

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <https://orca.cardiff.ac.uk/id/eprint/134266/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Mantzourani, Efi , Cannings-John, Rebecca , Evans, Andrew, Ahmed, Haroon , Meudell, Alan , Hill, Ian, Williams, Emma, Way, Cheryl, Hood, KerENZA , Legay, Benjamin, Houldcroft, Laura and Deslandes, Rhian 2021. Understanding the impact of a new pharmacy sore throat test and treat service on patient experience: a survey study. *Research in Social and Administrative Pharmacy* 17 (5) , pp. 969-977.  
10.1016/j.sapharm.2020.07.034

Publishers page: <http://dx.doi.org/10.1016/j.sapharm.2020.07.034>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



**Title:** Understanding the impact of a new Pharmacy Sore throat Test and Treat service on patient experience: A survey study

## **Abstract**

*Background:* A pilot of the first NHS funded Sore Throat Test and Treat (STTT) service in the United Kingdom began in selected community pharmacies in Wales in November 2018. The aim of this research was to explore whether a pharmacist delivering consultation for sore throat that included clinical scoring and point-of-care testing was acceptable to patients, and how this might influence future health-seeking behaviour.

*Methods:* A non-experimental design was employed using a survey research tool including a mix of closed and open questions. The patient experience survey was distributed to all patients who had completed a consultation between November 2018 and May 2019. Data from completed surveys were entered in Jisc Online Surveys® and exported to Excel® for descriptive statistics. Free-text comments were analysed using content and inductive thematic analysis.

*Results:* A total of 510 surveys were received (n=2,839 total consultations, response rate 18%). Overall, 501 patients (98%) were satisfied with the service. Patients' confidence in managing their condition and service satisfaction was not dependent on having been supplied antibiotics. After the service, 504 patients (99%) stated that they would return to the pharmacy for subsequent sore throat symptoms. Three themes were constructed after inductive analysis of free-text comments (n=242): convenience and accessibility; professionalism of pharmacy team; and perceived value of the service.

*Conclusions:* Results confirmed high levels of patient satisfaction with the new service, its delivery and the choice of options offered for sore throat symptom management. Whilst this research can only discuss patients' reported future behaviour, the patient-reported stated intentions signify a potential shift in health-seeking behaviour towards a pharmacist-led service. This has important implications in supporting the long-term plan of the governments in Wales and England to redirect management of uncomplicated conditions from GPs to pharmacies.

## **Keywords (3-10)**

Community pharmacy services; sore throat test and treat; patient acceptability; patient experience; health-seeking behaviour change; minor ailments; common ailments; extended pharmacy roles; Choose Pharmacy; pharmacist prescribing.

## **INTRODUCTION**

The Welsh Government (WG) has recently published their vision for “A Healthier Wales”. This places renewed emphasis on supporting people to live independently, with sustainable services that are delivered closer to home when appropriate and supported by the right healthcare professionals, in line with principles of Prudent Healthcare.<sup>1</sup> The National Health Service (NHS) England Long Term plan describes a similarly ambitious vision.<sup>2</sup> A key enabler to delivering these strategies is ensuring that primary care services are rebalanced so that uncomplicated management of minor ailments and chronic conditions is shifted to community pharmacies, creating more accessible pathways for patients and giving GPs additional time to manage more complex conditions and patients. Current evidence suggests that compared to GP consultations, pharmacy consultations for minor ailments are associated with similar health-related outcomes and substantially lower costs.<sup>3</sup>

However, there are barriers to delivering such a strategy through community pharmacies. A recent systematic review concluded that patients and the public appeared to view the expanding role of pharmacists as beneficial, but highlighted that more research is needed to understand how community pharmacies are held within the mindset of patients and the public, and explore different approaches to increase awareness of pharmacist skills.<sup>4</sup> This becomes crucial when a complex intervention is being introduced such as a new service in community pharmacies, where exploring acceptability with patients as a key stakeholder group becomes paramount to successful implementation.<sup>5</sup>

The management of patients presenting to primary care with uncomplicated sore throat is one area where care could be transferred from GPs to community pharmacists supported by the use of point-of-care

testing (POCT). The use of POCT in community pharmacy has been explored by Buss et al. and identified as useful for supporting pharmacists' decision-making.<sup>6</sup> Several schemes have been piloted in the UK and internationally whereby sore throat management in the community pharmacy is being augmented by POCT,<sup>7-10</sup> but there is little research reporting the experience of patients who use such schemes. The pilot of the first NHS funded Sore Throat Test and Treat (STTT) service in the UK was introduced in selected community pharmacies in Wales in November 2018. Pharmacies were selected by the Local Health Boards based on an assessment of local population needs, and expressions of interest from pharmacies already experienced in delivering the Common Ailment Service. The service adopted a staged test and treat strategy, with pharmacists using clinical scoring tools (FeverPAIN and CENTOR) to complete an initial examination, offering a POCT to screen for the presence of Streptococcus A if threshold scores were met, and antibiotics, if needed, in the case of a positive POCT. The model of service delivery has been described elsewhere,<sup>11</sup> and is also summarized in Supplementary Table 1. A study looking at the impact of the service on provision of patient care in the community setting suggested that STTT may have a role in safely re-balancing uncomplicated sore throat management from general practice to community pharmacies whilst continuing to promote antibiotic stewardship.<sup>11</sup> Another study evaluating pharmacists' perceptions of the STTT scheme revealed high levels of acceptability and satisfaction.<sup>12</sup>

The aim of this study was to explore patient views of the STTT service using a methodology co-designed with patients as part of the research team. We particularly wanted to explore whether the use of a clinical score and POCT by pharmacists was acceptable to patients, and to understand their likely future health-seeking behaviour regarding consulting at the pharmacy rather than the GP with sore throat. This research was needed to assess the impact of the initial phases of the service on the patient experience and generate new knowledge to inform policy around further roll-out.

## **METHODS**

To achieve the aim of this study a positivism paradigm was employed. We used quantitative research and a non-experimental design, with a survey research tool, distributed to patients between November 2018 and May 2019.

### ***Patient and Public Involvement***

Representatives from the Cardiff School of Pharmacy and Pharmaceutical Sciences Lay Faculty (AM and IH) were actively involved in all aspects of this research. In line with the UK Standards for Public Involvement, we have collaboratively reflected on improved ways to engage them in the research.<sup>13</sup> They advised on a number of questions and language, so that the final readability score of the document, using the Flesch Reading Ease and Flesch-Kincaid Grade Level readability tests, were within the desired ranges. Advice was provided on the research protocol submitted to Research and Development departments, in particular regarding the best approach for distributing the survey (including time and setting), and options for online completion.

The GRIPP2 guideline was followed when writing the study report and the GRIPP2 short checklist has been completed (Supplementary Table 2).

### ***Research Instrument***

A participant information sheet and patient experience survey were developed in collaboration with lay members of the public. The survey included three main parts: closed questions in relation to a) the service, for which patients had to state their level of agreement based on a 5-point Likert scale (1:strongly disagree, 5: strongly agree), b) background information on patient demographics, action already taken before coming to the pharmacy and future intentions in relation to seeking help from a healthcare professional for sore throat symptoms, and c) an open-ended question available at the end of the survey to allow patients the opportunity to explain answers and provide information that may help support the quantitative data collected.<sup>14</sup> A copy of the survey in English and Welsh is provided in Supplementary Figures 1 and 2.

For patients 6-12 years old, the parent or carer was asked to fill in the survey on their behalf. For patients between 13 and 18, the choice was available for either the patient to fill in the survey themselves or a parent/carer on their behalf, in line with the Gillick competence guidance.<sup>15</sup>

The survey was piloted with five members of the public. A Welsh version of the study documents was available, and electronic links for online completion were available to increase patient options in both English and Welsh.<sup>16-18</sup>

### ***Study Population***

The implementation of the STTT service started in November 2018 with 23 pharmacies in Cwm Taf Morgannwg Local University Health Board (LHB) in Wales. Another 33 pharmacies started providing the service in Betsi Cadwaladr LHB by January 2019. A detailed description of the patient journey through the service is presented in Figure 1. Total population sampling was employed in this research: patient experience surveys were handed out by pharmacists to all patients who were eligible for the STTT service, had presented to one of the 56 participating pharmacies and had completed the consultation, regardless of the outcome. Patients could complete the survey in the premises and use a pre-paid envelope to either post directly to the research team or hand back to the pharmacist to post, or complete the online version of the survey. Participant consent was implied upon return of the completed survey.

\*\*\*Insert Figure 1\*\*\*

### ***Analysis***

All responses from completed surveys were entered in Jisc Online Surveys® and exported to Microsoft Excel® for descriptive statistics. Responses in Welsh were translated by a Welsh speaker before entering into a spreadsheet. A 10% validation check was completed to quality assure the data transfer. Free-text comments were imported to Microsoft Word® and content as well as inductive thematic analysis was used. Missing values were reported. Responses to Likert type questions were summarised using counts and proportions. Characteristics (age, gender, tried to see a GP before) of patients who attended a STTT consultation within the same period were obtained from *Choose Pharmacy*, the national IT platform via

which services are recorded in community pharmacies in Wales. Since the *Choose Pharmacy* data were anonymised, the patients responding to the survey data could not be identified in this dataset to enable us to describe two mutually exclusive samples (patient responding to the survey versus patients that did not). However, this still enabled a comparison of the population of patients returning a completed survey with the total population of patients receiving an STTT consultation.

## RESULTS

A total of 510 completed surveys were received by the end of the data collection period (510 out of 2,839 consultations, response rate 18%) (English n=499, Welsh n=11). No surveys were returned electronically. Table 1 compares patient demographics of the survey responders with the whole population who received a STTT consultation in a community pharmacy participating in the pilot, during November 2018 to May 2019. The age and gender distributions are similar between the two populations, but a greater proportion of those responding to the survey had seen their GP previously.

\*\*\*Insert Table 1\*\*\*

### ***Patient Satisfaction with the Service and its Delivery***

Figure 2 presents a breakdown of patient satisfaction with different elements of the STTT service and its delivery (full data included in Supplementary Table 3). Overall, 501 patients (98.2%) were satisfied with the service and 502 (98.4%) stated they would recommend the service to others. A total of 506 patients (99.2%) agreed or strongly agreed that the pharmacists explained the aims of the service well, and 505 (99%) were satisfied with how the pharmacist checked whether they needed a throat swab. All except one of those patients who stated they needed a swab (n=433) were satisfied with how this was taken, and 405 (92.9%) of them agreed or strongly agreed that the results of the examination reassured them about their condition. All except three of those patients who stated they did not need a swab (n=97) agreed or strongly agreed that the results of the examination reassured them about their condition. 506 patients (98.8%) agreed or strongly agreed that they had the opportunity to raise questions or concerns related to the service.

\*\*\*Insert Figure 2\*\*\*

### ***Reported Service Outcomes***

Regardless of whether patients needed a swab or not, 494 out of 510 patients agreed or strongly agreed that at the end of the consultation they felt confident with managing their condition (Figure 2). A total of 487 (95%) patients responded to the question “*if test needed, I got an antibiotic from the pharmacy today*”. Of these, 164 (34%) patients stated they received an antibiotic supply from the pharmacy, and 230 (47%) stated they did not. The remaining 93 (19%) stated “*non applicable*” i.e. a point-of-care test was not needed. Similar patterns of response to confidence about managing sore throat and satisfaction with the service were seen in patients who did/did not receive an antibiotic, although patients who did not require a test or who required a test but did not receive an antibiotic were less likely to strongly agree (Table 2).

### ***Health-seeking Behaviour***

A total of 343 out of 510 patients (67.3%) tried to see a GP and 373 out of 510 (73.1%) knew that they could get an antibiotic from the pharmacy before attending a consultation in the pharmacy. After completion of the service, 504 out of 510 patients (98.8%) stated that they would return to the pharmacy instead of trying to see a GP for subsequent sore throat symptoms.

### ***Free-text Comments***

A total of 242 patients added a free text comment in the survey. Content analysis in relation to satisfaction returned a total of 401 occurrences of terms such as “*excellent/amazing/brilliant/great/very good/grateful/happy/impressed (n=176), helpful (n=40), professional (n=28), comfortable/efficient/painless/thorough (n=28), convenient/easier than GP (n=54), fast (n=37), informative (n=19), thank (n=20)*”. Inductive analysis revealed 3 themes: convenience and accessibility; professionalism of pharmacy team; perceived value (Figure 3). Table 3 summarises representative quotes from each theme and the respective subthemes.

\*\*\*Insert Figure 3\*\*\*

\*\*\*Insert Table 3\*\*\*

### **Convenience and Accessibility**

Patients discussed how the service being available even out of GP opening times without the need to book in advance and make an appointment increased their access to services. At the same time, timely access minimised disruption to patients' lives.

*"It was so convenient to call and consult with the pharmacy without having to make an appointment." S84*

*"..very happy with it [service] seen quickly and reduced time off school/work" S119*

Even though the service was overwhelmingly accepted as convenient, practical challenges in pilot sites and inconsistent commissioning of the service were perceived by some patients as factors that limit the usefulness and access to specific cohorts of patients.

*"The idea on paper is a good idea but practically (see below.) There was a lot of "running around + inconvenience". I visited the doctors, then the 1st chemist but the computer wasn't working, the second chemist couldn't do it but was very helpful, finally ended up 10 mins away - 4th visit of morning who took swab. All chemists were very friendly and helpful, but it was so inconvenient. I feel really sorry for older age groups + people with no transport." S439*

Inappropriate referral from GP surgeries in three cases was identified as a challenge, in particular when patients outside of service specification criteria were referred, or patients were directed to pharmacies not piloting STTT.

*"They [staff at GP reception] didn't even ask me how old my daughter is...[had to go] all the way to the pharmacy where I was told she can't have it [STTT consultation] as she [my daughter] is only 3. I mean he [pharmacist] still helped us but no test or anything." S403*

Many patients discussed how lack of publicity of the service limits patient engagement with them. It was thought that pharmacy services need to be better promoted to the general public.

*“All services offered at a pharmacy need MUCH more publicity. I work for the NHS and did not realise what options were available.” S1*

### **Professionalism of Pharmacy Team**

Patients felt very strongly about the professionalism exhibited by the team in the pharmacy, commenting on how this made them feel comfortable and at ease about the whole process. Only one patient commented on their preference for gloves being worn.

*“Pharmacist and pharmacy could not have been more helpful or friendly. The service was quick and efficient and comfortable. Amazing!” S143*

### **Perceived Value of the Service**

Patients identified that the structure of the service, including the point-of-care test, increased their confidence in the treatment outcome, reduced the diagnostic uncertainty and reassured them about their condition. Many patients added comments discussing viral vs. bacterial infections, confirming how the service supported education around antimicrobial stewardship. A small number of patients demonstrated a lack of understanding of the principles of antimicrobial stewardship.

*“...my sore throat and cough was identified as a virus. So no medication was given...” S97*

*“I will never use this service again because I needed antibiotics but was told no, within 3 days I had fluid on my left lung, so a fully developed chest infection meaning I needed antibiotics.” S306*

There was a general belief that management of not only uncomplicated sore throat but other minor ailment services should be transferred to community pharmacies and rebalance the workload in primary care to ease pressure on GPs and out-of-hour services. Pharmacists were perceived as the right healthcare professionals to be responsible for this.

*“I think this [service] is a great idea, no inconvenience to the patient and eases pressure on the*

*GP. Informative and friendly service by the pharmacist.” S34*

*“For the past 6 months it is so hard to get into the doctors you can never get in. Pharmacist always happy to see if he can help me and I found he actually helped me out.” S127*

Three patients reflected on requirements to be met for future extended services from community pharmacies, such as consideration of community pharmacists' workload and consistent availability of services:

*““The pharmacy I attended is extremely busy and there were only 2 pharmacists working and they were extremely stressed having to do prescriptions and see the people with throat problems. If this is being done then more staff should be available to do the tests.” S144*

## **DISCUSSION**

To the authors' knowledge, this is the first study internationally to explore patient views of a STTT service delivered in community pharmacies. We examined data from patient experience surveys to evaluate whether a pilot of an NHS funded pharmacy STTT service in the UK was acceptable and influenced patients' health-seeking behaviour towards requesting help from a community pharmacist, rather than a GP, when having a sore throat in the future.

Data from the first five months of the STTT service suggest that it is highly acceptable to patients, and that this acceptability is not dependent on being supplied antibiotics. Previous research has illustrated how patient expectations of an antibiotic have been managed by non-medical prescribers when treating respiratory tract infections.<sup>19</sup> Even though 43% of patients seen by a non-medical prescriber expected an antibiotic, this did not influence the strategies utilised by the healthcare professional. In contrast, they employed non-antibiotic, patient-centred approaches focussing on patient education, reassurance and physical examination. As a result, 96% of patients included in the study were satisfied with the consultation. This current study illustrates how patients also received increased education around antimicrobial stewardship (AMS), reaffirming the value of pharmacists in the global fight against antimicrobial resistance, as reported by Jones et al.<sup>20</sup> The protected patient time and increased training

provided to pharmacists as part of the service may have contributed to promoting appropriate use of antibiotics; only a small number of patients left comments that were indicative of lack of understanding of the principles of AMS.

Accessibility of the pharmacy and convenience was mentioned multiple times, mainly as an enabler for patients to access the service. Only one patient identified it as a challenge, comparing it to the shorter distance to the GP practice. Todd et al. discussed in 2014 how the majority of the population in England can access a community pharmacy within a 20-minute walk and how access is greater in areas of highest deprivation.<sup>21</sup> In their 2015 paper, the same authors further conclude that even though the vast majority of the population live within a 20 min walk of a GP premises, more people live within a 20 min walk of a community pharmacy, compared with GP premises.<sup>22</sup> Improved access to services and hence providing more options for patients contributes to redirecting management of uncomplicated conditions from primary care to community pharmacies, a key aspect in both the NHS England Long Term Plan and the Welsh Government's vision for 'A Healthier Wales',<sup>1,2</sup> with implications for the commissioning of future services. A recent document setting the pharmacy profession's future vision in Wales included recommendations on a number of strategies to support the community pharmacy workforce to deliver a range of extended services, including integration of an independent prescriber in every pharmacy team by 2030.<sup>23</sup>

In our sample population, which is highly representative of the total population who consulted their pharmacist for STTT, two thirds tried to see a GP before attending a STTT consultation. This decision to access a GP as a priority seems to be changing, with all but 6 patients reporting that they will return to the pharmacy next time they have symptoms of sore throat. Even though this is patient self-reported behaviour and needs to be validated by tracking patients across the system, it is an indication of the service's potential success in shifting health seeking behaviour. This finding can be contextualised in light of results of a systematic review in patient and public perspectives on community pharmacies.<sup>4</sup> The authors identified patients' reduced awareness of extended pharmacy services which led to low utilisation of these and reluctance in supporting pharmacists to carry out extended roles. This was linked to concerns over pharmacists' knowledge and skills outside of the traditional dispensing and medicines

advice roles and a general preference for GPs over pharmacists, regardless of the service provided. However, patient and public attitudes were influenced by frequency of service usage and the perceived impact or benefit from using these services, which is what we observed in our study. A recent cross-sectional survey looking at usage of community pharmacy services in England by patients with long-term respiratory conditions further reiterates our findings: most patients in the survey preferred to use GP practices for diagnostic services, but preference was associated with services previously accessed at the pharmacy.<sup>24</sup> Both studies identified professionalism of the whole pharmacy team and timeliness of consultations as features that enhance patient and public use of pharmacy services, in addition to convenience and ease of access, which were also identified by patients in our study.

Patients discussed perceived barriers to further roll-out, including low awareness for the service, inconsistent provision and availability, inappropriate referrals by GP teams, and consideration of the increased workload for pharmacists. These barriers have been discussed elsewhere in the literature. Despite patients overall being broadly positive for pharmacists providing extended services, awareness is low.<sup>4,24-25</sup> Increased collaboration between GPs and pharmacists has been identified as key to successful implementation and integration of new pharmacy services, with studies reporting these services not always perceived as beneficial or useful from the GPs' point of view.<sup>26-27</sup>

This study was part of a larger evaluation of the STTT service and findings need to be interpreted within this context. A different study explored the views of community pharmacists regarding their initial experience of and levels of preparedness for the service, as an important stakeholder group.<sup>12</sup> High levels of satisfaction were reported and pharmacists highlighted the service's role in providing patient education and contributing to principles of antimicrobial stewardship. Factors that would empower them to deliver the service confidently were described. A second study investigated data derived from a range of national databases providing pharmacy, GP, prescribing and secondary care data, to evaluate whether a pilot of an NHS funded pharmacy STTT service had an impact on antibiotic provision, patient safety and GP consultation rates.<sup>11</sup> No safety concerns were identified and findings suggested that STTT can be part of a collaborative approach aiming to re-balance uncomplicated sore throat management from general practice to community pharmacies whilst continuing to promote antibiotic stewardship. Data from all these

studies were triangulated and fed back to policy makers as part of an integrated approach to inform the service development.

#### Limitations:

Our research instrument had a low number of items to improve ease of completion for patients. The lack of multiple items that measure the same underlying construct meant that we did not test Cronbach's alpha and hence the survey may have lower reliability. The surveys were handed out to patients by pharmacists which could have introduced some biases given the self-reported and satisfaction-based nature of the questions. We accounted for this by asking pharmacists to encourage patients to complete the survey outside of the pharmacy setting, either online or on the hard copy and return directly to the researchers via the pre-paid envelope. The response rate is based on the assumption that all patients consulting for a sore throat that fit the criteria for the STTT service were given a survey by the pharmacist. Even though literature suggests that the use of both paper and online methods increases the response rate,<sup>28</sup> this study only received paper copies of responses and as such the response rate was relatively low. We accounted for the low response rate that may lead to suboptimal representation for some patient groups, by examining baseline characteristics and concluding that completed surveys were returned from a representative sample of the total population who had completed STTT consultations in pharmacies during the same time period in terms of age and gender,<sup>29</sup> but not in terms of having tried to see a GP before attending the pharmacy. Patients in our sample were more likely to want to see a GP compared to their wider population, prior to the consultation. The possible change in health-seeking behaviour that we have reported is important for future research. As the service becomes embedded in primary care and patients start to use it as routine care, we need to continue to monitor service outcomes and changes in patterns of use.

## **CONCLUSIONS**

This first ever study on patient acceptability of NHS funded sore throat test and treat services in the UK, revealed high levels of patient satisfaction with the service, the way it was delivered by community

pharmacists and the increased choice of options for sore throat symptom management it offered. Whilst this research can only discuss patients' self-reported future behaviour, the stated intentions of the patients indicate a potential shift in health-seeking behaviour towards a pharmacist instead of the GP. This has important implications in supporting the long-term plan of the governments in Wales and England to redirect management of uncomplicated conditions from GPs to pharmacies. To enable the desired behaviour change, factors that are important to patients have been highlighted in this research. Coordinated efforts to increase awareness of pharmacy services; effective restructuring of pharmacists' workload to accommodate capacity for extended services as part of routine care in the NHS, increasing pharmacist motivation and willingness to engage; and effective integration and communication of any new pharmacy services within referral pathways across the whole of primary care are all necessary. Results of this study were presented to policy-makers and have influenced the decision to roll out the service nationally, across selected sites that make up more than 50% of community pharmacies in Wales.

#### **List of abbreviations**

AMS	Antimicrobial Stewardship
CAS	Common Ailment Scheme
CP	Community Pharmacist
GP	General Practitioner
NHS	National Health Service
NWIS	NHS Wales Informatics Service
PGS	Patient Group Direction
STTT	Sore Throat Test and Treat
UK	United Kingdom

#### **Declarations**

### **Ethics approval and consent to participate**

The study was registered with the Research and Development departments in Betsi Cadwaladr (ref:18/176) and Cwm Taf Morgannwg (ref:CT/937/18) Local University Health Boards.

### **Consent for publication**

Not applicable

### **Availability of data and materials**

The datasets analysed during the current study are available from the corresponding author on reasonable request.

### **Competing interests**

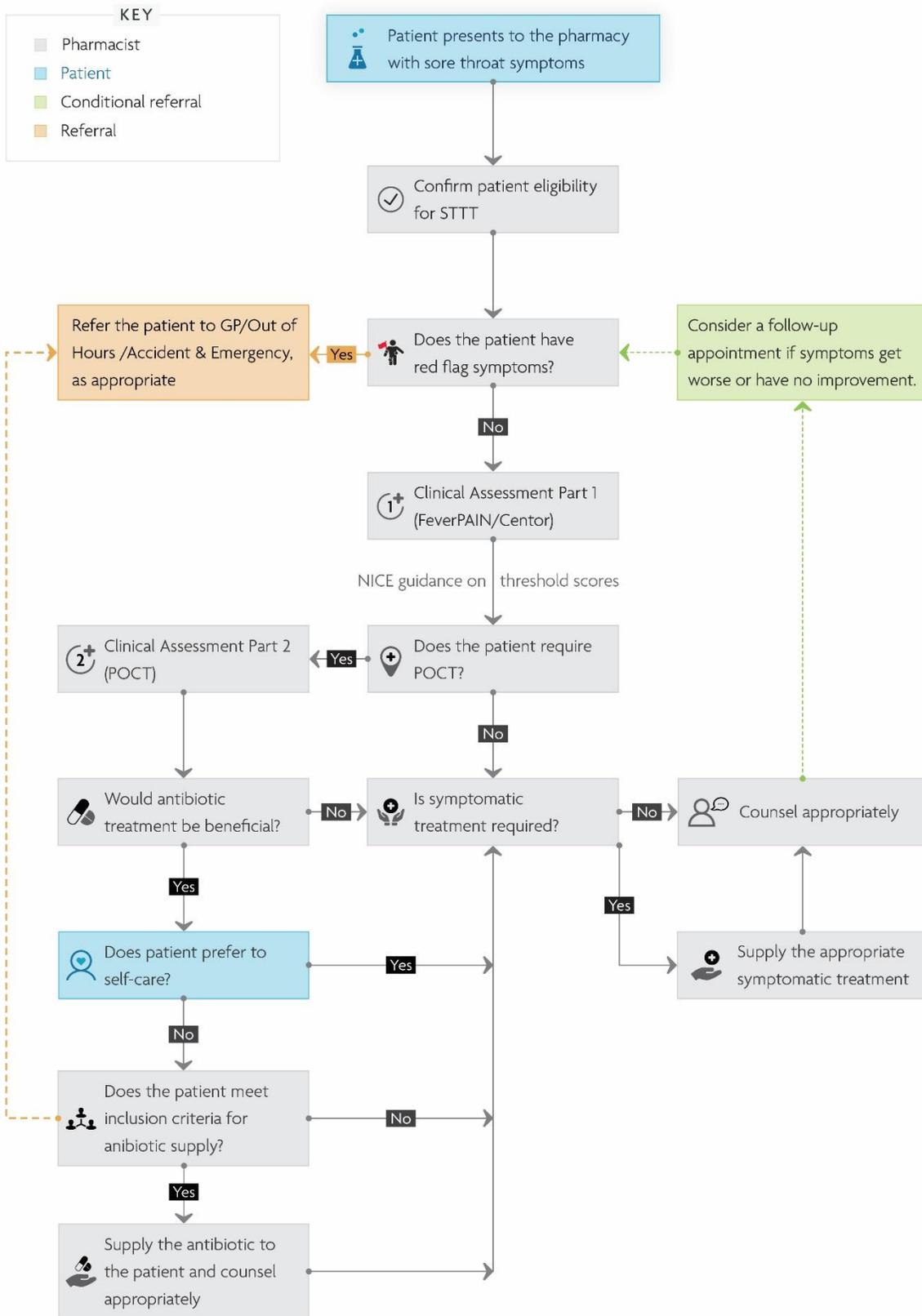
The authors declare that they have no competing interests.

### **Funding**

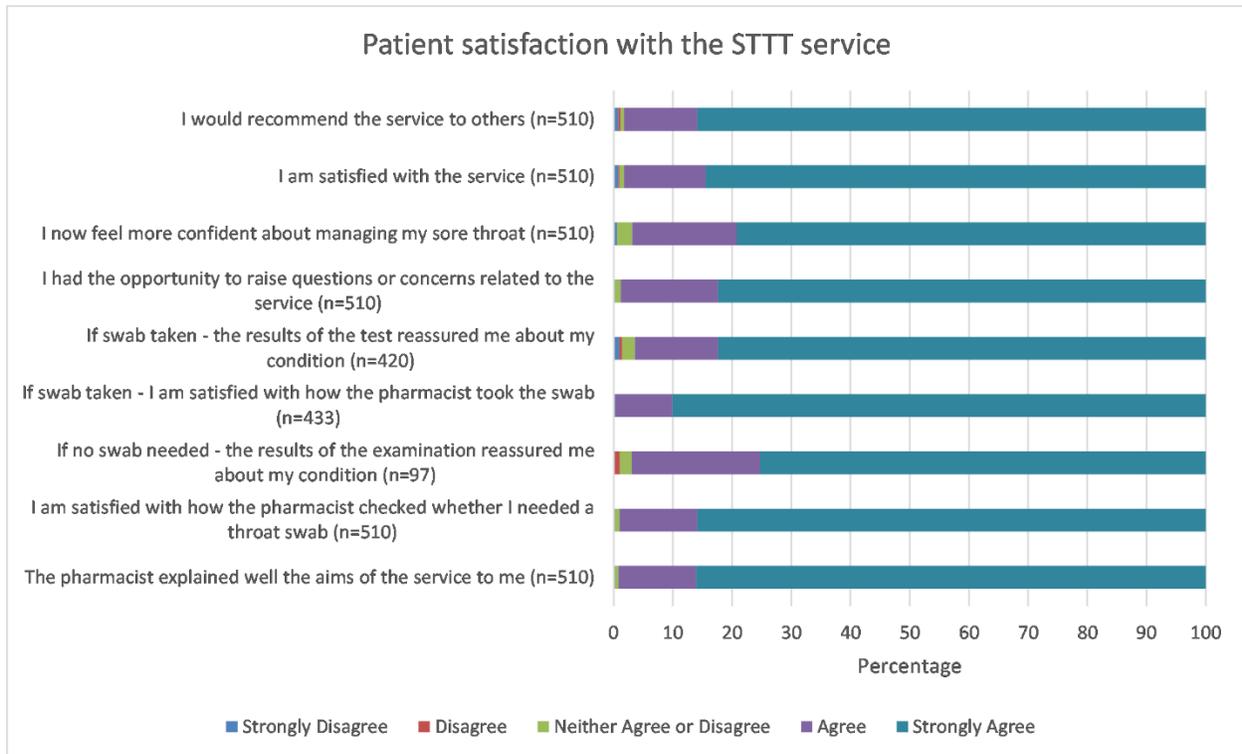
No funding has been obtained for this study.

### **Acknowledgements**

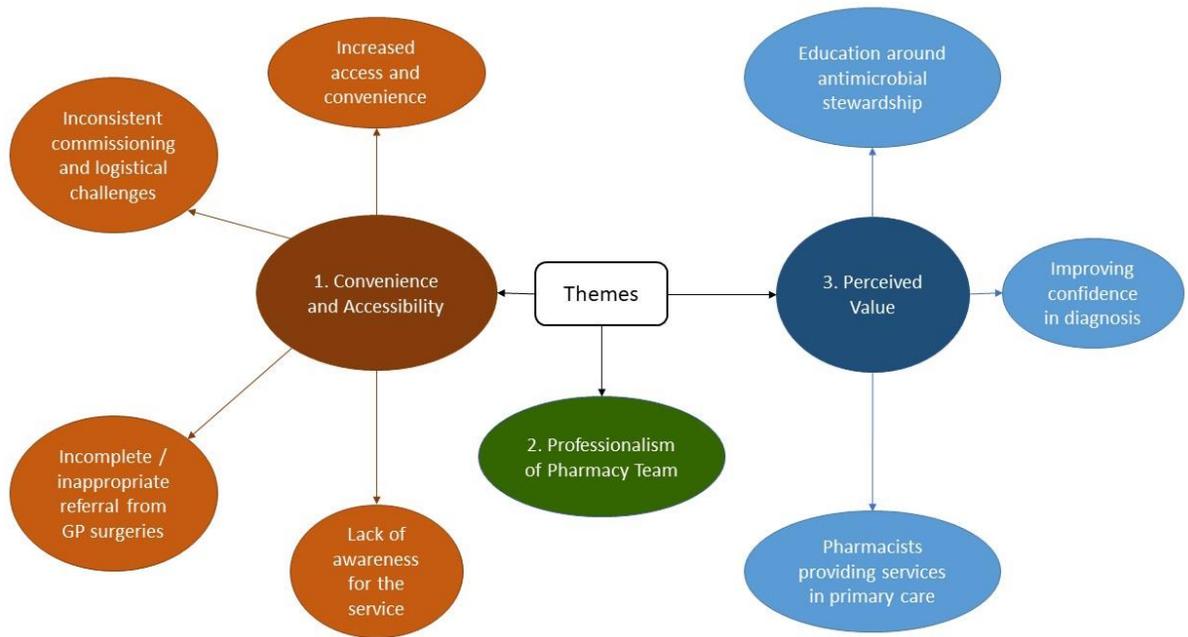
We would like to thank all the community pharmacists who supported this research by distributing the patient experiences surveys. We would also like to thank Haseeb Fazili, graphic designer at NHS Wales Informatics Service, for designing Figure 1.



**Figure 1:** Patient journey through the Sore Throat Test and Treat (STTT) community pharmacy service



**Figure 2:** A bar chart showing the percentage patient satisfaction in relation to different aspects of the Sore Throat Test and Treat (STTT) service and its delivery



**Figure 3:** An overview of the themes, as arising from inductive analysis of free-text comments added in patient experience surveys for Sore Throat Test and Treat (STTT)

**Table 1:** Patient demographics and background information for patients completing the survey and those who received a Sore Throat test and Treat (STTT) consultation

		Patients completing the survey n=510		Patients receiving an STTT consultation n=2839 (data from <i>Choose Pharmacy</i> , the national pharmacy IT platform)	
		n	(%)	n	(%)
<b>Age (years)</b>	6 - 12*	71	(14.7)	426	(15.0)
	13 - 18	68	(14.1)	520	(18.3)

	19 - 24	73	(15.1)	378	(13.3)
	25 - 34	103	(21.3)	626	(22.1)
	35 - 44	61	(12.6)	337	(11.9)
	45 - 54	37	(7.6)	233	(8.2)
	55 - 64	40	(8.3)	179	(6.3)
	65 +	31	(6.4)	140	(4.9)
	<i>total</i>	484		2,839	
	<i>Missing</i>	26	(5.1)	0	(0.0)
<b>Gender</b>	Male	120	(29.3)	954	(33.6)
	Female	289	(70.7)	1,185	(66.4)
	<i>total</i>	409		2,839	
	<i>Recorded as "completing for someone else"</i>	26	(5.1)	N/A	N/A
	<i>Other/prefer not to answer</i>	75	(14.7)	N/A	N/A
	<i>Missing</i>	0	(0.0)	0	(0.0)
<b>Tried to see a GP before</b>	Yes	343	(67.3)	1,642	(57.8)
	No	167	(32.8)	1,197	(42.2)
	<i>total</i>	510		2,839	

	<i>Missing</i>	0	(0.0)	N/A	N/A
--	----------------	---	-------	-----	-----

\*recorded as “completing for a child under 12”

**Table 2:** Patient confidence and satisfaction with the Sore Throat Test and Treat (STTT) service by antibiotic supply status

	If test needed, I got an antibiotic supply from the pharmacy today (n=487)			Missing values (n=23)
I now feel more confident about managing my sore throat (n=510)	Yes (n=164, 34%)	No (n=230, 47%)	Test not needed (n=93, 19%)	
Strongly disagree (n=3)	0 (0.0%)	3 (1.3%)	0 (0.0%)	0 (0.0%)
Disagree (n=0)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Neither (n=13)	1 (0.6%)	8 (3.5%)	3 (3.2%)	1 (4.3%)
Agree (n=90)	13 (7.9%)	49 (21.3%)	20 (21.5%)	8 (34.8%)
Strongly agree (n=404)	150 (91.5%)	170 (73.9%)	70 (75.3%)	14 (60.9)
I am satisfied with the STTT service (n=510)				
Strongly disagree (n=4)	0 (0.0%)	4 (1.7%)	0 (0.0%)	0

Disagree (n=1)	0 (0.0%)	1 (0.4%)	0 (0.0%)	0
Neither (n=4)	0 (0.0%)	3 (1.3%)	1 (1.1%)	0
Agree (70)	11 (6.7%)	38 (16.5%)	16 (17.2%)	5 (21.7%)
Strongly agree (n=431)	153 (93.3%)	184 (80.0%)	76 (81.7%)	18 (78.3%)

**Table 3:** Themes, subthemes and representative quotes as arising from inductive thematic analysis of the free-text comments in patient experience surveys.

Theme	Subthemes	Representative quotes (survey number)
1. <b>Convenience and accessibility</b>	Increased access and convenience	<p><i>“Very good service, doctors were fully booked so helped my daughter massively” S5</i></p> <p><i>“Very convenient and helpful. Thank you.” S98</i></p> <p><i>“Fast, easier than using GP” S27</i></p> <p><i>“Great service, was a lot quicker than waiting for GP” S32</i></p> <p><i>“Fantastic service and support in my local community and available outside GP hours.” S140</i></p> <p><i>“Fantastic. Went to doctor's = was sent here. I was a bit reluctant. Seen at 9am. Checked, assessed and walked away with medication before 9.30. Pharmacist really made me feel at ease. Thank you.” S142</i></p> <p><i>“Much easier than waiting 1-2 hours in the surgery or having to</i></p>

		<i>go to out of hours.” S195</i>
	Inconsistent commissioning and logistical challenges	<i>“...The surgery, [redacted], referred me to [redacted] pharmacy: no pharmacist today. They referred me to [redacted] - no pharmacist. Referred then to [redacted], cost road [sic], car drive away, no pharmacist. Returned to surgery, referred to [redacted], two towns away. Throat swab taken this is totally ridiculous, expensive, huge wage of time and I am too ill to do this. Stop this immediately until there is one system with all pharmacists leave on it for nearby, workable pharmacies. The pharmacist when found was great but really, 4th one is terrible.” S375</i>
	Incomplete/inappropriate referral from GP surgeries	<i>“My Drs receptionist should have advised me on where to go as I tried 3 other pharmacies before this one! However excellent and convenient service.” S102</i>  <i>“After trying 2 other pharmacists I found [name of pharmacy]...”S250</i>
	Lack of awareness for the service	<i>“...Need to promote better as didn't know this service was available.” S140</i>  <i>“A wonderful service which I know nothing about until I phoned the surgery to try to get an appointment this pm and was told that this existed” S358</i>
<b>2. Professional</b>		<i>“Professional manner, full explanation of procedure.” S40</i>

<p><b>sm of pharmacy team</b></p>		<p><i>“Very impressed with the service I received. The pharmacist was very thorough and made me feel at ease.” S83</i></p> <p><i>“The pharmacist was very welcoming, explaining the entire process and ensured I was happy/comfortable throughout.” S86</i></p> <p><i>“The pharmacy was brilliant from start to finish with my daughter (7 years old), would recommend this pharmacy and treatment to anyone with children. My child was very happy to have the test and get antibiotics. The lady went beyond to make my child happy and comfortable.” S94</i></p> <p><i>“Masks/gloves could have been worn. I was aware I was breathing into the pharmacist's face. S90</i></p>
<p><b>3. Perceived value</b></p>	<p>Improving confidence in diagnosis</p>	<p><i>“Amazing service - reassured me with the test and it was quick and easy - very, very impressed” S41</i></p> <p><i>“Received a result swiftly and was certain it was accurate” S54</i></p> <p><i>“...This service enabled me to go back to the GP with the knowledge that I wasn't wasting his time.” S58</i></p> <p><i>“Excellent service, attended due to no voice rather than "simple throat". Would have waited another day before a GP appointment - simply wanted clarification that a viral infection.” S78</i></p>
	<p>Education around antimicrobial</p>	<p><i>“I think this service is a brilliant idea especially that they take a swab to make sure whether antibiotics are needed.” S16</i></p>

	<p>stewardship</p>	<p><i>"I was so grateful for the service I received. My sore throat and cough was identified as a virus. So no medication was given. Excellent service."</i> S97</p> <p><i>"Referral from locum GP to chemist. Virus or bacterial infection? The chemist is a useful and efficient service. This will prevent visits to GPs and reduce demands for unnecessary antibiotics..."</i> S166</p> <p><i>"I had tonsillitis, tried to see a GP but was refused and told to go to pharmacist. He told me just take paracetamol and plenty of fluids and rest. I will never use this service again because I needed antibiotics but was told no, within 3 days I had fluid on my left lung, so a fully developed chest infection meaning I needed antibiotics."</i> S306</p> <p><i>"Went to pharmacy, test negative, had to go to doctors straight after test, saw nurse, given antibiotics."</i> S463</p>
	<p>Pharmacists providing services in primary care</p>	<p><i>"This service will aid Doctor's surgeries and help patients with their illness/diagnosis quickly - should be available everywhere"</i> S45</p> <p><i>"Very professional. I believe the scheme could be rolled out and offer more common ailments that the ones included at the moment."</i> P145</p> <p><i>"...I feel if I had not been treated at the chemist I would have to [go to ] A&amp;E as the Doctors surgery was closed till Tues (Bank Holiday) [Tuesday after a Bank Holiday Monday] and my</i></p>

		<p><i>condition would have worsened...” S451</i></p> <p><i>“The only reason I would not return to the pharmacy next time is because it is 15 minutes drive away instead of 2 mins to the GP. But if my local pharmacy did the scheme I would definitely go there instead of to the GP surgery.” S438</i></p> <p><i>“Great idea. Just need to think about the impact for the pharmacist.” S47</i></p>
--	--	--

## References

1. Welsh Government. A Healthier Wales. 2018 <https://gov.wales/sites/default/files/publications/2019-10/a-healthier-wales-action-plan.pdf>. Accessed 20 Jan 2020.
2. NHS. The NHS long term plan. 2019. <https://www.longtermplan.nhs.uk/>. Accessed 20 Jan 2020.
3. Watson MC, Ferguson J, Barton GR, Maskrey V, Blyth A, Paudyal V, et al. A cohort study of influences, health outcomes and costs of patients' health-seeking behaviour for minor ailments from primary and emergency care settings. *BMJ Open*. 2015;5:e006261. <http://dx.doi.org/10.1136/bmjopen-2014-006261>
4. Hindi A, Schafheutle E, Jacobs S. Patient and public perspectives of community pharmacies in the United Kingdom: A systematic review. *Health expectations: an international journal of public participation in health care and health policy*. 2017 Nov 8;1. <https://doi.org/10.1111/hex.12639>
5. Craig P, Dieppe P, Macintyre S, et al. Developing and evaluating complex interventions: new guidance: MRC, 2008 <https://mrc.ukri.org/documents/pdf/complex-interventions-guidance/>. Accessed 20 Jan 2020.

6. Buss V, Deeks L, Shield A, Kosari S, Naunton M. Analytical quality and effectiveness of point-of-care testing in community pharmacies: A systematic literature review. *Res Social Adm Pharm.* 2019;15:483–495.
7. New free throat screening service launched. Health Central. 2019 <https://healthcentral.nz/new-free-throat-screening-service-launched/>. Accessed 20 Jan 2020.
8. Rapid sore throat test. Hickey's Pharmacy. <https://www.hickeyspharmacies.ie/services/rapid-sore-throat-service/>. Accessed 20 Jan 2020.
9. Finch I. Superdrug launches free sore throat service in more than 200 branches. *Chemist and Druggist.* Dec 2018 <https://www.chemistanddruggist.co.uk/news/superdrug-launches-free-sore-throat-service-over-200-branches>. Accessed 20 Jan 2020.
10. Thornley T, Marshall G, Howard P, Wilson AP. A feasibility service evaluation of screening and treatment of group A streptococcal pharyngitis in community pharmacies. *J Antimicrob Chemother.* 2016;71(11):3293-9
11. Mantzourani E, Evans A, Cannings-John R, et al Impact of a pilot NHS-funded sore throat test and treat service in community pharmacies on provision and quality of patient care *BMJ Open Quality* 2020;9:e000833. doi: 10.1136/bmjoq-2019-000833
12. Mantzourani E, Hicks R, Evans A, Williams E, Way C, Deslandes R. Community Pharmacist Views On The Early Stages Of Implementation Of A Pathfinder Sore Throat Test And Treat Service In Wales: An Exploratory Study. *Integr Pharm Res Pract.* 2019 Nov 11;8:105-113
13. UK Standards for Public Involvement November 2019. <https://sites.google.com/nihr.ac.uk/pi-standards/home>
14. Boynton PM, Greenhalgh T. Selecting, designing, and developing your questionnaire. *BMJ.* 2004;328:1312-5.
15. National Health Service (NHS). Children and young people: Consent to treatment. 2019. <https://www.nhs.uk/conditions/consent-to-treatment/children/>. Accessed 20 Jan 2020.
16. Dillman DA, Smyth JD, Christian LM. Internet, Phone, Mail and Mixed-Mode Surveys. 4th ed. Hoboken, New Jersey: John Wiley & Sons, Inc; 2014.

17. Greenlaw C, Brown-Welty S. A Comparison of Web-Based and Paper-Based Survey *Methods. Eval Rev.* 2009;33(5):464-80.
18. Office for National Statistics. Language in England and Wales: 2011. 2013.  
<https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/language/articles/languageinenglandandwales/2013-03-04#welsh-language>. Accessed 16 Jan 2020.
19. Courtenay M, Rowbotham S, Lim R, Deslandes R, Hodson K, MacLure K, Peters, S, Stewart D. 2017. Antibiotics for acute respiratory tract infections: a mixed-methods study of patient experiences of non-medical prescriber management. *BMJ Open.* 2017;7:e013515.  
<http://dx.doi.org/10.1136/bmjopen-2016-013515>
20. Jones LF, Owens R, Sallis A, et al. Qualitative study using interviews and focus groups to explore the current and potential for antimicrobial stewardship in community pharmacy informed by the Theoretical Domains Framework. *BMJ Open.* 2018;8:e025101.  
<http://dx.doi.org/10.1136/bmjopen-2018-025101>
21. Todd A, Copeland A, Husband A, Kasim A, Bamba C. 2014 The positive pharmacy care law: an area-level analysis of the relationship between community pharmacy distribution, urbanity and social deprivation in England *BMJ Open* 4:e005764. <http://dx.doi.org/10.1136/bmjopen-2014-005764>
22. Todd A, Copeland A, Husband A, et al Access all areas? An area-level analysis of accessibility to general practice and community pharmacy services in England by urbanity and social deprivation *BMJ Open* 2015;5:e007328. <http://dx.doi.org/10.1136/bmjopen-2014-007328>
23. Welsh Pharmaceutical Committee. Pharmacy: Delivering a Healthier Wales. The Royal Pharmaceutical Society.  
<https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/Pharmacy%20Vision%20English.pdf?ver=2019-05-21-152234-477>. Accessed: 16 Jan 2020.
24. Hindi AMK, Schafheutle EI, Jacobs S Applying a whole systems lens to the general practice crisis: cross-sectional survey looking at usage of community pharmacy services in England by

patients with long-term respiratory conditions *BMJ Open* 2019;9:e032310.

<http://dx.doi.org/10.1136/bmjopen-2019-032310>

25. Leav VM, Corlett SA, Rodgers RM Workload and its impact on community pharmacists' job satisfaction and stress: a review of the literature. *Int J Pharm Pract.* 2012 Aug;20(4):259-71.

26. Hindi, A, Jacobs, S & Schafheutle, E 2019, 'Solidarity or Dissonance? A Systematic Review of Pharmacist and GP Views on Community Pharmacy Services in the UK', *Health Soc Care Comm.* 2018 Jul;27(3):565-598.

27. Bradley F, Ashcroft DM, Noyce PR. Integration and differentiation: a conceptual model of general practitioner and community pharmacist collaboration. *Res Social Adm Pharm* 2012;8:36–46.

28. Greenlaw C, Brown-Welty S. A Comparison of Web-Based and Paper-Based Survey *Methods. Eval Rev.* 2009;33(5):464-80.

29. Gayet-Ageron A, Agoritsas T, Schiesari L, Kolly V, Perneger TV. Barriers to participation in a patient satisfaction survey: who are we missing? *PLoS One.* 2011;6(10):e26852.

<http://dx.doi.org/10.1371/journal.pone.0026852>