

[NEWS](#) ▼ [COVID-19](#) [VIEWS](#) [REVIEWS & RESEARCH](#) [CLINICAL ZONES](#) ▼

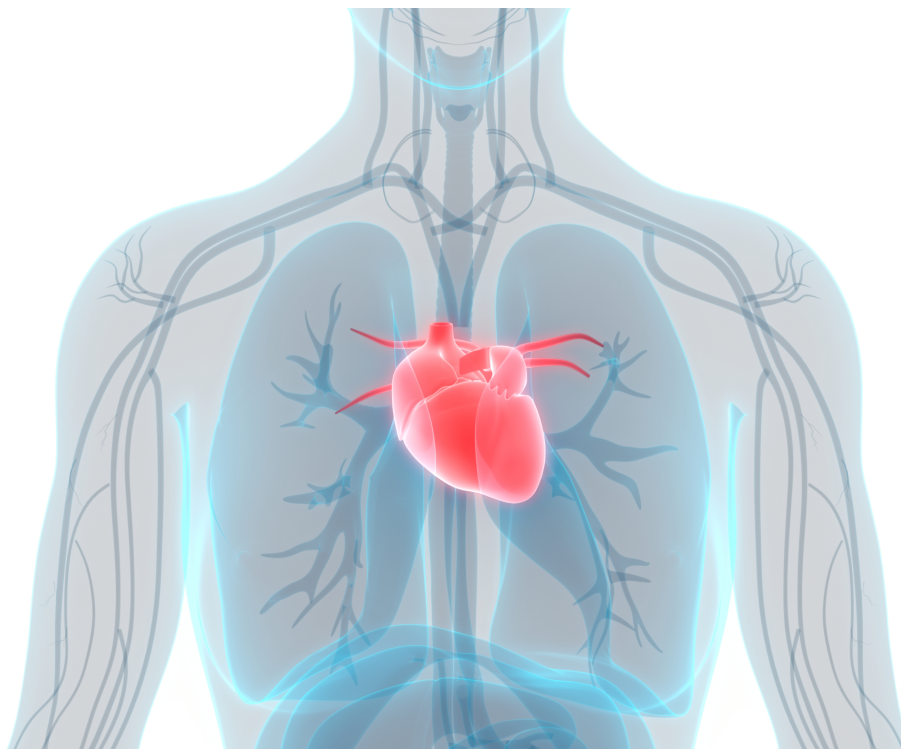


[EDUCATIONAL RESOURCES](#) ▼

[JOURNAL](#)

[NEWSLETTER](#)

[Home](#) > [News](#) > [Editor's pick](#) > [Impacting cardiovascular disease risk management](#)



Published on 7 June 2013

Impacting cardiovascular disease risk management

Sarah Aquilina BPharm (Hons)

Lilian M Azzopardi BPharm (Hons) MPhil PhD MRPharmS

Anthony Serracino Inglott BPharm PharmD MRPharmS

Department of Pharmacy,

Faculty of Medicine and Surgery,

University of Malta, Msida, Malta

Email: sarahaquilina84@hotmail.com

Sarah Aquilina BPharm (Hons)

Lilian M Azzopardi BPharm (Hons) MPhil PhD MRPharmS

Anthony Serracino Inglott BPharm PharmD MRPharmS

Department of Pharmacy,

Faculty of Medicine and Surgery,

University of Malta, Msida, Malta

Email: sarahaquilina84@hotmail.com

Through their expertise on medications, pharmacists are in a position to assist patients with medication counselling and can play a significant intervention in the prevention of cardiovascular disease risk. Several studies demonstrated the importance of the pharmacist's intervention in the management of patients with chronic disease, in particular diabetes, hypertension, dyslipidaemia and cardiovascular disease.(1–6) Disease management may be described as 'managed care', a term applied to describe care provided by healthcare professionals, which may be modified in order to obtain beneficial outcomes, in terms of both clinical and financial aspects. Disease management programmes are frequently undertaken for specific diseases, reasons being the cost of medications, clinical outcome measures, and different practices for managing and treating the disease. Such diseases include diabetes, cardiovascular disease and asthma.(7) Another concept targeted to improve the management of chronic diseases, minimise complications, and achieve improved outcomes in patients who suffer from chronic diseases is the chronic care model (CCM). It involves an interactive approach between patients and healthcare personnel, whereby the patients are involved in the management of their disease.(8,9) Several studies were performed according to the CCM, which led to improved care provided to patients in intervention groups as compared to control groups.(10) The CCM elements are perceived as necessary to offer an excellent service to patients who suffer from chronic diseases.(11)

In a study by Vargas et al, a controlled pre- and post-intervention study in diabetic patients was undertaken among 13 healthcare organisations. It was demonstrated that implementation of the CCM in the intervention groups improved the risk for cardiovascular disease as compared to the control groups. A significantly greater reduction in the ten-year risk of cardiovascular disease was achieved in the intervention group.(9) This study indicates the significant contribution of pharmacists as part of the healthcare team in the implementation of such a model for chronic disease patients.

Evidence of medicines management

The evaluation of the community pharmacist's role in providing pharmaceutical care in patients with risk factors for cardiovascular disease, namely hypertension, diabetes and hyperlipidaemia, was carried out in a pilot study in Malta and reported in an earlier publication.(2) In that study, two community pharmacies were selected and a total of 32 patients were chosen by convenience sampling, if they were 20 years of age or over, and they accepted to have clinical parameters namely, blood pressure, blood glucose, blood cholesterol and body mass index (BMI) monitored at three separate visits.

Patients' details including patient medication history, drug-related problems (DRPs), and lifestyle habits were documented at the initial visit. Patients were informed to visit the pharmacy for two more visits for follow-up, that is, after one month if one or more of the clinical parameters were not within the normal level or after three months if the results were normal. During the follow-up visits any medication changes and lifestyle changes were documented. The clinical parameters were monitored at each visit and lifestyle recommendations were provided depending on the results of the clinical parameters. Patients were provided with non-pharmacological advice according to disease management guidelines which were developed for this study. Patients were followed up over a period of nine months (2)

developed for this study. Patients were followed up over a period of nine months.(2)

Looking at DRPs presented by the patient cohort participating in this pilot study in Malta, out of 21 patients who were on medication, 13 patients were documented to have DRPs at the initial visit, while at the first and second follow-up visits, ten and eight patients, respectively, had DRPs (Table 1). The decrease in drug-related problems could be attributed to medication counselling which led to an increase in compliance with the drug therapy.(2) Possible solutions given for the identified DRPs were medication counselling, which was offered especially to patients who had abnormal readings of clinical parameters or patients who overused of medication; practical instructions, such as the use of a pill-box or associating medication to meal times; and referral to the general practitioner where a side effect from a medication was experienced. From the documented medication changes in the pilot study, five patients had changes at the first follow-up visit, of which three patients had changes in anti-hypertensive and lipid-lowering medication, such as the addition of a medication or stopping a medication and two patients had changes related to other drugs. Two patients had medication changes at the second follow-up visit, out of which one patient had a change in the doses of an anti-hypertensive and a lipid-lowering medication, and another patient had a change in medication unrelated to anti-hypertensive and lipid-lowering medication. Changes in medication might have occurred after the patient was referred to the general practitioner.

Non-pharmacological advice was the most frequent pharmacist intervention at all visits ($n=32$), followed by medication counselling which was more frequent at the initial visit ($n=13$), and referral to the general practitioner which was more common at the second follow-up visit ($n=14$). Medication counselling decreased in frequency from one visit to another, which could be a result of patients becoming more compliant to their medication regimen.(2) By contrast, referral of patients to the general practitioner increased across each visit, which was due to three consecutively high blood pressure readings at separate visits, high blood cholesterol readings, or identification of a DRP such as a side-effect.

According to a recent paper by Amariles et al, randomised, controlled studies in order to assess the pharmacist's intervention in cardiovascular disease risk management are not usually undertaken in the community pharmacy.(3) A randomised, controlled study evaluated pharmaceutical care provided by community pharmacists to cardiovascular disease patients or who have cardiovascular risk factors. In the intervention group, patient information on drug therapy and any cardiovascular problems were documented, followed by the identification of health outcomes which were not consistent with the patient's drug therapy and any occurrence of DRPs. Following the identification of DRPs, the pharmacist's intervention was either to give a recommendation on lifestyle or advice relating to administration of the medication, or to collaborate with the physician if a change in drug therapy was warranted. By contrast, the control group received normal care including health advice and medication counselling.(3)

Contrary to these studies, where pharmacists did not undertake any drug modifications, Hunt et al reported a single-blind, randomised, controlled trial where pharmacists made changes in anti-hypertensive treatment, such as dosage adjustments, and adding or changing medication.(4)

In a review of 30 randomised, controlled studies, where eight studies were undertaken in community pharmacies, the most common pharmacist interventions were medication counselling and non-pharmacological advice ($n=17$), communication with physician including DRPs identified ($n=16$), and medication management ($n=14$). These results were achieved among 19 studies that achieved significant reduction in blood pressure.(1)

The patient-focused rather than the product-focused role of the pharmacist is confirmed in these studies. The community pharmacist is beneficial to patients through documenting medication changes that may be undertaken when the pharmacist refers the patient to the GP.

Monitoring of clinical parameters

In a disease management programme, outcome measures are emphasised in order to be able to assess the

benefits from an intervention on a health condition. However, health benefits may not be obvious for some years.(7) Therefore, measuring clinical parameters is a way of monitoring the progression of a chronic condition.

In the pilot study in Malta, results obtained from monitoring clinical parameters in the community pharmacy showed statistically significant reductions in mean blood glucose at each visit and statistically significant improvements in mean body mass index readings between the initial visit and follow-up visits. Also, statistically significant reductions in mean diastolic blood pressure occurred at the follow-up visits (Table 2).

A randomised controlled trial by Rothman et al analysed the effectiveness of a pharmacist-led disease management programme in patients with uncontrolled diabetes. Clinical pharmacists provided the intervention group with patient education and counselling. Patients were followed up by the clinical pharmacist, often in collaboration with the physician. Modifications in medications by the clinical pharmacist were undertaken after the physician was contacted. The control group received care from a pharmacist at one time only. Statistically significant reductions in blood pressure levels and HbA1c levels were achieved more in the intervention group than the control group. Total cholesterol levels were improved in the intervention patients but no statistical significance was achieved.(5)

In another study by Krass et al, the role of the community pharmacist was highlighted through the setting up of a 'diabetes service model' in 56 community pharmacies, in order to evaluate the impact of the pharmacist services on type 2 diabetics. Mean blood glucose levels, which were checked among the intervention patients, decreased significantly over four pharmacy visits. A better reduction in HbA1c was achieved in the intervention group compared to the control group. No statistical significance was achieved for systolic and diastolic blood pressure between the intervention and the control groups; however, systolic and diastolic blood pressure decreased in the intervention patients between the first and last visit after six months. Total cholesterol and triglyceride levels decreased significantly in both intervention and control patients between the first and last visit. However, no statistical significance between intervention and control groups was achieved.(6)

More recently, a review of several randomised, controlled studies was carried out to assess the pharmacist's intervention in cardiovascular disease management in high-risk patients. Care provided exclusively by pharmacists and/or in collaboration with physicians or nurses were both included in the studies selected. Pharmacists' interventions entailed activities such as patient education; reminding patients through telephone calls or giving practical instructions for better medication adherence; communicating with the physician in cases DRPs and recommendations to change drug therapy; and assessment of cardiovascular risk factors.(1)

Of 30 randomised, controlled studies, statistically significant reductions in blood pressure were achieved in 19 studies, significant improvement in total cholesterol in six out of nine studies, significant improvement in LDL-cholesterol in four out of seven studies, and decreased smoking were achieved in two studies. Mostly, better significant reductions in these clinical parameters were obtained with more intensive pharmacist care in comparison to the usual care.(1)

These studies show that disease management is given importance in the area of cardiovascular disease risk factors. Results of clinical parameters are beneficial as they highlight the impact of the intervention of the pharmacist, especially in the community setting, in the prevention of cardiovascular disease and in the monitoring patients who already have risk factors.

Contribution of the pilot study

The pilot study undertaken in Malta demonstrated the community pharmacist's impact in the management of risk factors for cardiovascular disease, through medication counselling, in order for patients to be more adherent to their medication, and in the identification of DRPs. The pharmacist assists patients in achieving

a better quality of life and a lower disease progression.(12)

The pilot study highlights the fact that the body mass index may be an important parameter which should be monitored more often in cardiovascular disease risk management programmes due to the statistically significant improvement in mean BMI between the initial and follow-up visits. Compared with other studies, BMI was not among the parameters monitored. By contrast, blood glucose levels were statistically significant for each visit, which was a similar result to the other studies (Table 2). HbA1c levels, which reflect glucose control over the previous three months, were also measured in the pharmacist-led diabetes care programmes.(5,6)

Such programmes in the community pharmacy should also assess the HbA1c levels to ensure better glycaemic control.

Also, several studies did not carry out blood glucose monitoring when evaluating the pharmacist's intervention in cardiovascular disease risk management.(1,3) However, the studies that assessed the pharmacist's intervention in the management of diabetic patients undertook blood glucose and HbA1c monitoring.(5,6) Thus, it can be concluded that cardiovascular disease risk management programmes focus more on monitoring of blood pressure and blood lipids while diabetes care programmes include monitoring of all parameters to assess the cardiovascular disease risk as well as blood glucose.

Limitations of the pilot study include small sample size and there was no control group. However, patients were followed-up, therefore comparison could be undertaken between the visits.

Conclusions

The pharmacist is well placed within the healthcare team to provide knowledge on medications and patient education with regards to non-pharmacological advice. This would lead to more therapeutic goals being achieved. A cardiovascular disease risk management programme should assess the clinical parameters related to all the risk factors as this would help in achieving better patient outcomes.

Key points

- □ Disease management programmes involve strategies to improve outcomes in patients with chronic disease and to prevent complications from disease, through a collaborative approach among healthcare professionals and patients.
- In the pilot study carried out in Malta, the most common community pharmacist's interventions in cardiovascular disease risk management included offering non-pharmacological advice, medication counselling and referring patients to the general practitioner.
- □ Pharmacists have an important role in medication changes, such as dose adjustment or a change in medication, by collaborating with the physician or the pharmacists carrying out the modifications themselves.
- Monitoring of clinical parameters is part of the disease management for cardiovascular risk factors in order to assess whether therapeutic goals have been achieved.
- □ In the pilot study, blood glucose and body mass index (BMI) were the two parameters that were statistically significant between the three visits at the pharmacy. The statistically significant result for the BMI highlights the importance of monitoring this parameter as part of the management of risk factors for cardiovascular disease.

References

1. Santschi V et al. Impact of pharmacist care in the management of cardiovascular disease risk factors. Arch Intern Med 2011;171(16):1441–53.
2. Aquilina S et al. Disease management in community pharmacy. Hospital Pharm Eur 2008;38:59–61.
3. Amariles P et al. Effectiveness of Dader method for pharmaceutical care on control of blood pressure and total cholesterol in outpatients with cardiovascular disease or cardiovascular risk: EMDADER-CV randomized controlled trial. J Manag Care Pharm 2012;18(4):311–23

4. Hunt JS et al. A randomised controlled trial of team-based care: impact of physician-pharmacist collaboration on uncontrolled hypertension. *J Gen Intern Med* 2008;23(12):1966–72.
5. Rothman RL et al. A randomized trial of a primary care-based disease management program to improve cardiovascular risk factors and glycated hemoglobin levels in patients with diabetes. *Am J Med* 2005;118:276–84.
6. Krass I et al. The Pharmacy Diabetes Care Program: assessment of a community pharmacy diabetes service model in Australia. *Diabet Med* 2007;24: 677–83.
7. Pilnick A, Dingwall R, Starkey K. Disease management: definitions, difficulties and future directions. *Bulletin of the World Health Organisation* 2001;79(8):755–63.
8. Adams SG et al. Systematic review of the chronic care model in chronic obstructive pulmonary disease prevention and management. *Arch Intern Med* 2007;167(6):551–2.
9. Vargas RB et al. Can a chronic care model collaborative reduce heart disease risk in patients with diabetes? *J Gen Intern Med* 2007;22(2):215–22.
10. Coleman K et al. Evidence on the chronic care model in the new millenium. *Health Affairs* 2009;28(1):75–85.
11. Tsai AC et al. A meta-analysis of interventions to improve care for chronic illnesses. *Am J Manag Care* 2005;11(8):478–88.
12. Hungarian National Committee of Pharmaceutical Care (supported by EuroPharm Forum). Metabolic Syndrome Pharmaceutical Care Programme. 2009. www.europharmforum.org/file/12596 (accessed 15 April 2013).