Dignity with a Smile

ORAL HEALTHCARE FOR ELDERS IN RESIDENTIAL CARE
A REPORT FOR THE FEDERAL DENTAL ADVISORY COMMITTEE
2008

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Executive Summary and Recommendations

At the request of the Federal Dental Care Advisory Committee (FDCAC), a sub-group of the members agreed to tackle one of the serious oral health concerns that is more than just an access to care issue. They began by identifying questions raised within the committee. These are the final list of questions addressed in this report.

1. What oral health problems are found among elders in residential care in Canada; and how are they related to other disabilities and disorders
   - Oral problems are diverse and prevalent
   - Oral problems are associated with other systemic disabilities and disorders (*e.g.* diabetes, cardiovascular diseases*).*
2. Can oral healthcare be managed effectively in residential facilities?
3. Who manages the oral health of elders in residential facilities?
4. Can oral health be assessed competently by non-dental personnel?
   - A role for non-dental personnel in assessing oral health
5. How can the quality of oral health-related services in residential care be assessed?
   - Assessing quality of services
6. What policies, legislation and standards regulate oral care in residential facilities?
   - Setting policies, legislation and standards of oral care in facilities
7. How can policies for managing oral healthcare be translated to an acceptable standard of care in this multidisciplinary environment?
   - Translating policies to an acceptable standard in a multidisciplinary environment
8. How can the apparent widespread neglect of oral health in residential care facilities be placed on the agenda of the Federal/Provincial Health Ministers?
   - Sensitizing Health Ministers to oral healthcare for frail elders

The sub-group then addressed each of these 8 questions, identifying the information available to address the question and what further information, strategies and recommendations were required. These recommendations were listed and then categorized into five overarching themes. These themes are:

- Oral Health Care is integral to residential care
- Management of oral healthcare in residential care
- Education
- Assessing Oral Health
- Policies, Legislation and Standards

The summary of solutions, strategies and recommendations are as follows:

Oral Health Care is integral to residential care

1. Recognize oral health as an integral part of **general health**;
2. **Research** agencies must support at reasonable and sustainable levels research on oral health for frail elders;
3. Regulatory bodies must **enforce responsibility** of all professional groups to care for oral health at an appropriate standard;
4. Promote **collaboration** between oral healthcare and other healthcare providers;

5. Investigate **contractual agreements** between facilities and oral healthcare providers;
6. Heighten sensitivity to **risks** associated with **sugar,** alcohol, tobacco and poor hygiene;
7. Advise pharmaceutical companies and residential care managers to eliminate **sugar** as a medium for delivering medications;
8. Advise health authorities to discourage continuous snacking on **sugar** and other refined carbohydrates;
9. Promote professional collaboration on oral health to combat **anorexia and social isolation** among frail elders.

Management of oral healthcare in residential care

10. Identify **oral hygiene** as part of all care plans;
11. Implement regulations for appropriate **daily oral hygiene** support in all facilities;
12. Support placement of certified dental assistants **(CDAs)** and dental hygienists (**DHs) on salary** in every facility to co-ordinate oral healthcare;
13. Explore the possibility of **CDAs** as primary promoters of oral healthcare in facilities;
14. Acknowledge that **institutional structure and culture** influences oral health as much as surgical or medical interventions.

Education

15. Develop inter-professional education to promote **teamwork;**
16. Ask professional accreditation boards to establish educational **objectives** for oral healthcare appropriate to the scope of practice of each professional group;
17. Implement basic and continuing **oral health-related programs for all health professionals;**
18. Encourage continuing educational programs for all care staff to **highlight** associations between sugar, obesity, diabetes, cardiovascular disease and oral diseases;
19. Expand **professional development** initiatives for all healthcare providers to enhance oral healthcare.

Assessing Oral Health

20. Develop **guidelines** for assessing programs of oral healthcare in residential care facilities;
21. Define the **role** of oral health professionals in assessing oral health status and need for care;
22. Develop **clinical and psychometric instruments** for non-dental healthcare providers to assess the oral status and propensity for oral care.

Policies, Legislation and Standards

23. identify financial, physical, and psychological **barriers**, including inter-professional rivalries that impede effective oral healthcare for frail elders;
24. Promote **"best practice"** guidelines on oral healthcare and oral hygiene;

25. Ask all regulatory authorities in Canada to increase **compliance** with existing oral health guidelines.
26. Encourage development of **health promotion strategies** to increase appreciation for oral health in old age;
27. Rethink the **hierarchy** of healthcare providers in residential care.

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1. WHAT ORAL HEALTH-RELATED PROBLEMS ARE FOUND AMONG ELDERS IN RESIDENTIAL CARE?

In 2001, an Australian study of oral health among frail elders in residential care opens with the statement "[v]ery little is known about the onset of oral diseases and how they progress in these medically compromised, functionally dependent, and cognitively impaired older adults... [and] there has been little… international research published concerning the relationship between residents' oral health status and their medical, cognitive, and functional health characteristics".[1] The situation in Canada is similar. Consequently, we are poorly informed to manage the oral health-related needs and challenges of our ageing population.

In 2006 there were about 1.2 million people aged 80 years and over in Canada, up 25% from 2001 and accounted for 27% of all seniors in 2006, up from 24% in 2001.[2] Energy levels and neurological control declines as we age to the point where typically we become frail and dependent on others to cope with the usual needs of life.[3] Fortunately, we have a multitude of assets (*e.g.* strength; wealth; social support) to maintain a reasonable quality of life by harnessing the social and psychological factors that balance our assets and deficits (*e.g.* chronic disease; poverty; social isolation).

Frailty and dependency loom largest after 80 years when about one-third of the population in most western countries reside in nursing homes or other forms of residential care.[1,4] Nonetheless, the typical 85-year-old can look forward to at least five more years of life.[5] Cardiovascular, neurological and musculoskeletal disorders are the usual contributors to frailty,[6] but it is memory lapses, arthritis, hearing loss, poor eyesight and insomnia that more typically threaten independence, upset oral health and disturb quality of life.

1.1. Impact of General Health on Oral Health

Physical and cognitive dependence challenges oral hygiene, and it is not easy for caregivers to clean the natural teeth of someone who is distressed and confused. Yet, more threats to natural teeth are the sugar-laden snacks, such as muffins and sweet drinks, and the sweetened medications, offered routinely to elders when frailty curbs apatite. The caries initiated and sustained by sugar and other refined carbohydrates can destroy an entire natural dentition in a matter of months, especially in elders who take medications for depression, sleeping difficulties, hypertension and other chronic disorders of old age. In fact, most of the medications prescribed for chronic disorders will disturb the normal protective function of saliva.[7] Consequently, caries remains the major cause of tooth loss among elders, with an incidence today among some disadvantaged population

groups, such as Aboriginal peoples and new immigrants, comparable to the caries epidemics of the last century.[8]

1.2. Impact of Poor Oral Health on General Health

Infections from dental abscesses and from the bacterial plaque associated with gingival and periodontal diseases can be life-threatening by damaging the cardiovascular and endocrine systems.[9] However, it is pneumonia from aspiration of oral bacteria into the lungs that is most threatening to frail elders,[9,10,11,12,13] and has led to the current expert opinion that "the expense of aspiration pneumonia as a nursing home complication makes dental hygiene a potentially cost-saving intervention".[14]

RECOMMENDATIONS

1. Recognize oral health is an integral part of general health;
2. Research agencies must support at reasonable and sustainable levels research on oral health for frail elders;
3. Regulatory bodies must enforce responsibility of all professional groups to care for oral health at an appropriate standard.

2. CAN WE MANAGE ORAL HEALTHCARE IN RESIDENTIAL FACILITIES?

There is no consensus on an appropriate management strategy for oral healthcare in residential facilities.[15,16] Administrators who are particularly aware of their legal responsibility want ready access to emergency care for residents with dental pain and infection, and they seek also effective diagnostic services for oral diseases.[33] Consequently, most facilities offer a dental emergency service to residents. Unfortunately, access to regular diagnostic and preventive services is distressingly inadequate in most parts of the country. In general, some facilities have explicit policies and procedures involving formal arrangements with dental personnel, whereas others operate much more informally in response only to severe pain and infection.

The effectiveness of oral healthcare is influenced by the organizational context of a facility. However, successful strategies for care typically operate with a clear plan, a commitment to implement; and an agreement on responsibilities.[17]

Dental personnel working on salary can provide excellent comprehensive domiciliary care for residents, but unfortunately, most administrators cannot or will not support salaries that come anywhere near the income of dentists, dental hygienists or denturists in a fee-for-service private practice. Dental professionals simply have little incentive apart from an ethical sense of professional responsibility to make domiciliary calls to frail elders.

The presence of a "champion" for oral healthcare, whether from within the institution or from visiting dental personnel, is an essential ingredient for a successful oral healthcare strategy, and it is noteworthy that the professional qualifications of the champion are much less important than the ability to infiltrate and work within the specific culture of the institution.[17]

2.1 STRATEGIES FOR SPECIFIC DISORDERS

2.1a. Caries

Some people are resistant to caries despite an almost constant intake of sugar and poor oral hygiene, whereas others are very susceptible to the disease.[18] Constant sugar consumption from drinks and sticky foods increases greatly the risk of caries and the rapid destruction of teeth. Apparently, about half (51%) of the medicines used in the UK with or without prescription for chronic disorders contain a substantial quantity of sugar.[19] This phenomenon afflicts all age groups but it is more threatening for elders because many of the medications for the disorders of old age upset the acidic buffering capacity of saliva.[20] Fortunately, fluoride in the communal water supply or in a mouthrinse and toothpaste does prevent caries in elders as in children.[21,22]

2.1b. Gingivitis and Periodontitis

Oral malodour from poor oral hygiene and bleeding gingiva can upset social relationships, which can lead to social isolation, morbidity and early death.[23,24] The biological connections between poor oral hygiene, periodontitis and tooth loss remain unclear, but fortunately loss of teeth from periodontitis is an unusual event in old age.[9] In any event, mechanical plaque control and personal oral hygiene are the mainstays of periodontal therapy.[25]

RECOMMENDATIONS

4. Promote collaboration between oral healthcare and other healthcare providers;
5. Investigate contractual agreements between facilities and oral healthcare providers;
6. Heighten sensitivity to risks associated with sugar, alcohol, tobacco and poor hygiene;
7. Advise pharmaceutical companies and residential care managers to eliminate sugar as a medium for delivering medications;
8. Advise health authorities to discourage continuous snacking on sugar and other refined carbohydrates;
9. Promote professional collaboration on oral health to combat anorexia and social isolation among frail elders.

3. WHO MANAGES THE ORAL HEALTH OF ELDERS IN RESIDENTIAL FACILITIES?

Most nursing homes in the USA during the 1990s offered some dental services and assistance with oral hygiene, yet less than half of them were attended by dental hygienists or dentists for anything much beyond emergency care.[26] On the other hand, physicians and nurses perceive dentistry and dental hygiene as outside their sphere of influence and culture, so that, as one physician remarked recently: "*problems with swallowing are my department while problems with chewing are the dentist's department*".[27]

Dentists and dental hygienists traditionally play relative minor roles in residential care, in Canada[28,29,30] and elsewhere.[31,32] Clearly, the daily routine of care in LTC facilities across the country has many priorities competing for the attention of understaffed nursing services, whilst administrators complain about difficulties getting access to helpful dental personnel.[33] Dentists when asked, express concerns about financial constraints, inadequate equipment, limited demand and poor cooperation from staff and administrators of the facilities.[34] In general, therefore, dentistry and oral healthcare lies low on the list of priorities in most facilities.

Recent comments from several sources demonstrate a growing recognition of the need for improved dental services and financing arrangements to meet the oral healthcare needs of elders who are house-bound or in residential care.[35,36,37] Dentists and denturists* typically work independently within their own scope of practice while dental hygienists usually practice under direction from dentists. However, dental hygienists in Alberta, B.C., Manitoba and Saskatchewan, can obtain additional qualifications to practice in "residential care" independently of dentists. Denturists* in Quebec, Ontario, P.E.I, Nova Scotia, Newfoundland, Alberta, Saskatchewan and the Yukon may practice independently of dentists to provide removable prostheses, whereas in the NWT and other provinces they may provide this service only with approval from dentists. Certified dental assistants generally work only under the direct supervision of dentists to clean teeth, apply topical anti-caries agents and fissure-sealants to teeth, assess the cariogenicity of dietary habits, provide nutritional counselling relevant to oral health, and instructions on the use of dentures. A few public health programmes (*e.g.* in B.C.) permit dental assistants with additional education to offer advice on health promotion without direct supervision of a dentist. There are a few dentists and dental hygienists with mobile clinical practices limited to institutionalised and housebound persons throughout the country but there activities are few and far between. Unfortunately, despite the potential, there remain substantial barriers to further involvement of dentists [28,33] or dental hygienists in LTC facilities.[38]

RECOMMENDATIONS

10. Identify oral hygiene as part of all care plans;
11. Implement regulations for appropriate daily oral hygiene support in all facilities;
12. Support placement of certified dental assistants (CDAs) and dental hygienists (DHs) on salary in every facility to co-ordinate oral healthcare;
13. Explore the possibility of CDAs as primary promoters of oral healthcare in facilities;
14. Acknowledge that institutional structure and culture influences oral health as much as surgical or medical interventions.

* Denturists are also identified as "denturologists" in Quebec.

4. EDUCATION OF NURSING STAFF AND OTHER PROFESSIONALS IN RESIDENTIAL CARE

Educational programs that demonstrate oral hygiene techniques and products can increase the knowledge of nursing staff and improve the oral hygiene of patients in their care.[15] Unfortunately, there is no evidence that the knowledge and skill offer a practical benefit much beyond a few months,[39,40,41] and efforts to institute daily mouth-care as part of the daily care plan of nurses and care-aides have failed.[42,43] There are ongoing pre-licensure educational trials - the Seamless Care Project at Dalhousie University in Nova Scotia, for example[44] - that include dental personnel as part of an interdisciplinary team in residential care. So there is hope that the pre-licensure education of other healthcare providers will place oral and dental care prominently as an integral part of general hygiene, physical assessment and preventive maintenance.

RECOMMENDATIONS

15. Develop inter-professional education to promote teamwork;
16. Ask professional accreditation boards to establish educational objectives for oral healthcare appropriate to the scope of practice of each professional group;
17. Implement basic and continuing oral health-related programs for all health professionals;
18. Encourage continuing educational programs for all care staff to highlight associations between sugar, obesity, diabetes, cardiovascular disease and oral diseases;
19. Expand professional development initiatives for all healthcare providers to enhance oral healthcare.

5. ASSESSING ORAL HEALTH IN RESIDENTIAL CARE FACILITIES

5.1 QUALITY OF CARE

There is little information available on the long-term consequences of oral healthcare programs for frail elders,[1,16] and most attempts at quality assurance within oral healthcare for frail elders focused on very short-term improvements of oral hygiene.[45,46] Models of health disparities identify a multitude of variables influencing health disorders and provision of care, but they offer no guidance on how to evaluate particular programs of care.[47,48] Current opinions of quality assessment of healthcare support systematic and continuous evaluations of the structure, activity, and outcome of a program in which good structure increases good process; good process increases good outcome; and good outcomes demonstrate quality of care.[49,50] Moreover, there is awareness now that quality of life should be considered as central to any assessment of healthcare. Unfortunately, the usual measures of oral health-related quality of life are more

focused on treatment needs than on the benefits or limitations of care.[51,52] Indeed, the concepts of "quality of life" and "health-related quality of life" are laden with cultural values and influenced by personal goals, expectations, standards, and concerns, all of which render it difficult to measure or assess the impact that a program might have on the quality of life of the residents.[53]

RECOMMENDATION

20. Develop guidelines for assessing programs of oral healthcare in residential care facilities.

5.2 ASSESSMENT OF ORAL HEALTH BY NON-DENTAL PERSONNEL

The physical and cognitive assessment of frail elders should indicate the propensity* for personal hygiene and other oral healthcare practices.[54] Typically, as frailty increases, there is a decline in propensity for self-care and treatment. In Vancouver's RESIDENTIAL CARE facilities some years ago, for example, dentists determined that about one-third of the residents had a need for comprehensive dental treatment, one-tenth were unlikely to endure most dental procedures, and the others might have benefited from very limited care.[55] Like all disorders associated with advancing age, prevention and management of oral disability depends upon ability to exploit the resiliency and fluidity of health and frailty.[56]

Several screening methods have been proposed for assessing the oral health status of older people,[57,58,59,60,61,62] but the Resident Assessment Instrument (RAI) is used widely in Canadian residential care to screen and assess the level of care needed, while the Minimum Data Set (MDS) is the basic data collection instrument within the RAI.[63] The MDS covers 15 domains including oral problems (broken teeth, caries, ulcers *etc.*), oral status, and oral hygiene.[64] Application of the MDS is far from consistent, which causes concern about who should screen residents for mouth-problems. Apparently, application of the RAI identified no more than half of the oral needs in a group of institutionalized elders,[65] and nurses do not always use the MDS effectively to track the oral health-related needs of residents in their care.[66] On the other hand, at least one screening instrument with "significant interrater reliability" between the nurses and the dentists allows nursing staff "to do a brief oral health assessment that would serve as a screening evaluation [not a diagnosis] and prompt them to make appropriate referrals to a dentist.[67]

* Propensity for care addresses the physical and cognitive abilities of residents and their desire for treatment along with the potential for benefit.

RECOMMENDATIONS

21. Define the role of dental professionals in assessing oral health status and propensity for care;
22. Develop clinical and psychometric instruments for non-dental healthcare providers to assess the oral status and propensity for oral care.

6. POLICIES, LEGISLATION AND STANDARDS REGULATING ORAL CARE IN RESIDENTIAL FACILITIES?

Government policies in many Canadian jurisdictions proscribe quality of care in LTC facilities. Apart from the Yukon, Northwest Territories and Nunavut, most provinces have legislations to mandate oral health examination, assessment and oral care services in LTC facilities or nursing homes.[68] Typically, the regulations are vague, possibly in deference to the multiple sources of care available and to allow the administrators and the nursing staff flexibility. For instance, in British Columbia, the *Community Care and Assisted Living Act*[69] requires licensed operators of residential care facilities to "ensure that a person in care is assisted in (a) maintaining daily oral health, (b) obtaining professional dental services as required, and (c) following a recommendation or order for dental treatment made by a dental health care professional". In addition, operators "must ensure that staff develop and implement an individualized care plan [including oral health care] for a person in care… for two or more weeks", and they must "encourage a person in care to obtain an examination by a dental health care professional [*i.e.* a dentist, dental hygienist, denturist or denturologist* based on their scope of practice at least once every year". The Registered Nursing Association of Ontario offers "Best Practice Guidelines" for oral care in Ontario's LTC facilities in which all healthcare workers must have special skill, technique, training and experience to clean a resident's teeth (Registered Nursing Association Ontario , 2007).[70]

RECOMMENDATIONS

23. Identify financial, physical, and psychological barriers, including inter-professional rivalries that impede effective oral healthcare for frail elders;
24. Promote "best practice" guidelines on oral healthcare and oral hygiene;
25. Ask all regulatory authorities in Canada to increase compliance with existing oral health guidelines.

7. IMPROVING POLICIES FOR MANAGING ORAL HEALTHCARE IN RESIDENTIAL FACILITIES AND TRANSLATING THEM TO AN ACCEPTABLE STANDARD OF CARE

A recent report from Florida based on information from a wide range of interested parties, offers the following recommendations for improving oral

healthcare in LTC: 1) improve the education of everyone involved; 2) implement a preventive oral screening program on admission of every resident; 3) train

* Denturists are also identified as “denturologists” in Quebec

staff on how best to manage difficult residents; 4) establish a commercial dental insurance program to cover the cost of dental care; 5) expand the role of dental hygienists in the facilities; and 6) recognize that medical costs would be lowered as a consequence of good oral healthcare.[71] The report also recognized how oral health problems of residents are rooted frequently in neglect that occurs after retirement but before frailty occurs. It also emphasized the role of supportive social networks as key determinants of health.

Oral healthcare near the end of life revolves mostly around comfort, safety and cleanliness. Conflicting views on appropriate treatment can cause misunderstandings among everyone involved, particularly when the providers and recipients of care have different views on what constitutes a mouth problem that needs treatment.[33] Indeed, this misunderstanding probably explains why the low demand for dental care from frail elders is so dramatically at odds with the large estimates of treatment needs identified by dental personnel.[55] The struggle between practical need and ideal treatment is a reflection of ethical autonomy *versus* beneficence, whereby the wishes of a resident differ from the beneficence of a professional caregivers.[34] There is, as result, much disagreement on what constitutes reasonable oral healthcare, a just allocation of resources, and fair financial compensation.[72] Nonetheless, there are many instances across the country where dentists, dental hygienists and denturists provide good, cooperative and beneficial care in residential facilities. Unfortunately, the professional links to encourage expansion of their services remain to be forged. Perhaps by helping to train nurses and care-aides before they begin practice, and by forging cooperative interactions between our own professional organizations, we can restore and maintain the dignity of old age.

RECOMMENDATIONS

26. Encourage development of health promotion strategies to increase appreciation for oral health in old age;
27. Rethink the hierarchy of healthcare providers in residential care.

8. PLACING THE APPARENT NEGLECT OF ORAL HEALTH IN RESIDENTIAL CARE FACILITIES ON THE AGENDA OF FEDERAL AND PROVINCIAL HEALTH MINISTERS

A report on oral healthcare for seniors was prepared in 1999 for the provincial ministers responsible for seniors.[73] It explored through a questionnaire to program directors around the country the recent initiatives in community-based and facility-based continuing care for seniors. In summary, it concluded that there are seven challenges facing oral healthcare in Canadian LTC facilities: 1) limited resources; 2) high public expectations; 3) geographical remoteness; 4) public

ignorance of continuing care; 5) complexity of care needs; 6) resistance to change; and 7) the political environment and provincial control of program budgets. Sadly, the report offered no advice or suggestions on how to meet these challenges.

The legislative review of oral health in Canada's residential facilities produced for Health Canada explains that most provinces mandate through legislation "oral health examination, assessment and dental care services for residents of LTC facilities". [68] It qualifies this statement by referencing the Canadian Dental Association's assertion that "availability of oral care infrastructure in nursing homes is highly variable leaving many residents with few options to maintain their oral health". Apparently, the legislative authority to maintain the oral health of frail elders throughout the provinces is present, but the policies in most regulatory regions are missing to implement and support the laws.

RECOMMENDATIONS

28. Ask all regulatory authorities in Canada to increase compliance with existing oral health guidelines.
29. Adhere to regulations and policies in each province and territory that pertain to the oral health of residents in residential facilities.
30. Ask the chief dental officer in Health Canada to finance an exploration of evidence on the economic implications of oral neglect in Canada, particularly relating to the healthcare of frail elders territory.

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REFERENCES

1. Chalmers JM, Carter KD, Hodge CP, Fuss JM & Spencer AJ. The Adelaide Dental Study of Nursing Homes One-year Follow-up 1999. AIHW cat. no. DEN 84. Adelaide: AIHW Dental Statistics and Research Unit (Dental Statistics and Research Series No. 23). 2001.
2. Stasitcs Canada. The Daily, Tuesday July 17th, 2007: 2006 Census, age and sex. http://www.statcan.ca/Daily/English/070717/d070717a.htm (accessed Nov 17th, 2007)
3. Rockwood K, Fox RA, Stolee P, Robertson D, Beattie BL. Frailty in elderly people: an evolving concept. Can Med Assoc J 1994; 150:489-95.
4. McCormick JC. Chulis GS. Growth in residential alternatives to nursing homes: 2001. Hlth Care Financing Rev 2003; 24(4):143-50.
5. Hill GB, Forbes F, Lindsay J, McDowell I. Life expectancy and dementia in Canada: The Canadian study of health and aging. Chronic Dis Can 1997;18(4):166-7.
6. Canadian Institute for Health Information. Facility-Based Continuing Care in Canada 2004–2005. http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=home_e (Accessed Mar 23rd, 2006).
7. Guggenheimer J. Moore PA. Xerostomia: etiology, recognition and treatment. J Amer Dent Assoc 2003; 134:61-9.
8. Griffin SO. Griffin PM. Swann JL. Zlobin N. Estimating rates of new root caries in older adults. J Dent Res.; 2004; 83:634-8.
9. Hujoel, PP, Cunha-Cruz J, Loesche, WJ, Robertson PB. Personal oral hygiene and chronic periodontitis: a systematic review. Periodontol 2000. 2005; 37: 29-34.
10. Mojon P, Rentsch A, Budtz-Jorgensen E, Baehni PC. Effects of an oral health program on selected clinical parameters and salivary bacteria in a long-term care facility. Eur J Oral Sci 1998; 106: 827–34.
11. Russel SL, Boylan RJ, Kaslick RS, Scannapieco FA, Katz RV. Respiratory pathogen colonization of the dental plaque of institutionalized elders. Spec Care Dentist 1999; 19:128–34.
12. Wårdh I, Wikström M, Sörensen S. Oral bacteria and clinical variables in dependent individuals at a special facility. Int J Dent Hygiene 2004; 2:185-92
13. Langmore SE, Terpenning MS, Schork A *et al.,*, Predictors of aspiration pneumonia: how important is dysphagia? Dysphagia 1998; 13:69–81.
14. Terpenning M. Geriatric oral health and pneumonia risk. Clin Infect Dis 2005; 40:1807-10.
15. Pearson A, Chalmers J. Oral hygiene care for adults with dementia in residential aged care facilities. Joanna Briggs Institute Reports 2004; 2:65-113.
16. MacEntee MI. Caring for elderly long-term care patients: Oral health-related concerns and issues. Dent Clin North Am 2005; 49:429-43.
17. Thorne S, Kazanjian A, MacEntee MI. Oral health in long-term care: The implications of organizational culture. J Aging Studies 2001; 15:271-83.
18. MacEntee MI, Wyatt CCL, McBride B. A longitudinal study of caries and cariogenic bacteria in an elderly population. Community Dent Oral Epidemiol 1990; 18:149-52.
19. Baqir W. Maguire A. Consumption of prescribed and over-the-counter medicines with prolonged oral clearance used by the elderly in the Northern Region of England, with special regard to generic prescribing, dose form and sugars content. Public Health. 2000; 114:367-73.
20. Wyatt CCL, MacEntee MI. Dental caries in chronically disabled elders. Spec Care Dentist 1998; 17:196-202.
21. Bader JD. Shugars DA. Bonito AJ. A systematic review of selected caries prevention and management methods. Community Dent Oral Epidemiol 2001; 29:399-411.
22. Wyatt CCL, MacEntee MI. Caries management for institutionalized elders using fluoride and chlorhexidine mouthrinses. Community Dent Oral Epidemiol 2004; 32:1-7.
23. House JS. Social isolation kills, but how and why? Psychosom Med 2001; 63:273-4.
24. McKeown L. Social relations and breath odour. Int J Dent Hygiene 2003; 1:213-7.

25. Baelum V. Lopez R. Periodontal epidemiology: towards social science or molecular biology? Community Dent Oral Epidemiol 2004; 32:239-49.
26. Gift HC, Cherry-Peppers G, Oldakowski RJ. Oral health care in US nursing homes, 1995. Special Care Dentist 1998; 18:226 -33.
27 . Andersson K, Furhoff AK, Nordenram G, Wardh I. 'Oral health is not my department'. Perceptions of elderly patients' oral health by general medical practitioners in primary health care centres: a qualitative interview study. Scand J Caring Sci 2007; 21:126-33.
28. Weiss RT, MacEntee MI, Morrison BJ, and Waxler-Morrison N. The influence of social, economic, and professional considerations on services offered by dentists to long-term care residents. J Publ Hlth Dent 1993; 53:70-5.
29. Hawkins RJ, Main PA, Locker S. Oral Health Status and Treatment Needs of Canadian Adults Aged 85 Years and Over. Spec Care Dentist 1998; 18:164-9.
30. Wyatt CC. Elderly Canadians residing in long-term care hospitals: Part I. Medical and dental status. J Canad Dent Assoc. 2002; 68:353-8.
31. Longhurst RH. Availability of domiciliary dental care for the elderly. Prim Dent Care 2002; 9:147-50.
32. De Visschere LM; Vanobbergen JN. Oral health care for frail elderly people: actual state and opinions of dentists towards a well-organised community approach. Gerodontol 2006; 23:170-6.
33. MacEntee MI, Thorne S, Kazanjian A. Conflicting priorities: oral health in long-term care. Spec Care Dentist 1999; 19:164-72.
34. Bryant SR, MacEntee MI, Browne A. Ethical issues encountered by dentists in the care of institutionalized elders. Spec Care Dentist 1995; 15:79-82.
35. MacEntee MI, Harrison R, Wyatt CCL. Strategies to enhance the oral health of British Columbians, specifically aboriginal peoples, tobacco-users, and those of low socioeconomic background. A Report for the Ministry of Health, Government of B.C. March 2001. www.elders.dentistry.ubc.ca/oralhealthstrategies/
36. Canadian Dental Hygienists Association. Access Angst: A CDHA position paper on access to oral health services. 2003; 6 & 16. http://www.cdha.ca/pdf/position_paper_access_angst.pdf (Accessed Mar 16th 2006).
37. Canadian Dental Association. Position statement on "Delivery of oral health care". http://www.cda-adc.ca/_files/position_statements/delivery_care.pdf (Accessed March 16th, 2006).
38. Ablah CR;Pickard RB;. Dental hygienists and long-term care. Journal of Dental Hygiene 1998; 72 :27 -34,
39. Fallon T, Buikstra E, Cameron M, Hegney D, Mackenzie D, March J, Moloney C, Pitt J. Implementation of Oral Health Recommendations into Two Residential Aged Care Facilities in a Regional Australian City. Int J Evid Based Healthc 2006; 4:162-79. http://espace.library.uq.edu.au/eserv.php?pid=UQ:7904&dsID=ff_oral_care.pdf
40. Adachi M, Ishihara K, Abe S, Okuda K. Professional oral health care by dental hygienists reduced respiratory infections Int J Dent Hygiene 2007; 5:69–74.
41 . MacEntee MI, Wyatt CCL, Beattie BL, Paterson B, Levy-Milne R, McCandless L, Kazanjian A. Provision of mouth-care in long-term care facilities: an educational trial. Community Dent Oral Epidemiol, 2007; 35:25–34.
42. Herriman G, Kerschbaum W. Oral hygiene and education needs in long-term care facilities of Michigan. J Dent Hyg 1990; 64:174,195-8.
43. Weeks JC, Fiske J. Oral care of people with disability: a qualitative exploration of the views of nursing staff. Gerodontol 1994; 11:13-7.
44. Seamless Care: An Interprofessional Education Project for Innovative Team-Based Transition Care. Dalhousie University 2007. http://seamlesscare.dal.ca/index.html (Website visited December 26th, 2007).
45. Landesman A, Murphy M, Richards J, Smyth J, Osakue B. Oral hygiene in the elderly: a quality improvement initiative. Can J Nurs Leadersh 2003; 16:79-90.

46. Rivett D. Compliance with best practice in oral health: implementing evidence in residential aged care. Int J Evid Based Healthc 2006; 4:62-67.
47. Patrick DL, Lee RSY, Nucci M, Grembowski D, Jolles CZ, Milgrom P. Reducing Oral Health Disparities: A Focus on Social and Cultural Determinants. BMC Oral Health 2006, 6(Suppl 1):S4 (Website accessed May 3rd 2007) http://www.biomedcentral.com/content/pdf/1472-6831-6-S1-S4.pdf
48. Pruksapong M, MacEntee MI. Quality of oral health services in residential care: Towards an evaluation framework. Gerodontol 2007; 24:224-30.
49. Donabedian A. The quality of care. How can it be assessed? J Amer Med Assoc 1988; 260:1743-8.
50. Donabedian A. Quality assurance. Structure, process and outcome. Nurs Stand 1992; 7(11 Suppl QA):4-5.
51. Brondani MA, MacEntee MI. The Concept of validity in sociodental indicators and oral health-related quality of life measures. Community Dent Oral Epidemiol 2007; 35:472-8.
52 . MacEntee MI. Quality of life as an indicator of oral health in old age. J Amer Dent Assoc 2007;138:47S-52S
53. Allison PJ, Locker D, Feine JS. Quality of life: a dynamic construct. Soc Sci Med 1997; 45:221-30.
54. MacEntee MI, Hole R, Stolar E. The significance of the mouth in old age. Soc Sci Med 1997; 45:1449-58.
55. Mojon P, MacEntee MI. Estimates of time and propensity for dental treatment among institutionalized elders. Gerodontol 1994; 11:99-107.
56. Rowe JW, Kahn RL. Human aging: Usual and successful. Science 1987; 237:143-9.
57. Eichner K. Über eine Gruppeneinteilung des lückengebisse für die Prothetik. Dtsch Zahnarztl Z 1955; 10:1831-4.
58. Österberg T, Mellström D, Sundh V. Dental health and functional ageing. Community Dent Oral Epidemiol 1990; 18:313–8.
59. Dormenval V, Budtz-Jörgensen E, Mojon P *et al.*,, Nutrition, general health status and oral health status in hospitalised elders. Gerodontol 1995; 12:73–80.
60. Appollonio I, Carabellese C, Frattola A *et al.*,, Influence of dental status on dietary intake and survival in community dwelling elderly subjects. Age Ageing 1997; 26: 445-55.
61. MacEntee MI, Wyatt CCL. A Clinical Index of Oral Dysfunction in Elderly Populations (CODE). Gerodontol 1999; 16:85-96.
62. Nordenram G, Ljunggren G. Oral status, cognitive and functional capacity versus oral treatment need in nursing home residents: a comparison between assessments by dental and ward staff. Oral Dis 2002; 8: 296–302.
63. Morris JN, Hawes C, Fries BE *et al.*,, Designing the national resident assessment instrument for nursing facilities. Gerontologist 1990; 30: 293-307.
64. Minimum Data Set (MDS) — Version 2.0. For Nursing Home Resident Assessment and Care Screening Basic Assessment Tracking Form. http://www.cms.hhs.gov/NursingHomeQualityInits/downloads/MDS20MDSAllForms.pdf (Website accessed Sept 22nd, 2007)
65. Nederfors T, Paulsson G, Isaksson R *et al.*,, Ability to estimate oral health status and treatment need in elderly receiving home nursing a comparison between a dental hygienist and a dentist. Swed Dent J 2000; 24:105–16.
66. Ettinger RL, O'Toole C, Warren J *et al.*,, Nursing directors' perceptions of the dental components of the minimum data set (MDA) in nursing homes. Spec Care Dentist 2000; 20:23–7.
67. Kayser-Jones J. Bird WF. Paul SM. Long L. Schell ES. An instrument to assess the oral health status of nursing home residents. Gerontologist. 1995; 35:814-24.
68. Abi-Nahed J. Legislative review of oral health in Canada in particular long-term care facilities. A report prepared for the Office of the Chief Dental Officer. 2007.

69. Government of BC. Community Care and Assisted Living Act.. Victoria, BC: Queens Printer. 2005. http://www.qp.gov.bc.ca/statreg/reg/C/CommuCareAssisted/536_80.htm#section9.2 (Website accessed March 23rd. 2006)
70. Registered Nursing Association Ontario. Oral Health: Nursing Assessments and Interventions Nursing Best Practice Guidelines Program. 2007 http://www.rnao.org/Page.asp?PageID=924&ContentID=1567
71. Whitman LA, Whitman J. Improving Dental and Oral Care Services for Nursing Facility Residents. North Wales, PA: TRECS Institute report on oral health in LTC facilities. 2005. http://ahca.myflorida.com/mchq/Long_Term_Care/trust_fund/pdf/TandemDental.pdf (Website accessed Nov 25th 2007).
72. Dharamsi S, MacEntee MI. Dentistry and distributive justice. Soc Sci Med 2002; 55:323-29.
73. Minister of Public Works and Government Services Canada. Innovations in best-practice models of continuing care for seniors: Report prepared on behalf of the Federal/Provincial/Territorial Committee (Seniors) for the Ministers Responsible for Seniors. Ottawa: Division of Aging and Seniors Health Canada. March 1999. http://www.phac-aspc.gc.ca/seniors-aines/pubs/innovations/pdf/innovat_e.pdf (Website accessed Dec 29th 2007).