Title: Guidelines for Replacing Enteral Feeding Tubes in Long-Term Care

Date: August 30, 2007

Context and policy issues:

Enteral feeding is common practice for patients requiring either short-term or long-term artificial nutrition support. Contamination of enteral feeding sets and tubes is a key concern in long-term enteral feeding as it has been found that bacteria can be introduced into feeding system during administration. In the UK more than 30% of enteral feeding systems in long-term care settings are contaminated with a variety of bacteria via administration procedures. High rates of contamination reinforce the need to examine the guidelines for infection prevention with specific focus on administration of enteral feeding system.

Research questions:

1. What are the guidelines for replacement of enteral feeding administration sets and tubes for patients in long-term care?
2. Is there a risk of contamination for replacement of sets and tubes every 72 hours compared to every 24 hours?

Methods:

A limited literature search was conducted on key health technology assessment resources, including PubMed, CINAHL, The Cochrane Library (Issue 3, 2007), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI’s HTAIS, EuroScan, international HTA agencies, and a focused Internet search. Results include articles published between 1997 and the present, and are limited to English language publications only.
Summary of findings:

We did not identify Canadian guidelines for enteral feeding administration in long-term care facilities. The search identified five non-Canadian guidelines for replacement of enteral feeding sets. and six studies that focused on enteral feeding and the risk of contamination due to enteral feeding systems design, formula manipulation, and handling procedures within a 24-hour feeding session.

In 2003, the National Institute for Health and Clinical Excellence (NICE) developed clinical guidelines for patients (of all ages) and clinicians on the prevention of healthcare associated infection in primary and community care in the UK. The guidelines were developed by systematically reviewing and critically appraising national and international guidelines identified through electronically searching various databases. One of the four sets of guidelines contained three specific recommendations that addressed the prevention of infections associated with the use of enteral feeding systems. Table 1 presents the three recommendations.

Table 1. National Institute for Health and Clinical Excellence (NICE) recommendations on enteral feeding systems

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Strength of recommendation</th>
<th>Evidence category</th>
</tr>
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<tbody>
<tr>
<td>“Minimal handling and aseptic no-touch technique should be used to connect the administration system to the enteral feeding tube”</td>
<td>C</td>
<td>Directly based on category III evidence, or extrapolated recommendation from category I or II evidence</td>
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<tr>
<td>“Ready-to-use feeds can be given for a whole administration session, up to a maximum of 24 hours. Reconstituted feeds should be administered over a maximum 4-hour period”</td>
<td>C</td>
<td>Directly based on category II evidence, or extrapolated recommendation from category I evidence</td>
</tr>
<tr>
<td>“Administration sets and feed container are for single use and must be discarded after each feeding session”.</td>
<td>B</td>
<td>Directly based on category I evidence, or extrapolated recommendation from category I evidence</td>
</tr>
</tbody>
</table>

Category I evidence consists of sub-category Ia (evidence from meta-analysis of randomized controlled trials) and sub category Ib (evidence from at least one randomized controlled trial); Category II evidence consists of sub-category IIa (evidence from at least one controlled trial without randomization) and sub-category IIb (evidence from at least one other type of quasi-experimental study); and Category III denotes evidence from non-experimental descriptive studies, such as comparative studies, correlation studies and case control studies.

The NICE guidelines were based on four studies of quasi-experimental designs (category IIb) that were conducted in late 1980s and 1990s and that examined enteral feeding at hospital setting. The studies found that feeding sets and tubes were unacceptably contaminated when used for more than 24 hours. The findings were contrary to that of a 1993 study (also referred in the NICE guidelines) that examined enteral feeding systems in a long-term care facility. The study suggested that enteral feeding administration sets could be used up to 72 hours.
The Clinical Resource Efficiency Support Team (CREST) published guidelines for the management of enteral tube feeding in 2004. The guidelines were developed by a multi-disciplinary group drawn from patient management groups, professional groups, and government agencies. Specifically the guidelines applied to adult patients receiving either home or hospital-based enteral feeding in Northern Ireland. The guidelines recommended that “giving sets labelled for ‘single use’ should be discarded after each feeding episode.” Also, the guidelines recommended that “reservoirs marked for ‘single patient use’ should be labeled with time and date when first used and if used for a full 24 hours feed, discarded after 24 hours.” However, the guidelines stated neither the source (evidence) of the recommendations nor the level of strength of the recommendations.

In 2005, the UK Home Enteral Tube Feeding Review Group published guidelines for the management of home enteral tube feeding in adults. The guidelines were drawn from those published by CREST in 2004. The guidelines recommended that “giving sets labelled for ‘single use’ should be discarded after each feeding episode.” Also the “reservoirs marked for ‘single patient use’ should be labeled with time and date when first used and if used for a full 24 hours feed, discarded after 24 hours.” Like the CREST guidelines, the guidelines by Home Enteral Tube Feeding Review Group also failed to report the source (evidence) or the strength level of their recommendations.

The Institute of Human Nutrition in the UK published a document that contained guidelines for enteral feeding in adult patients in a hospital setting. The authors compiled the guidelines based on relevant literature identified through discussion with dietitians and specialist nutrition nurses. The guidelines were then reviewed by the British Society of Gastroenterology and the British Association of Parenteral and Enteral Nutrition. With Grade C strength level (based on NICE grading system described on Table 1 above), the guidelines recommended that “administration sets and nutrient containers should be discarded every 24 hours.”

Similar recommendations were made in the guidelines published by Darford and Gravesham NHS Trust in 2006. The guidelines specifically applied to adult patients receiving enteral feeding at hospitals in the UK. The guidelines stated that one should “discard bottle, giving set and any leftover feed after 24 hours. Syringes should be stored in a drawer at the patient’s bedside.” The authors stated the rationale for 24-hour replacement of feeding sets and tubes was “to limit incubation period for any contaminant.” However, like the CREST guidelines and those of Home Enteral Tube Feeding Review Group, Darford and Gravesham NHS Trust did not state the sources (evidence) and strength level of their recommendation. In addition, the authors did not state methods used to develop the guidelines.

Conclusion:

The guidelines identified in our electronic search recommended the replacement of administration sets and tubes every 24 hours in order to limit the risk of contamination. The evidence used in the guidelines is rather out-dated (from 1980s and 1990s) and are drawn from studies that focused on hospital settings. None of the guidelines review focuses on enteral tube feeding in long-term care facilities. Moreover, only two out of the five guidelines were developed through rigorous systematic reviews and clearly stated the strength level of their recommendation.

The use of enteral feeding administration sets for more than 24 hours was suggested by one study in a long-term care facility conducted in 1991. Though this study is reported in the NICE
guidelines, there were no guidelines addressing this timeframe (> 24 hours) within NICE or any other guideline included in this CADTH report.

Also, no additional studies were identified that examined the possible risks associated with using enteral feeding sets for more than 24 hours in a long-term care facility. Rather, studies in the literature\(^1\,^7\,^8\,^9\,^10\,^11\) focused on enteral feeding and the risk of contamination due to enteral feeding systems design, formula manipulation, and handling procedures within a 24-hour feeding session.

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