



August 2016 – SUPPORT Summary of a systematic review

Do additional services provided by pharmacists reduce healthcare costs or the demand for healthcare?

The role of pharmacists includes dispensing medication, and the packaging and compounding of prescriptions. But over the last two decades these responsibilities have expanded to include ensuring the proper use of medication as well as identifying, preventing and resolving drug-related problems. Pharmacists also promote health services and provide educational information.

Key messages

- ➔ **The provision of additional services by pharmacists targeted at patients, such as patient health education and follow-up, may lead to**
 - a decrease in the rate of hospitalisation, general practice visits and emergency room visits
 - a reduction in patients' medication costs
 - improvements in some clinical outcomes
- ➔ **The provision of additional services by pharmacists targeted at healthcare professionals, such as educational outreach visits, may improve patient outcomes**
- ➔ **The applicability of the findings to low-income countries may be limited by pharmacist numbers, patients and physicians' attitudes to pharmacists, pharmacists' training, and laws governing pharmaceutical practice**

Who is this summary for?

People making decisions about expanding the role of pharmacist services in low-income countries.

! This summary includes:

- **Key findings** from research based on a systematic review
- **Considerations about the relevance of this research** for low-income countries

X Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:

Pande S, Hiller JE, Nkansah N, Bero L. The effect of pharmacist-provided non-dispensing services on patient outcomes, health service utilisation and costs in low- and middle-income countries. *Cochrane Database of Systematic Reviews* 2013, Issue 2.

What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies

SUPPORT was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

Glossary of terms used in this report:
www.supportsummaries.org/glossary-of-terms

Background references on this topic:
See back page

Background

Pharmacists play an important role in providing and interpreting information related to self-medication and self-care. As these practices become more popular, the role of pharmacists in community pharmacies that offer patient care is likely to be enhanced. Increased demands for healthcare, the complex and expanding range of available medicines, the greater use of prescribed medications, and poor patient adherence, are all factors that have contributed to pharmacists needing to deliver patient-targeted services. These services include ensuring that medicines are correctly used, as well as the identification, prevention and resolution of drug-related problems (such as adverse effects). Pharmacists also contribute to the provision of health promotion services (including screening services for chronic diseases) and provide educational information.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: www.supportsummaries.org/how-support-summaries-are-prepared/

Knowing what's not known is important

A reliable review might not find any studies from low-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

About the systematic review underlying this summary

Review objective: To examine the effectiveness of services provided by pharmacists on patient outcomes and health service utilisation and costs in low- and middle-income countries

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Any health or drug-related, patient-targeted service delivered by pharmacists (other than drug compounding and dispensing, and excluding other services such as the selling of cosmetics or other non-pharmaceutical products) evaluated in a randomized trial, non-randomized trial, controlled before-after study, or interrupted time series study.	12 randomized trials in middle-income countries were included. 11 examined pharmacist interventions targeted at patients, and 1 evaluated a pharmacist intervention targeted at healthcare professionals. All the included studies compared pharmacist-provided services with usual care.
Participants	Pharmacists (or pharmacies) delivering services in outpatient settings other than, or in addition to, drug compounding and dispensing	Practising pharmacists and research pharmacists
Settings	Outpatient settings	Sudan (1 study), India (2), Egypt (1), Paraguay (1), Thailand (2), Chile (2), Bulgaria (2), and South Africa (1)
Outcomes	Objective measurement of patient outcomes and process outcomes such as health service utilisation and costs	Process outcomes (4 studies), rate of hospitalisation (2), number of visits to private clinics or outpatient clinics and emergency rooms in hospitals (1), medication costs of patients with chronic obstructive pulmonary disease and asthma (1), the number of visits to general practitioners (2), clinical and humanistic outcomes (11), patient outcomes (7), asthma score (1)

Date of most recent search: March 2010

Limitations: This is a well-conducted systematic review with minor limitations. There were few evaluations of impact that allowed robust conclusions to be drawn, particularly as many of the studies did not take all the costs involved into account.

Pande S, Hiller JE, Nkansah N, Bero L. The effect of pharmacist-provided non-dispensing services on patient outcomes, health service utilisation and costs in low- and middle-income countries. Cochrane Database of Systematic Reviews 2013, Issue 2. Art. No.: CD010398.

Summary of findings

Twelve studies were eligible for this review. Of these, 11 examined pharmacist interventions targeted at patients and one evaluated a pharmacist intervention targeted at healthcare professionals. Seven studies were undertaken in lower middle-income countries – Sudan (1), India (2), Egypt (1), Paraguay (1), Thailand (2) and five in upper middle-income countries – Chile (2), Bulgaria (2), South Africa (1). None of the studies presented data on total costs. One study presented data on patients' medication costs. All the studies provided data on patient outcomes and 4 studies examined health service utilisation.

1) Pharmacist-provided services targeted at patients versus usual care

Eleven of the 12 studies compared pharmacist-provided services targeted at patients with usual care. Interventions included counselling/patient Education (3), counselling or patient education + a booklet (4), counselling + drug review (1), a pharmaceutical plan with scheduled follow-up + patient education + a booklet (4), counselling + a booklet + a special medicine container (1), and counselling + a special medicine container (1). The duration of the interventions ranged between 20 and 50 minutes. Three of the 11 interventions were conducted over periods ranging between nine weeks and six months.

➔ **Pharmacist services targeted at patients may lead to reductions in the use of specific health services such as hospital admissions and general practitioner visits, a reduction in patients' medication costs, and improvements in some clinical outcomes. The certainty of this evidence is low.**

➔ **No studies were identified that examined pharmacist-provided services targeted at patients versus the same services provided by other healthcare professionals, or the same services provided by untrained health workers.**

About the certainty of the evidence (GRADE) *

⊕⊕⊕⊕

High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.

⊕⊕⊕○

Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.

⊕⊕○○

Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.

⊕○○○

Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

Pharmacist-provided services targeted at patients versus usual care		
People	Pharmacists (or pharmacies) delivering services in outpatient settings	
Settings	Sudan (1), India (2), Egypt (1), Paraguay (1), Thailand (2), Chile (2), Bulgaria (2), and South Africa (1)	
Intervention	Patient education and counselling (11), complete pharmaceutical care follow-up (3), bespoke educational booklets explaining the required disease, medication and lifestyle modifications (7)	
Comparison	Usual care	
Outcomes	Impact	Certainty of the evidence (GRADE)
Health service utilisation	Additional pharmacist services may reduce the rate of hospitalisation, general practice visits and emergency visits. In one study, for example, the reduction in general practice visits was 14% for the intervention group and 0% for the control group.	⊕⊕○○ Low
Medication costs	Additional pharmacist services may reduce medication costs of patients with asthma and chronic obstructive pulmonary disease. Other costs were not reported.	⊕⊕○○ Low
Clinical outcomes	Additional pharmacist services may lead to improvements in clinical outcomes* for diabetic and hypertensive patients; e.g. reductions in fasting plasma glucose levels or systolic and diastolic blood pressure.	⊕⊕○○ Low
GRADE: GRADE Working Group grades of evidence (see above and last page) * Fasting blood glucose, random blood glucose, glycosylated haemoglobin, systolic blood pressure, blood cholesterol, peak expiratory flow rate, clinical conditions and approaches to measurement of outcomes varied across studies.		

2) Pharmacist-provided services targeted at healthcare professionals versus usual care

One study evaluated educational outreach by pharmacists. The aim of this study was to improve the diagnosis, prescribing and follow-up care provided by general practitioners to children with asthma. The study reported an improvement in an asthma symptom score in the intervention group compared to the control group. The duration of the visits was 30 minutes and two visits were conducted over 12 weeks.

- Pharmacist services targeted at health professionals, such as educational outreach visits, may improve patient outcomes. The certainty of this evidence is low.
- The effect of pharmacist services targeted at healthcare professionals on total costs is uncertain. No studies were found that reported costs.
- No studies were found that assessed pharmacist-provided services targeted at healthcare professionals versus the same services provided by other healthcare professionals, or the same services provided by untrained health workers.

Pharmacist-provided services targeted at healthcare professionals versus usual care in low- and middle-income countries		
People	Pharmacists delivering educational outreach visits to general practitioners	
Settings	South Africa	
Intervention	Educational outreach visits aimed at improving diagnosis, prescribing and follow-up care for children with asthma	
Comparison	Usual care	
Outcomes	Impact	Certainty of the evidence (GRADE)
Patient outcome	There was an improvement in asthma scores as reported by the parents or guardians of children that were cared for by general practitioners in the educational outreach group in one study.	⊕⊕○○ Low
GRADE: GRADE Working Group grades of evidence (see above and last page)		

Relevance of the review for low-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
<ul style="list-style-type: none"> → The included studies were conducted in middle-income countries. → The pharmacists in the included studies may have received supplementary training. 	<ul style="list-style-type: none"> ▷ Expanding the role of pharmacists is dependent on having a workforce able to supply sufficient numbers of competent pharmacists, pharmacy technicians or assistants. ▷ Regulatory frameworks are needed to allow pharmacists to extend their activities beyond their traditional professional responsibilities. ▷ There may be too few pharmacists in low-income countries and they may lack sufficient training or support to assume additional roles and responsibilities. ▷ Other healthcare professionals may oppose expanding the role of pharmacists, especially those responsible for medication prescriptions.
EQUITY	
<ul style="list-style-type: none"> → The distribution of outpatient pharmacies and pharmacists may vary, especially between rural and urban areas. 	<ul style="list-style-type: none"> ▷ Expanding the role of pharmacists could reduce inequalities if, for example, help from pharmacists is available when access to other healthcare professionals is limited. However, if pharmacists are unavailable in underserved areas, allowing pharmacists to expand their roles may increase inequalities between urban and rural areas.
ECONOMIC CONSIDERATIONS	
<ul style="list-style-type: none"> → None of the studies provided a full costing of the interventions or their impacts. 	<ul style="list-style-type: none"> ▷ Insufficient information was provided to allow for the assessment of the costs or savings associated with services provided by pharmacists. These costs might include training costs of pharmacists, medication costs, costs of healthcare professional fees, and transportation costs for patients.
MONITORING & EVALUATION	
<ul style="list-style-type: none"> → No studies were undertaken in low-income countries, no studies compared services delivered by pharmacists to the same services delivered by others, and only one study assessed services targeted at healthcare professionals. 	<ul style="list-style-type: none"> ▷ The monitoring of health service utilisation, prescription data and costs should be undertaken. Randomized trials are needed to evaluate changes in the role of outpatient pharmacists in low-income countries. This should be done before attempts are made to scale-up any proposed changes.

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low-income countries. For additional details about how these judgements were made see:

www.supportsummaries.org/methods

Additional information

Related literature

Nkansah N, Mostovetsky O, Yu C, et al. Effect of outpatient pharmacists' non-dispensing roles on patient outcomes and prescribing patterns. *Cochrane Database of Systematic Reviews* 2010, Issue 7. Art. No.: CD000336.

Roughead EE, Semple SJ, Vitry AI. Pharmaceutical care services: a systematic review of published studies, 1990 to 2003, examining effectiveness in improving patient outcomes. *International Journal of Pharmacy Practice*. 2005; 13:53–70.

This summary was prepared by

Fatima Suleman, University of KwaZulu-Natal, South Africa.

Conflict of interest

None declared. For details, see: www.supportsummaries.org/coi

Acknowledgements

This summary has been peer reviewed by: Elizeus Rutebemberwa, Sami Pande, and Hanna Bergman.

This review should be cited as

Pande S, Hiller JE, Nkansah N, Bero L. The effect of pharmacist-provided non-dispensing services on patient outcomes, health service utilisation and costs in low- and middle-income countries. *Cochrane Database of Systematic Reviews* 2013, Issue 2. Art. No.: CD010398.

The summary should be cited as

Suleman F. Do additional services provided by pharmacists reduce healthcare costs or the demand for healthcare? A SUPPORT Summary of a systematic review. August 2016. www.supportsummaries.org

About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE: www.supportsummaries.org/grade

SUPPORT collaborators:

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the [Cochrane Collaboration](http://www.cochrane.org). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPNet) is an initiative to promote the use of health research in policymaking in low- and middle-income countries. www.evipnet.org

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. www.who.int/alliance-hpsr

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. www.norad.no

The Effective Health Care Research Consortium is an international partnership that prepares Cochrane reviews relevant to low-income countries. www.evidence4health.org

To receive e-mail notices of new SUPPORT summaries or provide feedback on this summary, go to: www.supportsummaries.org/contact