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Evaluating the role of primary care pharmacy technicians in antimicrobial stewardship (AMS) and acne management using TARGET resources

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Background: Inappropriate antibiotic prescribing is accelerating antimicrobial resistance (AMR) (*Antibiotic resistant infections and associated deaths increase* https://www.gov.uk/government/news/antibiotic-resistant-infections-and-associated-deaths-increase). Pharmacy professionals (pharmacists and pharmacy technicians) promote good antibiotic prescribing practice. The traditional role of pharmacy technicians in supporting pharmacists and patients has expanded alongside the clinical expansion of pharmacist roles. (Boughen M, Fenn T. Practice, skill mix and education: the evolving role of pharmacy technicians in Great Britain. *Pharmacy (Basel)* 2020; **8**(2): 50. doi:10.3390/pharmacy8020050) This paper focuses on the opinion of pharmacy technicians and their role in the review of acne management and the evaluation of the UKHSA TARGET acne 'How to…' review resources.

Aims and objectives: To explore the impact of the TARGET resources on the capability, opportunity and motivation of pharmacy technicians in general practice in managing patients with acne.
To evaluate the usefulness of the acne 'How to…' review resources.

Materials and methods: A primarily quantitative study using an electronic survey asking UK-based pharmacy technicians to rate their agreement on a five-point Likert scale with 21 predefined statements, themed on the COM-B model and usefulness of the TARGET resources for acne.

Discussion: The survey found that capability and opportunity in managing acne in the group familiar with TARGET resources was higher than the group not familiar with TARGET resources. Scores for motivation in both groups were high; pharmacy technicians have the motivation to undertake infection management roles, whether or not they are familiar with the TARGET toolkit.
The acne 'How to…' review resources were overall rated as useful in supporting the review of patients with acne.

Conclusion: The TARGET materials are effective resources that helps to upskill pharmacy technicians in the area of AMS, increasing capability and opportunity in the management of acne.

Introduction

Acne vulgaris (hereafter referred to as acne) is a common chronic skin condition.[1] Treatment is determined by the severity of the acne and how much it affects the individual. UK guidance recommends fixed combination topical preparations containing retinoids, benzoyl peroxide or antibiotics as a first-line treatment for mild-to-moderate acne or, for moderate-to-severe acne, a fixed combination non-antibiotic topical agent alone or together with oral lymecycline or doxycycline.[2] NICE guidance recommends that antibiotic treatment (topical or oral) for acne should not be continued for more than 6 months unless in exceptional circumstances.[3]

There are growing concerns about antibiotic resistance in the treatment of acne.[4,5] Most acne treatment in the UK is provided in general practice.[6] A cohort study analysed consultations and prescribing for acne using the Clinical Practice Research Datalink.[7] It found that the most common prescription given at the initial

acne consultation was an oral antibiotic alone (34%) against NICE guidance, closely followed by topical antibiotics (32%).[7] This is in line with earlier research, which found that the most commonly prescribed treatment for acne was oral antibiotics.[6] A 2022 study showed that 44.5% of people with a new acne diagnosis received a prescription for long-term oral antibiotics.[8]

Both pharmacists and pharmacy technicians working in the UK are required to be registered with the General Pharmaceutical Council (GPhC). The education and training requirements can be found on the GPhC website https://www.pharmacyregulation.org/education-and-training-requirements-pharmacy-team. Pharmacists are able to register with the GPhC after undertaking a GPhC accredited Master of Pharmacy degree (MPharm) and completing the pre-registration training year. The minimum duration to qualifying as a pharmacist in the UK is 5 years. For pharmacy technicians to register with the GPhC, they are required to undertake a GPhC approved combined competence and knowledge-based course, such as the Level 3 Diploma in Principles and Practice for Pharmacy Technicians. The duration for completing this course is not less than 2 years.

The pharmacy technician role has traditionally been to support pharmacists in the supply of medicines in hospital and community settings. Increasingly, pharmacy technicians are undertaking more generic medicines management-based roles and assuming training, leadership and development roles. The Audit Commission's publication 'A spoonful of sugar, medicines management in NHS hospitals' (2001) recommended pharmacists work more closely with patients and provide clinical services. This resulted in a significant transfer of responsibility to pharmacy technicians. Parallel to this, pharmacists in primary care roles began working with general practitioners, advising on the evidence-based use of medicines, medication safety and managing prescribing budgets. This work led to the creation of the primary care pharmacy technician.[9]

Primary care networks (PCNs) are defined as groups of general practitioner (GP) practices working with other health and social care services in their local area.[10] They were introduced in 2019 as part of the NHS Long-term plan. The Network Contract Direct Enhanced Service (DES) sets out the core requirements and entitlements for a PCN. One of the clinical responsibilities that has been set out in the DES is for Pharmacy Technicians is to support initiatives for antimicrobial stewardship to reduce inappropriate antibiotic prescribing.[11] However, there is some evidence to suggest that pharmacy professionals (pharmacists and pharmacy technicians) lack confidence in their ability to deliver clinical services,[12,13] and training has been found to increase confidence and competence and positively impact behaviour and practice.[14,15] The Treat Antibiotics Responsibly, Guidance, Education and Tools (TARGET) resources are produced by UK Health Security Agency (UKHSA) and are hosted on the Royal College of General Practitioner (RCGP) website www.rcgp.org.uk. TARGET materials are a well-established resource that support healthcare professionals (including pharmacists and pharmacy technicians) to implement AMS in their practice. The TARGET resources include patient information leaflets. general practice audits and training. The TARGET 'How to…' acne resources have been recently developed and support the review of patients on acne treatment, ensuring that antimicrobial prescribing is appropriate and reinforces the key messages of self-care and non-antimicrobial interventions.

A survey was developed using the COM-B approach to gain insight into pharmacy professionals' opinions of their role in acne management. The COM-B model is a comprehensive behavioural model developed by Michie *et al.*[16] and provides insight into three components thought to underpin any change in behaviour (B); Capability (C), Opportunity (O) and Motivation (M). Thus, for pharmacy professionals to be able to manage patients with acne (the behaviour change), they must be physically and psychologically capable (C), have the social and physical opportunity (O) and want or need to do this more than other competing priorities (M). Each of these components interact and interventions must target one or more of these to deliver and maintain the behavioural change.[16,17]

Aims and objectives

The aim of this study was to gain insight into pharmacy technicians' opinions of their role in acne management and explore the impact of TARGET resources on the capability, opportunity and motivation of pharmacy technicians in primary care to manage patients with acne. Additionally, the newly developed acne 'How to…' resources were evaluated for their usefulness in the management of acne.

Materials and methods

Study design and participants

A mixed-methods, but primarily quantitative, study was undertaken, using Likert scoring and free-text responses to carry out analysis. This was a carried out as a pilot study as the TARGET acne resources had been newly developed and therefore an initial evaluation was undertaken before any further development and wider use. Participants were UK-based pharmacy professionals (pharmacists and pharmacy technicians) working in general practice and community pharmacy. The survey was distributed widely via pharmacy networks, NHS England regional Antimicrobial Stewardship (AMS) leads, NHS England AMS communications and social media platforms (LinkedIn and Twitter). Results for both pharmacists and pharmacy technicians as pharmacy professionals working in community pharmacy have been published at www.sciencedirect.com. Combined results for GP setting for both pharmacists and pharmacy technicians are, at the time of writing this article, due to be published. This paper focuses on responses from pharmacy technicians from the GP survey to analyse the responses form this workforce in depth.

Survey method

The COM-B model has been previously used to assess the behaviour change of healthcare professionals after implementation of evidence-based interventions.[16] The model was applied here to assess capability, opportunity and motivation of pharmacists and pharmacy technicians working in general practice around acne management before and after piloting of the TARGET acne 'How to…' resources. An electronic questionnaire was developed and the Qualtrics XM platform used for deployment. The link for the TARGET acne 'How to…' toolkit and the clinical scenarios was included in the survey for respondents to access (both resources are now published on the RCGP website https://elearning.rcgp.org.uk/mod/book/view.php?id=12649).

Participants rated their agreement with 21 predefined statements on a five-point Likert scale aligned to the COM-B model components. (scale 1–5; strongly disagree to strongly agree) and a free-text response to allow participants to provide further feedback on the resources.

Mean and standard deviation of the five-point Likert responses were calculated. *P* values less than 0.05 were deemed significant. Demographic data on the profession of the participants, duration of professional registration and region of the UK they practised in were also collected.

Data analysis

Question types included five-point Likert questions (scale 1 to 5; strongly disagree to strongly agree), yes/no and free-text response. Mean and standard deviation of the five-point Likert responses were calculated, followed by *t*-tests to investigate statistical significance before and after use of the toolkit. Demographic data on the profession of the participants, duration of professional registration and region of the UK they practised in were also collected.

Ethical approval

This study was reviewed and approved by the University of Nottingham School of Pharmacy Research Ethics Committee (ref. 009-2023).

Results

Thirty-one registered pharmacy technicians responded to the survey. Of the respondents, 17 were familiar with TARGET resources and 14 were not. From the group that were familiar with the TARGET resources, two used these resources regularly in their practice and one had used the acne 'How to…' resource. Responses were received from England and Wales; with a range of post-registration experience from 0–5 years to over 20 years. The results are presented comparing pharmacy technicians familiar with the TARGET resources in comparison to those not familiar with the TARGET resources.

Awareness and engagement with AMS initiatives

All respondents reported having accessed resources to improve their awareness of AMR in the past. Aside from TARGET resources, most respondents reported having accessed resources from Centre for Postgraduate Pharmacy Education, PrescQIPP and e-learning for health, as well as their organizations own prescribing guidance. Where RCGP TARGET resources were used by respondents, audit templates e.g. urinary tract infection (UTI), cough and information leaflets discussing respiratory tract infections and UTIs were the most popular.

The respondents were asked whether they would be willing to join an AMS community of practice for AMR. This is a group of people with an interest or job role in AMS that will come together to share learning and pilot and feedback new resources. Of the 20 respondents that answered, 14 said yes. This supports the high score for motivation seen in both groups whether familiar with the TARGET resources or not.

Awareness of PCN DES requirements and national targets for antibiotic prescribing

AMS is part of the England PCN DES contract and antimicrobial prescribing competency framework. Out of the 23 responses to this question, 18 (78%) were aware that AMS is part of the PCN DES and of the national outcome framework targets for antibiotic prescribing.

COM-B analysis

The responses from the survey, using scoring from the five-point Likert scale and comparison of the groups familiar with TARGET versus not familiar with TARGET resources can be seen in Table 1.

Capability

Pharmacy technicians who were familiar with TARGET resources self-reported higher capability in managing patients with acne than those not familiar with TARGET resources [3.01 (SD 0.84) versus 2.25 (SD 0.82), respectively, *P* value 0.034].

Interestingly, the two respondents who used TARGET resources regularly self-reported higher capability at 3.75, with capability being the highest for the one pharmacy technician who had used the acne 'How to…' resources at 4.5.

Self-reported assessment for capability was highest overall for 'I have the skill to run clinical searches on my clinical system' and 'I understand the risks of long-term antibiotic treatment'. Capability was lowest overall for 'I am confident undertaking clinical review for patients with repeated or long-term use of antibiotics for acne management'.

Opportunity

Opportunity was also higher in the groups that were familiar with TARGET resources compared to those that were not familiar [3.84 (SD 0.31) versus 3.26 (SD 0.27), *P* value 0.011].

The two respondents who used TARGET resources regularly self-reported higher opportunity at 4.0, with opportunity being reported as highest for the one pharmacy technician who had used the acne 'How to…' resources at 4.6.

For opportunity, highest scores were for 'In the last three months I have the opportunity to run searches on the clinical system for quality improvement initiatives' and 'I am able to undertake quality improvement initiatives on the areas of prescribing that I have an interest in'. Lowest scores for opportunity were for 'There are support staff to run searches on my behalf'.

Motivation

Both TARGET familiar and unfamiliar groups self-reported similar scores for motivation [4.15 (SD 0.31) versus 3.85 (SD 0.74), *P* value 0.208].

For motivation, the highest score was for 'managing acne appropriately is important for the patient's quality of life' and lowest was for 'The review of patients on treatment for acne gives me job satisfaction'.

Interventions and feedback on the 'How to…' TARGET resources

Respondents were asked whether they had reviewed any patients on antibiotic treatment for acne in the last 3 months. Four respondents answered affirmatively. Reported interventions from the reviews included stepping down antibiotic treatment for their patient(s), giving advice on self-care and referring the patient to the GP or pharmacist. Only one had used the acne 'How to…' resource guide to structure these reviews so far in practice, suggesting a lack of awareness of the resource.

Table 1. Mean five-point Likert responses to COM-B survey components and comparison of responses from pharmacy technicians familiar with TARGET resources versus not familiar with TARGET resources

	Mean (SD)			*P* value (familiar versus not familiar)
Initial self-assessment of: capability	All $n=31$	Familiar with TARGET $n=17$	Not familiar with TARGET $n=14$	
I have enough knowledge to manage people with acne	2.22 (0.96)	2.47 (0.96)	1.92 (0.86)	
I am confident in managing people with acne	2.22 (1.07)	2.40 (1.08)	2.00 (1.00)	
I am able to give self-care advice to people with acne	2.96 (1.14)	3.00 (1.03)	2.92 (1.26)	
I have enough knowledge to undertake reviews with patients with repeated or long-term use of antibiotics for acne management	2.00 (1.02)	2.43 (1.12)	1.50 (0.65)	
I am confident undertaking clinical review for patients with repeated or long-term use of antibiotics for acne management	1.81 (0.90)	2.00 (0.97)	1.58 (0.76)	
I understand the risks of long-term antibiotic treatment	3.78 (1.10)	4.33 (0.60)	3.08 (1.19)	
I have the skills to run searches on my clinical system	4.52 (0.88)	4.80 (0.40)	4.17 (1.14)	
I understand the review criteria for stepping up treatment for acne	2.33 (1.28)	2.87 (1.26)	1.67 (0.94)	
I understand the review criteria for a trial of antibiotic treatment for acne	2.30 (1.30)	2.87 (1.26)	1.58 (0.95)	
I understand when onward referral is needed	2.56 (1.42)	2.93 (1.44)	2.08 (1.26)	
Capability mean	2.67 (0.81)	3.01 (0.84)	2.25 (0.82)	0.034
Opportunity				
I have the opportunity to run searches on the practice's clinical system for quality improvement initiatives	3.72 (1.56)	4.13 (1.09)	3.10 (1.92)	
Antimicrobial stewardship and antibiotic prescribing review are a priority in the practice(s) I work in	3.60 (1.02)	3.67 (0.87)	3.50 (1.52)	
Antimicrobial stewardship and antibiotic prescribing review are a PCN priority	3.76 (1.11)	3.93 (1.06)	3.50 (1.12)	
I am able to undertake quality improvement initiatives on areas of prescribing that I have an interest in	3.84 (1.12)	4.13 (0.72)	3.40 (1.43)	
There are support staff to run searches on my behalf	3.12 (1.34)	3.33 (1.35)	2.80 (1.25)	
Opportunity mean	3.61 (0.26)	3.84 (0.31)	3.26 (0.27)	0.011
Motivation				
Appropriate prescribing of antibiotics is of high importance in the context of other competing NHS priorities	4.35 (0.63)	4.36 (0.61)	4.33 (0.67)	
Appropriate self-care advice is important to avoid unnecessary antibiotic use for acne	4.22 (0.98)	4.21 (1.01)	4.22 (0.92)	
Managing the prescribing of antibiotics for acne appropriately can impact on antibiotic resistance	4.52 (0.71)	4.57 (0.49)	4.44 (0.96)	
Managing acne appropriately is important for the patient's quality of life	3.57 (1.21)	3.86 (0.91)	3.11 (1.45)	
I routinely share quality improvement outcomes with my colleagues	3.22 (0.98)	3.64 (0.81)	2.56 (0.83)	
The review of patients on treatment for acne gives me job satisfaction	4.35 (0.63)	4.29 (1.03)	4.44 (0.96)	
Motivation mean	4.04 (0.48)	4.15 (0.31)	3.85 (0.74)	0.208

All respondents were asked for their opinion on the usefulness of the acne 'How to…' resources in reviewing and managing people with acne by rating its usefulness on a five-point Likert scale. Overall, the respondents found the resources to be useful (Table 2). In particular, areas of strong agreement were in sections containing information on acne, self-care measures and treatment for acne. When asked for further feedback on the acne 'How to…' toolkit, respondents gave positive feedback: for example, 'These are exactly the kind of resources required for pharmacy technicians to be able to carry out reviews' and 'For a technician, this was all useful to implement a patient facing technician review clinic'.

Discussion

Findings from this survey show that many of the respondents were aware of the long-term risks of antibiotic treatments and recognize the opportunity to undertake quality improvement initiatives in AMS. The number of respondents who wanted to join a community of practice for AMS and the high level of motivation scores across both groups supports a willingness to engage in best practice around the use of antimicrobials. The results show that capability and opportunity scores were higher for those who were familiar with the TARGET resources, which suggests that the knowledge base that supports capability also supports

Table 2. Mean five-point Likert responses on the usefulness of sections of the acne 'How to…' toolkit

Usefulness of sections of the 'How to…' acne toolkit	Mean (SD)
Information on acne	4.21 (1.06)
Information on aggravating and modifiable risk factors	3.95 (1.0)
Undertake baseline search and analysis	3.63 (1.13)
Develop implementation plan	3.79 (1.15)
During the patient consultation	3.68 (1.13)
Self-care measures	4.11 (0.97)
Treatment of acne vulgaris	4.00 (0.97)
Referral to specialist care	3.74 (1.25)
Flowchart to review long-term and repeated antibiotic use in acne	3.95 (1.23)
Undertake post review search and analysis	3.55 (1.22)
Share key themes and embed quality improvement practice	3.70 (1.23)
Mean	3.85 (0.20)

pharmacy technicians to identify opportunities in their place of work. However, aspects of the pharmacy technician role in AMS may not be well defined in a primary care setting, which may consequently affect how pharmacy technicians self-report their capability and opportunity. This could also explain why some respondents scored certain sections of the toolkit as less useful than others.

There is currently no literature on the role of pharmacy technicians reviewing patients in primary care with acne and on oral and topical antibiotic treatment; our survey shows that at least some pharmacy technicians were already carrying out this role and making interventions in the management of acne. Familiarity with the TARGET resources and the associated increase in the capability score of respondents may uncover opportunities for pharmacy technicians to develop their role further in AMS. There is some evidence in secondary care settings that supports the impact of pharmacy technicians in AMS. A recent study found that an introduction of an Antimicrobial Pharmacy Technician service to a ward team resulted in improved documentation of allergy status, oral and IV antibiotic stop/review dates, recognition and management of antibiotic interactions and compliance with the local antimicrobial policy.[18] Another study carried out in 2022 highlighted the positive impact of a pharmacy technician on AMS, reducing the number of inappropriate IV antimicrobials continuing beyond 3 days.[19] However, more research is required to expand the evidence base and understand the wider impact of pharmacy technicians on AMS across all settings.

There is evidence of the impact of pharmacy technicians on other clinically specialist areas; preventing patient harm and reducing prescribing errors. An article in the *Pharmaceutical Journal* (July 2022) looked at interventions that were carried out by trained clinical pharmacy technicians in mental health triaging.[20] This included identifying prescribing errors, reviewing high-risk medicines, high-dose monitoring and ECG prompts. There is also research that shows pharmacy technicians have significantly lower discharge transcribing error rates compared with doctors, thus improving patient safety and minimizing inefficiencies from correcting errors.[21] International research also shows pharmacy technicians being effectively deployed in vaccination services[22] and delivering tobacco cessation interventions in community pharmacies.[23]

Implications for practice

In the UK, the pharmacy technician title is one that is regulated under legislation and only those meeting certain requirements can use the title 'pharmacy technician'. 'AMS pharmacy technician' is not a regulated title and there is no reliable definition of the knowledge, skills and behaviours that define the role of an AMS pharmacy technician. In the UK, the Initial Education and Training Standards for Pharmacy Technicians (https://www.pharmacyregulation.org/initial-PT) make no reference to AMS specific activities but do state tasks that may be considered part of a wider clinical role for pharmacy technicians and relevant to AMS activities, for example, medicines optimization, medicines safety and clinical governance. The current educational and training framework in place for pharmacy technicians in primary care; the GP Pharmacy Technician Medicines Optimisation Training Programme (www.pwds.nhs.uk) is aligned to the APTUK/PCPA National Competency framework. The framework includes in its clinical knowledge and application competency, core practice criteria to understand AMR and the roles of infection prevention, control and AMS measures.[24] A recent consensus building study that looked at defining the role of a clinical pharmacy technician in a PCN environment found 79% agreement among its expert panel of the importance of AMS in the primary care sector, with 90% agreement for the importance of AMS in all sectors.[25] Therefore, AMS can be regarded as part of a wider clinical role of a pharmacy technician in primary care; however, there needs to be a clear definition what this means in terms of knowledge, skills and level of practice. Development of AMS frameworks could promote standardization and recognitions of level of practice for pharmacy technicians. This may require development of educational resources at an appropriate academic level and support for pharmacy technicians to access them.

In August 2023, the Department of Health and Social Care released a consultation for pharmacy technicians to be named on Patient Group Directions (PGDs) for the supply and administration of medicines. In addition to this, community pharmacies in England will be providing the Pharmacy First service (due to commence end of January 2024). The Pharmacy First service is an advanced service that will allow community pharmacists to manage seven common infections using PGDs to supply antibiotics. This means that the future for the pharmacy technician scope of practice is potentially set to expand to include PGD supply of antimicrobials and the management of common infections. Resources such as TARGET materials and educational courses that allow for credentialing such as the higher education diplomas are therefore important to upskill and train the workforce.

Strengths and limitations

Strengths

The survey successfully explored the impact of familiarity with TARGET resources on the capability, opportunity and motivation

of pharmacy technicians in primary care on AMS. The survey was successful in understanding the usefulness of the 'How to…' toolkit for structured clinical review of patients with acne and clinical scenarios to pharmacy technicians in primary care in day-to-day practice.

Limitations

There was a limited timeframe for completing the survey resulting in a limited reach to pharmacy technicians in primary care. The relatively small sample size means that the results may not be generalizable to the whole workforce and also meant that we were unable to do further statistical analysis. There may also be a selection bias as those completing the survey may have more of an interest in AMS. The data were self-reported by pharmacy technicians without independent validation, so both inconsistent and inaccurate reporting cannot be ruled out. In addition, not all respondents answered all questions.

Conclusions

The TARGET resources are an effective tool to increase the capability and opportunity of pharmacy technicians in carrying out AMS initiatives in relation to the management of acne. The acne 'How to…' toolkit and clinical scenarios were perceived as useful for managing patients with acne.

The fact that pharmacy technicians were already reviewing patients with acne, and making interventions without using the TARGET acne 'How to…' resources, indicates a need for this resource to support clinical practice and a need for broader promotion of TARGET resources within the pharmacy technician workforce to raise awareness and allow upskilling. This can be done through targeted campaigns and professional reinforcement through a community of practice model and network dissemination.

This study adds to a small body of evidence of the potential impact of antimicrobial stewardship roles for pharmacy technicians on patient safety and patient care. Larger scale research would provide further evidence for more clinical roles for pharmacy technicians amongst other healthcare professionals and policy makers and on the evolving pharmacy technician role in AMS.

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Transparency declarations

The authors have no conflicts of interest to declare.

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