

## Evaluation of the impact of Scottish Reduction in Antimicrobial Prescribing (ScRAP) programme on GP Practice management of patients with suspected UTI

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### Abstract

**Background:** Optimising use of antibiotics is a key action to tackle antimicrobial resistance.

**Aim:** To evaluate the impact of an educational intervention on GP Practice teams’ self-reported change in practice in relation to managing patients with UTI.

**Design and setting:** Qualitative analysis of online evaluation and submitted improvement activity summaries from GP Practices in one large region in Scotland

**Methods:** Prescribing support pharmacists delivered facilitated sessions in protected learning time between May 2017 and November 2018, to which all GP practice staff, both clinical and support staff were invited. Practice audits and process mapping were used to consider local practice in context. Participants and facilitators were encouraged to complete an online feedback survey about the learning session. Each GP practice was also asked to complete a summary of improvement activity, outlining changes implemented and their impact. Improvement activity summaries were analysed using NVivo 12pro software to identify key themes.

**Results:** 404 participants and 239 facilitators completed surveys and were positive about the content, approach and length of the session with only minor content changes suggested. Improvement activity forms were submitted by 205 GP practices. Changes in practice included patient education to promote self-management and a reduction in the number of urine specimens sent to microbiology laboratories.

**Conclusions:** Feedback from facilitators and participants informed an update of the programme content. A whole team approach to management of patients with suspected UTI increased the success and impact of the changes made.

### Introduction

The development of antimicrobial resistance is inevitable and is driven by overuse of antibiotics, but can be contained by antimicrobial stewardship interventions. Concerted global action is required to slow and contain AMR.<sup>1</sup> Reducing unnecessary antibiotic use to reduce the overall quantity used is crucial but it is also important to support clinical teams to change behaviours to optimise patient care when using antibiotics. Evidence supports multi-faceted interventions including education, quality improvement and action planning to change behaviours.<sup>2</sup> The formation of GP clusters in primary care in Scotland in 2016 saw an increased focus on quality improvement methods as a way to improve care for local populations. Improvement strategies usually include multi-professional education to ensure a consistent approach to patient care and advice. Several UK education programmes have been developed, including the Stemming

the Tide of Antibiotic Resistance (STAR) programme,<sup>3</sup> which employed a multi-faceted facilitator led, practice based approach; and the Treat Antibiotics Responsibly, Guidance, Education, Tools (TARGET) toolkit, containing resources for practices and patients in a workshop format.<sup>4</sup>

The Scottish Reduction in Antimicrobial Prescribing (ScRAP) programme was developed in 2013 as a collaboration between the Scottish Antimicrobial Prescribing Group (SAPG) and NHS Education for Scotland (NES) and used a similar approach to the STAR programme and utilised a quality improvement approach. The initial ScRAP programme focused on AMR and respiratory tract infections. Following evaluation, an updated programme relaunched in 2017<sup>5</sup> and included additional modules on management of urinary tract infection (UTI). These focused on uncomplicated UTI in women, complicated UTI (older people, men, catheterised patients) and recurrent UTI. The new content covered diagnosis and treatment of UTI, largely based on recommendations in SIGN 88: Management of suspected bacterial urinary tract infection in adults. This guideline was superseded in 2020 by SIGN 160,<sup>6</sup> which includes some new recommendations relevant to this topic. Resources from Public Health England<sup>7</sup> and SAPG<sup>8</sup> were also used and these have since been updated.

One large health board (implementation board), representing 21% of the Scottish population, agreed to prioritise delivery of the new UTI sessions in all GP Practices while other health boards used a more targeted approach. The purpose of this paper is to report the impact of ScRAP in the implementation board, with particular emphasis on the process changes and improved practice in management of patients with suspected UTI.

## **Methods**

Between May 2017 and November 2018 ScRAP UTI content was delivered and facilitated by prescribing support pharmacists in 'Protected learning time' sessions and involved both clinical and non-clinical staff. Some practices received modules on AMR and respiratory infections from the original ScRAP programme in addition to one or more module on UTI. Topics for inclusion in the session were agreed by the facilitator and GP Practice staff in advance based on local learning needs. Prior to the session practices were asked to map out their usual process for managing patients presenting with UTI symptoms as a basis for discussion.

Following delivery of the session, all participants and facilitators were asked to complete online surveys (Supplementary information S1 and S2) to provide feedback on the training. Survey data was collated and analysed to identify themes and suggestions for improvement of the sessions and resources used.

Each practice was asked to submit a Summary of Improvement activity – UTI Diagnosis and Management (Supplementary information S3) to the prescribing support team describing changes they had made in relation to management of patients with UTI and their impact. Qualitative data from these Summaries was thematically analysed using NVivo 12 Pro software.

## **Results**

### **Online Evaluation Feedback Survey**

#### **Engagement**

404 Participants and 239 facilitators completed the online evaluation (Table 1). All but one of the facilitators and all but one of the participants completing the survey were from the implementation board. The majority of participant respondents were GPs (78%) and 85% of respondents were prescribers. "Other" respondents were medical students, health care assistants and practice managers.

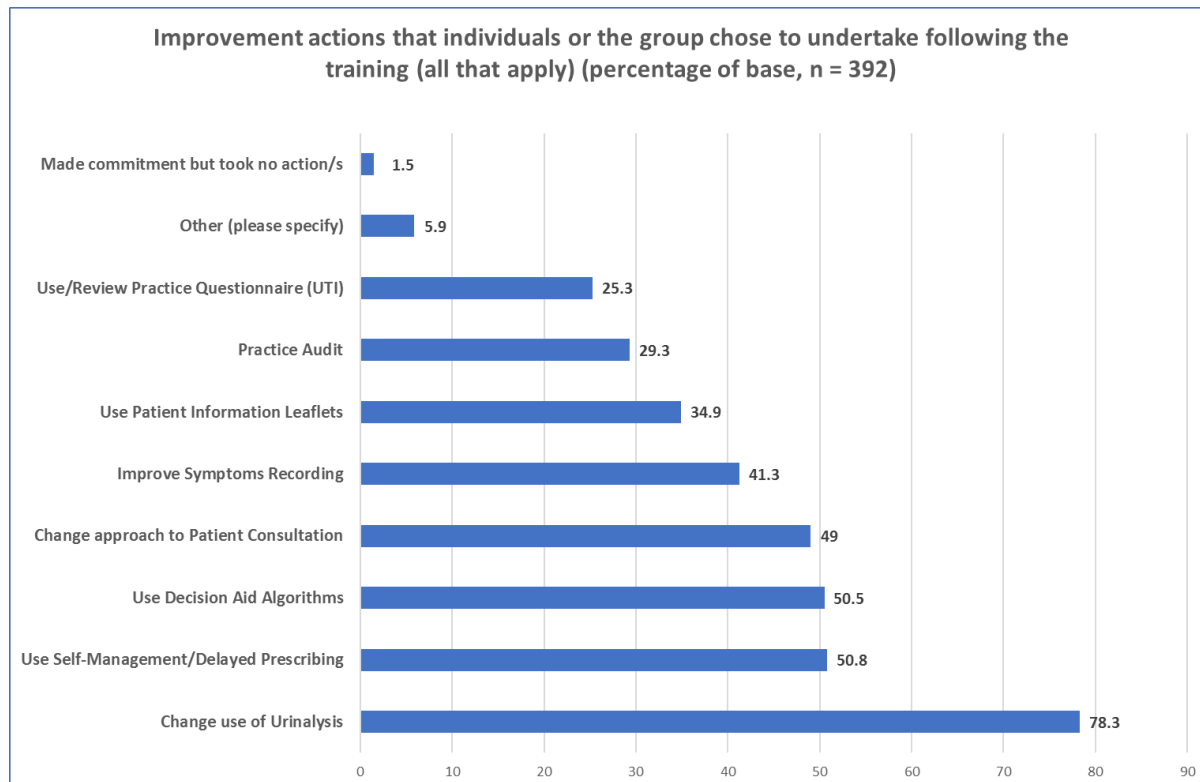
*Table 1: Profession of survey respondents*

Role	Number	% of total
GP	315	78.0
GP Trainee	13	3.2
Practice Nurse	41	10.1
Community Nurse	1	0.2
Pharmacist	5	1.2
Care Home Staff/Liaison	0	0
Practice Staff (non-clinical)	17	4.2
Other (please specify)	5	1.2
Role not stated	7	1.7
Total	404	100.0

### Impact

The evaluation sought to assess the influence of the programme on both knowledge and practice. All sessions were rated as having a *major influence* on participant knowledge in each respective topic by around a quarter of respondents and around two thirds reported *some influence* on their knowledge. Most participants (57% to 71% for individual sessions) reported that the modules had some influence on their knowledge that could be applied to their practice and more than 20% indicated that the learning had prompted a major influence on their practice in that respective area. The UTI module covering uncomplicated female cases was reported to have the most impact on practice. Impact on knowledge and practice for each module showed similar results across all professional/staff groups. Almost all participants (98%) indicated their commitment to improving their infection management and antibiotic prescribing practice. Chart 1 shows their intended improvement actions.

Figure 1: Improvement actions that individuals or the group chose to undertake following the training



### Feedback

Feedback on the sessions was largely positive. Participants and facilitators provided suggestions to improve the organisation and content of the programme: reduce duration of individual sessions by amalgamating them; upscale the sessions from individual GP practices to an area event; provide pre-session preparation

materials to give more time in the session for discussions; seek input from GPs to ensure case studies reflect 'real life'; tailor sessions to individual practices by incorporating additional local data; extend the programme for delivery to additional nursing staff and care homes.

### **Summary of Improvement Plans**

Summary of improvement activity forms were submitted by GP practices, the majority of respondents i.e. those submitting the form, were GPs, (128, 62%). Thematic analysis of the data from these forms led to the development of six themes.

### **New Ways of working**

This theme relates to the tangible changes made by GP practices to improve their management of patients with suspected UTI. During the education sessions facilitators suggested changes that could improve the appropriateness of antimicrobial prescribing for UTI. Analysis of data suggests that learning and discussion around potential strategies influenced the changes implemented by 189 practices. Key changes reported by respondents are shown in Box 1.

#### *Box 1: Key changes related to management of patients with UTI*

**Introduction or update of forms used to assess symptoms of UTI**  
**Training of clinical and non-clinical staff in use of new protocols**  
**Reduction in inappropriate urine testing (dip stick and lab testing)**  
**Improved recording of symptoms on patients electronic record (EMIS)**  
**Empirical treatment for patients with  $\geq 3$  symptoms**  
**Increased use of 3 day courses of antibiotics for uncomplicated UTI**  
**Increased use of delayed antibiotic prescription (patients with  $\leq 2$  symptoms)**  
**Review of patients on long term antibiotics for prophylaxis of UTI**

A key change was to streamline management of urine samples with 23 practices stopping acceptance of unrequested urine samples and some asking patients to provide full details of reasons for submitting a sample. To support this change, 72 practices reviewed and improved the information forms completed by patients or reception staff or introduced a data collection form where previously none existed. Clinicians educated reception staff on correct completion of forms to increase their confidence as first line triage of patients. Proforma were developed by some practices for associated nursing/care home staff to help assess patients with suspected UTI.

Many practices reduced the number of specimens sent for culture with greater use of empirical prescribing where clinically appropriate. Respondents also noted that self-care measures were more often considered for patients reporting mild or < 3 symptoms. Several respondents reported increased use of 3-day courses of antibiotics for uncomplicated UTI and more delayed prescriptions. Thirty-three practices reported that they had reviewed patients on antibiotics for prophylaxis of UTI and added a stop/review date on electronic records.

Simple measures such as displaying laminated copies of guidelines/decision aid algorithms in all treatment rooms supported consistency in new ways of working. The importance of team working was emphasised by 72 practices, particularly involving non-clinical staff to ensure guidelines were understood and followed.

### **Consideration of alternative diagnosis/treatment for patients' symptoms**

Raised awareness of alternative approaches to symptom management meant clinicians considered alternative diagnoses and changed treatment approach. This included use of non-steroidal anti-inflammatory drugs (NSAIDs) in selected patients, hydration for confusion in elderly patients and topical oestrogen as an option for recurrent UTI in post-menopausal women. Changes to management of UTI in patients with a urinary catheter included removal and replacement if a UTI was suspected. Patients with recurrent UTI were more likely to be investigated for underlying cause. Increased awareness or use of the 'Pharmacy First' service<sup>9</sup> was noted by 57 practices. This initiative was rolled out across Scotland in

November 2017 to support treatment of uncomplicated UTI in women aged 16-65 years. Training of reception staff was important to ensure appropriate signposting of patients to this service.

### **Education reaching wider than own practice**

Respondents valued the knowledge gained from the programme and discussed the need to make others aware of guidelines and processes to ensure consistency of patient care. The importance of alerting locums, new staff and those who had not attended the training to changes and inclusion in tutorials for GP trainees. Sharing education with nursing/care homes was frequently identified as an important aspect of changes in relation to reduction in unnecessary patient referral. Practices approached this in a variety of ways, some provided their associated nursing/care homes with copies of the guidelines or decision-making tools, others discussed appropriate use of urinalysis or provided formal education based on the ScRAP programme.

### **Getting patients involved**

This theme incorporates raising patient awareness and encouraging self-management and highlights the importance of good communication with patients. Ensuring patients understand changes in practice could foster a culture shift away from expectation of always having antibiotics prescribed. Some respondents emphasised the importance of explaining time limits on antibiotic prescriptions for prophylaxis of UTI. Patient education, using patient information leaflets and posters in the surgery or on practice websites were used to raise patients' awareness of changes to the process for diagnosis and treatment of UTI.

### **Benefits to the practice from new ways of working**

Education and subsequent changes were beneficial to individual clinicians and practices, saving both time and money. Changes to the mode of consultation reduced the number of face-to-face consultations for uncomplicated UTI with more patients having telephone consultations where appropriate, thereby reducing pressure on GP appointments. Several respondents felt the knowledge gained had given them more confidence in managing patients with suspected UTI.

A clear process for the accepting, testing and sending of urine samples to the laboratory saved money and reduced workload, freeing up time for other activities. There was a reduction in the number of urine samples and calls related to UTI from nursing/care homes. Information gathered on the questionnaires helped GPs to manage patients appropriately and improved electronic recording was particularly useful for patients with recurrent UTIs.

Post-education audit results were submitted by 39 practices and confirmed respondents' positive changes. These showed more appropriate laboratory testing of urine, reduced antibiotic prescribing for UTI with increased use of delayed prescribing and shorter courses. Review of patients on long-term prophylaxis resulted in some patients having this stopped.

### **Improving patient experience or outcome**

Respondents perceived the changes in practice enhanced the management of patients reporting symptoms of UTI. Patient consultations were with the most appropriate person and increased information sharing helped clinicians to explore patients' concerns and expectations. Improvements in symptom recording and treatment ensured patients received more consistent, evidence-based advice and enabled those with recurrent symptoms to be treated more appropriately, including referral for further investigation of symptoms. Review of patients on long-term antibiotics for prophylaxis of UTI was improved. While respondents reported "many patients" were receptive to change, others remained resistant.

## **Discussion**

### **Summary**

The evaluation surveys suggest that the ScRAP programme was well received and resulted in increased knowledge that was applied to improve practice. This is similar to findings from other UK studies using educational approaches such as STAR<sup>3</sup> and TARGET.<sup>4</sup> These studies also measured impact on antibiotic use and confirmed that prescribing rates reduced following the education programme. National

data<sup>10</sup> suggests that use of UTI antibiotics reduced more in the implementation board than in other health boards during and after the period of our study. Self-reported audits by some practices also showed reduced prescribing of UTI antibiotics.

The key aim of our study was to evaluate the impact of ScRAP on clinical practice to optimise systems and processes within GP Practices for managing patients presenting with suspected UTI. The session design allowed participants to discuss current guidance on diagnosing and managing UTIs, in an objective way in a non-threatening environment. The six themes developed highlighted that changes made and their impact on both staff and patients were generally positive. GP Practices implemented new ways of working in line with suggestions made during the training sessions and feedback highlighted the importance of a multidisciplinary approach. The main changes related to accepting and testing urine samples to reduce unnecessary testing through training of non-clinical staff in first line triage of patients. Involving the whole practice team, from Practice Manager, GPs, reception staff, Practice Nurses was invaluable to support working together and was an important factor in the success of the programme. Respondents were keen to share and discuss process changes with new colleagues and care homes associated with their practice. Improvements in prescribing with increased use of short courses of antibiotics and improved review of prophylactic antibiotics supports local and national stewardship ambitions. Some patient safety issues such as patients lost to urology follow-up were also identified. Patient engagement about changes in processes and encouraging self-management of symptoms supports shared-decision making.

### **Strengths and limitations**

The key strengths of this study are the number of participants involved and the multi-professional team approach used. Limitations include lack of quantitative data to demonstrate impact on antibiotic use or laboratory sample rates and lack of patient involvement to assess the impact of changes on patients. The large concentration of respondents from one health board area limits the generalisation of results. We also note that the intervention was delivered between May 2017 and November 2018 and guidance from SIGN,<sup>6</sup> PHE<sup>7</sup> and SAPG<sup>8</sup> referred to within the education sessions has since been updated. At the time of this intervention national (SIGN) recommendations were not to routinely perform urinalysis in women under 65 years. However, new recommendations in SIGN 160 supporting use of urinalysis to improve accuracy of diagnosis have been incorporated into the next version of ScRAP due to launch in 2021.

### **Comparison with existing literature**

Our findings are similar to other studies using educational approaches<sup>11-13</sup>. STAR<sup>3</sup> and TARGET<sup>4</sup> also measured the impact on antibiotic use and confirmed that prescribing rates reduced following the education programme. While audits carried out by individual Practices and national data suggest that use of UTI antibiotics reduced this was not analysed in our study.

The success of including action planning within the ScRAP sessions to support translation of knowledge into practice confirms findings from other studies showing suboptimal management of UTI can be addressed with education and resource development.<sup>14-16</sup> Regular education and feedback on practice helps to sustain changes<sup>17,18</sup> which supports plans for further ScRAP sessions.

### **Implications for research and/or practice**

Our study confirms the benefit of prioritising facilitated learning for multi-professional teams within protected learning time as an important method for reviewing and changing local practice. Follow-up of practice changes via audits and analysis of prescribing and laboratory utilisation will provide further evidence of benefit. Future interventions would benefit from behaviour change theory to support learning and action planning.

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