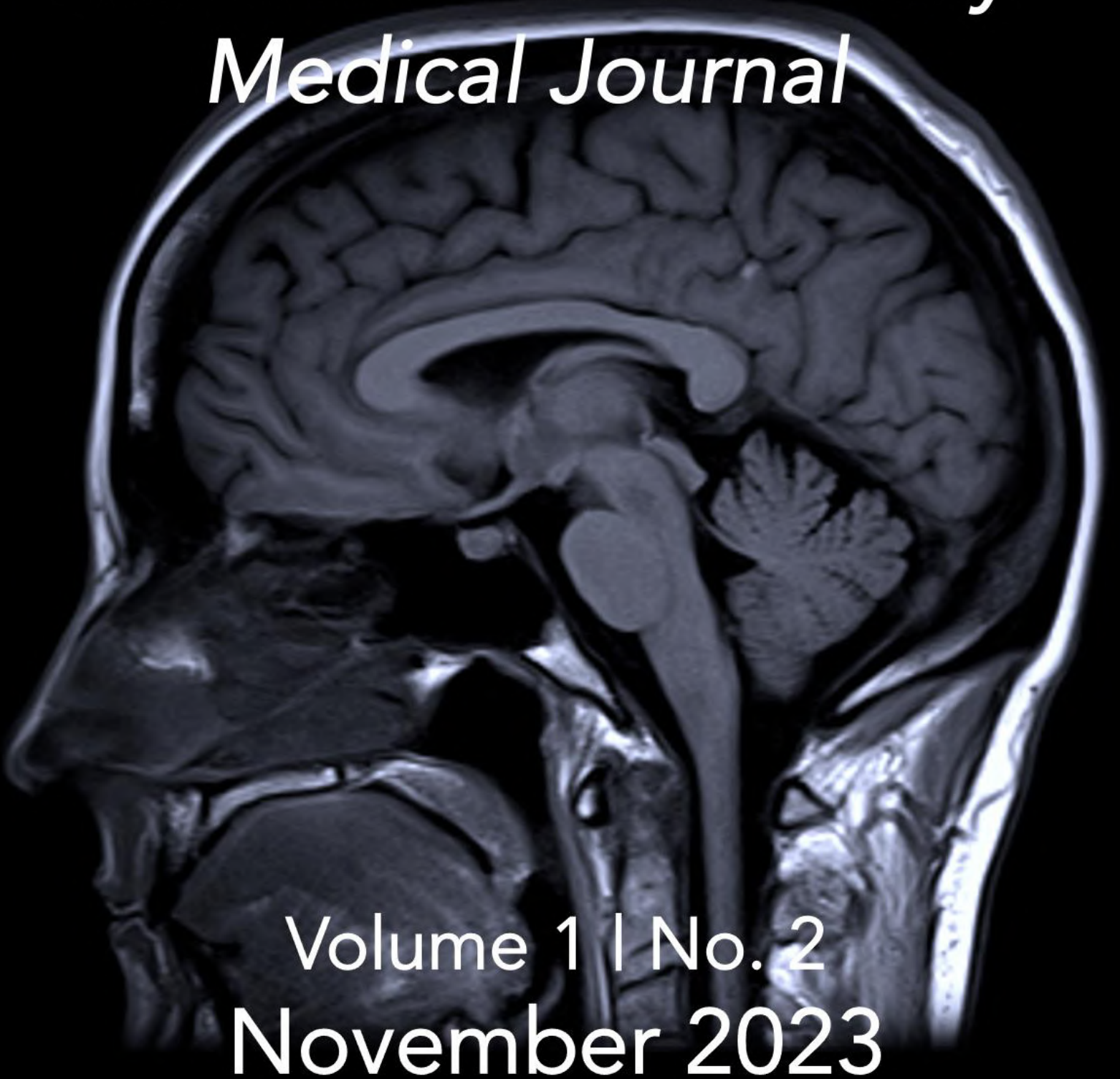




# LITHOS

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*The Memorial University  
Medical Journal*



Volume 1 | No. 2  
November 2023

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Lithos – The Memorial University Medical Journal  
Faculty of Medicine, Memorial University  
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ISSN I 2817-1802 (Print)  
ISSN I 2817-1810 (Online)

# Land Acknowledgement

A land acknowledgement is offered to recognize Indigenous peoples' enduring connection to their traditional territories, to recognize the history of the land that is currently shared by many peoples, and to recognize stewardship as a shared commitment of all those who reside in a territory. The practice of territory acknowledgement is itself a replication of an Indigenous practice which predates European contact.

## St. John's Campus

We respectfully acknowledge the territory in which we gather as the ancestral homelands of the Beothuk, and the island of Newfoundland as the ancestral homelands of the Mi'kmaq and Beothuk. We would also like to recognize the Inuit of Nunatsiavut and NunatuKavut and the Innu of Nitassinan, and their ancestors, as the original people of Labrador. We strive for respectful relationships with all the peoples of this province as we search for collective healing and true reconciliation and honour this beautiful land together.



# Editorial

## Hearing the silent: The implications of hearing loss in medicine

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Disparities within our healthcare system are well documented within current literature, however, individuals with hearing impairments are one population frequently overlooked. Hearing loss can be viewed as a tiered trajectory following an echelon pattern of disability contingent on the decibel range within which an individual is able to audibly hear. This spectrum typically moves within standardized parameters encompassing mild, moderate and severe hearing loss before culminating in profound or complete loss throughout a specified decibel range.<sup>1,2</sup> Hearing loss is further typified as conductive, sensorineural, or mixed, contingent on the anatomical origins of loss and each presenting with its own unique barriers to hearing and communication and, by extension, education.<sup>1-3</sup>

Hearing impairment in medicine is a unique topic as there is a significant body of literature examining the experiences of patients with hearing loss, typically older adults, on patient-provider interactions and the oft negative implications this poses.<sup>4-7</sup> These studies further delineate an important distinction between those who are hard of hearing from a young age and those with age-related loss as members of the former group often have well-developed coping strategies and improved comprehension of their hearing loss and limitations. Interestingly, the experiences of medical students and physicians with hearing loss is a poorly explored topic with the majority of extant literature resulting from recent shared individual experiences and anecdotal evidence.<sup>2,3,8-10</sup>

Several authors have presented their personal challenges navigating the medical field as students with a hearing impairment, identifying several key themes presented across these self-narratives. The impacts of background noise, ineffective positioning of the presenter or speaker, lack of understanding and insensitivity toward the disability have all been among the prevalent issues described.<sup>3,8,10</sup> Medical students with hearing impairments are often placed in environments, such as noisy lecture halls or clinical wards, where various factors that aid hearing are compromised.<sup>8</sup> One medical student commented on experienced difficulties associated with the acoustic feedback and sound distortion caused by lecture hall auditory systems while wearing hearing aids.<sup>3</sup> A second discussed difficulties in small group-based settings

because of the overlapping discussions taking place rendering it difficult to focus.<sup>10</sup> A third student described their experience attending a psychiatry assessment behind a one-way mirror in which she was unable to comprehend the conversation as the patient was facing the opposite direction. The same student also recounted her exposure to discrimination from those who mistook her inability to hear as lackadaisical inattentiveness.<sup>8</sup> These incredibly frustrating experiences provide real world examples of challenges encountered daily by hearing impaired medical learners as they attempt to navigate the complexities of medical education.

The onset of the COVID19 pandemic in early 2020 brought entirely new issues to the forefront for medical students with hearing loss, secondary to the widespread use of surgical masks, creating additional barriers to hearing, communication and learning.<sup>3,9</sup> These practices, while necessary for personal protection, have further limited effective communication for these individuals through the elimination of visual cues crucial for lip reading; a strategy relied upon by a significant proportion of this population.<sup>2,11</sup> The use of virtual lectures has further limited medical education for those with hearing impairment as the use of recorded slides and audio-only lectures further diminishes the ability to correctly interpret relayed concepts.<sup>10</sup>

Jawadi (2022) described various technological advancements that aid medical learners with hearing impairments in clinical and didactic settings, such as the use of hearing aids, Bluetooth microphone/FM systems, clear face masks, sound amplification devices and automatic captioning software.<sup>10</sup> Additionally, the development of electronic stethoscopes which amplify cardiac and respiratory sounds has been a major development that allows those unable to use traditional devices to effectively conduct clinical examinations. Equivocally, these modalities are also imperfect as significant time, energy, and often finances, are committed to finding and managing these technologies, which may also prove to be logistically challenging.<sup>3,10</sup> For example, the use of an electronic stethoscope, though revolutionary, is also associated with significant feedback and static from slight movements against the listening surface. While these modalities are flawed, they have also been described as empowering, allowing

hearing impaired medical students to take control over their hearing loss and access to education in a world designed for people without hearing loss.<sup>10</sup>

The issue of hearing impairment in medical education is particularly near and dear to my heart as a medical student with severe hearing loss sloping towards profound in the upper frequencies. Those close to me know that I use my hearing impairment as a motivator and choose to challenge myself rather than be hindered, however, many of the difficulties shared by my hearing-impaired colleagues impact me daily as well. One of the hardest parts of starting medical school during a global pandemic, aside from the inability to read lips through the mandated masks, was the uncertainty around whether I would be able to functionally utilize a standard stethoscope. Inevitably, I discovered I could not and enlisted the use of a digital stethoscope which has allowed me to be on par with those using standardized devices. Despite this, my hearing loss certainly had me favouring career paths in which stethoscopes were not essential for practice.

In the classroom setting, I always elected to sit in the front row as to ensure that I would not miss any pertinent information relayed by the instructors. I was relieved when instructors were allowed to remove masks while lecturing, however, when they chose not to it created an entirely new sense of distress not being able to read lips – a technique I rely heavily upon for communication. Further difficulties arise in the operating room, such as when a hearing aid battery dies while scrubbed in the middle of a surgical case, or when the surgeon speaks too softly to be heard amid the background noise of various surgical tools. While I am no stranger to advocating for myself, these are issues that are rarely discussed and can make an incredibly frustrating learning environment for those with hearing loss such as myself.

Hearing impairment cannot be viewed as a homogenous concept, but rather is a unique experience affecting those afflicted in various ways, such that respecting individual differences is paramount. Despite this, there are various universal strategies clinicians and medical educators can implement to ensure effective and inclusive education for those with hearing impairments as seemingly small changes in communication can be transformational. It is important for medical educators to recognize the reliance on visual cues and lip reading for hearing impaired students and avoid covering their mouths or to use clear face masks where possible in required settings. Speak clearly, at a normal pace and pitch and turn to face the learner when speaking – educators should avoid raising their voice to repeat the message as this can often be perceived as patronizing.<sup>8</sup> Further, students with hearing impairments should be positioned to see the face of the lecturer in

classroom settings or be seated facing the patient during consultations. Finally, accommodating students with hearing impairment in regard to technologies necessary for their successes in a non-judgemental and open manner is crucial to effective and equitable medical education.

The silence on deafness will not be broken overnight, however, with recognition of these issues and continued advocacy we can identify and discourage disparities affecting medical students with hearing loss in ensuring equitable medical education.

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# Original Research: Medical Education

## Dental health in primary care; experience, education, and attitudes of primary care physicians in Newfoundland and Labrador

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### ABSTRACT

**Introduction:** Primary care physicians in Canada are often tasked with assessing dental issues despite reporting limited training in this area. Knowledge and attitudes around dental health in primary care in Newfoundland and Labrador (NL) have not previously been documented. Thus, we developed a survey for family physicians in NL with the goal of understanding the dental care education received by family physicians, comfort levels with providing dental care, and to identify potential gaps in training.

**Methods:** Three semi-structured interviews with family physicians were used to guide the development of the survey, which was disseminated to all family physicians working in NL. Questions included demographic information, education in dental care, frequency, and confidence in providing dental care, and views on dental care within the scope of family medicine. The survey was circulated online through the provincial medical association and family practice networks.

**Results:** A total of 63 family physicians responded to the survey. Of the respondents, 78% reported receiving less than 2 hours of dental care training throughout medical school, and 84% received less than 2 hours throughout residency. Notably, none of the physicians felt that their dental knowledge was above average when compared to their colleagues. Almost all family physicians felt that basic oral health should be within the scope of practice for family physicians.

**Conclusion:** Our survey found that family physicians frequently see patients regarding a variety of dental complaints, yet they reported very little formal education in this area of practice throughout all stages of their training. The results of this study can be used to inform undergraduate and postgraduate medical education curriculum in Newfoundland and Labrador.

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### INTRODUCTION

Dental health has profound effects on multiple elements of patients' lives, including function and activities of daily living, psychological and social function, and the risk of progression to serious systemic disease.<sup>1</sup> When a dentist is not readily accessible, a primary care physician may be tasked with assessing dental issues in a clinic or emergency room setting. As oral health care is not currently subject to the Canada Health Act, it is not a publicly funded and equally accessible health care service. Despite this, all provinces and territories have a publicly funded dental service for pediatric patients; however, coverage and eligibility vary widely between regions. Most programs have coverage for certain high-risk groups, such as Indigenous children, children with disabilities, and children in low-income families.<sup>1,2</sup> In Newfoundland and Labrador, coverage is provided through the Children's Dental Health Program, which is available for all children ages 0-12, and youth ages 13-17 in low-income families or on social assistance.<sup>2,3</sup> Additionally, there is a limited Adult Dental Program, but this does not cover any preventative care treatment.<sup>2,3</sup> As such, patients who are not eligible for publicly funded programs inevitably must seek the

advice of their primary care physician to address dental issues.

A Health Canada survey found that 32% of Canadians have no dental insurance, meaning any dental care needed would require the patient to pay out of pocket.<sup>4</sup> As such, the inability to pay for dental care is a documented reason why patients may seek oral health care in their primary care physician's office. Despite the well-understood implications of proper dental care, one Canadian survey found that 89% of family physicians received less than three hours of oral health training in medical school and residency.<sup>5</sup> In the study, 95% of respondents did not receive any training or described their training as "poor to fair." However, the perceived importance and need for learning about oral health were high, as 92% of family physicians reported requiring more information and resources.

Dental health care is important to all populations, but at-risk populations, including young children, Indigenous people, those living in rural communities, and people of low socioeconomic status, are especially vulnerable to



poor oral health.<sup>6</sup> Nationally, it has been established that vulnerable people in the population routinely have the highest level of oral health problems and difficulty accessing oral care.<sup>7</sup> Additionally, dental surgery related to caries is the most common surgical outpatient procedure for preschool children at most hospitals in Canada.<sup>8</sup> Patients who are unable to seek treatment from a dentist or primary care provider ultimately seek care in the emergency department. However, a 5-year study conducted at The Hospital for Sick Children in Toronto, Ontario, showed that the average cost of an emergency department visit for a dental complaint exceeded the cost of an outpatient preventative visit.<sup>9</sup> Other studies in Canada have shown that dental visits account for 1% of emergency department visits and that definitive treatment and management are not given, leading to wasted taxpayer dollars overall.<sup>10</sup> Despite these significant findings, dental health continues to be a negligible portion of current medical education.

Complications of poor oral health have significant impacts on children; dental problems are associated with a marked decrease in school attendance and an increase in missed parental working days.<sup>11</sup> Teeth examination begins at six months, according to the current Rourke baby record, and advice regarding dentition and fluoride between two and six months of age.<sup>12</sup> However, only 44% of family physicians reported counselling patients and families on dental care, largely due to gaps in the physicians' scope of practice and confidence in counselling and identifying common dental presentations such as caries.<sup>5</sup>

Despite national surveys and reports, a comprehensive study of dental knowledge in primary care in Newfoundland and Labrador does not exist. Thus, we developed an anonymous research survey for family physicians in Newfoundland and Labrador with the following objectives:

1. To gain an understanding of the education on basic dental care received by family physicians in Newfoundland and Labrador.
2. To understand family physicians' level of comfort and their attitudes towards providing dental care in Newfoundland and Labrador.
3. To identify possible gaps in primary care training in Newfoundland and Labrador with regards to dental care.

## METHODS

Semi-structured interviews with multiple family physicians in Newfoundland and Labrador were conducted to gather background information to guide the development of the research survey and to ensure only questions of relevance were included. Based on these interviews, a standardized online questionnaire

was created. The questionnaire was available through Qualtrics, an online survey tool. The sampling frame included all family physicians working in Newfoundland and Labrador. An introduction to the project, including a link to the survey, was circulated to family physicians via the Newfoundland and Labrador Medical Association, the Family Practice Renewal Program, direct contact with community clinics, and word of mouth. The survey was completed exclusively online, and the results were therefore accessed online. Prior to commencing the survey, participants read a privacy statement and agreed to an informed consent form documenting approval by the Newfoundland and Labrador Health Research Ethics Board.

The survey collected non-identifying background information, including the Regional Health Authority and population of the area of practice. It then measured standard background information on physicians training in dental care, including quantifying teaching hours in medical school and residency. It further assessed the frequency with which family physicians deal with dental care and their self-assessed confidence level in providing this care, in addition to their views on including dental care within the scope of family medicine. Survey responses included linear numeric scales, frequency scales, and Likert scales. Survey respondents had the opportunity to submit short answers when applicable. Outcome measures included analyzing quantitative and qualitative survey responses.

## RESULTS

There are over 700 family physicians listed as practicing with the College of Physicians and Surgeons of Newfoundland and Labrador, including those practicing part-time, occasional locums, or in specialty areas requiring referrals. All these physicians were provided with survey details through email distribution by the Newfoundland and Labrador Medical Association, for which membership is mandatory. This membership overlaps with the non-mandatory membership of the Family Practice Renewal Networks, through which the survey was also distributed. There were 63 responses received. The number of participants who completed each individual question ranged from 55 to 60.

### *Physician demographics*

Some basic demographic information was obtained through the survey. The majority of respondents, 39 physicians, practice in the Eastern Health region. There were 12 physicians practicing in Central Health, 7 in Western Health, and 7 in Labrador-Grenfell Health. Some physicians reported working in more than one region. There was a diverse range of practice populations among physicians. Of the respondents, 28 reported working in a location with greater than 100,000 people, 2 physicians in a location with 50,000-100,000 people, 16 physicians in a location with 10,000-50,000

people, and 14 physicians in a location with less than 10,000 people.

When considering this data, it is important to note the population served in each region. Eastern Health serves over 300,000 people, or roughly 60% of the population of Newfoundland and Labrador. Central Health is the next largest region, servicing 18% of the province's population, while Western and Labrador-Grenfell serve roughly 14% and 8%, respectively. Nearly half of the physicians described working in a region serving more than 100,000 people, which should be considered with the fact that more than half of the population of Newfoundland and Labrador live in the greater St. John's area. Considering this, the number of survey respondents from each region reasonably represents physician demographics provincially.

Physicians were asked to describe their scope of practice; 42 physicians described working in a private clinic, 19 in emergency medicine, and 22 others in roles such as hospitalist, academic practice, and community clinics. This is not something that is well documented or tracked by any regulatory bodies or health authorities, and thus it is not possible to compare the respondent population to the family physician population.

### Medical Education

Given the goal of understanding the education regarding dental care among family physicians, it was important to know where physician respondents completed their medical training. For both medical school and residency, over 80% of physicians trained in Newfoundland and Labrador, further breakdown is available in Table 1. Notably, there is only one medical school, Memorial University, in Newfoundland and Labrador.

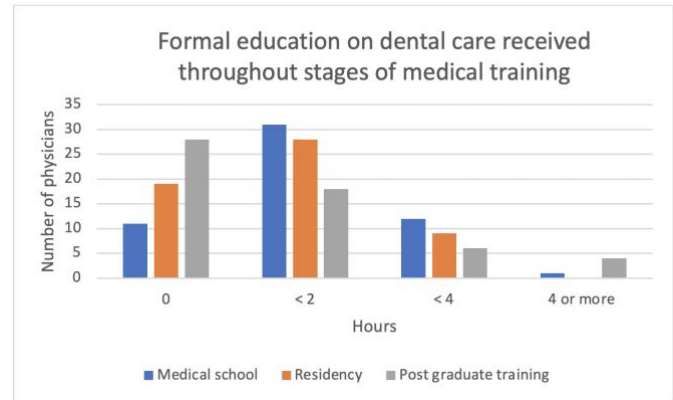
The number of hours of education on dental care was assessed. Seventy-eight percent of physicians reported receiving less than 2 hours of education on dental care throughout medical school, and 84% of them received less than 2 hours throughout residency, as shown in Figure 1.

**Table 1.** Location of Medical Training.

Location of Training	Medical School n (%)	Residency n (%)
Newfoundland and Labrador	48 (80%)	50 (83%)
Elsewhere in Canada	5 (8%)	7 (12%)
Outside of Canada	7 (12%)	3 (5%)

Physicians primarily describe using self-study with tools such as MedScape™ or UpToDate™ to obtain their knowledge on oral health. Many use their personal experience as well. Some have learned at conferences,

from collaboration with dental professionals, or from online resources such as YouTube™.



**Figure 1.** Hours of formal education on dental care during medical training

### Perception of dental knowledge

Notably, no physicians feel their dental knowledge is above average when compared to their colleagues. Ninety-three percent feel they are average, with 7% feeling they are below average or poor. Most family physicians (91%) described themselves as only somewhat comfortable or somewhat uncomfortable addressing dental issues.

### Dental care in practice

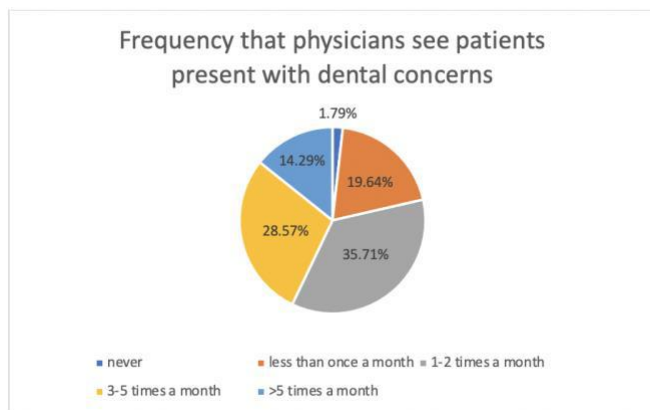
Most family physicians reported seeing dental issues in their practice at least once per month, as shown in Figure 2. They have provided care for a wide variety of presenting dental issues, such as preventative oral care, trauma management, pediatric and geriatric concerns, and pain and infection management.

Most physicians see dental issues in the adult (age 18-65) population most frequently. Most family physicians experience parents bringing up dental issues during well-baby visits, specifically.

### Attitudes towards dental care in family medicine

Almost all family physicians agree that basic oral and dental health should be within the scope of a family physician, with 38% strongly agreeing and 46% somewhat agreeing. They also agree there should be more training and education regarding dental health, with 54% strongly agreeing and 36% somewhat agreeing. Infection and pain management are the most supported possible topics that should be addressed, with 56 and 52 physicians identifying these as areas of focus, respectively. Other significant topics include preventative oral care, trauma management, pediatrics, geriatric dental concerns, and associated health burdens.

There is support among family physicians for delivering training on dental care in several ways. A majority of respondents indicated there should be more formal lectures in medical school and residency, clinical experiences in medical school and residency, online self-learning tools, and post-graduate training. Notably, all physicians agreed that such training should be provided.



**Figure 2.** Frequency of dental concerns seen by family physicians.

At the end of the survey, respondents were given a chance to add any further comments they had in the form of free text. Here, two major themes evolved. Physicians think that patients should have better access to affordable dental care, and physicians think they are not trained sufficiently in dental care and could thus benefit from further education. Most comments focused on the fact that dental care should be publicly funded, but since it is not, patients' concerns often fall to the family physician. Dental care was described as "lacking in our education" and that physicians were "at times trying to manage issues that [they are not] trained to treat." Dental care is "rarely taught but often seen."

## DISCUSSION

### *Summary of the results*

To our knowledge, this is the first study assessing the education, comfort level, and experiences of primary care physicians in Newfoundland and Labrador regarding dental health care in their practice. Our survey found that family physicians frequently see patients regarding a variety of dental complaints, yet they reported very little formal education in this area of practice throughout all stages of their medical training. They supported more training on dental care during any stage of medical education but also emphasized the need for affordable and accessible dental care provided by dentists.

### *Comparison to the literature*

Most survey respondents felt that oral and dental health care should be included in the scope of practice of

family physicians, but most family physicians reported being only somewhat comfortable or somewhat uncomfortable addressing dental complaints. This is consistent with similar research from the United States, where a survey of family medicine residency programs found that 79% of programs felt oral health care issues should be addressed by primary care physicians.<sup>13</sup> However, 68% were not satisfied with the current level of competence that their family medicine residents graduate with, and 67% felt residents were not prepared to answer oral health-related questions on family medicine board exams.<sup>13</sup> A scoping review by Harnagea et al. (2017) found that the most commonly cited barrier to oral health care in primary care was providers reported lack of competency<sup>14</sup>. Most survey respondents reported receiving less than 2 hours of formal education on dental care in both medical school and residency. Notably, many participants reported no formal education at all. This is consistent with research from other jurisdictions, including the United States, where almost one-fifth (19%) of family medicine programs had 0 hours of oral health curriculum, 51% reported 1-3 hours, and 31% reported 4 or more hours of education.<sup>13</sup>

This survey shows that family physicians regularly see dental presentations in their practice despite a lack of formal education on the topic, and family physicians support more formal training in dental care. Increasing formal dental and oral health education in medical school and residency curriculum has been highlighted as an area of importance in the literature. Goodell et al. (2019) conducted a scoping review to develop Entrustable Professional Activities (EPAs) for oral health integration into primary care training.<sup>15</sup> Their results included EPAs for oral health risk assessment, general oral health history and examination, as well as disease-specific evaluation for common oral health issues such as dental caries, periodontal disease, oral pain, benign oral lesions, and oral cancer. Their EPAs also included providing prevention-related counseling to patients. Morel et al. (2022) piloted a clerkship module and clinical experience for third-year students at a medical school in the United States, demonstrating the feasibility of incorporating such training into the medical school curriculum. They found that students who completed this module increased their oral health knowledge as well as their comfort in conducting oral examinations.<sup>16</sup>

### *Implications and Future Research*

The results of this study can be used as a tool to advocate for further education on dental care to be provided throughout medical education, whether it be in the undergraduate or residency curriculum. To further support this, this study could be expanded to survey current medical students and residents about their experience and comfort with oral health care education.

This study can also be used to support the development of an educational tool regarding dental care for family physicians. Clinical audits regarding dental visits in primary care would be beneficial to further support the data this survey provides.

### STRENGTHS AND LIMITATIONS

Strengths of the study include that it was accessible through an online survey platform. It also included both qualitative and quantitative data, allowing respondents to add additional information and experiences that were not directly evident from quantitative-based questions.

Limitations include survey design with absence of a clinical audit of the care provided, making the results potentially influenced by recall bias. Only physicians in one province were surveyed, with the majority having completed their medical training at the same university, possibly reducing generalizability. Additionally, those physicians who did choose to participate in the survey may be different than those who did not, potentially having more of an interest in dental care and medical education. Further potential bias exists due to the survey developers themselves being in medical training in Newfoundland and Labrador and being aware of the frequency of dental visits to family physicians and their lack of education on the same. Further, given a poor response rate, no statistical analysis was completed.

### CONCLUSIONS

The results of this study were not surprising to the authors. The results highlight the prevalence of dental issues seen in primary care in Newfoundland and Labrador. It shows that family physicians receive minimal education on dental care across all stages of training, yet they regularly treat dental complaints in a variety of settings. Ultimately, there are two major themes: family physicians in Newfoundland and Labrador support universal access to dental care, and family physicians in Newfoundland and Labrador support more formal education on dental care, which can be delivered at any stage of training. Ideally, all Newfoundlanders and Labradorians would have affordable and timely access to a dentist. Realistically, more education on dental care would benefit primary care providers and their patients. The authors hope that this data can be presented to curriculum developers at both the undergraduate medical education and postgraduate medical education levels such that this topic can be formally integrated into medical education in Newfoundland and Labrador.

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# Case Report

## Thinking outside the box: An unusual presentation of papillary thyroid carcinoma

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### ABSTRACT

Thyroid malignancies are the most commonly encountered endocrine tumours, for which there is a wide spectrum of disease with varying potential for aggressiveness. Papillary thyroid cancer is the most common occurrence of this malignancy and is typically indolent in nature, rarely progressing to metastatic disease. Our case represents an atypical presentation of metastatic papillary thyroid cancer that was initially believed to be an aggressive digital papillary adenocarcinoma and provides interesting consideration when composing differential diagnoses.

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### INTRODUCTION

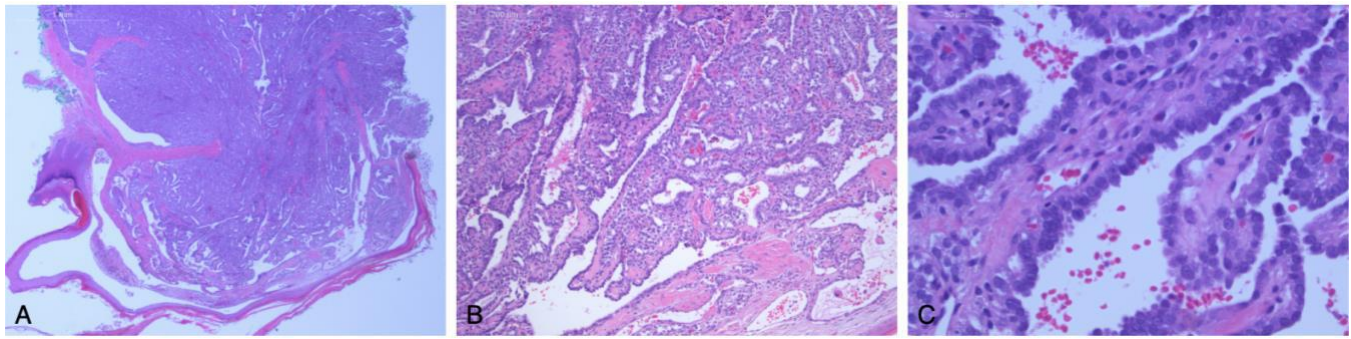
Thyroid cancer represents the most common endocrine malignancy and is often subdivided into differentiated or medullary thyroid cancer, with the former accounting for greater than 80% of these occurrences.<sup>1</sup> Clinical behavior is highly variable as tumours may be indolent, slowly progressing neoplasms or rather aggressive malignancies with significant patient mortality.<sup>2,3</sup> Thyroid carcinomas typically present with an asymptomatic mass or swelling of the neck; however, instances of incidental discovery have been reported.<sup>3</sup> Here we describe an unusual presentation of metastatic thyroid carcinoma initially believed to be an aggressive digital papillary adenocarcinoma (ADPA).

relatively easily found mitoses. Glands and papillary structures lined by one or occasionally two layers of epithelial cells were seen. Collectively, these features are consistent with aggressive tumors with a high propensity for local recurrence designated as ADPA, which possess a range of documented morphologies. Histopathological assessment of the excised tissue showed involvement of the painted margin (Figure 1C). An amputation was recommended given the high rate of recurrence and metastases seen with ADPA's, however, the patient refused digital amputation and was referred to Radiation Oncology for consideration of post-operative radiation instead.

### CASE REPORT

An 85-year-old man sought medical attention because of a non-healing finger lesion. Approximately one year earlier a metal sliver slipped under the nail bed of his left fourth digit while moving an old bed. Initially, he unsuccessfully attempted to remove the sliver using a needle. Curiously, the lesion increased in size over the following year, becoming painful and prone to bleeding. After presenting to his family physician, he was referred for surgical excision. A partial transverse excision of the nail was performed in order to facilitate removal of the granulating lesion and the tissue was sent for routine histopathological examination. There, microscopic investigation of the excised tissue (Figure 1A-B) revealed a papillary glandular lesion composed of cells with mild to moderate nuclear pleomorphism and

When initially seen by Radiation Oncology the patient was clinically well and had no other associated lesions or additional symptoms. Past medical history was significant for a remote left-sided renal cell carcinoma treated with radical nephrectomy 25 years earlier. He was also followed for goiter and treated for hypothyroidism. His medications included Eltroxin, Metformin, Aspirin and Crestor. Family history was non-contributory. The patient had no allergies and did not smoke or consume alcohol. Review of systems was unremarkable, and he denied the presence of any constitutional symptoms. On physical examination, the patient appeared to be in good general condition without evident lymphadenopathy and an unremarkable abdominal exam. Clinical examination of the left fourth digit showed a well-healed surgical scar with no evidence of macroscopic disease.



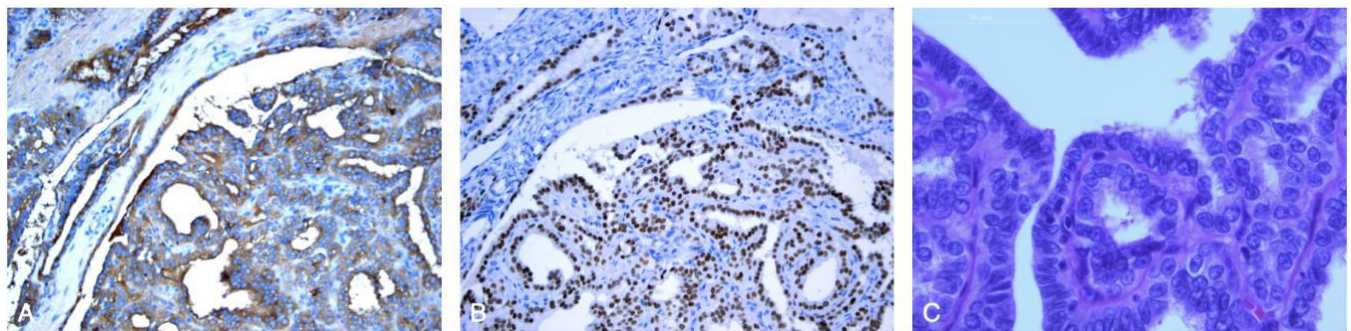
**Figure 1.** Histopathologic examination of excised tissue at increasing magnification demonstrating a papillary glandular lesion with mild to moderate nuclear pleomorphism and involvement of the excision margin.

Given the clinical presentation, the surgeon felt that soft tissue sarcoma was the most likely diagnosis, however, the patient's history of goiter paired with the papillary histologic appearance on biopsy lead to consideration of metastatic papillary thyroid carcinoma (PTC) as a possible alternative. Whatever the diagnosis, the best initial management to guide treatment and prognosis is to determine the stage of the disease. Moreover, the possibility that this represented a metastatic lesion from another primary site existed and warranted further investigations. Therefore, thyroglobulin levels were measured and found to be elevated at 8200 µg/L, with a TSH of 0.10 mU/L and Free T4 of 15 pmol/L. Ultrasound imaging of the thyroid demonstrated an enlarged right lobe with two solid nodules - the largest measuring 82x64x94mm with a partially necrotic center - and an associated enlarged right cervical lymph node.

A computed tomography (CT) scan showed a large thyroid mass measuring 8.1 cm in its largest diameter along with pre-tracheal, anterior mediastinal and subcarinal lymphadenopathy. There were innumerable pulmonary lesions and a lobulated paraspinal mass in the lower right thorax. Subsequent whole-body bone scan with technetium labeled methylene diphosphonate (MDP) was negative for active metastatic disease. These laboratory and radiologic findings were strongly

suggestive of metastatic Differentiated Thyroid Cancer (papillary type).

The patient underwent a total thyroidectomy with a level VI neck dissection in accordance with the revised American Thyroid Association guidelines for large (>4cm) papillary tumors.<sup>4</sup> Immunohistochemical staining of the sample was positive for thyroglobulin (Figure 2A) and thyroid transcription factor 1 (TTF1) (Figure 2B). Examination of the biopsy sample under high power field (Figure 2C) showed characteristic intranuclear inclusions as well as some empty appearing nuclei; eponymously called "Orphan Annie eyes." These findings confirmed the diagnosis of PTC with metastatic thyroid carcinoma also present in resected level VI lymph nodes. Such findings are representative of T3, N1B, M1 (stage 4C) disease. Therefore, 5250 MBq of intravenous iodine-131 was administered in an effort to reduce tumor burden and ablate thyroid tissue. Seven days after ablative therapy, an iodine-131 scan showed extensive metastatic disease involving lymph nodes, bones, lungs, and skull. The scan was repeated six months later (Figure 3) and showed persistent metastatic disease in all sites. Whole body iodine-131 planar images (Figure 3A) and SPECT-CT imaging (Figure 3B) demonstrated multiple foci of increased uptake in the neck, lungs, mediastinum, pelvis and right femur.



**Figure 2.** Immunohistochemical staining displaying: A) Positivity for thyroglobulin. B) Positivity for TTF1. C) Intranuclear inclusions as well as some empty appearing nuclei ("Orphan Annie eyes").



In further effort to suppress the excretion of TSH and inhibit tumor growth, this gentleman was prescribed a regular dose of Synthroid at 125 ug/day. He was scheduled to have regular follow-ups at three-month intervals with repeat blood work and magnetic resonance imaging (MRI) of the axial skeleton. Despite this management, this gentleman's disease continued to progress, and he died four years after initial presentation. During this time, he was also treated with whole brain and mediastinal irradiation for brain metastases and for palliative treatment of dysphagia, respectively. The patient was planned for a second course of iodine ablation but did not receive the treatment.



**Figure 3.** A) Whole body iodine 131-planar image displaying multiple foci of increased uptake in the neck, lungs, mediastinum, pelvis, and right femur. B) Whole Body iodine-131 SPECT-CT reconstructed images demonstrating increased uptake within the left iliac crest.

## DISCUSSION

ADPA's are rare eccrine sweat gland neoplasms originally described in 1979 with further characterization of these neoplasm as aggressive digital papillary adenoma (ADPA) and aggressive digital papillary adenocarcinoma (ADPAca) in 1984.<sup>5,6</sup> Since the original description, relatively few instances have been reported in a series of three retrospective studies and case reports.<sup>2,7-11</sup> The most common tumour sites are the volar surfaces of the hands and feet. The rate of local recurrence is 5% and the rate of metastasis is 12 to 14%.<sup>8,9</sup>

Conversely, thyroid carcinoma is the most common endocrine malignancy with approximately 25,000 new cases diagnosed annually in North America. The most common class includes differentiated thyroid cancers, arising from the follicular epithelium and further classified into the two sub-types of papillary thyroid carcinoma (PTC) and follicular thyroid carcinomas. PTC is the most common histological subtype of thyroid carcinoma, comprising about 80% to 85% of all thyroid malignancies in developed countries.<sup>1</sup> They exhibit a relatively indolent course and have the most favourable prognosis of all thyroid malignancies with long-term

disease-free survival of approximately 90-95%. Most cases are sporadic in nature, although prior exposure to radiation therapy (RT) is a well-established risk factor.<sup>12</sup>

Unlike follicular carcinomas, loco-regional lymph node involvement is common at presentation of PTCs and may be observed in approximately 33% to 61% of cases.<sup>2</sup> In contrast, distant metastases are far less prevalent, occurring in only 4-15% of cases. The lung is the most frequent site of spread, followed by bone and brain.<sup>3</sup> Soft tissue metastases are very rare and typically occur on the scalp face or neck.<sup>4,13</sup> In PTC, the presence of distant metastases is the most significant poor prognostic factor, however 10-year survival is still around 50%.<sup>12,14</sup> The worst prognosis, a 5-year survival as low as 8%, has been observed in patients with distant metastases in more than one organ.<sup>15</sup> Radioactive ablation is recommended in all patients with PTC and known distant metastases as such treatments are shown to improve overall survival in these patients.<sup>4,14</sup>

The present case depicts a very unusual presentation of a typically indolent and highly treatable disease. Unusual metastatic presentations and patterns of PTC generally herald a much worse prognosis as was seen in the present case. The BRAF(V600E) gene mutation is a common genetic anomaly in PTC that has been shown to be an independent predictor of aggressive disease.<sup>16,17</sup> Vemurafenib is a BRAF kinase inhibitor that is currently FDA approved for the treatment of BRAF(V600E) positive melanoma. In one non-randomized open label phase II trial, Vemurafenib showed anti-tumor activity in patients with progressive BRAF(V600E) papillary thyroid carcinoma refractory to radioactive iodine.<sup>18</sup> It is unknown whether Vemurafenib would have been beneficial in this patient as the testing was not available, however, it is possible there may have been some impact on longevity.

## CONCLUSION

PTC is the most common histological subtype of thyroid carcinoma and generally carries an indolent course with infrequent reports of distant metastatic spread. We have reported a case of a metastatic PTC initially mistaken for an ADPA, further denoting the importance of thorough clinical work-up.

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# Patient Encounters

## What's in a name?

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**Note:** This story discusses suicidal ideation. Patient details have been altered to protect individual privacies.

During one of the earliest days of my clerkship year I was called to complete a psychiatric interview on a man brought to the hospital for suicidal ideation. While this is not uncommon in psychiatry, I recall feeling a bit inexperienced to be faced with such a heavy task. I had also found myself becoming more aware by the day that many of the patients at this hospital were not thrilled to speak to a young medical student about their mental health. Many of these patients had faced difficult social circumstances and trauma; when they see doctors, they see people who are nothing like them and could never understand them – and in some cases, they may be right.

I knocked on the door, not sure what to expect, and introduced myself, “Hi, I’m Emily, one of the medical students working with the psychiatry team today.”

As I sat down, I took in the frail man sitting across from me. In psychiatry, we are taught to assess whether or not the patient’s chronological age matches their apparent age. To be honest, I could not tell how old he was, but he looked aged in the sense of appearing like someone who has been subjected to a difficult life.

He was immediately frustrated for having to be there. He insisted he was fine, that there was no need to be assessed and that he was not suicidal. So instead, I decided to ask him about himself, his life, and how he was doing. To my surprise, as we talked he very slowly opened up. We talked for close to an hour and developed some good rapport. I learned that the man was facing a remarkably difficult set of circumstances in life. We talked about how he felt hopeless, how he had lost everything to addiction, and how he was completely alone. By the end of the hour, we talked about how he had, in fact, been planning on ending his life.

Of his many hardships, what struck me most was when he insisted that he had no one in his life: no family, no friends.

I asked, “the nurse said that a neighbour called to have you brought in today. Is she a friend?”

“I don’t even know her that well. She lives down the hall. She’s not really a friend. I don’t have any friends... I don’t really have anyone to spend time with. I don’t see anyone or go anywhere anymore.”

My heart sank for him. But we are supposed to collect information on exactly how much social support a patient has – “are there any other neighbours around that you see?”

“No, I don’t know them.”

“How about family?”

“I don’t have any.”

Saddened, I finished the interview and excused myself briefly to discuss the case with the team.

When I returned, I talked to him about being admitted to the hospital to get some help. Thankfully, the patient agreed and said he was ready. I was relieved. I excused myself again to get some paperwork and supplies and returned to the room to do a physical exam to prepare him for admission. As he rolled up his sleeve so I could take his blood pressure, I glanced down, and saw a single word tattooed on his arm in dark letters:

*Emily*

My heart sank so low, I worried it would go through the floor. This man had just told me that he had no family, no friends, no social support. Not a soul in his life. And yet, he had the name of someone tattooed on his arm – my name.

My surprise was so obvious, I could not ignore it.

“I like your tattoo. Can I ask who Emily is?”

He cracked the faintest of smiles. “My daughter.” I didn’t know what to say. So, I said, “Well, I’m biased, but I think you picked a nice name.”

He chuckled lightly and said “Yes, I think so too. She’s almost 25 now.”

I paused, forced my best smile and said, “That’s wonderful... Okay, you’re all set to go upstairs now”.

“Thank you, Emily”

I thanked him for his time and courage and wished him good luck with the admission.

I watched him walk upstairs with the nurse, I felt confounded and saddened that a perfect stranger had my name on their arm while they lived the loneliest days of their life. And I felt relieved that he would not be alone for the next few days, at least.

\* \* \*

A few months later, I got to handle my first ever delivery during my obstetrics and gynecology rotation. While the resident did the steps along with me, this would be the first time I would help to deliver a baby myself.

Before the delivery, I introduced myself to the young labouring mom and her partner, along with the resident and attending, and asked if they would be comfortable with having a student assist with the delivery. The couple exchanged a smile and said absolutely. They were so excited to meet their first-born child and had opted not to know the sex in advance as to add to the surprise. When it was time for the delivery it went incredibly well, and they were thrilled to meet their beautiful baby girl. I could not have been more thrilled either.

A while later I came back to the room to congratulate the new family. Before I could ask what the baby’s name was, the mom glanced at my name tag, smiled down at her new daughter and said “Guess what! Her name is Emily, too.”

\* \* \*

When we walk into a room we do not always consider the lasting impression our actions and words will have on a patient – and we never know how they will impact us in return. Every day, we require our patients to share their stories with us. They share their intimate details in the hopes that we might be able to help them, and we gladly gather this information without reciprocating. This is the power dynamic of medicine. We must do our best to witness their stories, honour them, and empathize without projecting our own feelings onto their experience. Sometimes it feels as though the gap is too far to bridge; how can empathize when we both know their experience is so different from our own? What I have learned is that in every patient encounter, whether we are able to see it or not, there is always something that connects us.

Acknowledging this common ground with patients builds our own humanity and builds their trust in us.

These stories remind me of the responsibility and privilege that practicing medicine is, because we get to walk with patients through both the worst and the best moments of their lives. And these stories remind me that we can always find common ground, if we choose to see it.

# Being Human in Medicine

## The dory and its anchor: The human connection in medicine

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The concept of humanism in medicine represents a unique concept; this is after all a field that requires unwavering dedication to patient care, which can often shroud our identities that are independent of the physician label. Together in this profession, we share this wonderful human condition with its infinite manifestations and individualized responses to the pressures that surround us. I do not know how you respond to these pressures, but most days, I feel like a Bay of Islands dory rocking - nay, thrashing - about, swaying from side to side and it is all I can do some days, just to hold on and not take on more water and weigh myself down. What keeps me afloat is my drive to build connections with those around me which allows me to maintain my individual identity: my anchor and my floatation device in one.

My identity manifests as a son, father, husband, and friend; a first-generation immigrant hopelessly in love with this province and its people in a land of potential and opportunity. I am an aspiring powerlifter and a connoisseur of fine IPAs; sometimes the two don't go hand in hand but they pair well with my mood, to either be alone or be surrounded by good company. Nonetheless, I am a medical oncologist, having entered medicine against all odds and my parents' recommendation otherwise, to care for those who face life-altering diagnoses for some and life-ending diagnoses for others. This career is filled with various pressures regardless of whether I deliver bad-news or relay great news. I am a life-long learner, teacher, mentor, and a senior leader. I feel the weight of everyone's expectations of me with every decision I make, with one aspect of who I am likely to suffer the consequences of that decision: whether it is to take a weekend to be with my family or time after-hours spent documenting in an electronic medical records system or attend yet another meeting. These constant expectations associated with the provision of patient-centered care can often lead us to overlook the parts of our identity independent of the medical field and fail to remember the human side of ourselves; these pressures can rock us or thrash us side to side if we lose sense of ourselves

To be human, or humanism, in medicine to me is no different than being human in any other context. To be

human is to know suffering, joy, and everything in between. Being human is not about my attitude towards life or my behaviours and choices that make up who I am. Being human is certainly not about my accomplishments or my failures. I do not cease to be if I fail to remember a friend's birthday or miss a meeting. My personal story is full of successes and disappointments, joy, and heartache. Yet as I continue my journey through the years (a much more eloquent way of saying 'as I get older'), I am beginning to gain a different perspective of what it is that makes me who I am today both within the medical field and independent of it. Being human, and therefore my identity, is about the connections I build or, more importantly, choose to build as this is how my story is written, and this is how I remain anchored. My desire to connect was sparked after being forced into isolation by virtue of external circumstances and geopolitical pressures. As a result of the aftermath of war and its impact on my family, I was forced to adjust to a new reality, new cultures, and new languages. To connect with others, I needed to communicate and therefore, I transitioned from a native Arabic speaker to an English-speaking teenager.

Being able to connect with another human allows us to find common ground with others. Connections in medicine can often evolve to building relationships with our patients and their families, learners, and colleagues. I am by all accounts an introvert; I enjoy meeting new people but thrive in one-on-one or small group settings. After first arriving in Canada, I failed miserably to build any meaningful connections, mostly owing to wide cultural gaps I did not understand or know how to traverse over. It may be my introverted nature, but I have come to realize that I truly enjoy the connection that comes with the relationship building within small settings, such as those often found in clinical care settings. Medicine is built upon the basis of the human condition and its makeup, and therefore, building connections is integral to not only being human but caring for others and for ourselves.

The height of the COVID19 pandemic is not far behind us, its impact on the human condition will continue to be felt well into the next decade. In this post-pandemic era, challenges facing healthcare systems and healthcare workers appear to be multiplying. Societal inequities

abound. Uncertainty in the world surrounds us. Our colleagues appear to be falling victim to yet another pandemic: burnout. In the early days, weeks, and months of the pandemic-related lockdowns, we were completely deprived of real human connection. We adapted by resorting to tools such as Skype (remember that?!) and eventually Zoom, Webex and Teams. Yet, despite being able to see each other on screen and it being better than no visual connection, we intuited that this is a facsimile of the reality of building a connection. It is unfortunate that I gained this insight after such a dark chapter in world history, but I am thankful for the opportunity to now reflect on this. I feel anchored when I relate to others' stories or even become part of another being's story – a frequent occurrence in oncologic care. It is perhaps why causes of burnout amongst oncologists are not usually rooted in the human condition and disease subset we often find ourselves caring for. Being an oncologist is not depressing because of the subject matter. Instead, the sharing in the most intimate aspects of the human condition and providing what is often termed whole person care is reciprocated.

I by no means am an expert on burnout and urge anyone with symptoms and signs of the same to seek mental health and wellbeing supports. I merely wish to illustrate that in times of great change and challenge, we need to return to basics: what do we value? What connected you to medicine? My humanist approach reminded me of the value I placed on connecting with others: despite the fierce headwinds facing the practice of medicine, I use this knowledge to try and remain anchored.

# Interview

## An interview with Team Broken Earth CEO, Dr. Art Rideout

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### ABSTRACT

Dr. Art Rideout is a plastic reconstructive surgeon working in St John's, Newfoundland and Labrador. He is the CEO and co-founder of Team Broken Earth, a registered charity driven by doctors, nurses, and other specialized healthcare professionals. When the earthquake hit Haiti in 2010, Dr. Rideout, and several of his esteemed colleagues saw an opportunity to put a small team together to help. While they originally believed their work would be a single mission, Team Broken Earth has since expanded its chapters nationwide and is currently doing relief work in Guatemala, Haiti, Nepal, Bangladesh, Nicaragua, and Ethiopia. In this interview Dr. Rideout shared his background, Team Broken Earth's accomplishments, and goals for the future.

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### **Where did you grow up, and where did you complete your training?**

I was born in New Brunswick and spent a lot of years there, then lived a few years in Ontario. I went to school in Nova Scotia and did medical school here at Memorial University. Other things that shaped my career was becoming a family doctor for a year, doing some general surgery, and being lucky enough to train in many different places, including Plastics at McGill, a fellowship in Toronto, another fellowship in Syracuse, NY and then practicing here in pediatrics as a reconstructive surgeon since 1997.

### **If you could go back in time and change something during your training, what would it be?**

I don't think I would; I've been very lucky. I've had many mentors, many great people along the way. I never thought I'd get into volunteering until the twilight of my career - I'm very thankful that I have had an opportunity to volunteer my time so early in my career. For my first mission, I left my wife and my 5 kids at home -- all under the age of 10 -- to go to Bolivia. I'm very thankful for having that kind of support to start the journey that early.

### **How did you get involved with global surgery and Team Broken Earth?**

Team Broken Earth was started by Dr. Andrew Furey, Dr. Jeremy Pridham, and me. We've always had an interest in giving back and doing volunteer surgery. I've been with Operation Smile since 2001 and have done many missions over the years, I can now share that experience of wanting to give back with local individuals as well as the medical community. I think the idea of giving back is a great concept because these people will come back home with a sense of community and rejuvenation that I think makes us all better people. And on top of that, it makes me become a better physician

and better surgeon because if I can deliver care in resource compromised environments such as Haiti, Guatemala, and Bangladesh, I can do it really well here because I have all the resources that I need.

### **Team Broken Earth has grown a lot over the past decade, what do you think is behind the sustained growth of this organization?**

A lot of our team members across Canada have a connection to Newfoundland. Initially, we expanded organically. And over the years, we have grown to the organization we are today through making connections across the country. I'm really proud of Canadian training, in particular the training at Memorial University. A big thing for us is also education. We do a lot of education mentorship, and we really want to pass on that knowledge. Since the educational component is sustainable, it's important to us that all the team members have a teaching component here at Memorial University.

### **That's terrific, being able to mentor and train people in different countries and helping them to be self-sufficient.**

And for us too, it's the exchange of culture. For example, we're doing a rural mission next week in rural Guatemala to do some primary care and identify patients that may benefit from surgical intervention. Then we have a great local partner on the ground so there's continuity of care, cultural sensitivity, and some corporate social responsibility on our part. And we're going back there in February with the surgical team to provide that surgical care.

### **What was your most memorable experience as a Team Broken Earth member?**



It's hard to pin down to the most memorable because there's a lot of emotions surrounding that. There's been happy moments and there's also been very sad moments because you realize that we're very lucky in North America. We have access to good medical care, and so sometimes you see babies in countries with high infant mortality rates, high rates of HIV and lack of access to care. But if I had to pinpoint a happy moment, it's actually more of a general theme of what I love to do, because I love doing cleft lip and palate procedures. For me, it's a great operation that I can do safely in different environments, and it has a big impact right away. Cleft lip takes about an hour of surgery and that can make a lifelong difference to an individual, to a community, to a family. Cleft palate takes a little longer, about an hour and a half, but delivering and providing that care to somebody who may not be able to have it, whether it's here or internationally is a good moment for me.

**If there was one thing about the current state of global surgery you could change what would it be?**

If I could identify one thing, it would be access to care. For most of the world, trauma is one of the leading causes of loss of income, loss of life, loss of health. If we could improve access to safe surgical care, I think that would be a big thing because most of the world does not have safe surgical care. As well, there's a lack of social determinants of health such as safe water, safe food, safe housing across the world. If we can provide that or at least a starting point to that I think that would make a big difference.

**You did a mission up in Labrador a few months ago and that got me thinking, are there gaps in surgical care that's unique to remote communities in Canada in particular?**

I think the common themes are access to care and distance travelled. Our missions in Labrador are more educational. For example, in Goose Bay, we do a lot of first responder care. It's like an ATLS course, but trauma based. We work with the community and either Labrador Health or the Nunatsiavut government to identify what the need is and then respond to that. One good example is we did a course in Nain where it was essentially a diabetes/wound care course and we delivered that to their local community nurses because that's what they asked for. So, we found that whether it's Nain or whether it's other countries, going in, doing a needs assessment, and responding to what they say the need is, I find that's where we've been most effective.

**What are some future aspirations you envision for Team Broken Earth?**

Education and national exposure are our big focal points. We're a registered national charity and I'd like to expand that national scope across Canada and really work together to provide care in different areas. We had teams pre-COVID that were active in Boston so I would like to get more of an international flavor of teams as well. Because our heart is always in Haiti, one of the things that we're planning to do with regards to education is that we're going to bring a senior orthopedic resident from Haiti and train them in Saskatoon for one year. The goal is that the orthopedic surgeon is going to take the Canadian knowledge back to Haiti so that they can operate there at a level that they may not have had access to before.

**I really like that; those are some big goals and I think you guys are starting a spark.**

That's a good way of putting it. I found that people want to give and help others, sometimes they just don't know how to, or just need a platform. So anytime we've tried to put a team together, whether it's to go to the Gathering Place, partner with the Lions Club to provide free eyeglasses and eyecare or going to the Collaborative Clinic to help some of the Afghan refugees, these are all part of being in the community; I'm very proud that anytime we put a call for help, we have team members that are ready to go. I think that speaks to their heart of Team Broken Earth and I really like the idea that they want to give back.

**Is there a piece of advice that you'd like to share?**

I don't hand out advice, though I will say that you can learn from other people's experiences. For instance, I never thought I'd be here ten years later talking about a Canadian national charity that we started. I'm very proud of what we've done. I guess the wisdom from that is, just do it if it's something you're passionate about. Don't feel like you have to wait until the time is right. If it's in your heart, just do it. I'm not saying it's not without heartache, struggle, and a lot of sleepless nights. But at the end of the day, if it's meaningful to you, it's probably meaningful to others and if you go out there and do it, you'll find like-minded people.

**Is there anything you'd like to say to the readers?**

I've been very lucky in that I've had the opportunities along the way through the support of many different people. I have to say I couldn't have done it alone, it's with many people helping me, so thank you to them.

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