1. Mission
The International Centre for Oral-Systemic Health (ICOSH), launched in January of 2008, is a first-of-its-kind centre of academic and research excellence committed to interprofessional investigation of oral-systemic relationships, interprofessional development of preventive and therapeutic oral care products, and the transfer of associated scientific evidence into interprofessional education, transdisciplinary models of care, and effective population-based healthcare that translates into meaningful healthcare policy which recognizes the significance of oral-systemic health.

Oral-systemic health is defined as the absence of any pathobiological process or risk factor emanating from the oro-facial complex that may:

1. Negatively impact the structure or function of an end organ;
2. Complicate the treatment or management of a systemic disease or condition including normal biological processes such as aging and pregnancy; and, conversely, the absence of any pathobiological process or risk factor related to diseases or conditions of major organ systems (external to the oro-facial complex), and normal biological processes (such as aging and pregnancy) that may:
3. Negatively influence the structure, integrity, or function of the oro-facial complex;
4. Complicate the treatment or management of a disease or condition of the oro-facial complex.

The bi-directional relationship between oral and systemic health is integral to ensuring overall health and as such contributes to the state of physical, mental, emotional and social well being necessary for an individual to enjoy life’s possibilities and to adapt to life’s challenges.

2. Emerging Scientific Evidence & Precepts in Support of Mission
Over the last several decades, there has been substantial investigation into the relationship between oral health and overall health. Much has been learned about such things as caries, oral complications associated with treatment of head and neck cancer, oral complications related to solid organ transplants, the relationship between nutrition and oral health, and the threat that oral diseases/conditions pose to successful aging. Equally as important, but perhaps not as well recognized, is an emerging base of evidence supporting interrelationships between periodontal disease and inflammatory-driven disease states/conditions such as diabetes, atherosclerosis-induced diseases, adverse pregnancy outcomes, osteoporosis, rheumatoid arthritis, Alzheimer’s disease, and chronic kidney disease/end stage renal disease, among others. Evidence for some of these interrelationships appears stronger than others. Although much work needs to be done to establish cause and effect, current evidence suggests that periodontitis is much more than a localized oral infection. Preliminary data indicate that periodontitis causes changes in systemic physiology and biochemistry that alter immune function, serum lipid levels, and inflammatory biomarkers leading to a systemic inflammatory state; and furthermore, that these changes are reversible with periodontal treatment. The evidence to support some of these interrelationships appears to be sufficient enough that governmental authorities, educational institutions, private insurers, and professional associations have pronounced a call to action relative to increasing awareness and application of the oral-systemic connection. The ability to move this science and its applications forward will depend on a number of precepts which are fundamental to the success of ICOSH.
2.1 Changing nondental healthcare providers’ perception of the importance of oral health is essential and must be a primary goal.

2.2 Interprofessional approaches to research and the ability of dental and non-dental practitioners to work in collaboration to apply that research effectively is critical to the success of ICOSH. Researchers, educators, students, and practitioners should be “ready, willing, and able to work in collaboration” to discover new science and provide optimal health care for their patients. Many of the core competencies established by the University of Manitoba Interprofessional Education for Collaborative Patient-Centered Care are extremely useful in training students to this end.

2.3 Education in oral-systemic science, especially at an undergraduate level, is fundamental to bringing about this change. However, knowledge about oral-systemic relationships does not necessarily translate into integration of the knowledge into practice. Undergraduate education in oral-systemic science must be reinforced by clinical training in order to sustain this change once students become licensed practitioners.

2.4 As a prerequisite for clinical training in interprofessional care related to oral-systemic science, education in oral-systemic science must be integrated into the undergraduate programming of schools such as medical, nursing, dietetics, pharmacy, occupational therapy, respiratory therapy, physical therapy, and physicians’ assistants, among others. In addition, curriculum reform within dentistry and dental hygiene is critical to prepare future dental and dental hygiene practitioners for interprofessional collaboration, more medically-based modes of oral healthcare, and caring for more medically compromised patients.

2.5 All healthcare providers share the responsibility for implementing the findings of evidence-based oral-systemic research in order to provide optimal healthcare for their patients.

3. Vision and Scope of Activities
The International Centre for Oral-Systemic Health (ICOSH) is unique in the world and poised to become internationally recognized as the premier catalyst behind new discoveries and eventual public policy changes related to the oral-systemic connection including: 1) interprofessional education in oral-systemic science; 2) investigation into cause-and-effect associations of oral-systemic relationships through basic research; 3) development of risk assessment/diagnostic tools and preventive and therapeutic methods/technologies that impact oral-systemic health; 4) designing population-based applied research projects that target special cohorts at risk for oral-systemic disease states and strategies for measurement of patient outcomes specific to health promotion, prevention and intervention oral-systemic diseases/conditions; 5) collecting and analyzing data specific to patient outcomes related to prevention and intervention of oral-systemic disease states; and 6) effective translation of the data and expertise into scientific advocacy that will guide future healthcare policy decisions. This leadership will be established through the following distinctions:

3.1 ICOSH will become the global leader in interprofessional education in oral-systemic science through the development and implementation of a globally relevant web-based curriculum for undergraduate students and licensed practitioners in medicine, nursing, dietetics, pharmacy, occupational therapy, respiratory therapy, physical therapy, and physicians’ assistants, among other healthcare professions.

3.2 ICOSH will become the global leader in biomedical and epidemiologic research related to cause-and-effect associations of oral-systemic relationships and innovation in the development of risk assessment/diagnostic tools, and preventive and therapeutic methods/technologies that impact oral-systemic health.

3.3 ICOSH will align clinical outreach (for patients) and training activities (for students) with a wide range of community and governmental partners to structure research projects that will allow data related to patient outcomes to be collected and analyzed. These partnerships will allow ICOSH to develop “best practices” and model collaborative care which will serve as a valuable template for interprofessional care in oral-systemic health for replication by other institutions/organizations.

3.4 ICOSH will become the leader in establishing primary oral healthcare as a medical necessity in certain high risk populations within Canada through careful planning and strategic partnerships with public policy experts relative to demonstration projects.
4. Structure and Management
ICOSH was originally designed as a virtual centre within various participating Faculties. ICOSH will provide a stimulating and nurturing environment for interdisciplinary collaboration among its members leading to the development of unique and innovative educational resources that can be used for a wide range of applications. These educational resources will be available to the overall University interprofessional education program and enhance the effectiveness and quality of healthcare for all Manitobans. Additionally, ICOSH will provide a fertile environment for an entirely new area of collaborative interdisciplinary research increasing funding opportunities for university investigators.

ICOSH has three operational arms which are led by individual Directors who report directly to the Dean of the Faculty of Dentistry. The three arms of ICOSH and the responsibilities of the individual Directors are as follows:

4.1 Education; Director is responsible for
- All educational endeavors, including development and implementation of a web-based curriculum in oral-systemic science for both undergraduate students and continuing education for licensed practitioners in medicine, nursing, dietetics, pharmacy, occupational therapy, respiratory therapy, physical therapy, and physician assistants, among other healthcare professions
- Ensuring the integrity, relevance, and absence of commercial conflicts or biases as recommended by the AAMC Task Force on Industry Funding of Medical Education
- Working with Faculty-specific curriculum committees regarding content of educational modules and making recommendations for integration of educational modules as appropriate
- Defining collaborative models of care and identifying/developing clinical emersion experiences for students
- Ensuring electronic learning environments (CD/web-based) are effective
- Integrating university-wide interprofessional education initiatives as appropriate to ensure congruency with curriculum in oral-systemic science
- Building and sustaining relevant alliances within university units to ensure implementation of curriculum
- Creating and organizing programs/symposia related to oral-systemic science for educators, government, industry, healthcare systems, media, and the public at large
- Conducting assessment as well as process and outcomes research specific to educational programming in oral-systemic science
- Ensuring adherence to university guidelines regarding marketing, advertising, and accreditation for continuing education for licensed practitioners
- Guiding global dissemination of educational modules
- Providing direction to the Education Review Council and acting upon the advice of Council as appropriate

4.2 Research; Director is responsible for
- Stimulating, nurturing and coordinating research of the utmost rigor in the following areas of investigation:
  - Investigator-initiated multidisciplinary scholarship and basic research in the area of cause-and-effect of oral-systemic relationships
  - Investigator-initiated multidisciplinary scholarship and applied research related to how oral care intervention may impact oral-systemic outcomes
  - Contracted research pertaining to development of pharmacological products or devices and commercially supported clinical trials
- Fostering a virtual research environment that allows for maximizing efficiencies through sharing of technical expertise and resources whenever possible
- Promoting research activities/interactions through creating and organizing various related activities
  - Visiting scientist program
  - Quarterly published newsletter regarding areas of recent investigation to be circulated within the university
• International symposia every 3 years to showcase work in progress/discoveries and to bring together potential collaborators

• Preparing investigator-initiated proposals for the review of the Research Review Council
• Ensuring that the Research Review Council considers proposals on merit and relevance to ICOSH mission
• Ensuring a fair balance of biomedical and applied research proposals are selected by the Research Review Council
• Ensuring proposals do not violate university guidelines for externally funded research, privacy of study populations and data repositories, and academic freedom of principal investigators
• Ensuring all research involving humans, animals, and biohazardous materials go through proper university review boards
• Acting as a liaison between funding agencies, commercial entities contracting research, the university, and investigators
• Working with the Offices of Sponsored Research and Technology Transfer to ensure all university policies are adhered to and that efficient commercialization processes are initiated
• Ensuring the integrity, relevance, and absence of commercial conflicts or biases as recommended by the AAMC Task Force on Industry Funding of Medical Education

4.3 Practice Models and Public Policy; Director is responsible for
• Engaging community partners and stakeholders to identify initial interprofessional practice sites
• Working with community partners and community stakeholders to acquire initial funding for clinical emersion experiences
• Working with researchers to coordinate population-based studies and policy related studies; collection of patient outcomes data
• Advocating to government, health authorities, and the insurance industry for inclusion of oral health in comprehensive medical care that will guide future healthcare policy decisions
• Implementing models of care developed by Director of Education and the Education Review Counsel
• Providing clinical oversight of students in interprofessional clinical emersion experiences
• Interfacing with the university Office of Interprofessional Education and any other administrative units responsible for organization and coordination of student clinical emersion experiences
• Interfacing with the university Office of Interprofessional Education to recruit faculty facilitators for student clinical emersion experiences
• Ensuring that on-site and off-site clinical emersion experiences for students are effective

Membership
A. Categories of Membership and Membership Criteria –
Any educator or investigator from the academic, healthcare, government, or community sector with an interest in oral-systemic health related education/training or research may be appointed to ICOSH membership. It is expected that appointees will have previous background and experience in education, research, public policy, and/or interprofessional and interdisciplinary collaborations. Those with demonstrated accomplishments in these areas (development of educational materials, establishment of clinical training facilities, external funding) and the ability to mentor students (clinical residents, graduate students) will receive preferential consideration. There shall be only one category of membership (general membership) and those desiring membership may communicate this through any existing member or ICOSH area director. Each ICOSH area director shall appoint members in consultation with the Dean of the Faculty of Dentistry and maintain a roster of all active members to ensure effective communication.

B. Appointments for Membership –
Appointments to membership will be made by ICOSH area directors in consultation with the Dean of the Faculty of Dentistry based on expressed interest, evaluation of credentials, and potential contributions to mission and objectives related to education, research, and practice models/public policy.

C. Privileges and Responsibilities of Membership –
ICOSH members are expected to devote time to the area of oral-systemic health and actively participate in meetings, Centre programs/events, and Centre educational/research initiatives as appropriate to their interests
and abilities. Members who are engaged in any Centre activities will benefit from collaborative networks, access to external funding allocated through the Centre, shared resources related to curriculum development/research, and enrichment/enhancement programs related to oral-systemic health. Centre members recruited to develop educational resources will own the “educational intellectual property” associated with the materials they develop, however, in some cases, they may be required to assign “right of use” for these resources to the University of Manitoba for applications in interprofessional curricula and for additional applications as negotiated by the University in cases of externally sponsored educational projects (members will always be informed of intended applications for educational resources prior to engaging in specific projects). Members may be paid honoraria for providing expertise to the Centre (board members) or for education development activities “above load” of normal academic duties. In cases where honoraria are paid for development of educational resources, members may also be required to assign “right of use” as described above.

Similarly, those members engaging in research activities sponsored by the Centre through external funding must agree to assignment of intellectual property rights as negotiated by the University (University negotiations will be guided by the UMFA collective agreement regarding ownership of intellectual property). In all cases, members will be advised of terms regarding intellectual property prior to participating in any externally funded research project within the Centre.

Members will be required to explicitly name the Centre, and Centre funding if applicable, in any work that arises from the Centre environment and resources. For example, in a peer-reviewed publication, the member’s contact information would include their affiliation with the Centre. This will provide one of the primary mechanisms to increase visibility and awareness of the Centre.

ICOSH currently maintains a membership list of 85 individuals from various University Faculties (the founding Faculties of ICOSH were Dentistry, Medicine, Pharmacy, Nursing, and Human Ecology) and various external institutions/organizations around the world. These members have expressed interest in ICOSH education/research initiatives, have attended meetings related to ICOSH activities, or are actively participating or planning to participate in education, research, or both areas of ICOSH. It is anticipated that this list will continue to grow as various ICOSH projects mature and as collaborative working groups continue to expand.

5. Current Status of ICOSH
Under the direction of ICOSH Founding Director and Dean of the Faculty of Dentistry, Anthony M. Iacopino DMD PhD, ICOSH is in a unique position to move oral-systemic science and its applications forward. Continued professional and academic credibility, external funding, and interest from government/healthcare systems has served to nucleate a growing cadre of interprofessional experts around this area of education and research. Thus, ICOSH can offer substantial benefits and opportunities to its members and the broader university community by:

- providing new options for scholarly activity related to curriculum development and interprofessional education
- providing educational resources that can be utilized within the university interprofessional education program as shared learning experiences or capstone clinical experiences
- establishing international reputation through new models of interprofessional care that may serve as templates around the world and may also inform policy decisions that change the face of the Canadian healthcare system
- improvement of public health through multidirectional reinforcement of wellness messages related to the importance of oral health to overall health and the impact of systemic diseases/conditions on oral health
- providing new possibilities for developing research programs, collaborations, external funding streams, and intellectual property

The Centre will serve to bring together investigators from various disciplines within an interdisciplinary environment that encourages collaboration and comprehensive approaches to biomedical, clinical, and policy issues. The Centre will serve as a nucleus of intellectual thought and will provide various forums for communication and discussions within the broad area of oral-systemic science and its applications to clinical practice. To date, the Centre has facilitated the formation of five specific multidisciplinary research groups focused on various aspects of the oral-systemic connection. It is anticipated that these initial research groups will expand and that others will become established depending on investigator interests and available resources.
Perhaps the biggest breakthrough and contribution of ICOSH to date is the development of the first comprehensive curriculum in oral-systemic health for non-dental healthcare professionals. The Curriculum in Oral-Systemic Health for Nondental Healthcare Providers was conceived in and developed by the ICOSH Director of Education and Director of Interprofessional Education for the Office of Continuing Professional Development, Ms. Casey Hein BSDH, MBA. The blueprint for the curriculum went through exhaustive review by an interprofessional advisory board comprised of 50 international experts representing academia, research, and clinical practice, from a wide range of disciplines including Dentistry, Dental Hygiene, Pharmacy, Dietetics & Human Nutritional Science, Nursing, Physician Assistants, Respiratory Therapy, Medicine, Occupational Therapy, Speech & Language Pathology, Psychology & Aging, and Community Health Science & Gerontology. The curriculum is the first and only interprofessionally vetted, comprehensive resource about oral health for nondental healthcare providers (HCPs).

The curriculum and associated resources contain novel content which will:

- Influence the way nondental healthcare students and practitioners perceive the relationship of the oral cavity to the rest of the body
- Provide clinical recommendations for appropriate integration of oral health related considerations into the practice of relevant nondental healthcare disciplines
- Challenge pre-licensure students and practitioners from nondental healthcare disciplines to build collaborative relationships with dental practitioners to ensure optimal overall healthcare for their patients
- Provide the requisite knowledge base for interprofessional clinical placement/emersion experiences of pre-licensure students
- Stimulate collaboration and innovative thinking on how to transcend professional boundaries to integrate clinical protocols that include application of oral-systemic medicine in everyday patient care
- Provide the scientific justification for collaborative, interprofessional models of care that have overlapping boundaries centered on prevention and treatment of systemic diseases and conditions which are compromised or exacerbated by diseases and or conditions of the oral cavity
- Inculcate a philosophy of practice that embraces shared accountability for clinical outcomes related to oral-systemic diseases/conditions
- Stimulate innovative thinking of new models of care which rely upon interprofessional teams and collaborative practice
- Keep current of the best practices, credible evidence, and evolving models of care in oral-systemic health, to assist future revisions of the curriculum

The planning phase for the curriculum was completed in 2009 and the first two modules [1) Periodontal Diseases, and 2) Emerging Evidence of Periodontal-Systemic Links], are near completion. These electronic modules contain highly engaging and interactive learning experiences along with state-of-the-art animations and case-based videos. They will form the basis of foundational education for interprofessional programming and clinical rotations by September 2011.

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