

## The MEDMAN project: Evaluation of the medicines management training for community pharmacists

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### Abstract

**Background and Training package:** A RCT was conducted to evaluate a community pharmacist-led medicines management service (MEDMAN) for patients with coronary heart disease (CHD). The aim was to evaluate training provided prior to commencement of the service.

**Method:** Questionnaires were mailed to participating English community pharmacists at three time points to assess CHD knowledge, perceived knowledge/skills, and comfort with respect to the new service.

**Results:** Before training (baseline; response rate 63%) pharmacists had good CHD knowledge although 50% reported needing much more knowledge. Fewer (20%) felt training in communication skills/working with GPs was needed. After training (post-training time point 1; response rate 80%), perceived knowledge and skills increased ( $P < 0.001$ ). At post-training time point 2, CHD training was rated highly useful (89%), relevant (91%) and complete (74%). Pharmacists continued to feel comfortable providing the service throughout the three time points. Many (68%) undertook further training. Pharmacists' attitudes to MEDMAN were generally positive and un-related to knowledge, skills or comfort.

**Conclusion:** Baseline CHD knowledge was good. Future training packages should include mentoring and experiential training.

**Keywords:** Community pharmacy, coronary heart disease, training, MEDMAN project

### Introduction

Changes to the general pharmaceutical services (GPS) contract in England and Wales require community pharmacists to extend their traditional role beyond the supply of medicines to cognitive services such as medicine use review (Pharmaceutical Services Negotiating Committee (PSNC), 2005). These reviews will identify and resolve problems with medication for people with long-term conditions (Bellingham, 2004).

Pharmacist-led medication review has been advocated by the medical profession (Neary, 2002) and could contribute to medicines management indicators for the recently introduced general medical services (GMS) contract.

Prior to the new contract, medicines use review activities have been referred to as medicines management. This has been defined as "The process of optimising beneficial outcomes and minimising harm from medicines, including medication review

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(appropriateness), monitoring and advice to patients and prescribers” (Community Pharmacy Medicines Management Project Evaluation Team, 2004).

The Community Pharmacy Medicines Management Project (MEDMAN) was a large randomised, controlled trial (RCT) comparing CHD related outcomes in patients receiving a community pharmacy led service to those receiving usual care. This MEDMAN service involved many of the activities which now form medicines use reviews. It involved 1493 patients, 102 pharmacists and 164 GPs in primary care organisations in nine English Health Authorities. Although the evaluation found no significant differences between intervention and control groups in terms of drug treatment, lifestyle targets (as defined by the National Service Framework (NSF) for coronary heart disease (CHD) (National Service Framework, 2004), or quality of life, patients reported a high level of satisfaction with the service and GPs were largely supportive (Community Pharmacy Medicines Management Project Evaluation Team, 2004).

This paper reports on the evaluation of the training provided to support the community pharmacists. The results of the RCT are reported elsewhere (Community Pharmacy Medicines Management Project Evaluation Team, 2004).

### *Aim*

The aim of the work reported here was to evaluate the training provided. This included assessment of pharmacists’ understanding of the term “medicines management”, their basic knowledge of CHD, their perceived knowledge and skills of medicines management, and their self-reported ability to provide the CHD service and medicines management services in general.

## **Materials and methods**

### *Location and recruitment*

Nine study sites were purposively selected from a list of 33 volunteer primary care organisations in England provided by the PSNC. The selection was on the basis of local knowledge, to include a range of population, general practice and community pharmacy characteristics. Patients were randomised 2:1 intervention to control and their associated practices and pharmacies were involved in the study. All pharmacists working in the associated pharmacies were invited to take part in the training.

### *The training package*

A tailored training package was commissioned by the PSNC<sup>||</sup> from the Centre for Pharmacy Postgraduate Education (CPPE). All pharmacists participating in the project were required to complete the training

which was delivered in all nine study site areas to three cohorts of pharmacists in September 2001, November 2001 and January 2002. Each training package developed for the study consisted of three face-to-face events: a two-hour launch event (to which participating GPs were also invited); a two and a half hour CHD event; and, a full day communication event. Written material on the project and clinical case studies in CHD were also provided. A series of learning sets was also established to provide ongoing support according to local need (Mason-Duff & Shaw, 2002). The aim of the training was to provide an introduction to medicines management, facilitate individual learning needs analysis leading to independent study, demonstrate the identification of essential information from GP patient records and associated negotiating and communication skills for the patient and GP interface, and facilitate action learning to enable pharmacists to learn from the experience of each other.

### *Questionnaire development and design*

The study design was a self-administered survey completed by participating community pharmacists at baseline (BL) before receiving any CHD training, approximately six months after completion of all three compulsory training events (post training 1, PT1) and after delivering the service to approximately five patients (post training 2, PT2).

Questionnaires were compiled based on previous work (Coggans, McKellar, Bryson, Parr, & Grant, 2001) and the NSF for CHD (National Service Framework, 2004.). The BL survey included: respondent demography; role perceptions as community pharmacists and understanding of medicines management; perceived medicines management knowledge, skills and comfort; attitude statements; and, training needs. The same questionnaire was used for both post training surveys. PT2 excluded BL perceptions, expectations and demography. The PT2 questionnaire also included a more in-depth set of ten knowledge questions and items on the usefulness, relevance and completeness of the training. Question format comprised a mixture of open and closed questions. Open questions included understanding of medicines management, role perceptions and training needs. Five point Likert scales were used to assess perceived medicines management knowledge, skills, comfort and for the attitude statements.

BL questionnaires were distributed at the first training event with the option of completing immediately, or later and returned by post. The post training questionnaires were distributed by post. Reply paid envelopes were included. A reminder and duplicate questionnaire were sent after two weeks, with a final reminder telephone call to non-responders.

### Data management and analysis

Data was manually entered into, and analysed in, SPSS v11.5. Quality assurance measures included double data entry (BL and PT1) and independent checking of a random 10% sample (PT2). Simple descriptive statistics, and the  $\chi^2$  test for association between two categorical variables were conducted. Due to small numbers in some of the categories, Likert scale responses were dichotomised into “high” and “low” categories for this  $\chi^2$  analyses. The “high” category was assigned to respondents indicating “confident” or “little more needed” for perceived skills and knowledge, “very comfortable” or “fairly comfortable” for perceived comfort and “strongly agree” or “agree” to attitude statements respectively. High knowledge was arbitrarily defined as four or five correct answers to the knowledge questions in the BL and PT1 questionnaires and seven or more correct answers to the knowledge questions in the PT2 questionnaire. This effectively coded subjects who scored greater than 60% correct at any of the three time points as having “high” knowledge.

Pair-wise comparisons were made across the time points using the McNemar’s test. Due to the multiple tests being conducted, a more stringent *p*-value of <0.01 was used to denote statistical significance. Responses to the open-ended questions were independently coded by two observers and checked by the first observer to ensure consistency of coding.

## Results

### Response rates

In total, 102 pharmacists completed the training, of whom 94 were sent PT1, and 84 were sent PT2 questionnaires. The response rates were: BL 63% (*n* = 59/94); PT1 80% (*n* = 75/94); PT2 44% (*n* = 37/84). BL and PT1 questionnaires were answered by 42 respondents, BL and PT2 questionnaires by 23 respondents, and 20 respondents answered all three. Comparisons across pairs of questionnaires are based only on respondents who completed both. Not all respondents answered every question, therefore results are reported as proportions of completed questions.

### Demography

At BL, most respondents were female [40 (68%)], had a median age of 41 years (inner quartile range (IQR) 35–49) and had been qualified for a median of 12 years (IQR 6–23). There were 19 pharmacy owners, 20 managers, eight locums and 11 employee pharmacists (one did not respond). Seven respondents also worked in a medical practice offering prescribing advice. Seventeen respondents to the BL questionnaire did not conduct any patient consultations as part of the study; six of these completed PT1

questionnaire. At the time of completion of PT2 questionnaire, pharmacists had consulted with a median of nine patients each (IQR 0–39), although two respondents had not seen any patients.

### Questionnaire findings

Table I shows the thematically coded responses to the open question on medicines management. Tables II and III provide the results of the three surveys for: perceived knowledge, skills and comfort with the proposed medicines management, changes over time and their associations with BL values. Associations between pharmacists’ attitudes to training and perceived knowledge, skills, comfort and actual knowledge are in Table IV. Attitudes to medicines management and their association with knowledge, skills and comfort are in Table V. The key findings are summarised below.

### Expectations of the “medicines management” service

At BL, in response to an open question, the majority of respondents (87%) defined medicines management as optimising medicines use and reviewing appropriateness. Many respondents (42%) thought medicines management involved patient compliance, concordance and understanding. Approximately a quarter (24%) thought it involved working with GPs or other health professionals (Table I).

In the second post-training questionnaire, the majority of responding pharmacists (84%) agreed that their medicines management role was as they had expected.

### Perceived knowledge, skills and comfort

At BL, half of the respondents (50%) felt they needed more or much more knowledge to deliver the proposed MEDMAN service. Fewer felt they needed

Table I. Community pharmacists’ responses to the open question “What do you understand by the term medicines management?”

Response theme	Respondents % ( <i>n</i> )
Optimising medication and review for appropriateness	87.2 (47)
Patient compliance with and understanding of medicines	41.8 (23)
Co-ordinated service from GPs and other health care professionals	23.6 (13)
Cost effective service to reduce waste	21.8 (12)
Improved patient outcomes and quality of life	16.4 (9)
Treatment according to guidelines, national targets and evidence based practice	10.9 (6)
Involving the provision of lifestyle advice	9.1 (5)
Involving the provision of advice about medicines and general support for patients on medicines	9.1 (5)

Table II. Perceived knowledge, skills and comfort (all time points).

Time point	N	Confident % (n)	Little more needed % (n)	Neutral % (n)	More needed % (n)	Much more needed % (n)
BL knowledge	58	10 (6)	40 (23)	NA	41 (24)	9 (5)
PT1 knowledge	74	35 (26)	51 (38)	NA	14 (10)	0 (0)
PT2 knowledge	36	36 (13)	59 (18)	NA	14 (5)	0 (0)
BL skills	56	7 (4)	57 (32)	NA	28 (16)	7 (4)
PT1 skills	74	54 (40)	41 (30)	NA	5 (4)	0 (0)
PT2 skills	36	58 (21)	33 (12)	NA	8 (3)	0 (0)
		Very comfortable % (n)	Fairly comfortable % (n)	Neutral % (n)	Some reservations % (n)	Serious reservations % (n)
BL comfort	54	13 (7)	52 (28)	11 (6)	22 (12)	2 (1)
PT1 comfort	74	50 (37)	16 (12)	18 (13)	1 (1)	15 (11)
PT2 comfort	36	25 (9)	64 (23)	6 (2)	3 (1)	3 (1)

more/much more skills (35%). Whilst a majority (65%) felt fairly or very comfortable with their involvement in the project, 13 (24%) had some or serious reservations (Table II).

Following training, only ten respondents (14%) felt they required more knowledge and only four (5%) more skills. Forty-nine (66%) felt very or fairly comfortable with their involvement in the MEDMAN service, but twelve had some or serious reservations (Table II).

At the second post training questionnaire, five (14%) respondents still felt they required more knowledge and three (8%) more skills. However, 32 (89%) felt very or fairly comfortable with their involvement in MEDMAN, with only two (6%) having some or serious reservations (Table II).

When pharmacists who completed both BL and PT1 questionnaires were compared a significant improvement was shown in their perceived level of knowledge (54 vs. 85%  $p < 0.001$ ) and skills (64 vs. 97%  $p < 0.001$ ) although their perceived level of comfort did not significantly change (Table III). Of those who completed both BL and PT2 questionnaires, there were again significant

improvements in perceived knowledge (41 vs. 86%  $p < 0.01$ ) and skills (52 vs. 86%  $p < 0.01$ ) and perceived level of comfort did not change significantly across the two time points (Table III).

#### Responses to knowledge questions

Seventy seven percent of pharmacists scored highly on the basic knowledge questions at BL (i.e. four or more correct) and 89% of respondents scored highly on the first post training questionnaire. However, there was no significant change over time, among those who completed both questionnaires ( $p = 0.08$ ) (Table III). Nineteen of 37 respondents (53%) scored 9/10 or 10/10 for the more in-depth questions included in the PT2 questionnaire, with 33 (89%) scoring seven or more (data not shown).

Despite an increase in the proportion of pharmacists with a high level of perceived knowledge after training compared with BL, there was no significant association between perceived knowledge and actual knowledge at either time point (PT1  $p = 1.00$ , PT2  $p = 1.00$ ) (data not shown). Furthermore, neither perceived ( $p = 0.23$ ) nor actual knowledge ( $p = 1.00$ )

Table III. Change in knowledge, skills and comfort across time points.

Item	BL % (n)	PT1% (n)	p-value	BL % (n)	PT2% (n)	p-value*
Knowledge (perceived)						
Low	46 (19)	15 (6)	0.001	59 (13)	14 (3)	0.002
High	54 (22)	85 (35)		41 (9)	86 (19)	
Knowledge (actual)						
Low	26 (11)	48 (20)	0.078	44 (10)	13 (3)	0.385
High	74 (31)	52 (22)		56 (13)	87 (20)	
Skills						
Low	36 (14)	3 (1)	<0.001	48 (10)	14 (3)	0.016
High	64 (25)	97 (38)		52 (11)	86 (18)	
Comfort						
Low	34 (13)	32 (12)	1.00	45 (9)	5 (1)	0.020
High	66 (25)	68 (26)		55 (11)	95 (19)	

\* All  $p$ -values refer to the McNemars test with the exception of BL vs. PT2 knowledge (actual) which is the  $\chi^2$   $p$ -value due to the change in questions asked.

were significantly associated with pharmacists' perceived need for further training at PT2 (Table IV).

*Attitudes to medicines management*

At BL, the majority (82%) of respondents strongly agreed/agreed that they felt confident in their ability to tailor advice according to patients' needs and that pharmacists were ideally placed to review patients' treatment in relation to NSF guidelines (85%) (Table V). Only three (6%) strongly agreed/agreed with the statement: "I have doubts that the training package will make any difference to my delivery of care to patients with CHD". These proportions did not significantly change over time. Only eight (15%) respondents at BL had doubts that their advice or counselling would have any impact on the care of patients with CHD.

*Relationships between perceived knowledge, skills, comfort and attitudes*

Overall, there were no significant associations between perceived knowledge, skills or comfort and responses to attitude statements (data not shown).

*Views on training*

At BL 30 pharmacists requested training in the following areas: general clinical (12; 40%) and CHD related training (15; 50%) familiarisation with GP notes and computer systems (4; 13%), working with GPs (3; 10%) and communication skills (3; 10%).

The majority of respondents at the second post training questionnaire rated the CHD training event highly for usefulness, relevance and completeness (89%, n = 31, 91%, n = 32 and 71%, n = 25, respectively). The clinical case studies were also rated highly (94%, n = 32, 97%, n = 33 and 79%, n = 27). However, only between 40 and 55% of respondents rated the launch and communication events, project information pack and learning sets highly for all three. The majority of respondents (24; 65%) agreed that the training provided was sufficient to enable them to provide MEDMAN service. Similar numbers (25; 68%) agreed they had undertaken at least 10 further hours of additional training to enable them to able to deliver the service, of whom 14 had agreed that the training provided was sufficient. Despite already seeing patients, 11(30%) of pharmacists still felt they needed further training.

Pharmacists' agreement with the statement that the training was sufficient was not significantly associated with their perceived level of knowledge, skills or actual level of knowledge. However, none of those who agreed that the training was sufficient had a low level of comfort in delivering the MEDMAN service and perceived need for further training was significantly

Table IV. Association between pharmacists' attitudes to training\* and perceived knowledge, skills and comfort and actual knowledge (PT2).

	Perceived knowledge			Perceived skills			Perceived comfort			Actual knowledge		
	High % (n)	Low % (n)	p-value	High % (n)	Low % (n)	p-value	High % (n)	Low % (n)	p-value	High % (n)	Low % (n)	p-value
The training provided by CPPE was sufficient to enable me to deliver the community pharmacy medicines management service	71 (22)	20(1)	0.09	66.7 (22)	33.3 (1)	0.60	71.9 (23)	0	<b>0.023</b>	60.6 (20)	100 (4)	0.315
I have had to undertake additional training to that provided by CPPE (> 10 h) to enable me to deliver the community pharmacy medicines management service	67 (21)	60 (3)	1.00	63.6 (21)	100 (3)	0.52	65.6 (21)	75 (3)	1.00	69.7 (23)	50 (2)	0.819
I feel I still need further training to enable me to deliver the community pharmacy medicines management service	23 (7)	60 (3)	0.23	24.2 (8)	66.7 (2)	0.37	18.8 (6)	100 (4)	<b>0.005</b>	30.3 (10)	25 (1)	1.00

\* Figures show the percentage that had a high level of agreement with the attitude statements with dichotomised knowledge, skills and comfort.

Table V. Attitudes to MEDMAN at each time point.

Attitude statements		N	Strongly agree % (n)	Agree % (n)	Uncertain % (n)	Disagree % (n)	Strongly disagree % (n)
I feel confident in my ability to tailor advice I give to patients depending on their needs	BL	56	14 (8)	68 (38)	13 (7)	4 (2)	2 (1)
	PT1	75	13(10)	75 (56)	12 (9)	0 (0)	0 (0)
	PT2	36	28 (10)	69 (25)	3 (1)	0 (0)	0 (0)
I have serious doubts that advice or counselling from me will make any difference to the care of patients with CHD	BL	57	4 (2)	11(6)	28 (16)	33 (19)	25 (14)
	PT1	75	1 (1)	4 (3)	17 (13)	65 (49)	12 (9)
	PT2	36	0 (0)	6 (2)	28(10)	44 (16)	22 (8)
I feel that pharmacists are ideally placed to review patients' treatment so that it is in line with the NSF guidelines	BL	56	39 (22)	46 (26)	11 (6)	2 (1)	2 (1)
	PT1	75	16 (12)	76 (57)	7 (5)	0 (0)	1 (1)
	PT2	36	47 (17)	47 (17)	6 (2)	0 (0)	0 (0)
I have doubts that the training package will make any difference to my delivery of care to patients with CHD	BL	54	4 (2)	2 (1)	6 (3)	54 (29)	35 (19)
	PT1	74	1 (1)	3 (2)	12 (9)	53 (39)	31 (23)
	PT2	36	0 (0)	0 (0)	8 (3)	61 (22)	31 (11)

associated with a low comfort level ( $p < 0.001$ ) (Table IV).

## Discussion

Community pharmacists had good knowledge of the NSF framework for CHD at BL and this remained high throughout the project. The results show improvements with pharmacists' perceived knowledge and skills for delivery of a CHD MEDMAN service after training, although comfort with provision of the service only increased after delivery of the service. At BL, many felt they needed an update in CHD knowledge, but few felt training in communication skills and working with GPs was required. These preferences were reflected in their ratings of the training components. Attitudes to medicines management were mainly positive and did not change significantly between the three surveys.

Prior to their involvement in the study, few community pharmacists provided a medicines management service. Communication with GPs was *ad hoc* and often related to prescribing errors (Rogers, Fletcher, & Rees, 1994; Kennedy, Blenkinsopp, & Purvis, 1997). The MEDMAN service for CHD required community pharmacists to conduct in-depth consultations with patients at an appointed time, to document any advice they had given, to make written recommendations to GPs (and other health professionals) and to follow up patients where necessary.

The study had some strengths and limitations; although part of an RCT, the training was provided to all pharmacists so there was no comparison group. Response rates were comparable with other studies in community pharmacy for the BL and second questionnaires (Matheson & Bond, 1999; Porteous, Bond, Robertson, Hannaford, & Reiter, 2003; Watson, Bond, & Gaultet, 2003) but were low for

the final questionnaire which limits the generalisability of the results. Almost 70% of our respondents were female, a third were pharmacy owners and 15% had a postgraduate qualification. This profile is relatively typical of working community pharmacists (Inch, Bond, Lee, Scott, & Grant, 2005). The BL response was lower than the PT1 response which might have resulted from the distribution method (handed out for later return) rather than a direct mailing. Few pharmacists completed all three questionnaires, reducing the power of comparison across all three time points.

In addition, due to the unexpectedly high scores for knowledge at BL, the knowledge instrument was extended to ten questions prior to PT2 to increase its discriminatory power, but a consequence of this was to reduce the validity of making comparisons across time points. The reliability of the two knowledge instruments could not be directly compared since any difference would be confounded by the impact of training. The differential attrition of respondents across the three time points also limits interpretation of the results.

The finding of improved perceived knowledge and skills for medicines management provision are in line with a previous study evaluating health promotion training, in which community pharmacists' perceptions improved six months after receipt of a two-day training course (Coggans et al., 2001). However, it is noted that their perceived level of comfort with the service did not change even after completion of further training opportunities provided. Some pharmacists had also undertaken additional training themselves and still felt they wanted further training, which in a few was related to a low perceived level of comfort with delivering the service.

The high perceived level of skills prior to seeing patients may have been related to participants' view that medicines management is helping patients to get

the most from their medicines as well as supporting patient compliance, concordance and understanding. This is often regarded as a core function of community pharmacists. Few respondents felt that training in communication skills which was provided had been necessary, which is perhaps reflected in their low quality ratings for the training event on this topic. Previous work has highlighted a lack of communication skills training in CPPE packages, as well as a lack of opportunity to practice (Sanders & Brackley, 1996). A survey of pharmacy contractors throughout England and Wales also found that therapeutic and disease management were identified as training needs frequently while non-clinical training such as motivational training and interpersonal skills were perceived as the least important (Tweedie, Ruttter, & Jones, 2000).

Pharmacists indicated a need for CHD updating and the CHD training was highly rated. This contradicts the BL knowledge status, but may reflect a general cognitive demand as well as an understanding of the need for the higher order cognitive skills required to apply knowledge to patients' needs. In comparison, the relatively low ratings for the launch event were surprising, since this provided an opportunity for networking with local GPs prior to the start of the project. Elsewhere joint training events between pharmacists and GPs have been rated highly by both professionals, because of the opportunity for collaboration (Parr, Bryson, & Ryan, 2000). However, few pharmacists at BL felt that training on working with GPs was needed. This could reflect the similarly small proportion who felt that medicines management was concerned with joint working or perhaps the pharmacists concerned had qualified a number of years previously and had substantial experience of working with GPs.

Despite having positive attitudes to medicines management and high perceived levels of knowledge, skills and comfort once the service had commenced, other results from the project show that, during their consultations with patients, pharmacists only documented 34% of potential issues (Community Pharmacy Medicines Management Project Evaluation Team, 2004). Interpreting the results in relation to Miller's pyramid of competence (Miller, 1990), it would appear that although pharmacists were able to demonstrate knowledge and indicate through the questionnaires that they knew how to deliver the service, in practice, their service delivery was sub-optimal. Since the core training package had no effect on pharmacists' comfort with delivering this service, it may have been appropriate to incorporate more support in the form of mentoring, or ongoing formal experiential training. Pharmacists themselves are aware that the development of skills such as communication and the application of clinical knowledge requires learning from more

experienced pharmacists, rather than continuing education events (Ward, Seston, Bagley, & Wilson, 1999). Mentoring is used extensively in medicine and nursing and supervised practice is also required for pharmacists wishing to learn prescribing skills (RPSGB, 2002). Early findings would indicate that pharmacists found this beneficial with some challenges and negative experiences, mainly more time needed to maximise learning (George et al., 2007). The opportunity to join learning sets was an alternative to an appointed mentor but was rated highly by only half the respondents.

### Conclusion

Ongoing mentoring support or formal experiential training may be required for pharmacists delivering a medicines management service, in addition to BL training, as evaluated in this study.

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### Note

<sup>||</sup>The overall project was managed by a project Board led by PSNC. Other members of the Board included representatives of the National Pharmaceutical Association, the Company Chemists Association, the Royal Pharmaceutical Society of Great Britain and the Department of Health.

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