

Factors associated with independent nurse prescribers' antibiotic prescribing practice: a mixed-methods study using the Reasoned Action Approach

Ness, V.; Currie, K.; Reilly, J.; McAloney-Kocaman, K.; Price, L.

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1 **Title:** Factors associated with independent nurse prescribers' antibiotic prescribing
2 practice: A mixed methods study using the Reasoned Action Approach

3 **Authors:** Dr. Valerie Ness *, Glasgow Caledonian University; Professor Kay Currie¹,
4 Professor Jacqui Reilly^{1,2}, Dr. Kareena McAloney-Kocaman¹, Professor Lesley Price ¹

5 **Affiliation addresses in full:**

6 ¹ Glasgow Caledonian University, Cowcaddens Road, Glasgow. G4 0BA

7 ²NHS National Services Scotland, 4th Floor, Meridian Court, 5 Cadogan Street, Glasgow.
8 G2 6QE

9 **Corresponding author details:**

10 *Valerie Ness, Tel: (0141) 331 8813, Mobile: 07724295949, Email: v.ness@gcu.ac.uk

11 **Running Title:** Nurses' antibiotic prescribing behaviour

12

13 **Structured summary:**

14 Background: Numbers of nurse prescribers is increasing, yet little evidence exists about
15 their antibiotic prescribing behaviour.

16 Aim: This paper presents the findings of a study which measured nurse independent
17 prescribers' (NIPs) intention to manage patients, presenting with an Upper Respiratory
18 Tract Infection (URTI) for the first time, without prescribing an antibiotic and to examine
19 the determinants of this behaviour.

20 Methods: This was a mixed method study using the Reasoned Action Approach (RAA).
21 Content analysis of data from 27 telephone interviews with NIPs informed the
22 development of a questionnaire which was tested for validity and reliability and used in

1 a national survey of NIPs across Scotland. Descriptive and inferential statistical analysis
2 was carried out to determine intention to manage patients without prescribing an
3 antibiotic and the significant influences on this intention.

4 Findings: Results from 184 participants found that NIPs intend to manage patients,
5 presenting with an URTI for the first time, without prescribing an antibiotic. Key
6 determinants were perceived norm, perceived behavioural control and moral norm.
7 Significant beliefs were, positive social influence from other non-medical prescribers
8 ($p=0.007$) and nurse prescribers ($p=0.045$), the enablers of prescriber experience and
9 confidence ($p<0.001$) and the barrier of pressure from patients/carers ($p=0.010$).

10 Conclusion: Nurse prescribing is expanding globally and these findings have
11 international relevance. This paper is significant as it is the first to explore the
12 determinants of NIP antibiotic prescribing intentions using a rigorous theoretical model.
13 Findings provide reassurance that NIPs intend to prescribe appropriately. The
14 identification of nurse-specific barriers and enablers to this intention should be
15 acknowledged and targeted in future interventions to manage this behaviour.

16 Keywords: nurse, intention, prescribing, Reasoned Action Approach, upper respiratory
17 tract infections

18

19 **Introduction** (words:2997)

20 Improving antibiotic prescribing is a fundamental objective in the United Kingdom (UK)
21 antimicrobial resistance (AMR) strategy [1], as evidence suggests that inappropriate
22 prescribing is a problem, especially within the community where the majority of antibiotics
23 are prescribed [2, 3]. Most available research has focused on the decisions of doctors,
24 yet independent nurse prescribing in the UK and United States of America is well

1 established with numbers increasing annually and many other countries are now
2 adopting nurse prescribing [4-6]. Furthermore, evidence suggests nurse prescribing
3 improves patient care [7, 8].

4 With a growing body of nurse prescribers, understanding their practice is essential; one
5 cannot assume that nurse prescribers tend to respond in similar ways to medical
6 prescribers, evidence is required. A mixed-method systematic review of studies which
7 explored the influences on the antimicrobial prescribing behaviour of independent nurse
8 prescribers globally, found only seven studies which explored this topic. Furthermore,
9 only four explored the influences on whether to prescribe an antibiotic not with the other
10 three focusing on the choice of antibiotic. The most frequently occurring influence on
11 prescribing behaviour, found in these studies was diagnostic uncertainty, followed by the
12 clinical condition of the patient, patient/parent pressure, peer support, cost and payment
13 factors. This evidence was limited by relatively poor response rates, small sample sizes,
14 and designs not theoretically supported and which often fail to explore the underlying
15 reasons for nurses' prescribing decisions [9]. Measuring health professionals' behaviour
16 is complicated because it often raises both ethical and logistical problems. Ethically
17 because observing clinical behaviour involves issues of patient confidentiality [10] and
18 logistically can produce the Hawthorne effect. This was found in an observational study
19 of antibiotic prescribing behaviour in physicians where the proportion of antibiotics
20 prescribed for viral cases was significantly less in the study group than by using
21 retrospective analysis [11].

22 Evidence suggests that self-limiting upper respiratory tract infections (URTI) resolve
23 without antibiotics, yet they are still prescribed in the majority of cases [12]. Targeting
24 these self-limiting infections is a priority recommendation in the fight against AMR [13-
25 15]. In addition, self-limiting infections are usually treated in the community where many
26 nurse prescribers work [5]. Therefore, the aim of this study was to measure nurse

1 independent prescribers' (NIPs) intention to manage patients, presenting with an URTI
2 for the first time, without prescribing an antibiotic and to examine the determinants of this
3 behaviour.

4 Since examining health professionals' actual behaviour is complicated, the Reasoned
5 Action Approach (RAA), the latest version of The Theory of Planned Behaviour, provides
6 a solution to this difficulty. It measures intention to behave; intention being the immediate
7 antecedent to behaviour [16]. Using a behavioural theory ensures that social,
8 psychological and cognitive factors associated with prescribing are uncovered which can
9 then be used to design interventions to improve this behaviour. The RAA can identify the
10 unique, individual influences on nurse antibiotic prescribing behaviour and usefully
11 highlights the potentially complex interaction of the constructs of the theory; attitudes
12 (towards performing the behaviour in question), perceived norms (the amount of social
13 pressure one feels about performing the behaviour) and perceived behaviour control
14 (PBC) (the ease or difficulty and confidence in being able to perform the behaviour)
15 (Figure 1). Perceived norms are divided into injunctive norms (people who approve or
16 disapprove of the behaviour) and descriptive norms (whether people like them, are more
17 or less likely to behave in this way). These aforementioned constructs all follow from our
18 underlying beliefs. For example, the more one believes that performing the behaviour
19 will have positive outcomes, the more positive one's attitude will be towards performing
20 the behaviour. A further construct which is added to the RAA in certain contexts is that
21 of moral norms; a person's personal feelings of moral obligation or responsibility to
22 perform or refuse to perform a behaviour [16,17]. Due to the public health consequences
23 of inappropriate prescribing, antibiotic prescribing can be considered a moral choice and
24 therefore this construct was added and explored in the study.

25 The RAA's authors advise that the behaviour being explored should be defined in terms
26 of target, action, context and time (TACT) [16]. For this study the target was defined as

1 patients, the action as NIPs managing patients without prescribing an antibiotic, the
2 context that the patient presents with an URTI for the first time, and time was during a
3 patient consultation with the NIP.

4

5 **Methods**

6 This was a three-phase mixed method study using the RAA as the theoretical framework.
7 Phase one involved an elicitation study comprised of one-to-one telephone interviews
8 with NIPs to elicit their modal (the set of beliefs held with the greatest frequency in the
9 population of interest), salient (beliefs that come readily to mind and are activated
10 spontaneously without much cognitive effort) beliefs about managing patients,
11 presenting with an URTI for the first time, without prescribing an antibiotic. These salient
12 beliefs determine a person's attitude, perceived norm and PBC and influence their
13 intention.

14 All NIPs in Scotland were invited to participate via email requests sent from the
15 gatekeepers (nonmedical prescribing (NMP) leads for each National Health Service
16 (NHS) Health Board) with a two-week recruitment period. Estimated numbers of qualified
17 NIPs in Scotland at this time, from NHS Education for Scotland data, were 2364.
18 Telephone interviews were carried out (between October 2015 and February 2016) with
19 27 NIP volunteers until saturation was reached. A topic guide was used which was
20 developed from RAA guidance and asked open-ended questions in relation to each of
21 the major constructs of the RAA [16] (supplementary information). A content analysis of
22 the responses, using guidance from Elo and Kyngas [18], was completed to find the most
23 frequently occurring salient beliefs. Immersion in the data, through reading the transcripts
24 several times, took place and then through coding, categories were generated. These
25 categories were then grouped under higher order headings and then listed in order, from

1 most frequently mentioned to least frequently mentioned. To determine how many salient
2 beliefs to include in the final set, guidance was sought from the RAA authors and beliefs
3 were included based on their frequency of emission until 75% of all responses had been
4 accounted for [16] (supplementary material).

5 These beliefs were then used to develop the indirect measures of intention in a
6 questionnaire for the next phase of the study. Indirect measures were measured using
7 Likert scores, and weighted to form a composite measure for each construct. The greater
8 score, the greater the importance of the belief was for participants. Beliefs were then
9 summed to create a median composite score for attitude, perceived norm and PBC. The
10 questionnaire (supplementary information) also contained questions which directly
11 measured NIPs' intention, attitudes, perceived norm, moral norm and PBC to ensure all
12 the constructs were measured. Direct measures used Likert scales, between one and
13 seven, to form a composite score for each measure. A median above four was
14 considered a positive response

15 In phase two (July 2016), fifteen participants from the elicitation study volunteered to test
16 the reliability and validity of the questionnaire items and completed feedback questions
17 to test the face validity. Content validity was achieved by asking the elicitation interview
18 participants to review the questionnaire. Construct validity was tested by ensuring that
19 items measuring a particular construct, correlated more highly with each other than with
20 items measuring a different construct. Mann-Whitney tests were carried out to see if
21 there was a relationship between those who intended to manage patients without
22 prescribing an antibiotic and those who did not. An index of internal consistency was
23 applied to the direct measures using Cronbach's alpha coefficient (α) and items were
24 removed using a step reduction until the overall Cronbach's alpha was improved and
25 further reduction of items would not improve the overall values. Test-retest reliability was
26 carried out by asking participants to complete the questionnaire again two weeks later

1 and Spearman's rho correlation coefficient was used to check for stability of indirect
2 measures.

3 In phase three the finalised questionnaire was sent, via email from the gatekeepers, to
4 all NIPs across Scotland using the programme SurveyMonkey (SurveyMonkey Inc, San
5 Mateo, CA, www.surveymonkey.com). Only NIPs who were currently managing patients,
6 presenting with an URTI for the first time, were asked to take part to ensure consistency
7 with RAA guidance regarding the context of the behaviour [16]. The survey ran from
8 December 2016 for six weeks Survey data was transferred to IBM SPSS Statistics for
9 Windows, version 23 (IBM Corp., Armonk, N.Y., USA) and descriptive and inferential
10 analysis was performed. Questionnaire that had excessive missing data (i.e. participants
11 had stopped less than half-way through) were not included in the final analysis. To
12 establish direct measures in the RAA questionnaire, overall scores were calculated and
13 therefore missing values from individual items were ignored. However, indirect measures
14 were weighted and then summed to create a composite score therefore missing values
15 for these questions would impact on the overall score if ignored. As such missing values
16 were replaced by the median of the other items in the scale.

17 Descriptive statistics assessed the distribution of the data to determine the suitability for
18 parametric or nonparametric analysis. Composite variables were created for the direct
19 measures and as data for most of the constructs was skewed, median and frequencies
20 were used to describe the data, and non-parametric tests were appropriate [19].

21 To examine the influence of demographic variables a series of bivariate tests (Mann-
22 Whitney U for gender; Kruskal-Wallis for educational qualification, work location and
23 setting; and Spearman's rho for years' experience) were carried out to explore
24 differences between groups of participants based on these characteristics. These

1 particular characteristics were selected after exploring the prescribing literature and
2 using guidance from the RAA.

3 Inferential analysis was carried out using Spearman's Correlation to explore the
4 relationship of the direct and indirect measures (independent variables) with intention
5 (dependent variable). This analysis identified the significant predictors of intention for
6 the multiple linear regression model. A multiple linear regression model was used due to
7 the ordinal nature of the data and lack of normality [20]. The purpose of the regression
8 analysis was threefold. Firstly, to establish the overall fit of the model i.e. could the RAA
9 predict intentions when applied to this behaviour. Secondly, to understand the relative
10 importance of the determining factors and beliefs on intention; using intention as the
11 dependent variable and the direct measures of attitude, perceived norms, moral norms
12 and PBC as the predictor variables and then again using intention as the dependent
13 variable and the beliefs being the independent variables. Finally, regression was used to
14 assess the influence of each predictor with a view to designing an intervention to change
15 the most powerful predictor. If multicollinearity was suspected a stepwise regression was
16 employed to remove highly correlated predictors from the model.

17 The final part of the study mapped the key RAA behavioural determinants found in this
18 study to the constructs in the Theoretical Domains Framework (TDF) [22]. This
19 framework contains 33 behaviour change theories with domains mapped to evidence-
20 based interventions. The second stage then mapped these domains to techniques
21 judged to be appropriate in changing each construct domain using the mapping tool
22 designed by Michie et al. [23].

23 The study was approved by Glasgow Caledonian University, School of Health and Life
24 Sciences Ethics Committee (REF: HLS/NCH/14/16) and NHS Research and
25 Development Department (REF: IRAS/177949).

1

2 **Results**

3 The Phase two study found the questionnaire to be both valid and reliable. The face
4 validity of the questionnaire was improved by rewording one of the questions, based on
5 comments from participants, and adding “normally” and “tend to” to acknowledge the
6 individual nature of patients presenting with an URTI, based on test-retest reliability
7 findings and participant comments. Six items measuring attitude and one measuring
8 PBC were removed after internal consistency testing and finally items with a different
9 direction of positive/negative responses were changed so that all measured in the same
10 direction.

11 In Phase three, the total number of participants was 184. ‘A priori’ power calculation [21]
12 demonstrated that 160 participants was sufficient to power the study. Table I shows that
13 159 (86.4%) were female and educational qualifications ranged from Diploma to PhD.
14 Respondents had a variety of years’ experience working as a NIP and unsurprisingly the
15 majority worked in the community since it was expected that patients with an URTI would
16 initially present to this setting.

17 Intention to manage patients without prescribing an antibiotic was measured using a
18 composite variable of three Likert items; “I expect to...”, “I want to...” and “I intend to
19 manage patients presenting with an URTI without prescribing an antibiotic”. Results
20 found that, with a median of six (Likert scales of one to seven), NIPs intend to manage
21 patients, presenting with an URTI for the first time, without prescribing an antibiotic. Only
22 21.7% (n=40) of participants had an intention score of four or less, leaving 78.3%
23 (n=144) with an intention greater than four, agreeing with the statements that they
24 intended/wanted/expected to manage patients without prescribing an antibiotic.

1 Composite scores were calculated for the predictor constructs of attitude, perceived
2 norm, moral norm and PBC. All median scores were above 5.5 demonstrating that
3 participants had a positive attitude, felt no guilt, felt positive social pressure and felt in
4 control when managing patients without prescribing.

5 Individual belief scores were calculated for the indirect measures of attitude (behavioural
6 beliefs and outcome evaluations), injunctive norms (injunctive belief strength and
7 motivation to comply), descriptive norms (descriptive belief strength and identification
8 with the referent) and PBC (control beliefs and perceived power) and when combined all
9 medians were positive.

10 Results demonstrated that although all constructs entered into the regression contributed
11 to intention, perceived norm, moral norm and PBC were most influential (Table II).

12 Perceived norms (whether NIPs perceived that important others approved or expected
13 the behaviour) was the most significant predictor. Moral norm (whether NIPs perceived
14 the behaviour was morally wrong) and PBC (whether NIPs perceived themselves able
15 to carry out the behaviour) were the next most significant predictors in explaining NIPs'
16 intentions to manage patients without prescribing an antibiotic.

17 Although the greatest predictors of intention had now been identified, it is at the level of
18 beliefs that insight into people's decisions and actions can be gained. Therefore, their
19 underlying beliefs of perceived norm and PBC were regressed with intention (moral norm
20 did not have any underlying beliefs) to identify the most important constructs to target
21 with behaviour change interventions. Having other NIPs' approval ($p=0.007$) and
22 wanting to behave like other nurse prescribers ($p=0.045$), were significant normative
23 beliefs. The significant control beliefs were NIPs' experience and confidence ($p<0.001$),
24 and pressure from patients/carers to prescribe ($p=0.010$) (supplementary information).

1 How these key determinants influence nurse prescribing behaviour in the context of the
2 RAA are summarised in Figure 2.

3 Although the study found that NIPs intend to manage patients presenting with an URTI
4 without prescribing an antibiotic, it is important to explore how these significant beliefs
5 can be used to form the basis of future interventions targeting nurse prescribing
6 behaviour for two main reasons. Firstly, to ensure that the beliefs that facilitate this
7 behaviour continue in future populations of NIPs and that the beliefs that are barriers to
8 this positive behaviour do not prevent this intention becoming an actual behaviour. These
9 significant determinants were therefore mapped to the constructs in the Theoretical
10 Domains Framework (TDF) [22] and then to evidence-based behaviour change
11 techniques [23] (Table III).

12 An intervention will be most effective if it targets the component that carries most weight
13 in predicting intentions [16]. Hornick and Woolf [24] add that, as well as being strongly
14 related to intention, there must also be enough people who do not already hold this belief
15 to merit trying to change it. Therefore, the significant beliefs were explored to establish if
16 any had enough people who did not hold this belief. Patient or carer pressure was the
17 significant belief which most participants thought made them less likely to manage
18 patients without prescribing an antibiotic. Sixty six percent of participants (n=121) said
19 this pressure was likely to occur and 32% (n=59) participants said this would make them
20 less likely to manage patients without prescribing an antibiotic. It would therefore appear
21 that this may be an important belief on which to focus a behavioural intervention.

22

23 **Discussion**

24 To the authors' knowledge this is the first study to use a theoretical framework to explore
25 NIPs' antibiotic prescribing behaviour using quantitative methods to measure NIPs'

1 intention to manage patients presenting with an URTI without prescribing an antibiotic.
2 Findings demonstrate that NIPs do intend to manage patients without prescribing an
3 antibiotic. This is consistent with one previous smaller qualitative study that indicated the
4 majority of NIPs would not prescribe antibiotics for an URTI [25].

5 The influence of social pressure from NMPs (including nurse prescribers) was shown to
6 be a crucial factor in influencing NIPs intention to manage patients without prescribing
7 an antibiotic. If NIPs felt that other NMPs thought they should manage patients without
8 prescribing and that their approval was important to them, they were more likely to
9 manage them without prescribing. If they felt that other NIPs intended to manage patients
10 without prescribing and they wanted to be like them when it came to their prescribing,
11 then again they were more likely to manage patients without prescribing. The influence
12 of positive social pressure was also discussed in the literature when dealing with the
13 challenges of patient consultations [25]. An informal peer group with other nurse
14 prescribers was central to the success of nurse prescribing in a Trust in England [26]
15 and in another study, focussing on antibiotic prescribing behaviours, findings showed
16 that nurses identified with their own clinical group [27]. This suggests that NIPs should
17 continue to use peer support from other NMP colleagues to aid in their prescribing
18 decisions and reflect on and share their practice with their peers to build confidence in
19 new prescribers. Both peer support and positive role-modelling are potential areas for
20 changing behaviour and in supporting new prescribers.

21 Experience and confidence positively influenced, and perceived patient/carer pressure
22 negatively influenced, NIPs' control over their behaviour. Confidence was highlighted as
23 influential in one study of nurse antibiotic prescribing [25], and in studies of nurse
24 prescribing of other drugs [28,29]. Experience was also a finding in a smaller study of
25 nurse prescribers [30]. Since the role of independent prescribing is an additional
26 qualification, which nurses in the UK achieve after they have gained considerable

1 professional experience, it is difficult to assert whether it is the experience of prescribing,
2 or their experience as a nurse that influences their prescribing. Although, the number of
3 years' experience as a prescriber did not have any effect on intention in the regression
4 analysis, therefore it may be experience as a nurse rather than as a prescriber that
5 influences this belief. This is noteworthy because nurses may be expected to prescribe
6 much earlier in their career in the future [31].

7 Patient or carer pressure was the significant belief which most participants thought made
8 them less likely to manage patients without prescribing an antibiotic. Similarly, patient
9 pressure was the most frequently discussed factor in the Phase 1 interviews. The
10 importance of this is supported by other nurse prescribing literature which found patient
11 pressure to be an influencing factor in antibiotic prescribing [32, 33] and a challenge [25].
12 There were many reasons given in the interview data for this pressure; patients' previous
13 experiences of receiving an antibiotic from a medical prescribers leading to the
14 expectation that they would receive an antibiotic again, patients' beliefs that antibiotics
15 would make them better, patients returning for another appointment for the same
16 condition, and patients thinking that nurses were not as good as GPs. However, the
17 descriptive findings from this study found that the majority of nurses did not succumb to
18 this pressure. Providing information and reassurance, using safety netting such as
19 delayed prescribing or follow-up appointments, and providing education were all ways of
20 avoiding prescribing, in line with that reported previously [25, 34].

21 The information gained from mapping the findings to the TDF suggest that there are a
22 variety of techniques which could be used to further enhance NIP behaviour. To address
23 pressure to prescribe, guidance about strategies to manage these expectations such as
24 safety netting, education, symptom management and empowering patients to self-
25 manage, along with protected time to deliver these should be a priority for training and
26 education. Other interventions could address the influence of positive peer pressure from

1 other NMPs. Dissemination of these findings to trainee NIPs, and having peer support
2 and role modelling [35, 36] embedded in the culture, would support new prescribers.
3 Learning from their peers and identifying nurse prescriber opinion leaders could help
4 promote confidence in NIPs' prescribing behaviour [37]. A third focus could be on
5 changing NIPs' beliefs about their capability through interventions such as mastery [38,
6 39], feedback and stress reduction.

7 This study has some limitations. Self-reporting was used to measure intention and its
8 determinants which has weaknesses. Although participants may still have felt that they
9 had to respond in a socially acceptable way, by giving what they thought was the "correct"
10 response, the use of telephone, rather than face to face interviews, and an anonymous
11 online survey were adopted to minimise social desirability bias. Secondly, the same
12 participants who took part in Phase one and two of the study may have also taken part
13 in Phase three, which may have affected their later intended behaviour. Thirdly, a lack
14 of national data made it impossible to examine the representativeness of the sample
15 against the current Scottish NIP population. Finally, due to the sampling technique used,
16 and the fact that it was dependent upon voluntary participation, it is vulnerable to non-
17 response bias and no data was collected on non-responders.

18

19 **Conclusion**

20 This multi-phased, mixed method study has established robustly for the first time that
21 NIPs intend to manage patients presenting with an URTI for the first time, without
22 prescribing an antibiotic. Significant influences, specific to this group of prescribers
23 included pressure from patients/their carers to prescribe an antibiotic. This pressure has
24 been a finding in the medical prescribing literature but the emphasis on NIPs having time
25 and strategies to manage patients' expectation is a unique finding from this study, which

1 along with the positive influence from other NMPs can be used to inform the design of
2 an intervention.

3 The numbers of NMPs internationally are increasing annually and further countries are
4 considering adopting this model of care [40]. The key role of nurses in transforming
5 service delivery, and the Nursing and Midwifery Council's new standards, which state
6 that nurses should be able to demonstrate the ability to progress to a prescribing
7 qualification following registration [31], mean there has never been a better time to
8 highlight the influences on NIPs' antibiotic prescribing behaviour. Interventions, based
9 on the findings of this study, should be developed to ensure all NIPs are prescribing
10 appropriately. There is a real global opportunity for nurses to make a difference to AMR
11 through their prescribing practice.

12

13 **Conflict of Interest Statement:** None

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16

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Table I: Phase Three (survey): participants' demographic details

Gender (n=184)	Number (n)	Percentage (%)
Female	159	86.4
Male	25	13.6
Qualification (n=184)		
PhD	1	0.5
Masters	61	33.2
PGC/D	37	20.1
Degree	76	41.3
Diploma	9	4.9
Work setting (n=184)		
Community	113	61.4
Hospital	50	27.2
Both	21	11.4
Location (n=184)		
Urban	97	52.7
Remote and rural	43	23.4
Both	44	23.9
Years qualified as a NIP (n=184)		
<2	17	9.2
2-5	48	26.1
6-10	60	32.6
>10	25	13.6
Did not respond	34	18.5

Table II: Intention and all the constructs (direct and indirect): Regression

Model	Unstandardised Coefficients		Standardised coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-0.021	0.482		-0.044	0.965
Attitude	0.023	0.084	0.016	0.267	0.790
Perceived norm	0.507	0.069	0.510	7.303	<0.001
Perceived behavioural control	0.255	0.061	0.255	4.176	<0.001
Moral Norm	0.249	0.058	0.213	4.315	<0.001
Injunctive belief x Motivation to comply	0.016	0.012	0.090	1.372	0.172
Descriptive belief x Identification with the referent	-0.017	0.012	-0.087	-1.492	0.138
Control belief x Perceived power	-0.003	0.009	-0.016	-0.318	0.751

Table III: Mapping the RAA constructs to the TDF to techniques for behaviour change

RAA constructs	TDF constructs	Techniques for behaviour change
Perceived Norm	Social influences	Social process of encouragement, pressure and support; modelling/ demonstration of behaviour by others
Perceived Behavioural Control	Beliefs about capabilities	Self-monitoring; graded task (starting with easy tasks); increase skills (problem solving, decision making, goal setting); rehearsal of relevant skills; roleplay; social processes of encouragement, pressure, support; self-talk; feedback; motivational interviewing
NMP/other nurse prescribers	Social influences	Social process of encouragement, pressure and support; modelling/ demonstration of behaviour by others
Patient pressure	Environmental context and resources Emotion Social influences	Environmental changes Stress management, coping skills Social process of encouragement, pressure and support; modelling/ demonstration of behaviour by others
Experience/confidence	Beliefs about capabilities	Self-monitoring; graded task (starting with easy tasks); increase skills (problem solving, decision making, goal setting); rehearsal of relevant skills; roleplay; social

		processes of encouragement, pressure, support; self-talk; feedback; motivational interviewing
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1 Figure 1: The Reasoned Action Approach

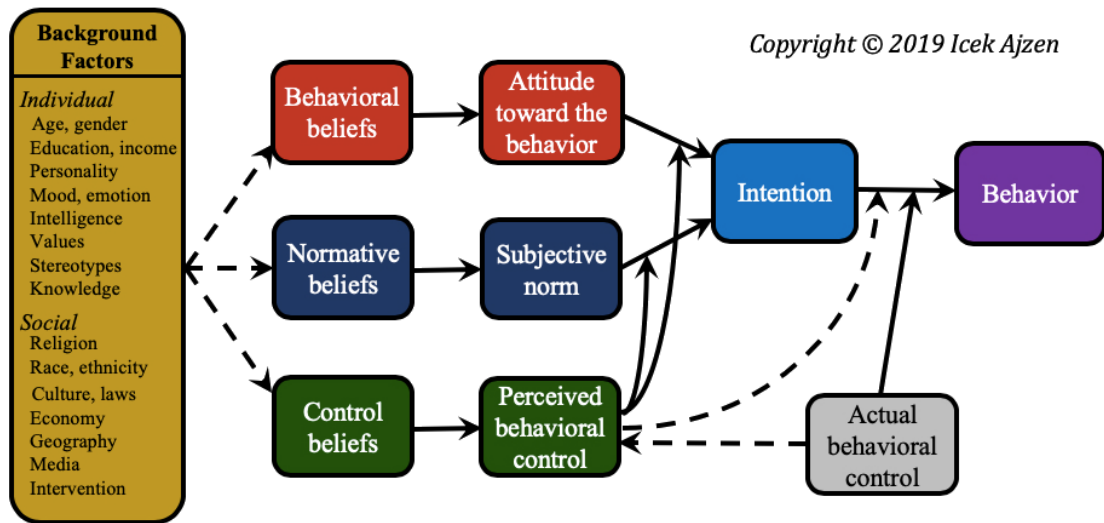


Figure 2: Greatest determinants of intention for NIPs managing patients, presenting with an URTI for the first time, without prescribing an antibiotic

