London School of Hygiene and Tropical Medicine: Masters in Public Health

By Justin Hayde-West

Supervised by Julia Ross, Mustafa Al-Haboubi

<table>
<thead>
<tr>
<th>PROJECT DETAILS</th>
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<td>PRUK-2019-TB-L3-2-JW</td>
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<tr>
<td>01/10/2019 – 31/07/2021</td>
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<table>
<thead>
<tr>
<th>FUNDING STATEMENT</th>
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<tr>
<td>This final report presents research and training funded by Pharmacy Research UK (PRUK-2019-TB-L3-2-JW). The views expressed in this report are those of the author and do not necessarily represent the views of the funder.</td>
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Outline any extension requests granted by PRUK (200 words max)

This section should outline any extension requests that were approved (extensions to the bursary duration or additional monies) and the reasons for the extension.

No extensions requested.

Describe the nature of the training undertaken (300 words max)

Please provide an overview of the training that you have undertaken as part of the bursary.

Year 1:
The following modules were undertaken and passed in year 1. The first four core modules provided a baseline of public health knowledge for the more advanced modules and research project. The fifth and sixth modules were chosen specifically as they apply to my intended research topic in which a change is being made at the health system level to affect individual practitioners and population level health outcomes. The modules consisted of exams and coursework with a requirement to learn how to use Stata, a statistics program.

- Basic epidemiology – passed 2020
- Basic statistics for public health and policy – passed 2020
- Introduction to health economics – passed 2020
- Principles of social research – passed 2020
- Health services – passed 2020
- Health policy, process and power – passed 2020

Year 2:
The following modules were taken in year 2 with all coursework elements passed and the exam components to be confirmed in August 2021. The modules built on the existing base provided by the year 1 modules and provided a greater understanding of health system changes and decision making. The economic evaluation module included advanced excel training and the requirement to learn how to build an economic evaluation model within excel.

- Health systems – exam result tbc August 2021.
- Health decision science – exam result tbc August 2021.
- Economic evaluation – exam result tbc August 2021.
- Globalisation and health – exam result tbc August 2021.
- Organisational management – exam result tbc August 2021.

Specific training was also provided for the research project which included application of theoretical knowledge from past modules. Additional submodules of the research project which were completed included plagiarism training, ethics, how to undertake a literature search and confidentiality.

Background (500 words max)

This section should outline the existing literature available and a background to the research conducted.

Patient discharge from a hospital setting is associated with an increased risk of avoidable medication related harm. (Alqenae, Steinke and Keers, 2020) Issues with medications arising around the time of hospital discharge include medicines omissions, duplications dosing errors or medicines associated readmissions. These issues are often attributable to poor communication between healthcare providers. Studies have demonstrated the benefit of data-driven systems when transferring patients from one care setting to another. (Alqenae, Steinke and Keers, 2020) Within England these systems associated with medicines are referred to as “Transfer of care around medicines” (TCAM) systems. (Royal Pharmaceutical Society, 2011; Feinmann, 2019) This research paper will attempt to systematically identify and analyse the barriers to implementing medicines “transfer of care” systems within community pharmacies in England.
The pharmacist workforce within England is primarily divided between pharmacists working directly for the NHS in NHS hospitals and community pharmacists working for private organisations which participate in the NHS pharmacy contract. (Centre for Workforce Intelligence, 2013) As a result, NHS employed pharmacists work within secondary care whilst privately employed pharmacists work mainly within primary care. Communication between these two entities has traditionally been one way, with hospital pharmacists contacting community pharmacists to arrange continuity of medicines supply as patients flow between care settings. (Royal Pharmaceutical Society, 2011)

Research estimates that within England, 237 million medication errors occur per year with 66 million having the potential to cause harm. (Elliott et al., 2021) The scale and frequency of these medicine’s incidents have led to continuity of care between settings becoming a national focus to improve medicines safety. In addition, the World Health Organization (WHO) has outlined “reducing harm at transitions of care” as one of the three key focuses of its Global Patient Safety Challenge. (World Health Organisation, 2017)

Many interventions have been piloted relating to TCAM with successful interventions incorporating medicines reconciliation; clear, and structured discharge summaries; follow-up between hospital and community providers; electronic discharge notifications; and web-based access to discharge information. (Nazar et al., 2015)

When practically designing and implementing these recommendations within health systems, community pharmacists play a key role in supporting patients and coordinating care. (Ahmad et al., 2014) A recent systematic review highlighted how community pharmacists could help resolve medication errors, significantly improving patient journeys and outcomes. (Hesselink et al., 2012) Community pharmacy interventions included improving the quality of medicines information, care coordination, improved patient understanding of their medication and improved medicines adherence with the potential to reduce morbidity and mortality in targeted conditions. (Lambert-Kerzner et al., 2012)

At a national level, The Royal Pharmaceutical Society (RPS) has issued professional guidance in its publication ‘Keeping patients safe when they transfer between care providers - getting the medicines right’. (Royal Pharmaceutical Society, 2011) As of February 2021, NHS England has also enabled reimbursement for community pharmacies to deliver such schemes where they are implemented via the “Discharge Medicines Service” (DMS). (NHS England, 2019) Despite the NICE guidance, RPS supporting documents and newly acquired funding, there is not currently a nationally available commissioned and standardised service which fully encompasses the knowledge gleaned from the TCAM pilots.

Aims & Objectives (300 words max)

Please outline the aims and objectives of the research conducted.

The originally proposed research question was to understand the benefit of pharmacists using data-driven methods as patients transfer between care settings. However, the research question was made more specific in referring to TCAM systems due to the time constraints of the project. The research was also specified on the overall barriers of which the evidence base is a sub-theme as minimal research exists on barriers to adoption.

Aim:
To identify, understand and classify the main barriers that prevent community pharmacists in England from implementing a medicines “transfer of care” system.

Objectives:
1. To conduct a review of the literature with a systematic approach on the topic of health and societal benefits of effective medicines transfer of care in addition to the policies driving the implementation of systems to facilitate this transfer.
2. To analyse the policies, plans and programmes of key stakeholders to identify links made between health benefits and implementation of effective “transfer of care” processes.
3. To assess the key factors influencing implementation of such policies within community pharmacy utilising contextual interaction theory as an analytic framework. (Bressers, 2007)
4. To undertake a thematic analysis of the interview findings utilising the Framework method and present the relevant results and conclusions. (Gale et al., 2013)
5. To generate recommendations to support community pharmacists based on the findings.

Method (500 words max)
Please describe the methodologies employed on the research, including any other relevant assessments conducted.

Methodological Strategies
A mixed methods approach with a focus on qualitative methodology was employed to appropriately address the research objectives which were exploratory in nature. This encompassed a literature review with a systematic approach and a qualitative component in the form of semi-structured interviews followed by thematic analysis of the interview transcripts.

This approach was utilised to identify if the findings of the literature are supported by the views of community pharmacy subject matter experts who have recently been involved in the process. Multiple methodologies were employed with the expectation that the two alternative methodologies could produce concordant results which would improve confidence in the findings and recommendations of the research.

Ethical approval was obtained from the LSHTM Ethics Committee in March 2021 (Ref 25117)

Search strategy
The first component of the mixed methods study included a literature review with a systematic approach following Cochrane Principles. (Lefebre C et al., 2020)

The following databases were searched for Qualitative, quantitative, and mixed methods studies as well as systematic reviews; Medline, EMBASE, PubMed, and Cochrane. The same keywords were used on AHSN and Royal Pharmaceutical Society websites to identify grey literature which was relevant to the research.

The latest search was run on July 9, 2021.

The research question generated the following keywords:
The key concepts and their synonyms were applied to entire articles including subheadings and abstracts. Both Boolean operators and truncation were employed within the databases.

Titles and abstracts were screened against inclusion and exclusion criteria; from those which met the inclusion criteria, full text article copies were be obtained for further screening. Full texts meeting the inclusion criteria were included in the final list of studies for analysis. Only studies published in English and undertaken in Europe or North America were reviewed.

Qualitative interviews
The second component of the study involved a qualitative utilisation of semi-structured interviews with community pharmacists as key informants (KIs). Purposive sampling was used to identify the selected KIs of interest which were community pharmacists operating in regions with a medicines “transfer of care” system. Participants were offered a chance to participate if they were operating as a community pharmacist in a region known to have a TCAM system which allowed for geographical diversity. The information sheet and consent form were sent to any participants who were interested in participating in the research and a signed consent form was obtained prior to scheduled interviews.

An interview topic guide was designed based on the themes arising from the literature review. Ten recorded interviews were then conducted. Following the interview, the contents were transcribed by the interviewer in English and coded to generate overarching themes and subthemes.

The framework method was then used to analyse the interviews as this is a systematic method for categorizing potentially wide-ranging qualitative data. (Gale et al., 2013) This approach for thematic analysis was comprised of five phases including familiarisation, framework identification, coding, charting, and mapping and interpretation.

### Results (500 words max)

**Please describe the main results of the research and an outline of the analyses conducted to produce the results.**
Description of studies
The studies included in the literature search were identified according to the flow diagram above. The studies primarily referred to implementation methods or an exploration of the evidence base for the service with limited mention of barriers. There was no common conceptual framework among the studies. Barriers were also explored within the RPS guidance which examined TCAM exemplar sites. Themes were primarily limited to financial challenges, leadership requirements, the contrast of geographies with more integrated local services and information sharing around implementation. These categories informed the key themes of the topic guide.

Synthesised themes
The overarching themes as drawn from the literature included finance, health system leadership, the nature of local health services and engagement during implementation. However, additional subthemes emerged from the interviews revealing the additional factors of local leadership, workforce challenges, education requirements and the need for peer support. Table 1 and Figure 1 combine the findings from both methods. Figure 1 identifies subthemes which overlap across multiple themes. Where the subtheme overlaps multiple themes they have been colour coded to the dominant theme highlighted by the qualitative interviews.
Table 1: Description of interview participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Geography</th>
<th>Interview Length</th>
<th>Implementation Experience</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rural</td>
<td>19 minutes</td>
<td>Pre-DMS</td>
<td>Independent</td>
</tr>
<tr>
<td>2</td>
<td>City</td>
<td>18 minutes</td>
<td>Pre-DMS</td>
<td>Multiple</td>
</tr>
<tr>
<td>3</td>
<td>City</td>
<td>30 minutes</td>
<td>Pre-DMS</td>
<td>Multiple</td>
</tr>
<tr>
<td>4</td>
<td>City</td>
<td>26 minutes</td>
<td>Pre-DMS</td>
<td>Multiple</td>
</tr>
<tr>
<td>5</td>
<td>City</td>
<td>24 minutes</td>
<td>Pre-DMS</td>
<td>Multiple</td>
</tr>
<tr>
<td>6</td>
<td>Rural</td>
<td>17 minutes</td>
<td>Post-DMS</td>
<td>Multiple</td>
</tr>
<tr>
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<td>19 minutes</td>
<td>Post-DMS</td>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>10</td>
<td>City</td>
<td>22 minutes</td>
<td>Post-DMS</td>
<td>Multiple</td>
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</table>

Table 2: Thematic analysis results table combining emergent themes from the literature review and semi-structured interviews

<table>
<thead>
<tr>
<th>Themes</th>
<th>Financial Subthemes</th>
<th>Leadership Subthemes</th>
<th>Local Services Subthemes</th>
<th>Implementation Subthemes</th>
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<tbody>
<tr>
<td></td>
<td>Set-up funding</td>
<td>AHSN led</td>
<td>Organisational relationships</td>
<td>Evidenced base</td>
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<tr>
<td></td>
<td>Local or national reimbursement</td>
<td>Hospital led</td>
<td>Rural vs city</td>
<td>IT infrastructure</td>
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<td></td>
<td>CCG led*</td>
<td>Monitor</td>
<td>Workforce*</td>
<td>Education*</td>
</tr>
<tr>
<td></td>
<td>PCN led*</td>
<td></td>
<td></td>
<td>Peer Support*</td>
</tr>
</tbody>
</table>

* Indicates that the subtheme arose as a result of the semi-structured interview

Participants were primarily based within “chain” pharmacies which operate in more than one location and are colloquially referred to as multiples. The dominance of pharmacists operating within multiples reflects the overall market dynamic in England in which most community pharmacists operate within a “multiple” organisation. Due to the mostly urbanised centres of population within the UK the geography of the local area was also primarily a city for the majority of the participants. The pharmacies which had undertaken their implementation of TCAM prior to the creation and implementation of the DMS was split equally in order to control for the potential impact of the DMS and its potential to skew the findings. Participants were drawn from locations in the southeast, midlands and northeast of England.
A diagram was also developed below linking the key subthemes related to each phase of the implementation journey with special reference made to the journeys pre and post implementation of the DMS. For example, funding was deemed most pressing during the planning stages to provide health system stakeholders with some assurance about the long-term viability of the system. During the implementation phase the key informants highlighted the importance of a peer support network, education and appropriate workforce planning to enable pharmacists to upskill themselves and deliver the service.
Discussion (500 words max)
Please use this section to analyse the findings of your research and link it back to the original hypothesis.

The key barriers identified from the study correspond mainly to those identified within the literature. These corresponded to a requirement for financial incentives, clinical leadership and organisational relationships. However, the novel findings and subthemes of workforce priorities and workload were also highlighted which are not present in the literature and therefore may not have been considered by implementers. It would be recommended for health system level implementers to consider these themes when planning implementation of a TCAM system.

All interviewees identified that financial incentives were a key challenge for implementation. In relation to the financial theme, there were two main subthemes – funding for the initial system setup and financial incentives to ensure that the set objectives of community pharmacists are aligned with delivering TCAM consultations. With the contracting of DMS across England, the incentives do now exist to allow TCAM consultations to compete with dispensing duties. Regions in which local funding was complex to obtain prior to the DMS were most likely to have had more resistance to adoption. The research indicates that the introduction of DMS as a national reimbursement scheme for community pharmacists conducting these services significantly mitigates the financial challenge.

The leadership and workforce challenges are of key importance for stakeholders interviewed and thus it is important for past implementation experience to be transmitted to community
pharmacists via an overarching body such as an Academic Health Science Network (AHSN). The effectiveness of this transmission of knowledge is linked to the AHSN approach in introducing the innovation to the local health system. The research indicates each AHSN approached the introduction of TCAM differently although they shared some similar principles. For example, informant 7 experienced a strong education campaign providing an evidence-based rationale for the introduction of TCAM. The AHSNs also varied in whether they would be the direct communicators of the need for change or act as facilitators in the process. Among the stakeholders as highlighted in the interviews, AHSNs have the greatest power to implement relative to other stakeholders. This is balanced against the informal power of local community pharmacy networks which contain many front-line pharmacists who will ultimately carry out the service. If these networks are not engaged or become strongly opposed to implementation of the system, it is unlikely to demonstrate the same benefits as in trials.

AHSN delivery teams would benefit from gaining technical knowledge from teams who have already implemented the system elsewhere to understand potential pitfalls. Engagement with local stakeholders would help them build an understanding of the local culture and existing systems related to medicines transfer of care which may be an appropriate launchpad for the TCAM system.

The limitations of the study corresponded to a limited amount of time to conduct both interviews and the literature search. All research was carried out by a single interviewer and thus a maximum of ten interviews could be undertaken within the time-period.

Further research could explore the uncovered themes in greater depth and undertake more interviews to increase certainty of the results.

**Conclusion (300 words max)**

*Please provide a succinct conclusion to the report and provide the key take-home message for the reader to understand.*

To conclude, following this qualitative study using ten semi-structured interviews, a thematic analysis was undertaken using the framework method. The analysis revealed multiple subthemes which are important barriers to community pharmacists in implementing a TCAM system.

The key themes from stakeholder interviews corresponded to those gathered from the initial literature review, namely financial incentives, and engagement via clinical leadership. One theme of key concern for community pharmacists which was not outlined in the literature was the workforce challenge presented by adding an additional service into an already busy workload. Additionally, one participant raised concerns about the need for education and clinical peer support when initiating a TCAM model.

Recommendations arising from the research include:

Firstly, establishment of a defined set-up funding route or sharing of regional costing examples between new TCAM sites. This would mitigate the remaining financial barrier to implementation in the form of costs to both hospitals and community pharmacies to modify their facilities to deliver TCAM and the DMS.

Secondly, front line engagement during TCAM implementation planning to assuage practitioner fears around workload, communication and peer-support. The engagement could highlight
scenarios such as problematic referrals from hospital pharmacists, how to prioritise DMS requests vs other work commitments and the potential local communication routes for community pharmacists attempting to resolve queries.

Thirdly, appropriate monitoring and evaluation at a regional or national level to ensure funding at a national level is continued and to mitigate a barrier around implementation in which community pharmacists perceive the scheme as unsustainable.

And finally, generation of a clinical peer support network for pharmacists operating in regions with a TCAM system should be considered alongside implementation of the system. Ideally this could be generated at the ICS level and would support community pharmacists in managing their new clinical caseload.

**Summary of outputs (300 words max)**

*Please include a list of dissemination activities carried out during the life of the project, in addition to future activities planned.*

During the development stages awareness of the project was shared via the Chief Pharmaceutical Officer’s Clinical Fellows network which spans high level stakeholders within hospital and community pharmacy as well as clinical commissioning. This was to both generate potential interested key informants and prevent duplication of research which may have been undertaken elsewhere. The network will be supplied with a copy of the report once it is deemed suitable for wider publication to increase the likelihood of it informing future policy.

Following completion of the research the London School of Hygiene and Tropical Medicine will feature it on their website and support submission to an appropriate journal. The research is also intended to be featured as a poster at the Clinical Pharmacy Congress and disseminated via the Twitter social media platform to maximise reach.

**Outline the next steps in your research career (500 words max)**

*We are interested in the next steps you will be taking in your research journey. We are also keen to understand how this project will support you to take those next steps.*

In the near term I would like to publish the research if possible and use it as an opportunity to participate in a more comprehensive research project into data driven care and TCAM with a larger team. In the next 12 months I would have hoped to publish the paper, present it at the clinical pharmacy congress and have obtained some valuable feedback about where to go next. I would also be keen to donate some time back to PRUK such by contributing to peer review or mentoring of others embarking on the research journey.

My long-term plan is to continue to publish papers aligned to the public health impact of clinical pharmacy. I retain a strong interest in data-driven care and I feel that the Masters in public health I will obtain in 2021 provides a strong foundation for research in this area which applies individual health practitioner interventions to population health outcomes within a geographical area.

I have sought a mentor with both a pharmacy and public health background who has undertaken numerous pieces of research linking pharmacy practice to antimicrobials and would be keen to be guided on my next research steps through that relationship.

I have also not ruled out the possibility of further academic study in the form of a PhD but would seek to undertake this full time such as in the case of an NIHR fellowship. Due to the highly competitive nature of obtaining such fellowships this would be a long-term goal.
References

Please use the Harvard referencing format.

References:


