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3   Service users' experiences of contacting NHS patient medicines helpline services: A qualitative study.

4

5   Matt Williams

6   Abbie Jordan

7   Jennifer Scott

8   Matthew D Jones

9

10   **Author Note**

11   Matt Williams: Department of Pharmacy & Pharmacology, University of Bath, Bath, United Kingdom.

12   ORCID: 0000-0002-9122-1858

13   Abbie Jordan: Department of Psychology, University of Bath, Bath, United Kingdom. ORCID: 0000-

14   0003-1595-5574

15   Jennifer Scott: Department of Pharmacy & Pharmacology, University of Bath, Bath, United Kingdom.

16   ORCID: 0000-0002-4920-0914

17   Matthew D. Jones: Department of Pharmacy & Pharmacology, University of Bath, Bath, United

18   Kingdom. ORCID: 0000-0002-2617-4098

19   Correspondence concerning this article should be addressed to Matthew D. Jones, Department of

20   Pharmacy & Pharmacology, 5 West, University of Bath, Claverton Down, Bath, BA2 7AY, United

21   Kingdom. Tel: 01225 383829. Electronic mail should be sent to m.d.jones@bath.ac.uk.

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1   **Abstract**

2   **Objectives**: Patient medicines helpline services (PMHS) are available from some National Health

3   Service (NHS) Trusts in the UK to provide medicines information to hospital patients and carers. To

4   date, studies of PMHS have examined the views of service users via satisfaction surveys. This study

5   used qualitative methods to explore service users' experiences of using a PMHS, including perceived

6   benefits and areas for improvement.

7   **Design:** Qualitative, using semi-structured interviews.

8   **Setting**: This study was conducted across seven NHS Trusts in England.

9   **Participants**: Forty users of PMHS were individually interviewed over the telephone. Interviews were

10   audio-recorded, transcribed verbatim, and analysed using Braun & Clarke's inductive reflexive

11   Thematic Analysis. Ethical approval was obtained before study commencement.

12   **Results**: Participants predominantly called a PMHS for themselves (82%; carers: 18%). Two main themes

13   were generated. *Theme 1: Timeliness*: PMHS provide support during the uncertain transition of care

14   period from hospital to home, when patients and carers often feel vulnerable because support is less

15   available. PMHS met service users' needs for timely and easily accessible support, and quick resolution

16   of their issues. PMHS could be improved with staffing beyond typical work week hours, and by having

17   staff available to answer calls instead of using an answerphone. *Theme 2: PMHS are best-placed to help*:

18   PMHS were perceived as best-placed to answer enquiries that arose from hospital care. Service users

19   felt reassured from speaking to pharmacy professionals, and PMHS were perceived as the optimal

20   service in terms of knowledge and expertise regarding medicines-related questions. However, several

21   participants were initially unaware that their PMHS existed.

22   **Conclusions:** PMHS are perceived to be a valuable means of accessing timely medicines-related support

23   when patients and carers may be feeling particularly vulnerable. However, their availability and

1 promotion could be improved. We recommend that providers of PMHS consider whether this is

2 achievable, in order to better meet the needs of service users.

3

4 **Keywords**: Patients, carers, service users, medicines information, drug information services, patient

5 medicines helpline services, hospital discharge, National Health Service, qualitative, thematic analysis.

6

7 **Strengths and limitations of this study**

8 • This is the first study to adopt an idiographic approach to exploring service users'

9 experiences of using patient medicines helpline service.

10 • Participants were recruited from a geographically diverse range of NHS Trusts (n=7) across

11 England.

12 • Providers of the service acted as gatekeepers to participants, which may have resulted in

13 participant selection bias.

14 • The sample primarily comprised service users from acute NHS Trusts, and therefore could

15 have been improved by additional service users from other Trust types (e.g., specialist and

16 mental health).

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1   **BACKGROUND**

2   Many patients leave hospital with gaps in their knowledge about their medicines,[1-6] and a

3   sizeable number of patients subsequently experience medicines-related errors and require support

4   with medicines-related problems.[7-14] Consequently, hospital discharge may be a confusing and/or

5   risky period for patients who have recently experienced changes to their medicines.

6   Patient medicines helpline services (PMHS) have been set up at many National Health Service

7   Trusts (NHS) in the United Kingdom with the aim of providing medicines-related support to recently

8   discharged hospital patients and their carers. The first PMHS was set up in the UK in 1992, and a

9   survey study conducted in 2017 reported that 52% of NHS Trusts provided a PMHS.[15] Providing a

10   PMHS accords with World Health Organisation (WHO) policy, which states that offering information

11   on medicines via Medicines Information (MI) centres, and providing public education about

12   medicines, are essential interventions to promote the rational use of medicines.[16]

13   In line with healthcare quality improvement approaches, services are likely to be improved

14   by seeking to understand the experiences of service users.[17] In order to ascertain service users'

15   views and experiences of PMHS, quantitative satisfaction survey studies have been conducted,

16   whereas qualitative studies have not.[18] The results of such survey studies suggest that service users

17   typically consider PMHS to be beneficial.[18] For example, a recent systematic review found that

18   satisfaction ratings are excellent, the advice received is reported to be usually followed, and users

19   report several positive outcomes, such as feeling reassured, and improved health.[18] However, a

20   limitation of survey studies is that surveys include questions that are important to the researcher,

21   rather than allowing participants to provide in-depth information that is important to them.

22   Relatedly, survey answer options do not permit participants to respond in-depth using their own

23   words. To enable service users to provide a detailed consideration of how and why PMHS may be

24   beneficial and how they could be improved, an idiographic approach is needed.

1   Whereas the nomothetic approach is considered useful for making generalisations about

2   groups of individuals in order to make assumptions about populations, the idiographic approach is

3   considered useful for exploring individuals' lived experiences of a phenomenon.[19] Idiography is

4   concerned with exploring the in-depth experiences of particular individuals in particular contexts,

5   and qualitative methods are considered appropriate for collecting rich data in order to achieve this.[19]

6   Consequently, our study sought to address an important knowledge gap by being the first study to

7   take an idiographic approach, and use qualitative methods, to explore service users' experiences of

8   PMHS.

9   **Aim**

10   The aim of this novel qualitative study was to explore patients' and carers' experiences of

11   using a PMHS, their benefits, and ways that they can be improved. Through learning about patients'

12   and carers' experiences of PMHS, we aimed to suggest improvements to how PMHS are delivered. In

13   particular, this study addressed the following research question: *What are patients' and carers'*

14   *experiences of using an NHS patient medicines helpline service?*

15   **METHOD**

16   **Study design**

17   The authors adopted the epistemological position of pragmatism, in order to develop

18   recommendations for service improvement for the benefit of users of PMHS. Pragmatism uses

19   appropriate methods for solving practical problems, with an emphasis upon the usefulness of

20   research.[20] Pragmatism has become increasingly popular in health research, since its aim is to

21   produce findings that are of benefit to service users.[20-22]

22   For transparency, the study authors comprise three University academics with PhDs (one

23   male, two female) and one PhD student with an MSc (male). All study authors have an interest in

24   pharmacy practice, health services research, and/or health psychology. One author (MJ) has prior

25   experience of managing a PMHS for an NHS Trust in England.

1 **Participants and recruitment**

2   Recruitment was conducted via seven NHS Trusts from different regions within England:

3 four acute Trusts, one mental health Trust, one specialist Trust, and one community Trust. Initially,

4 four Trusts were recruited, one of each type. Additional Trusts of all types were subsequently

5 recruited in order to ensure that our sample target was met, and to enhance the diversity of

6 experiences included in the analysis. However, only three additional acute Trusts agreed to take

7 part. Pharmacy professionals who provided the PMHS at sites acted as gatekeepers to the

8 recruitment of participants, with each site recruiting participants over a six-month period.

9   Eligible participants were required to be either a patient, or a patient's non-professional

10 carer, who recently used a PMHS provided by an NHS Trust within England for the purpose of

11 seeking support regarding medicines. Participants were also required to be aged 16 years or older,

12 fluent in English, and available to participate in a telephone interview within one month of having

13 used the PMHS. Participants were excluded if, in the pharmacy professional's judgement, taking part

14 would likely cause distress to the service user. Pharmacy professionals were also required to exclude

15 service users who stated they were (or were considering) making a complaint against the Trust, and

16 if the service user was a healthcare professional to the patient.

17   Invitations to participate in the study were sent from Trusts to all helpline enquirers who

18 agreed to receive study information at the end of their call to the PMHS. After reading the study

19 participant information sheet, interested individuals opted in by contacting the research team via

20 telephone or email in order to participate. Prior to participation, interested individuals were

21 informed as to the purpose of the study and what participation entailed, including key ethical issues

22 (e.g., data storage and confidentiality). Interested individuals also had the opportunity to ask

23 questions about the study.

24   Our estimated sample size was based upon that of published qualitative studies of service

25 users' experiences of healthcare services, and recommendations in literature.[23] In relation to such

1   guidance, we aimed to conduct forty interviews. The sample size was not based upon reaching data

2   saturation. The concept of data saturation has been challenged as a means of identifying the

3   appropriate number of participants to include in a study.[24] For example, it has been suggested that

4   data may never be truly saturated, since there could always be potential codes and themes to be

5   identified.[25]

6   The first forty individuals who contacted the study team and met the study eligibility criteria

7   were recruited into the study. Prior to data collection, verbal informed consent was obtained from

8   each participant via telephone, which is appropriate for low risk, telephone interview studies.[26]

9   **Data collection**

10   Semi-structured interviews were chosen as the data collection method in order to provide

11   flexibility through the use of probes and unplanned questions. This increased the potential for

12   producing richer data compared with other approaches that were considered, such as a qualitative

13   survey.[23] Data were collected via telephone, enabling participants throughout England to be easily

14   interviewed. Evidence suggests that telephone interviews can lead to rich data, provided that

15   interviewers ensure that participants' needs are understood and respected.[27][28] Consequently, care

16   was taken to ensure that participants were comfortable being interviewed over the telephone, and

17   that they also felt able to pause the interview at any time and to ask clarification. Each participant

18   was interviewed once.

19   During the same telephone call as the interview, but before the interview was conducted,

20   the following background information was collected from participants: Name of NHS Trust

21   contacted, date of PMHS contact, whether they had previously used a PMHS. Patients were also

22   asked whether they were an inpatient or outpatient for their recent period of care, and the number

23   of prescribed medicines they were prescribed at the time of the PMHS contact. Carers were also

24   asked their relationship to the patient who the PMHS contact was regarding.

1   Separate interview schedules were developed for patients and carers (see Supplementary

2   file 1 for the interview schedules). Table 1 provides a summary of the interview topics (e.g. what the

3   patient/carer found helpful and unhelpful about their experience of contacting the PMHS). The

4   interview schedules were broadly similar, although, for ethical reasons, the carer version did not

5   contain questions that would have resulted in them providing personal information about the

6   individual in their care. The aim of the interview with carers was to explore whether the PMHS met

7   their needs as a carer seeking information. Both schedules comprised open-ended questions, and

8   were developed in accordance with established conventions for semi-structured interviewing.[23 29-31]

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Table 1. Topics for the interviews with service users

Topics for interviews with service users
1. Why the patient/carer contacted the helpline service, including what their question or concern was, the perceived seriousness of the issue, whether they considered any other sources of medicines information, and their decision-making process for choosing to use the helpline service.
2. What the patient/carer found helpful and unhelpful about their experience of contacting the medicines helpline service.
3. What impact the patient's/carer's use of the service has had (e.g., Was the advice followed? If so, what were the outcomes of this? If the advice was not followed, what were the reasons for this?).
4. Whether there were any self-perceived negative consequences of using the helpline service.
5. How the patient/carer felt about the medicines now, compared to before the helpline contact.
6. How the patient/carer felt about the hospital and NHS Trust now, compared to before the helpline contact.
7. What the patient/carer would have done had the helpline service not been available, and why.
8. Whether the patient/carer sought any other sources of medicines-related information or support following their use of the helpline service, and if so, why.

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2   During data collection, the interview schedules served as flexible guides for interviews,

3   enabling participants to discuss aspects of their experiences of using a PMHS that were important to

4   them.

5   During the same telephone call as the interview, but after their interview had been

6   conducted, the following background data were collected from each participant: age, gender,

7   ethnicity, and current occupational status.

8   All interviews were conducted by a trained interviewer (MW), audio-recorded, and

9   transcribed verbatim.

10 **Data analysis**

11   Braun and Clarke's inductive reflexive thematic analysis (TA) was used to analyse the

12 qualitative interview data.[32][33] TA is a systematic, rigorous and transparent technique for organising,

13 describing, and interpreting data, which has been used within health research to explore patients'

14 experiences of healthcare services.[34-36] Braun & Clarke's TA was chosen instead of other thematic

15 methods, since it provides a straight-forward step-by-step process for conducting a thorough and

16 transparent analysis.

17   Analysis involved the following stages, as outlined by Braun and Clarke: familiarisation with

18 the data, generating initial codes, developing themes, reviewing themes, defining and naming

19 themes, and writing the analysis.[23][32] Individual interview transcripts were uploaded into NVivo

20 version 12,[37] which was used for generating initial codes and developing and reviewing themes. The

21 only deviation to the TA stages was that Iterative Categorisation (IC) was used in place of the

22 defining themes stage.[38] The choice to use IC was made in order to increase transparency and rigour.

23 IC is also a systematic, rigorous and transparent technique, which can be used to support a range of

1   analytical techniques, including TA .[38] IC leaves a clear audit trail, which provides a route back to the

2   coded data (see Neale for further details).[38]

3   **Patient and public involvement**

4   The study design and documents (participant information sheet and interview schedules)

5   were reviewed by six members of the public who were either recent hospital patients or carers.

6   Refinements to the documents were made based upon their feedback. Patients/the public were not

7   involved in the recruitment of participants, nor dissemination of findings.

8   **Establishing quality in qualitative research**

9   Yardley's criteria for demonstrating the quality of qualitative research were met [39]. For

10   *sensitivity to context*, previous literature was reviewed in preparation for the study, and we

11   endeavoured to recruit participants from several different NHS Trusts. For *commitment and rigour*,

12   TA and IC stages were followed, including Braun & Clarke's 15-point guidelines on conducting TA,[23]

13   and a 'paper trail' approach was used. Also, credibility checks were conducted, where each stage of

14   the analysis was checked by another member of the research team to verify that the identified codes

15   and themes were appropriate. Additionally, the consolidated criteria for reporting qualitative

16   research (COREQ) and the standards for reporting qualitative research (SRQR) were followed.[40][41] For

17   *coherence and transparency*, the study results are grounded in example quotations from the raw

18   data. A reflective diary was used throughout the process of data collection and analysis, to record

19   thoughts about each interview, contextual features that may have influenced interviews, and/or any

20   ways that interviews could have been improved in order to enhance subsequent interviews.

21   Additionally, the authors have disclosed their positions regarding the research topic. For *impact and*

22   *importance*, the study findings were used to develop recommendations for improving the provision

23   of PMHS.

24   **RESULTS**

25   **Participant characteristics**

1   Table 2 provides an overview of participant characteristics (see Supplementary file 2 for

2   anonymised information regarding each participant). Participants were predominantly, female,

3   elderly, had used a PMHS regarding themselves, and had used a PMHS that was based at an acute

4   Trust. Table 3 provides an overview of the types of enquiries that participants made to the PMHS.

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Table 2. Participant characteristics

Characteristic		Participants (*n* = 40)
		n (%), or mean years (SD; range)
Type of enquirer	Patient, calling for self	33 (82%)
	Carer / calling on behalf of patient	7 (18%)
Type of patient [a]	Inpatient	17 (52%)
	Outpatient	12 (36%)
	Member of the public	4 (12%)
Type of carer [b]	Spouse or partner of patient	5 (71%)
	Parent of patient	1 (14%)
	Son or daughter of patient	1 (14%)
No. medicines currently prescribed [a]	Zero to 4	11 (33%)
	5 to 9	19 (58%)
	10 or more	3 (9%)
Gender of enquirer	Male	17 (42%)
	Female	23 (58%)
Age of enquirer (years)		68 (9.87; 44 to 85)
Ethnicity of enquirer	White or White British	38 (95%)
	Asian or Asian British	1 (3%)
	Mixed race	1 (3%)
Occupational status of enquirer	Retired	30 (75%)
	Employed	4 (10%)
	Unemployed	4 (11%)
	Carer and/or homemaker	2 (5%)
Has enquirer used PMHS in the past?	No	34 (85%)
	Yes	6 (15%)
NHS Trust type where PMHS was used	Acute 1	23 (57.5%)
	Acute 2	6 (15%)
	Acute 3	6 (15%)
	Acute 4	3 (7.5%)
	Mental health	1 (2.5%)
	Specialist	1 (2.5%)
	Community	0 (0%)

Note. Abbreviations: NHS = National Health Service; PMHS = patient medicines helpline service.

[a] Data collected only from participants who were patients

[b] Data collected only from participants who were carers

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*Table 3. Types of enquiries made by study participants (*n *= 40)*

Enquiry type	n (%)
Administration or dosage	10 (25%)
Interaction	9 (23%)
Supply	7 (18)
Medicines-related error [a]	6 (15%)
Side effects	6 (15%)
Storage	2 (5%)

[a] Incorrect medicine prescribed (n = 3); missing medication (n = 2); discharge paperwork not sent to primary care, causing a delay to receive medication (n = 1)

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7 **Interview duration**

8   Interview duration ranged from 12 to 66 minutes (mean = 25 minutes).

9 **Overview of themes**

10   Two main themes were generated from the analyses: *Timeliness,* and *PMHS are best-placed*

11 *to help*. *Timeliness* identifies that service users often feel vulnerable after discharge from secondary

12 care, and that service users want quick access to support when they need it, from pharmacy

13 professionals who are available to help them. This is what PMHS have the potential to provide,

14 although their availability could be improved. *PMHS are best-placed to help* reveals that PMHS may

15 reduce the burden upon other healthcare services, and that PMHS are considered to be the best

16 place to access medicines-related support pertaining to hospital care, from pharmacy professionals

1   with expert knowledge. Pharmacy professionals were considered to have positive personal qualities

2   that helped to reassure service users. However, although PMHS are considered best-placed to help,

3   service users' awareness of the existence of PMHS could be improved.

4   **Theme 1: Timeliness**

5   *Vulnerable after discharge*

6   Participants described feeling vulnerable after leaving hospital, and in need of support during

7   this transition of care period. Reasons for feeling vulnerable after leaving hospital included being in

8   recovery, feeling isolated, being house-bound, experiencing a medicines-related error (e.g., a

9   missing medication), being discharged with multiple medicines and feeling confused, and realising

10   that they had not asked important questions during discharge. The PMHS was perceived to fulfil this

11   important service gap.

12   *"If you've been discharged from hospital, for instance, you're given a bunch of medicines, it's*

13   *explained to you, and perhaps you don't absorb it all completely… It probably just doesn't quite go in*

14   *until you come home… and then you think "Ah. Perhaps I should've asked this question." In which*

15   *case, if you've got something like this helpline, it's invaluable."* (P11, Male, Patient)

16   *Accessing help*

17   Pertaining to feeling vulnerable after leaving hospital, participants perceived the situation as

18   stressful, and spoke of the need for immediate help with regards to medication advice. In order to

19   reduce this stress, it was therefore important to be able to access support quickly (i.e., no

20   answerphone or additional buttons to press to get through), and to also have the situation resolved

21   as soon as possible. This is what the PMHS typically enabled.

22   *"I was relieved, actually, to have somebody to talk to immediately that could help me within a*

23   *short space of time."* (P5, Female, Patient)

1   Participants spoke of the importance of the method of accessing the PMHS, and that the

2   telephone was vital for accessing the service quickly, compared to accessing the service via email.

3   Access methods were often described in relation to participants' perceived severity of the situation

4   (i.e., email would be useful for situations where help was not needed immediately).

5   *"I think it depends on the urgency of the situation… Because of this situation, [telephone access]*

6   *was great. It was immediate… but if it wasn't a vital thing, then yes…I could just email it through*

7   *thinking "I don't even need it today, this minute, but in the next couple of days would be helpful.""*

8   (P32, Female, Carer)

9   Relatedly, some participants commented that potential access options, such as online chat or a

10   mobile phone app, would increase their stress.

11   *"I'm not that keen on technology. At a time when I felt really stressed out, I would've had an*

12   *added stressor, having to work out how to do it. So, for me, it's very comforting, because I'm very*

13   *familiar with the telephone [laughs]."* (P10, Female, Patient)

14   However, participants felt that having more than one method of accessing support is useful,

15   such as telephone and email. Several participants considered the access options of email, online

16   chat, and mobile phone app to likely be preferable for younger service users.

17   ***Availability of help***

18   Participants described how contacting the PMHS was likely to lead to a quicker resolution in

19   comparison to other sources of support (e.g., their GP, a local pharmacy, NHS 111, or another

20   hospital contact). This was another reason why participants typically contacted the PMHS in the first

21   instance.

1   *"I was waiting to hear back from the surgery, because I left it with the receptionist at the*

2   *surgery… But actually, I only got a call from the surgery this morning. And this was resolved [by the*

3   *PMHS], you know, last week."* (P16, Female, Patient)

4   Although most participants described their PMHS as timely, some were concerned about

5   needing the service when it was unavailable (e.g., evenings and weekends, to support patients who

6   get discharged out-of-hours, and people who are unable to contact the service during typical work

7   hours).

8   *"Seven days a week would improve it. If you were discharged on the Friday night, being in the*

9   *situation I was in, I would've been very concerned."* (P9, Female, Patient)

10   Additionally, only one participant had a negative experience of contacting a PMHS, when they

11   contacted the service for a second time. Here, the helpline team were not available to take the call.

12   The participant left a message on the PMHS answerphone and was not called back.

13   *"I'm wondering if… a vulnerable patient was calling hoping to get some kind of reassurance,…*

14   *and left a message and they weren't called back, they would mistrust this service."* (P6, Female,

15   Patient)

16   **Theme 2: PMHS are best-placed to help**

17   *Reduced burden upon other services*

18   Participants considered their PMHS to be best-placed to help for several reasons. Primarily,

19   participants spoke of the importance of returning to the place where they recently received care,

20   rather than seeking advice elsewhere. Many participants felt that they would contact the hospital

21   anyway, had the PMHS not existed.

22   *"As far as I was concerned. I'd just left the hospital, so I reckoned they [PMHS] would know."*

23   (P28, Female, Patient)

1   There was recognition that contacting the PMHS could reduce the burden upon other healthcare

2   services, or that queries may have gone unasked, since some participants described not wanting to

3   burden other healthcare services. PMHS providers were perceived as having more time to answer

4   queries compared to other HCPs, particularly hospital consultants and GPs.

5   *"Hospitals and doctors are extremely busy, and some of the queries you might have might be*

6   *very trivial, and take up time, which is not the best use of the medical practitioners' time. Some of*

7   *those issues, if you can deal with a call to this helpline, then I think it's in everybody's best interest."*

8   (P31, Male, Patient)

9   ***A source of expertise***

10   Participants spoke of the PMHS having the knowledge and resources to deal with enquiries

11   that other HCPs would not necessarily have (e.g., access to medical records; an overview of their

12   multiple health conditions and medicines regimen).

13   *"There's no point ringing up the doctor. Because they aren't specialised in all this treatment, you*

14   *know. So that's why we rang the [PMHS]."* (P1, Female, Carer)

15   Relatedly, participants described the benefit of speaking to a pharmacy professional regarding

16   their medicines, since pharmacists are experts about medication and their advice can be trusted.

17   Participants often described this as providing them with the reassurance needed to take their

18   medicines as advised, particularly when taking multiple medicines, when the potential for mistakes

19   is increased.

20   *"To make sure that whatever you're proposing to do has at least been under the eye of a*

21   *pharmacist, makes you feel reassured that you're not doing anything that you shouldn't."* (P21, Male,

22   Patient)

23   ***Positive personal qualities***

1   Participants also spoke of helpline staff as having positive personal qualities, which were

2   important for providing them with reassurance at a time when they felt anxious. Several participants

3   compared the positive experience with the helpline staff to less positive experiences with other

4   HCPs (e.g., their GP). Positive personal qualities of helpline staff included being professional, calm,

5   compassionate, down to earth, having good listening and communication skills, being

6   knowledgeable and confident, being thorough, going above and beyond what they wanted, not

7   being dismissive, and working with the patient to devise a plan to support them.

8   *"The person who I dealt with, she listened, she was compassionate, she normalised how I was*

9   *feeling, and then in order to help alleviate the distress that I felt she made a plan that would reduce*

10   *the distress that I was feeling. And it was a really really positive experience."* (P37, Male, Patient)

11   ***Helpful but hidden***

12   Although PMHS were considered best-placed to help, awareness of the service was

13   sometimes poor. A number of participants described how they were not initially aware that the

14   PMHS existed (e.g., they called the hospital and were transferred to the PMHS). There was

15   recognition that PMHS should be promoted more, since they are considered beneficial and could

16   help a greater number of patients.

17   *"I wasn't aware it was available… So I think the more that they can let people know that the*

18   *service is available, the better."* (P36, Female, Carer)

19   Suggestions for improving promotion of PMHS included pharmacy professionals visiting

20   wards to tell patients about it, putting posters up around the hospital and in the local area (GP

21   surgeries, local pharmacies), and advertising within discharge summaries. However, one participant

22   struggled to find the contact details within their discharge summary, and was initially unsure what

23   the service provided because the promotion was unclear.

1   *"Almost put a bit more higher priority… Because it was buried along in page three or five. I*

2   *wouldn't have known how I could use that service, or if it was a priority I could use them, or whether I*

3   *should try other routes before I use them."* (P32, Female, Carer)

4   **DISCUSSION**

5   This study explored forty service users' experiences of using an NHS PMHS. Two themes

6   were identified during the analysis: *Timeliness,* and *PMHS are best-placed to help.* The findings

7   illustrate how PMHS meet patients' and carers' needs for timely and easily accessible support, and

8   for enquiries to be quickly resolved. However, PMHS may not always be considered a timely source

9   of support, since the service is not available all the time. PMHS could therefore be improved by

10   being available during evenings and at weekends. Additionally, providing a PMHS with an

11   answerphone will mean that service users will experience a delay to receive help, and there may be

12   a risk that messages are missed. PMHS were perceived to be uniquely placed to answer medication

13   queries that arose from hospital care, and were more positively viewed as approachable and

14   valuable when compared with other sources, such as GPs. However, several participants were

15   initially unaware that the service existed, and so, increasing the promotion of PMHS would ensure

16   that more patients have access to timely help when it is needed. Relatedly, increasing the promotion

17   of PMHS will only be useful if the promotional materials are clear as to who the service is for, and

18   what the service provides.

19   Our findings accord with those of a recent systematic review and a literature review that

20   examined the evidence regarding the effectiveness of medicines information services for patients

21   and the general public, both within the UK and internationally.[18][42] Based upon survey study findings,

22   the systematic review concluded that such services are typically perceived positively by service users

23   (e.g., satisfaction ratings are excellent), and users report several positive outcomes such as feeling

24   reassured.[18] Our qualitative study found that PMHS provide reassurance to service users during the

25   transition of care period when service users may be feeling particularly vulnerable. Their anxieties

1   were alleviated by having quick access to an expert who had the skills to address their enquiries

2   efficiently and compassionately.

3   Our findings also are consistent with two survey studies examining the provision of PMHS in

4   the UK.[15][43] The most recent of these was conducted in 2017, and surveyed all NHS Trusts in England

5   in order to examine whether Royal Pharmaceutical Society endorsed national standards for

6   providing a PMHS were being met.[15][44] This survey identified that both the availability and promotion

7   of PMHS were below standard. For example, out of 117 Trusts that provided a PMHS, only 57%

8   reported that their PMHS was available for eight or more hours per day, and only 7% reported that

9   their PMHS was available out-of-hours, such as during evenings and weekends. Additionally, only

10   40% of Trusts used promotional material describing PMHS access times and the types of enquiries

11   that patients/carers can make. Under-promotion was also identified as an issue in a recently

12   conducted qualitative study exploring thirty-four pharmacy professionals' perceptions of providing

13   PMHS.[45] Under-promotion was perceived by pharmacy professionals as a reason why PMHS are

14   underused. Additionally, some pharmacy professionals described how their PMHS is under-

15   promoted for fear of not being able to cope with the demand due to lack of resources to adequately

16   deliver the service. Promotion of PMHS is important because if patients do not know that the service

17   exists, they cannot utilise it, thus the opportunity to resolve medicines-related issues is missed. This

18   may result in harm to patients. An evaluation of 500 calls to one PMHS at an acute NHS Trust found

19   that 48% of issues may have resulted in patient harm had professional information from the helpline

20   not been available.[46]

21   **Recommendations for practice**

22   Study findings suggest that to better meet the needs of the service users, the provision of PMHS

23   could be improved by extending their opening hours so that they are available during evenings and

24   weekends. Providers should also ensure that helpline staff are available to answer the telephone rather

25   than using answerphones. The promotion of the service could be improved to increase knowledge of

26   the service among patients and carers. Such promotion could include ward pharmacists telling their

1   patients and patients' carers about the PMHS during ward rounds, and by advertising the PMHS clearly

2   in patients' copies of their discharge summaries. However, we appreciate that the above

3   recommendations may be challenging since PMHS are often established without funding and are often

4   provided within a resource-limited context.[43][45] Because our findings described in this study and in a

5   recently conducted systematic review suggest that PMHS can have several benefits for patients,[18]

6   budget holders/commissioners should consider whether they should fund new PMHS. This is important,

7   since a survey study conducted in 2017 reported that only 52% of NHS Trusts provided a PMHS.[15]

8   **Recommendations for future research**

9   Future research is needed to better understand the needs of patients and carers when

10   contacting a PMHS, particularly pertaining to service availability, methods of access, and promotion.

11   One option could be to conduct a large, prospective, multi-site mixed methods survey, with enquirers of

12   all ages, in order to enhance the generalisability of the findings. Another option could be to conduct a

13   discreet choice experiment in order to elicit potential service users' preferences regarding the provision

14   of PMHS, such as the availability, access, and promotion of the service. Further research is also needed

15   to explore the experiences of patients and carers who have problems or queries regarding medicines

16   following hospital discharge, yet do not contact their Trust's PMHS. This may result in additional

17   recommendations to improve the awareness and use of PMHS.

18   **Strengths and limitations**

19   This is the first study to take an idiographic approach to exploring service users' perceptions of

20   PMHS, thereby providing rich and contextualised accounts of PMHS use that have resulted in

21   recommendations for service improvement and future research endeavours. Service users were

22   recruited from seven NHS Trusts from different regions within England in order to include a broad range

23   of experiences of PMHS use. Additionally, consideration was made throughout the study to enhance the

24   validity and trustworthiness of the findings. However, providers of the service acted as gatekeepers to

25   participants, which may have resulted in selection bias. Furthermore, the sample predominantly

1   comprised service users from acute NHS Trusts, and therefore could have been improved by the

2   addition of service users from other Trust types (e.g., mental health, specialist, and community Trusts).

3   Finally, the sample may also be limited since participants had already chosen to contact a PMHS and

4   may therefore be likely to hold positive views about telephone helplines.

5   **Conclusion**

6   PMHS are seen as a valuable means of easily accessing timely medicines-related support during

7   a transfer of care period, when patients and carers may be feeling particularly vulnerable. PMHS were

8   perceived as best-placed to answer enquiries that arose from hospital care. PMHS were also perceived

9   as the optimal service in terms of knowledge and expertise with regard to answering questions about

10   medications. However, the availability and promotion of PMHS could be improved. We recommend that

11   providers of PMHS consider whether this is achievable, in order to better meet the needs of service

12   users.

13   **LIST OF ABREVIATIONS**

14   PMHS: patient medicines helpline service; UK: United Kingdom; NHS: National Health Service;

15   MI: Medicines information; GP: general practitioner.

16   **DECLARATIONS**

17   **Acknowledgements**

18   We would like to thank the pharmacy professionals from the seven NHS Trusts who supported

19   the study by being participant identification sites, and the patients and carers who took the time to

20   participate in this study.

21   **Contributors**

22   MW designed the study, collected all data, conducted the analyses, and drafted the manuscript.

23   AJ provided advice regarding study design, including expertise in qualitative methods, and read,

24   provided feedback and approved the final manuscript. JS provided advice regarding study design, and

1   read, provided feedback and approved the final manuscript. MJ provided advice regarding study design,

2   and read, provided feedback and approved the final manuscript.

9   **Patient consent for publication**

10   This article does not contain personal medical information about an identifiable living individual.

11 Therefore, patient consent for publication was not required.

12 **Ethics approval**

13   This study was reviewed and approved by the London – Brighton & Sussex Research Ethics

14 Committee, and the NHS Health Research Authority (IRAS ID: 233726). The study also received

15 ethical clearance through the Research Ethics Approval Committee for Health of the University of

16 Bath.

17 **Data availability statement**

18   Anonymised transcripts and datasets are available from the University of Bath Research Data

19 Archive.

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Supplementary files

File name: Supplementary file 1.

File format: .pdf

Title of data: Supplementary file 1. Interview schedules

Description of data: Interview schedules used to collect data from participating patients and carers.

File name: Supplementary file 2.

File format: .pdf

Title of data: Supplementary file 2. Participant characteristics

Description of data: Table providing a more detailed account of participant characteristics than is in Table 1.