Prevalence in Australia is high by international standards.5
Affects over 2 million Australians.5
Financial burden.6
Positive outcomes achieved by pharmacist asthma disease state services.7


Assess asthma severity/control.
Conducted lung function testing.
Questionnaire

Baseline
6 months
PACP and its outcomes
- Assess asthma severity/control
- Conduct lung function testing
- Questionnaire

PACP
- Assess asthma severity/control
- Conduct lung function testing
- Questionnaire

Control
- Assess asthma severity/control
- Conduct lung function testing
- Questionnaire

Results of the study

Table 7. Comparison of the Mean Blood Pressure of Patients on Metformin

<table>
<thead>
<tr>
<th>Variable</th>
<th>Metformin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician (n=33)</td>
<td>Pharmacist (n=31)</td>
</tr>
<tr>
<td>Mean systolic blood pressure (mmHg)</td>
<td>135.0 (16.0)</td>
</tr>
<tr>
<td>Mean diastolic blood pressure (mmHg)</td>
<td>87.5 (6.7)</td>
</tr>
<tr>
<td>Mean heart rate</td>
<td>70.1 (15)</td>
</tr>
</tbody>
</table>

Independent model
Reduced hospital admissions (p<0.001)
Improved patient’s breathing (p<0.001)
Well accepted (p=0.001)

Recent study in pharmacist prescribing
Respiratory Disease Management in Primary Care: Impact of Independent Prescribing Pharmacist-Run Asthma and COPD Clinic on Outcomes

Independent model
Reduced hospital admissions (p<0.001)
Improved patient’s breathing (p<0.001)
Well accepted (p=0.001)
AIMS of this study:
1. To measure the quality and appropriateness of prescribing in asthma by pharmacists
2. To test the feasibility of prescribing for asthma in primary care by community pharmacists in future

- Fulfill research gap in Australian practice
- Address gap in asthma management
- Widen scope of practice for Australian community pharmacists

Interventional scenarios (n=9)
- Prescribing a preventer when patient is only using a reliever.
- Prescribing a LABA for patient on an inhaled corticosteroid and symptomatic.
- Increasing dosage of inhaled corticosteroid.
- Removal of inappropriate medication.
- Prescribing an oral corticosteroid.
- Reduce corticosteroid dosage

Scenarios: Expected prescribing interventions according to current guidelines

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>Expected prescribing interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prescribing a non-combined inhaled steroid</td>
</tr>
<tr>
<td>2</td>
<td>Prescribe a long acting beta agonist or combination inhaled steroid</td>
</tr>
<tr>
<td>3</td>
<td>Increase dose of inhaled steroid</td>
</tr>
<tr>
<td>4</td>
<td>No action</td>
</tr>
<tr>
<td>5</td>
<td>Removal of secondary reliever</td>
</tr>
<tr>
<td>6</td>
<td>Removal of nebuline medication</td>
</tr>
<tr>
<td>7</td>
<td>Prescribe an oral steroid</td>
</tr>
<tr>
<td>8</td>
<td>Remove long acting beta agonist</td>
</tr>
<tr>
<td>9</td>
<td>Reduce inhaled steroid dose</td>
</tr>
</tbody>
</table>

Justification of study design

<table>
<thead>
<tr>
<th>Study design—Four stage process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
</tr>
<tr>
<td>Step 2</td>
</tr>
<tr>
<td>Step 3</td>
</tr>
<tr>
<td>Step 4</td>
</tr>
</tbody>
</table>

9 scenarios given to 20 asthma specialist pharmacists using a convenience sample (9x20=180)
Evaluation of appropriateness of interventions by clinical panel. Qualitative data (stakeholders opinions, perspectives and attitudes) Pharmacist recommendations compared to real interventions/outcomes using data from asthma study.

HREC Approval Granted

Nguyen N and Bajorek B. Prescribing in warfarin therapy—Exploring its clinical utility in the hospital setting. [Honours project]. In press 2006.
**Study design**

**EXTERNAL**
- Respiratory Physician
- General Practitioner
- Nurse Practitioner
- Community Pharmacist
- NPS Facilitator

**INTERNAL**
- Clinical Academic (Asthma Expert)
- Research Pharmacist / Asthma Pharmacy Educator
- Asthma Researcher

**Data Analysis**

- Step 1: Descriptive Statistics
  - Determine median score of appropriateness and inter rater variability (Kappa score, ICC).
- Step 2: Qualitative Interviews
  - Analyse for themes using manual inductive coding.
- Step 3: Inferential Statistics
  - Direct quantitative comparison with actual interventions database.

**Results**

**N=18 Pharmacists**

Completing 9 scenarios

- Overall, pharmacists indicated that:
  - a prescribing intervention / function would be **useful** in the management of each scenario
  - they were **confident** in undertaking the stated prescribing interventions
  - Prescribing ‘appropriate’ in 78% of interventions:
    - therapeutically appropriate, but ‘execution’ lacking

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>CONFIDENCE IN PRESCRIBING INTERVENTION</th>
<th>USEFULNESS OF PRESCRIBING FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>4.5</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>2.5</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

1= not at all confident 5=very confident
1= not useful, 2= useful, 3=very useful

Overall Appropriateness: Therapeutic recommendation + Prescribing Accuracy
Feedback from External Panel

- Traditional “medical model” of practice: self-acknowledged ‘medical resistance’
- Focus on ‘risks’ and ‘diagnostic’ component of prescribing; non-collaborative
- Poor understanding of ‘pharmacy practice’, training

BUT...

- Obvious benefits for patients
- Acknowledged deficiencies in medical management (e.g. GPs)
- Apparent ‘lack of agreement’ re: patient mgmt
- Pharmacists more ‘holistic’ in their prescribing approaches; “inappropriate” interventions closely mirror those of GPs (e.g. antibiotics)

Discussion

- Pharmacist prescribing is feasible in asthma management but needs:
  - Specific training / coaching regarding the execution of prescribing interventions
  - Clarifying definitions of prescribing with medical prescribers, and defining scope of practice
  - Reinforcement of ‘pharmacist’ expertise within the prescribing function
  - Prospective ‘real life’ trial → clinical outcomes
Non-Medical prescribing

- Nurse practitioners, optometrists, podiatrists, physiotherapists and pharmacists.\(^1\)
- Relieves burden placed on physicians.
- Facilitates continuity of care.
- Exists in Australia via nurse practitioners and optometrists.\(^2\)

Pharmacist prescribing

- Common practice in a number of countries excluding Australia.\(^1\)
- Why pharmacists?\(^1\), \(^3\), \(^4\)
- Operates under two broad categories of prescribing: dependent and independent.

Current prescribing models

- Non-Medical prescribing
  - Dependent
    - Formulary, patient referral, protocol, repeat
  - Independent
    - Supplementary
    - Independent prescriber