**A pilot study of a randomized controlled trail to evaluate the effects of progressive resistance exercise training on shoulder dysfunction caused by spinal accessory nuerapraxia/neurectomy in head and neck cancer survivors**

The purpose of this pilot study was to investigate the effects of progressive resistance exercise training (PRET) on shoulder function among head and neck cancer patients with shoulder dysfunction caused by spinal accessory neurapraxia/neurectomy. Twenty patients with a history of squamous cell head and neck cancer were recruited at 2 sites in Edmonton, Canada. Eligible patients had a radical, modified, or selective neck dissection; shoulder dysfunction due to spinal accessory neurapraxia/neurectomy; a Karnofsky performance status ≤ 60%; no cancer metastasis; and no shoulder comorbidity. Patients were randomly divided into 2 groups. "Early" patients began PRET within 8 weeks of neck dissection. "Late" patients, acting as controls, followed standard post-surgical exercise routines until given the option to begin PRET exercises 8 weeks after surgery. Demographics were comparable between the two groups with the exception of cancer stages (exercise group: stage III (n = 3), stage IV (n = 5); control group: stage I (n = 3), stage IV (n = 6)). Background information was taken through chart review and several instruments. Exercise habits were recorded using the leisure score index of the Godin Leisure-Time Exercise Questionnaire; quality of life was evaluated using the FACT-Head & Neck instrument. Range of motion was evaluated using a universal goniometer and the shoulder pain and disability index was given. Pain medication was monitored at 6 week intervals starting at baseline. All patients followed PRET for 12 weeks. Subjects exercised 3 times per week; intensity was adjusted based on exertion (≤ 13 on the Borg scale). Resistance was increased when the subject accurately completed 2 sets. Six exercises were performed to strengthen the muscles in the surrounding area (rhomboids, levator scapulae, biceps, triceps, infraspinatus, posterior deltoid, middle deltoid, supraspinatus, subscapularis). Continuous data were compared with two-tailed *t* tests and categorical data were compared using Pearson's chi-square test. The results of this study showed that the "early" patient PRET group had a significant decrease in pain level from the control group ($P = 0.038$) and also had a significant improvement in the external rotation range of motion ($P = 0.001$) and in the shoulder pain and disability index score ($P = 0.045$). This study is feasible based on the recruitment rate (80%) and completion rate (85%).

**McNeely ML, Parliament M, Courneya KS, et al.** *Head Neck* 2004;26:518-530. **References:** 49. **Reprints:** Margaret L. McNeely, Physical Therapy, Rehabilitation Medicine Department, Cross Cancer Institute, 11560 University Avenue, Edmonton, Alberta T6G 1Z2 Canada; Email: margiem@cancerboard.ab.ca —*Alvin G. Wee, UNMC Dept Otolaryngology, Omaha, NE*

**Elders assessment of an evolving model of oral health**

The concept of oral health has been explored by several international organizations. Most recently, the International Classification of Functioning, Disability, and Health (ICF) illustrates health and disease as a non-linear phenomenon with bio-psychosocial consequences. Emerging from this concept is an empirically based model of oral health encompassing health and disability and portraying the bio-psychosocial aspects of oral function. This model emerged from a thematic analysis of open-ended interviews with 24 healthy elders in order to present oral hygiene, comfort, and general health as the major themes of oral health. These major themes were surrounded by an inner layer of components (impairment, restricted participation, and limited activity) that extend the themes and an outer layer of environmental factors (personal environment, adapting, social environment, and coping) that influence the components and themes. Although this model is influenced strongly by the ICF and emerged from the thematic analysis of interviews with healthy elders, it has not been subjected to independent evaluations from elders. The objective of this article is a qualitative evaluation of the model by 6 focus groups comprised of elders. The participants, 30 women and 12 men with a mean age of 75 years, attended the focus groups to discuss the relevance of the model to their oral health beliefs and experiences. These transcripts of the narratives were analyzed systematically. There was a general agreement among the participants that the original components of the model are important to oral health. However, they felt that the terms limited activity; "impairment" and "restricted participation" were too negative and they suggested using terms such as "activity" and "participation" without connecting them to limitation and restrictions. The group also suggested changing the term "social environment" to "socio-cultural environment" to reflect the current view that culture plays in the society. Additional components felt to be important included diet, economic priorities, personal expectations, and health values and beliefs. It was also felt that elliptical rather than concentric circles better illustrate the dynamic and overlapping importance of various components in the model. This qualitative study reconfirmed the components in the oral health model with some minor modifications while introducing new components and a new graphical representation.

**Brondani MA, Bryant SR, MacEntee MI.** *Gerodontology* 2007;24:189-195. **References:** 46. **Reprints:** Professor MI MacEntee, Faculty of Dentistry, University of British Columbia, 2199 Wesbrook Mall, Vancouver BC V6T1Z3 Canada. Email: macentee@interchange.ubc.ca —*Beatrice Leung, University of Toronto, Toronto, ON*

**Quality of oral health services in residential care: towards an evaluation framework**

Delivering oral health care to the frail elders in long term care (LTC) facilities has always been a challenge. Unfortunately, organizing and evaluating oral health services in LTC facilities are even more challenging. In spite of that, there is a need for an evaluation framework to improve and account for the quality of oral healthcare in LTC facilities. This paper explores the concepts of quality of care and evaluation in healthcare, reviews methods used to evaluate the operation and effectiveness of oral healthcare in LTC facilities, and recommends changes to assure oral health-related quality and accountability for frail elders. Unlike traditional quality assurance (QA) that concentrated on a physician's performance, it has expanded to include the idea of ongoing procedural assessment, a programme's performance, and patient outcomes. As for health-programme evaluation, it has expanded to encompass systematic and empirical information about the characteristics of a programme's inputs (structure), operational activities (process), and outcomes. As for evaluations of oral healthcare in LTC facilities, there is good evidence that mouth-care products and techniques are efficacious but there is not sufficient information on the effectiveness of care strategies within the daily operations of residential care, and even less information on the quality of these programmes as a whole. With this theoretical basis in mind, the authors suggest that oral health-related programmes in LTC facilities could be improved by using a combination of QA and health programme evaluation that *(1)* engage a mixture of different health care givers and administrators. The success of an evaluation process depends on appropriate contacts with a range of different individuals who have different perspectives, relating to health and healthcare. The evaluation should also *(2)* seek quality beyond the limits of effectiveness. Quality of care goes beyond clinical effectiveness and programme efficiency. It should consider other factors such as personal autonomy, care-values, culture, and experience. The program should also be evaluated based on *(3)* the structure, process or activities and outcome of the oral health programme. Unlike acute care, the desired outcomes of LTC facilities are different from the care recipient's as frail elders value and balance quality of care and quality of life differently. Therefore, focus on the structure and process of a service may reveal how and why specific outcomes have emerged. The evaluation should also *(4)* use formative (relating to process) and summative (associated with outcome) methods to provide both quantitative and qualitative evidence of care. The impact of services on elderly residents is determined most effectively by multiple assessment tools and techniques. Finally, the evaluation should provide *(5)* new knowledge available for appropriate consideration and action. This theoretical framework can be useful in oral healthcare for frail elders in residential care.

**Pruksapong M, MacEntee MI.** *Gerodontology* 2007;24:224-230. **References:** 49. **Reprints:** Professor MI MacEntee, Faculty of Dentistry, University of British Columbia, 2199 Wesbrook Mall, Vancouver BC V6T1Z3 Canada. Email: macentee@interchange.ubc.ca—*Beatrice Leung, University of Toronto, Toronto, ON*

**Dental implants placed in previously failed sites: survival rate and factors affecting the outcome.**

The objectives of this retrospective clinical study were to evaluate *(1)* the survival rate of dental implants that were performed in sites which previously had failed implants and *(2)* the factors that could affect the outcome of this second procedure. Fifty-six patients (mean age 53.71 ± 1.3 years old) presenting with 79 redo implants were studied. All patients had previously suffered from chronic periodontitis and had completed periodontal treatment before any implant therapy was done. Inclusion criteria applied were: presence of one or more failed implants that were removed and replaced, new implants had to be inserted into the same site as the previously failed implant, age 20 years or older at the time of first implant placement, use of similar implants at first and second attempt, and both original and redo implants have to be placed by the same operator. Patients were excluded for the following: any systemic condition affecting bone metabolism, any changes in environmental conditions, evidence of parafunctional occlusal habits, and any signs of non-biological implant failure. Data on the failed implants' characteristics and placement mode were collected and this included: *(1)* the manufacturer, *(2)* the type of implant surface, *(3)* prosthetic connection, *(4)* insertion mode (submerged or exposed), *(5)* any evidence of augmentation, *(6)* reason for removal, *(7)* survival time of the first implant, and *(8)* implant length and diameter. All implants were followed-up for 7 to 78 months (mean 29.9 ± 2 months). Descriptive statistics were employed to analyze the study data. Systemic, environmental, and local factors' effects on the success and failure of the redo implants were evaluated by contingency table analysis for categorical data and *t* test for unpaired observations for continuous data at a 5% significance level. Thirteen out of 79 redo implants failed (overall survival = 83.5%). Redo implants were re-inserted 0 to 49 months after the original failed implants were removed (mean 6.75 ± 1.12 months; median 4 months). Redo fixtures were 10 to 15 mm in length (mean 11.99 ± 0.17 mm) and 3.25 to 5 mm in diameter (mean 4 ± 0.1 mm) as compared to previously inserted fixtures that were 8 to 16 mm in length (mean 12.1 ± 0.19 mm) and 3.25 to 5 mm in diameter (mean 3.9 ± 0.1 mm). The 13 redo implants that failed were of similar length to successful ones (11.9 ± 1.38 and 12.05 ± 1.39 respectively, $P = 0.8906$). Successful implants had greater diameters (4.05 ± 0.52 mm) than failed implants (3.72 ± 0.56 mm) but the differences were only marginal ($P = 0.06$). Exposure of implants during healing, need for bone augmentation at the time of surgery, implant type, prosthetic connection and placement mode did not affect the outcome of the redo implants. Likewise, smoking habits and implant location showed no significant difference in affecting survival outcome of the redo implants. The authors suggest that findings in this study seem to support the "site-specific etiological background" for implant failure. However, the authors rightly recognize the probability of type II error occurring due to the small sample size. They recommend that a co-ordinated, large-scale study be carried out to produce a much larger database of redo implants to provide a more accurate outcome evaluation.

**Machtei EE, Mahler D, Oettinger-Barak O, Zuabi O, Horwitz J**. *Clin Oral Implants Res* 2008;19:259-264. **References:** 35. **Reprints:** Prof Eli E. Machtei, Department of Oral and Dental Medicine, Rambam Health Care Campus, PO Box 9602, Haifa 31096, Israel. E-mail: machtei@rambam.health.gov.il—*Elvin W.J. Leong, Singapore*

**Incidence of osteonecrosis of the jaw in women with postmenopausal osteoporosis in the health outcomes and reduced incidence with zoledronic acid once yearly pivotal fracture trial**

Osteoporosis is a disease that often increases the risk of bone fractures, especially at the hip and vertebrae. Use of bisphosphonates can decrease this risk by reducing excessive bone turnover to maintain or increase bone mass. However, the use of high cumulative doses of intravenous bisphosphonates for treatment of bone metastases has been linked to some case reports of osteonecrosis of the jaw (ONJ). The estimated prevalence of ONJ in patients with cancer receiving intravenous bisphosphonates ranged from 0.8 to 10%. ONJ has also been reported in patients with osteoporosis who are receiving oral bisphosphonate therapy. However, the number of cases is too small to provide an accurate estimate of the prevalence. Using a three year prospective clinical trial, the authors determined the incidence of ONJ using data from clinical trials of zoledronic acid in women with postmenopausal osteoporosis (PMO). This multicenter, randomized, double-blind, placebo-controlled clinical trial enrolled 7,714 women with PMO. The intervention included the administration of intravenous zoledronic acid 5 mg over 15 minutes or a once-yearly placebo infusion. An independent, blinded adjudication committee searched the trials' adverse event database using 60 terms. Specifically, the committee reviewed identified events of ONJ, being defined to have exposed bone in the maxillofacial area with delayed healing for more than six weeks despite appropriate care. Only one participant in the placebo group and one in the intervention group experienced delayed healing associated with infection that met its definition for ONJ. Both cases were resolved with antibiotic therapy and appropriate debridement. The authors concluded that the occurrence of ONJ is rare in a PMO population. Delayed healing of lesions is possible with or without the use of bisphosphonates. In light of the clinical benefit of zoledronic acid in reducing hip and vertebral fractures, there is no evidence to suggest that patients with osteoporosis who are receiving bisphosphonates will require any deviation from routine dental care.

**Grbic JT, Landesberg R, Lin SQ, et al**. *J Am Dent Assoc* 2008;139 (1);32-40. **References:** 43. **Reprints:** Dr. Grbic, Division of Oral Biology and the Center for Clinical Research in Dentistry, Columbia University College of Dental Medicine, 630 West 168th St., Box 20 New York, NY 10032. Email: jtg2@columbia.edu—*Beatrice Leung, Toronto, ON*

**Assessments of trabecular bone density at implant sites on CT images**

The purpose of this article was to correlate the mean densities of trabecular bone measured with 2 software applications, eFilm and DentaCT, at possible implant sites on the maxilla and mandible. The study also aimed to correlate these measurements with bone quality using Lekholm and Zarb classifications and to establish a quantitative scale for each bone quality. CT images with edentulous areas that had the potential for implant placement and an alveolar thickness sufficient enough to support a region of interest (ROI) of at least 0.1 $cm^2$ in trabecular bone were selected. There were 75 implants sites identified. Three sequential axial images of each implant site were selected. Bone density of each ROI was measured by the examiner using the eFilm software application as well as DentaCT. The same examiner measured the bone density of each ROI 3 times on each of the 3 axial images and calculated the mean from the 9 measurements of each potential implant site. The images were then reformatted into transversal sectional images for classification of bone quality. The subjective assessment was made using the Lekholm and Zarb bone quality classifications by two examiners. The Paired Student *t*-test was used to compare between-groups and the Kruskall-Wallis test was used for within-group comparisons. Statistical significance was set at $P < .05$. The results indicated that the mean densities determined in both software applications were greater in the anterior mandible, followed by anterior maxilla, posterior mandible, and the posterior maxilla. However, wide ranges were noted for all anatomic regions. The Kruskall-Wallis test showed no significant differences among anatomic regions for either software. DentaCT measurements were significantly higher than eFilm measurements ($t = 4.50$; $P < .001$) Bland-Altman plot analysis showed that eFilm consistently underestimated bone density when compared with DentaCT. Subjective evaluation found that bone type 2 was the most prevalent and bone densities were significantly reduced from bone type 1 to type 4. According to this study, trabecular bone density for each bone type was found to be as follows: bone type 4 < 200 HU, bone types 2 and 3 200 < 400 HU and bone type 1 > 400 HU. This study confirms the variable bone qualities in any anatomic regions and that site specific bone evaluation is important prior to implant surgical procedures.

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