Proposed methodology to measure the impact of GRIP toolkit materials on antibiotic prescribing for URTIs by primary care physicians

The method described here illustrates the process for assessment of one specific symptom of upper respiratory tract infection (URTI), sore throat.

This has been selected as the Centor criteria may be used to predict the likelihood of a group A streptococcal bacterial infection in patients complaining of acute sore throat while other common URTI symptoms are likely to be due to viral infection. This protocol can be adapted for other URTI symptoms.

Using this protocol and analysing the collected data can help understand:

- The impact of GRIP toolkit materials on antibiotic prescribing in URTIs
- Thether current level of antibiotic use is indicated (e.g. in non-high risk patients)

Study arms

- Control arm: no access to GRIP toolkit materials (n=tbc)
- Test arm: full access to GRIP toolkit materials (n=tbc)
Test arm: GRIP URTI toolkit preparation prior to assessment If you are part of the control arm and will not be using the toolkit during this assessment, you do not need to read this section. Please go straight to the patient section below.

Preparation and planning

- Review current personal and colleague management practices when dealing with URTIs, specifically acute sore throat
- Ensure each doctor within the test arm has read and understood the toolkit materials
- Identify any differences between current practice versus that advised in the GRIP toolkit

Defining use of the GRIP toolkit

There are four ways the GRIP toolkit can be used by the test arm. The doctor can choose any combination or all of these three elements:

Following the 1, 2, 3 approach for the consultation:

a continuing professional development (CPD) manual provides information on antibiotic resistance, its causes (including the inappropriate use of antibiotics in URTIs) and introduces the principles of the 1, 2, 3 approach for URTIs and sore throat consultations

Use of the patient conversation guide:

guides the doctor through communicating key messages on antibiotic use in URTIs, the problems associated with over use of antibiotics and better ways to manage the patient’s sore throat symptoms

Use of the tear-off pad of patient information:

the leaflets should be personalised for patients and include suggested self-management treatment options. They include key patient information such as why antibiotics don’t work for most URTIs and how to determine when signs and symptoms warrant further investigation
Patients

- All patients who present complaining of a sore throat can be included in this study.
- To ensure a random population, it is recommended that this study be conducted with all patients that present each day during the assessment period (3 months at the start of the sore throat season).
- All sore throat patients are eligible, please do not stratify based on other factors.
- Set a time period over which the study will run (3 months at the start of the sore throat season).
- Set a suitable target number of patients (suggested 150-200 patients).

Data to collect

Both control and test arms are to record the following information about each patient:

Patient data
- Male/female
- Age
- Ethnicity

Number of days the patient has been experiencing the sore throat

Throat pain scale TPS (see appendix A)

Temperature
- Rank into three groups: <37°C, 37-38°C, and >38.1°C
- Patient feeling feverish

Presence of concomitant symptoms
- Tonsillar exudate
- Tender anterior cervical lymph nodes
- Accompanying cough
High risk criteria2–4

- Elderly patients aged >65 years or young children <2 years of age or those born prematurely
- Immunocompromised patients
- Pre-existing conditions such as diabetes, cystic fibrosis, chronic lung disease and those with HIV
- Specific local populations, such as Aboriginal or Torres Strait Islander people in Australia, American Indians or Alaskan natives
- Patients who show signs of being severely unwell

Red flag symptoms1,5,6

- Coughing up blood
- Shortness of breath
- Neck swelling on one side of the neck (not related to the lymph nodes)
- Great difficulty swallowing, e.g. unable to swallow food
- Very high temperature (>39°C) or night sweats
- Drooling or muffled voice
- Wheezing sounds when breathing

Specific patient requests for antibiotic treatment

If antibiotics are prescribed, the type of antibiotic and stage at which antibiotics were prescribed (at first visit or subsequently)

Other medications prescribed and/or recommended to manage symptoms (see appendix B for a full list of symptomatic relief options)

Subsequent data recording:
Please record whether the patient required:

- a follow-up visit
- referral to another HCP
- further investigation (swab, X-ray, sinus TC)

Test arm group must also record which of the items they used from the toolkit:

- Tear-off pad
- Patient conversation guide
- Following the 1, 2, 3 approach for the consultation (detailed within the CPD manual)
- Full list of symptomatic options (appendix A)
Analysing the data

- Total number of patients
- Average duration of sore throat symptoms at time of presenting
- Pain Severity according to the TPS (no pain, mild, moderate, severe)
- Number of antibiotic prescriptions, follow-up, referrals and further investigations in each severity group
- Number of patients that feel feverish
- Number of patients in each of the three temperature ranges
- Number of antibiotic prescriptions, follow-up, referrals and further investigations in each temperature group
- Number of patients presenting with tonsillar exudate, or with tender anterior cervical lymph nodes
- Number of antibiotic prescriptions, follow-up, referrals and further investigations in tonsillar or pharynx exudate, or with swollen lymph nodes group
- Ease of use of the toolkit materials with patients
- Usefulness of toolkit materials
- Patient satisfaction with the consultation

This data will be compared to that collected in the other test arm to determine the effect of the toolkit materials on the pattern of antibiotic use for sore throats. It is hypothesised that over a period of 3 months the number of antibiotic prescriptions will be lower in the test arm group using the GRIP toolkit.

References
### Appendix A: Scoring throat pain

Ask the patient which of the following best describes their throat when they swallow?

<table>
<thead>
<tr>
<th>No pain</th>
<th>Mild pain</th>
<th>Moderate pain</th>
<th>Severe pain</th>
</tr>
</thead>
</table>


### Appendix B: Shared decision making around symptomatic relief

Types of symptomatic relief:

<table>
<thead>
<tr>
<th>Drug class</th>
<th>Examples</th>
<th>Mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analgesics: non-steroidal anti-inflammatory drugs (NSAIDs)</strong></td>
<td>Ibuprofen, Aspirin</td>
<td>Inhibits prostaglandin production throughout the body and in the central nervous system (CNS), (^1) to relieve pain and reduce fever (^2)</td>
</tr>
<tr>
<td><strong>Analgesics: (non-NSAID)</strong></td>
<td>Paracetamol, Codeine</td>
<td>Paracetamol thought to act on prostaglandins in the CNS to relieve pain and reduce fever (^3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Codeine</strong> is converted to morphine, a powerful analgesic (^4)</td>
</tr>
<tr>
<td><strong>Decongestants</strong></td>
<td>Pseudoephedrine, Phenylephrine</td>
<td>Constricts swollen nasal blood vessels to reduce swelling and congestion (^5,6)</td>
</tr>
<tr>
<td><strong>Antihistamines</strong></td>
<td>Chlorphenamine, Diphenhydramine</td>
<td>Reduces histamine-related congestion and helps drain sinuses, (^6) drying up a runny nose, and often used in combination with decongestants. Can also suppress cough (^7) and induce drowsiness for nocturnal cough</td>
</tr>
<tr>
<td><strong>Cough suppressants</strong></td>
<td>Dextromethorphan, Codeine, Pholcodine</td>
<td>Suppresses the cough reflex to normal levels (^7,8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug class</th>
<th>Examples</th>
<th>Mode of action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NSAIDs for sore throat</strong></td>
<td>Flurbiprofen</td>
<td>Inhibits prostaglandin production at the site of pain, to reduce swelling and inflammation and improve swallowing.</td>
</tr>
<tr>
<td></td>
<td>Benzydamine</td>
<td></td>
</tr>
<tr>
<td><strong>NSAIDs for muscle aches</strong></td>
<td>Ibuprofen</td>
<td>Inhibits prostaglandin production at the site of muscle pain to relieve pain.</td>
</tr>
<tr>
<td></td>
<td>Diclofenac</td>
<td></td>
</tr>
<tr>
<td><strong>Decongestants</strong></td>
<td>Oxymetazoline</td>
<td>Oxymetazoline and xylometazoline constrict swollen blood vessels to reduce nasal swelling and congestion.</td>
</tr>
<tr>
<td></td>
<td>Xylometazoline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saline</td>
<td>Saline irrigation clears mucus and bacteria from the nose.</td>
</tr>
<tr>
<td><strong>Anticholinergics</strong></td>
<td>Ipratropium</td>
<td>Reduces the amount of mucus produced in the nose to relieve a runny nose.</td>
</tr>
<tr>
<td><strong>Antiseptic agents for sore throat or earache</strong></td>
<td>Amylemetacresol</td>
<td>Amylemetacresol and dichlorobenzyl alcohol are antibacterial, antiviral and have local anaesthetic properties.</td>
</tr>
<tr>
<td></td>
<td>Dichlorobenzyl alcohol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cetylpyridinium chloride</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acetic acid</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Boric acid</td>
<td></td>
</tr>
<tr>
<td><strong>Anaesthetic agents for sore throat or earache</strong></td>
<td>Benzocaine</td>
<td>Exerts a numbing effect achieved by blocking sensory signals locally.</td>
</tr>
<tr>
<td></td>
<td>Hexiteresorcinol</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lidocaine</td>
<td></td>
</tr>
<tr>
<td><strong>Demulcents for sore throat</strong></td>
<td>Glycerin</td>
<td>Lubricates the throat to produce a soothing effect. lozenge formulations have a demulcent action.</td>
</tr>
<tr>
<td></td>
<td>Honey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td></td>
</tr>
</tbody>
</table>

Tailoring sore throat treatment

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Local delivery</th>
<th>Relieves pain</th>
<th>Anti-inflammatory effect</th>
<th>Demulcent effect</th>
<th>Low dose, reduced side effect risk*</th>
<th>Note on formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral NSAIDs</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>Slower acting than local treatments³</td>
</tr>
<tr>
<td>Other analgesics</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>Slower acting than local treatments³</td>
</tr>
<tr>
<td>Local NSAID lozenge</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>Faster acting than systemic treatments³. Can relieve pain in 2 minutes and last up to 4–6 hours⁸⁹</td>
</tr>
<tr>
<td>Local NSAID spray/gargle</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>Faster acting than systemic treatments³. Gargles are often swallowed and the active ingredients do not reach the throat¹¹</td>
</tr>
<tr>
<td>Antiseptic/anaesthetic lozenge</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>Faster acting than systemic treatments³. Lozenges dissolve slowly to release active ingredients³</td>
</tr>
<tr>
<td>Antiseptic/anaesthetic spray/gargle</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>Faster acting than systemic treatments³</td>
</tr>
<tr>
<td>Anaesthetic ear drops</td>
<td>✔️</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
<td>Acidic agent preferred for acute early stage disease compared to topical/oral antimicrobial agents⁸</td>
</tr>
<tr>
<td>Cough syrup</td>
<td>✔️</td>
<td>✗</td>
<td>✗</td>
<td>✔️</td>
<td>✔️</td>
<td>Provides a cough suppressant (anti-tussive) effect¹³</td>
</tr>
</tbody>
</table>

¹The literature available on topical OTC sore throat treatments demonstrates a good safety profile, with only very minor self-limiting adverse effects, such as headaches and coughing being reported.¹¹