

# Delayed prescriptions:

## Evolution of an innovation

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### ABSTRACT

#### Background

Use of a delayed prescription (to be filled at a later time if the patient's condition fails to improve or deteriorates) is a strategy to reduce prescribing of unnecessary antibiotics without damaging the doctor-patient relationship.

#### Objectives

To better understand general practitioners' (GPs') use of delayed prescriptions to reduce unnecessary antibiotic use and why their use of this innovation might change over time.

#### Methods

Qualitative study using semi-structured interviews conducted in family practice in Auckland, New Zealand. The sample was thirteen GPs previously reporting high or low use of delayed prescriptions for antibiotics. The outcome measures were their experiences of delayed antibiotic prescription use; reasons for using or not using delayed prescriptions; to which patients they would give them, and the specific instructions they give to patients.

#### Results

All GPs considered they had spontaneously developed the innovation of

using delayed prescriptions. Their rationale was that limiting antibiotics would reduce side-effects, save patients money and reduce the appearance of resistant strains of bacteria. Confidence and frequency in using the strategy was assisted by knowing that other GPs used it and that its use was being researched. Some had decreased using delayed prescriptions after several years' use because their patients were educated not to expect antibiotics for viral illnesses. The duration of the delay before using the antibiotic was variable, as was the age group of patients and the specific conditions under which they would use the innovation.

#### Conclusion

Delayed prescriptions are seen by some GPs as a mechanism for reducing antibiotic intake while preserving the doctor-patient relationship. Not all view it as a safe tactic to use. Consensus on options for using delayed prescriptions for antibiotics for a variety of respiratory symptoms/conditions is warranted.

#### Key words

Diffusion of innovation, respiratory tract infections, antibiotics, family practice, delayed prescriptions

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## Background

There is little or no evidence to support the use of antibiotics in the treatment of the common cold,<sup>1-3</sup> sore throats,<sup>4-6</sup> acute bronchitis,<sup>7,8</sup> persistent nasal discharge or ear infections in children.<sup>10</sup> However general practitioners (GPs) often feel under pressure from patients to prescribe antibiotics for these conditions.<sup>9-15</sup> The majority of 100 randomly selected Auckland GPs surveyed in 1999 felt that most patients presenting with upper respiratory tract symptoms expected antibiotics.<sup>10</sup>

Delayed (or 'as needed') prescribing is a strategy developed to reduce unnecessary antibiotic use without damaging the doctor-patient relationship.<sup>6,15-17</sup> The patient is informed that antibiotics are not currently indicated, but they are offered a prescription to take away (or collect later from the front desk) that they can subsequently have filled should the need arise. Typically patients are instructed to get the antibiotics should particular symptoms persist or worsen over a specified period of time. Doctors have reported using this strategy to deal with patients wanting antibiotics when not strictly indicated.

The uptake of the use of new interventions in general follow an 'S' shaped curve first recognised in the business marketplace.<sup>18</sup> This supports the hypothesis that the probability of uptake of a new technique is an increasing function of the proportion already using it and the profitability (advantage) of doing so, but a decreasing function of the size of the investment required. Uptake of an innovation typically follows a bell-shaped curve.<sup>19</sup> Initial use is restricted to the innovators or pioneers, followed by the early majority and then the late majority. A minority are late responders or never adopt the innovation.<sup>20</sup> The literature on diffusion of innovation spans diverse fields from industry through to medicine.<sup>21</sup>

The innovation process is the way by which an innovation spreads from its source of invention to its ultimate

users or adopters.<sup>19</sup> Diffusion is the naturalistic (unplanned or spontaneous) spread of innovations in comparison with proactive (planned and directed) dissemination.<sup>22</sup>

Using the delayed prescription strategy may involve a culture of change for GPs. The way they might adopt new drugs may differ from their uptake of innovations that involve active patient participation, such as delayed prescribing. Another example of a strategy involving active patient participation is the green prescription, where a written, goal-orientated exercise prescription is given to sedentary patients as a tangible reminder of an exercise. The introduction of a new drug is usually accompanied by extensive advertising and academic detailing by the pharmaceutical industry but innovations promoting behavioural changes by patients seldom enjoy an equivalent degree of financial backing. The process of uptake of a patient-centred innovation by GPs therefore may be more of a diffusion than an active dissemination following the typical market place model.

Our aim was to explore GPs' experiences of delayed prescription use, the diffusion of this innovation and their changing use of the strategy over time.

## Method

This study forms part of a multi-method approach to studying delayed prescribing in general practice. A 1999 cross-sectional study of 100 randomly selected Auckland GPs had identified their use of the delayed prescribing strategy.<sup>10</sup> A single blind randomised controlled trial found that use of the delayed prescription of antibiotics for the common cold significantly decreased antibiotic use in the intervention group,<sup>16</sup> and a systematic review<sup>1</sup> has shown similar results in use with sore throat,<sup>6</sup> otitis media,<sup>17,23</sup> and cough.<sup>24</sup>

This current study used a qualitative approach to explore delayed prescription use by GPs. The doctors were recruited from a list of high-users (twenty or more delayed prescriptions per month) or low-users (one or fewer per month), prepared from the cross-sectional study.<sup>10</sup> Thirteen doctors were recruited for the study and no GP approached declined to be interviewed.

Sampling ceased at data saturation.

Interviews were conducted by telephone in 2001. Purposive sampling was used to deliberately include 'outliers' with respect to characteristics

such as gender and socioeconomic location.<sup>25,26</sup> This built sample diversity to improve data robustness.

GPs were paid for their time. Semi-structured open-ended questions were progressively focused to more structured questions. Questions included doctors' views on delayed prescribing, the duration, frequency and circumstances of their use and perceived advantages and disadvantages. The interview data was collected in an iterative process in which themes from the early interviews were specifically checked in later interviews. Interviewing ceased once data saturation had occurred, with no new themes emerging.<sup>27-29</sup>

The interviews were audiotaped along with handwritten responses which were checked against the audio recordings, and from which typed responses were prepared. A general inductive approach to the data analysis was used. Individual written interview responses were initially analysed to identify sub-themes. Interviews were then collated and analysed for emerging categories. These were combined into major themes through ongoing discussions with an experienced qualitative researcher (DT) and re-reading of the transcripts by the first three authors (which included the interviewer, FG) until consensus was reached regarding the main themes being ex-

## Delayed prescribing has been generated spontaneously and independently by GPs

pressed. The data was double coded by an independent researcher (NK) as a consistency check and discrepancies resolved by negotiation between two of the researchers (NK and FG).

Approval for the study was given by the Auckland Ethics Committee.

## Results

The respondents were men and women ranging in age from 30s to 60s, including both New Zealand-trained physicians and immigrants (from Asia and South Africa) with practice locations ranging from lower to upper-middle class suburbs. Seven GPs had identified themselves as high-users and six as low users in the previous study, but two of the high-users reported they now were low-users when interviewed, and one low-user had significantly increased his use of the strategy over the past two years.

All the doctors, from enthusiastic regular users through to one who now never uses the strategy, said that the concept of a delayed prescription was an idea that they had developed spontaneously, not something that they had been taught or had read about. Their motivation included maintaining the doctor-patient relationship when confronted with patients wanting antibiotics for the common cold. It was also used as a mechanism to assist in the education of patients regarding the inappropriateness of antibiotic use in treating viral infections.

While they had seen it as an option early in their career (usually for over a decade and up to twenty years), the majority had used the strategy in a very limited capacity until recently, and had only started using it regularly in the past two or three years.

*'I thought about it many years ago but very seldom used it (delayed prescribing)'* and

*'I started to use it the last two years – before then my use was very limited.'*

A primary reason identified by the GPs for this was a growing professional awareness of the social, medical and financial costs associated with unnecessary antibiotic use and a drive by doctors to reduce their antibiotic prescribing. They identified a number of benefits to limiting antibiotic use:

*'Reduce the side-effects of unnecessary antibiotics';*

*'Saves patients' money';*

*'May save the government money';*

*'It is important to decrease antibiotic use to reduce resistant strains developing. There have been no new antibiotics for a number of years now and it's unlikely we will get any in the near future so we need to be careful';*

*'It seemed like a good idea. People come wanting a prescription for antibiotics but I'm trying to limit antibiotic use and this is a compromise.'*

Another major reason for their recent increased use of the strategy was the knowledge that it is being used by other doctors and that it is now a

topic of research. Knowledge that their colleagues were also using it gave the concept increased acceptability as an orthodox intervention. As two commented,

*'My use (of delayed prescription) has increased once it came to light about two years ago that others were using it',* and

*'I had no idea other general practitioners were doing this until I was involved in the study on it.'*<sup>16</sup>

On the other hand, some doctors have decreased their use of delayed prescription. One reason they attributed this to was that they had educated their patients over time that antibiotics were not needed for viral illnesses and these patients would now seldom present with these conditions. Two doctors commented:

*'I'm a low antibiotic user and I haven't used one delayed prescription in the past month. I have decreased my use in the past ten years – partly because it is easier to educate patients about viral and bacterial conditions. There are brochures available plus a public education scheme and this has made it easier to explain to patients.'* and

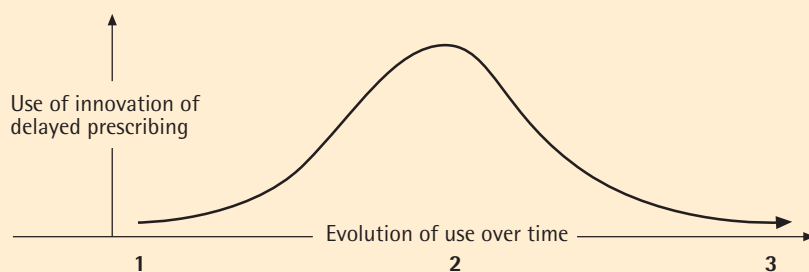
*'I use both antibiotics and delayed prescription less – my patients are educated not to present for viral illnesses.'*

Another doctor ascribed his decreased delayed prescription to concerns that medical practice now operates in a more litigious environment and the use of a delayed prescription could make him more vulnerable to a patient complaint.

*'I've decreased my use over the last five to six years – I used to do more. I would rather see the patient again for medicolegal reasons.'*

In the cross-sectional study these doctors would be recorded as low-users yet originally they were high-users. This demonstrates the benefit of a qualitative study in that it enables the investigators to delve into reasons for behaviour change that may be unexpected. A schematic representation of the evolution of use of the delayed prescription innova-

Figure 1. Schematic representation: Evolution of the innovation of delayed prescribing



1. Doctor believes s/he is the only one using the delayed prescription innovation.
2. Doctor is aware that others are using the innovation (through communication with colleagues; reading the literature; being involved in research) and increases its use.
3. Doctor uses the innovation much less frequently as patient population become educated and reduce their expectation of antibiotics for viral illnesses.

tion is outlined in Figure 1. The rise and fall in use of this innovation may indicate that this a temporary strategy, the need for which declines as patient education is achieved.

While some GPs say they have no restrictions on its use, others are selective about patients for whom they consider delayed prescribing appropriate. A range of criteria are used. Most doctors restrict use to those patients who can understand the concept and instructions. Patients who are poorly educated, have a poor command of English, or are transient to the practice are identified as poor candidates for receiving delayed prescriptions.

*'I use it with patients I know, I have a good rapport with, if they understand my philosophy about what I'm trying to do. When I know a patient's history and they can recognise the signs I'm looking for.'*

*'I won't give one to patients I don't trust to understand, [the reasons for delayed prescriptions] or poor English speakers.'*

Some GPs also restricted its use to a particular age range, but within this category there was considerable variability and inconsistency. Some used delayed prescriptions only with children. One doctor would not use the strategy in very young children, under age three. One GP said:

*'I never use it in babies under 12 months old and seldom under six to eight years.'*

In contrast, another said,

*'I use it mostly with children less than six years old.'*

There was no consensus regarding circumstances or specific instructions for use. Some would use delayed prescribing only with clearly viral illnesses:

*'I use it for someone with viral illness not warranting antibiotics';*

others with chronic illnesses where secondary infection is more likely:

*'Use with patients with potential for getting a secondary infection – if they previously always got bacterial*

*infections of their chest, ears, sinuses or throat.'*

There was considerable variability with respect to instructions for use regarding the symptoms to watch out for and how long to wait. One told his patients to get the prescription and the antibiotics if no better after 24 hours. Another's instruction was to get the prescription filled *'if the condition deteriorates over the next one to two days'*. Some GPs

will specify the symptoms to watch for, such as increasing fever or mucopurulent sputum.

*'The number of days to delay antibiotic use may vary, depending on how long the symptoms have already been present.'*

Some doctors are more likely to use the strategy when circumstances make it difficult for a patient to return should their symptoms worsen: *'particularly on Fridays or if patient travelling'* and *'especially before a long weekend'*.

## Conclusion

Earlier research has indicated that the speed with which public health innovations are adopted is influenced by the communications network disseminating the idea and knowledge that it is used and endorsed by those perceived as opinion leaders.<sup>30-32</sup> In general, early adopters are likely to take up new interventions in response to scientific information from credible written and professional sources, whereas the majority change their practice performance in response to opinion leaders, peer activities and acceptance by their social network,<sup>33</sup> although the latter may play a smaller role in large cities compared with closely-knit small towns.<sup>34</sup> The GPs in our study identified that their use of delayed prescribing increased dramatically on learning that this inno-

vation was wide-spread and was a topic of research by academic GPs.

A further finding of interest was the subsequent decreased use of delayed prescribing by some of the enthusiastic early adopters. Their view was that use of the strategy over time had resulted in an educated patient population who no longer sought antibiotics for viral illnesses and hence the need to issue delayed prescriptions had declined. This illustrates the value

of a sequential explanatory multi-method approach using qualitative data to explain quantitative results.<sup>35</sup> Use of qualitative methodology differentiated previously high-users who now limited use because the intervention had successfully educated their patients from those who had never used the innovation extensively. In a cross-sectional study both groups would be classified as 'low-users'.

There are increasing reports of the use of delayed prescribing in family practice.<sup>6,23,24</sup> Unlike interventions such as new drugs, delayed prescribing has been generated spontaneously and independently by GPs. There is consequently considerable variability in its use with respect to which patients, which conditions and which instructions are considered appropriate. The development of more formalised recommendations for delayed prescribing use is needed.

Other strategies include asking the patient to collect the prescription from the front desk at a later date or post-dating the prescription with a gap of some days.<sup>6, 24</sup> This might also serve to further reduce unnecessary use. Alternatively, special patient instructions in written form may be warranted, as was done in a controlled before-after study of delayed prescriptions for otitis media.<sup>23</sup> Patient education leaflets explaining the natural course of a common cold have been

## Delayed prescription...was also used as a mechanism to assist in the education of patients regarding the inappropriateness of antibiotic use in treating viral infections



found to be effective in reducing unnecessary antibiotic use,<sup>36</sup> and this could be combined with information on when the use of antibiotics might be indicated. A potential strategy that we plan to test is placing the prescription in an envelope with clearly written instructions (when to use under what conditions) on the outside might reduce the possibility of some patients becoming confused about when to use a delayed prescription.

Evidence from randomised controlled trials of delayed prescriptions show an increase of signs and symptoms in the control arms, suggesting that there is some morbidity in not taking antibiotics for some patients under certain conditions.<sup>6,17,24</sup> In a randomised controlled trial comparing antibiotic use with placebo, one child in the placebo group developed meningitis.<sup>37</sup> Long-term safety issues for delayed prescriptions will need

to be monitored using large cohort studies as randomised controlled trials are not good at showing rare side-effects. Formalising recommendations for patient suitability and instructions for use may be required to ensure safety and consistency.

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