

An evaluation of the TARGET Antibiotics Toolkit (Treat Antibiotics Responsibly; Guidance, Education, Tools) to improve antimicrobial stewardship in primary care – is it fit for purpose?

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Key Messages

- The TARGET Antibiotics Toolkit complemented existing AMS activities
- Time, workload, cost, and lack of awareness were key barriers to using the Toolkit
- In 2014 AMS was not a priority for many due to other competing demands

Abstract

Background

The TARGET Antibiotics Toolkit aims to improve antimicrobial prescribing in primary care through guidance, interactive workshops with action planning, patient facing educational and audit materials.

Objective

To explore GPs', nurses' and other stakeholders' views of TARGET.

Design

Mixed methods.

Method

In 2014, forty UK GP staff and 13 stakeholders participated in interviews or focus groups. We analysed data using a thematic framework and normalisation process theory.

Results

269 workshop participants completed evaluation forms and 40 GP staff, 4 trainers and 9 relevant stakeholders participated in interviews (29) or focus groups (24). GP staff were aware of the issues around antimicrobial resistance (AMR) and how it related to their prescribing. Most participants stated that TARGET as a whole was useful. Participants suggested the workshop needed less background on AMR, be centred around clinical cases and allow more action planning time. Participants particularly valued comparison of their practice antibiotic prescribing with others, and the TARGET Treating Your Infection leaflet. The leaflet needed greater accessibility via GP computer systems. Due

to time, cost, accessibility and competing priorities, many GP staff had not fully utilised all resources, especially the audit and educational materials.

Conclusions

We found evidence that the workshop is likely to be more acceptable and engaging if based around clinical scenarios, with less on AMR and more time on action planning. Greater promotion of TARGET, through Clinical Commissioning Group's (CCG's) and professional bodies, may improve uptake. Patient facing resources should be made accessible through computer shortcuts built into general practice software.

Key words

Antibiotics, Common Illnesses, Health promotion, Lifestyle Modification/ Health Behavior Change, Primary Care, Public health

Background

The World Health Organisation (WHO), and the Department of Health (DH) action plans on antimicrobial resistance (AMR) ^{1,2} stress the importance of improving professional education, and public engagement to improve antimicrobial prescribing practice. In response, Public Health England with the Royal College of General Practitioners (RCGP) and other professional societies have developed the TARGET Antibiotics Toolkit (**T**reat **A**ntibiotics **R**esponsibly, **G**uidance, **E**ducation, **T**ools) for primary care in England. TARGET is hosted on the RCGP website (<http://www.rcgp.org.uk/targetantibiotics>). TARGET aims to help prescribers and commissioning organisations increase responsible antimicrobial prescribing in the primary care setting.^{3,4} There are seven key resource areas that make up the TARGET Antibiotics Toolkit; an interactive workshop presentation, patient leaflets (Treating Your Infection), audit toolkits, National antibiotic management guidance, training resources, resources for clinical and waiting areas and a self-assessment checklist

This study aimed to explore perceptions of the value of the TARGET Antibiotics Toolkit, and investigate attitudes, perceptions, and opinions about, and use of the materials using the Normalisation Process Theory (NPT)⁵. The NPT is a framework made up of four constructs that allow us to examine and understand the dynamics of implementing, embedding, and integrating new interventions.

Methods

We used a mixed methods approach to explore perceptions, attitudes and opinions. TARGET workshops given by ten trainers involved 56 GP practices with 318 primary care staff (including receptionists, practice managers and other non-prescribing staff), were conducted across England as part of a wider evaluation⁶ where all practice staff were invited to take part in the workshop to encourage a whole practice approach to antimicrobial stewardship (AMS). Trained staff delivered the one hour workshop covering AMR, guidance, how to optimise antibiotic prescribing, use of resources in the Toolkit, reflection on their own antibiotic prescribing data and some action planning. Workshop participants completed a five point Likert scale evaluation form immediately after each workshop to assess its effectiveness.

Focus Group and Interview Participants

We sought participants with a wide range of familiarity with the resources to minimise positively biased opinions. We invited trainers who had delivered TARGET workshops, GP and other staff who had participated in workshops in the previous 6 – 14 months who had and had not used TARGET materials, and members of the RCGP via newsletters, to participate in focus groups or interviews. Where multiple people who had had a workshop from a practice agreed to take part, we conducted a focus group. Two newsletters from the RCGP invited participants, the second recruitment advert (supplementary material) specifically highlighted our requirement to speak to not only those that use TARGET but also those that have decided not to use TARGET. We also communicated with the Royal Pharmaceutical Society to recruit relevant stakeholders for interview.

Figure 1: GP staff recruitment flow chart

Interview Schedule

The schedule, developed by the study group of GPs, Psychologist, Microbiologist and Medicine Managers, explored participants' opinions about the TARGET Toolkit, the TARGET workshop if attended, on-going use of TARGET and the website, and perceived usefulness of each of the resources (which were shown to participants or they were guided through the website if being interviewed over the telephone) and suggested improvements. The schedule also explored social norms around antimicrobial use and AMS by asking about colleagues' and Clinical Commissioning Groups' (CCGs') attitudes and how they and others were or thought they should be implementing the materials, using computer prompts and audits, or promoting AMS in their practice or area. The schedule was piloted with three GPs and as no changes were made these pilot results were included in the analysis. The schedule remained flexible throughout data collection allowing emerging themes to be incorporated.

Data Collection

Semi-structured interviews were conducted face to face or by telephone, and focus groups were conducted in person; both lasted between 30 to 90 minutes. Field notes of the most important themes

arising were made immediately after the interview or focus group. Interviews and focus groups were digitally recorded, and transcribed.

Analysis

Transcripts were read and checked for accuracy and to gain familiarity with the data. Initial themes were coded by one researcher (LJ) using the computer software QSR NVivo 10 with a thematic analysis framework. A second researcher (RO) coded 20% of the transcripts to check for coding consistency. No disagreements arose in the coding discussions; consensus was reached on the coding framework by both coders. These researchers were not involved in workshop or resource development, but both now promote TARGET resources.

The themes identified during the analysis were placed within the NPT framework.⁵ The NPT was chosen for the purpose of understanding implementation (or not) of the TARGET Antibiotics Toolkit. The framework breaks down the implementation process and provides an in depth analysis of each of the action stages involved with implementing an intervention. Through applying our data to the NPT we can identify reasons why implementation did or did not occur, further informing intervention development. There are four fundamental constructs to the NPT that influence implementation of an intervention into routine practice:

- *Coherence*: the degree of understanding an individual has over the purpose and necessity of an intervention
- *Cognitive participation*: the degree of engagement towards implementing the intervention
- *Collective action*: the effort invested in completing the intervention
- *Reflexive monitoring*: the informal and formal evaluations individuals and group make about the intervention's value.

The NPT allowed us to interpret the intervention implementation by identifying barriers and facilitators, and helped inform modifications to its content and delivery.

Results

Workshop evaluation forms

Evaluation forms were returned by 269 of 318 (85%) workshop participants (166 GPs, 51 nurses, 15 other staff, 37 unknown as the questions were unanswered). Eighty percent (217/269) responded that the workshop helped them to understand how they could optimise their antimicrobial prescribing and 88% (237/269) responded that the workshop helped them to understand why responsible antimicrobial prescribing was an important issue. Table 1 illustrates which of the TARGET resources participants found useful, would use personally and would use in their surgery.

Table 1:- TARGET resources evaluation section of the workshop evaluation form – projected future use and perceived usefulness: 269 returned (2014 – 2015)

In total, Fifty three professionals took part in the qualitative interviews and focus groups. Forty GP staff (35 GPs, 5 nurses) from England and Scotland participated in interviews (16) or focus groups (24); Of these 40 GP staff participants, 28% had attended a TARGET workshop and were using at least one resource, a further 28% had attended a TARGET workshop but weren't using any of the resources. 40% hadn't attended a TARGET workshop but were using at least one TARGET resource and 5% hadn't attended a TARGET workshop and weren't using any of the TARGET resources. We interviewed four workshop trainers from four CCGs involved in the workshop evaluation (two consultant microbiologists, one CCG antibiotics lead, one CCG administrator), and nine other relevant stakeholders involved in AMS from Scotland (3) and England (6) (three prescribing advisors, one clinical pharmacist, one pharmaceutical advisor, one public health strategist, one antimicrobial pharmacist, one primary care development lead and one antimicrobial prescribing project lead).

Coherence: the degree of understanding an individual has over the purpose and necessity of the TARGET intervention

The threat of AMR was well understood by participants. Several participants supported the need to tackle AMR, and believed that something more needed to be done to address it. Many also believed that awareness needed to reach beyond GPs to other health care professionals, and the general public. Those with somewhat indifferent views towards AMR were the ones who reported many of the barriers indicated in this study.

A few GPs were concerned that reducing antimicrobial prescribing would lead to an increase in hospital admissions; therefore some GPs indicated they adopted a cautious approach to prescribing antimicrobials, prescribing even when guidance suggested otherwise.

Cognitive Participation: the reported investment and engagement towards implementation of TARGET

All stakeholders were positive about TARGET and were promoting its use within their CCG or region. Around half of GPs reported using the TARGET resources to varying degrees and a further third of participants said they were considering or intending to use or promote TARGET.

A small number of GPs and other stakeholders reported the *Treating Your Infection Leaflet* would reduce patient re-consultations and workload by educating patients; others reported it would ensure consistency in the messages given by GPs. Many participants said that they would use or promote the TARGET audits with several others stating they have already used them. Many had used other antimicrobial audit materials. The PHE antibiotic primary care guidance was considered very useful for most GPs. and many stated they valued the hard copies of guidance provided locally for easy access. The foremost barrier to intention to implement TARGET resources was lack of awareness of the website; thus some indicated it needed wider promotion and others that it needed easier access.

Most GP staff and stakeholders described the TARGET Antibiotics Toolkit as a useful resource which addressed their own prescribing behaviour and patient expectations. They felt that it complemented existing efforts and was relevant to all practice staff in developing a consistent approach to patient enquiries about antimicrobials.

The majority of workshop participants felt the workshop was useful, and thought the case scenarios and practice prescribing data were valuable and encouraged good debate around their own and other staff's prescribing habits; Some suggested more clinical scenarios. The introductory part covering AMR was criticised by some as repeating well known information. One of the workshop trainers suggested that to facilitate more implementation of resources, practice staff would have benefited from more time at the end of the workshop to create a concrete action plan, so that staff were clearer about the exact follow-up actions required.

Table 2: Coherence and Cognitive Participation Quotations (2014 – 2015)

Collective Action: the effort invested in using TARGET

Some of the GPs and most of the other stakeholders had already started promoting antimicrobial stewardship within their practice or CCG, through educational events, promoting TARGET, CCG incentives and using locally developed resources such as: electronic prescribing dashboards, and practice leaflets and posters. Participants described several different local adaptations of the TARGET *Treating your infection* leaflet: A5 tear off pads, pharmacy versions and trifold versions. Some participants suggested that a computer prompt, translation into other local languages, and a simplified version may facilitate increased leaflet use. Although no participants had used the TARGET patient videos, a few suggested they would be useful to show on their waiting room screens.

Many participants stated they would or were planning to use the TARGET audits in future, and many had already used similar audits in the past. Very few individuals had used the RCGP TARGET on-line clinical courses; many were not aware of them. A few expressed an interest in using the courses for professional development. One participant said the on-line courses were too time consuming, whereas another said they would be fun to do at home, or as a group practice effort.

For many participants, time, workload and competing priorities of other initiatives were the main barriers to implementing TARGET resources. There was also lack of clarity around whose responsibility it was to take forward actions discussed in the workshop e.g. displaying posters. One stakeholder indicated that although individuals in practices may feel AMR is a priority, practices have other more pressing priorities. Several participants were concerned by the high cost of printing resources obtained from the TARGET website.

Reflexive monitoring: the informal and formal evaluations that individuals and groups make about the intervention's value

Many participants admitted to not monitoring the effects of implementing TARGET and were therefore uncertain of its value e.g. although posters were seen as useful for educating patients, some were unsure if they had been displayed in their practice. Some felt they could be doing more to monitor the outcomes; one participant thought it was Public Health England's responsibility to monitor any outcomes.

The TARGET audits could be used to evaluate practice prescribing, however participants did not recognise the potential for using audits to monitor the effectiveness of the TARGET resources on their own practice. Several participants felt that antibiotic audits were valuable and had positive effects on practice, and two participants reported an antibiotic audit had directly impacted on their practice antimicrobial prescribing. A few participants did not see benefits from auditing, and several thought inadequate Read coding made audits unreliable.

Monitoring methods included stakeholders providing quarterly antibiotic prescribing data to practices, carrying out their own evaluations, anecdotal feedback and audits; none had done a formal evaluation. Several stakeholders felt it was too early to tell if there had been any positive effects as they had only just implemented roll out of TARGET.

The self-assessment checklist is a key resource that can be used for monitoring, but was infrequently mentioned by participants. A stakeholder mentioned using the checklist as a monitoring tool, asking GPs to complete it before and after implementing the TARGET Antibiotics Toolkit; they reported that GPs found this very useful. Overall, an informed understanding of the overall benefits of TARGET was not held by any of the participants.

Table 3: Collective Action and Reflexive Monitoring Quotations (2014 – 2015)

Conclusions

Summary

The TARGET Antibiotics Toolkit complemented existing activities to support appropriate antibiotic prescribing by addressing perceived patient expectations, patient education, clinician education and their behaviours. Cost of printing and lack of awareness were seen as key barriers to utilisation of the TARGET Antibiotics Toolkit, along with time and workload concerns which could be partly addressed with structured and tailored action planning from CCGs. In 2014 AMS was not a priority for many practices as a result of other competing demands. Audits were seen as difficult due to inadequate Read coding.

Strengths and limitations

We used a mixture of interviews and focus groups to capture both individual and GP practice level engagement and use of TARGET. As we used workshop questionnaires and qualitative methods and participants may have used resources other than TARGET, a wide range of participants with varying AMS experience and opinions about TARGET contributed data. Of the GP staff that took part in this study, only 5% had not received a TARGET workshop and were not using the TARGET resources; however, a further 28% had received a TARGET workshop and had decided not to use TARGET, therefore the data obtained from both of these groups provided a sufficient understanding of the decisions around why TARGET had not been implemented. We only interviewed four trainers but we felt this gave us adequate feedback about the resource delivery as we also had the workshop questionnaire data. We obtained qualitative data from five nurses, which is representative of the proportion of nurse prescribers. We undertook telephone rather than face to face interviews, which could reduce data quality,⁷ however, telephone interviews greatly facilitated recruitment, and the breadth of data gathered supports this approach.

The focus of this study was to explore qualitatively the acceptability and implementation of the TARGET Antibiotics Toolkit. Therefore, this study cannot comment on the effectiveness of the resources. Further research will be needed to evaluate the effectiveness of the TARGET Antibiotics Toolkit and the individual resources.

This research was conducted in 2014 prior to the introduction of the NHS Quality Premium in March 2015⁸ and therefore was at a time when TARGET was comparatively less well known.

Commissioners looking to implement TARGET may experience increased engagement and compliance as a result of the increased prioritisation of AMS by the NHS, although further research would be needed to examine this potential effect on engagement.

Comparison with existing literature

Patient expectation for antimicrobials, time pressures and diagnostic uncertainty undermined implementation of another AMS intervention.⁹ Time pressure, difficulty in changing style of consultation and lack of familiarity with available resources were barriers to implementing the *When Should I Worry* booklet in primary care.^{10,11} The barriers to implementing TARGET were similar, revolving around lack of awareness, time, competing priorities, cost and GP prescribing

inconsistencies. Research has shown that overall GP workload in England has increased by 16% from 2007 - 2014¹², it is therefore unsurprising that GPs are reporting that time and workload are key barriers. A requirement for good coherence in the normalisation of interventions was stressed in a Swedish study, in which GPs who didn't feel AMR was an issue were less likely to follow guidelines.¹³ Certainly our participants were aware of the importance of AMR, and this was reinforced in the workshop, however some reflected that it was not just their responsibility to improve prescribing. A public campaign is running within North West England through 2017 called "Keep Antibiotics Working", this would help to influence patients opinions towards the necessity of antibiotics, and facilitate use of resources.

A study exploring implementation of a smartphone app for antimicrobial prescribing found that adoption of the app was successful because the information was in a format that was easily accessible to prescribers.¹⁴ Our study indicates that difficulty accessing and lack of awareness of TARGET contributed to some of the aspects of lack of implementation, particularly for the *Treating Your Infection* leaflet. Positive attitudes towards an electronic prescribing intervention in primary care and perceptions that it would save time facilitated adoption.¹⁵ If participants appreciated the benefits of implementing TARGET it increased favourable opinions towards it, particularly where they felt that it would reduce future consultations and decrease inconsistent prescribing.

Implications for research and/or practice

There are various changes that are recommended on the basis of our findings, to improve the TARGET toolkit and increase use (Table 4). To overcome the barriers identified it is important for CCGs to undertake further promotion to increase awareness with those that are unfamiliar with all of the TARGET resources and how they can be implemented in a timely and cost effective way, and identifying individuals in each practice responsible for implementing specific resources. Prescribers would be more likely to use TARGET if they could see measurable benefits especially to workload, such as decreased future consultations, improved prescribing and increased patient satisfaction and self-care; these need highlighting during implementation and measuring through audit. We found evidence to suggest that active promotion by CCGs could also increase local use of TARGET resources within practices by highlighting the importance of AMS and raising the issue as a high priority. To help primary care clinicians from overprescribing cautiously to prevent hospital

admissions, confidence needs to be increased to improve the quality of antibiotic prescribing. This could be achieved through promotion of the TARGET training resources and by sharing the Treating Your Infection leaflet highlighting safety netting advice. We will be updating the presentation to highlight the very small difference antibiotics make for most uncomplicated infections and the risk of complications if antibiotics are not prescribed.

Service evaluations of the TARGET resources should be encouraged, so that positive or negative effects of the resources can be fed back to local practice staff.

Table 4: Suggested improvements to TARGET resources (2014 – 2015)

Ethics

The study was approved by Public Health England sponsorship review group, Cardiff university ethics board (13/58, 25-09-2013) and local NHS R&D departments. NHS REC approval was not required as patients did not participate. Interview and focus group participants gave informed written consent for audio recording, transcription and use of anonymised quotes in publications; participants were offered £40 incentive.

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Disclosures

Leah Jones and Donna Lecky are involved in implementation of the TARGET Antibiotics Toolkit and will be involved in future adaptations.

Professor Clodna McNulty led development of the TARGET Antibiotics Toolkit and Public Health England antibiotic guidance.

Nick Francis led the development of the When should I worry Booklet that is available through the TARGET website.

The authors Meredith Hawking, Rebecca Owens, Chris Butler, and Micaela Gal report no conflicts of interest.

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References

1. The World Health Organisation. World Health Assembly addresses antimicrobial resistance, immunization gaps and malnutrition. 2015; <http://www.who.int/mediacentre/news/releases/2015/wha-25-may-2015/en/>. Accessed 28th April 2016.
2. Department of Health. UK 5 Year Antimicrobial Resistance Strategy 2013 to 2018. 2013; <https://www.gov.uk/government/publications/uk-5-year-antimicrobial-resistance-strategy-2013-to-2018>. Accessed 28th April 2016.
3. Public Health England. Training Resources: The TARGET Antibiotics Toolkit. 2012; http://www.rcgp.org.uk/clinical-and-research/toolkits/~/_link.aspx?id=2FC34B3CA5B446F19CB795B37AFF5083&z=z. Accessed 5th April 2017.
4. Bunten AK, Hawking MKD, McNulty CAM. Patient information can improve appropriate antibiotic prescribing. *Nursing in Practice*. 2015(82).
5. May CR, Mair F, Finch T, et al. Development of a theory of implementation and integration: Normalization Process Theory. *Implementation Science*. 2009;4(1):29.
6. McNulty CAM, Hawking MKD, Jones L, et al. Optimising antibiotic prescribing in general practice: protocol for a practice-based randomised controlled trial of the effects of the 'TARGET Antibiotics' workshop In. Submitted to Public HealthUnpublished.
7. Novick G. Is there a bias against telephone interviews in qualitative research? *Res Nurs Health*. 2008;31(4):391-398.
8. NHS England. *Technical Guidance Annex B, Information on Quality Premium*. 2016.
9. Ackerman SL, Gonzales R, Stahl MS, Metlay JP. One size does not fit all: evaluating an intervention to reduce antibiotic prescribing for acute bronchitis. *BMC Health Serv Res*. 2013;13(1):462.
10. Francis NA, Butler CC, Hood K, Simpson S, Wood F, Nuttall J. Effect of using an interactive booklet about childhood respiratory tract infections in primary care consultations on reconsulting and antibiotic prescribing: a cluster randomised controlled trial. *BMJ*. 2009;339:b2885.

11. Francis NA, Phillips R, Wood F, Hood K, Simpson S, Butler CC. Parents' and clinicians' views of an interactive booklet about respiratory tract infections in children: a qualitative process evaluation of the EQUIP randomised controlled trial. *BMC Fam Pract.* 2013;14(1):1.
12. Hobbs FDR, Bankhead C, Mukhtar T, et al. Clinical workload in UK primary care: a retrospective analysis of 100 million consultations in England, 2007–14. *The Lancet.* 2016;387(10035):2323-2330.
13. Björkman I, Berg J, Viberg N, Stålsby Lundborg C. Awareness of antibiotic resistance and antibiotic prescribing in UTI treatment: A qualitative study among primary care physicians in Sweden. *Scand J Prim Health Care.* 2013;31(1):50-55.
14. Charani E, Kyratsis Y, Lawson W, et al. An analysis of the development and implementation of a smartphone application for the delivery of antimicrobial prescribing policy: lessons learnt. *J Antimicrob Chemother.* 2013;68(4):960-967.
15. Devine E, Williams EC, Martin DP, et al. Prescriber and staff perceptions of an electronic prescribing system in primary care: a qualitative assessment. *BMC Med Inform Decis Mak.* 2010;10(1):1.