

A national pilot community pharmacy-led urinary tract infection service: clinical and patient-reported outcomes from 9077 consultations

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Background: A national community pharmacy urinary tract infection (UTI) service was piloted in Wales between June 2024 and February 2025. The aim of this study was to understand the utility of the service for patients and its broader impact on primary care.

Methods: We conducted a retrospective, cross-sectional, descriptive study using anonymized individual-level data from all UTI service pharmacy records between 17 June 2024 and 31 January 2025. Patient-reported outcome measures were collected through follow-up phone calls.

Results: A total of 9077 consultations were recorded during the study period. In total, 8813 women (mean age 39.8 years) accessed the service. Pharmacists assessed and managed (with advice with or without treatment) 7621 (84%) consultations without need for onward referral. Antibiotics were supplied in 78.7% of consultations ($n = 7143$). Only 1% of consultations were considered to have resulted in inappropriate antibiotic supply, where pharmacists deviated from the structured treatment protocol. In total, 1006 consultations (11.1%) took place out of hours or at weekends. Of 2138 women responding to follow-up (23.6% of total), 87.0% ($n = 1861$) reported symptom resolution, and 14.4% ($n = 301$) reported contacting another healthcare professional after their pharmacy consultation. Of these 301, 62.7% ($n = 189$) were supplied antibiotics.

Conclusions: Community pharmacists provided an accessible and effective UTI service, aligned with national diagnostic guidelines, and with antibiotic supply rates comparable to general medical practice. A pharmacy-provided treatment pathway, including urinalysis, may enhance UTI care by offering appropriate diagnosis and treatment that is widely accessible, reducing demand on general medical practice and without compromising antimicrobial stewardship.

Introduction

A urinary tract infection (UTI) is defined as a bacterial infection in any part of the bladder or associated structures in the lower or upper urinary tract, and can be categorized as (i) uncomplicated presentation in otherwise healthy women without significant comorbidities, or (ii) complicated, presentation in men, or in women with renal impairment, abnormal urinary tracts, poorly controlled diabetes or immunosuppression.¹ In the UK, NICE and the UK

Health Security Agency (UKHSA) produce national guidelines for diagnosis of UTIs based on presenting symptoms and, where indicated, the use of urine dipstick point-of-care diagnostic test (POCT).² A midstream urine may also be used to ascertain the causative organism and antibiotic sensitivity for certain cohorts of patients.

UTIs are among the most common bacterial infections presenting in general medical practice, with acute UTIs occurring in up to 50% of women,³ and around half of patients presenting

with UTI symptoms requiring a urine test.⁴ UTIs are the second most common indication for antibiotics in England,⁵ with same day antibiotic prescribing occurring in around 78% of UTI-related consultations in primary care.⁴

Many uncomplicated UTIs resolve spontaneously, but patients may seek help from a healthcare professional for symptom management. Timely diagnosis and appropriate management, either with self-care or with antibiotics, are key to symptom resolution and preventing complications such as persistent, recurrent or ascending infections.^{6,7} The high incidence of UTIs and the associated demands on healthcare resources underscore the need for effective and accessible management strategies beyond traditional GP-led care. A coordinated approach amongst healthcare professionals in primary care has been highlighted as key to this strategy.⁸ Community pharmacies play an increasingly important role in patient care by providing accessible healthcare services and offering health advice without the necessity of appointments, including managing minor ailments and supporting public health initiatives. Countries such as Australia,⁹ New Zealand,¹⁰ Switzerland¹¹ and Canada¹² are using community pharmacies to provide UTI services using structured decision trees, point-of-care testing, or written protocols agreed with GPs, and achieving high symptom resolution rates whilst improving healthcare access and efficiency.

Across the UK, a range of pharmacy-led services have been established for managing uncomplicated UTIs in specific patient cohorts; however, patient eligibility criteria and use of POCT to support diagnosis, vary. The evidence base for these services is gradually increasing. In England, small-scale studies examining outcomes from a private community pharmacy-led test and treat service,¹³ and locally commissioned services have demonstrated that patients' symptoms can be managed safely, with antibiotic supply rates between 53% and 75%.^{14,15} The national Pharmacy First service for seven common infections, including UTIs,¹⁶ was launched in England in 2023 as part of the delivery plan for recovering access to primary care.¹⁷ Pharmacy First data indicate antibiotics are supplied in 84.4% of UTI consultations.¹⁸ In Scotland, community pharmacists have been managing uncomplicated UTIs since 2020, as part of Scotland's own Pharmacy First service.¹⁹ In 2023/24, antibiotics were supplied in 84.5% of consultations.²⁰ The national service in Scotland followed evaluation of earlier pilot services.^{21,22} The largest of these, the NHS Grampian project,²³ examined data from 349 patients at the initial pilot phase, finding that antibiotics were supplied in 85.7% of consultations, and from a further 1464 patients during the later stages of roll-out, where antibiotics were supplied in 72.6% of cases. In all studies, patients self-reported that UTI services in community pharmacy improved their access to treatment and shifted management of uncomplicated UTIs from other services such as general medical practice, out-of-hours (OOH) or accident and emergency (A&E) departments.

In Wales, a national Common Ailments Service (CAS) has been in place since 2013 to improve primary care access by allowing community pharmacists to provide advice, treatment and referral (as appropriate), for a range of self-limiting and uncomplicated health conditions.²⁴ Following a successful pilot in one health board (organizations in Wales responsible for delivering healthcare services within their respective areas),²⁵ a national pilot community pharmacy UTI service was commissioned from June 2024.

The existing evidence base for pharmacy-led UTI services comprises relatively small studies. Even in the Grampian project, which extended over a considerably longer time period than other studies, the number of consultations reviewed was small.²³ The aim of this study was to explore the feasibility of delivering a national UTI service in Wales in accordance with the service's protocol, and to describe key characteristics of the service, the people who used it, antibiotic supply rates and patient-reported outcome measures. The study period was 17 June 2024 to 31 January 2025. It was hoped the study would enable better understanding of the value and role of community pharmacy services in supporting the management of uncomplicated UTIs, and the impact of pharmacy provision on other primary care services.

Methods

UTI service implementation and roll-out

Community pharmacies in Wales commissioned to provide the CAS²⁶ were eligible to provide the UTI service upon completion of the required training.²⁷ The pilot commenced in June 2024 and included 49 pharmacies across Wales. The service was available to women who presented to the pharmacy with symptoms of lower, uncomplicated UTI in accordance with the service specification.

The service specification (a document describing the conditions under which commissioned community pharmacies were required to provide the service including any training requirements, and clinical inclusion and exclusion criteria) was similar to the earlier health board pilot model and based on UKHSA guidelines.²⁵ The Welsh Medicines Advisory Service developed the formulary and clinical monograph with input from a National Community Pharmacy Clinical Reference Group.²⁸

The service specification included the following eligibility criteria: people assigned female at birth with female genitalia, aged 16–64 years, who were not pregnant or catheterized. A Patient Group Direction (PGD) allowed the supply of certain prescription-only medicines, including antibiotics. Requirements for urine sampling and POCT aligned with UKHSA guidance (Figure S1, available as [Supplementary data](#) at JAC Online). Ibuprofen for symptom relief was supplied where appropriate. Pharmacists provided self-care and safety netting advice, including providing the TARGET leaflet,²⁹ to all those who accessed the service. Antibiotics were supplied to those with two or more key UTI symptoms, or those with one key symptom and a positive POCT result. Pharmacists were asked to make follow-up telephone consultations to patients accessing the service within 7–10 days of each consultation to collect patient-reported outcome measures (PROMs), including treatment outcome and subsequent health service utilization. Specific PROM questions were developed through a combination of literature review and engagement with Public Health Wales.

Study design

This was a retrospective, cross-sectional descriptive study using anonymized individual-level data from pharmacy records of all people meeting the inclusion criteria for the UTI service between June 2024 and January 2025.

Data collection and preparation

Data for all UTI consultations were obtained through the *Choose Pharmacy* system, an IT application supporting service delivery in 98% of community pharmacies in Wales. Data included standardized demographic information derived from matching patients to existing health records in the Welsh Demographic Service, and clinical information in the

form of free-text and drop-down predefined responses recorded by pharmacists during index consultations and follow-up telephone calls.

Microsoft Excel v2207 was used to prepare the master dataset, comprising monthly extracts of UTI consultations. The data collection form in *Choose Pharmacy* prevented incomplete or duplicate records. Data were transferred to IBM SPSS v29 to undertake descriptive analyses.³⁰

Outcomes and data analysis

Key measures of interest were:

- Demographics and presenting symptoms of service-users.
- Number of UTI consultations per month, proportion of POCTs carried out, and percentage of consultations in which antibiotics were supplied.
- Number and percentage of consultations by factors related to engagement with the service (frequency of service use, duration of symptoms, referral sources, alternative action had the UTI service not been available).
- Number and percentage of in or OOH, and weekend consultations.
- Number and percentage of consultations by service outcome (consultation outcome, pharmacy referrals to other services, nature of additional pharmaceutical advice).
- Number and percentage of consultations, POCTs and analgesics/antibiotics supplied stratified by symptoms.
- Number and nature of additional pieces of pharmaceutical advice and decision-making information recorded.
- Number and percentage of people who were followed up after initial consultation, symptom resolution rates and subsequent healthcare resource utilization.

Summary statistics were used to describe key characteristics of the service and service users. Categorical variables were summarized with frequencies and proportions alongside 95% CIs.³¹ Continuous variables were summarized using means and SDs.

Free-text data

Codes were assigned independently by two researchers (G.L. and R.P.) and quality assured by a third researcher (E.M.). Each consultation record could have none, one, or more than one comment by the pharmacist. Reasons for non-completion of follow-up phone calls and information on medication the patient received from any subsequent consultation with a healthcare professional following pharmacy consultation, were analysed separately. A combination of framework and content analysis was conducted to construct themes, broad concepts within each theme, and concept counts. Comments that reiterated information captured in the predefined options, or confirming patients' eligibility for the service, were not considered for analysis.

Ethics

The study received a favourable ethical opinion from the Cardiff University School of Pharmacy and Pharmaceutical Sciences ethics committee (reference: 2324-23) and was registered with the Research and Innovation department of Digital Health and Care Wales. Data were collected as part of routine clinical care and provided to the researchers fully anonymized with no patient identifiable information; as such, this study did not require NHS ethical approval.

Results

Initial consultation

We extracted data for 9077 consultations recorded between 17 June 2024 and 31 January 2025, equating to 8813 women

(some women presented more than once), with a mean age for all consultations of 39.8 years. The service grew over the study period with the number of pharmacies providing the service increasing from 49 in June 2024 to 346 in January 2025 (Table 1). Most consultations arose from self-referral ($n=7097/9077$; 78.2%) and took place 1–4 days after symptom onset ($n=6164/9077$; 67.9%). Most women reported that they would have contacted their GP for an appointment had the service not been available ($n=8142/9077$; 89.7%) (Table 2). A total of 1006/9077 (11.1%) consultations took place outside 9:00 to 18:00 on weekdays or on Saturday, Sunday or a bank holiday (Table 2).

Pharmacists assessed and managed (with advice with or without treatment) 84% ($n=7621/9077$) of consultations without any need for onward referral. Pharmacists supplied treatment (antibiotic and/or analgesia) in 78.8% ($n=7154/9077$) of consultations (Table 2). A POCT was performed in 28.3% ($n=2569/9077$) of all consultations (Table 1). Antibiotics were supplied in 78.7% ($n=7143/9077$) of consultations, with back-up antibiotics (to be taken if symptoms do not improve or worsen) supplied in 3.7% ($n=338/9077$), with little variation over time (Table 1).

Antibiotics were supplied in 87.3% ($n=6318/7237$) of consultations where women had two or three key diagnostic symptoms (69.6% of all consultations), with 79 (1.1%) consultations resulting in advice only, and 835 (11.5%) resulting in referral to another healthcare professional. Antibiotics were supplied in 51.0% of cases of women with only one key diagnostic symptom ($n=753/1477$) (8.3% of all consultations), and in 19.6% ($n=71/363$) of consultations where women had no key diagnostic symptoms (0.8% of all consultations) (Figure 1). Of the antibiotics supplied to women with fewer than two key diagnostic symptoms, 9.0% ($n=74/824$) (1.0% of all courses) did not have a positive POCT result reported or record of other severe urinary symptoms; as such these were considered to have been supplied inappropriately.

In total, 6211 free-text comments were added for 4057 index consultations. Of these, 5669 were included in the analysis and mapped across three main domains: information contributing to decision-making ($n=3074$); advice provided ($n=1028$); and justification of referral ($n=1567$) (Table 3). In three consultations the information provided did not justify a referral to a GP. Examples for each concept within the domains can be found in Table S1.

Patient-reported outcome measures

Women in 4005 consultations provided consent to follow-up (44.1% of those consulted). Of these, 2138 were contacted by a member of the pharmacy team within the recommended follow-up period (53.4% of those who consented, 23.6% of total) (Figure 2). The characteristics of women followed up were broadly similar to those who were not (mean age 40 years; similar presenting symptoms; and similar symptom duration). Women who were followed up were more likely to have been supplied with analgesics under the CAS and/or antibiotics during their index consultation (supply in followed up: 97.5%; not followed up: 72.9%) and less likely to be referred to other healthcare professionals (followed up: 0.0%; not followed up: 21%) (Table 1). Pharmacists explained the reasons for not completing the follow-up

Table 1. Number of health boards and pharmacies delivering the UTI service and the number of consultations, urine dipstick use (point-of-care testing) and antibiotics supply per month, between 17 June 2024 and 31 January 2025

Month, year	HBs with active UTI service ^a (n)	Pharmacies with active UTI service ^b (n)	Consultations (n)	Urine dipstick (POCT) (n)	% POCT ^c (95% CI)	Back-up antibiotics supplied (n)	% Back-up antibiotic ^c (95% CI)	Antibiotics supplied at consultation (n)	% Antibiotic supplied ^c (95% CI)
June 2024	6	49	120	41	34.2 (26.3, 43.0)	2	1.7 (0.5, 5.9)	98	81.7 (73.8, 87.6)
July 2024	7	173	709	214	30.2 (26.9, 33.7)	27	3.8 (2.6, 5.5)	555	78.3 (75.1, 81.2)
August 2024	7	246	1129	336	29.8 (27.2, 32.5)	35	3.1 (2.2, 4.3)	888	78.7 (76.2, 80.9)
September 2024	7	289	1277	334	26.2 (23.8, 28.6)	41	3.2 (2.4, 4.3)	999	78.2 (75.9, 80.4)
October 2024	7	318	1344	385	28.6 (26.3, 31.1)	50	3.7 (2.8, 4.9)	1076	80.1 (77.8, 82.1)
November 2024	7	313	1449	402	27.7 (25.5, 30.1)	52	3.6 (2.8, 4.7)	1114	76.9 (74.6, 79.0)
December 2024	7	357	1514	414	27.3 (25.2, 29.7)	67	4.4 (3.5, 5.6)	1195	78.9 (76.8, 80.9)
January 2025	7	346	1535	443	28.9 (26.7, 31.2)	64	4.2 (3.3, 5.3)	1218	79.3 (77.3, 81.3)
Total	7	466	9077	2569	28.3 (27.4, 29.2)	338	3.7 (3.58, 37.8)	7143	78.7 (77.8, 79.5)

HB, health board; POCT, point-of-care test; UTI, urinary tract infection.
^aMaximum of seven health boards in Wales.
^bOn 31 March 2024, there were 689 community pharmacies in Wales.
^cPercentage based on number of consultations.

for 772 episodes. These included: no answer ($n=478$, 61.9%) and no return phone call from the message left by the pharmacist on answering machine ($n=174$, 22.5%). Of the women contacted, 1861 (87.0%) reported their symptoms had resolved, 301 (14.4%) reported contacting another healthcare professional after their pharmacy consultation, and 189 (8.8%) were provided with an antibiotic supply (Figure 2, Table S2). The majority of those contacting another healthcare professional ($n=240$; 79.7%) did not have a POCT recorded in the pharmacy consultation as symptoms indicated a UTI was likely; of these, 149 had additional antibiotics supplied (Table S3).

For the 2138 patients who were contacted, 1237 additional free-text comments were recorded. Of these, 944 were included in the analysis and mapped across five domains: (i) reason for further contact with other healthcare professional ($n=173$); (ii) general UTI-related advice (for future symptoms) ($n=143$); (iii) pharmacist referring to other healthcare professional during call ($n=112$); (iv) reminder of need to retest for haematuria (97); and (v) patient-reported experience of the service ($n=419$) (Table 4). Examples for each broad concept within the domains can be found in Table S4.

Discussion

To our knowledge, this is the first cross-sectional analysis of anonymized individual-level data from electronic pharmacy records of consultations in the community pharmacy-led NHS UTI service in Wales, and the largest study reporting outcomes from an NHS community pharmacy-led UTI service, to date. Previous reports have been limited to private (non-NHS) services¹³ or small samples,^{14,15,21-23} with patient follow-up to examine clinical outcomes limited to only a subset of these.^{14,15,21} We described key characteristics of the service and the people who used it. We found service activity grew over the study period as more pharmacies were commissioned, with 9077 consultations completed over the entire study period. Of these, 11.1% were undertaken out of hours.

Most consultations were managed entirely in the community pharmacy. Pharmacists largely adhered to the structured protocol, with antibiotics supplied in 78.7% of consultations; only 1.0% of supplies were considered potentially clinically inappropriate. Without the service, more than 95% of users stated they would have sought an appointment with a GP or attended another unscheduled care setting.

The overall antibiotic supply rate of 78.7% was similar to studies of UTI consultations in general practice.⁴ Other pharmacy-led UTI services have reported antibiotics being supplied in 53% to 75% of consultations;¹³⁻¹⁵ the current national services in Scotland and England report higher rates at around 84.5%.^{18,20} Pharmacist training, differences in PGDs, and variation in POCT use between nations could help explain observed variation in supply rates. The supply rate reported in our study was higher than in the study using home-based urinalysis;¹⁵ this might be attributable to differences in the treatment pathway between the studies. In that study, 19% of patients eligible for the service and supplied with a urinalysis kit did not return to the pharmacy, a likely source of bias. Additionally, the authors reported the digital urine analysis pathway used recorded only one of the three key UTI diagnostic symptoms in the UTI treatment algorithm in use

Table 2. Descriptive overview of the community pharmacy-led UTI service consultations (N=9077) between 17 June 2024 and 31 January 2025

	Total consultations (N=9077), n (%)	Consultations with patients followed up (N=2138), n (%)	Consultations with patients not followed up (N=6939), n (%)
Service-user demographics			
Health board			
1	842 (9.3)	225 (10.5)	617 (8.9)
2	1322 (13.4)	394 (18.4)	928 (13.4)
3	1632 (18.2)	371 (17.4)	1261 (18.2)
4	1474 (15.9)	373 (17.4)	1101 (15.9)
5	1443 (15.8)	345 (16.1)	1098 (15.8)
6	2147 (25.8)	360 (16.8)	1787 (25.8)
7	104 (1.2)	20 (0.9)	84 (1.2)
Missing	113 (0.9)	50 (2.3)	63 (0.9)
Age at consultation (years), mean (SD), range			
	39.8 (14.0) 16–64	40.3 (13.8) 16–64	39.7 (14.0) 16–64
Presenting symptoms ^a			
Dysuria	7376 (81.3)	1848 (86.4)	5528 (79.7)
Nocturia	6703 (73.8)	1643 (76.8)	5060 (72.9)
Cloudy urine	5367 (59.1)	1318 (61.6)	4049 (58.4)
Urinary urgency	7710 (84.9)	1879 (87.9)	5831 (84.0)
Urinary frequency	8189 (90.2)	2011 (94.1)	6178 (89.0)
Haematuria	1264 (13.9)	319 (14.9)	945 (13.6)
Suprapubic tenderness	5536 (61.0)	1321 (61.8)	4215 (60.7)
Factors related to engagement with the service			
Frequency of service use			
One consultation	8561 (97.1)	2007 (98.0)	6554 (96.9)
Two consultations	241 (2.7)	41 (2.0)	200 (3.0)
Three consultations	10 (0.1)	1 (0.0)	9 (0.1)
Four consultations	1 (0.0)	0 (0.0)	1 (0.0)
Duration of the symptoms prior to accessing the service			
Less than 1 day	759 (8.4)	207 (9.7)	552 (8.0)
1–2 days	3154 (34.7)	739 (34.6)	2415 (34.8)
3–4 days	3010 (33.2)	758 (35.5)	2252 (32.5)
5–6 days	902 (9.9)	219 (10.2)	683 (9.8)
1 week or longer	1251 (13.8)	215 (10.1)	1036 (14.9)
Missing data	1	0	1
Referred to the pharmacy by:			
GP/GP staff	1796 (19.8)	490 (22.9)	1306 (18.8)
Self-referral	7097 (78.2)	1593 (74.5)	5504 (79.3)
Emergency services:			
GP OOH	50 (0.6)	8 (0.4)	42 (0.6)
GP OOH	7	2	5
Emergency Department	2	0	2
NHS Direct/111	41	6	35
Other pharmacy	88 (1.0)	42 (2.0)	46 (0.7)
Other HCP	22 (0.2)	3 (0.1)	19 (0.3)
Other	23 (0.3)	2 (0.1)	21 (0.3)
Missing data	1	0	1
Patient alternative action had the service not been available			
Contact GP	8142 (89.7)	1940 (90.7)	6202 (89.4)
Contact other service:			
GP OOH	571 (6.3)	133 (6.2)	459 (6.6)
GP OOH	263 (1.3)	55 (2.6)	208 (3.0)
Emergency Department	6 (0.1)	1 (0.0)	5 (0.1)
NHS Direct/111	290 (3.2)	65 (3.0)	225 (3.2)
Nurse/other HCP	33 (0.3)	12 (0.6)	21 (0.5)

Continued

Table 2. *Continued*

	Total consultations (N=9077), n (%)	Consultations with patients followed up (N=2138), n (%)	Consultations with patients not followed up (N=6939), n (%)
Buy medication from pharmacy	171 (1.9)	36 (1.7)	135 (1.9)
Do nothing	163 (1.8)	29 (1.4)	134 (1.9)
Missing data	9 (0.1)	0 (0.0)	9 (0.1)
Factors related to the service availability			
Number of consultations in- and out-of-hours			
In-hours ^b	8071 (88.9)	1923 (89.9)	6148 (88.6)
Out-of-hours ^c	1006 (11.1)	215 (10.1)	791 (11.4)
Service outcomes			
Consultation outcome			
Advice only	457 (5.0)	53 (2.5)	404 (5.8)
Referral	1454 (16.0)	0 (0.0)	1454 (21.0)
Supply treatment	7154 (78.8)	2085 (97.5)	5057 (72.9)
Analgesics ^d	537 (7.5)	206 (9.9)	331 (6.5)
Antibiotics ^d	7143 (99.8)	2084 (99.9)	5047 (99.8)
Missing data	12 (0.1)		
Referred to other services following initial consultation			
GP	1143 (12.6)	0 (0.0)	1143 (16.5)
GP OOH	79 (0.9)	0 (0.0)	79 (1.1)
Emergency Department	13 (0.1)	0 (0.0)	13 (0.2)
Other HCP	221 (2.4)	0 (0.0)	221 (3.2)
No referral was made	7621 (84.0)	2138 (100.0)	5483 (79.0)
If no referral was made, what guidance was given:			
Return to pharmacy	739 (8.1)	153 (7.2)	586 (8.4)
Seek medical advice if symptoms worsen or do not improve	6593 (72.7)	1897 (88.7)	4696 (67.7)
Back-up antibiotics discussed	210 (2.3)	77 (3.6)	133 (1.9)
Other	73 (0.8)	11 (0.5)	62 (0.9)
Missing data	6	0	6

HCP, healthcare professional; OOH, out of hours; UTI, urinary tract infection.

Data are number (%) unless specified.

^aNot mutually exclusive. More than one symptom can be present in a consultation.

^bNumber of consultations 9:00–18:00 Monday to Friday.

^cNumber of consultations outside 9:00–18:00 on weekdays or any time on a Saturday, Sunday or a bank holiday.

^dNot mutually exclusive. More than one analgesic or antibiotic can be supplied in a consultation.

at the time. This meant that all patients were entered in the urinalysis arm, meaning fewer patients received antibiotics when compared with following the current UTI treatment algorithm, which recommended all patients with two or more key symptoms for immediate or back-up antibiotics. This suggests that widening access to testing could contribute to further reducing antibiotic use.

Despite testing being recommended in UKHSA guidance for people with fewer than two key diagnostic symptoms, there are differences in the use of urinalysis to support UTI diagnosis in pharmacy-led UTI services in different parts of the UK. Urinalysis forms part of the UTI pathway in Wales, but not in Scotland or England. Findings from this study confirm the effectiveness of the UKHSA guidance in reducing unnecessary antibiotic supplies. Direct comparison between UTI services is challenging. Scotland's Pharmacy First UTI treatment pathway varies significantly from the pathway in Wales. In England, Pharmacy First

has similar inclusion criteria to the service in Wales but does not include urinalysis. Antibiotic supply rates from pharmacies in Scotland and England are higher than in Wales (84.5% and 84.4% versus 78.7%, respectively). When comparisons between England and Wales (where comparable service data are available) are limited to people with two or more key diagnostic symptoms, in Wales antibiotic supplies reduce to 69.6% of consultations, a reduction of 14.8% with the comparable cohort (84.4% versus 69.6%). This would suggest that including urinalysis in the treatment pathway in England might spare around 14 courses of antibiotics for every 100 pharmacy UTI consultations. Between the launch of Pharmacy First in February 2024 and the end of April 2025, 784 854 UTI consultations took place;¹⁸ applying a reduction of 14 antibiotic courses per 100 consultations suggests that nearly 110 000 courses of antibiotics could have been spared by inclusion of urinalysis in the treatment pathway in that period.

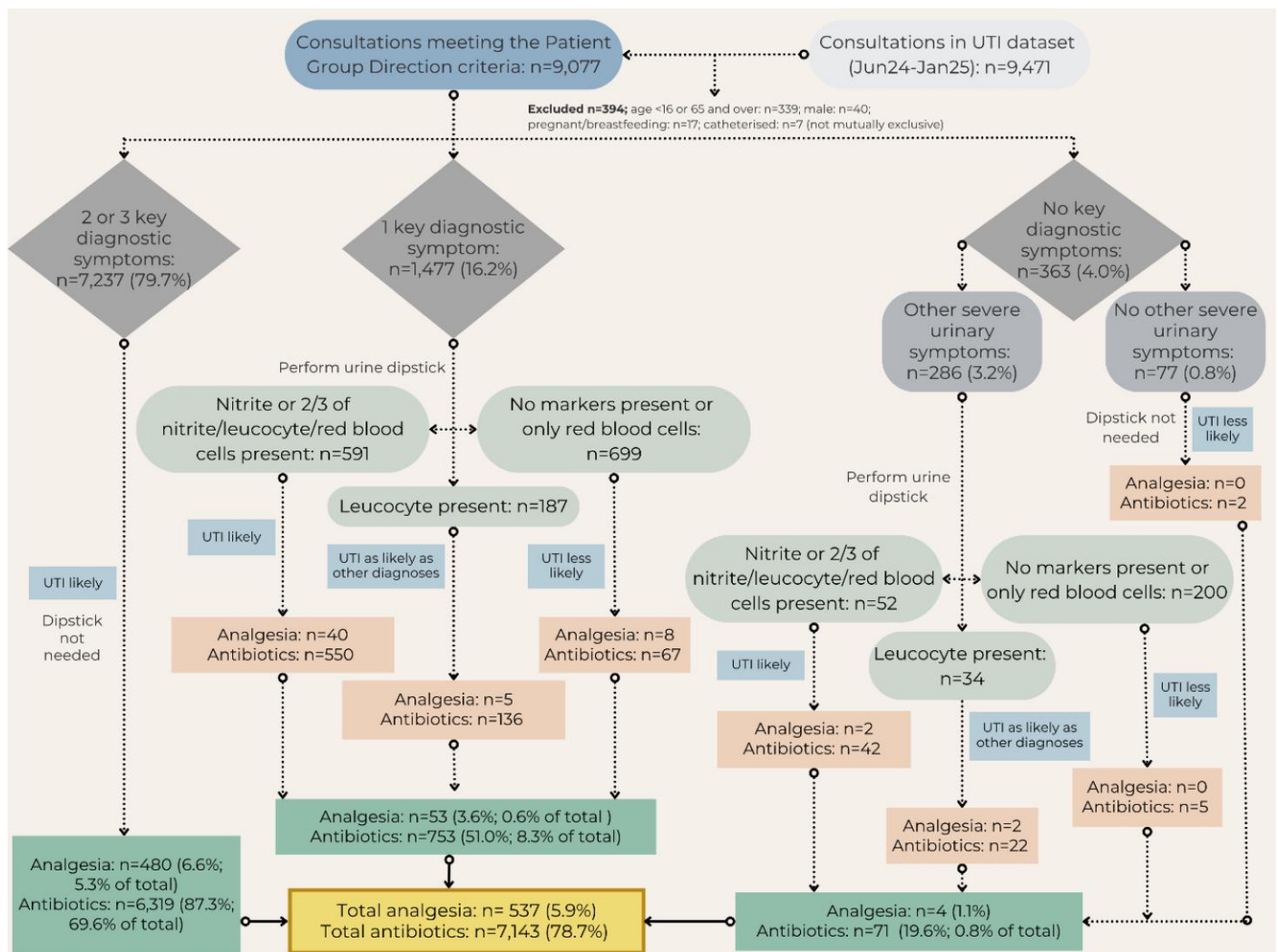


Figure 1. Analgesia and antibiotic supply during the community pharmacy-led UTI service consultations ($n=9077$) between 17 June 2024 and 31 January 2025, stratified per service specification pathway.

We are mindful that other factors may have contributed to the difference, including the 11.5% of patients in Wales who presented to another healthcare professional after the pharmacist's assessment. However, similar data are not available for England, and more research is recommended to explore and understand the differences. In addition, in Wales people with only one symptom (16.2%) or no key symptoms (3.2%) are managed in the pharmacy, whereas in England these patients are advised to self-care or present to other healthcare settings.³³ The extent to which this results in subsequent antibiotic supply is unclear and warrants further research.

There are inherent risks associated with any model that expands access to prescription-only medicines, including the potential for misdiagnosis of more serious conditions or overlooking underlying potentially more troubling factors contributing to UTI symptoms, when assessment takes place in a pharmacy. However, data from this study indicate that pharmacists adhered to the service's structured referral protocols when

further investigation was needed. Furthermore, PROMS obtained through follow-up phone calls did not identify any patients who presented in a different care setting after having been managed inappropriately by the pharmacist. Symptom resolution rates of 87% are comparable to those in a systematic review, which indicated high self-reported resolution rates (84%–89%) in pharmacy-led UTI management, and similar to typical resolution rates with GP-prescribed antibiotics.³⁴ A study directly comparing pharmacist and GP management found no significant difference in the time to symptom resolution.³⁵

Strengths and limitations

This is the largest descriptive analysis of a community pharmacy-led UTI service to date. The *Choose Pharmacy* dataset includes comprehensive data from consultations from all health boards across Wales and reflects a generalizable sample of women seeking care from healthcare professionals for symptoms

of suspected UTI. Consultations are recorded prospectively and are mostly structured, resulting in negligible missing values (Table 2). Choose Pharmacy does not currently capture socio-economic characteristics of service users, preventing assessment of the service by deprivation, which is an important consideration in tackling health inequalities.

Explanation of deviations from the predefined treatment pathway relies on pharmacist free-text entries in patient records,

which require further detailed analysis to fully understand. The analysis presented in this study is purely descriptive; a cost-effectiveness evaluation is required to understand the value of

Table 3. The three domains from a total of 5669 free-text comments that were left by pharmacists in the fields associated with the initial consultation, further broken down into broad concepts

Domain 1: information contributing to decision-making (n = 3074)
Concepts: physiological parameters (in part or full); comorbidities; history of presenting complaint; previous UTI infection history; menopause/gynaecological-associated symptoms/contributing factors; other medicines patient taking (general sales list/ pharmacy/prescription-only medicines); self-care tried already; rationale for GP requesting a dip test; confirming allergy status; choice of antibiotics justified
Domain 2: advice provided (n = 1028)
Concepts: safety netting and leaflets; self-care; antimicrobial stewardship; blood in urine; prevention of future infections; possible side effects of antibiotic
Domain 3: justification of referral (n = 1567)
Concepts: referral to Pharmacist Independent Prescribing Service versus other healthcare professional; referral to Common Ailment Service; referral reasons (uncertainty as to whether patient meets Patient Group Direction inclusion criteria; red flag symptoms; diagnostic uncertainty; other). Three instances were identified where the information provided did not justify a referral to a GP

Table 4. The five domains from a total of 944 free-text comments that were left by pharmacists in the fields associated with patient-reported outcome measures from the follow-up phone calls, further broken down into broad concepts

Domain 1: reason for further contact with other healthcare professional (n = 173)
Concepts: appointment with GP (related to UTI), with initial 3 day course not being sufficient (symptoms returned after stopping antibiotic) as the main one; presentation at out-of-hours/Accident & Emergency settings (related to UTI, as per safety netting provided); presentation at hospital (related to other bladder/urinary tract conditions); other healthcare setting (related to UTI); contact unrelated to UTI
Domain 2: general UTI-related advice (for future symptoms) (n = 143)
Concepts: self-care; safety net; antimicrobial stewardship; other
Domain 3: pharmacist referring to other healthcare professional during phone call (n = 112)
Concepts: general practice versus pharmacy (for new UTI Common Ailment Service consultation or Pharmacist Independent Prescribing Service) (direct referral); persisting symptoms (conditional referral); new symptoms (direct referral)
Domain 4: reminder of need to retest for haematuria (n = 97)
Concepts: sample in pharmacy versus general practice
Domain 5: patient-reported experience with the service (n = 419)
Concepts: satisfaction with the service; future health-seeking behaviour; other

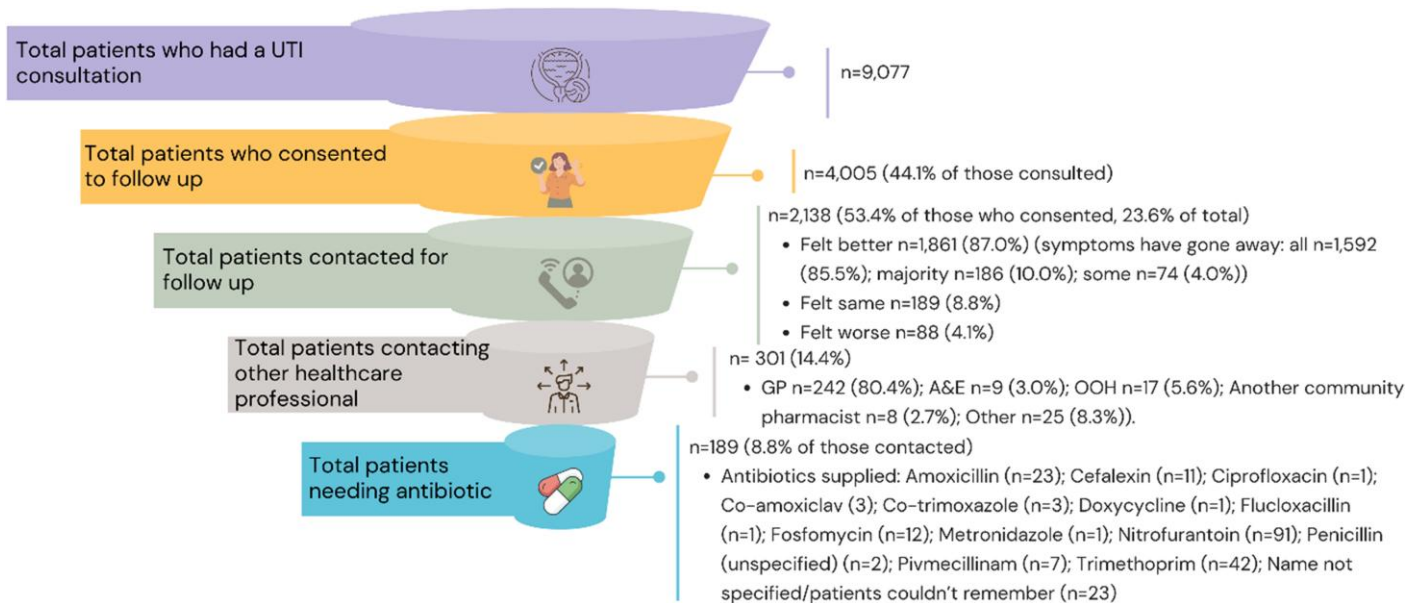


Figure 2. Patient-reported outcome measures for the community pharmacy-led UTI service consultations between 17 June 2024 and 31 January 2025, collected by pharmacists during follow-up phone calls 7–10 days after the initial consultation.

the service more broadly to primary care. The evaluation of patient-reported experience measures in this article is limited, and the low response rate to follow-up phone calls could affect precision around estimates (e.g. the CI), given the smaller sample size. Furthermore, the low response rate risks having specific groups of patients responding, biasing results. However, we have demonstrated that responders are of similar age, have a slightly higher rate of presenting symptoms, and were more likely to be referred by the GP than those not followed up. We can therefore be confident that the women who responded to follow-up were representative of women whose needs the service is intended to meet. In addition, recently published data from a study reporting patient-reported experience measures (PREMs) from surveys received from women using the service, the first ever study on systematically collected PREMs from an NHS-funded national community pharmacy UTI in the UK, revealed high satisfaction levels that were independent of age or supply of antibiotics.³⁶

Conclusions

This study suggests that community pharmacists can deliver an accessible and effective UTI service, with their practice compliant with national guidelines, and antibiotic supply rates that are lower than other pharmacy-led services in comparable health systems and equivalent to rates in general practice. The pharmacist-led service had high symptom resolution rates, and the initial indication is of a high degree of patient satisfaction. The extrapolation estimating a potentially meaningful reduction in antibiotic supply through inclusion of urinalysis in the treatment pathway can support policy-makers in other nations. These data strengthen the current evidence base for the value of pharmacist-led services for common infections, and highlight how these services can reduce the burden on general medical practice whilst protecting against excessive antibiotic use. Further expansion of the role of community pharmacists could be supported by the increasing number of pharmacist independent prescribers in the sector.

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Transparency declarations

None to declare.

Author contributions

Efi Mantzourani (Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Writing—original draft, Writing—review & editing), Haroon Ahmed (Methodology, Validation, Writing—review & editing), Andrew Evans (Conceptualization, Methodology, Writing—review & editing), Samuel Macdonald (Conceptualization, Project administration, Writing—review & editing), Georgia Lintern (Formal analysis, Writing—review & editing), Rhos Phyfer (Formal analysis, Writing—review & editing), Meryl Davies (Methodology, Writing—review & editing), and Rebecca

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Supplementary data

Figure S1 and Tables S1 to S4 are available as Supplementary data at JAC Online.

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