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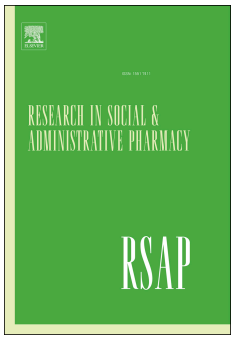

Health care professionals' perceptions of a community based 'virtual ward' medicines management service: A qualitative study

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Title Page

Health care professionals' perceptions of a community based 'Virtual Ward' medicines management service: a qualitative study.

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Article Synopsis

This article describes a qualitative research study using focus groups to explore the views and experiences of a medicines management team (MMT) on the service they deliver within a 'Virtual Ward' (VW); and those of the wider multidisciplinary team of healthcare professionals on the service provided by MMT. Several themes emerged from the focus groups, including impact on patients and carers, team working and issues and challenges. A dedicated medicines management team was seen as a positive contribution to the VW, which potentially increased the quality of patient care, and appeared to be a positive experience for both the MM and wider multidisciplinary teams.

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Introduction

Within England, the organisation of the National Health Service (NHS) delivered in the community setting falls under the domain of local Clinical Commissioning Groups (CCGs). This study is based within an NHS CCG in the North West (NW) of England serving a population of around 155,000 residents across four localities; and currently utilises a hospital avoidance intervention in the form of a Virtual Ward (VW). Virtual wards first described by Lewis,[1] can be defined as a model of care that:

> *". . . provides multi-disciplinary case management services to people who have been identified, using a predictive model, as high risks for future emergency hospitalisation. Virtual wards use the systems, staffing, and daily routine of a hospital ward to deliver preventive care to patients in their own homes."* [2]

Variations of Lewis's model have been adopted nationally and internationally, with evidence highlighting that hospital avoidance programmes are most effective when offered to people who are at high risk of future hospitalisation, rather than those who are currently experiencing multiple hospital admissions.[3] As such, the integrated multi-disciplinary preventative care provided by VWs may be of most benefit to people with long-term conditions and complex health and social care needs; typically older people receiving fragmented care by a number of care providers. A report by the Nuffield Trust estimated that between 2012/13 and 2021/22, the number of people aged 65 years or over in the United Kingdom (UK) will increase by 20%, and those aged over 85 years will increase by 33%. [4] Further estimates suggest that by 2035, those aged 65+ will account for 23% of the total population, and that the number of people aged 85+ will reach 3.5 million (accounting for 5%

of the total UK population).[5] Across Europe it is projected that by 2035 up to a third of the population will be aged 65+, with emerging economies (such as China and India) expecting to experience a two fold increase in this age group.[6] Moreover, in 2014 there were estimated to be more than half a million people aged 90+ living in the UK and over the last 30 years the number of centenarians in the UK has quadrupled.[7] Similar increases in the numbers of centenarians are also seen in other countries, and the current estimate of 317,000 worldwide is projected to reach 18 million by the end of the century.[8] Therefore, it can be anticipated that many of the elderly will have increasing multiple long term conditions that will need supporting.

In his original model, Lewis proposed that the composition of a VW multi-disciplinary team (MDT) should vary according to the needs of the local high risk patients; and suggested pharmacists as potential team members.[1] Furthermore, the inclusion of pharmacy technicians serves to create a medicines management team within the MDT.

In England around £300 million of NHS prescribed medicines are wasted each year; the causes of waste vary from inefficient prescribing and stock piling, to patient recovery and non-adherence.[9] Medicines management teams have the potential to reduce waste medication by optimising medicines and increasing patients' adherence to their medication. Medicines optimisation looks at how patients use their medicines over time. Stopping or stepping down the doses of medicines, starting or increasing the doses of others, or altering the frequency to simplify the patient's medication regime.[10]

Furthermore, it is suggested that when patients move between care providers the risk of miscommunication and unintended changes to medication are a significant problem, with up to 70% of patients experiencing an error or an unintentional change to their medicines.[11] Incidents such as these can also lead to unnecessary hospital admissions, with four to five

percent of hospital admissions being due to preventable problems with medicines.[12] As members of the VW MDT, a medicines management team is well placed to facilitate communication about patients' medicines between health and social care practitioners within the same or different sectors.

There is a dearth of research on the role and impact that pharmacists, and indeed medicines management teams (to include pharmacy technicians) have as members of a VW MDT. One international study compared six VW models across the UK, the United States of America (USA) and Canada, and reported pharmacists as being part-time members of four of these (UK = three, Canada = one).[13] A more recent case study report described the care practice within three of the four UK based VWs, and described the presence of a pharmacist within two out of the three MDTs associated with these.[14] Neither study discussed the actual role played by the pharmacist within the MDT, or the impact of this contribution.[13, 14]

Within the USA a model similar to VWs exists called the Patient-Centred Medical Home (PCMH). This is a collaborative model of team-based care with the core principles of providing patient-centred, co-ordinated care with enhanced access for patients; and a systems-based approach to quality and safety. A PCMH team may or may not be virtual, and services may be delivered from various locations, and not necessarily within a patient's home.[15] Pharmacists are rarely mentioned in medical home discussions, but the complementary skills and knowledge of pharmacists and prescribers have been accredited to delivering improved patient care and medicines management for patients; in particular those with long-term conditions.[16]

Novel to this particular NW of England VW is input from a dedicated medicines management team, comprising four pharmacists and four pharmacy technicians (1.6 whole time equivalents). The team delivers medicines management support to selected VW patients.

Since the inception of the VW in 2013, the medicines management team have delivered support (medicines optimisation; strategies and aids to help increase medicines adherence and interventions to reduce waste medication) to over 932 patients; hence a need was identified to explore the impact of this service. The aim of the study therefore was to evaluate the inclusion of a medicines management service provided by a dedicated medicines management team within a VW.

Method

Study design

To address the aim of the study a qualitative approach was employed using focus groups to promote group discussion and to explore the views and experiences of the medicines management and multi-disciplinary teams respectively.[17] A purposive sampling approach was employed to recruit participants. Potential participants for both focus groups were identified and approached to engage in the study via the head of the VW medicines management team. Focus group interview schedules were developed, discussed and further refined by the project team after reviewing the literature and receiving feedback from the head of the head of the VW medicines management team and the deputy chief nurse of the CCG (Tables 1 and 2).

Insert Table 1 here (see end of document)

Insert Table 2 here (see end of document)

Procedure

Letters of invitation and participant information sheets were sent to potential participants of both focus groups by the VW service leads on behalf of the research team. Written consent was obtained from all participants prior to data collection. The study was deemed to be a service evaluation by the Research and Development Committees of the relevant NHS Trusts,

and ethical approval was granted by the University Faculty Ethics Committee. The focus groups were held in May - June 2015. Both lasted less than one hour, and were audio-recorded and moderated by one researcher (LC) with another (AK) present in a note-taking capacity.

Data analysis

The audio-recordings were anonymised and transcribed in full. Following this, each transcript was independently read and re-read by two members of the research team (LC and AK) until a thorough understanding of the content was achieved. Using thematic analysis, one of the most common form of analysis in qualitative research, commonalities and differences amongst the accounts were identified as patterns or themes within the data.[18] Categorisation of the data followed, whereby these early themes were formed into descriptive codes, and the data subsequently reduced to provide support for the initial conclusions, before meeting with a third researcher (BJ) to discuss and confirm the final coding frame[19, 20].

Results

Study participants

A total of eight medicines management team members (pharmacists and technicians) were invited, with five agreeing to participate. Within the wider multi-disciplinary team, 27 members were invited and nine agreed to participate. These comprised: a health trainer, physiotherapist, social worker, occupational therapist, community matrons and district nurses.

Themes

Thematic analysis of both focus groups identified three main themes: *Impact on Patients and Carers, Team Working,* and *Issues and Challenges*; each containing sub-themes. The results of the analysis will be discussed systematically using the thematic headings (Fig. 1). The medicines management team focus group will be denoted as FG1, the multi-disciplinary team focus group as FG2 and the participants within each by the use of P with their corresponding identification number e.g. P1, P2.

Insert Fig. 1. Here (see end of document).

Impact on Patients and Carers

The medicines management team considered that they frequently acted as a link between the patients' different care providers, supplying and clarifying information regarding the patients' medication. Such information, often acquired upon visiting the patient at home, enabled the team to address confusion between different care providers and improve communication:

". . . they [the patient] had been supplied with it [warfarin] by the hospital, but at that point the GP wasn't aware that the patient was actually taking warfarin, because the GP had actually stopped it . He had stopped it because I think she [the patient] was just non-compliant with her meds. But the hospital, not aware of the compliance issue, had re-initiated it." (FG1P1)

An intervention frequently reported by the medicines management team was the provision of medication management aids (from now on referred to as 'aids') to assist patients to use their medicines correctly, so encouraging adherence, and believed by the team on some occasions to prevent hospital admissions. It was suggested that at times, the provision of aids to assist in

the management of a patient's medication was actually more helpful to the patient's carer than to the patient, though it was also thought to protect patients from harm:

> "*. . . we've got a lady who has had to have a little safe to put the blister packs in, you know, that just the carers have got the pin to open it and put in medication and that . . . [she] has dementia problems, she would overdose . . . so that was the safety aspect of it.*" (FG2P6)

The medicines management team also cited an occasion where the provision of an aid to a patient had not had such a positive outcome:

> *". . . we gave him [the patient] an alarm clock to help him remember to take his medication. The patient had schizophrenia. Despite me changing the alarm clock to beep, he'd switched it to voice; and so when the voice went off to take his medication, he believed God was speaking to him and he stopped taking all medication*!" (FG1P3)

Patients' lack of understanding about their medication was highlighted as sometimes leading to adverse events. Both teams believed that patients benefited from being educated about their medication. The medicines management team in particular, saw this as part of their role, and suggested that this helped to increase patients' adherence to their medication:

> *"It's about people's understandings, and we're trying to encourage them [patients] to ask questions and to increase their knowledge around their medication . . . they say they don't really know why they're taking their medication, and so we will often provide them with an information sheet explaining what the medication is, how often they take it, and what it's used for, and try and stress the importance of taking your regular medication and the reasons behind that, so they're given a rationale for, you know, their compliance really."* (FG1P4)

Another of the sub-themes that resonated with both teams was medicines optimisation. When carried out by the medicines management team this was suggested to not only be of benefit to patients, but also carers:

> *". . . it's just a fantastic review of the patient isn't it, that they get and they [medicines management team] highlight issues. . . obviously as you get older it's all polypharmacy. Sometimes they [medicines management team] can reduce things, or you know, different medication that does the same job with one tablet, or they can put all the tablets together once a day to cut down all the issues with taking them. It's fantastic yeah, it's great.*" (FG2P3)

The multi-disciplinary team additionally identified that for certain patients, it was necessary to take a step back and to consider stopping some medication, and that the medicines management team would support them with this:

> *". . . I think it's having the courage to say, 'Look enough is enough'. They've got all these tablets that they're [the patients] not taking and we need to stop it. We need to go back to the GP and say, 'look you know, be realistic, they're not benefiting from this' . . . they [medicines management team] tend to support us [multi-disciplinary team] more going back to the GP and saying 'look I think we need to reduce some of these medications'."* (FG2P6)

The value of visiting patients at home was raised several times by the medicines management team, who felt that patients were often more confident when being visited in their own homes; talking more openly when discussing their medicines than would have been the case in an alternative environment. It was also highlighted that social, environmental and family concerns were often identified. The medicines management team recounted how they frequently signposted patients (and carers) to the wider multi-disciplinary team for support of

non-medicines issues. Joint visits by members of both teams were stated as being especially productive and providing holistic care, as several aspects of a patient's needs could be addressed by one visit. Both teams reported frequently finding large quantities of unwanted and unused medication. They explained how they used this as an indicator of non-adherence, often seeing it linked to adverse events experienced by the patient:

> *". . . every time she [the patient] went to the GP, her blood pressure wasn't controlled . . . so the GP kept increasing her blood pressure medication, and when we went round we removed four bin bags of blister packs because the lady had literally not taken any medication."* (FG1P3)

Team Working

Both focus groups referred to the advantages of working together within the VW, how this affected their specific roles, and the benefits this brought to the patients. Sub-themes included: *Joined-up thinking and Inter-Professional Education.*

Participants in both groups discussed how the information provided by the individual members of the VW often 'joined up' and 'made sense' once the information was shared between the whole VW team. One participant noted:

> *"I think the multi-disciplinary teams are vital because you have all this information, and yet you can go and sit in a multi-disciplinary team meeting, and one of those other disciplines will throw something into the mix, and that fits the puzzle; so you have a much clearer picture*." (FG1P2)

Similarly, another participant remarked:

> *"And they [medicines management team] really help with obviously like rehab for ourselves, you know, therapy input, because patients aren't taking the medication correctly, or you know, not taking them at all. You know sometimes it affects their motivation and things, depending on what they're on, so obviously it helps with their participation in rehab . . . and also the falls side of things again, you know if they're not taking medication correctly, that contributes to falls, so it's really helpful."* (FG2P3)

The multi-disciplinary team reported their appreciation of the education given by the medicines management team, acknowledging their role as 'experts' in medicines. Education was imparted in both an organised manner through training sessions, and ad hoc through day to day working, side-by-side on the VW:

> *". . . and yeah it has been beneficial . . . some of the meds management team have done like a training session and brought some of the aids, you know, some of the assistive aids you can get, and brought them for us to have a look at. So that's been really useful." (FG2P3)*

Issues and challenges

A final theme to emerge (along with its attendant sub-themes), was the *Issues and Challenges* that the medicines management team had experienced whilst delivering their service to date. The medicines management team described how occasionally patients' expectations were raised by the VW before they had assessed a patient's needs:

> *"The district nurse had said, 'Oh, I think you need a blister pack', and then when we went to see the gentleman, he didn't actually need a blister pack. So then, we had to explain why he didn't. . . . the GP said 'No, I don't want him to have a blister pack.*

He doesn't need blister packs. He's not appropriate for them' . . . the patient was fine, and we explained… and almost, like, contradict another healthcare professional, which is quite difficult really." (FG1P4)

The medicines management team also described the challenge of accessing a patient's health records held by the patient's GP. The team explained that they had to physically attend the GP surgery to read the notes as they were unable to access them remotely on-line.

"We [medicines management team] have had so many IT issues, where, because we're not employed by (NHS Trust) we've not been able to remotely access records (via electronic patient record software system) for the virtual ward patients. So, we have to run round GP surgeries trying to get brief summaries." (FG1P5)

The distressing nature of some of the situations experienced during domiciliary visits was raised as a concern by medicines management team participants. However, they voiced the opinion that they were a 'close-knit' team, and were able to support each other when such instances arose:

"Some of the situations that we can encounter with no warning can be quite distressing; a patient's living conditions . . . can be quite difficult . . . to actually sit in someone's home in that environment, or the patients' stories can be quite tragic and…hard really, to deal with . . . so we sort of support each other really." (FG1P5)

"I think for us as a team . . . we're very fortunate that we are quite a close-knit little group… and I wouldn't hesitate for a minute to say to somebody . . . 'Do you fancy a coffee?' . . . We've come out of homes and thought 'Oh my goodness me' . . . but I think we're lucky that we've got one another . . . and we are a close-knit little group." (FG1P2)

The majority of the VW patients were elderly and often had complex medical conditions. The medicines management team participants emphasised how this and the increasing number of patients with memory and mental health issues, impacted upon the time and skills needed to deliver their service:

> *"The patients are a lot more complex. They may be not the correct patients to be on the virtual ward from the original conception, but that's the reality that some very complex patients with a lot of issues and problems are the patients that we visit."* (FG1P5)

Furthermore, the medicines management team identified that the elderly patients were also slower in their ability to participate physically and mentally in a review of their medication, again impacting on the time taken to complete a medication review:

> *". . . we're dealing with very elderly people who are a lot slower, even slower to answer the door, slower to walk back to the room, may go and visit the toilet in the middle of the visit…but equally, it's to gain their trust . . . you have to listen to a lot of the stuff that's not related to your visit to reach the point where you can then start asking them questions."* (FG1P5)

Discussion

Evidence has indicated that up to 70% of patients experience an error or an unintentional change to their medication when their care is transferred.[21] In the USA, 60% of medication errors were found to occur at the time of transition between care providers.[22] High rates of medication discrepancies have also been found during patient transition between hospital and community environments within Europe.[23] Incidents such as these can lead to unnecessary hospital admissions and re-admissions, with four to five percent of hospital admissions being

due to preventable problems with medicines.[12] National guidance advises that it is the responsibility of all professionals involved in the care of a patient to ensure the safe transfer of information about their medicines.[24-26] Several members of the medicines management team explained how they were frequently required to transfer information between, and to, care providers regarding patients' medication; so 'joining them up'.

This role of provider of information regarding a patient's medication was to emerge again, in another sub-theme entitled Patient Education, where information was given to the patients themselves in order to attempt to increase their adherence to their medicines. A role mirrored by PCMH pharmacists.[27] As members of the wider multi-disciplinary VW team, it could be suggested that the medicines management team is well placed to facilitate communication about patients' medicines between health and social care practitioners within the same or different sectors.

Our findings also reported the differing interventions made by the medicines management team to support patients' adherence to their medicines. Alongside the practical factors that increased the ability of the patients to take and use their medicines correctly, interventions took account of patients' beliefs and preferences in order to influence and motivate continuation of treatment. This is especially noteworthy when considering that unintentional adherence is frequently caused by the failure of care providers to adequately identify and provide the support that patients need to commence, continue or use their medication.[25] It is recommended that support should start by exploring patients' perceptions of their medicines and the reasons why they may not want or are unable to take or use them.[25]

The medicines management team reflected on the value of domiciliary visiting, and the insight that could be provided into a patient's social, environmental and domestic status. The value of carrying out medication reviews in patients' homes has been acknowledged

previously by other medicines management teams, where pharmacists have been able use their intuition, knowledge and people skills to make medicines fit better into patients' lives; so further supporting medicines adherence. [28]

Medicines management teams have the potential to reduce waste medication by optimising medicines and increasing virtual ward patients' adherence to their medication.[10] For members of both the multi-disciplinary and medicines management teams it was considered an almost routine and essential intervention carried out by the medicines management team for a majority of the VW patients. In delivering this valued intervention, the medicines management team are working in line with the principles for medicines optimisation as suggested by the Royal Pharmaceutical Society.[10]

Both the multi-disciplinary and the medicines management teams explained how they supported the other within the VW. Members of the multi-disciplinary team also described how they valued the education around medicines given to them by the medicines management team. In particular, both teams expressed their opinions of the value of them all meeting together on a regular basis to discuss individual patients. This mirrored research by Lewis *et al.*, who explored the integration of VWs within three sites in England.[14] Lewis *et al.* concluded that where there were regular multi-disciplinary team meetings within a VW and a set of shared values was fostered amongst the wider multi-disciplinary team, this provided a focus for integration. Virtual ward meetings also providing a forum in which the care of the VW patients could be discussed reviewed and a multi-disciplinary team care plan put into place. Furthermore, regular meetings of the VW team were seen to sustain the multi-disciplinary model of care, preventing it from reverting back to the traditional model of one to one case management.(10) Lewis *et al*. also identified a number of the same issues acknowledged as areas of concern for this medicines management team, such as access to

patient records, also highlighted by PCMH pharmacists; and the length and nature of medication reviews.[14, 29, 30]

Overall, this medicines management team within the VW model of case management, although recognised as one service with a modest number of patients, appears to be helping to increase the support given to patients, carers and health and social care providers. In the challenging environment of complex medical conditions, polypharmacy and an ever growing elderly population with mental health and memory issues, it is suggested that the medicines management team are helping to increase the quality of patient care and patient outcomes.

Study limitations

This study was conducted at one site. Due to the low numbers and disparity of models of VWs across the country, in particular the composition of the multi-disciplinary teams within these, it is unclear how transferable these findings will be. However, this model has already been used to deliver a VW medicines management service in one locality, suggesting potential for transferability across a wider area.

However, it is recognised that the study could be strengthened by the inclusion of patient and carer voices on the survey. An economic evaluation would also offer further insight into the inclusion of a medicines management service provided by a dedicated medicines management team within a VW.

Conclusion

In summary, this study has elicited the perceptions of the contribution of the medicines management team to the VW of both the medicines management team and the wider multi-disciplinary team. Overall the results indicate a positive experience for both teams, and that the medicines management team is working in line with national recommendations and

guidelines around several aspects of medicines management, ultimately increasing the quality of patient care overall.[9,10, 21, 24, 25]

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Conflicts of interest

Conflict of interest: None.

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Table 1

Focus group interview schedule of the virtual ward medicines management team

What do you think in general about the virtual ward medicines management service?
How do you feel about the change in your role from that working within the virtual ward team and that of your normal medicines management function? What are the positives and negatives of these?
Thinking back to the service(s) you have recently delivered the, what impact/ difference, if any, do you think that this has made to the patient(s)? Can you give a clinical example of an intervention carried out by the medicines management team which has prevented or may have prevented an admission to hospital?
What do you feel about the supervisory role? How is this working?
Thinking back to the service(s) you have recently delivered, what impact/ difference, if any, do you feel that this has made to the family carer(s)?
Thinking back to the service(s) you have recently delivered by the medicines management team. What went well? What went less well?
Regarding the virtual ward medicines management service, what would you change if you could? (Prompts: Referral process? How do feel about how decisions are made? How you interact with one another? Interaction with other members of the VM? Communication? Outcomes?)
Are there any other services that you think that the medicines management team could/should offer to the virtual ward patients?
Do you feel that you have any developmental needs?
Is there anything I didn't ask that you'd like to discuss about the virtual ward medicines management service?

Table 2

Focus group interview schedule of the virtual ward multi-disciplinary team

What do you think in general about the virtual ward medicines management service?
How do you think that the relationships are between yourselves and the medicines management team?
How have these developed?
Do you think that there are any benefits to these new relationships?
Have your expectations changed as a result of working alongside the medicines management team?
Are you aware of all of the services that the medicines management team can offer to patients?
What specific services provided by the medicines management team have you seen delivered in practice?
Thinking back to the service(s) you have recently seen delivered by the medicines management team, what impact/ difference, if any, do you think that this has made to the patient(s)?
Thinking back to the service(s) you have recently seen delivered by the medicines management team, what impact/ difference, if any, do you feel that this has made to the family carer(s)?
Thinking back to the service(s) you have recently seen delivered by the medicines management team. What went well? What went less well?
Regarding the medicines management service, what would you change if you could? (Prompts: Referral process? How do feel about how decisions are made? Interaction with the medicines management team? Communication? Outcomes?)
Are there any other services that you think that the medicines management team could/should offer to the virtual ward patients?
Thinking back to the service(s) you have recently seen delivered by the medicines management team, has the medicines management service impacted on your role? If so, how?
Is there anything I didn't ask that you'd like to discuss about the virtual ward medicines management service?

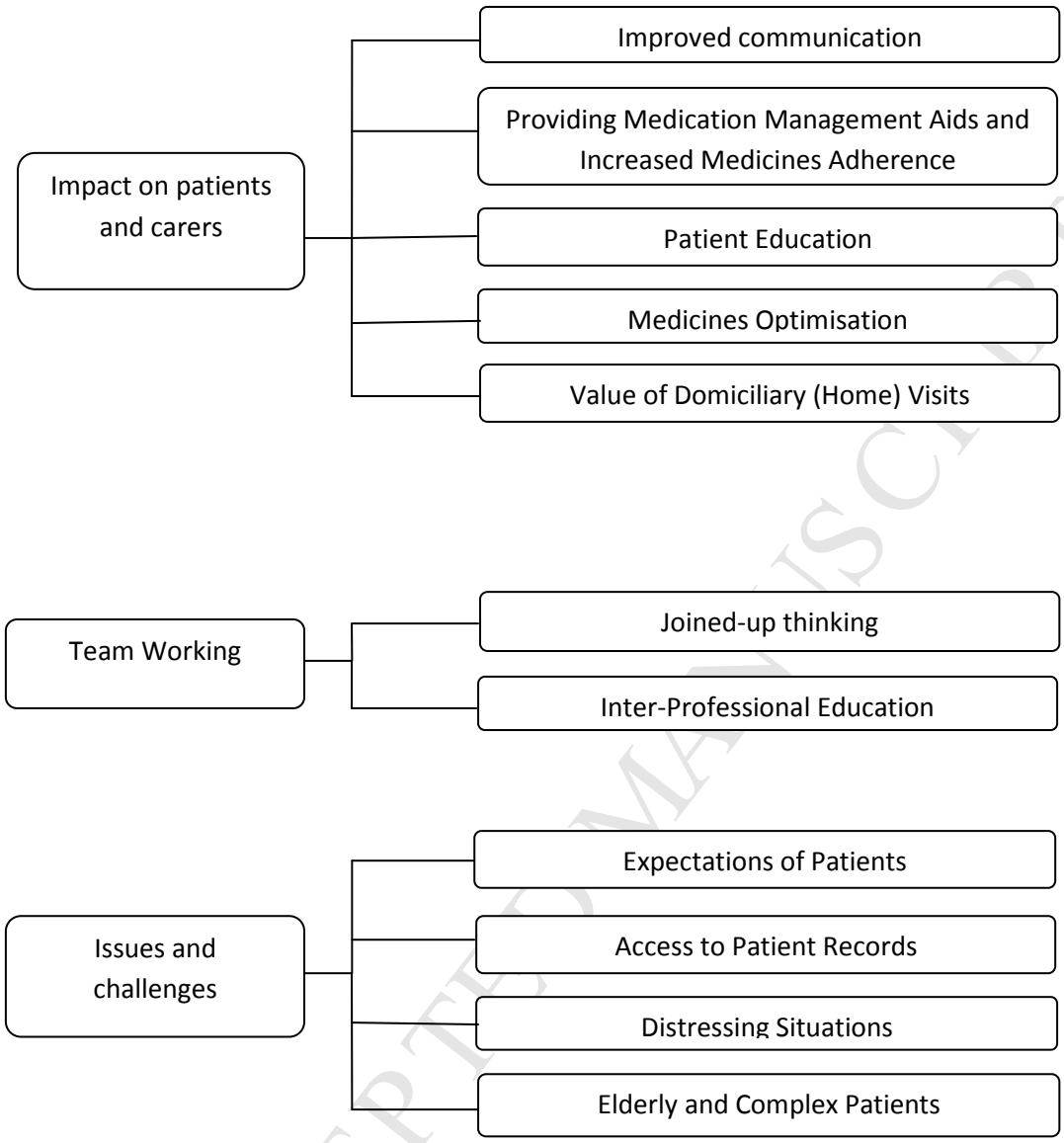

Fig. 1. Key themes to emerge from the data