough, sore throat++, fever.

EXAMINATION: Red pharynx, tonsils enlarged, tonsillar nodes ++, ears NAD

2. Type your diagnosis here 3. Type your management decision here 4. If you decide to prescribe drugs please write this on the script as below

"Tonsillitis"

"Advised bed rest & plenty fluids"

5. Finally please indicate below how difficult it was for you to make your decision about this scenario

On the scale 1 to 10, how difficult was it for *vi* to make a decision for this scenario?

Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult

"Brand X Antibiotic 3x daily"
 "Paracetamol 250mg/5ml, 5ml qd§ prn, 100ml"

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Case 1of 8. Miss Kay Hamilton, 104 Dene View Place, Othertown Age 26years

Active Problems :Nil Current medication :Microgynon :Co-codamol Smoker :10/ day

Significant past : Substance Misuse 2005 Occupation :Beautician
: Therapeutic termination of pregnancy 2003

HISTORY :Sore throat 2 days,"can't swallow",Feels awful. "Ialways need antibiotics"

EXAMINATION: Red throat,tonsils not enlarged,nodes+,tender

DIAGNOSIS: MANAGEMENT: _____

On the scale 1to 10,how difficult was it for you to make a decision for this scenario?

Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult

If you wish to comment on this decision please do so here

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Case 2 of 8. Master Sean Cleary, 35 Jubilee Terrace, Othertown				Age	9years
Active Problems	: Nil	Current medication	: Nil	Smoker	: Not recorded
Significant past	: Nil			Occupation	: Not recorded
HISTORY : 4 days sore throat, cough					
EXAMINATION: Tonsils+++ , pus, nodes+++					

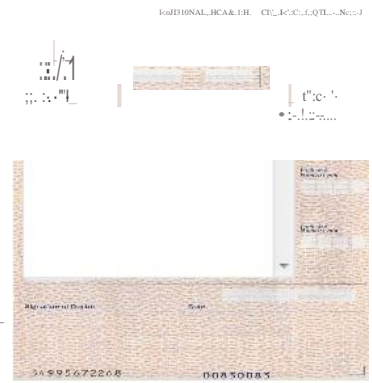
DIAGNOSIS: _____ MANAGEMENT: _____

On the scale 1to 10, how difficult was it for you to make a decision for this scenario?
 Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult

If you wish to comment on this decision please do so here

===== :r||=====
| Ne |

Progress



Case 3 of 8. Miss Shada Naseem, 93 Cedar Drive, Othertown		Age 24 years
Active Problems: Nil	Current medication: Sulphasalazine 500mg bd :Co-codamol	Smoker : non-smoker
Significant past : Juvenile Rheumatoid Arthritis 2000		Occupation : School Teacher
<p>HISTORY : 3 days cough, sore throat++, fever.</p> <p>EXAMINATION: Red pharynx only</p>		

DIAGNOSIS:

MANAGEMENT: -----

On the scale 1 to 10, how difficult was it for you to make a decision for this scenario?

Not at all difficult
 1 2 3 4 5 6 7 8 9 10
 Extremely difficult

If you wish to comment on this decision please do so here

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Case 4 of 8. Master Lewis White, 57 Grange Estate, Othertown		Age 14years
Active Problems :Nil	Current medication: Aqueous cream, :1%Hydrocortisone cream	Smoker :Not recorded
Significant past :Eczema 2000	Occupation: Student	
HISTORY :Sore throat, earache and cough 3 days. Good footballer, big game coming up at weekend (3 days). Mum feels "he needs an antibiotic to clear it"		
EXAMINATION: Red throat, ears sl red, tonsils- pus, nodes+++ , Chest clear		

DIAGNOSIS:

MANAGEMENT:

On the scale 1to 10, how difficult was it for you to make a decision for this scenario?

Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult

If you wish to comment on this decision please do so here

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Case 5 of 8. Miss Faith Maclaren, 145 Westview Court, Othertown Age 12years

Active Problems: Nil Current medication: Salbutamol inhaler Smoker :Not recorded
:Beclomesthasone inhaler
 Significant past :Asthma 2003 Occupation: Not recorded

HISTORY :8 days sore throat, chest OK but cough ++

EXAMINATION: Pus on tonsils, nodes++, Chest clear

DIAGNOSIS:

MANAGEMENT:

On the scale 1to 10, how difficult was it for you to make a decision for this scenario?

Not at all 1 2 3 4 5 6 7 8 9 10 Extremely difficult

If you wish to comment on this decision please do so here

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Case 6 of 8. Mr Jonathon Brown, 50 Woodside Gardens, Othertown		Age 39years
Active Problems: Nil	Current medication :Nil	Smoker :10/day
Significant past :Appendicitis 1979	Occupation: Security guard	
HISTORY :Sore throat, for 2 weeks. Nil else		
EXAMINATION: Red pharynx, ears NAD, Chest clear		

DIAGNOSIS:

MANAGEMENT:

On the scale 1to 10,howdifficult was itfor you to make a decision for this scenario?

Not at all difficult | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Extremely difficult

If you wish to comment on this decision please do so here

Case 7 of 8. Master Adam Ryder, 7 Clayton Road, Othertown		Age 4 years
Active Problems : Nil	Current medication: Nil	Smoker : Not recorded
Significant past : Perthe's disease 2008		Occupation: Not recorded
: Otitis media 2008		
: Otitis media 2009 x 3		
: Otitis media 2010 x 2		
HISTORY	: 3 days snotty nose, cough, sore throat and earache	
EXAMINATION:	Red pharynx, tonsils enlarged, tonsillar nodes++, ears NAD	

DIAGNOSIS:

MANAGEMENT:

On the scale 1 to 10, how difficult was it for you to make a decision for this scenario?

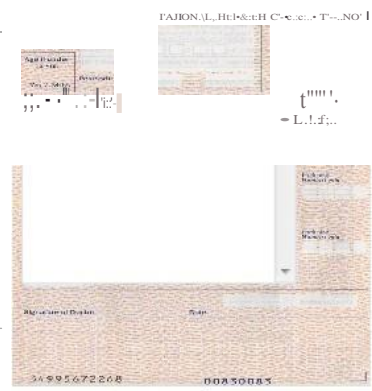
Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult

If you wish to comment on this decision please do so here

Back

Progress fl=

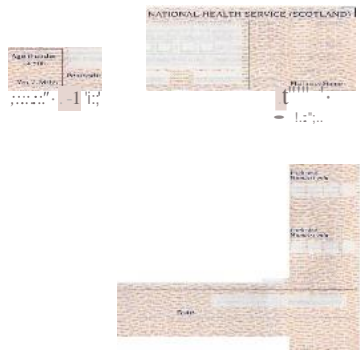
Next



Case 8 of 8. Mr Ronald Matthews 89 Ouselaw, Othertown Age 34years

Active Problems: Nil	Current medication: Co-codamol	Smoker :Not recorded
Significant past :Depression 2006 :Knee surgery (ligament reconstruction) 2005 :Chest infection 1980		Occupation: Unemployed labourer
HISTORY : Sore throat, runny nose 4 days.		
EXAMINATION: Looks well, red pharynx only		

DIAGNOSIS: _____ MANAGEMENT: _____



On the scale 1to 10, how difficult was it for you to make a decision for this scenario?

Not at all difficult 1 2 3 4 5 6 7 8 9 10 Extremely difficult
Ⓜ Ⓜ Ⓜ Ⓜ Ⓜ Ⓜ Ⓜ Ⓜ Ⓜ Ⓜ

If you wish to comment on this decision please do so here

Back

Ne

Background

81. Male Female

82. How long have you been qualified as a doctor? years

83. Are you a GP trainer in a vocational training scheme? Yes

No

Is there any other comment you would like to make?

Back

Progress

Submit

Your questionnaire has been submitted .Many thanks!

If you wish to find out more about this study please contact:

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Table 1 Summary of the internal consistency of constructs (alpha) and correlations with behavioural simulation and intention. This table corresponds to Table 3 in the original paper-based IME [9].

Theoretical Construct	# items	Alpha	Correlation with intention	P-value	Correlation with behavioural simulation	P-value	Agrees with paper IME?	Questionnaire Items
<i>Theory of Planned Behaviour (TPB)</i>								
Attitude (direct measure)	3	0.63	0.48	<0.001	0.25	<0.001	<u>Y: both</u> ²	12
Attitude (indirect measure) (TPB measured this using the same questionnaire items as for Outcome expectancies in SCT)	8	0.52	0.31	<0.001	0.12	0.052	Y: intention	3,13*
Intention	3	0.89	-	-	0.34	<0.001	Y	8,16,17,18*
Perceived behavioural control (direct measure)	3	0.65	0.25	<0.001	0.05	0.37	Y: intention	11*
Perceived behavioural control (indirect measure)	6	0.86	0.40	<0.001	0.31	<0.001	<u>Y: both</u>	9,10
Subjective Norm	5	0.63	0.09	0.14	-0.06	0.35	Y: both	2,14*
<i>Social Cognitive Theory (SCT)</i>								
Risk perception (OLT measured this using the same items as for Anticipated consequences)	3	0.64	0.39	<0.001	0.24	0.001	<u>Y: both</u>	4,5
Outcome expectancy: procedure (SCT measured this using Behavioural Beliefs items from Attitude indirect in TPB)	2	-0.05 ³	-0.15	0.013	-0.05	0.39	See note 5	3,13*
Outcome expectancy: patient (SCT measured this using Behavioural Beliefs items from Attitude indirect in TPB)	5	0.54	0.18	0.003	0.19	0.002	See note 5	3,13*
Outcome expectancy: clinician (SCT measured this using Behavioural Beliefs items from Attitude indirect in TPB)	2	0.33 ³	0.29	<0.001	0.08	0.20	See note 5	3,13*
Self-efficacy	6	0.86	0.37	<0.001	0.22	0.003	<u>Y: both</u>	6,15
<i>Operant Learning Theory (OLT)</i>								
Anticipated consequences (TPB measured this using the same questionnaire items as for Risk perception)	3	0.64	0.39	<0.001	0.24	0.001	<u>Y: both</u>	4,5
Evidence of habit ⁴	3	0.832	0.78	<0.001	0.37	0.001	Y: both	7

¹ We did not expect the delivery method (paper or web) to affect the correlation between constructs and behavioural simulation and intention. 'Yes: both' means that the statistical significance of the correlation measured in the web-based IME agreed with that seen in the paper-based IME for both behavioural simulation and intention. 'Y: intention' means that the statistical significance of the correlation measured in the web and paper-based IMEs agreed for only intention.

² Predictors marked in bold and underlined were selected as targets for a new intervention.

³ These are correlation coefficients due to there being fewer than three items in the scale.

⁴ Although habitual behaviour was highly correlated with behavioural simulation and intention, it was not selected as intervention targets. Habit is not a causal determinant but an attribute of behaviour and is modified indirectly by targeting other causal aspects of behaviour.

⁵ Outcome expectancy was split into two parts in the paper-based IME but had poor internal consistency. We attempted to address this in the WIME study but stay as close to the original study as possible by simply adding one more dimension to it (ie; splitting it three ways rather than two) in the hope that this would overcome the internal reliability and consistency issues of this measure. However, this alternative approach did not generate factors with desirable psychometric properties. Thus, similarly to the paper-based IME, Outcome expectancy was not flagged as a potentially suitable candidate construct to develop an intervention. A direct comparison between paper and web-based IMEs for these items is therefore inappropriate.

Table 2 Behaviour change techniques by theoretical domains identified as intervention targets.

Theoretical domain targeted	Behaviour change technique and definition	How it was delivered in the WIME
Behavioural regulation	<p>Action planning Prompt detailed planning of performance of the behaviour (included at least one of context, frequency, duration and intensity).</p> <p>Goal setting (behaviour) Set or agree on a goal defined in terms of the behaviour to be achieved.</p> <p>Prompts/cues Introduce or define environmental or social stimulus with the purpose of prompting or cueing the behaviour.</p> <p>Self-monitoring of behaviour Establish a method for the person to monitor and record their behaviour(s) as part of a behaviour change strategy.</p>	<p>GPs were asked to make an action plan following a template which included context and frequency</p> <p>The action plan template asked GPs to set their behavioural goal to be ‘not prescribing an antibiotic’</p> <p>The examples of action plans we provided were designed to make salient the most likely situations for cueing ‘not prescribing an antibiotic’</p> <p>The action plan template included a section requesting that GPs determine how they would monitor the success of their plan</p>
Beliefs about capabilities (includes perceived behavioural control construct)	<p>Demonstration of the behaviour Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to or imitate.</p> <p>Behavioural practice/rehearsal Prompt practice or rehearsal of the performance of the behaviour one or more times in a context or at a time when the performance may not be necessary, in order to increase habit and skill.</p>	<p>The action plan examples described situations that previous research had identified as most likely to result in inappropriate prescribing behaviour and included alternative behaviours to prescribing an antibiotic that they could do instead</p> <p>Asking GPs to actually write out their action plan enabled them to rehearse what they would do as an alternative to prescribing in the situations they would usually prescribe.</p>
Beliefs about consequences (includes attitude construct)	<p>Social reward Arrange verbal or non-verbal reward if and only if there has been effort and/or progress in performing the behaviour.</p>	<p>On downloading the action plan, the GPs received the following message with the action plan template: <i>“Great! By writing out your own action plan and following it through, you are likely to follow more evidence-based prescribing practice in the future”</i></p>