TITLE: Aztreonam for the Treatment of Patients with Cystic Fibrosis and Chronic *Pseudomonas aeruginosa* Lung Infections: Clinical Effectiveness and Guidelines

DATE: 17 September 2014

RESEARCH QUESTIONS

1. What is the clinical effectiveness of concurrent or alternating inhaled tobramycin and aztreonam therapy for patients with cystic fibrosis (CF) and chronic *Pseudomonas aeruginosa* lung infections?

2. What is the clinical evidence to support a 28 day break in aztreonam therapy for patients with CF and chronic *Pseudomonas aeruginosa* lung infections?

3. What are the evidence-based guidelines associated with the use of aztreonam for patients with CF and chronic *Pseudomonas aeruginosa* lung infections?

KEY FINDINGS

One evidence-based guideline regarding the use of aztreonam for patients with cystic fibrosis and chronic *Pseudomonas aeruginosa* lung infections was identified.

METHODS

A limited literature search was conducted on key resources including PubMed, Embase, The Cochrane Library (2014, Issue 9), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. The search was also limited to English language documents published between January 1, 2011 and September 10, 2014. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

Disclaimer: The Rapid Response Service is an information service for those involved in planning and providing health care in Canada. Rapid responses are based on a limited literature search and are not comprehensive, systematic reviews. The intent is to provide a list of sources of the best evidence on the topic that CADTH could identify using all reasonable efforts within the time allowed. Rapid responses should be considered along with other types of information and health care considerations. The information included in this response is not intended to replace professional medical advice, nor should it be construed as a recommendation for or against the use of a particular health technology. Readers are also cautioned that a lack of good quality evidence does not necessarily mean a lack of effectiveness particularly in the case of new and emerging health technologies, for which little information can be found, but which may in future prove to be effective. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up to date, CADTH does not make any guarantee to that effect. CADTH is not liable for any loss or damages resulting from use of the information in the report.

Copyright: This report contains CADTH copyright material and may contain material in which a third party owns copyright. This report may be used for the purposes of research or private study only. It may not be copied, posted on a web site, redistributed by email or stored on an electronic system without the prior written permission of CADTH or applicable copyright owner.

Links: This report may contain links to other information available on the websites of third parties on the Internet. CADTH does not have control over the content of such sites. Use of third party sites is governed by the owners’ own terms and conditions.
SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
</tr>
<tr>
<td>Patients with cystic fibrosis (CF) and chronic lung infections caused by <em>Pseudomonas aeruginosa</em></td>
</tr>
<tr>
<td><strong>Intervention</strong></td>
</tr>
<tr>
<td>Q1: Concurrent or alternating treatment with inhaled tobramycin</td>
</tr>
<tr>
<td>Q2 and 3: 28 day therapy of aztreonam followed by a 28 day stoppage in therapy</td>
</tr>
<tr>
<td><strong>Comparator</strong></td>
</tr>
<tr>
<td>Q1: Standard 28 day cycle of aztreonam alone</td>
</tr>
<tr>
<td>Q2 and 3: No stoppage or break in aztreonam therapy</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
</tr>
<tr>
<td>Clinical effectiveness (e.g., reduction of infection, improved clinical outcomes, harms)</td>
</tr>
<tr>
<td>Guidelines</td>
</tr>
<tr>
<td><strong>Study Designs</strong></td>
</tr>
<tr>
<td>Health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, evidence-based guidelines</td>
</tr>
</tbody>
</table>

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

One evidence-based guideline regarding the use of aztreonam for patients with cystic fibrosis and chronic *Pseudomonas aeruginosa* lung infections was identified. No relevant health technology assessment reports, systematic reviews, meta-analyses, randomized controlled trials, or non-randomized studies were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One evidence-based guideline by the Cystic Fibrosis Foundation regarding the use of aztreonam for patients with CF and chronic *Pseudomonas aeruginosa* lung infections was identified

The guideline provides recommendations regarding clinician provision of routine chronic inhaled aztreonam therapy for CF patients six years of age and older with chronic *P. aeruginosa* infection. Therapy with aztreonam is strongly recommended for patients with moderate to severe lung disease, based on strong evidence indicating a substantial benefit for lung function and quality of life. Aztreonam therapy is also recommended for patients with mild lung disease, based on a moderate level of evidence for a moderate benefit. No relevant literature was found regarding the clinical effectiveness of concurrent or alternating inhaled tobramycin and aztreonam therapy, or the clinical evidence to support a 28 day break in aztreonam therapy for patients with CF and chronic *Pseudomonas aeruginosa* lung infections.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies
No literature identified.

Guidelines and Recommendations

Summary available from: http://www.guideline.gov/content.aspx?id=45307
See: Table 4. New and Modified Recommendations, page 684

PREPARED BY:
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca
APPENDIX – FURTHER INFORMATION:

Systematic Reviews - Duration of Treatment Not Specified


Randomized Controlled Trials

Alternate Comparator


Placebo Comparator


Policy Statement


Review Articles
