

# Assessing pharmacists' antimicrobial knowledge and their perceived effectiveness in challenging poor prescribing in hospital

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## Background

Pharmacists are often reported to be medication experts<sup>1,2</sup>. They attend wards and review medication charts daily. It is expected that pharmacists will effectively challenge inappropriate drug selection.

48% of all inpatients are on antimicrobials at any one time. National Antimicrobial Prescribing Survey (NAPS) shows the hospital performing poorly for all parameters.

Compared to pharmacists, prescribers are a relatively transient workforce, often leaving/rotating in a hospital setting.

## Local priorities

Nationwide benchmarking criteria for antimicrobials the national antimicrobial prescribing survey (NAPS). Results for all key deliverables for antimicrobials were poor:

| National Antimicrobial Prescribing Survey (NAPS)      | 2015 | 2016 | National average | National target |
|---|------|------|------------------|-----------------|
| <b>Appropriateness of all prescriptions</b>           | 71%  | 58%  | 75%              |                 |
| <b>Documentation of indication</b>                    | 91%  | 80%  |                  | 95%             |
| <b>Surgical prophylaxis &gt;24 hours</b>              | 22%  | 18%  | 30%              | < 5%            |
| <b>Restricted antimicrobials with an approval no.</b> | 50%  | 34%  |                  |                 |

## Organisation's strategic priorities

| Hospital's strategic goals <sup>3</sup> | Antimicrobial focus on strategic fit  |
|---|---|
| <b>Patient First</b>                    | Patients expect best practice. Optimal antimicrobial selection reduces length of stay and improves patient satisfaction   |
| <b>Quality and Safety</b>               | Reduction in medication incident reports and morbidity/mortality associated with suboptimal prescribing of antimicrobials |
| <b>Our People</b>                       | Development of pharmacists to provide consistent service and support best possible antimicrobial selection                |
| <b>Sustainability</b>                   | Reducing unnecessary and suboptimal antimicrobial prescribing will reduce spend medication. Errors are also costly.       |

## International priorities

'Antimicrobial resistance (AMR) is an important global problem facing society and health-care workers. The misuse and overuse of antimicrobials over the past 50 years has accelerated the development of resistance to antimicrobial agents; and with few new antibiotics in development, it is essential that we preserve the usefulness of existing ones for as long as possible. Effective AMR control requires the optimal prescription and use of antimicrobials.' - World Health Organisation<sup>4</sup>

## Objective

An human resources development needs investigation (HRDNI) will assist in determining the most appropriate development interventions for the hospital pharmacists. The research questions are as follows:

### Primary outcomes

- How appropriate is the current programmed knowledge of antimicrobials for pharmacy staff?
- How effective are the pharmacists in challenging suboptimal prescribing of antimicrobials?
- How confident are the pharmacists in challenging suboptimal prescribing of antimicrobials?

### Secondary outcome

- What other issues may impede pharmacist performance for identifying and improving prescribing of antimicrobials?

## Methodology

A voluntary anonymised written test based on recognised reputable national online training from the National Prescribing Service<sup>5</sup> (NPS) is offered for pharmacists.

A 'pass' has been set at 80% as discussed and agreed with consultants and antimicrobial pharmacists.

A Likert rating of pharmacists' perception of their effectiveness challenging suboptimal antimicrobial prescriptions will be compared to them challenging doctors for prescriptions with poor medication history

## Methodology

The learning objective, learning strategy and assessment are intertwined such that one cannot be considered without the other.

Delahaye<sup>6</sup> cites the work of Biggs and Tang<sup>7</sup> where the learning creates changes and these changes can be measured. The baseline (NAPS audit) and both subjective and objective questions from the modified NPS objective written test. This test measures what it is supposed to and creates reliability in measuring change in behaviour.<sup>6</sup>

Objective tests are reliable.<sup>6</sup> Subjective analysis allows ranking of issues as well as exploring the perceptions of pharmacists.

All data collected will be non-identifiable. It will not be possible to review specific staff member results either from a management or a staff member perspective and this will be made clear to participants. The data collected is the written response to questionnaires, completed in a supervised setting within the pharmacy department.

## Results

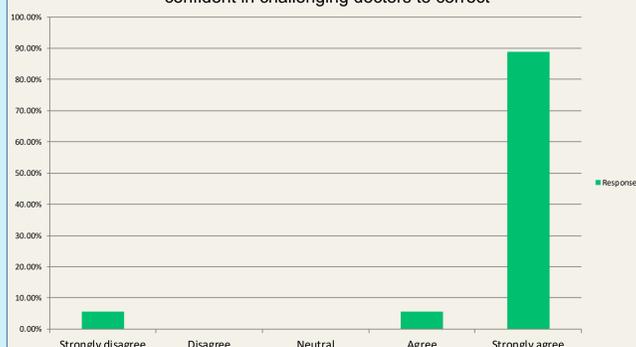
Of the 32 permanently employed pharmacists at NH, 18 (56.25%) volunteered to participate in the research.

Results from the objective written test show that from 31 questions, pharmacists scored an average of 10.32 (57.35%). One staff member (respondent 7) achieved 80.65% and therefore passed.

| Questions | Av Correct* | Average % | Lowest % | Highest % |
|-----------|-------------|-----------|----------|-----------|
| 31        | 10.32       | 57.35%    | 29.03%   | 80.65%    |

Pharmacists were questioned on their knowledge of antimicrobials. 33.34% agreed that their knowledge was sound. The majority of reasons were familiarity with guidelines and a need for training.

When thinking of Medication Management Plans (MMPs) I am confident in challenging doctors to correct



Answers to question 'When thinking of MMPs doctors are receptive and cooperative when being challenged by pharmacists – my effectiveness.'

| Text responses MMP effectiveness     | Response | Answer Choices    | Responses |
|--------------------------------------|----------|-------------------|-----------|
| <b>Dr considers unimportant</b>      | 3        | Strongly disagree | 0.0% 0    |
| <b>Dr values highly</b>              | 5        | Disagree          | 5.6% 1    |
| <b>Pharmacist development needed</b> | 1        | Neutral           | 16.7% 3   |
|                                      |          | Agree             | 33.3% 6   |
|                                      |          | Strongly agree    | 44.4% 8   |

Answers to question 'When thinking about of prescribing of sub-optimal antimicrobials, doctors are receptive and cooperative when being challenged by pharmacists – my effectiveness'

| Text responses                           | Response | Answer Choices    | Responses |
|--|----------|-------------------|-----------|
| <b>Pharmacist development need</b>       | 7        | Strongly disagree | 0.0% 0    |
| <b>Procedures not followed</b>           | 1        | Disagree          | 5.6% 1    |
| <b>Evidence supports decision making</b> | 1        | Neutral           | 38.9% 7   |
| <b>Hierarchy issues</b>                  | 3        | Agree             | 44.4% 8   |
|  |          | Strongly agree    | 11.1% 2   |

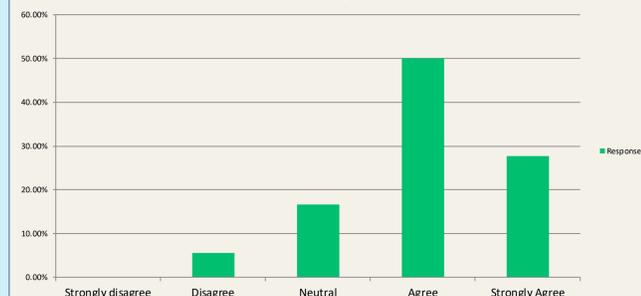
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## Results

I am confident challenging doctors if the antimicrobial prescribed is sub-optimal



77.77% participants feel they are effective at challenging prescribers for MMPs whilst 55.55% are effective for antimicrobials. Qualitative text responses for MMPs highlight need for development

Pharmacists were also asked if anything else prohibits them from working effectively. 50% feel they either do not have the time or there is insufficient resource to complete their work

## Analysis

Noe et al<sup>8</sup> describes the need of alignment of departmental and organisational strategic priorities. Optimal prescribing of antimicrobials affects all of the organisations strategic priorities.

Also, although not explicit in the above, Victorian hospital management focus particularly on reducing length of stay for patients<sup>9</sup>. Antimicrobials typically account for up to 30% of the drug budget in hospitals and this class affects most aspects of patient care<sup>10</sup>

To deliver effective change, and to ensure adoption of the new training approach, the researcher should consider evaluating the training program at the design phase.<sup>6,11</sup>

Junior doctors make up a significant percentage of the prescribing workforce. These doctors find it difficult to interpret data, diagnosing and prescribing.<sup>12</sup> There may be conflicts in boundaries between professions<sup>13</sup>, and it is quite possible that these conflicts occur between pharmacists and doctors, leading to a passive nature in challenging prescribing. Newly qualified pharmacists are uneasy in interactions with doctors.<sup>14</sup>

The Likert Scale gained qualitative and quantitative results to improve understanding of underlying development needs of pharmacists.

Pharmacists are very effective and confident when challenging doctors if medication histories are suboptimal. Effectiveness and confidence is not as good when comparing to antimicrobial challenge. Reasons for lack of effectiveness and confidence are then highlighted with demonstrating a knowledge gap for antimicrobials.

Using theory associated with the HRDNI, it is understood that pharmacists without the programmed knowledge need their development program to be tailored accordingly.<sup>6</sup> describes how there is a need to move from explicit to tacit knowledge. Basic facts, skills, factual information, procedures are required for the pharmacists before moving to more socialising of learning. This socialising will improve effectiveness of prescribing as will be in collaboration with the prescribers.

## Conclusion

The methodology was the most appropriate in identifying unmet need and the development program according to those identified from the HRDNI. Specific gaps in programmed knowledge of pharmacists was identified. The quantitative information allows greater insight into perceptions of pharmacists. Using theories associated with the HRDNI, a development program is more likely to improve performance and address organisational priorities.

## Acknowledgements

Northern Health

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