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DENTAL HEALTH SERVICE SUPPORT - CAPABILITY GAP: PAEDIATRIC AND GERIATRIC DENTAL COMPETENCY AND SUSTAINMENT CONSIDERATIONS

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Solo Flight

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By Major Joseph Franklin

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INTRODUCTION

As part of Canada's commitment to Afghanistan, the Canadian Armed Forces (CAF) deployed as part of the North Atlantic Treaty Organization`(NATO) Training Mission - Afghanistan (NTM-A) to support the capacity and competency building of the national security forces of Afghanistan through mentorship, training and professional development support.[1] The mission was called Operation ATTENTION and centred primarily in Kabul, Afghanistan while activities were conducted throughout the country from several smaller satellite bases. In Mazar-e-Sharif, a team of Canadian dental advisors, a board certified comprehensive dentist and dental assistant worked with Afghan National Army (ANA) Dental Officers and Dental Technicians at the ANA Regional Hospital. Although the mission was focused on the development of host nation dental capacity and skills, there were occasions when direct patient care was provided by the Canadian Dental Officer to manage complications of the dental treatment previously rendered. The patient population seen within the ANA Regional Hospital was composed primarily of serving ANA soldiers and civilians varying in age from approximately five years to elderly adults of uncertain age. Civilians accounted for approximately 15% of the patients treated and were usually dependents of senior ANA officers, or other local elite. The Canadian dental advisors were not adequately prepared to provide mentorship and guidance for the dental treatment of young children and did not anticipate the requirement prior to arriving in theatre.

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[1] Government of Canada. "Operation ATTENTION." Last accessed 9 May 2020. https://www.canada.ca/en/department-national-defence/services/operations/military-operations/recently-completed/operation-attention.html

The aim of this paper is to raise awareness about the inadequately mitigated risk associated with Royal Canadian Dental Corps (RCDC) dental teams treating civilian populations while deployed in humanitarian, humanitarian - civic assistance and global health engagement operations. The operational dental health service support required for the aforementioned types of operations, demands that dental teams be able to treat patients of all ages and abilities. The thesis of this paper is that the RCDC has a duty to establish a program that will ensure military dental providers can competently treat the full range of civilian patients if and when required on operations. This essay will begin with examples that highlight why the current structure of the CAF's garrison-based dental clinics cannot fully prepare military dental teams for all deployment types. Then an example of a military that is structured to mitigated this risk will be explored. The essay ends by identifying the key elements of a system that can ensure CAF Dental Officers deliver high quality dental care to all recipients populations at home or abroad..

DIFFERENT PATIENTS REQUIRE UNIQUE SKILLS

Many developing nations exist with inadequate health and industrial infrastructure that cannot meet the basic needs of their populations. When affected by wide-scale natural disaster or severe crises, international humanitarian assistance with integral medical-surgical capability is critical in order to minimize unnecessary deaths and manage injuries, and restore public health measures. Although global population trends indicate an increasing life expectancy, people living in the poorest countries still die young and humanitarian assistance in the form of healthcare will generally serve a younger population affected by higher instances of undiagnosed and untreated disease. Consequently, it should be expected that dental care provided to civilian populations in developing nations will include care for young children and adult with 'a high

prevalence of co-morbidities and numerous barriers to care'.[2] These populations require particular skillsets and particular management protocols not commonly encountered through provision of dental support to military members.[3],[4]

Military members are adults aged 18 to 60 years with regular access to comprehensive dental care. They have access to a full spectrum of physical and phycological health services and drug benefits. Members are required to complete medical and dental examinations at regular frequencies and this allows treatment needs to be identified early and addressed in a conservative manner. CAF patients are therefore less complex from a medical or dental perspective and considered generally healthy.

Not surprisingly, paediatric patients require smaller tools and special equipment. Very significantly, several of the core dental procedures and techniques used to treat children, are never used in adult populations (e.g. pulpotomies, stainless steel crowns, strip crowns). Additionally, children pose unique behavioural challenges which demand patience and sometimes even limited restraint of the patient. Special considerations and precise calculations are required for paediatric medication and anesthetic dosages.

On the opposite end of the age spectrum, elderly patients often take multiple medications that each require investigation to avoid interactions and potentially explain conditions of the oral cavity. Older patients often have complex medical conditions that impact the delivery of dental

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[2] D'Souza, James. "Oral Healthcare Needs in a Geriatric Population.11 Mar 2015." Last accessed accessed 8 May 2020. https://www.intechopen.com/bookes/emerging-trends-in-oral-health-sciences-and-dentistry/oral-health-care-needs-in-the-geriatric-population.

[3] Saleha Shah. "Paediatric Dentistry - Novel Evolvement." *Annals of Medicine and Surgery (London)*. 25, 2018, p21-29.

[4] FDI World Dental Federation. "Oral Health for an Aging Population by FDI World Dental Federation." Last accessed 9 May 20202. https://www.fdiworlddental.org/sites/default/files/media/resourdes/ohap-2018-roadmap_ageing.pdf.

care (e.g. history of oral bis-phosphonates which contra-indicates extractions without hyperbaric oxygen treatment or modification of anticoagulant therapy to allow blood clot formation after biopsy). These patients need to be closely monitored during treatment, as blood pressure can drop rapidly leading to syncope and a lack of responsiveness.

SKILL FADE WITH POTENTIAL OPERATIONAL IMPACTS

To practice dentistry in Canada, graduates of recognized four-year dental education programs must obtain a certificate of the National Dental Examination Board (which establishes competence) and purchase a renewable general practice permit from a provincial or territorial regulatory dental college. The four-year dental education program covers paediatric, adult, and geriatric dentistry in detail. The practice permit signifies permission to employ techniques for which training has been completed, in a manner that meets the standards of care.[5] Determination of continued competency for any particular skillset, is considered a dental professional's individual responsibility. Following formal training, most dentists immediately enter into private practice dentistry which caters to families and individuals by providing a broad spectrum of treatments to patients young and old. In this scenario self-regulation should not pose a significant risk to patients. In contrast, dental practice in the CAF setting is aimed at a narrow patient demographic which does not include paediatric nor geriatric patients. With very few exceptions, CAF dentists can only ensure competencies in treatment of children, disabled, geriatric and very

[5] Over the past fifteen years, various provincial and territorial dental colleges have began introducing training requirements for a limited number of procedures that have been identified as high risk. The CAF has done the same for dental implant restoration, management of sleep apnea with oral appliance therapy and utilization of bioactive and implantable materials, and select sedation modalities. There is no minimum number of hours of clinical dentistry required to maintain a dental practice permit. There is no minimum frequency of skill employment required to maintain clinical competency for procedures or patient groups.

ill dental patients outside of the CAF during their off-hours; in an unstructured, undocumented manner.

In 1993 the Government of Canada authorized the CAF`s participation in the United Nations (UN) Operations in Somalia which aimed to resolve a civil war and provide humanitarian support to those affected by famine. UN medical facilities are meant to support UN peacekeepers and the mission's staff, however, the mandate is occasionally extended to allow for the provision of humanitarian assistance to the local population.[6] Canada's peacekeeping mission in Somalia was called Operation DELIVERANCE and the contingent included a medical facility with an integral dental section. Most of the dental treatment provided during this mission was completed on Canadian soldier with limited treatment of Somali citizens. The host nation population that did receive dental care included people of various ages. Most patient were young children.[7]

On 12 January 2010, Port-au-Prince Haiti was struck by a catastrophic 7.0 magnitude earthquake. The epicentre was located 25 kilometres from the capital city Port-au-Prince. Government statistics report the death toll as being between 212,000 to 316,000 people and the number of collapsed or severely residences and commercial buildings as being 250,000 and

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[6] United Nations Department of Peacekeeping Operations, *First UN International Conference on Medical Support for Peacekeeping Operations: Final Report*. New York, United Nations, 1997. p32-34. There is no official UN policy or obligation for JN med facilities to provide or take responsibility for medical services to the local population. When med services extended to the local population, it is done in accordance with international humanitarian law and medical ethics.

[7] Swan E. S, Karpetz E. "Dental Casualties during Canadian UN Operations in Somalia." *Journal of the Canadian Dental Association.* 61: 99, 1995, p1-4. The authors identify children as being particularly vulnerable to violence during war and highlight the importance of including a dental facility, operational field hygiene and vector control units. The use of CAF dental assets to treat civilians is permitted in accordance with QR&Os but requires the authorization of the Minister of National Defence or the Operational Commander in the deployed setting.

30,000 respectfully.[8] in response to the resultant devastation, the Government of Canada (GoC) authorized the deployment of the CAF to conduct a humanitarian mission called Operation HESTIA. Included within the Canadian contingent was a medical-surgical facility from 1 Canadian Field Hospital that included a dental section. The deployed health facility was set-up in the city of Léogâne and provided health care to the people of the surrounding communities that no longer had access to medical services due to earthquake-related destruction.[9] Although CAF dental personnel had served in all of Canada's major overseas peace support missions up to this period, Operation HESTIA was the first time that Canadian dental assets were deployed with a mission to provide dental care solely to a civilian population. The dental section consisted of one Advanced Education General Dentist Specialist Officer and one Dental Technician. During this humanitarian mission, 364 Haitian civilians received dental treatment including 421 extractions and 258 other various dental surgical procedures.[10] The Haitian patients ranged in age from young children to the elderly.

In both cases above, selecting the most appropriate military dental professionals for the mission proved to be a challenging task. Although the RCDC held centralized documentation that identified all dental officers that engaged in private practice dentistry with civilian patients, the system lacked the necessary fidelity to determine which of these dental officers treated children and/or elderly patients. And further, the system could not provide details of the range of services that were provided in the private practice setting. Fortunately, for many years the CAF

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[8] O'Conner, Maura. "Two Years Later, Haitian Earthquake Death Toll in Dispute." *Columbia Journalism Review.* Last accessed 12 May 2020.https://archives.cjr.org/behind_the_news/one_year_later_haitian_earthqu.php.
[9] "Canadian Forces Health Services Overview – 2014." Last accessed 9 May 2020. https://www.royalcdnmedicalsvc.ca/wp-content/uploads/2014/01/CFHS-Overview.pdf.
[10] Jung, H.W. "Canadian Forces Response to Earthquake in Haiti: Operation HESTIA." *Presentation to Australian Military Medicine Association.* Last accessed 12 May 2020. https://www.slideshare.net/leishmanassociates/disaster-and-humanitarian-assistance-jung-5708003.

had been training dental officers as Advanced Education General Dental (AEGD) Specialist Officers that had received focused education and clinical treatment experience with special needs, paediatric and elderly US military veteran patients. The dental officer that deployed on Operation DELIVERANCE in Somalia and Operation HESTIA in Haiti, were both AEGD Specialist Officers.

FUTURE OPERATIONAL DENTAL HEALTH SERVICE SUPPORT

In 2006, Canadian Defence Academy published Operational Art: Canadian Perspectives Health Service Support in which Maj Stephen Molyneaux described a vision for CAF dental health service support in the year 2020. The author described a role for dental support in military operations other than war (MOOTW) and specifically in "humanitarian relief in impoverished areas of the world".[11] He went on to add that "dental assets [had] yet to be deployed on a mission solely to provide care to a civilian population, but it [could not] be assumed that they [would] never be deployed to a humanitarian crisis for such a reason…".[12]

Canada's 2017 defence policy, Strong, Secure, Engaged (SSE) declares that the CAF will 'continue to provide a full spectrum of safe, high-quality physical health services…that meets or exceeds Canadian standards, both in garrison and during operations'.[13] Canadian doctrine gives the formation commander authority to direct humanitarian emergency medical and or dental care to civilians - limited to examination and treatment to alleviate pain and suffering and preserve

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[11] English, Allan, James C. Taylor. *Operational Art: Canadian Perspectives Health Service Support*. Kingston, Canadian Defence Academy, 2006. p129.
[12] Ibid, p129.
[13] Canada, Department of National Defence. *Strong Secure Engaged: Canada's Defence Policy.* Ottawa: Canadian Defence Academy, 2017. p25.

life and limb.[14] Canadian Operational doctrine ensures that all people will be treated humanely and solely based on their symptoms and treatment needs, in accordance with IHL.[15]

SSE envisions the CAF engaging in operations that 'contribute to a more stable, peaceful world, including through peace support operations and peacekeeping'.[16] SSE also directs the CAF to '[b]olster its ability to respond to increasingly severe natural disasters at home and abroad'.[17] Climate change in the form of global warming will continue to cause increasingly frequent extreme weather events and natural disasters. Consequently, there will likely be a greater need and demand for international humanitarian assistance. These statements imply that the CAF RCDC should be prepared to provide dental care in the context of peacekeeping or humanitarian assistance. It's experience in previous operational theatres suggests that these missions may involve the provision of dental treatment to patients belonging to paediatric, adult and geriatric demographics.

Acknowledging the progressive changes in the re-distribution of global power and influence, SSE directs the CAF to '[b]alance traditional relationships with the need to engage emerging powers'. [18] This should not be interpreted as an intent of the GoC to abandon its American or NATO allies. By examining US foreign policy orientation, the CAF can gain a sense of the type of missions it may be asked to support. Since the mid-1990's the U.S. Department of Defense (DoD) has been increasing its involvement in global health engagement

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[14] Canada, Department of National Defence. *Joint Doctrine - Health Services Support to Operations 5-6. Ottawa: C*F Health Svcs Gp HQ G5/7 HSS PDT, 2007. p1-10.
[15] International Committee of the Red Cross. "Practice Relating to Rule 110. Treatment and Care of the Wounded, Sick and Shipwrecked Section B. Distinction between the wounded and the sick." *International Humanitarian Law.* Last accessed 7 May 2020. https://ihl-databases.icrc.org/customary-ihl/eng/docs/v2_rul_rule110_sectionb.
[16] Canada, Department of National Defence. *Strong Secure Engaged: Canada's Defence Policy.* Ottawa: Canadian Defence Academy, 2017. p14.
[17] Ibid, p14.
[18] Canada, Department of National Defence. *Strong Secure Engaged: Canada's Defence Policy.* Ottawa: Canadian Defence Academy, 2017. p14.

(GHE) and humanitarian civic assistance (HCA).The DoD has taken the position that health is a pre-condition of human security and thus views these activities as 'significant component[s] of security cooperation'.[19] Capitalizing on the benefits of GHE and HCA, the US extended their use to non-emergency situations. This has not been well received by the international community.[20] . A mandate for global health was officially added to the US National Security Strategy in 2010.[21]

In 2006, the United Nations Office of Coordination of Humanitarian Affairs (UN OCHA) updated its consensus paper on the guiding principles, appropriate roles and appropriate contributions of militaries when humanitarian operations in times of peace - the Oslo Guidelines.[22] The Oslo Guidelines are clear in articulating that in conducting peacetime humanitarian activities, military assets are only appropriate in situations where there are 'no comparable civilian alternatives…to meet a critical humanitarian need'.[23] This position is consistent with that taken by the EU and NATO doctrine on civil military cooperation in Allied Joint Publication - 9 (AJP-9).[24],[25] Canada's defence policy does not articulate an official

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[19] Baxter, M. "Review of the Role of the United States Military in Non-Emergency Health Engagement." *Military Medicine.* 178:11, 2013, p1231. US Congress permits HCA in non-emergency situations when these activities 'serve the basic economic and social needs of the people of the country concerned.' Doctrinally, HCA must serve the security interests of US. Authorized activities include: direct medical, surgical, dental and veterinary care and the related training, eduction and technical assistance related to this care. 'Health engagement' involves HCA and other activities such as the US Global Emerging Infections Surveillance and Response System.

[20] Ibid, p1234. Objections are based in concerns regarding the military's commitments to humanitarian values, erasure of aid worker neutrality, questionable effectiveness, local capacity displacement and sustainability.

[21] Ibid, p1232.

[22] United Nations Office for the Coordination of Humanitarian Affairs, *Guidelines on The Use of Military and Civil Defence Assets To Support United Nations Humanitarian Activities in Complex Emergencies, March 2003 - Revision I, January 2006*. New York: United Nations, 2006, p8-12. Of note the guidelines encourage military forces to be unarmed and to limit their activities to indirect assistance activities and infrastructure support missions.

[23] "National armies for global health?" *The Lancet*. 384:9953, 2014. Last accessed 10 May 2020. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)61923-1/fulltext.

[24] "AJP-9 NATO: Allied Joint Doctrine for Civil-Military Cooperation." *Allied Joint Doctrine.* NATO. Last accessed 11 May 2020. https://www.nato.int/ims/docu/AJP-9.pdf, p1-4.

[25] Metcalfe, V., Simone Haysom and Stuart Gordon. "Trends and Challenges in Humanitarian Civil–Military Coordination: A Review of the Literature." *HPG Working Paper.* May 2012. Last accessed 12 April 2020. https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7679.pdf.

position regarding the utilization of strategic GHE in non-emergency situations. The US continues to conduct GHE in non-emergency situations.

A NATO-MEMBER'S MODEL THAT ADDRESSES THE ISSUE

The US DoD, amongst our NATO allies, is uniquely organized in a manner that allows US military dentists opportunities to provide dental treatment to the full spectrum of patients from children to the elderly. US military dentists care for paediatric and geriatric patients within their community-oriented military hospitals and treat active duty members in their traditional dental clinics. The complexity of dental treatment required by ill patients in the hospital setting provides excellent preparation for humanitarian dental care in developing nations. All healthcare professionals with clinical roles deployed on NATO missions are required to possess the credentials identified in terms of reference (TOR) prepared by the lead nation.[26] While competence in the treatment of paediatric and geriatric patients is not an item for credentialing, experience with these patient populations may be included in the TOR of the dental officer.

Currently, in efforts to address growing healthcare expenses, the US DoD is reducing the number of locations where veterans and family members can receive dental care by military providers. The changes to the US DoD Dental care system will reduce the number of US military dentists with recent experience treating children and elderly populations.

ADDRESSING THE CAF COMPETENCY CONCERNS

As an interim measure meant to minimize risks to the CAF and Canada, the RCDC should canvas all of its military dental officers for an assessment of their competence, comfort

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[26] North Atlantic Treaty Organization. *NATO Standard Allied Medical Publication - 9.2 Guidelines for a Multi-National Medical Unit Edition A Version 1 January 2018,* Brussels: NATO Standardization Office, 2018, pA-7.

and experience in treating paediatric and elderly dental patients. Self-reporting of procedures billed in private practice may be the only manner of objectively understanding the treatment range rendered by dental personnel (exception - dental technicians) in private practice settings.[27] It is important to note that this option does not assess knowledge, diagnosis, clinical judgement, quality or efficiency related to a dental clinician's competency and therefore should not be relied upon as a permanent solution.

To organize a system that will ensure that CAF dental officers have the required knowledge, skills and experience to be successful in operations, a rigorous process should be employed to identify the essential skillsets or competencies. As expertise in paediatric and geriatric dentistry does not exist within the CAF system, consultation with appropriate leaders in these fields is recommended to ensure that the training provided will be effective and appropriate.[28] As dental competencies involve both clinical judgements of a patient's condition based on findings of an examination followed by the application of appropriate clinical skills, the appropriate training system will include both a didactic and a clinical components.[29]

The didactic component of the training should be made widely available to dental technicians, dental hygienists and dental officers to promote a learning environment. However, the clinical component of the training should be restricted to a limited audience and provided as 'high readiness training' facilitated by subject matter experts if possible. This restriction reflects an effort to maximize the benefits to the CAF while attempting to exercise fiscal restraint.

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[27] Dental Technicians would be an exception .
[28] Organizations such as FDI World Dental Federation can serve as invaluable resources in determining national and regional trends related to population-level access to dental care and untreated dental disease burden which will inform clinical competencies required.
[29] Training that is tailored to the specific roles of the dentist and dental technician/hygienist will be required.

LONG-TERM MAINTENANCE OF COMPETENCY

Ideally this system would also include a mechanism to maintain clinical competencies in a sustainable manner. Maintenance of these competencies will be largely dependent on individual motivations. However, as there are no CAF dental clinics in Canada where paediatric and geriatric competencies can be utilized and skills maintained, it is likely that these competencies will have limited duration and be lost.

There are a few options that align with the other federal government priorities that can be explored as potential means of institutionalize maintenance of paediatric and geriatric competencies. These opportunities exist in the communities where dental care is identified in the Canada Health Act as a federal responsibility. They includes First Nations people living on reserves; Inuit; qualifying veterans; inmates of federal penitentiaries; and some refugee claimants.[30]

CONCLUSION

SSE declared that the CAF would '… provide a full spectrum of safe, high-quality physical health services…that meets or exceeds Canadian standards, both in garrison and during operations'.[31] The thesis of this essay was that the RCDC has a duty to establish a program that will ensure military dental providers can competently treat the full range of civilian patients if and when required on operations. This essay identified the structural challenge of the CAF and RCDC to ensure appropriate paediatric and geriatric dental competencies are available as an operational capability. Further the essay provided strong indicators of a persistent demand for

[30] First Nation and Inuit (no matter where they live in Canada) have access to a non-insured health benefit program which includes drug, dental and ancillary health services. Under 'Treatment Benefits - Programs of Choice (POC) qualifying veterans receive basic dental care and limited pre-authorized services (examples of services covered-exam, scaling fillings, extractions, and standard dentures) delivered at private clinics.

[31] Canada, Department of National Defence. *Strong Secure Engaged: Canada's Defence Policy.* Ottawa: Canadian Defence Academy, 2017. p25.

these competencies and alluded to the challenges our NATO allies also face in this matter. The essay ended with a proposed model to address the capability gap in a long term manner.

Given the current inability of the CAF to ensure a deployable dental capability with the capacity to provide competent dental care to civilian paediatric and elderly patients at the same level afforded to Canadians, the RCDC must take action. Because of the operational significance of this capability gap, this issue should be given priority.

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