TITLE: Methods to Diagnose Obstructive Sleep Apnea

DATE: 12 July 2016

RESEARCH QUESTIONS

1. What is the diagnostic accuracy of home-based sleep studies versus lab-based sleep studies for the diagnosis of obstructive sleep apnea (OSA)?

2. What is the clinical effectiveness of home-based sleep studies versus lab-based sleep studies for the diagnosis of OSA?

3. What is the cost-effectiveness of home-based sleep studies versus lab-based sleep studies for the diagnosis of OSA?

4. What are the evidence-based guidelines regarding the diagnosis of OSA?

KEY FINDINGS

One systematic review and meta-analysis, five randomized controlled trials, three non-randomized studies, one economic guideline, and two evidence-guidelines were identified regarding methods to diagnose obstructive sleep apnea.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. To address research questions 1, 2, and 3, no filters were applied to limit the retrieval by study type. To address research question 4, methodological filters were applied to limit retrieval to guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2011 and June 30, 2016. 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.

**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><strong>Intervention</strong></td>
</tr>
<tr>
<td><strong>Comparator</strong></td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
</tr>
<tr>
<td><strong>Study Designs</strong></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, economic evaluations, and evidence-based guidelines.

One systematic review and meta-analysis, five randomized controlled trials, three non-randomized studies, one economic guideline, and two evidence-guidelines were identified on methods to diagnose obstructive sleep apnea (OSA).

Additional references of potential interest are provided in the appendix.

**OVERALL SUMMARY OF FINDINGS**

One systematic review,¹ five randomized controlled trials (RCTs),²-⁶ and three non-randomized studies (NRSs)⁷-⁹ addressed the diagnostic accuracy and clinical effectiveness of home-based versus lab-based sleep studies for the diagnosis of OSA. The systematic review¹ reported that portable devices, used for home-based diagnosis of OSA, showed good diagnostic performance compared with in-laboratory sleep tests in adult patients with a high probability of moderate to severe obstructive sleep apnea and no unstable comorbidities. One randomized controlled trial⁵ reported that a home-based sleep study for the diagnosis of OSA using a portable device in a high risk urban population was feasible, accurate, and preferred by patients. Another RCT³ found that home-based studies for the diagnosis of OSA were not inferior to in-laboratory testing in terms of acceptance, adherence, time to treatment, and functional improvements. One RCT⁴ reported that home-based monitoring was effective for diagnosing OSA in the elderly population and can be used as an alternative to in-laboratory diagnosis in elderly patients with a high probability of OSA. Another RCT⁵ established that a home-based sleep study was a valid alternative to laboratory-based sleep study for suspected OSA. One RCT⁶ found that a home-based sleep study was an alternative to in-laboratory sleep studies in patients with suspected
OSA. The authors also noted that home-based sleep studies may help patients with limited mobility and those who live in remote areas, where a sleep lab may not be easily accessible. One NRS\(^7\) reported that home-based diagnosis of OSA through a portable machine was feasible and performed with good reliability, high accuracy, and a low failure rate. Another NRS\(^8\) found no significant difference between in-lab and home-based studies for the diagnosis of OSA. One NRS\(^9\) reported that in-home sleep testing is useful for the detection of sleep disordered breathing in women believed to be at high-risk for OSA.

One economic evaluation\(^10\) formulated conclusions based on an American model and found that, for payers, a home-based diagnostic pathway for OSA incurs fewer costs than a laboratory-based pathway. For providers, costs were comparable if not higher when using the home-based approach.

Two evidence-based guidelines\(^11,12\) were identified regarding the methods to diagnose OSA. One guideline recommended the use of portable sleep monitors to diagnose OSA when in-laboratory testing is not available. The second evidence-based guideline\(^12\) provided indications on when home sleep testing may be more appropriate than laboratory-based testing.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials


Non-Randomized Studies


**Economic Evaluations**


**Guidelines and Recommendations**


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

Randomized Controlled Trial – Alternate Population