# Managing chronic disease

## Patients' views and attitudes to using a broadband based service

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### Background

The uptake of chronic disease management initiatives among general practitioners remains low. cdmNet is a broadband based service used to assist registered care providers in developing GP management plans, team care arrangements, reviews and home medicines review for patients with a chronic disease. This study examined patients' views and attitudes of managing chronic disease using cdmNet.

### Methods

Cross-sectional survey consisting of an anonymous questionnaire was completed by patients whose chronic diseases were managed using the broadband based service.

### Results

Significant correlation was found between GPs' use of this broadband based service, and patients' perception that using a broadband based service will improve their control of chronic disease ($p<0.001$). Patients who felt confident their personal information would be kept private were also significantly more likely to recommend cdmNet ($p<0.001$).

### Discussion

Patients who feel that technology may contribute to improving the management of their chronic disease and have an understanding of privacy are more likely to have positive views and attitudes toward using a broadband based service.



### Keywords

patients; chronic disease/management; online systems


Chronic disease affects more than 30% of the population worldwide, accounts for more than 70% of healthcare costs in developed countries and is responsible for more deaths globally than all other diseases combined.[1] To assist health professionals in the management of chronic diseases, the Australian government introduced a range of Medicare items for chronic disease management (CDM) including: general practice management plans (GPMPs), team care arrangements (TCAs), reviews and home medicines reviews (HMRs).[1]

Despite these initiatives, uptake of these item numbers by general practitioners appears to be limited.[2–4] Possible reasons include difficulties in accessing and communicating with other health professionals,[5] challenges with using computers in general practice,[6] the need to up-skill practice staff,[7] limited patient computer skills, lack of patient access to technology,[8,9] GP time constraints[5,10] and privacy issues.[11]

cdmNet is a secure broadband based service that utilises information technology to develop GPMPs, TCAs and reviews for patients diagnosed with a chronic disease.[12] The process involves the creation of individualised, best practice GPMPs, TCAs and reviews, and the generation of reminders for patients, which can be used by health professionals and patients to monitor the patient's progress.[13] The service can only be accessed by registered users such as GPs, practice nurses, care team members and patients.

A previous study examined users' perspectives on a system known as the Chronic Disease Management System (CDMS), which was the precursor to cdmNet.[13–15] This study reported high overall satisfaction among GPs, allied health professionals and patients who used this system.[14,15] In 2010, CDMS became known as cdmNet and was extended to include the capacity to develop GPMPs, TCAs and reviews for the 12 chronic diseases listed by the Australian government.[1] A broadband based service could potentially assist GPs in improving the management of patients diagnosed with a chronic disease, and the views of consumers who have used such a service would be valuable in gauging the potential success and acceptability of this broadband based service. Studies have also recognised that patient input is vital to patient care,[16] and can positively influence better process and health outcomes for patients.[16] The active involvement of patients in the development, implementation and evaluation of health strategies and programs is also integral to the success of these strategies.[17] Consequently, the aim of this study was to examine patients' views and attitudes toward managing chronic disease using cdmNet.

## Methods

This study was part of a wider research program using the broadband based chronic disease management tool. A convenience sample of GPs from metropolitan Melbourne (Victoria) who participated in research that included educational workshops for the purpose of upskilling GPs in the use of cdmNet were invited to be involved and invite their patients to be involved. The research and upskilling program was delivered by Monash University.

For this component of the study, participating GPs generated a list of patients for whom a GPMP had been developed using the online system during the intervention period (March to September 2011). An invitation letter, explanatory statement, questionnaire and reply-paid envelope were mailed by the GPs to their patients. The anonymous questionnaire comprising of 65 questions was developed based on literature and a previously developed and a validated questionnaire.[13,14,18,19]

This questionnaire was designed to explore patients' access to technology, their attitudes and views on GPs using technology and, in particular, GPs use of the online system for developing GPMPs and TCAs to manage and review patients diagnosed with a chronic disease. As this was an anonymous questionnaire, reminder letters were mailed to all participants 2 months after the initial invitation.

Completed questionnaires were returned to the research team via surface mail. Data were analysed using IBM SPSS Statistics (version 19) package.[20] Continuous data were compared using an independent sample t-test while the strength and direction of the relationship between two variables were analysed using Spearman's rank order correlation.

## Results

Of the 15 GPs involved in the workshops, 10 chose to participate in this study. Invitation letters were sent by the 10 GPs to their patients (total of 336 patients). Of the 152 responses received, 17 of these answered less than 75% of the questionnaire, therefore were classed as 'incomplete' and were not included in the final analysis. The overall response rate was 40% (*Figure 1*).

### Patient demographics

The median ± SD age of the respondents (n=135) was 73 ± 12.9 years (range = 19–90 years). Almost half (45%) derived their income from the aged pension and other pensions. The majority (75%) reported their highest qualification as 'secondary school' or 'trade/diploma' (*Table 1*).

Respondents were asked about their diagnosed chronic diseases, in particular diabetes, osteoarthritis, heart disease, and chronic obstructive airway disease or chronic obstructive pulmonary disease (*Table 1*). Respondents were able to record more than one disease (if applicable), with 54% (n=73) recording one chronic disease, 31% (n=43) recording two chronic diseases and 7% (n=9) recording three or more chronic diseases.

### Patients' views and attitudes on the use of technology and cdmNet

Given that the online system is accessible to patients via electronic devices such as mobile phones and computers with internet access,

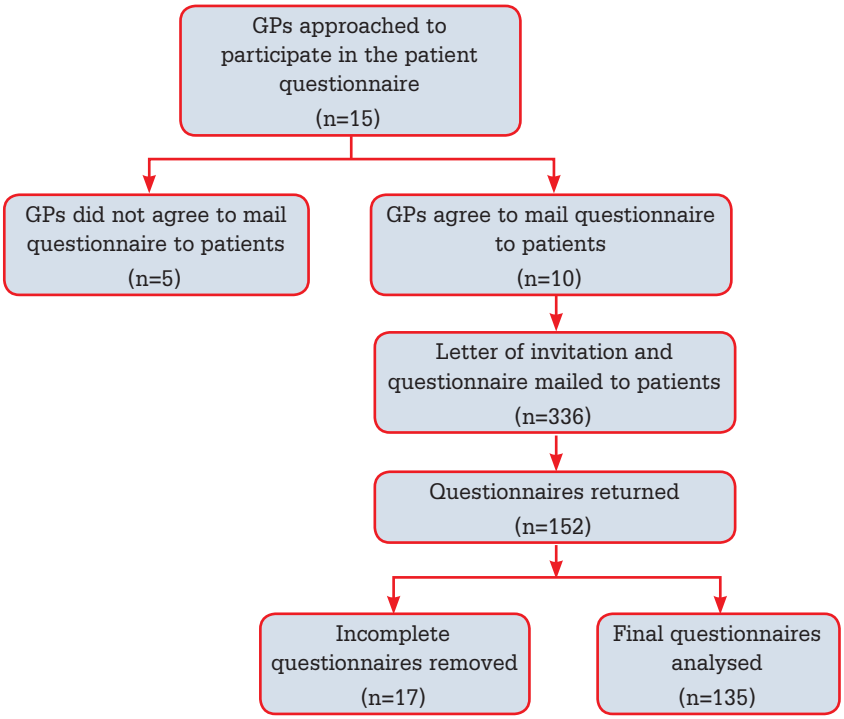


Figure 1. Recruitment of GPs and patients

**Table 1. Demographics of patients who participated in the study**

| Patient demographics | % (n) |
|---|---|
| **Gender** | |
| • Male | 44% (59) |
| • Female | 49% (66) |
| • Missing data | 7% (10) |
| **Income** | |
| • From paid work | 13% (18) |
| • Age pension/other pension | 45% (61) |
| • Superannuation or retirement savings | 10% (14) |
| • Other investments | 12% (16) |
| • Support by family | 4% (5) |
| • Age pension and superannuation or retirement savings | 10% (14) |
| • Other | 5% (7) |
| **Qualification** | |
| • Secondary school | 41% (55) |
| • Trade/diploma | 34% (46) |
| • University degree | 11% (15) |
| • Post-graduate degree | 7% (9) |
| • Missing data | 7% (10) |
| **Chronic disease** | |
| • Diabetes | 36% (48) |
| • Osteoarthritis | 28% (38) |
| • Ischaemic heart disease/chronic heart failure | 29% (40) |
| • Chronic obstructive airway disease/chronic obstructive pulmonary disease | 13% (17) |
| • Other diseases (included depression, cancer, hypertension and chronic back pain) | 40% (54) |

**Table 2. Patients' views on the use of technology, cdmNet, privacy and satisfaction**

| Statements | Disagree or strongly disagree % (n) | Neither agree or disagree % (n) | Agree or strongly agree % (n) | No response % (n) |
|---|---|---|---|---|
| My GP has explained what the cdmNet broadband based service is about | 22% (29) | 18% (24) | 41% (55) | 20% (27) |
| My GP has explained what the GP management plan is about | 17% (23) | 10% (14) | 55% (75) | 17% (23) |
| I like my GP's use of computers to help manage my chronic disease(s) | 6% (8) | 16% (21) | 60% (81) | 19% (25) |
| I believe the GP management plan which was developed through the cdmNet broadband based service improved my control of my chronic disease(s) | 12% (17) | 32% (43) | 36% (48) | 20% (27) |
| I understand the purpose of a GP management plan | 10% (13) | 13% (18) | 59% (80) | 18% (24) |
| I found that viewing my GPMP and health information on the internet was helpful | 14% (18) | 26% (35) | 25% (34) | 36% (48) |
| I found the cdmNet technology too difficult to use | 16% (22) | 30% (41) | 16% (21) | 38% (51) |
| I was comfortable with the fact that all health professionals involved in my care can see all of my clinical details on the computer | 8% (11) | 10% (13) | 61% (83) | 21% (28) |
| I am comfortable with the nature and extent of information sharing that takes place to develop a care plan for me | 6% (8) | 13% (18) | 58% (79) | 22% (30) |
| I understand how the privacy of my personal information will be protected within the cdmNet broadband based service | 5% (7) | 18% (24) | 56% (75) | 21% (29) |
| I am confident that my personal information will stay private | 6% (9) | 19% (25) | 55% (75) | 19% (26) |
| I would recommend that cdmNet be made available to others with a diagnosis of chronic disease | 3% (4) | 21% (28) | 50% (67) | 27% (36) |

patients were asked about their level of access to these devices. Approximately 70% (n=94) of the cohort owned a mobile phone, and approximately 62% (n=84) had access to the internet at their residence; of these 82% (n=69) indicated having used the internet. Therefore around half of the cohort had access to the internet and had used it previously. Not surprisingly, older patients were less likely to own a mobile phone (t-test, $p<0.001$); and were also less likely to have access to the internet or use the internet (t-test, $p<0.001$).

When asked about their views on the use of computers by GPs, 60% of respondents strongly agreed/agreed that they liked their GP's use of computers to help manage their chronic diseases (*Table 2*). Significant correlation was found between GPs' use of computers to help patients manage their chronic disease and patients' perception that using cdmNet will improve their control of chronic disease (r=0.43, n=105, $p<0.001$).

## Patient's views and attitudes on privacy

Regarding patients' views on privacy, more than half of the respondents were comfortable with sharing information between health professionals involved in their care (*Table 2*). Patients who indicated that they understood how privacy of their information would be protected within the system were more confident that the personal information would remain private (r=0.73, n=104, $p<0.001$).

Overall, patients who were confident that their personal information will remain private were more likely to recommend making cdmNet available to other patients diagnosed with chronic disease(s) (r=0.64, n=97, $p<0.001$).

# Discussion

cdmNet is a novel broadband based tool that uses technology for developing and monitoring GPMPs, TCAs and reviews for patients who have been diagnosed with a chronic disease.[13] Our study examined the views and attitudes patients whose chronic disease(s) were being actively managed using the online tool. Patients who were satisfied with their GP's use of computers and technology, tended to agree that it could improve their chronic disease management. Patients who were confident that their privacy would remain protected were more likely to have positive views and attitudes towards the use of the broadband based tool. The results of our study could potentially have wider implications for similar technology based tools.

The results from this study suggest that our patient cohort was generally older with limited income and qualifications that reflected their age group. The older the patient, the less likely they were to own mobile phones and computers, and have access to, or use, the internet. This may limit their involvement in directly managing their chronic disease using a broadband based service such as this one. Interestingly, only 36% of patients generally agreed that GPs' use of the online care plan would improve the management of their chronic disease. cdmNet was previously

tested when known as CDMS in a trial conducted in Victoria with results suggesting a high overall satisfaction among GPs,[15] users[16] and patients[17] involved in the trial.

More than half of the respondents in our study were comfortable with health care records being shared with care team members and understood that their personal information within the online system would remain confidential. This result is important as it suggests that patients who are confident that their personal information would remain private were more likely to recommend an online system to other patients diagnosed with chronic disease.

A limitation of this study was the response rate of 40%. However, it is not clear if this resulted in any bias as the characteristics of the non-respondents are unknown particularly their ownership and/or use of mobile phones and the internet. The study also found up to 38% of patients were unclear about the purpose of cdmNet or the questions used in the survey. However, limited or no access to a mobile phone or internet might have contributed to the low response rate to questions regarding those issues. The strength of this study was the ability to identify every patient at each GP site who was managed with cdmNet during the study intervention period and invite them all to participate. The patients approached for the survey had already consented to have a GPMP or TCA using cdmNet and therefore may not be representative of all patients, some of whom may decline GPMP or TCA or decline to use cdmNet.

## Conclusion

This study provides an insight into patients' views and attitudes toward the use of technology such as online based systems in the management of chronic disease. The patients involved liked their GP's use of computers to help manage their chronic diseases. Patients' confidence that their privacy will remain protected is also likely to be important ensuring the success of implementing initiatives such as online care plan systems.

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