



EVENT REPORT

Greater Manchester Connected Health City (GM CHC)

Antibiotic prescribing in Primary Care: a Practitioner's perspective

Building Rapid Interventions to reduce antimicrobial resistance and overprescribing of antibiotics (BRIT)

Monday 18th June 2018

The Bright Building, Manchester Science Park, Pencroft Way, M15 6GZ

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The purpose of the workshop was to discuss the challenges and issues related to antibiotic prescribing in Primary Care including how the adoption of digital interventions can potentially lead to an improvement in care. The GM CHC BRIT team in collaboration with Public Health England and the NHS Greater Manchester Medicines Management Group presented the utility of data driven approaches to derive a better understanding of antibiotic prescribing behaviour across Primary Care in the region.

Antibiotic prescribing in Primary Care: The Big Picture

Prof Tjeerd van Staa - Clinical Epidemiologist; Principal Investigator

Tjeerd provided an overview of the BRIT project, including progress on the examination of antibiotic prescribing in UK primary care using various data resources (CPRD, SAIL, NHS Digital and Research One); a qualitative study using interviews with GPs; as well as the development of smart dashboards based on data analytics to support clinical and policy teams on the optimisation of antibiotic prescribing.

The challenges of antibiotic prescribing in Primary Care were also mentioned including the persistence of requiring an antibiotic for each bacterial infection, the use of policy guidelines often based on out-dated symptom scores and health targets based on overall prescribing levels in practices and not on establishing most optimal use of antibiotics. The BRIT project aims to mitigate these challenges by providing detailed analytics on:

- Why antibiotic prescribing varies greatly between practices
- Why high prescribing practices have lower rates of clinical complications (e.g. hospital admissions)
- Why significant variability in risks of clinical complications persist (e.g. by indication and patient characteristics)
- How the current prescribing is ineffective in targeting of antibiotics to patients at high risk of clinical complications
- The substantive levels of repeat prescribing / switching
- Tailored feedback to practices on their prescribing + suggestion of what to do
- The provision of detailed insight in regional prescribing patterns to policy makers to enable a better understanding of challenges and opportunities (beyond counting prescriptions in practices)
- The need to support evaluation of improvement interventions

The BRIT dashboard: Feedback on your practice's prescribing

Dr Victoria Palin & Chirag Mistry - Data Scientists

The BRIT project aims to develop and implement at scale the infrastructure for collecting and analysing data on antibiotic prescribing, clinical interventions and patient demographics in order to better understand the public drivers for antibiotic prescribing. This will enable the project team to develop and test simple interventions to refine antibiotic prescribing in locations, facilities or sub-groups (of patients and/or clinicians).

Vicki and Chirag presented a web-based platform (dashboard) designed to help users develop a better understanding of how antibiotics are currently prescribed and where



prescribing could be improved. The dashboard has two types of users, i.e. Practice level users and CCG level users or policy makers. Features of the dashboard include benchmarking, so a practice can see their prescribing rates adjusted by STAR-PU, but also see how they compare to a regional average and national average. There is also information on the variability of prescribing across practices for each infectious condition, where users can see what antibiotic drugs are being prescribed for each condition. Practices will also be informed which of these antibiotic prescriptions are deviating from the guidelines with links to local prescribing recommendations. Another feature of the dashboard is risk profiling where a patient's risk of an infection-related complication can be identified in a 30-day window. Over-prescribing to low-risk patients or under prescribing to high-risk patients can also be visualised.

The dashboard has been designed to incorporate pertinent issues facing clinicians in Primary Care and can be tailored according to the user's requirements. For example, to explore drivers of antibiotic prescribing, complex models are fitted to national and local data to understand the factors that influence suboptimal prescribing.

Interactive session: Evaluate ideas with your peers and explore capabilities of digital interventions

1) What would you change about primary care, to improve antibiotic prescription quality?

- Addressing patient expectations – supporting patients in understanding the normal course of infectious illness (for example in children). Could easily support patient groups to relieve pressure on GPs.
 - On the other hand - GPs would always prefer to review unwell children in order to be safe
- Need to reduce patient demand
- Increasing consultation times to ensure GPs are not held back in counselling patients about antibiotic use
- Provide data to support GPs to identifying bacterial vs. viral infections and in risk profiling patients. In addition, the identification of self-limiting versus more serious bacterial infections is relevant here.
- Patients should be offered options in terms of whether or not they are given a prescription, including the value of deferred prescriptions. Often people just want to get a prescription because access to GPs is difficult so they want to get something whilst they've got the opportunity.
 - Counter view: some patients think the doctor knows best, don't want to wait or will buy them over the internet if not given by a GP

2) What would make health practitioners more or less likely to use an intervention like BRIT?

- The interventions needs to be:
 - Simple
 - Well integrated
 - Automated
 - Able to nudge behaviour at the right moment



- For example, an intervention such as OptimiseRx is a lot easier to use than the equivalent because it requires fewer clicks. Pharmacy in Oldham has been using this for an audit and feedback exercise, and are on their third iteration. They provide feedback on:
 - Inappropriate course lengths
 - Inappropriate repeat prescriptions
 - Prescriptions made for viral illnesses
 - Incomplete records e.g. consultation not recorded or no diagnosis recorded.
- Saves time in doing individual case note reviews. For example OptimiseRx has a database, it forces GPs to choose the formulary brands (rather than them having to remember what to use). GPs weren't receptive to Switch. It would make sense to integrate BRIT into OptimiseRx. N.B. BRIT does not currently aim to provide real-time data, more to enable people to consider the drivers for their prescribing behaviour and how they might change this overall.
- It is a challenge to give the most useful and appropriate information. Need to consider what other successful screen-based interventions have been implemented and what features make them successful?
- Don't want to be overwhelmed with dashboards – can they be integrated to provide one dashboard to be used in various aspects of quality improvement and auditing?

Risk profiling

- Moving it beyond the actual antibiotic prescription, what are the risks of complications?
- Risk profiling is complex and the computer isn't always there, we need to be able to maintain clinical judgement.

3) Specific required features of a BRIT type dashboard

- Frequency of use of the dashboard – one practice has a QI meeting once every 2 months, could see it being used then
- Could BRIT provide a menu of possible interventions? GPs don't have time to think about what to do. Could embed QI methodology to include the nudge factor, e.g. signposting to RCGP QI toolkit or other similar interventions.
- Think about stratifying the data into clinical risk groups e.g. COPD/DM.
- Using antibiotics as a lens to other prescriptions (building on the finding that high antibiotic prescribers also tend to be high prescribers in general).
- Thinking about what the alternatives to prescription might be
- What other outcomes can we look at other than hospital admissions? Time off work? Microbiologist had an issue with the 30 day hospitalisation being an outcome for high risk patients due to concern that this might push prescribers to prescribing more for this group; they are known to harbour the highest proportion of drug resistant microbes so it is more important to prescribe appropriately in this group. We do not yet know if reducing prescribing in young healthy people (low risk) who rarely have infections will have any impact on drug resistance.
- How would changes in guidelines be incorporated into the system? Is there an issue with access to guidelines? No – it's just having the time to review them. Some practices have them on the wall, or people will look them up online during the



consultation. The benefit of an intervention like OptimiseRx is that they are integrated into the system.

- Microbiologist would like to be able to identify the best GPs and take them to the worst GPs to teach them how to improve their practice.
- Feedback needs to be at the individual GP level. Locums etc. can skew data for practices.

Optimising antibiotic prescribing in primary care: How can we help?

Dr Jung Yin Tsang - GP

Jung provided a practitioner's perspective on the clinical challenges associated with antibiotic prescribing focusing on the real vs. nominal forces driving antibiotic prescribing behaviour. Patient, Clinician and System factors were discussed as key determinants of prescribing decisions in an incredibly complex healthcare system.

The utility of digital interventions including dashboards was also discussed with emphasis placed on actionable insights from any feedback platform, "the real challenge is moving beyond just looking at a pretty dashboard and being able to identify real targets that you can action and do", i.e. emphasising the need for advanced analytics to translate data into a usable form.

Information Governance: Simple, easy, safe, GDPR ready

Dr Emily Griffiths - Information Governance Lead

Data sharing and processing contracts have been approved by the HRA and signed by the first participating practices. These stipulate the research purposes for the data. They also describe the Information Governance assurances around the pseudonymised dataset that will flow into our data safe haven, for example that the data and dashboards will be received by the University of Manchester and always remain on the N3 network. Participating practices receive access to our advanced dashboards, which are hosted on servers in an ISO27001 certified Trustworthy Research Environment. This is a data analytics facility where the study researchers can apply their analytical tools needed to conduct population health studies within a trusted and highly secure environment that minimises the risk of unauthorised access. This information security management system is underpinned by risk assessments, routine monitoring, and a privacy impact assessment for each CHC project. All these documents can be reviewed and signed electronically on our project's data flow on the Information Sharing Gateway.

Other projects in Primary Care

Dr Ben Brown – Research Fellow and General Practitioner

1) Smart MedicAtion Safety dashboard (SMASH)

The smart medication safety dashboard (SMASH) identifies patients who are potentially at risk of developing complications due to their prescribed medications. The dashboard presents a list of affected patients to practice users, such as GPs and pharmacists, to prompt appropriate action. SMASH has been successfully rolled out across several practices in Greater Manchester as part of a trial to determine whether the availability of a web based



dashboard, together with pharmacist support, actually reduces the number of patients at risk due to incorrect prescribing.

2) Performance Improvement plaN Generator (PINGR)

PINGR is an electronic audit and feedback (e-A&F) tool for improving the quality of long-term condition management in primary care (e.g. hypertension, chronic kidney disease and atrial fibrillation). The PINGR design is based on evidence and theory derived from e-A&F systems, and has been through extensive usability testing. It is accessed as a web site and uses coded EHR data to calculate proportions of patients meeting standards recommended in clinical guidelines (quality indicators).

Next steps

Contact ACTION@manchester.ac.uk, if you wish to participate in our research study or have any other queries. We will respond by providing further project details. We will then work with you to execute all necessary agreements to enable the exchange of de-personalised data compliant with information governance, ethics and security rules.

Workshop Agenda

Antibiotic prescribing in Primary Care: a Practitioner's Perspective



The Bright Building, Manchester Science Park, Pencroft Way, M15 6GZ
Monday 18th June 2018
12.15 - 15.30

12.15	Registration & Lunch	
13:00	How can digital analytics drive an improvement in care?	Dr Ben Brown GP & Wellcome Trust Research Fellow
13:20	Antibiotic prescribing in Primary Care: The Big Picture	Prof Tjeerd van Staa Clinical Epidemiologist
13:40	The BRIT dashboard: Feedback on your practice's prescribing	Dr Victoria Palin & Chirag Mistry Data Scientists
	Imosphere: Atmolytics dashboard	Adrian Owen & Mark Rogers
14:00	Interactive session: Evaluate ideas with your peers and explore capabilities of digital interventions	
	<ol style="list-style-type: none"> 1. What would you change in primary care to improve antibiotic prescribing? 2. What information is required to manage and measure the impact of interventions? 	
14:45	Optimising antibiotic prescribing in primary care: How can we help?	Dr Jung Yin Tsang GP
15:00	Information Governance: Simple, easy, safe, GDPR ready	Dr Emily Griffiths Information Governance Lead
15:15	Lessons learnt & feedback	
15:30	Close	

The Greater Manchester Connected Health City is part of the Department of Health funded Connected Health Cities programme using data to improve health and wellbeing in the North of England. The BRIT project aims to use data to understand antibiotic prescribing in an effort to tackle antimicrobial resistance.

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