The International Centre for Oral-Systemic Health

1 Mission

The International Centre for Oral-Systemic Health (ICOSH), launched in January of 2008, is a first-of-its-kind academic centre committed to addressing the knowledge gap that exists between dentistry and other health professions by increasing awareness of the links between oral and systemic health. ICOSH strives to accomplish its mission through health profession curriculum reform, public policy, and related research. Emphasis is placed on interprofessional investigation of oral-systemic relationships, transfer of associated scientific evidence into interprofessional education, and development of transdisciplinary models of care that translate into meaningful healthcare policy which recognizes the significance of oral-systemic health.

1.1 Oral-Systemic Health, Defined

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:
   - Negatively influence the structure, integrity, or function of the oro-facial complex;
   - 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.

1. Changing non-dental healthcare providers’ perception of the importance of oral health is essential and
must be a primary goal.

2. Critical to the success of ICOSH is the interprofessional approach to research, and the ability for dental
and non-dental practitioners to work collaboratively to put the research into practice. 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.

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.

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.

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

ICOSH is unique in the world and is structured to serve as a catalyst for the development of new education and
healthcare models 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.

1. ICOSH will become a global leader in interprofessional education in oral-systemic science through 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.

2. ICOSH will become a 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. ICOSH will align clinical outreach (for patients) and training activities (for students and practitioners) 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 models for collaborative care which will serve as valuable templates for interprofessional care in oral-systemic health.

4. ICOSH will become a 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 University units and external partners. ICOSH provides 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 are available to the overall University interprofessional education program and enhance the effectiveness and quality of healthcare for all Manitobans. Additionally, ICOSH provides 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 Executive Director of ICOSH. The three arms of ICOSH are as follows:

1. Education
2. Research
3. Practice Models and Public Policy

4.1 Director of Education

Responsibilities of the Director of Education are as follows.

- 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 the curriculum committees of various health professions 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 and practitioners
- 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 Director of Research

Responsibilities of the Director of Research are as follows.

- 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
  o Visiting scientist program
  o Quarterly published newsletter regarding areas of recent investigation to be circulated within the university
  o Quarterly focus group/retreat for university researchers to stimulate thought and discussion
  o International symposia every three years to showcase work in progress/discoveries and to bring together potential collaborators
• Assisting in preparation of investigator-initiated proposals
• 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

Responsibilities of the Director of Practice Models and Public Policy are as follows.
• 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
4.4 Membership

4.4.1 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 Executive Director and maintain a roster of all active members to ensure effective communication.

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

4.4.3 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 co-founder, Executive Director and Dean of the College of Dentistry, Anthony M. Iacopino, 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.

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The primary focus of ICOSH and 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 Non-dental 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, Casey Hein. 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 non-dental healthcare providers (HCPs).

The curriculum and associated resources contain novel content that is designed to accomplish the following.

- Influence the way non-dental 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 non-dental healthcare disciplines
- Challenge pre-licensure students and practitioners from non-dental 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 with 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—which address topics related to oral cancer and pediatric oral health, respectively—are complete. These modules contain highly engaging and interactive learning experiences along with state-of-the-art animations and case-based videos.

Work continues on the remaining modules and content experts interested in participating in the curriculum project are encouraged to contact ICOSH.

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