



Commitment questions targeting patients promotes uptake of under-used health services: Findings from a national quality improvement program in Australia



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ABSTRACT

Rationale: Interventions asking patients to commit to speaking with their doctor about a health-related issue could be used to improve quality of care.

Objective: To evaluate the impact of commitment questions targeting patients on the uptake of recommended health services within a national quality improvement program (Veterans' MATES).

Methods: Patients targeted in the home medicines reviews (HMRs), dose administration aids (DAAs), renal function testing and diabetes interventions were posted educational information and response forms which asked whether they intended to talk to their general practitioner (GP) about the targeted service. Uptake of the service after each intervention was determined using health claims data. Log binomial regression models compared the monthly rate of service use in the nine months post-intervention among patients answering 'yes' to a commitment question with non-responders and patients answering 'no' or 'unsure'.

Results: Each intervention targeted up to 58,000 patients. The average response rate was 28%. Positive responses were associated with increased uptake of HMRs (rate ratio (RR) 2.64, 95% CI 2.39–2.92; $p < 0.0001$), dose administration aids (RR 2.53, 95% CI 2.29–2.79; $p < 0.0001$), renal function tests (RR 1.18, 95% CI 1.13–1.24; $p < 0.0001$), GP management plans (RR 1.30, 95% CI 1.14–1.48; $p < 0.0001$) and diabetes care plans (RR 1.47, 95% CI 1.24–1.75; $p < 0.0001$) compared to non-responders. Similar increases in uptake were also observed among positive responders when compared to patients responding 'no' or 'unsure' to the commitment question.

Conclusion: Positive responses to commitment questions distributed as part of national, multifaceted interventions were consistently associated with increased uptake of targeted services.

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1. Background

The translation of evidence into clinical practice is challenging (Eccles et al., 2005; Scott and Glasziou, 2012), particularly for medicines use and related health services. Poor uptake of medicines recommended for secondary disease prevention has been

well described (Giangregorio et al., 2006; Ogilvie et al., 2011; Winkelmayer et al., 2005; Yusuf et al., 2011). Among those who do receive recommended therapies, suboptimal use of related health services has also been reported (Lee et al., 2010; Roughead et al., 2008; Woodward et al., 2013).

Quality improvement activities targeting health professionals are widely used to transfer evidence into practice in healthcare (Grimshaw et al., 2012). However, behaviour is one of the main determinants of an individual's health status (Squires et al., 2013) and interventions to improve use of medicines and associated health services often require engagement with multiple stakeholders, including consumers, and the use of tailored messages to achieve behaviour change (Grimshaw et al., 2012; Roughead, 2006).

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The majority of interventions that target consumers receiving suboptimal care provide educational information to promote consumer behaviour change and improve communication with health care providers (Grimshaw et al., 2012).

Evidence from studies drawing on the principles of commitment and consistency suggest that interventions asking patients to commit to a specific behaviour could be used to improve the quality of their health care. Asking people to provide a written or public commitment to undertaking a specific activity has led to more positive attitudes toward human immunodeficiency virus (HIV) prevention (Perlini and Ward, 2000), improved attendance rates for medical appointments (Martin et al., 2012), improved follow-up after tuberculosis screening (Wurtele et al., 1980), a reduction in inappropriate prescriptions for antibiotics (Meeker et al., 2014) and increased rates of completion of antibiotic treatment (Kulik and Carlino, 1987; Putnam et al., 1994). Interventions grounded in the principles of commitment and consistency are thought to engage an individual's desire for their words, beliefs, attitudes and actions to appear consistent at all times (Cialdini, 2009). Acts that encourage an individual to appear consistent with their previous commitments are likely to be responded to in an automatic manner because an individual's sense of self dictates that consistency is maintained (Cialdini, 2009). Furthermore, once an initial commitment has been made, individuals are also more likely to agree with additional requests for behaviours that are consistent with that position, in order to maintain consistency (Cialdini, 2009).

There is a need for further testing of interventions drawing on the principles of commitment and consistency to determine if they are effective when applied at the population level. This paper assesses the use of commitment questions in consumer response forms, which ask a patient whether they will speak with their doctor about a specific health service, on the uptake of health services targeted by an Australian quality use of medicines program; Veterans' Medicines Advice and Therapeutics Education Services (Veterans' MATES). Veterans' MATES is a national quality improvement program funded by the Australian Government Department of Veterans' Affairs (DVA) and aims to improve medicine use for Australian veterans. As previously described (Roughead et al., 2013), the Veterans' MATES program was designed using the theoretical frameworks of social cognitive theory (Bandura, 1986), the transtheoretical model (Prochaska and DiClemente, 1986) and the health promotion model Precede–Proceed (Green and Kreuter, 2005). Under the program, a new intervention targeting a specific medicines-related problem is implemented every three months. The topic for each intervention is determined following consultations with stakeholder groups, medication-related analyses of administrative health claims data, and consideration of Australia's National Health Priority Areas. For each intervention, administrative health claims data are used to identify patients with the specific medicine-related problem and to generate patient-specific prescriber feedback. The prescriber feedback is mailed to the general practitioners (GPs) providing care for the patients together with supportive educational materials that encourage the GP to review therapy. The same educational materials are sent to pharmacists accredited to provide home medicines reviews (HMRs) and to community pharmacies. Four weeks after the health professional mailing, targeted patients are mailed an educational brochure developed specifically for consumers that describes the medicines-related problem and encourages them to seek advice from their GP or pharmacist. Health professionals and patients targeted by the Veterans' MATES program are asked to complete and return a one page 'tick box' response form provided with the intervention materials. All Veterans' MATES materials are evidence-based; the materials are developed in consultation with a clinical reference group, externally reviewed by expert clinicians and endorsed by a

national editorial committee.

In accordance with the principles of consistency and commitment described by Cialdini (2009), the Veterans' MATES program has incorporated commitment questions into consumer response forms as an active strategy to facilitate behaviour change. To date, commitment questions have been included in the consumer response forms for four interventions aiming to increase use of health services, including HMRs (released November 2006), dose administration aids (DAAs) (September 2008), renal function tests (March 2012), and diabetes care plans (March 2013). Eligible patients can only receive these services after consultation with their GP. The aim of this study was to evaluate the impact of the commitment questions used in the Veterans' MATES consumer response forms, in conjunction with other interventional materials, on the uptake of targeted health services.

2. Methods

2.1. Data source and study population

Patients and GPs eligible for each intervention were selected using DVA's health claims database. This database contains details of claims for all DVA-subsidised pharmaceuticals and health services, including hospitalisations, GP and allied health services, and diagnostic tests. Client details including date of birth, residential status and date of death are maintained within the database. In December 2012, the DVA treatment population consisted of 228,266 veterans, war widows and widowers, of which 58% were male and the average age was 76 years (Australian Government Department of Veterans' Affairs, 2012).

2.2. Description of the interventions using commitment questions

The specific aim(s) of each of the four Veterans' MATES interventions and the criteria used to select targeted patients are described in Table 1. Veterans targeted in these interventions were posted an educational brochure with a consumer response form that included at least one commitment question. The commitment questions asked the patient whether they intended to talk with their GP about the targeted health service, with a prompt to consider the educational information provided before responding (Table 1). Patients were asked to respond to the question by marking the 'yes', 'no' or 'unsure' tick box and return the form using the pre-paid envelope provided. Response forms were printed with a unique patient number to identify respondents for analysis.

2.3. Statistical analysis

Administrative health claims data were used to determine the monthly rate of use of the recommended health service among patients targeted in the intervention. The monthly rate of use was determined by dividing the cumulative number of patients who had received the targeted health service since commencement of the intervention by the total number of targeted patients alive that month. Patients were categorised based on their responses to the commitment questions during the intervention period for the analysis. Monthly changes in the rate of use of the targeted health service in the nine months post-intervention among veterans who answered 'yes' to a commitment question were compared with non-responders and those who answered 'no' or 'unsure' using log binomial regression models, with adjustment for number of months since the intervention. Patients returning a response form with an error (such as ticking two answers for the same question) or without answering the commitment question were excluded from the analysis. Data were analysed using SAS version 9.4 (SAS

Table 1
Veterans' MATES interventions and target audience.

Intervention topic	Aim of the intervention	Criteria used to select targeted patients	Date intervention commenced	Number of individuals targeted			Patient commitment question
				GPs	Pharmacists	Veterans	
Home Medicines Review (HMR)	To increase uptake of HMRs in veterans at risk of medication misadventure	Patients aged 65 years and over who were dispensed four or more unique medicines each month and had not received an HMR in the previous four months	November 2006	12,949	7155	58,046	After reading the brochure, do you think you will discuss an HMR with your doctor at your next visit?
Dose administration aids (DAAs)	To increase uptake of subsidised DAAs in veterans at risk of medication misadventure	Patients aged 65 years and over who were living in the community and had not received a subsidised DAA, and were regularly dispensed at least four medicines that could be packed in a DAA or received medicines for dementia	September 2008	10,182	8080	27,707	Do you intend to talk to your doctor or pharmacist about the Department of Veterans' Affairs DAA service?
Renal function tests	To improve renal function monitoring among veterans taking medicines that may affect or be affected by kidney function	Patients who were either aged 80 years and over, diabetic or previously hospitalised for renal impairment, who were dispensed medicines that require renal function monitoring and had not received a renal function test in the last 12 months	March 2012	10,360	8311	27,432	After reading the brochure 'Medicines and your kidneys – is it time for a check-up?' do you intend to talk to your doctor about your kidney function at your next visit?
Diabetes cycle of care	To increase uptake of GP management plans and diabetes care plans among patients with newly diagnosed diabetes	Patients living in the community who were recently initiated on diabetes medicines or had received other diabetes services, and had not received a care plan	March 2013	6091	8543	9544	After reading the brochure are you likely to make an appointment to visit your doctor to talk about the services available to help manage your diabetes?

HMR: home medicines review, DAA: dose administration aid, GP: general medical practitioner.

Institute Inc., Cary, NC, USA).

This study was approved by the University of South Australia and DVA human research ethics committees.

3. Results

Table 1 outlines the number of patients, GPs and pharmacists targeted during the interventions. The number of patients targeted ranged from 9500 in the diabetes intervention to 58,000 in the HMR intervention.

The proportion of patients responding to the commitment questions ranged from 24% to 32% (Table 2). The number of patients responding positively to each intervention, non-responders, and those responding 'no' or 'unsure' are presented in Table 2.

The monthly rate of HMR uptake before and after the Veterans' MATES intervention in November 2006 appears in Fig. 1. Examination of the HMR rate between the end of the screening period and the start of the intervention shows HMR uptake at baseline was similar among each of the response categories. Following the release of the intervention at the end of November 2006, the curves begin to diverge, and by the end of follow-up, uptake of HMRs is considerably increased among patients who responded positively to the commitment question in comparison to non-responders and those who answered 'no' or 'unsure'. Similar patterns were also observed following interventions aiming to increase uptake of DAAs (Fig. 2), renal function tests (Fig. 3), and care plans among patients with diabetes (Figs. 4 and 5).

Our regression analyses also demonstrated an association between positive responses to commitment questions and increased uptake of targeted services. Following the HMR intervention,

there was a 2.6-fold increase in HMR uptake among patients who made a commitment to speak to their doctor compared to non-responders and those responding 'no' or 'unsure' (Table 2). Similarly, patients who intended to speak to their doctor after receiving the DAA intervention had a three-fold increase in DAA uptake compared to those who did not intend to discuss the topic with their GP, and there was more than a two-fold increase in DAA uptake compared to non-responders. Positive responses to the commitment question included in the renal function tests intervention were associated with a 17% increase in testing, while uptake of GP management plans and diabetes care plans were increased by 30–50% among positive responders in comparison to other targeted patients.

4. Discussion

This study demonstrates that patients responding positively to the commitment questions used within a multifaceted quality improvement program were more likely to receive the targeted service in comparison to both non-responders and those with a negative response. This was despite all patients, GPs and pharmacists included in this study receiving the same interventions. Importantly, the rate of uptake observed between the end of the screening period and the start of the intervention was the same for patients answering yes, no, or not responding to the commitment question for each intervention. Trends in uptake diverge after the intervention is mailed out to targeted patients (one month after clinicians), further suggesting consumer involvement in the GP's decision to refer the patient for the service. These findings suggest the use of commitment questions in the Veterans' MATES

Table 2
Patient intent to discuss the materials with their doctor and impact on health service use.

Intervention outcome	No. of patients included in the analysis	Patient intent to discuss materials with their doctor			Uptake of targeted health service	
		Yes	No/unsure	Did not respond	Yes vs. did not respond RR (95% CI; P-value)	Yes vs. no/unsure RR (95% CI; P-value)
Uptake of HMRs	57,189	11,389	5296 (9%)	40,504 (71%)	2.64 (2.39–2.92; $P < 0.0001$)	2.67 (2.19–3.26; $P < 0.0001$)
Uptake of DAAs	26,710	3976 (15%)	4585 (17%)	18,149 (68%)	2.53 (2.29–2.79; $P < 0.0001$)	3.29 (2.81–3.86; $P < 0.0001$)
Uptake of renal function tests	27,422	5504 (20%)	1150 (4%)	20,768 (76%)	1.18 (1.13–1.24; $P < 0.0001$)	1.17 (1.05–1.30; $P = 0.0037$)
Uptake of GP management plans	9089	1617 (18%)	778 (8%)	6694 (74%)	1.30 (1.14–1.48; $P < 0.0001$)	1.39 (1.15–1.67; $P = 0.0007$)
Uptake of diabetes care plans					1.47 (1.24–1.75; $P < 0.0001$)	1.54 (1.19–2.00; $P = 0.001$)

RR: rate ratio. CI: confidence interval. HMR: Home Medicines Review. DAA: Dose administration aid. GP: general medical practitioner.

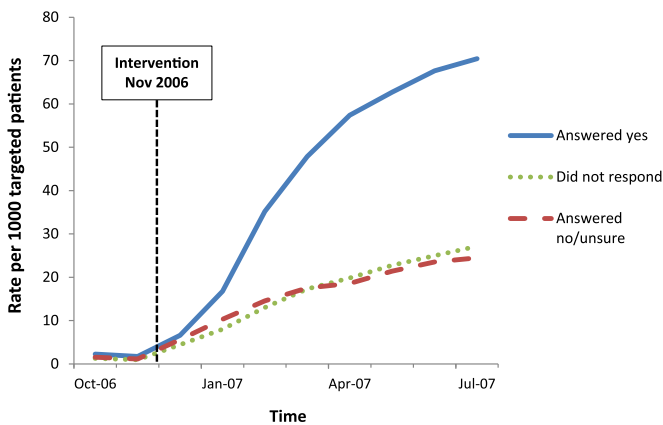


Fig. 1. Monthly rate of home medicines reviews (HMRs) before and after the Veterans' MATES intervention in November 2006. Results are stratified by the patient's response to the commitment question on the evaluation form.

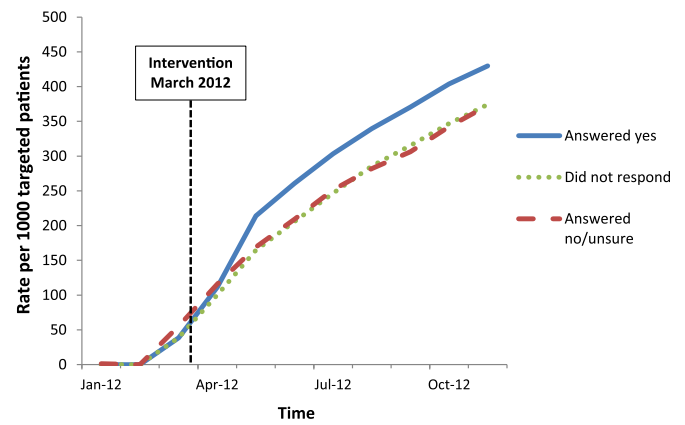


Fig. 3. Monthly rate of renal function testing before and after the Veterans' MATES intervention in March 2012. Results are stratified by the patient's response to the commitment question on the evaluation form.

consumer response forms, in conjunction with other interventions including educational information and patient-specific prescriber feedback, has led to behaviour change at the national level, with the effects sustained throughout the follow-up period.

In this study, positive responders had the highest uptake of the targeted health service, followed by non-responders, while patients who stated that they did not intend to speak to their doctor consistently had the lowest uptake out of the three groups. These

findings are consistent with previous work demonstrating that commitments that are freely chosen, active, and public are more likely to be acted on (Cialdini, 2009; Kiesler, 1971). Previous studies assessing the impact of commitment on behaviour show that individuals who actively express their intentions (such as ticking a box or signing a pledge card) are more likely to be consistent with their decision than someone expressing the same intention in a passive manner (Allison and Messick, 1988; Cioffi and Garner, 1996; Fazio et al., 1982). Furthermore, individuals making a public

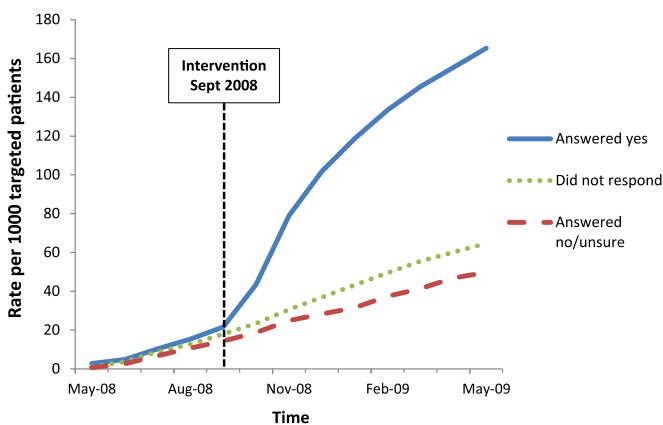


Fig. 2. Monthly rate of use of dose administration aids (DAAs) before and after the Veterans' MATES intervention in September 2008. Results are stratified by the patient's response to the commitment question on the evaluation form.

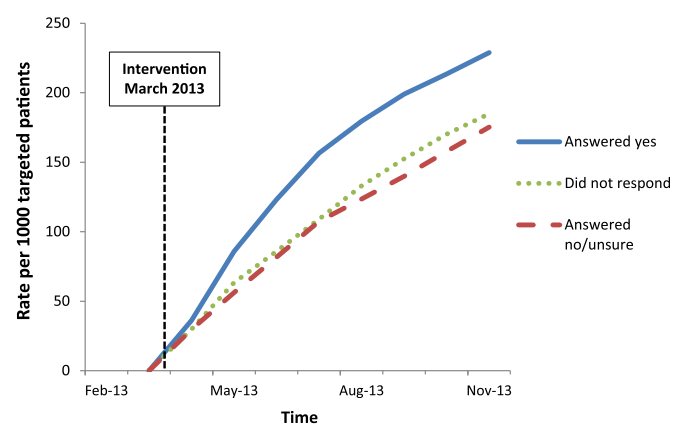


Fig. 4. Monthly rate of use of GP management plans before and after the Veterans' MATES intervention in March 2013. Results are stratified by the patient's response to the commitment question on the evaluation form.

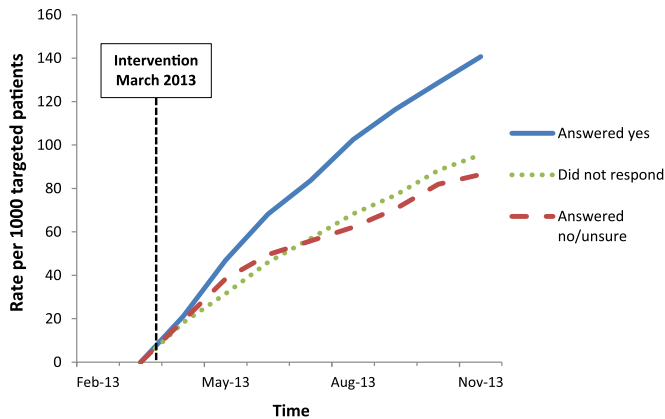


Fig. 5. Monthly rate of use of diabetes care plans before and after the Veterans' MATES intervention in March 2013. Results are stratified by the patient's response to the commitment question on the evaluation form.

commitment are more likely to perform the behaviour than those who made the same commitment privately (Cioffi and Garner, 1996; Deutsch and Gerard, 1955). In the present study, patients who did not respond to the commitment question may have made a private or passive commitment to speak with their GP, postponed their decision, or had not received or read the material. Those who returned a completed response form marked 'yes' or 'no' could be considered as making an active, public commitment and were more likely to stick to their intentions, leading to the differences in uptake of the targeted service.

Similar to other studies drawing on the principles of commitment and consistency, the health services targeted in this study were not accessed by all positive responders by the end of the follow up period. We could not ascertain whether these patients had discussed the service with their GP and had not accessed it based on their doctor's clinical judgement, or whether these patients had simply changed their mind and not discussed it with their doctor. Factors such as competing priorities or lack of resources may have also prevented patients from acting on their positive intentions (Greenwald et al., 1987). Furthermore, the commitment intervention assessed in this study was one of many strategies used within a larger quality improvement program that also targeted GPs and pharmacists. There may have been sound clinical reasons why patients who responded positively to the commitment question were not suitable for the targeted health service, while patients who did not intend to discuss the service with their GP may have received the service if the GP felt it was clinically indicated. Similarly, patients responding negatively to the commitment question had the lowest uptake of targeted services, despite other interventions targeting their GP and pharmacist. This highlights the need to carefully consider concurrent strategies that will maximise the likelihood of the person responding positively to a commitment question when designing interventions to improve quality of care.

The Veterans' MATES program incorporates commitment questions based on the principles of commitment and consistency described by Cialdini (2009) in combination with other strategies to promote behaviour change. Studies examining question-behaviour effects underpinned by alternative theories (such as cognitive dissonance or increased attitude accessibility) have also shown that asking consumers about intentions towards health behaviours such as healthy eating, exercise, health assessments and screening can lead to improvements in these behaviours (Rodrigues et al., 2015; Sprott et al., 2006; Wood et al., 2014). Our results are in keeping with these studies; however, few studies have examined question-

behaviour effects when used in conjunction with other interventions to promote behaviour change. We located one randomised controlled trial that found uptake of a personalised health plan by consumers with high cholesterol was the same among consumers who completed a questionnaire asking about intentions, anticipated regret and attitudes (81%), those who received personalised information about their risk of cardiovascular disease (81%), and controls (80%) (Ayes et al., 2013). However, consumers who received personalised risk information in conjunction with the questionnaire were more than six times more likely to sign up for a health plan in comparison to controls and consumers who received only one of these interventions (odds ratio 6.22; 95% CI 1.87–20.7, $P = 0.003$) (Ayes et al., 2013). These results suggest interventions asking patients about their intentions in conjunction with techniques to increase the likelihood of a positive reaction towards a health behaviour can lead to behaviour change, which is in keeping with the results of the present study.

4.1. Strengths and limitations

One of the strengths of the Veterans' MATES program is the use of administrative health claims data to identify patients and clinicians eligible for interventions, provide patient-specific prescriber feedback and tailored education, and track changes in health service use at the national level. Because the program targets all eligible veterans, we were unable to assess the impact of commitment questions administered independently from other components of the intervention or include a control group in the analysis, however uptake was assessed in the group of non-responders. We could not determine individual reasons for answering or acting on the commitment question from claims data; nor could we account for severity of illness, which may have influenced the patient's response to the commitment question and the GPs decision to refer the patient for the targeted service. Future studies exploring factors associated with positive and negative responses could assist with planning and implementation of quality improvement initiatives that target consumers. There is also scope to assess whether commitment questions targeting health care providers have an impact on behaviour and assess the use of commitment questions in conjunction with interventions delivered in an electronic format.

Questionnaire reminders are not sent as part of the Veterans' MATES program as it is an ongoing national program with a new intervention released every three months. Overall, 28% of the targeted patients included in this study responded to the commitment questions, which could be viewed as a potential limitation to the use of this approach. However, a large number of patients were directly exposed to the commitment questions, as these were incorporated into national quality improvement initiatives that collectively targeted more than 100,000 patients.

5. Conclusions

In this study, positive responses to commitment questions in consumer response forms distributed as part of a national quality improvement program were associated with increased uptake of targeted health services. These effects were consistently demonstrated across each Veterans' MATES intervention using commitment questions to improve utilisation of recommended health services. Commitment questions are a simple but effective addition to patient response materials and may be used in conjunction with interventions in other healthcare settings to increase uptake of services by patients and improve quality of care.

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