



# BMJ Open Pilot and quantitative evaluation of the TARGET acne toolkit by UK pharmacy professionals working in general practice

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## ABSTRACT

**Background** Acne vulgaris (acne) is a common skin condition sometimes needing topical or oral antibiotic treatment. Pharmacists and pharmacy technicians (together known as pharmacy professionals) working in general practice are well placed to ensure their appropriate use.

**Objectives** The objectives of this study are to pilot an evidence-based intervention ('How to...' tool) to review treatments in the management of acne and evaluate the capability, opportunity, motivation and behaviour (COM-B) of pharmacy professionals working in general practice before and after the use of this tool.

**Design, setting and participants** A quantitative electronic survey was developed asking UK-based pharmacy professionals working in general practice to rate their agreement with 21 predefined statements related to the COM-B model.

**Intervention** Participants were sent an initial survey, given time to access and use the 'How to...' acne resources and then sent a follow-up survey 2 weeks later.

**Outcome measures** Primary outcome was change in 5-point Likert scale responses to statements on capability, opportunity and motivation in the management of acne. Secondary outcome was the perceived usefulness of the toolkit.

**Results** 141 pharmacy professionals completed the initial survey; 19 completed the follow-up survey. Significant improvement in the 5-point Likert scale means that responses were observed after implementation of the acne 'How to' resource; capability 3.68 (SD 0.40) versus 4.11 (SD 0.29),  $t(189) = -5.10$ ,  $p < 0.001$ ; opportunity 3.85 (SD 0.24) versus 4.07 (SD 0.29),  $t(94) = -2.50$ ,  $p = 0.007$  and motivation 4.35 (SD 0.47) versus 4.51 (SD 0.32),  $t(113) = -2.51$ ,  $p = 0.007$ . The 'How to' resources were rated as being useful (4.06, SD 0.12) and supportive (4.08, SD 0.18) to help pharmacy professionals in all areas of managing acne.

**Conclusion** The acne 'How to' resources are useful to pharmacy professionals in managing acne in general practice and may improve their capability. Further work is needed with greater numbers of participants to demonstrate generalisability of this outcome.

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Strength includes responses from pharmacy technicians, in addition to pharmacists.
- ⇒ Strength includes responses from across all regions of the UK.
- ⇒ Limitation includes low number of follow-up survey completions.
- ⇒ Limitation includes short timeframe to use the new toolkit and complete the follow-up survey.

## INTRODUCTION

Acne (acne vulgaris) is a common skin condition affecting up to 85% of 12–24 year olds.<sup>1</sup> Mild cases can be managed effectively by community pharmacies, with skin care advice and topical treatments available over the counter.<sup>2</sup> Moderate and severe cases of acne may need referral to general practice for other treatments to be prescribed, including topical or oral antibiotic therapy<sup>3</sup>; a recent study showed that 44.5% of people with a new acne diagnosis received a prescription for long-term oral antibiotics.<sup>4</sup>

Since 2018, the number of pharmacists and pharmacy technicians (identified together as pharmacy professionals) reviewing patients in general practice has increased substantially.<sup>5</sup> There is a wealth of evidence that pharmacy professionals can effectively treat and advise on mild acne as part of a minor ailments service in community pharmacy.<sup>6–8</sup> However, some evidence has highlighted that there may be a need for further training in dermatology.<sup>9 10</sup> For moderate or severe acne, the first-choice agents for the management of acne include use of prescription-only topical or oral antibiotics, followed by review with only exceptional circumstances leading to use for over 6 months.<sup>11</sup> Long-term use of topical and oral antibiotics is associated with antimicrobial resistance (AMR). General practice generates over 72% of the total

National Health Service (NHS) antibiotic prescriptions in England,<sup>12</sup> so ongoing and regular patient reviews, which may be undertaken by pharmacy professionals, are vital to ensure that antimicrobial prescribing appropriateness are in line with the NHS long-term plan.<sup>13</sup>

Research has highlighted antibiotic overuse in acne as a major source of concern<sup>14 15</sup> but a recent systematic review has demonstrated that differences between guidelines on the use of long-term oral antibiotics exist,<sup>16</sup> highlighting the importance of pharmacy professionals having sufficient capability to undertake patient reviews and prescribe appropriately. However, there is currently no published evidence on the capabilities of pharmacy professionals working in general practice in the long-term management of people with moderate or severe acne.

The UK Health Security Agency (UKHSA) led TARGET antibiotics toolkit (Treat Antibiotics Responsibly, Guidance, Education and Tools),<sup>17</sup> designed to support primary care clinicians to champion and implement antimicrobial stewardship (AMS) activities, is hosted on the Royal College of General Practitioners website. The toolkit comprises a range of AMS resources including patient information leaflets, audits and training. To address ongoing challenges with acne management, including use of long-term and repeated antibiotics, a new, evidence-based intervention ('How to...' tool) to support clinicians in primary care to manage acne was developed with a multidisciplinary group and added to the TARGET website. The aim of this study (commissioned by UKHSA) was to pilot and evaluate the use of the 'How to...' tool for the management of people with acne by pharmacy professionals working in general practice.

## METHODS

### Study design and participants

A quantitative pilot study was undertaken as the acne toolkit had been newly developed and therefore an initial evaluation was undertaken prior to any further development and wider use. Participants were UK-based pharmacy professionals (pharmacists and pharmacy technicians) working in general practice. Consent to participate was gathered via completion of the survey.

### Survey method

The COM-B model has been previously used to assess the behaviour change of healthcare professionals after implementation of evidence-based interventions.<sup>18</sup> 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. Statements relating to the management of acne were developed and classified as being either 'capability', 'opportunity' or 'motivation' by a consensus of expert pharmacy professionals; there were 21 statements in total. An electronic questionnaire was developed and the Qualtrics XM platform used for

deployment. Participants rated their agreement with the 21 predefined statements on a 5-point Likert scale related to the COM-B model components. The 5-point Likert scale was rated as extent of agreement with the statements (scale 1–5, strongly disagree to strongly agree) and a free-text response to allow participants to give further feedback on the resources. For participants who had not reviewed any patients with acne during the data collection period, there were options to select reasons for this.

The initial survey was distributed widely via pharmacy networks such as the Primary Care Pharmacists Association, NHS England AMR leads and advertised on social media. Participants were asked at the end if they wished to opt-in to take the follow-up survey in 2 weeks time, once they had undertaken any of the following actions:

1. Accessed the 'acne how to' resources, or
2. Run clinical searches to identify patients with acne in their practice(s), or
3. Reviewed, or planned to review any patients with acne.

An automated email with link to the follow-up survey was sent confidentially to all participants who opted-in at the end of the initial survey. The follow-up survey asked the same questions as the initial survey on capability, opportunity and motivation. In addition, there were more detailed questions on the actions taken after reviewing people with acne. Both surveys were piloted for the first few days of the study by sending to pharmacists known to the research team to provide feedback. The surveys were amended as needed; amendments included adding in some additional demographic questions which did not substantially alter the survey and therefore all responses were included in the final analysis. The final surveys used can be found in online supplemental material 1 and 2. Each participant who completed both the initial and the follow-up survey was entered in a draw for one of 20 £50 Amazon vouchers.

### Data analysis

Question types included 5-point Likert questions (scale 1–5; strongly disagree to strongly agree), yes/no and free-text response. Mean and SD of the 5-point Likert responses were calculated. Data were confirmed to be normally distributed; therefore, paired and two-sample t-tests could be used to investigate statistically significant changes in responses before and after use of the toolkit, as has been demonstrated to be an acceptable statistical method previously.<sup>19</sup> Demographic data on the profession of the participants, duration of professional registration and region of the UK they practised in were also collected. There was no analysis of the free-text responses; however, most quotes have been included to contextualise results. All results were reported in line with the Standards for Quality Improvement Reporting Excellence (SQUIRES) checklist (online supplemental material 3).

### Patient and public involvement

None.

**Table 1** Mean 5-point Likert responses to capability, opportunity, motivation and behaviour survey components in the initial survey, by pharmacy professional group

	Mean (SD)		
	Initial (all) n=141	Initial (pharmacist) n=121	Initial (pharmacy technician) n=20
<b>Capability</b>			
I have enough knowledge to manage people with acne	3.00 (1.21)	3.14 (1.19)	2.15 (0.96)
I am confident in managing people with acne	2.79 (1.23)	2.91 (1.21)	2.10 (1.09)
I am able to give self-care advice to people with acne	3.61 (1.14)	3.74 (1.09)	2.85 (1.15)
I have enough knowledge to undertake reviews with patients with repeated or long-term use of antibiotics for acne management	2.96 (1.23)	3.12 (1.18)	2.00 (1.10)
I am confident undertaking clinical review for patients with repeated or long-term use of antibiotics for acne management	2.82 (1.24)	3.00 (1.19)	1.70 (0.90)
I understand the risks of long-term antibiotic treatment	4.28 (0.79)	4.31 (0.80)	4.15 (0.73)
I have the skills to run searches on my clinical system	4.08 (1.16)	3.97 (1.20)	4.75 (0.43)
I understand the review criteria for stepping up treatment for acne	2.89 (1.27)	2.97 (1.25)	2.40 (1.32)
I understand the review criteria for a trial-off antibiotic treatment for acne	2.89 (1.29)	2.99 (1.26)	2.30 (1.31)
I understand when onward referral is needed	3.01 (1.32)	3.09 (1.28)	2.55 (1.43)
Capability mean	3.23 (0.52)	3.32 (0.47)	2.70 (0.94)
<b>Opportunity</b>			
I have the opportunity to run searches on the practice's clinical system for quality improvement initiatives	3.48 (1.55)	3.40 (1.55)	4.00 (1.21)
Antimicrobial stewardship and antibiotic prescribing review are a priority in the practice(s) I work in	3.86 (0.90)	3.88 (0.89)	3.75 (0.94)
Antimicrobial stewardship and antibiotic prescribing review are a Primary Care Network (PCN) priority	3.61 (1.04)	3.57 (1.04)	3.85 (1.01)
I am able to undertake quality improvement initiatives on areas of prescribing that I have an interest in	3.91 (1.02)	3.88 (1.02)	4.05 (1.02)
There are support staff to run searches on my behalf	3.48 (1.19)	3.51 (1.19)	3.25 (1.22)
Opportunity mean	3.67 (0.22)	3.64 (0.20)	3.78 (0.29)
<b>Motivation</b>			
Appropriate prescribing of antibiotics is of high importance in the context of other competing NHS priorities	4.32 (0.79)	4.30 (0.82)	4.45 (0.59)
Appropriate self-care advice is important to avoid unnecessary antibiotic use for acne	4.50 (0.82)	4.51 (0.80)	4.45 (0.92)
Managing the prescribing of antibiotics for acne appropriately can impact on antibiotic resistance	4.54 (0.74)	4.58 (0.70)	4.30 (0.90)
Managing acne appropriately is important for the patient's quality of life	4.72 (0.56)	4.74 (0.57)	4.65 (0.48)
I routinely share quality improvement outcomes with my colleagues	3.84 (1.07)	3.86 (1.05)	3.70 (1.14)
The review of patients on treatment for acne gives me job satisfaction	3.52 (0.90)	3.55 (0.90)	3.35 (0.91)
Motivation mean	4.24 (0.42)	4.26 (0.42)	4.15 (0.46)

DES, Directed Enhanced Service.

## RESULTS

There were 288 initiations of the initial survey and 141 completions (49% completion rate). Only completed surveys were included in the final analysis and therefore there was no missing data.

A full breakdown of the demographics can be found in online supplemental material 4. Pharmacists made up most respondents, with 121 responses; the remaining 20 were from pharmacy technicians.

For the follow-up, 75 respondents opted to receive the follow-up survey, of which 19 (25%) completed it within the 2-week time frame. Of the follow-up respondents, two were pharmacy technicians and the rest were pharmacists. Responses were received from participants working in each of the seven NHS England regions, plus Wales, Scotland and Northern Ireland; with a range of postregistration experience from 0 to 5 years to over 20 years.

**Table 2** Comparison of responses from participants familiar versus not familiar with the Target toolkits in the initial survey

	Mean (SD)		tstat, p value
	Familiar (n=90)	Not familiar (n=51)	
Capability mean	3.48 (0.50)	2.80 (0.57)	T(18) =2.70, p=0.007
Opportunity mean	3.77 (0.29)	3.48 (0.22)	T(8) =1.85, p=0.050
Motivation mean	4.31 (0.38)	4.12 (0.50)	T(10) =0.67, p=0.260

### Prior awareness of AMR requirements and target resources

Of the 141 respondents to the initial survey, 90 (64%) were already familiar with the TARGET toolkit resources and of those 19 (21%) used them regularly. Most respondents were aware of the requirement for AMS as part of the Directed Enhanced Service (DES) and the national outcome framework targets for antibiotic prescribing (113 (80%) and 109 (77%), respectively). There was also good interest from the pharmacy professionals in joining a community of practice for AMS, with 81 (57%) stating they would like to be included.

### Capability, opportunity and motivation analysis

The responses in the initial survey to the capability, opportunity and motivation 5-point Likert scale questions can be seen in [table 1](#). When the pharmacists and pharmacy technician subgroups were analysed, the pharmacy technicians self-reported that they had lower confidence in their capability than the pharmacists; however, this was not significant: 2.70 (SD 0.94) versus 3.32 (SD 0.47),  $t(18) = 1.80$ ,  $p = 0.088$ . Self-reporting of opportunity and motivation were similar for both professions. A further subgroup analysis of those who were familiar with the TARGET toolkit prior to the survey ([table 2](#)) showed that those already familiar had a higher initial capability of 3.48 (SD 0.50) versus 2.80 (SD 0.57);  $t(18) = 2.70$ ,  $p = 0.007$ . [Table 3](#) shows the capability, opportunity and motivation 5-point Likert scale scores of the respondents who took both the initial survey and the follow-up after accessing the acne resources. After use of the acne resources, the mean capability, opportunity and motivation scores had all significantly increased. There was an increase in 19 of the 21 individual COM-B components, but only 9 reached statistical significance.

Self-reported assessment of capability was highest overall for 'I understand the risks of long-term antibiotic treatment' and lowest for 'I am confident undertaking clinical review for patients with repeated or long-term use of antibiotics for acne management'. For opportunity, 'Antimicrobial stewardship and antibiotic prescribing review are a priority in the practice(s) I work in' was the highest rated statement, the lowest rated was 'There are support staff to run searches on my behalf'. For

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

### Feedback on the 'how to...' resources

In the initial survey, all pharmacy professionals were asked to rate the usefulness of each section of the 'How to...' resources in reviewing and managing people with acne on a 5-point Likert scale. Overall this showed that all sections of the resources were rated as being useful ([table 4](#)). From the respondents who took the follow-up survey after using the acne 'How to...' resources, [table 4](#) also shows the areas of acne management that they thought the resources supported them in. Areas where there was high agreement that the resources were supportive were as follows: self-care advice, and review of current treatment to swap, trial off or add in antibiotics. Further to this, 17 of the 19 (89%) respondents stated they were likely to use the resources in the future. When all respondents were given a free-text option to give further feedback on the acne resources, many comments were positive. For example:

Good use of advice for different types of skin colour [Clinical scenarios]

These are exactly the sort of resources required for pharmacy technicians to be able to carry out reviews [How to toolkit]

Very informative [Clinical scenarios and How-to toolkit]

Some areas of feedback were identified for further consideration:

Quite text heavy [How to toolkit]

more diagrams than words [needed] [How to toolkit]

Awareness to this resource needs to be increased as I was not aware of this before

## DISCUSSION

### Summary

The aim of this study was to pilot and evaluate the use of the TARGET 'How to...' resources for the management of people with acne by pharmacy professionals working in general practice, using a COM-B model and questions on perceived usefulness of the resources.

### Prior awareness of AMR requirements and target resources

There was a high level of awareness of AMR and AMS training requirements from pharmacy professionals working in general practice and many respondents indicated that they were already aware of the TARGET resources, even if they did not use them regularly prior to the initial survey. Over half of respondents also wanted to join a community of practice for AMS; this suggests high engagement from the pharmacy professionals in the best practice around use of antimicrobials. AMS is part of the

**Table 3** Mean 5-point Likert responses to capability, opportunity, motivation and behaviour survey components from respondents who completed both the initial and follow-up surveys

	Mean (SD) n=19		Tstat, P value t(18)*
	Initial	Follow-up	
<b>Capability</b>			
I have enough knowledge to manage people with acne	3.47 (1.04)	3.95 (0.51)	-1.69, 0.054
I am confident in managing people with acne	3.32 (1.17)	3.79 (0.40)	-1.76, 0.048
I am able to give self-care advice to people with acne	4.05 (0.94)	4.42 (0.49)	-1.59, 0.065
I have enough knowledge to undertake reviews with patients with repeated or long-term use of antibiotics for acne management	3.47 (0.94)	3.79 (0.83)	-1.03, 0.158
I am confident undertaking clinical review for patients with repeated or long-term use of antibiotics for acne management	3.21 (0.95)	3.79 (0.83)	-2.07, 0.026
I understand the risks of long-term antibiotic treatment	4.42 (0.75)	4.58 (0.59)	-0.65, 0.264
I have the skills to run searches on my clinical system	4.32 (0.86)	4.42 (0.59)	-0.57, 0.289
I understand the review criteria for stepping up treatment for acne	3.53 (1.04)	4.21 (0.61)	-2.48, 0.012
I understand the review criteria for a trial-off antibiotic treatment for acne	3.47 (1.09)	3.89 (0.78)	-1.46, 0.081
I understand when onward referral is needed	3.58 (1.18)	4.26 (0.71)	-2.39, 0.014
Capability mean	3.68 (0.40)	4.11 (0.29)	-5.10, <0.001*
<b>Opportunity</b>			
I have the opportunity to run searches on the practice's clinical system for quality improvement initiatives	3.95 (1.00)	4.11 (1.02)	-0.64, 0.264
Antimicrobial stewardship and antibiotic prescribing review are a priority in the practice(s) I work in	4.16 (0.67)	4.42 (0.67)	-2.04, 0.028
Antimicrobial stewardship and antibiotic prescribing review are a PCN priority	3.68 (1.08)	4.21 (0.77)	-2.04, 0.028
I am able to undertake quality improvement initiatives on areas of prescribing that I have an interest in	4.00 (0.86)	4.11 (1.07)	-0.57, 0.289
There are support staff to run searches on my behalf	3.47 (1.14)	3.58 (1.23)	-0.52, 0.303
Opportunity mean	3.85 (0.24)	4.08 (0.28)	-2.50, 0.007*
<b>Motivation</b>			
Appropriate prescribing of antibiotics is of high importance in the context of other competing NHS priorities	4.32 (0.65)	4.68 (0.46)	-2.69, 0.008
Appropriate self-care advice is important to avoid unnecessary antibiotic use for acne	4.74 (0.55)	4.74 (0.44)	0, 0.500
Managing the prescribing of antibiotics for acne appropriately can impact on antibiotic resistance	4.74 (0.55)	4.74 (0.55)	0, 0.500
Managing acne appropriately is important for the patient's quality of life	4.84 (0.36)	4.68 (0.46)	1.83, 0.041
I routinely share quality improvement outcomes with my colleagues	3.89 (1.17)	4.37 (0.74)	-2.67, 0.008
The review of patients on treatment for acne gives me job satisfaction	3.58 (0.82)	3.84 (0.93)	-1.56, 0.068
Motivation mean	4.35 (0.47)	4.51 (0.32)	-2.51, 0.007*

\*Mean capability: t(189), opportunity: t(94), motivation: t(113).

England PCN DES contract and antimicrobial prescribing competency framework<sup>20,21</sup>; however, there were still some respondents who were not aware of the requirements or the TARGET resources. As these resources are England-specific (although often adopted and adapted for the other UK nations), further examination of the data did not reveal any part of the UK, or professional group with a high number of respondents with this lack of knowledge.

### Capability, opportunity and motivation

The initial survey questions on the COM-B model components showed that all respondents had an overall high

motivation for managing acne, but capability and opportunity were moderate. When separated by profession, pharmacy technicians had a lower, but non-significant, capability score than pharmacists, but similar opportunity and motivation; further investigation into a possible unmet training need should be undertaken.

Aspects of acne management that were least highly rated in terms of initial confidence in capability by all were review of patients on long-term antibiotics, trial-off antibiotics and stepping up to antibiotic therapy. This is an interesting finding as even though initial AMR awareness

**Table 4** Mean 5-point Likert responses on the usefulness of sections of the 'How to' resource and from the question: 'the 'How to...' resources support me... in my current role'

Usefulness of sections of the 'How to...'	Mean (SD) n=134
Information on acne	4.16 (0.83)
Information on aggravating and modifiable risk factors	4.16 (0.82)
Undertake baseline search and analysis	3.96 (0.87)
Develop implementation plan	3.97 (0.86)
During the patient consultation	4.03 (0.85)
Self-care measures	4.20 (0.78)
Treatment of acne vulgaris	4.19 (0.78)
Referral to specialist care	4.13 (0.86)
Flowchart to review long-term and repeated antibiotic use in acne	4.11 (0.94)
Undertake post review search and analysis	3.86 (0.91)
Share key themes and embed quality improvement practice.	3.88 (0.90)
Mean	4.06 (0.12)
The 'how to' resource supports me to do the following in my current role:	Mean (SD) n=16
Diagnose acne vulgaris	3.94 (0.75)
Provide self-care advice	4.38 (0.70)
Initiate topical treatment for mild or moderate acne	3.94 (0.83)
Initiate topical and oral treatment for moderate/severe acne	3.94 (0.83)
Make referrals to a dermatologist as required	4.06 (0.75)
Make referrals to mental health services as required	3.81 (0.88)
Review current treatment and swap topical treatments for acne	4.25 (0.75)
Review current treatment of acne and trial off antibiotics	4.31 (0.68)
Review current treatment and add in oral antibiotics	4.13 (0.86)
Mean	4.08 (0.18)

was high, there is possibly an unmet training need with regards to antibiotic use in acne.

In the group of pharmacy professionals that took both the initial and follow-up surveys, the overall capability, opportunity and motivation had significantly increased after they had accessed the acne 'How to' resources. Capability had the largest increase; 0.43 ( $p < 0.001$ ) points on the 5-point Likert scale, which raised the follow-up capability to 4.11 (SD 0.29) from 3.68 (SD 0.40) initially. In the specific capability components related to long-term antibiotic use, that were previously rated the lowest, there were increases in the 5-point Likert scores observed, but no statistical significance.

Overall, this suggests that there is currently an unmet training need in managing acne for pharmacy professionals, particularly around management of long-term antibiotic therapy potentially as the result of expanded and new roles. The TARGET acne resources are demonstrated as being able to improve the confidence in capability, opportunity and motivation in managing acne and fill a gap in the evidence-based training needs for pharmacy professionals working in general practice.

### Feedback on the 'How to...' resources

All sections of the TARGET acne resources were deemed to be useful in supporting pharmacy professionals to identify and manage people with acne and those that completed the follow-up survey rated the resources highly in terms of support for giving self-care advice and swapping, stepping up or stepping down topical and oral therapies.

The free-text feedback received on these resources was positive, particularly for the clinical case study scenarios. Most of the feedback on areas for improvement related to the look and feel. This could be easily addressed before the resources are more widely disseminated in general practice. The difference in individual capability component scores between the pharmacists and pharmacy technicians (table 1) indicates potentially more need for these resources to upskill pharmacy technicians; however all pharmacy professionals were seen to benefit from the resource. Any further updates of the TARGET resources, or new resources provided, needs to consider this and the needs for all pharmacy professionals in General Practice (GP).

### Strengths and limitations

The time frame for follow-up responses was short and thus limited the number of survey responses and number of patients with acne who were reviewed, meaning behaviour change after implementation of the acne 'How to' resources could not be assessed. Additionally, as there were relatively few follow-up responses, the generalisability of the findings presented here is limited. A further follow-up to allow respondents who wanted to take the follow-up survey but could not in the timeframe might be beneficial (although outside of the scope of this paper). Furthermore, fewer responses were received from pharmacy technicians due to limited reach as networks are not as extensive as for pharmacists and therefore it is uncertain if the findings presented here are applicable to this professional group.

### Comparison with existing literature

The recent expansion of pharmacist prescribing roles in general practice<sup>5</sup> and lack of published evidence on the scope of the role of pharmacy technicians working in general practice may mean pharmacy professionals have expanded their role into unfamiliar territory from the well established over-the-counter advice and supply of medicines for acne, as part of minor ailments schemes.<sup>6-8</sup>

There is currently no literature on the management of acne, prescribing or reviewing of oral and topical antibiotics by pharmacy professionals in general practice; this study contributes to the knowledge base. Similar resources for AMR of other conditions, aimed at pharmacy professionals in primary care, have also been demonstrated to be effective and are now included in contractual frameworks.<sup>22–24</sup> Most available resources for acne management by pharmacy professionals are for over-the-counter advice and supply of medicines<sup>25</sup> and there is currently a paucity of resources aimed at managing prescribed treatments, including antimicrobials for acne. Furthermore, a recent systematic review indicated that the clinical practice guidelines available contain differences around prescribing of long-term oral antibiotics, to add to the potential confusion and lack of capability in the area.<sup>16</sup>

### Implications for research and/or practice

Despite high engagement with prior AMR and AMS resources and good motivation to manage acne, there may be an unmet training need for pharmacy professionals, specifically around long-term antibiotic management in acne. The TARGET acne ‘How to’ resources are demonstrated as being able to improve the confidence in capability, opportunity and motivation of managing acne and were deemed to be useful in supporting the pharmacy professionals surveyed. However, some minor alterations to the look and feel of the TARGET ‘How to’ resource would aid user accessibility. It would be beneficial for these resources to be embedded in frameworks for pharmacy professionals working in general practice as an evidence-based AMS resource for the management of acne.

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**Contributors** KS: project lead and manuscript author, overall content guarantor. TT: principle investigator. NF: development of TARGET acne ‘How to...’ toolkit, development of survey. AL: development of TARGET acne ‘How to...’ toolkit, development of survey. DML: development of the COM-B survey statements. IP: development of survey. SP: development of survey. CA: development of the final survey questions. MB: development of the electronic survey using the Qualtrics platform. DA-O: development of survey, guidance on AMR and context to study.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** This study was reviewed and approved by the University of Nottingham School of Pharmacy Research Ethics Committee (ref: 009-2023). Participants gave informed consent to participate in the study before taking part.

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**Data availability statement** Data are available upon reasonable request. Dataset is available by request from the lead author.

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