A naturalistic evaluation of the financial benefits of employing a mental health pharmacist to work with child and adolescent mental health services

Ray Lyon,¹ Graham Brown²

¹Department of Pharmacy, Sussex Partnership NHS Foundation Trust, Chichester, UK

²Department of Pharmacy, Western Sussex Hospitals NHS Foundation Trust, Worthing, UK

Correspondence to

Ray Lyon, Chapel Street Clinic, Chapel Street, Chichester PO19 1BX, UK; ray.lyon@sussexpartnership.nhs.uk

Received 19 July 2016

Revised 12 October 2016

Accepted 20 December 2016

Published Online First

13 January 2017

EAHP Statement 4: Clinical Pharmacy Services

ABSTRACT

Objectives To demonstrate that employing a mental health pharmacist in child and adolescent mental health services can significantly reduce medication expenditure, while assisting optimising medication use.

Method The financial evaluation was undertaken by comparing annual expenditure on medication between years 2004–2005 and 2014–2015, and examining any financial impact arising from the employment of the first pharmacist in 2007–2008. The current postholder and the chief pharmacist identified expenditure reduction initiatives undertaken or led by the pharmacist and agreed which key medicines optimisation roles the postholder had also undertaken.

Results Prior to the appointment of the pharmacist, annual drug expenditure over the preceding 3 years had remained steady at approximately £250 000. Since the first appointment in 2007, there has been a gradual and sustained reduction in expenditure and by March 2015, the annual reduction from baseline was approximately £133 000. This is significantly more than the £36 000 per annum that it cost to employ the pharmacist for six sessions a week and represents a net saving of £97 000 per annum. Eight key expenditure reduction initiatives were identified that were introduced and facilitated by the pharmacist.

Conclusions The period covered by this naturalistic evaluation was unusually stable with regard to the range and model of services provided, prescribing practice, medication prices and the medications available. It provided a rare opportunity to assess the financial impact of employing a pharmacist. These savings were pivotal in persuading Sussex Partnership NHS Foundation Trust to invest another £200 000 in 2016 in the employment of four additional pharmacists to work with the trust's community adult mental health teams.

INTRODUCTION

The prospect of realising financial savings in the drug budget is often put forward in business cases to justify employing more pharmacy staff. Proving this is extremely difficult, due to confounding impacts on drug budgets including changes to service models, availability of new medicines (both generic and proprietary), changes in prescribing responsibilities, the turnover of prescribers and service reconfigurations. Finding robust published evidence to demonstrate the long-term financial benefits is therefore very limited. Two reports have been written in the UK on the potential impact of mental health pharmacy services on inpatient¹ and some community mental health services² but none

measure the actual financial impact over a number of years. This is particularly true of community child and adolescent mental health services (CAMHS). Virani and Crown³ looked at the impact of a clinical pharmacist on patient and economic outcomes in an inpatient child and adolescent mental health unit in Canada and showed a significant reduction in ward drug costs, amounting to \$5485 in the year following appointment. Rubio-Valera *et al*⁴ produced an in-depth narrative review of new roles for pharmacists in community mental healthcare in 2014 reviewing papers from several countries, including the USA, Australia, Canada, New Zealand and UK. This review identified several advantages, but did not cover the financial benefits that can be achieved. One of the criticisms of the papers that it reviewed was the lack of any longer term follow-up.

This naturalistic evaluation describes the financial benefits gained by employing a mental health pharmacist to work with CAMHS over a period of 8 years when the model of care delivery, the market for medicines used by CAMHS prescribers and the prescribing relationship with primary care services were particularly stable. It also describes how these savings were realised and briefly describes the additional medicines optimisation roles undertaken by the postholder.

CONTEXT

Sussex Partnership NHS Foundation Trust CAMHS provides mental health services to young people under the age of 18 years across Sussex, the exception being young people with psychotic symptoms who are looked after by early intervention in psychosis services. CAMHS run a 16-bedded inpatient unit for age of 12–18 years old with emotional difficulties and psychiatric problems, but the vast majority of their services are delivered by nine community-based teams, distributed geographically throughout the county. Nearly all outpatient prescribing is undertaken using National Health Service (NHS) prescriptions similar to those used by NHS family doctors working in primary care. These prescriptions are dispensed by a community pharmacist of the patient or family's choosing. The price of CAMHS is charged for medication dispensed is usually set nationally and published in the government's monthly Drug Tariff.⁵ A small number of medicines used by CAMHS do not have a fixed price because they are unlicensed, for example, liquid 'special' preparations; the cost for these being based on what the community pharmacist has to pay to acquire the medication. The

CrossMark

To cite: Lyon R, Brown G. *Eur J Hosp Pharm* 2018;25:48–52.

exception to the use of NHS prescriptions was the use of private repeat prescriptions from April 2013 for immediate-release melatonin, dispensed by one community pharmacy and then posted to the patient or family. This was one of the cost-saving initiatives led by the CAMHS pharmacist.

CAMHS started funding a pharmacist for two sessions a week in 2007, to support services in West Sussex, a county in the UK with a total population of around 828 000 people.⁵ In November 2008, the funding was increased to six sessions a week covering the whole of Sussex (West Sussex, East Sussex and Brighton and Hove), which together have a total population of 1.65 million.⁶ The pharmacist was primarily employed to work at a service support level to optimise medicines use, working with prescribers and managers in the nine CAMHS teams across Sussex rather than directly with patients. Only one session each week involved face-to-face contact with patients on the inpatient unit.

The stable financial environment previously alluded to was in part due to the use of well-established shared care arrangements for prescribing medication for attention-deficit hyperactivity disorder (ADHD). These have been in place since the 1990s, and for prescribing melatonin since 2008 and allow family doctors working in primary care to take over the prescribing responsibility for a young person's medication once it has been initiated, benefits seen and the dose stabilised. The CAMHS team was responsible for reviewing and monitoring the child, normally every 6 months, in line with National Institute for Health and Care Excellence (NICE) guidance on prescribing ADHD medication.^{7,8} In Sussex, with one exception, all family doctors were happy to prescribe under shared care throughout this period.

Other potential confounding factors that could have impacted on prescribing expenditure were as follows: changes in the service model, which was stable; changes in workload; changes in prescribing personnel; and the availability of new medicines on the market, particularly generics. During this period, some new generic antipsychotics became available, but had little financial impact, as most antipsychotic prescribing was being done by the separately funded early intervention in psychosis services. The biggest expenditure was on medication used to treat ADHD. Methylphenidate and atomoxetine remained the medicines of choice to treat this condition between 2004 and 2015 in line with NICE guidance.^{7,8} Lisdexamfetamine was just starting to be prescribed in 2014 as an alternative second-line treatment at a similar daily cost to atomoxetine. Prior to, and since the appointment of the pharmacist, the cost of all these ADHD medicines has remained stable.

Although accepted referral figures are not available for the whole period, over the last 6 years numbers have fluctuated, but the overall trend has shown a slight increase. Unlike other mental health specialties, the majority of medical staff are either consultants or senior grade doctors, with a small number of senior trainees. Throughout this period, there was only a gradual turnover of these personnel.

METHOD

The financial evaluation was undertaken by comparing the year-on-year expenditure on medication dispensed by community pharmacies between 2004–2005 and 2014–2015, and examining the financial impact following the employment of the first pharmacist in 2007–2008. The NHS Business Service Authority's Prescription Service produces monthly reports on all prescriptions dispensed in community pharmacies. These data are available broken down by each CAMHS team. To assess the

Table 1 Child and adolescent mental health services (CAMHS) drug expenditure, items and accepted referrals* across Sussex prior to and since the appointment of a CAMHS pharmacist in 2007

Period name	Spend on FP10 prescriptions	Items dispensed on FP10 prescriptions	Number of new accepted referrals
2004/2005	£256 874	4196	Not available
2005/2006	£265 010	5017	Not available
2006/2007	£249 481	5906	Not available
2007/2008	£243 404	6131	Not available
2008/2009	£194 654	6097	Not available
2009/2010	£167 507	5490	5524
2010/2011	£162 741	5266	5226
2011/2012	£148 138	4933	5443
2012/2013	£123 393	4371	5084
2013/2014	£117 023	4830	5647
2014/2015	£116 649	5426	5986

*Accepted referrals by general CAMHS teams only available since 2009–2010.

impact the workload might have on expenditure, data on accepted referrals were requested. Unfortunately, this was only available for the period 2009–2010 to 2014–2015.

The current postholder and the trust's chief pharmacist reviewed cost reduction initiatives undertaken or led by the CAMHS pharmacist and agreed on the key medicines optimisation roles the postholder was undertaking during the period covered.

RESULTS

The impact on drug expenditure

As can be seen in [table 1](#) and [figure 1](#), prior to the appointment of the pharmacist, drug expenditure had remained steady at approximately £250 000 per annum for 3 consecutive years. Since the appointment of the first pharmacist in 2007, expenditure has steadily decreased and the annual reduction from baseline is approximately £133 000. This is significantly more than the £36 000 per annum that it cost to employ a band 8a pharmacist for six sessions a week in 2014–2015 and represents a net saving of £97 000 per annum. These savings are absolute figures and take no account of inflation.

There is clear evidence that these savings had not been generated due to any reduction in workload (between 2009–2010 and 2014–2015 when figures are available), as shown in [table 1](#) and [figure 2](#).

DISCUSSION

There appears to be a strong correlation between the employment of a CAMHS pharmacist and a steady reduction in drug expenditure. To attribute this to the employment of a pharmacist, it is important to understand how stable the prescribing environment was and to be aware of the wider roles undertaken to fully appreciate the other benefits employing a pharmacist brings.

Expenditure reduction initiatives led by the CAMHS pharmacist

The following initiatives introduced and facilitated by the pharmacist helped to realise expenditure reductions:

1. The auditing of doctors' prescribing to identify unusual prescribing patterns on a monthly basis by using community pharmacy dispensing data. Some ad hoc manual auditing of

Drug expenditure in Sussex CAMHS 2004/05 to 2014/15

Figure 1 Drug expenditure in Sussex child and adolescent mental health services (CAMHS) 2004/2005 to 2014/2015.

CAMHS dispensed items vs accepted referrals 2004/05 to 2014/15

(Accepted referral data not available prior to 2009/2010)

Figure 2 Child and adolescent mental health services (CAMHS) dispensed items versus accepted referrals 2004/2005 to 2014/2015.

prescriptions, photocopied prior to issue, took place where there were concerns. Areas where savings were identified included: twice daily atomoxetine dosing when not clinically justified, prescribing combination of atomoxetine and methylphenidate (not supported by guidance from the NICE)^{7,8} and long-term repeat prescribing for young people whose family doctors should have taken over prescribing responsibility.

- Promoting the use of stimulant ADHD medication only on school days, if appropriate. As well as reducing costs it can also help a young person whose appetite is suppressed, to gain weight and mitigate the risk of suboptimal growth.
- Organising and reporting the results of audits against shared care guideline standards for ADHD treatment. As well as ensuring clinical parameters were measured, children were expected to have an annual break in treatment to assess continuing benefit. Due to improved compliance with the guideline standards, more children had their medication discontinued when they were no longer benefiting.
- A decision was made to reduce the maximum dose of immediate-release melatonin prescribed for new patients from 12 to 6 mg/day as the pharmacist advised that the evidence⁹ showed little additional benefit for doses over 6 mg. This proposal was supported by the senior medical staff.

5. An area of high cost had been the prescribing of immediate-release melatonin primarily for sleep latency in young people with neurodevelopmental problems. Due to a large variation in what community pharmacists were charging for this unlicensed product, some monthly prescriptions cost over £100. A decision was made to move away from NHS prescriptions and use private prescriptions dispensed by one community pharmacy and the medication posted directly to families. Even with additional postal costs, this realised a significant saving.
6. The pharmacist developed separate guidance for older adolescents¹⁰ and for the parents/guardians of children and younger adolescents¹¹ on how best to enable young people to swallow tablets and capsules as many parents were unaware of the mechanics of swallowing. This initiative helped reduce the prescribing level of liquid preparations that are generally much more expensive.
7. A monthly financial prescribing report was produced that compared prescribing levels between teams across Sussex. This helped to identify unusual or unexpected prescribing, for example, any use of branded medication when it should be prescribed generically, or the prescribing of medicines for physical health conditions, which should be undertaken by the young person's family doctor. It also had the benefit of allowing each team to compare what and how much they prescribed with other teams.
8. Commencing in February 2012, a short aide-mémoire with tips on cost-effective prescribing¹² was sent to all prescribers. This was updated three times during the study period.

All of these initiatives contributed to the steady decline in drug expenditure. Some of these initiatives, that is, posting a standardised immediate-release melatonin product, enabling more children to swallow tablets and capsules and improved compliance with shared care guidelines, can also be seen as quality gains.

Key pharmacist medicines optimisation roles

Because of the large number of teams being supported, the pharmacist's role has always been to provide support to prescribers and team managers, rather than having much direct patient contact, with the exception of one inpatient unit. The support provided included:

- ▶ Writing and updating shared care guidelines for patients on melatonin and ADHD medication
- ▶ Writing prescribing guidelines
- ▶ Facilitating, coordinating, analysing and action planning to improve clinical outcomes with the various consultant groups on CAMHS-specific audits
- ▶ Monitoring prescribing compliance with trust guidelines
- ▶ Organising and chairing the CAMHS drugs and therapeutics subgroup
- ▶ Attending consultants' meetings to promote good practice
- ▶ Producing financial reports
- ▶ Identifying and implementing savings initiatives
- ▶ Training CAMHS clinicians

The pharmacist provided a number of other roles that helped improve the patient's and their family's experience of using and dealing with medication. These included:

- ▶ Addressing medicines information enquiries, mainly from CAMHS clinicians and managers, but also from family doctors
- ▶ Writing patient information leaflets
- ▶ Attending the 16-bedded inpatient unit's multidisciplinary team's ward meeting

- ▶ Nurse dispensing training for the urgent help services and home treatment teams
- ▶ Joint consultations with other clinicians when required for specific patients/families
- ▶ Medication education for patients, either at the inpatient unit or via community teams

Much of the success has been due to the calibre of the individuals working in the post and their willingness to develop a new role in an environment unused to receiving any pharmacy support. Having a clear set of objectives from the outset enabled the CAMHS teams to work with the pharmacist to identify joint priorities. Any service wishing to set up a similar role from scratch would need to be mindful of the importance of appointing a pharmacist, with the right clinical skills and the right interpersonal skills and drive to assert them self in the teams. Without these additional attributes, a lot of senior pharmacy management time will be needed to support the individual establish themselves and make the post a success.

Looking to the future

The clear financial benefit of employing a pharmacist has been a real eye opener for the trust. A business case to employ four additional pharmacists to support the general adult community mental health teams was successful in May 2015, and it is clear that the success of the CAMHS pharmacist was a significant factor in obtaining full support from the trust's executive team to fund these new posts. These four additional pharmacists were recruited in late 2015 and early 2016.

There is ongoing informal feedback from managers and prescribers working in CAMHS about the value of having a pharmacist attached to their teams. The role is developing, and the pharmacist is now working for three sessions a week as an independent prescriber supporting two CAMHS teams, a role that has also been very warmly welcomed. A second pharmacist has been employed part time to backfill the time spent undertaking this prescribing role.

To date, it has not been possible to secure resources to enable pharmacists to work face to face with individual young people and their families in the community. There is growing support to use pharmacists within our community CAMHS teams, as recruiting medical prescribers is proving difficult. Recruiting and training pharmacists to take on this role within a short period would be difficult, but not impossible. Although having a prescribing qualification would be an asset, experience within the trust's early intervention in psychosis teams shows this is not essential. The trust's early intervention in psychosis pharmacist, who supports six teams, has been able to work closely with some patients and if appropriate their families, to support their recovery where medication adherence in particular has been a problem. She also provides a focus for the early intervention in psychosis teams to discuss medication on the days she is able to attend their multidisciplinary team meetings. A similar model that allows pharmacists to review patients on long-term ADHD medication and lead on medication related audits could provide a fulfilling and important role for pharmacists embedded in CAMHS teams.

CONCLUSIONS

We have had an opportunity in Sussex to see the real financial impact of employing a pharmacist to support community CAMHS teams over a long period. The prescribing environment was unusually stable, therefore minimising the impact of confounding factors, giving a strong signal that the savings could be directly linked to the postholder's influence. Employing a

pharmacist has led to a gradual and sustained reduction in annual drug expenditure over 7 years, eventually reducing drug spend by over £133 K per year from baseline. The cost of the six sessions per week, based on 2014–2015 salaries, was £36 K. Partly as a result of the impact the CAMHS pharmacist had, the trust's executive team has funded four new posts to support their community adult mental health teams across Sussex.

What this paper adds

What is already known on this subject

- There is some limited evidence of the short-term financial benefits of employing a pharmacist on a child and adolescent mental health ward or in community mental health services.
- An in-depth narrative review of new roles for pharmacists in community mental healthcare in 2014 did not cover children and adolescent services and was criticized for lack of any long-term follow-up.

What this study adds

- It provides long-term evidence that employing a mental health pharmacist can produce cumulative financial savings for community-based children and adolescent mental health services.
- It provides details of the strategies used to achieve the savings and describes what non-financial medicines optimisation roles were also undertaken.

Competing interests None declared.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Riley C, Brandford D. *Getting the medicines right: medicines management in adult and older adult acute mental health wards*. National Mental Health Development Unit, 2009.
- 2 Davies P, Taylor J. *Getting the medicines right 2: medicines management in mental health crisis resolution and home treatment teams*. National Mental Health Development Unit, 2011.
- 3 Virani A, Crown N. The impact of a clinical pharmacist on patient and economic outcomes in a child and adolescent mental health unit. *Can J Hosp Pharm* 2003;56:158–62.
- 4 Rubio-Valera M, Chen T, O'Reilly C. New roles for pharmacists in community mental health care: a narrative review. *Int J Environ Res Public Health* 2014;11:10967–90.
- 5 Department of Health. Electronic Drug Tariff, 2016. <http://www.drugtariff.nhs.uk/nhs.uk/#/00309233-DC/DC00309229/Home> (accessed 28 Mar 2016).
- 6 Office of National Statistics. Mid-year population estimates, 2014. [Online] 2015. <http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/latest> (accessed 3 Sep 2015).
- 7 National Institute for Health and Care Excellence. TA98. *Methylphenidate, atomoxetine and dexamfetamine for attention deficit hyperactivity disorder (ADHD) in children and adolescents*. London: National Institute for Health and Care Excellence, 2006.
- 8 National Institute for Health and Care Excellence. CG72. *Attention deficit hyperactivity disorder: diagnosis and management*. London: National Institute for Health and Care Excellence, 2008.
- 9 Appleton R, Gringras P, MENDS (Medicines for Children, Clinical Trials Unit, University of Liverpool) Study Group. The use of melatonin in children with neuro-developmental disorders and impaired sleep—a randomised, double-blind, placebo-controlled, parallel trial. *Arch Dis Child* 2011;96(Suppl 1):A1.
- 10 Sussex Partnership NHS Foundation Trust. *Swallowing pills (tablets and capsules)—Patient information leaflet for adults and older adolescents, version 2*. Chichester, 2015. <http://www.sussexpartnership.nhs.uk/node/1680/attachment> (accessed 15 Apr 2016).
- 11 Sussex Partnership NHS Foundation Trust. *Swallowing pills (tablets and capsules)—Patient information leaflet for parents and guardians of children and younger adolescents, version 2*. <http://www.sussexpartnership.nhs.uk/node/1681/attachment> (accessed 15 Apr 2016).
- 12 Sussex Partnership NHS Foundation Trust. *Cost effective prescribing tips for CAMHS teams, version 5*. <http://www.sussexpartnership.nhs.uk/node/1639/attachment> (accessed 15 Apr 2016).