Oral Health Assessment of Older Adults: The Kayser-Jones Brief Oral Health Status Examination (BOHSE)

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WHY: The bidirectional effects of systemic diseases such as cardiovascular disease, cerebrovascular accident (CVA), human immunodeficiency virus (HIV), diabetes, and pneumonia on oral health in older adults is well recognized (National Academies (IOM), 2011). Almost 49 million Medicare beneficiaries have no dental coverage (Willink, Schoen, & Davis 2016) and states may elect to provide dental coverage to adult Medicaid recipients however less than half provide comprehensive dental care (U.S. Department of Health and Human Services, 2012). By the time older adults enter nursing homes this unmet need for dental care may take back seat to the myriad demands imposed by comorbid conditions. Additionally, chronic diseases and the side effects of medications prescribed to treat them can further adversely affect oral health (Tavares, Lindefeld Calabi, & San Martin, 2014). The National Academies of Sciences Engineering, Medicine: Health and Medicine Division (previously known as Institute of Medicine) report (2011) Improving Access to Oral Health Care for Vulnerable and Underserved Populations recognizes the barriers to oral care in the current health system and supports training nondental health professionals such as nurses to perform oral disease screening.

BEST TOOL: In a systematic review of oral health assessment by nurses and others in the care of cognitively impaired institutionalized residents, the Kayser-Jones Brief Oral Health Status Examination (BOHSE) was found to be the most comprehensive, validated and reliable screening tool (Chalmers & Pearson, 2005). The 10-item examiner-rated BOHSE catalogues oral health problems with a higher score identifying more problems. The BOHSE assessment begins with observation and palpation for enlarged cervical lymph nodes and includes a complete oral cavity evaluation. Using a pen light, tongue depressor, and gauze, the conditions of the oral cavity, surrounding tissues, and natural/artificial teeth are examined and categorically graded from 0 (normal) to 2 (significantly problematic).

TARGET POPULATION: The BOHSE was designed to evaluate the oral condition of nursing home residents, with and without cognitive impairment, by those providing nursing care. The BOHSE has been employed in a variety of populations including community-dwelling and hospitalized older adults, nursing home residents, and individuals with cognitive impairment (Chalmers, Spencer, Carter, King, & Wright, 2009; Chen, Chang, Chyun & McCorkle, 2005; Lin, Jones, Godwin, Godwin, Knebl, & Niessen, 1999; Yu, Lee, Hong, Lau, & Leung, 2008).

VALIDITY AND RELIABILITY: Statistically significant test-retest reliability (r=.83-.79), inter-rater reliability (r=.68-.40), and content validity have been established by six field experts (Kayser-Jones, et al, 1995).

STRENGTHS AND LIMITATIONS: The BOHSE is a screening tool with demonstrated reliability and validity that should be used by nursing personnel in residential settings. Systematic use of this tool at scheduled times can facilitate oral health triaging of residents to allow for timely care provided by the dentist.

FOLLOW-UP: Although the cumulative score is helpful, individuals who score on items with an asterisk that are underlined should be referred for a dental evaluation and exam and follow up immediately. In general, a semi-annual checkup is recommended by a dentist for oral health assessment.

MORE ON THE TOPIC:
Best practice information on care of older adults: www.ConsultGeri.org
## The Kayser-Jones Brief Oral Health Status Examination (BOHSE)

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>MEASUREMENT</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LYMPH NODES</td>
<td>Observe and feel nodes</td>
<td>No enlargement</td>
<td>Enlarged, not tender</td>
<td>Enlarged and tender*</td>
</tr>
<tr>
<td>LIPS</td>
<td>Observe, feel tissue and ask resident, family or staff (e.g. primary caregiver)</td>
<td>Smooth, pink, moist</td>
<td>Dry, chapped, or red at corners*</td>
<td>White or red patch, bleeding or ulcer for 2 weeks*</td>
</tr>
<tr>
<td>TONGUE</td>
<td>Observe, feel tissue and ask resident, family or staff (e.g. primary caregiver)</td>
<td>Normal roughness, pink and moist</td>
<td>Coated, smooth, patchy, severely fissured or some redness</td>
<td>Red, smooth, white, or red patch; ulcer for 2 weeks*</td>
</tr>
<tr>
<td>TISSUE INSIDE CHEEK, FLOOR AND ROOF OF MOUTH</td>
<td>Observe, feel tissue and ask resident, family or staff (e.g. primary caregiver)</td>
<td>Pink and Moist</td>
<td>Dry, shiny, rough red, or swollen*</td>
<td>White or red patch, bleeding, hardness; ulcer for 2 weeks*</td>
</tr>
<tr>
<td>GUMS BETWEEN TEETH AND/OR UNDER ARTIFICIAL TEETH</td>
<td>Gently press gums with tip of tongue blade</td>
<td>Pink, small indentations; firm, smooth and pink under artificial teeth</td>
<td>Redness at border around 1-6 teeth; one red area or sore spot under artificial teeth</td>
<td>Swollen or bleeding gums, redness at border around 7 or more teeth; loose teeth; generalized redness, or sores under artificial teeth*</td>
</tr>
<tr>
<td>SALIVA (EFFECT ON TISSUE)</td>
<td>Touch tongue blade to center of tongue and floor of mouth</td>
<td>Tissues moist, saliva free flowing and watery</td>
<td>Tissues dry and sticky</td>
<td>Tissues parched and red, no saliva*</td>
</tr>
<tr>
<td>CONDITION OF NATURAL TEETH</td>
<td>Observe and count number of decayed or broken teeth</td>
<td>No decayed or broken teeth/roots</td>
<td>1-3 decayed or broken teeth/roots*</td>
<td>4 or more decayed or broken teeth/roots; fewer than 4 teeth in either jaw*</td>
</tr>
<tr>
<td>CONDITION OF ARTIFICIAL TEETH</td>
<td>Observe and ask patient, family or staff (e.g. primary caregiver)</td>
<td>Unbroken teeth, worn most of the time</td>
<td>1 broken/missing tooth, or worn for eating or cosmetics only</td>
<td>More than 1 broken or missing tooth, or either denture missing or never worn*</td>
</tr>
<tr>
<td>PAIRS OF TEETH IN CHEWING POSITION (NATURAL OR ARTIFICIAL)</td>
<td>Observe and count pairs of teeth in chewing position</td>
<td>12 or more pairs of teeth in chewing position</td>
<td>8-11 pairs of teeth in chewing position</td>
<td>0-7 pairs of teeth in chewing position*</td>
</tr>
<tr>
<td>ORAL CLEANLINESS</td>
<td>Observe appearance of teeth or dentures</td>
<td>Clean, no food particles/tartar in the mouth or on artificial teeth</td>
<td>Food particles/tartar in one or two places in the mouth or on artificial teeth</td>
<td>Food particles/tartar in most places in the mouth or on artificial teeth</td>
</tr>
</tbody>
</table>

Upper dentures labeled: Yes _____ No _____ None_____  
Lower dentures labeled: Yes _____ No _____ None_____  
Is your mouth comfortable? Yes _____ No _____ If no, explain: _________________________________________________________

Additional comments: _______________________________________________________________________________________

*Underlined* -refer to dentist immediately

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