On-call hospital pharmacy services: a perspective from NHS Tayside, Scotland

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ABSTRACT

Aim To describe the enquiries to an out-of-hours pharmacy on-call service and to describe the activity of this service from April 2015 to March 2016.

Method Data entered by on-call pharmacists into the 'On Call' app database at a large teaching hospital were reviewed retrospectively. Data were analysed using OpenOffice Calc.

Results 839 on-call enquiries were received in the data collection period, averaging 70 calls per month or 2.3 calls per shift. The busiest days were Saturdays (26.0% of total calls, 218/839) and Sundays (20.0% of total calls, 168/839). The vast majority of calls were received before midnight (91.8%, 770/839), with most of these being received between 09.00 and 20.00 (68.1%, 571/839). The number of calls varied greatly between months with the least calls being received in April (37) and the most in January (100). Nurses were the main users of the service with 62.8% (527/839) calls. Junior doctors were the other main users with 26.2% (220/839) of calls. Most calls involved queries regarding the supply of medicines (30.0%, 252/839), Medicines information requests (26.8%, 225/839) or requests to dispense discharge prescriptions (17.6%, 148/839). The majority of calls were resolved within 30 min (82.4%, 691/839) and a significant proportion answered within 10 min (48.6%, 408/839). The average time taken to resolve a call was 22 min. More experienced members of the service were able to resolve calls more quickly than the more junior (averages of 26.64 vs 19.73 min).

Conclusions This article provides a commentary on the pharmacy on-call service within NHS Tayside and an in-depth look at what an on-call service entails.

INTRODUCTION

'On-call' is a term used frequently within health-care by many different professions. The implications vary greatly between groups of staff and between health boards but at the most basic level, on-call is defined as being available to work outwith one's normal working hours. Hospital pharmacy departments routinely provide on-call services. The recent article by Cheeseman and Rutter¹ discussing the provision of on-call hospital pharmacy service in NHS England provided a valuable insight into how on-call services are provided in NHS England. In addition, a 2013 article by Heath *et al*² provided an insight into on-call services in St Vincent's Hospital in Sydney, Australia. The current article attempts to describe the on-call service from a Scottish perspective based on work undertaken within NHS Tayside, Scotland.

As noted by Cheeseman and Rutter,¹ traditional working hours for hospital pharmacy are between

09:00 and 17:00, Monday to Friday. The experience in NHS Tayside coincides with this as pharmacists are available between the hours of 08:00 and 18:00, but with the core hours remaining as 09:00–17:00. At weekends, there are minimal clinical pharmacy services although the dispensary is open 10:00–13:30. This set-up leaves periods of time during the week and at weekends where there are no pharmacists on site. These times are collectively known as out of hours (OOH). Pharmaceutical service provision during the OOH period is provided by the pharmacy on-call service. In NHS Tayside, the pharmacy on-call service provides OOH support to all acute, mental health and community hospitals within the managed service of NHS Tayside. In exceptional cases, there may also be requests from the General Practitioner (GP) OOH services, community pharmacy, private hospitals or the police/prison service after other options have been pursued. Given the wide range of areas, which could potentially require support, the pharmacy on-call service within Tayside has agreed to the following criteria for calls³:

- ▶ Initiation of class 1 drug alert.
- ▶ Chemical, biological, radioactive, nuclear attack; major incident procedure.
- ▶ Breach in pharmacy department security (in conjunction with key holders) or cold store alarm.
- ▶ Supply of critically urgent medicines, unavailable from wards/departments in Tayside (including National Holding Centre medicines).
- ▶ Provision of medicines information, for queries unable to be answered from use of available sources on NHS Tayside pharmacy website and senior medical and nursing staff.

As will be discussed subsequently, these five categories can be further subdivided into more specific call types.

In NHS Tayside, the structure of the on-call service changed significantly after the national review of on-call systems took place across the UK.⁴ In 2012, the Scottish government published guidance based on recommendations from this review, which changed the way in which on-call pharmacists were remunerated and the way in which on-call services were provided.⁵ One of the key recommendations was that the working week should be split into a maximum of nine on-call sessions:

- ▶ Monday to Friday—one session each day (each session should be no more than 16 hours).
- ▶ Saturday and Sunday—two sessions each day (each session should be no more than 12 hours).
- ▶ Public holiday—two sessions each day (each session should be no more than 12 hours).⁵

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This represented a significant change from the previous structure and triggered a review of the service as a whole within NHS Tayside. Following this review, the NHS Tayside pharmacy on-call service now has:

- ▶ A rota that is populated by pharmacists working in several hospitals and settings across Tayside (secondary care pharmacists and pharmacists based in GP practice), that is, a Tayside-wide rota.
- ▶ A system for ensuring compensatory rest in line with Section 27 of the Agenda for Change NHS Terms and Conditions of Service Handbook.⁶
- ▶ On-call shifts allocated on a sessional basis as described above.

In addition to this change in structure, robust training, induction, mentorship and peer review systems have also been put in place. Within the last 2 years, the NHS Tayside pharmacy on-call service has also implemented a completely paperless call recording and reporting system, using the 'On Call Pharmacy' app. This has been developed in conjunction with NHS Tayside by the software development company Software and has afforded the NHS Tayside pharmacy on-call service many benefits. One such benefit is the ability to generate a database of calls that can be interrogated easily. This article has been made possible by the use of data extracted from the 'On Call Pharmacy' app. Prior to the implementation of the app, none of the data presented in this article was able to be collected or analysed. In recognition of all the work done and the changes made, the NHS Tayside pharmacy on-call team were nominated and short-listed as finalists for the Team of the Year Award at the Scottish Pharmacy Awards in 2015.⁷

METHOD

Data entered into the 'On Call' app database by on-call pharmacists throughout NHS Tayside were collected retrospectively for the period of April 2015–March 2016. The data were analysed using OpenOffice Calc. The analysis looked at sorting the data using the following fields: overall number of calls, number of calls per hour, day and month, enquirer, category of call and the time calls took to answer.

RESULTS

The results presented are for the time period of April 2015–March 2016 (financial year 2015–2016) inclusive unless otherwise stated.

Activity of the service

The NHS Tayside pharmacy on-call service received 839 calls (70, or 9.3% resulting in pharmacist attendance to the hospital) in the OOH period from April 2015 to March 2016. This equates to 70 calls per month, 16 calls per week or 2.3 calls per on-call shift on average. There is very little published literature describing how many calls pharmacy on-call services receive. Cheeseman and Rutter¹ suggests that most on-call services in NHS England receive up to 20 calls per week relating to supply of medicines (65.3%) and up to 20 calls per week relating to medicines advice (83.6%). However, Heath *et al* reported that their on-call service received 963 calls over a 10-year period. The activity of the NHS Tayside on-call service is more in line with the experiences in NHS England, although received calls maybe categorised in different ways in different services thus not allowing direct comparison. Until this point, it has been thought that pharmacy on-call services are busier at the weekends than during the week. Figure 1 demonstrates this is the

case in Tayside and shows how many calls were received each day of the week.

Nearly half of all calls (46.0%, 386/839) were received over the weekend with Saturday being the busiest day with 26.0% (218/839) of all calls. There is very little difference in number of calls received during the week with around 10% (9.7–11.7) of calls received each weekday. There are potentially a number of factors why weekend shifts receive more calls. Pharmacy opening hours at weekends is likely to play a significant role. The on-call service starts once the dispensary closes. In NHS Tayside, the dispensary closes and thus the on-call service begins at 13.30 on Saturdays and Sundays compared with 17.00 during the week. Thus, on-call shifts on Saturdays and Sundays are 3.5 hours (22%) longer than shifts during the week. In addition, there are very few pharmacists on the wards over the weekends in comparison to weekdays meaning queries that are usually dealt with by the ward pharmacist are more likely to be asked to the on-call pharmacist. Looking in more detail at when calls are received, figure 2 shows which hours of an on-call shift are the busiest.

Figure 2 shows that no calls (0.0%, 0/839) were received between the hours of 10:00 and 13:00. This is expected as the dispensary is always open during these hours and therefore there is no on-call service. Between the hours of 13:00 and 17:00, 29.1% (244/839) of calls were received. These calls are attributable to weekend on-call shifts as there is no pharmacy on-call service during these hours on weekdays. Figure 1 shows that 46.0% of calls are received at weekends and figure 2 demonstrates that 29.1% of calls are between 13:00 and 17:00 (weekend calls). It can therefore be deduced that 16.9% of weekend calls fall within the hours of 17:00–10:00. In other words, 63% (29.1/46) of calls at the weekend occur during what would be considered normal pharmacy working hours during the week. Figure 2 also demonstrates that a significant number of calls are received between the hours of 17:00 and 20:00 (38.3%, 321/839). This is the most common time for the on-call service to be contacted. Possible reasons for this are that clinical pharmacy services stop at 17:00 in most cases and the dispensary closes at 18:00. However, there is still significant activity in clinical areas after these times. Therefore, there is often pharmaceutical advice required beyond core pharmacy working hours. In addition, most wards have a drug round at around 18:00 meaning nurses are likely to identify issues with medicine administration at this time. Also, it is common for patients to be transferred from admission wards to other wards in the evening. This process can also lead to medication issues and present the need to contact the on-call pharmacy team. Overall, figures 1 and 2 combined show that over two thirds of calls (68.1%, 571/839) are received between the hours of 09:00 and 20:00 throughout the week. In comparison, only 8.2% (69/839) are received between 00:00 and 10:00. This is very similar to the results reported by Heath *et al*² where 7% of their calls were received between 00:00 and 08:00.

The final measure relating to the activity of the service is how much variation occurs throughout the year. Figure 3 shows how many calls were received each month throughout the last financial year.

It can be seen from figure 3 that there is significant variation in the number of calls received throughout the year as the busiest month (100 calls) being almost three times as busy as the quietest month (37 calls). There are many factors that could contribute to this variation. One factor is the rotation of junior doctors. In the UK, new doctors start in August each year. New doctors then rotate every 4 months to different areas. There is some correlation between these rotations and the number of

Figure 1 Which days did the on-call team receive their calls?

calls displayed in [figure 3](#). August sees a peak in calls, which then gradually reduces over the course of the next 4 months. A similar trend is seen from December to March. April to July is less in keeping with this pattern, perhaps because the junior doctors have gained more experience by this stage.

Users of the service

There is very little detail in the literature regarding who contacts pharmacy on-call services. Anecdotally, it is thought nursing staff are the main users. Administration of medicines is a key nursing role and therefore nurses are likely to need advice about medicines. It is expected that junior doctors would also be major users of the services since they provide a significant prescribing role. [Figure 4](#) shows the breakdown of who calls the pharmacy on-call service within Tayside.

[Figure 4](#) demonstrates that the majority of calls come from nurses (62.8%, 527/839). Junior doctors (all grades below consultant) made up the majority of the other callers (26.2%, 220/839). The remainder of calls came from a wide variety of other

healthcare professionals and members of staff within and outwith the secondary care setting.

Types of calls

As described above, the NHS Tayside pharmacy on-call service receives calls from a wide variety of callers. This variety of callers results in a variety of types of calls. Previous studies have described on-call queries as belonging to one of two broad categories: supply of medicines or medicines information.^{1 2} Although most queries could be classified in this way for NHS Tayside, calls have been broken down into more detailed categories, as shown in [figure 5](#).

Calls that are classified as medicines supply or medicines information accounted for 56.9% (477/839) of calls. Prescription requests made up 17.6% (148/839) of calls. A prescription request was defined as a person calling to ask if a discharge prescription could be dispensed outwith normal pharmacy hours or if the on-call pharmacist knew of the location of a discharge prescription. The remaining 25.5% (214/

Figure 2 At what time did the on-call team receive their calls?

Figure 3 Number of calls received each month.

839) of calls fell under other categories such as advice on Total Parenteral Nutrition (TPN), advice on transferring or borrowing medicines from other departments or hospitals, calls regarding the security of the department or fridge temperature breaches (alarm call outs) or chemotherapy.

How long do calls take to answer?

The NHS Tayside on call pharmacy service defines a call as starting when the on-call pharmacist answers the initial phone call. The call is complete once the query has been resolved. In circumstances when it is necessary to attend the hospital to resolve the query, the call will end once the on-call pharmacist has returned home. Some enquiries are more complex than others and therefore require more time to address. Very little literature is published describing how long calls take to answer. On average, on-call queries were answered in 22 min. [Figure 6](#) displays the length of calls within NHS Tayside.

Most calls were dealt within 30 min or less (82.4%, 691/839), with almost half of calls (48.7%, 409/839) being resolved

within 10 min. There was also a significant proportion of calls (17.6%, 148/839) that required more than 30 min to resolve. Some of these longer calls can be explained by the requirement to attend the hospital. However, as described earlier, only 8.4% (70/839) of calls required attendance to the hospital. Therefore, almost 1 in 10 (9.3%, 78/839) calls took over 30 min and did not require attendance to the hospital indicating that they were likely complex calls.

Cheeseman and Rutter¹ discovered that in NHS England, all grades of pharmacists are involved in providing on-call services, from band 6 to band 9. This is not the case within NHS Tayside where junior pharmacists (bands 6 and 7) and a very small number of senior pharmacists (band 8a) provide the service. [Figure 7](#) shows the difference in average call length between the different pharmacist bands.

As expected more experienced pharmacists took less time to deal with calls. On average, calls took 35% longer (26.6 min compared with 19.7 min) to be answered by band 6 pharmacists than band 8a pharmacists. One of the perceived benefits of

Figure 4 Which staff groups call the pharmacy on-call service.

Figure 5 What categories of calls were received and how many?

Figure 6 How long do queries take to resolve?

on-call services being provided by junior pharmacists is that cost savings may be achieved. Payment for calls is based on hourly rate of each pharmacist and junior pharmacists have lower hourly rates. However, [figure 7](#) shows that some of the potential cost-savings could be offset by more junior pharmacists taking longer to deal with queries.

DISCUSSION

The results presented in this article provide an account of the pharmacy on-call service within NHS Tayside. This is the first

article to describe the activity of an on-call service in such detail. Extensive literature searches revealed that there is very little data published about on-call pharmacy services. Nonetheless, there are some aspects for discussion moving forward.

Extended working hours

At the current time, there is significant pressure for the NHS to provide more services over a 7-day working week. This has been brought into the public eye in recent months with the

Figure 7 Average time taken to answer on-call enquiries.

proposals for a new junior doctors contract. If this is to be the direction of travel, it would be expected that more pharmaceutical input would be required over an extended period of time in comparison to what is currently delivered. It is not clear at present exactly how this will be delivered or how this will affect on-call services. If the activity of other services (non-pharmacy) was to increase, this may cause an increase in the demand for the pharmacy on-call service. However, if pharmacy services also expand and pharmacy working hours change to a 7-day week then the on-call period will be shorter, thus the activity of pharmacy on-call services may be reduced. The results from NHS Tayside indicate that most calls are received either at the weekend or before 20:00 during the week, which would imply that if extended opening hours were implemented across a 7-day working week, a significant number of calls to the pharmacy on-call service would be prevented. This would be welcomed among on-call pharmacists but may precipitate another review of the on-call service in due course. For example, in the Central Manchester University Hospitals Foundation Trust, a similar extension in hours resulted in the traditional on-call pharmacist service being replaced by a 'night-shift' pharmacist.⁸

Reduction of inappropriate calls

The types of calls received by the NHS Tayside pharmacy on-call team is an area that is under constant review. The five criteria that are deemed appropriate circumstances in which to contact the pharmacy are mentioned previously. However, some calls do not fall into any of these categories and in particular are neither urgent nor emergencies. To address this, the on-call team in NHS Tayside has introduced a number of measures. Information about how to source medicines OOH or which information sources to refer to in order to resolve medicines information queries were made available on the local intranet pages. In addition, a file, which lists all medicines stocked in ward areas, and on which wards, was also made available for staff to use OOH. This allows ward staff to identify the location of medicines within Tayside and organise the transfer of the medicine without needing to refer to the on-call pharmacist. However, there are still a number of calls to the on-call team that could be resolved without the input of an on-call pharmacist. The next step to address this issue within Tayside is for

calls destined for the on-call pharmacist to be screened by a member of the Hospital at Night team. As described previously, a significant proportion of calls are enquiries about prescriptions (148/839, 17.6%) or medicine information requests (225/839, 26.8%). It is anticipated that Hospital at Night practitioners will be able to resolve the majority of these calls thus reducing the number of calls coming through to the on-call pharmacy team. In addition, some other centres in the UK have automated dispensing systems, which can be operated remotely. This allows medicines to be supplied to wards from pharmacy without pharmacists needing to attend the hospital. Although such a system is not in place currently in NHS Tayside, it is something that could be considered in the future. A combination of these measures could significantly reduce the time pharmacists spend on straight-forward calls received, saving money and allowing more time to be dedicated to more complex queries, which require pharmacist-specific expertise.

Quality assurance of calls

The data presented in this article have described the calls received by the NHS Tayside pharmacy on-call service. However, what is not presented is the response or answers to queries received. The aim of the service is to provide high-quality advice on a consistent basis irrespective of which individual pharmacist is on-call. Induction training and mentoring systems are in place to help achieve this. However, to ensure calls are answered appropriately, every call is reviewed by the head of service (or deputy) on a monthly basis. In addition, frequent peer review meetings are held in which calls are discussed among the team allowing a consistent approach to be adopted by the entire team. Any member of the team can initiate discussion about a call or how a call should be responded to. Minutes of these meetings are disseminated to the entire team. In future, feedback from service users will be collected to determine if the advice given is appropriate and helpful to the caller. This will also help ensure advice given is consistent between on-call pharmacists and of a high quality.

CONCLUSION

Pharmacy on-call services are provided by all health boards during the OOH period. Service set-up and service provision

may vary between trusts although many of the themes and challenges faced are common to all. This article provides a commentary on the pharmacy on-call service within NHS Tayside and an in-depth look at what an on-call service can provide.

What this paper adds?

What is already known on this subject?

- ▶ Pharmacy on-call services are provided throughout the UK and the world by hospital pharmacy departments.
- ▶ Most calls involve medicines information or medicine supply type queries.
- ▶ Very little research has been published describing pharmacy on-call services in any detail.

What this study adds?

- ▶ A detailed description of a pharmacy on-call service from NHS Tayside.
- ▶ A demonstration of how the use of technology can provide useful insights into a service.
- ▶ A reference point for other pharmacy on-call services.

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