THE CONTRIBUTION OF COMMUNITY PHARMACY TO IMPROVING THE PUBLIC'S HEALTH:

LITERATURE REVIEW UPDATE 2004-7

PHLink

Promoting good health through pharmacy

MANAGEMENT SUMMARY

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INTRODUCTION

This report presents a summary of findings from a review of evidence published in peer-reviewed journals between 2004 and 2007 on the contribution of community pharmacy to improving the public's health. This current review adds to the evidence identified from our two previous reviews covering the periods 1990-2001[1] and 2001-2004[2]. It was commissioned by the Department of Health. This Management Summary focuses on evidence of effectiveness, quality, costs/cost-effectiveness and skill mix where available. Key findings relating to pharmacists' attitudes and practice are also summarised.

METHODS

A systematic search of international peer-reviewed literature was undertaken using the same search terms as the previous two reviews of this subject. Data were extracted using the same structured matrix as in the previous reviews, with a sample of reviews cross-checked to assure accuracy. In total 96 papers were reviewed: 21 smoking cessation; 13 emergency hormonal contraception; 12 diabetes; 16 coronary heart disease prevention and management (including 8 lipid management); 8 substance misuse; 8 osteoporosis screening/ prevention; 6 weight management; 3 hypertension; 3 sexually transmitted infections; 3 immunisation; 2 contraception; 1 HIV awareness. Most studies were conducted in Canada, Australia and the US.

RESULTS

SMOKING CESSATION

21 papers were reviewed, covering 18 studies.

OVERVIEW:

- New evidence from a large study showing similar abstinence rates from one-to-one treatment services provided by community pharmacists and primary care nurses, but rates were lower than for group interventions with specialist advisors.
- Quality criteria developed in 2 studies could be used to further develop frameworks for UK services.
- Some evidence that involving pharmacy support staff increases the provision of brief advice and recording of smoking status in patient medication records.
- Further evidence that pharmacists remain apprehensive about proactively raising smoking with their customers.

EFFECTIVENESS

There were 6 intervention studies, 2 of which were conducted in the UK. A large London study using a quasi experimental design with 1500 participants and validated abstinence found similar abstinence rates at four weeks (19%) for people receiving the service on a one-to-one basis from community pharmacists and primary care nurses, compared with 30% for those receiving a group treatment service from 'behaviour change experts' (McEwen et al 2006). The authors commented that the difference may be due to the additional behavioural support given by the latter. Self reported abstinence rates were 45% (four weeks), 35% (12 weeks) and 15.8% at 44 weeks in an uncontrolled, non-validated Scottish study with 177 clients in 18 pharmacies.

A US study tested the feasibility of a protocol to target specific people for questioning and 'brief interventions' [akin to 'brief advice' in the UK] about smoking in two community pharmacies (Purcell et al 2006). The smoking status of 57% and 29% of eligible people was recorded in the two pharmacies.

QUALITY

Quality criteria were developed and applied in studies in the UK (Scotland) and Norway.

A quality criteria assessment framework developed in a Scottish study included 13 elements: cessation rates of 30% (one month); 28% (three months); 14.3% (one year); and in those not abstaining, to achieve a reduction in smoking levels; improve access to smoking cessation services; client group from areas of inequality; client satisfied with the service; successful use of the 'stage of change' model; ensure ongoing written material is available; subjective estimate of reduced workload in general practice; avoid increasing time pressure on pharmacists; pharmacists satisfied with service; achieve a cost of £300 per quitter] (Cramp et al 2007). 6 of the 13 criteria were achieved: improved access; clients satisfied with service; successful use of 'stages of change' model; one month 30% success rate; 3 month 28% success rate; and, in those not abstaining, achieve a reduction in smoking levels.

A quality framework for advice during sales of over the counter nicotine replacement therapy (NRT) developed in Norway had 12 criteria (6 relating to customer service and 6 on content of pharmaceutical advice) (Granas et al 2004). A mystery shopper study found a mean score of 17.3 (of a possible 45) on a first visit and 16.2 on the second visit.

[1]Anderson, C, Blenkinsopp, A, and Armstrong, M. The contribution of community pharmacy to improving the public's health: Evidence from the peer-reviewed literature of 1990-2001. PharmacyHealthLink and Royal Pharmaceutical Society of Great Britain, 2003.
http://www.pharmacyhealthlink.org.uk/ (accessed 16/3/08).

[2]C Anderson, Blenkinsopp A, Armstrong M. The contribution of community pharmacy to improving the public's health. Evidence from the peer reviewed literature 2001-2004. Pharmacy HealthLink and Royal Pharmaceutical Society of Great Britain, 2005. http://www.pharmacyhealthlink.org.uk/ (accessed 16/3/08).

COSTS AND COST EFFECTIVENESS

The cost per quitter was £525 in a Scottish study, compared with the quality criterion of £300 in that programme (Cramp et al 2007).

SKILL MIX

In a US study the pharmacy which involved its dispensing technicians in implementing a protocol for offering brief interventions [brief advice in the UK] and recording smoking status had recording rates and numbers of interventions roughly double those in the pharmacy that did not use technicians (Purcell et al 2006).

ATTITUDES AND PRACTICE

Two studies from Canada and Australia explored pharmacists' attitudes (Brewster et al 2005; Edward et al 2006) and one US study (Purcell et al 2006) investigated actual practice in relation to unsolicited questioning and advice about smoking. Most pharmacists did not routinely ask about or record the smoking status of their customers. Pharmacists in the Canadian and Australian studies were apprehensive about raising the topic of smoking cessation and expressed some concerns about alienating their customers (Brewster et al 2005; Edwards et al 2006).

CORONARY HEART DISEASE PREVENTION AND MANAGEMENT

16 papers were reviewed, involving 13 studies.

OVERVIEW

- Further evidence of effectiveness of pharmacy services in reducing lipid levels and that the effect was sustained one year after the intervention ended.
- Evidence from a RCT of effectiveness of a pharmacy service in significantly increasing prescribing of antiplatelet medicines, lipid-lowering treatment, and smoking cessation treatments.
- A workplace based cardiovascular risk reduction programme provided by community pharmacists significantly reduced blood pressure and improved lipid profiles but had no effect on weight.
- A community pharmacy based service where peer health educators measured blood pressure and completed cardiovascular risk profiles for people with hypertension was well received by patients and GPs.

EFFECTIVENESS

There were 2 intervention trials. The Canadian Pharmacist Intervention in Risk Reduction (PIRR) trial used a 'before-after' design. 41 pharmacies recruited 217 patients. The primary outcome was the proportion of patients with changes in targeted medication. There was a significant increase in the prescribing of antiplatelet and lipid lowering treatments and of smoking cessation treatments. This trial was ended early due to under-recruitment.

The Canadian SCRIP Plus trial was a 'before and after' study of the effects of pharmacist intervention in lipid management. 42 pharmacies recruited 419 patients to the study. The mean reduction in LDL level was 0.5mmol/L from a baseline mean of 3.5mmol/L, representing a 13.4% reduction in relative risk, and 27% of patients reached their target LDL level. One year after completion of SCRIP Plus patients were followed up and their LDL cholesterol measured. The mean LDL level was not significantly different from that one year earlier. Most patients still had not reached their target LDL level.

A workplace-based cardiovascular risk reduction programme provided by community pharmacists led to significant reductions in systolic and diastolic BP and in LDL but had no significant effect on weight (John et al 2006). 56 workers with risk factors for cardiovascular disease took part, of mean age 41 years, 37 had diabetes mellitus and 19 did not. The number of pharmacist visits per participant ranged from 1 to 13, with a mean value of 7.

In the Cardiovascular Health Awareness Program (CHAP) in Canada, people aged over 65 with hypertension were invited by their doctor to attend a session in their local pharmacy with a trained volunteer peer health educator (PHE). The PHE measured their blood pressure and completed a cardiovascular risk profile. A copy of the findings was given to the pharmacist and faxed to the doctor. Feedback from doctors, PHEs and pharmacists was positive and the pharmacists reported increased patient traffic and more dialogue with patients. A RCT of CHAP was recently completed and the findings are due to be published in 2008.

QUALITY / COSTS / COST-EFFECTIVENESS / SKILL MIX

No evidence was found.

DIABETES

11 studies were reviewed including 2 intervention trials and 2 reviews.

OVERVIEW

- Further evidence of effectiveness of diabetes management services provided from pharmacies, leading to a significantly greater reduction of approximately 1% in HbA1c compared with 0.3% in controls.
- Evidence from a RCT that pharmacy based targeting of people with risk factors for diabetes together with 'point of care' blood glucose testing prior to referral was more effective and more cost effective than targeting and referral alone.
- A diabetes screening and cardiovascular risk assessment service resulted in new diagnoses for 16% of those referred and therapy changes in 42%.

EFFECTIVENESS

A structured review covering 7 experimental studies in the period up to 2005 concluded that there was 'limited evidence of effectiveness of community pharmacy based diabetes services'.

Since the time of that review a substantial amount of further evidence has been published. A systematic review (Machado et al 2007a) with meta-analysis of data from 2247 patients in 16 studies found a significant reduction in HbA1c levels in the pharmacists' intervention group ($1.00 \pm 0.28\%$; $p < 0.001$) but not in controls ($0.28 \pm 0.29\%$; $p = 0.335$).

Subsequent to the latter review an Australian study was published which tested the effectiveness of a community pharmacy based diabetes service in controlled trials (Krass et al 2007a). The numbers of patients receiving the intervention were 149 at 28 pharmacies. The trial showed statistically and clinically significant reductions in HbA1c of 0.97% (compared with 0.27% in controls).

Pharmacy based screening for undiagnosed diabetes was the subject of three studies, conducted in Australia, the US and Switzerland. The US study included diabetes testing together with CHD risk assessment (Snella et al 2006). The Australian and US studies used simple risk factor assessment as a filter prior to diabetes screening and involved testing of 1286 and 888 people respectively (Krass et al 2007b ;Snella et al 2006). The Swiss paper reported findings from a national screening campaign in which 93,258 people were tested (Hersberger et al 2006). Follow up to identify subsequent diagnoses was conducted only in the Australian study, where 1.7% of those tested were diagnosed as having diabetes. In the US study 81% of those screened were referred, 15% of whom had blood glucose measurements outside the defined range. In the Swiss campaign 6.9% of those tested were categorised as 'possible diabetes'.

COSTS AND COST EFFECTIVENESS

A cost-effectiveness analysis was conducted for 99 patients who had received the pharmacy based diabetes service in the earlier of the two Australian trials (Taylor et al 2005). Pharmacists were paid 40 Australian dollars per hour (approx £18). The mean cost of the intervention over nine months was 383 Australian dollars per patient (approx £175).

The cost-effectiveness of pharmacy based risk assessment plus blood glucose testing ('sequential screening', SS) in generating a diagnosis of diabetes was compared with pharmacy based risk assessment with referral to the GP for blood glucose testing in an Australian study (Krass et al 2007b). The rates of diagnosis were 1.7% and 0.2% respectively. The SS method resulted in fewer referrals to the GP and a higher uptake of referrals and was more cost-effective.

QUALITY / SKILL MIX

No evidence was found.

HYPERTENSION

Two intervention studies and one systematic review were included. The systematic review included 13 trials and found evidence of effectiveness of pharmacist input in significantly reducing systolic blood pressure (Machado et al 2007b).

OVERVIEW

- A systematic review with meta analysis of 13 RCTs covering 2246 patients found significant reductions in systolic but not diastolic BP.

QUALITY / CLINICAL/COST-EFFECTIVENESS / SKILL MIX

No evidence was found.

WEIGHT MANAGEMENT

Six studies were identified and reviewed

OVERVIEW

- Two of three intervention studies showed a positive effect while the third showed no significant change in weight.

Six studies were identified and reviewed whose focus was specifically on weight management; 3 involved interventions. In 2 of these, the service was provided for a total of 316 people and in the third, which was an extension of a national health promotion

campaign, it was provided for 1370. A service provided in a single pharmacy in the US resulted in a mean weight loss of 3.6kg among 216 people over a mean duration of 26 weeks (Lloyd et al 2007). 1 in 3 people were able to decrease their BMI category and 1 in 4 decreased their CHD risk status and BP in those with uncontrolled hypertension at baseline was more likely to be controlled. The service involved an initial consultation with the pharmacist (scheduled for 1.5 hours) followed by 15 minute fortnightly follow ups until target weight was reached and then a three monthly follow up. The service was provided free during the study period and is now offered on a fee-paying basis. In a Swiss study 3800 people who had participated in their community pharmacy-based diabetes screening in Switzerland to take part in a programme of lifestyle counselling. Of the 1370 who took part, the mean weight lost was 0.6–1.9 kg at 3 months. People in the high-risk counselling group (245) showed weight loss of 2.25% at 3 months and 2.74% at 1 year (Botomino et al 2007). In addition to the specific studies on weight management, weight reduction was one of several outcome measures in a workplace health-improvement programme where community pharmacists provided education about cardiovascular disease, identification of drug therapy problems, and the importance of routine blood
pressure, pulse, and weight measurements (John et al 2006). No significant effect on weight was found.

EMERGENCY HORMONAL CONTRACEPTION (EHC) / CONTRACEPTION

Thirteen studies were included, one of which was a structured review.

Community pharmacy supply of EHC enables most women to receive it within 24 hours of unprotected sexual intercourse . Making EHC available OTC did not change the level of use but did change where women obtained it, with more women using pharmacies as the source (Marston et al 2005). A large US trial of advance availability of EHC found no increase in risky sexual behaviour and no significant reduction in the number of pregnancies (Rocca et al 2007). No differences were observed in use of regular contraception or in risky sexual behaviour (Raine et al 2005). Adolescents aged younger than 16 years behaved no differently in response to increased access to EHC from the other age groups (Harper et al 2005).

Pharmacy services were generally very highly rated by women. There were some concerns about confidentiality and privacy among a substantial minority of users, particularly among younger women (Anderson et al 2006). In general, the way in which services are configured affects their use, with women preferring services that give them privacy whilst treating them in a sympathetic and non-judgmental manner. It is worth noting that many of the studies were conducted prior to the increase in availability of consultation areas in pharmacies. Some concerns were also reported about the appropriateness of additional and unsolicited information and advice from pharmacists about future contraceptive use and sexually transmitted infections (STIs).

SEXUALLY TRANSMITTED INFECTIONS

Four papers were reviewed, covering four studies.

Chlamydia screening and other STI prevention roles appear promising – but privacy & confidentiality again are an issue. In some developing countries, pharmacies already play a greater role in STI detection and treatment.

SUBSTANCE MISUSE

Eight papers were reviewed, covering eight studies.

Ongoing pharmacy-based schemes such as needle-exchange and supervised methadone use appear to be reasonably well-accepted by clients, pharmacists and the public (with the exception that the public might prefer methadone supervision to be undertaken in private – i.e. not in the public area of the pharmacy). There is potential for STI / HIV prevention advice to be given by pharmacists to drug service users.

OSTEOPOROSIS SCREENING / PREVENTION

Eight studies were reviewed, six of which provided community pharmacy-based osteoporosis screening, one a risk management service for patients taking long term oral corticosteroids and one a falls prevention service.

OVERVIEW

- Community pharmacy based services for osteoporosis risk assessment were well received and identified women at different levels of risk.
- Not all studies conducted follow up after the assessment and those that did found that preventive treatments had been initiated and that women reported having made lifestyle changes.

One study tested the feasibility of referral for screening by local family doctors using a list of criteria to target women who might be at risk (MacLaughlin et al 2005). The service was well received by women in all of the studies. Where follow up was conducted a substantial proportion of women had new prescriptions for relevant medicines, and substantial percentages of women reported having made lifestyle changes (MacLaughlin et al 2005; Summers et al 2005; Naunton et al 2006).

A small RCT of a community pharmacy service tested the effect of pharmacist led risk management activities in patients taking long term oral corticosteroids (McDonough et al 2005). Intervention

pharmacies provided an educational pamphlet on osteoporosis prevention and reviewed patients' medication while controls provided usual care. 96 patients participated and those in the intervention group were significantly more likely to be taking calcium supplements after 9-months.

IMMUNISATION

Two studies (1 UK, 1 US) were reviewed, one of which was a service provision study. The UK pharmacy-based immunisation service (for influenza in particular) seems to have been reasonably well-accepted by patients, physicians and pharmacists (Hind et al 2004).

DISCUSSION

EFFECTIVENESS

Further evidence of the effectiveness of community pharmacy based services was identified for smoking cessation, hypertension, lipid management and diabetes.

Although overall there appear to be positive outcomes associated with pharmacy-based CHD management services, the studies conducted do not so far provide sufficient evidence to make a clear assessment. Most studies have only measured outcomes in the short term so the extent to which changes are sustained cannot be quantified. The exception is the Scrip Plus study where lower lipid levels were sustained one year after the end of the intervention period.

Currently the evidence for weight management might best be summed up as 'promising and in need of further study.' In the meantime, there are opportunities to collect data on effectiveness and it is encouraging to note that a government-funded Australian study will evaluate a community pharmacy weight-management service which itself is based on a critical review of the literature and the development of an evidence-based service model (Rieck et al 2006).

QUALITY

Two service quality frameworks for smoking cessation were identified. No other studies assessed service quality.

COSTS AND COST-EFFECTIVENESS

We identified two robust cost effectiveness analyses of a diabetes management service and a comparison of two methods of diabetes screening.

Compared with previous reviews, studies were more likely to target specific groups of people for both screening and intervention, which is likely to increase cost-effectiveness.

There was no obvious theoretical basis for the 'dose' of pharmacist input used in the studies we reviewed. Monthly face-to-face consultations were common and there was no discussion in the papers about whether there might be a dose response curve which could help to identify optimal input. Some recent studies have used telephone follow ups as an alternative option to face-to-face consultations. One trial also included the possibility of follow up using electronic communication but this was not used.

SKILL MIX

Only two studies included or discussed the contribution of pharmacy staff other than the pharmacist. One of these studies involved technicians in one pharmacy identifying people to receive brief advice on smoking. This was successful in doubling the numbers identified and recording their smoking status compared to the pharmacy which did not involve their technicians.

FUTURE RESEARCH

The dearth of UK studies in many key areas of the review is a matter for concern, with the exceptions of emergency hormonal contraception and substance misuse. In contrast, Canada has generated a substantial body of community pharmacy based research since our 2004 update and Australia has continued to expand its existing substantial evidence base.

In Australia a strategic long term programme of pharmacy practice research has produced a substantial evidence base to underpin proposed new community pharmacy services funded by the government. The key was collaborative working between the Australian government, the contract negotiators (The Pharmacy Guild of Australia), Schools of Pharmacy and the professional body. The Community Pharmacy Agreement Research and Development Program[3] helped to establish Australia as an international leader in evidence based community pharmacy services. Research and development was one of the priorities identified in the Fourth Agreement between the government and The Pharmacy Guild of Australia (2005-10). Funding of up to $19 million (8.9 million GBP) has been allocated for the Research and Development Program to identify research and development priority areas in community pharmacy service provision and then to fund projects with the greatest potential to deliver services with positive health outcomes for consumers and economic impacts for the health system. An example from research the programme is the research on diabetes that led implementation of the pilot Diabetes Medication Assistance Service (DMAS)[4] from 2007.Since September 2007, eligible patients with type 2 diabetes are able to schedule in-pharmacy appointments (with pharmacists in participating pharmacies) to receive assistance

[3]http://www.guild.org.au/ (accessed 11/3/08).
[4]http://www.guild.org.au/uploadedfiles/Research_and_Development_Grants_Program/News_and_Events/RDmarketingbooklet.pdf (accessed 11/3/08).

in managing their diabetes medicines, using a glucometer and self-monitoring their blood glucose. Pharmacists are also involved in the patient's lifestyle management by providing regular blood pressure and weight measurements, as well as general health and lifestyle advice. To participate in the pilot programme, pharmacists must be credentialed against a competency based training course. Pharmacies must also have a private area within the pharmacy to allow for confidential sit-down consultations with the patient.

If pharmacy-based studies are to have credibility with the wider public health community, it is important that they use key outcome measures that are recognised and accepted in relation to the particular health issue/s. For example, smoking cessation studies should be validated (e.g. by carbon monoxide or cotinine) wherever possible. This factor should be included in any quality assessment framework of smoking cessation services together with some assessment of behavioural support being given with medicines.

CONCLUSIONS

The review found a substantial number of studies and their findings have strengthened the evidence base of effectiveness for community pharmacy based services in smoking cessation, CHD management and prevention, diabetes screening and management, hypertension – although most of the studies were conducted abroad in settings that might vary from those in the UK and therefore further research is required within the UK. Some evidence of effectiveness was found relating to osteoporosis risk assessment and weight management. These areas remain promising and should also be tested in pilot studies and further research.

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