NCDs—A major obstacle to socio-economic development

By Dr Martin Gillis, Canada

**Weekend, 29 August 2012**

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tant professor at the Dal-
house University’s Faculty of Dentistry in Halifax, Canada, and a member of IDF’s Consul-
tative Section on Diabetes Education. He also serves as the oral health representa-
tive for IDF. Today, he will be pre-
senting a paper entitled “Poor nutrition: A risk factor driving the NCD epidemic” as part of the scientific pro-
gramme at this year’s con-
gress in room S221 of the HKCEC.

**Introduction**

I n September 2011, a UN High-
level Meeting on Noncommuni-
cable Diseases (NCDs) was held in New York City. This was a water-
shed moment in the global fight against NCDs with the adoption of the Political Declaration on NCDs by UN member states, meaning that all nations must act against this global epidemic. The four prin-
cipal NCDs, cardiovascular disease, cancer, diabetes and respiratory diseases, accounted for 60% of all deaths globally and 80% of deaths in low- and middle-income coun-
tries in 2005. The WHO projects that deaths attributed to NCDs will rise globally by 7% by 2025.

There are four primary risk fac-
tors that fuel the rising incidence of NCDs: tobacco use, alcohol abuse, poor nutrition and physical inac-
tivity. Disease prevention and control focused on minimising public expo-
sure to such risk is vital to revers-
ing the tide of NCDs. If this is not done, NCDs will continue to be a major obstacle to socio-economic development and a barrier to the achievement of the Millennium De-
velopment Goals and the Post-2015 UN development agenda.

Oral disease, the most common NCD and one of the most expensive to treat, is a global public health con-
cern. The political declaration notes that oral diseases “share common risk factors and can benefit from common responses”. Therefore, in-
terventions and strategies to im-
prove prevention should have a positive impact on all NCDs, including the prevention and control of oral disease. The UN knows how to deal with NCDs; it is a matter of taking action by opera-
tionalising existing plans such as the WHO Global Strategy on Diet, Physi-

cal Activity and Health, and utilising processes and structures such as the WHO Innovative Care for Chronic Conditions Framework.

The WHO will be the lead agency implement-
ing prevention and control measures for NCDs; however, progress will require a multifaceted approach from multiple sectors. In terms of nu-
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ing global NGOs such as the FDI World Dental Federation and the International Diabetes Federation (IDF), is needed. Diets comprised of processed foods with high fat, salt, and sugar content are common
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Dr Martin Gillis

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fordable, healthy food; health-care providers to educate and facilitate behaviour change in the public they serve; and all of society to engage in healthy lifestyle practices.

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menting the Political Declara-
tion on NCDs by addressing health, nutrition, and physical activity. Mitigating this risk factor will help with the pre-
vention and control of oral disease and type 2 diabetes. Now is the time for both fed-
erations to renew efforts for collaborative action on this global concern.

Dr Martin Gillis is a research-

time, and I am heartened by the recent promise of a pan-UN and pan-society conference on NCDs in the lead-up to the Millennium De-
velopment Goals and the Post-2015 UN development agenda.

Mesenchymal stem cells: From clinics to bench top and back

By Dr Songtao Shi, USA

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shed moment in the global fight against NCDs with the adoption of the Political Declaration on NCDs by UN member states, meaning that all nations must act against this global epidemic. The four principal NCDs, cardiovascular disease, cancer, diabetes and respiratory diseases, accounted for 60% of all deaths globally and 80% of deaths in low- and middle-income countries in 2005. The WHO projects that deaths attributed to NCDs will rise globally by 7% by 2025.**

**There are four primary risk factors that fuel the rising incidence of NCDs: tobacco use, alcohol abuse, poor nutrition and physical inactivity. Disease prevention and control focused on minimising public exposure to such risk is vital to reversing the tide of NCDs. If this is not done, NCDs will continue to be a major obstacle to socio-economic development and a barrier to the achievement of the Millennium Development Goals and the Post-2015 UN development agenda.**

**Oral disease, the most common NCD and one of the most expensive to treat, is a global public health concern.** The political declaration notes that oral diseases “share common risk factors and can benefit from common responses”. Therefore, interventions and strategies to improve prevention should have a positive impact on all NCDs, including the prevention and control of oral disease. The UN knows how to deal with NCDs; it is a matter of taking action by operationalising existing plans such as the WHO Global Strategy on Diet, Physical Activity and Health, and utilising processes and structures such as the WHO Innovative Care for Chronic Conditions Framework.

**The WHO will be the lead agency implementing prevention and control measures for NCDs; however, progress will require a multifaceted approach from multiple sectors. In terms of nutrition, concerted action with other UN agencies and subsidiaries such as the Food and Agriculture Organization of the United Nations and the Codex Alimentarius Commission, and partnerships with external agencies, including global NGOs such as the FDI World Dental Federation and the International Diabetes Federation (IDF), is needed. Diets comprised of processed foods with high fat, salt, and sugar content are common lifestyle choices in today’s society. Improving nutrition will require governments to mandate legislation and regulation reflective of the health in all policies; a philosophical shift in the agri-food industry to provide affordable, healthy food; health-care providers to educate and facilitate behaviour change in the public they serve; and all of society to engage in healthy lifestyle practices.**

**Today we have the task of implementing the Political Declaration on NCDs by addressing health, nutrition, and physical activity. Mitigating this risk factor will help with the prevention and control of oral disease and type 2 diabetes. Now is the time for both federations to renew efforts for collaborative action on this global concern.**

**Dr Martin Gillis is an assistant professor at the Dalhousie University’s Faculty of Dentistry in Halifax, Canada, and a member of IDF’s Consultative Section on Diabetes Education. He also serves as the oral health representative for IDF. Today, he will be presenting a paper entitled “Poor nutrition: A risk factor driving the NCD epidemic” as part of the scientific programme at this year’s congress in room S221 of the HKCEC.**

**Mesenchymal stem cells (MSCs) are a population of hier-
archical postnatal stem cells with the potential to differentiate in to mesodermal lineage-derived cells, including osteoblasts, chondrocytes, adipocytes, cardiomyocytes, myo-
blasts and non-mesodermal lineage-
derived cells, such as neural cells. They are a promising source for regenerative medicine in terms of forming mineralised tissue to replace damaged and diseased tissue.**

**The orofacial region contains multiple lineages including bone marrow-derived MSCs (BM-MSCs), dental pulp stem cells, periodontal ligament stem cells (PD-LSCs), stem cells from human exfoliated deciduous teeth, stem cells from root apical papilla, and gingival stem/progenitor cells. Our team of researchers at the University of Southern California has identified that PD-LSCs can be used successfully to treat periodontitis with regeneration of cementum and Sharpey’s fibres in swine and hu-

**Despite these promising results, we need to develop new strategies to treat a variety of disorders and diseases.**

**Conversely, reduction of IFN-γ and TNF-α levels at the implantation sites by systemic infusion of FasX+ regulatory T cells markedly improved BM-MSC-based bone regeneration and calvarial defect repair in C57BL/6 mice. For potential pharmacological intervention, we demonstrated that local administration of aspirin reduced levels of IFN-γ and TNF-α at the implantation site and significant-
ly improved BM-MSC-based calvarial defect repair.**

**These results collectively uncover a previously unrecognised role of re-
ceptor Fas in BM-MSC-based tissue engineering and suggest a practical approach to enhancing bone regeneration by pharmacological control of local cytokines.**

**MycB-based immunotherapy has demonstrated successful outcomes in several human diseases and preclinical disease models, including acute graft-versus-host disease, systemic lupus erythematosus and SLE. The promising results of such therapeutic effects have led to exploration of the underlying mechanisms. It has been shown that MSCs, including orofacial tissue-derived MSCs, target lymphocytes through several soluble factors, such as nitric oxide, interleukin-10, IL-10, IL-4, IL-6, IL-10, IL-12, IL-13, IL-17, and IL-18. These soluble factors have been shown to inhibit MSCs through inhibition of nuclear factor kappa B, resulting in BM-MSC-mediated suppression of immune responses.**

**The FDI and IDF recognise the importance of the political declaration on NCDs and one of the most expensive to treat, is a global public health concern.”**

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**“Oral disease, the most common NCD and one of the most expensive to treat, is a global public health concern.”**

**By Dr Songtao Shi, USA**

**“...the role of immune response in cell-based tissue regeneration remains unclear.”**

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**Mesenchymal stem cells: From clinics to bench top and back**

**Dr Songtao Shi is an associate pro-
fessor at the University of Southern California’s Center for Craniofacial Molecular Biology in Los Angeles, USA. This afternoon, he will be pre-
senting a paper on MSCs as part of the scientific programme at this year’s congress in Hall F of the HKCEC.”**

**Dr Songtao Shi**