WORKING GROUP 4
Enhancing the Dental Practice of the Future

1. Introduction

This report consists of eight sections. Sections 2 through 7 discuss the various aspects of the dental practice of the future. Each section presents the situational analysis and a solution analysis in the way of recommendations.

Section 2  Emerging practice models
Section 3  Alternative ownership models
Section 4  Value-based health care
Section 5  Practice efficiencies
Section 6  Future of insurance and benefits landscape
Section 7  Paradigm shift in oral health care.
Section 8  Summary of all recommendations.

There are several Appendices to this Working Group report. Appendices A through O contain statistics and information which was consulted to draft the report. Appendices P through S contain Policy Briefs relating to various topics discussed in the main body of this report. Appendix T lists the experts consulted by the Working Group.
2. Emerging Practice Models

Situational Analysis

Traditional practice models in Canada have been centred around dentists owning and operating their own practices and working independently with their own oral health team. The independence allows the dentist to set their hours of practice, allowing for flexibility in personal schedules, and to determine the size and makeup of the office support staff. There are variations within this basic model which include multiple dentists in a partnership agreement or multiple dentists owning their own practice and cost-sharing the facility. Data from the United States show that the culture created by this traditional practice mindset is changing, albeit very slowly, as the percentage of dentists who own their own practice has decreased slightly between 1991 (91%) and 2012 (86%). There has been a growing trend over the past few years toward corporate-owned practices that employ or contract dentists to operate within the corporate management structure. These dental practice management organizations have varying percentage ownership with non-dentist investors. Supporting data suggests that the percentage of corporate ownership has increased over time.

The reasons for this increasing trend may reflect the lack of business training or knowledge that is acquired by a young dentist, increased debt load due to education costs which prohibits the purchase or start-up of independent practice and perhaps, a longing for better work–life balance and the lack of desire to navigate through the “headaches” of ownership. Research is also showing that as the number of millennials grows within the workforce, the culture and expectations of employment are changing. This age group will be focused on their personal needs while, keeping work–life balance and positive employer brands, high on their agenda. By 2020, 50% of the dental workforce in Canada will be millennials. Gender, race and urban/rural location may also play a critical role in the employment choice of the younger graduate.

The rapid and changing development of new technologies to aid in diagnosis and treatment of oral disease requires dentists to increase capital investments to operate which increases expenditures. Pooling resources and cost-sharing in the dental group practice model or multi-specialty type practice may prove to be beneficial. The dental group practice model is a single legal entity that is owned by two or more dentists in partnership.

Group practices can be small, operate in a single location or expand to include many partners operating in multiple locations. In the United States, where group practices are well established in both medicine and dentistry, it has been shown that the average number of patients seen in a group practice on an annual basis may be higher when compared to a solo practice, thus
keeping operational costs lower. However, there are conflicting opinions about whether consolidation into larger practices is actually more cost-efficient.

The multi-specialty practice consists of general practices that are expanding their scope of services by integrating specialists into their office, providing care across almost all treatment disciplines in one location. This model allows the practice to establish a niche and distinguish itself, as well as create more efficient communication and financial operations. The overall patient experience may also be improved as it eliminates travel to additional offices for specialty care.

These models have been in place throughout Canada. One model may be better than another depending on the location (urban vs. rural), age and gender of the dentist, as well as the population demographics of the practice. The newer, emerging models of practice that found elsewhere like the United States, are described in the following paragraphs.

**Automated micro practice.** This model has been gaining momentum amongst physicians in the United States. First described by Moore in 2002, a micro practice is a low volume, highly efficient solo practice that uses technology to keep overheads low and allow more time for doctor–patient interactions. A micro practice usually operates with a single practitioner and almost no support staff, decreasing monthly operating costs. Automated patient communications, appointment scheduling, registration and the use of a call center for patient questions, are integral parts of this model. In this system, a physician treats a small number of patients, and typically, patients can be seen the same day. High rates of patient satisfaction are reported.

**Independent Practice Association (IPA).** This model has become popular with the physicians in the United States. IPA’s are run by member physicians, and private practitioners are organized as a self-directed group. The IPA functions as a central organization which manages purchasing, information technology and data services, compliance, marketing, billing and collections, and other office management functions for the member practices. This practice model allows the practitioner to maintain the autonomy of the practice while taking advantage of the professional management and economies of scale. IPA’s may also have an advantage in negotiating contracts with vendors and insurance companies due to the large number of participating members. This model can be easily translated to dental practice. One important aspect is that the IPA is comprised solely of licensed practising clinicians.
As the connection between oral and systemic health becomes better understood, the need to integrate dentistry and medicine will be critical.

**Inter-professional practice models (IPPMs).** The development of IPPMs will be integral to the future of dentistry. Improved collaboration between oral and general health care teams will be required to overcome dentistry’s previous isolation from medical care and to promote referrals. One proposed model, as described by Guyton et al., involves general dentists, dental specialists, dental hygienists, physicians and medical specialists along with nurse practitioners working together, either in the same setting or across a shared network. This interdisciplinary approach, may allow for better coordination of treating chronic diseases using a value-based system for health care. This model could also have nurse practitioners working within a dental practice or dental hygienists working within a medical setting, to allow for greater screening and facilitation of referrals for further treatment. The creation of a universal health record will be a necessary starting point. To date, dentistry has not moved towards creating a single health record amongst dentists or integrated with the health sector. The future expectation will be greater integration between dentistry and general health because it is beneficial to the patient. Reimbursement models will need to be understood and clarified.

**Dental Support Organization (DSO) – Managed Care Private Practices.** The DSO is typically a stand-alone, legal entity built specifically to handle the non-clinical business functions of the dental offices which it manages. It provides business services such as accounting, human
resources, marketing, legal and practice management. The traditional solo practice model can then utilize centralized outsourcing for most of its business functions.

**Walk-in Dental Clinics.** While such clinics do exist in Canada, they offer mainly emergency and after-hours service. There is limited literature regarding the success of this model. The patients are typically referred on to a general dentist for comprehensive care and definitive treatment.

**Teledentistry.** This is an emerging model that requires close attention as teledentistry, along with the use of smartphone technology in monitoring patients, will be a plausible development. Teledentistry involves remote diagnosis. Teledentistry is the use of information technology and telecommunications for dental care, consultation, education and public awareness. Scanners, video cameras, and other forms of virtual communication can be used to care for patients, or to supervise allied oral health care providers, particularly in underserved populations like rural or less developed geographic locations. Legislation relating to teledentistry can vary greatly by jurisdiction and further guidelines for its effective use needs to be developed.

A misgiving about this model is the focus on the actual technology. Technology will always be changing and improving. The focus should be for dentistry to learn how to enable, utilize and manage the technology to facilitate connections and improve the value of dentists. Research on this topic, through interviews with experts in this field has stressed the importance of dentistry “owning” and regulating the diagnosis. The ability to diagnose oral disease is a key focus for the future of dentistry. Our profession needs to invest in proper information data, like diagnostic data. Presently, we only collect treatment data. The data should be segmented to allow for a better understanding of the dentist profile (model of practice they represent), the level of oral disease and the regions with a prevalence of certain types of oral disease. This can help facilitate GPs to better manage disease in their offices, through help from teledentistry technologies. This data may also allow our profession to “support” our concern with respect to the oversupply of dentists in Canada. The level of disease does not support the number of dentists.

**Mobile Dentistry.** Mobile dental clinics, whether operating out of converted vehicles or via oral health professionals using portable equipment, has been used with some success to treat patients in underserviced areas, high-risk communities, nursing homes or long-term care facilities. This model positively supports the concern of access to care. Unfortunately, the number of providers currently offering these services is very limited.
The growing senior population in Canada will lead to further gaps in care due to increasing mobility and functional abilities. With developing technology, mobile dentistry will evolve to offer full service care to those at home. To date, we have not convinced governments and other payers of the importance of paying for dental care at home.

Patient-Centred Care Model. The future of dentistry is being challenged. An oversupply of dentists competing for a limited numbers of restorative procedures is creating a turbulent environment that many in our profession may be unaware of. Emerging practice models give us choices on how to best serve the population. The “Patient-Centred Care Model” should be universal in any of the models we choose to adopt. Increasing the value of dentistry within the health profession by promoting a more holistic team approach with medicine and emphasizing (and preserving) our ability to diagnose oral disease, will be the basis for this approach. A shift to a value-based, patient-centred model can bring positive change, ensuring successful oral health practices for the new generation of dentists. Understanding the increase in preventative procedures within practice models will allow for viable variations within the model structure. In any future model of practice, understanding the patients, their needs and expectations will be crucial.

Solution Analysis & Recommendations

- CDA along with the PDAs need to clarify and promote the definition of oral health.
- We need to promote public awareness of the relationship of oral health and systemic disease and that dentists are the experts in diagnosing oral disease.
- Develop a list of primary care activities, such as smoking cessation, diet control and obesity and diabetic monitoring.
- Better support the value-based, patient-centred model, by enhancing scope of practice for dentists and allied dental personnel.
- CDA along with PDAs be active in developing a universal electronic health record for all provinces and integrate this into dentistry.
- Associations need to be active in encouraging further development of data collection processes, including diagnostic data. This will lay the ground work to fuel the success of teledentistry thus allowing a lowering of costs and increasing the value of dentists.
- Diagnosis needs to be a regulated act.
- Further research concerning the future of “fee for service” and other reimbursement alternatives (including a two-tiered reimbursement system, private/public) for dentistry.
- Establish a national practice management centre, that all licensed dentists can access via their provincial associations.
• All provincial regulatory bodies need to review their existing standards of practice ownership (including corporatization) that will best promote the patient-centred model of care.
• The profession and associations need to be involved in integrating dentistry and medicine and to be part of the decision-making processes; this will start at the education level. CDA should consider further research into integrated practice units (IPUs or IPPMs), in which a dedicated team of clinical and non-clinical personnel provide the full range of care for the patient’s condition.
• Need to educate new and future dentists about the various practice models in order to help new dentists decide on their career path.
3. Alternative Ownership Models

Dentistry in Canada is currently undergoing an economic and demographic change at an unprecedented rate. Further analysis is recommended to determine the impact that corporatization will have on the future of the dental profession.

Introduction

The term ‘corporatization’ is a matter of debate. Internationally, this term is often used by public policy experts to describe the conversion of state assets into independent commercial companies. At an extreme, corporatization could apply to non-dentists purchasing dental practices and hiring dentists as employees. While this is, indeed, permissible in certain jurisdictions, this is not a widespread practice. In Canada, there generally are restrictions on ownership of dental practices. In Ontario, provincial law dictates that the majority ownership and control of dental corporations must be by dentists (Appendix A – p. 38).

Corporate dentistry in Canada can be defined by non-clinical practice services being provided via contract with a third-party organization that is not controlled by the practicing dentist. The third-party organization can be funded by investors who are not engaged in the clinical practice of dentistry. The corporatization of dentistry, therefore, formally establishes two parties with different primary motivations: the dentist, ultimately, responsible for providing care; and the third-party, responsible for maximizing profit. The fundamental implication is that corporate interests may somehow conflict with the clinical practice of dentistry. Corporate dentistry appears to be a continuously shifting environment, with numerous variations in practice models that are constantly evolving (Appendix B – p. 39).

Under the corporate dentistry model, dentists reach agreements with a company – commonly referred to as the dental service organization (the “DSO”) – for business support. These corporations manage the non-dental operations of both individual dentists and group practices. The degree of control that a DSO has over the management of the practice depends on the nature of the business arrangement and the ownership of the DSO.

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Situational Analysis

The American Dental Association (ADA) reports that the number of large dental practices increased from 2,000 to 2,500 (a 25% increase) between 2009 and 2011. The ADA also reports that the number of solo practitioners decreased from 76% to 69% between 2006 and 2010. A recent review conducted by Vujicic (2017) shows that traditional solo ownership rates in dentistry are declining slowly and steadily, yet, they are declining for almost every age group. What is even more surprising is the steady decline in ownership for males and the stagnant rate for female dentists, which counteracts the contemporary argument that women are more likely than their male counterparts to opt out of solo ownership of a dental practice (Appendix C – p. 41).

Appealing to Solo Practitioners

Solo practitioners face many challenges. They need to lead in a variety of roles: CEO, human resources manager, chief financial officer, clinician and more. Thus, the appeal in corporate dentistry lies in the pragmatism of the practice – the ability to relieve dentists of these ‘burdens.’ A 2012 analysis by the ADA on US data compared incomes between dentists who own and who do not own their own practices, concluding that owners earn roughly $36,000 more each year than non-owners (non-owners refers to both dental associates and salaried employees), after controlling for age, gender and location (Appendix D – p. 42). More importantly, dentists employed by a corporation are often salaried, and the consensus is that the incomes of salaried dentists are generally less than the incomes of both owners and associates. Conclusively, the strength and performance of the economy are the greatest determinant of a dentist’s income.

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5 ADA (2012a). ADA explores growth of large group practices.
7 Ibid
8 Curtis (2012)
Appealing to New Graduates

Corporate dentistry may also be particularly alluring for new graduates and young dentists, especially as they have seen a drastic increase of 314% in dental school tuition fees from 1982 to 2002. To add fuel to the fire, with the cost of opening a new practice starting at approximately $600,000, many young dental professionals are finding it more difficult to pay down student debt as well as purchase a practice. Having a DSO offering a stable income may be more pragmatic. DSOs may simply be offering young dentists what they want including more time to focus on their personal life and a practice that is inherently collaborative. It is not only the students that are being affected. Older dentists, who are often delaying retirement, have reported difficulty finding younger practitioners who can afford to buy their practice.

Patients

A common theme associated with corporatization is that it will impact the doctor-patient relationship, and ultimately the care provided to patients. Corporate dentistry has been criticized for exerting undue influence on individual dentists, either directly as a result of the employee-employer relationship, or indirectly as a result of the specific business agreement with a nominally independent dentist. However, Vujicic (2017) clearly states that much of this is speculative and not backed by any evidence in the literature. Notably, it has been argued by Curtis (2012) that an example of direct influence would be the requirement that employee-dentists are mandated to meet production quotas as enforced by DSOs. Much of the speculation on this topic has been due to the management style and focus of DSOs on maximizing profits. However, further research is required to study the impact DSOs have on the care provided to patients.

Solution Analysis & Recommendations

- Further analysis is recommended to determine the impact corporatization will have on the future of the dentistry profession.
- Definitional issues aside, the reality is that corporate structures do exist in Canada. While the driving forces behind any trends are multifactorial, the reality is that dentists are choosing to enter into these arrangements. It is the role of the Canadian Dental Association to support dentists irrespective of any enterprise practice arrangements they may enter. For those considering these arrangements, they should choose a model that

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15 See Canadian Dental Association, Economic Realities of Practice
which best fits their goals and lifestyle. Ultimately, this may be a subjective choice rather than a ‘one-size-fits-all’ approach.

On February 5-6, 2016, the Ontario Dental Association (ODA) adopted a Policy Position on Corporatization:

**WHEREAS** the ODA recognizes that some dentists may choose or have chosen to enter into enterprise practice arrangements, **AND WHEREAS** the ODA recognizes that dentists are the leaders of dental practices and are dedicated to the health and wellbeing of patients who rely on the clinical skill, training and expertise of their dentist of choice, **BE IT RESOLVED THAT** the ODA encourages its members to educate themselves about all aspects of prospective practice arrangements to ensure they promote their personal and professional growth, are fair to the dentist provider, do not interfere in the patient-dentist relationship, and allow them to hold paramount the best interests of patients, **AND BE IT FURTHER RESOLVED THAT** no practice arrangement can override a dentist’s professional, moral and ethical responsibility to provide the highest standard of appropriate dental care to patients.

• The Canadian Dental Association and its Corporate Members could choose to adopt similar policy positions and dedicate themselves to supporting their membership by providing general education on the roles and responsibilities of member dentists when incorporating their practice.
• Health care is undergoing significant changes; dentistry, although distinct from much of our health care system, is not immune from these trends.
• The type of treatments provided in dental offices is evolving. In the past, the treatment of disease occupied the major portion of a dentist’s time, and therapeutic procedures dominated what dentists did. Today, there is increasing focus on prevention of disease and the maintenance of good health overall. Furthermore, an emphasis on quality and value will yield changes in the health care delivery model for dentists.¹⁷
• The health care industry is also becoming more inter-professional. In addition to a trend towards preventative care delivered by non-dentists, there is a movement underway to more fully integrate dentistry and general health. The profession must prepare themselves and learn to take advantage of other health care providers, to promote both the oral health and overall health of the patient.¹⁸

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¹⁸ Genco, R.J. and Genco, F.D. Common risk factors in the management of periodontal and associated systemic diseases: the dental setting and interprofessional collaboration. *J Evid Based Dent Pract*. 2014; 14 suppl: 4–16
• Further research on health care trends is warranted to better understand both the implications to the profession of dentistry, and the degree to which the profession is prepared to meet the changing needs and attitudes of Canadians.
4. Value-Based Health Care

There has been acknowledgment for many years that health is much more than just the provision of health care. The World Health Organization defines health as ‘a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity’. Improving health includes broader aims such as tackling the social determinants of health and allowing people ‘freedom to lead lives they have reason to value’. The value-based care movement involves greater recognition of what patient’s value when defining health and care outcomes and allocating limited resources.

Situational Analysis

- The current Canadian system is similar to US health care system – based on what providers can do rather than what the patient needs. The medical system in the US is chaotic, unreliable, inefficient and expensive.
- The current fee-based system leads to the potential for overtreatment and lowered quality of care.
- Due to high debt loads following graduation, there is a need for high production.
- A change from the present fee-based system to a value-based system will encounter resistance from providers. Clinicians will need to prioritize patients’ needs and patient value over the desire to maintain their traditional autonomy and practice patterns.
- Key stakeholders should be engaged including health care providers, government agencies, insurance companies and patients to come together and work towards a system of health care reform. The very foundation of how health care is financed and delivered will change under a value-based system, and input from all parties will be required.
- Comprehensive reform will require simultaneous progress in all the components of a value-based care system because they are mutually reinforcing. However, a health care strategy will involve a sequence of small steps over a long period of time rather than an attempt to change everything at once. A strategic plan will be needed for rolling out changes in each area while giving the actors time to adjust.

There have been many proposals for improvement with the central idea of having more competition. However, health care organizations are consolidating to stymie competition buying market share to increase bargaining power with suppliers and insurers – many citing this as potential to enhance value. Years of research show that provider consolidation typically raises prices, with no measurable impact on quality.
Health care payers and providers must stop fighting the emergence of a competitive health care marketplace and make competing on value central to their strategy.

All stakeholders in the health care industry can catalyze change in five ways:

1. **Put patients first**
2. **Create choice**
3. **Stop rewarding volume**
4. **Standardize methods to pay for value**
5. **Make data on outcomes transparent**

To compete on value, providers must meet patients’ needs better or at a lower cost than their competitors do, or both. But this kind of competition has been slow to arrive, because four interrelated barriers have blocked the way.

1. **Limited reimbursement-based incentives.**
   For the most part, providers have neither been rewarded financially for delivering value nor, have they been meaningfully penalized for failing to do so.

2. **Limited market share incentives.**
   Even when providers have improved value, they have not been sufficiently rewarded with increased market share.

3. **Inadequate data on value.**
   Good data on outcomes and costs is essential to designing and optimizing value-based care; unfortunately, there’s very little of it available.

4. **Inadequate know-how.**
   In the absence of financial incentives to pursue value and without good data to guide leadership, the management skills necessary for transforming care delivery have not developed.
Analysis of Potential Solution – Value-Based Health Care

Value-based health care is founded on the principle of improving the quality of care for patients. At its core is increasing the overall value for patients (attaining the best possible health outcomes while maintaining the lowest possible costs). In this system, better health becomes the goal, not more treatment. Changing to a value-based health care system, will mean changing the way a patient receives care.

Value-based health care puts what patients value at the center of health care. It helps ensure that they receive the care that can provide them with outcomes they think are important. The limited resources are focused on high-value interventions.

Values have been present in health care since its beginnings. Placing value and values at the centre of healthcare could help to ensure available resources are used to provide the greatest possible benefit to patients.

There is a wave of innovation occurring with some health care organizations taking a coordinated approach to patient care and assuming accountability for the cost, quality and outcomes of their patient population.

A limited number of these Accountable Care Organizations (ACOs) include dental care as part of their care consolidation strategy (~3% at present). The ADA and the American Academy of Pediatric Dentistry (AAPD) commissioned five case studies to investigate successes and challenges of incorporating dental care into a coordinated approach to care. The ADA and AAPD believe that the models currently in operation offer valuable insights into the experience of integrating dental care into ACOs.

The five case studies provided several overarching key findings:

First, there were two main motivations for ACOs to offer dental care. Some ACOs embrace a “whole health” philosophy of care delivery that assumes the ACO cannot be accountable for a patient’s overall health if it does not address oral health needs. Both Kaiser Permanente Dental Associates (PDA) and Trillium Coordinated Care Organization typified this perspective. Others included dental care because the primary payer (typically the state’s Medicaid program) includes it as a covered health benefit. For example, Hennepin Health was required by the county to include oral health benefits partially as a result of high cost dental procedures and pain medication dependency associated with untreated oral health problems.
Second, payment arrangements vary across organizations. Most of the ACOs that were studied accept a variation of a capitated payment at the organization level where dental services are carved out of the total capitation. Additionally, individual dentists are able to receive upside incentives without direct downside risk. Permanente Dental Associates, for instance, negotiates an annual capitated payment from Kaiser’s health plan that covers all dental and administrative costs for its patients. It then pays individual dentists incentives for achieving certain quality metrics. Hennepin Health, on the other hand, utilizes a slightly modified capitated payment model in which the organization receives a global payment from the state’s Medicaid program specifically for the provision of dental services. Individual dentists are paid on a fee-for-service basis, however, they are provided bonus payments based on the amount of care provided and meeting certain quality measures. In the more established ACOs, the dentists can be shareholders in the ACO and share in the total generated cost savings.

Third, the ACOs studied reported some promising results in coordinating dental care with overall medical care and improving patient outcomes. Typically, more experienced ACOs reported more advanced care coordination techniques with data showing improved patient outcomes. Kaiser, for example, recognized that its dentists were a critical patient touch-point, interacting more frequently with patients than other health care providers, and achieved remarkable success in utilizing dentists to close patient-care gaps. Hennepin Health has also shown promising results with a large reduction in emergency department utilization by targeting high hospital utilizers and steering them toward preventative dental care. Prior to this initiative, providers were frustrated that their provision of care was essentially limited to prescribing painkillers and not treating the cause of dental pain.

Fourth, integrating dental care into ACOs presents numerous organizational and technical challenges. Kaiser, for instance, has integrated dental care in its Pacific Northwest region since the early 1970s but has not expanded this as a national offering. Several organizations identified technical challenges related to Electronic Health Records systems that are unable to interface with each other without costly fixes or a system-wide replacement. Practising in an ACO may also present cultural challenges to dentists who are not accustomed to practising in a large group setting or do not have advanced training that allows them to treat varied and complex cases.

As the health care system continues to evolve toward increased coordination of care and value-based payment, there could be further opportunities for better coordination of dental and
overall medical care. Analysis shows that early adopters have seen some important benefits, but that there are also important challenges as well.

Solution Analysis & Recommendations

- Health care is moving towards a value-based system. Basic salary-based remuneration cuts down the need for high volume dentistry, allows more time per patient, less working hours and providing more positions thus having potential for reducing surplus of dentists in metro areas. Patient care is enhanced and value is perceived. More time for appointments will enhance communication between the practitioner and patient leading to improvement in trust. It may also lead to shorter waiting lists for patients.
- Explore the use of complementary dental personnel (therapists, extended duty hygienists, assistants) with an emphasis on prevention. Research the rewards for quality of care/value monitored (production/patient satisfaction).
- Consider changing the profession’s name – “Dentist” implies that the practitioner’s skills are limited to teeth. Perhaps changing the professional designation to “Doctor of Oral Health” or something similar will broaden the appreciation of both practitioners and patients.
- Change the expectations of new graduates entering the profession with respect to quality of care and patient needs. This will be difficult to achieve with debt loads associated with training.
- Examine initiatives to reduce the cost of dental education. For example, subsidize dental faculty fees and examine the need for a pre-dental degree.
5. Practice Efficiencies

Introduction
Running a successful and profitable dental practice is no easy task. Although dentists excel at providing patients with quality oral health care, it is easy to be overwhelmed with the daily operations and office management required for a productive dental practice. There is a constant need to recruit new patients, keep present patients happy, increase production and reduce practice-related overhead costs. These are a few of the tasks which dentists are not formally trained to do well. Efficiency is the foundation to profitability and thus, it is worthwhile to analyze how various policies and systems serve this goal. Dentists have a long history of increasing their efficiency by delegating tasks to other health providers such as dental assistants, dental hygienists, and dental laboratory technicians (Beauzoglou, 2012). However, the current practice landscape and market forces present today’s dental professional with many unique challenges. These include:

- New graduates with high debt loads and minimal resources to invest in new practices. (Walton, 2006)
- A lack of formal training in practice management and financial planning.
- The rising costs of purchasing existing dental practices. (Cirrus, 2011)
- The need for ongoing investment into new and costly dental equipment and/or technologies. (Milgrom, 2017)
- A desire for many professionals to achieve work-life balance, flexible schedules and a solid income. (Watson, 2012)
- Non-traditional competition to dental practice such as independent dental hygiene practices and corporately-owned offices. (Adams, 2004)
- Established dentists looking at extending their careers while decreasing work hours and maintaining ownership. (Vujicic M., 2016)

To be competitive in today’s market, dentists will need to systematically evaluate the way they practice and search for new ways to increase productivity and efficiency while keeping their overall overhead low.

Situational Analysis

Here are some current trends for improving dental practice productivity, efficiency and cost structure:
Production:

Macro
Several factors determine the overall size and growth of the profession such as, the number of dentists, population, disposable income, the extent of dental insurance and the level of dental fees.

Number of dentists
In the coming decade, the growth rate of the number of dentists is expected to increase because of the influx of foreign-trained dentists. This rate will exceed the population growth and the population to dentist ratio will fall which will put downward pressure on sustainable real growth. (Impact, 2017)

Population
Anti-immigration policies in the US will likely increase the flow of immigrants to Canada and most provinces. An increase in the population growth would help address some problems faced by the profession. (Impact, 2017)

Disposable income
The higher the amount of disposable income, the more likely that people are willing to spend dental care. If and when interest rates rise, and disposable income falls and if financial access becomes more of an issue, the demand for government intervention will grow. (Impact, 2017)

Dental Insurance
The best estimates are that between 55% and 65% of the population has dental insurance. The overall effect of dental insurance is likely to decline as fewer employers are interested in providing coverage, and those that do, seem to be clawing back the benefit by increasing the co-pay, annual spending limits and smaller restrictions. A number of plan sponsors do not anticipate spending more on insurance as their own bottom lines are not growing. (Impact, 2017)

Risk: There is the additional possibility that the government removes incentives for plan sponsors to provide insurance, as they tried to do earlier this year. The majority of dental plan sponsors do not anticipate increasing their payouts. Patients would like increased guidance on insurance.
The level of dental fees
In a dental office, it is important to look at both production and costs. The costs or expenses can be broken down further into 5 major parts: real estate, labour, supplies, depreciation (aka equipment) and other.

Generally, more competition in the dental marketplace and less demand for services is the reason for decreasing production numbers.

Below is an infographic illustrating dentists’ income in the United States.


Solution Analysis

Production:

Attracting new patients
Dental practices may improve the new patient attraction by integrating smart mobile technology. (Plangger, 2015) Using a smart mobile device, a dental patient could, for example, use the voice recognition function to start a search query into the map function, (eg Google Maps), find a dental practice nearby using the map’s wireless search capabilities and then click on the displayed phone number to call the practice and book an appointment which can then be uploaded directly into a separate calendar application. Dental practices can also invest in customized downloadable applications (apps) that patients can utilize for scheduling, appointment reminders, billing/payment, and as an overall source of information. Integration...
of such applications into the dental practice may increase efficiencies of time, money, labour, and other resources for both office staff and patients.

Fifty percent of patient touches are now digital. Digital tools also make it easier to bring allied health professionals into the conversation. Risk: Be aware and keep on side with privacy regulations.

Mix of services
Dentistry is a relationship-based business first and foremost. Having a higher ratio of preventative services in practice, leads to more relationships in the office. Consortium data indicates that a 30-45% balance of hygiene-to-dentistry is a good mix. Generally speaking, there is a trend towards less big procedures and more preventative procedures as patients become smarter. As well, the value of preventative services of a practice has a greater impact on the value of a practice than those derived from the services of a dentistry as they are more sustainable. By harvesting the billing information from software programs, dentists can improve efficiencies.

Increasing production
Increasing the scope of practice and variety of services offered in a dental practice will have an impact on productivity. Oral health is an important component of general health and dental professionals are in an ideal position to be involved with the diagnosis and management of chronic diseases such as diabetes, hypertension, and obstructive sleep apnea.

Included in this shifting practice paradigm is the use of saliva-based diagnostic tests. Saliva is being studied as a diagnostic fluid for oral, dental, and craniofacial disorders as well as for systemic disorders that range from breast cancer to diabetes. Additional services such as smoking cessation, administering vaccines, and botox injections are examples of treatments that could potentially be incorporated into a dental setting.

Risks: Changing the scope of practice for dentists and allied dental personnel will require changes to overarching legislation and regulations which have their own administrative burdens and associated delays. Complex practices can be more stressful and by not being 100% efficient and living within their means practitioners may be content to have longer careers.

In the future:
• **Skill development**: Either develop the skills in house of procedures that you refer out, or alternatively, bring a specialist in-house to do them. Sometimes a five surface restoration
can survive just as well as a crown. Learn how to do a five surface restoration well. The patient that might not be able to afford the crown might be able to afford the five surface filling.

- **Learn a new language**: Learn a new language so that you can communicate better with other potential patients in your community.
- **Search engine optimization**: Postal code lookups based on postal codes that many of patients are situated in.
- **If you don’t measure, it you can’t manage it**: Measure what you can, use your software to look for areas of dentistry that are not taken care of like chronic severe periodontitis by looking for multiple pockets of greater than 5mm.
- **Reduce the time and switch over between procedures by booking similar procedures back to back**: If there is a gap in the schedule, identify it in the morning huddle and consider filling it with a younger patient that may require sealants and provide the sealants during the open time. There may be patients who are overdue or in need of a complete oral exam.

Risk: Consider work-life balance. Skill development, learning a language, and learning to measure a practice all take time. Also consider stamping programs as being CDA certified. I could see people getting more CE that is more designed to game the fee guide rather than provide actual service.
Cost Control: 5 parts - Labour, Supplies, Real Estate, Equipment, and Other.

Labour
Currently labour costs represent about 25-32% of total production. Relationship-building is the biggest asset of an independent practice. Focusing on improving relationships and patient-centred care will yield excellent results. Allied or auxiliary dental personnel can include dental assistants, community dental health coordinators, dental hygienists, and dental therapists. In some jurisdictions, the auxiliaries may have an expanded or wider scope of practice allowing
them to perform therapeutic treatments and procedures which have traditionally been reserved for licensed dentists.

In the United States, practices that have employed expanded function allied dental personnel have been shown to treat more patients, and report higher gross billings and net incomes than practices that did not. The more services that were delegated, the higher the practices’ productivity and efficiency. The effective use of expanded function allied dental personnel has the potential to substantially expand the capacity of a general dental practice, resulting in a higher patient flow and the ability to generate higher incomes.

Similarly, the use of nurses and/or physician assistants in oral maxillofacial surgery practices has been shown to improve efficiency and decrease overhead costs without compromising the quality of care. (Resnick, 2016)

It appears that some Certified Dental Assistants (CDAs) are leaving the profession for higher annual income in the “private” sector. The issue is not the hourly rate, but is based on the total annual salary rather than the hourly wage. Real wage increases in all dental auxiliary classes are expected in the next decade.

In the future:

- **Reduce turnover:** Keep your staff happy. Staff do not like to be micromanaged or significant change. The best way for dental practice owners to espouse accountability is for dental practice owners to set protocols, policies and performance review systems within the practice. Competition for millennials is tight, with tech firms paying 75K for some positions. Losing staff can suddenly bring your rates above market levels.

- **Sharing the pie:** Consider the cost of staff leaving when determining the compensation and keeping staff engaged by sharing the pie. Risk: Note that compensation can drive unusual behaviour. You get what increased revenue, but at unusual costs.

- **Gig-based economy:** Match the requirement to the market available. Hire people temporarily or for a few hours a day for things that are not customer-facing (e.g. custodial duties or website management). Risk: Don’t outsource critical duties.

- **Artificial Intelligence (ie. algorithms) can super charge human abilities.** An algorithm is a step-by-step procedure for solving a problem within a finite class of problems. Think of the checklist as the first level of easiest algorithms, and Artificial Intelligence as being the most advanced. Algorithms can perform calculation, data processing and automated reasoning tasks. Uber software can help turn a regular driver into a super driver. Neural networks may be more efficient at running through lists of checklists than humans. Assistants may do
the scan initially with the computer than bring the dentist in and alert them to what failed the checklist.

- **Automation**: Cheque processing technology, outbound texts for appointment reminders, patient education.

- **Expanding past the usual dental auxiliaries**: As we expand the scope of the dental practices, nurses could be brought in for vaccinations, programmers for website and mobile web development, dietitians for diabetes and diet control, and medical lab technicians for saliva diagnosis.

- **Fraud**: Have basic protocols in place to reduce the risk of theft. (e.g. Locking cheque book away, having bank statements mailed home and ensuring that statements are reconciled by someone other making the payments)

Risks: As hygiene wages and hygiene fees rise, the probability of an independent hygiene practice opening up and the dentist and hygienist switching roles increases. Also consider the risk of an Artificial Intelligence-based dental program combined with a mobile phone.

**Supplies/Consumables**

Currently, supplies represent between 5-10% of a practice’s total production costs. Effective management of inventory is important to decrease the overhead costs of a dental practice. Inventory costs are related to storing and maintaining material over a certain period. (Supplies can expire, capital can be used more efficiently in times of high interest rate environments.) Ordering in bulk or excess quantity may result in savings during purchasing, reduce shipping fees and lower replenishment costs; however, this can result in higher carrying costs and the need for increased storage space so a proper balance must be achieved. Investing in inventory software and delegating the responsibility to specific office personnel with careful monitoring and evaluation can potentially result in efficiencies, reduced waste and overall cost savings. (Patel, 2016)

**In the future:**

- **Trade-offs**: Look at the trade-offs between using technology and the cost of labour. (Using an assistant to provide high speed evacuation versus Isolite.)

- **Cost-benefit analysis**: Realistic analysis of buying pieces of equipment need to be done. (Risk: We all have a hidden drawer of junk.)

- **CDA/provincial associations – as a buying group**: Levelling the playing field and being a middleman for bulk purchases.

- **Improve relationships with sales reps**: Arms length relationship with dental supply representatives.
• **Cheaper alternatives:** Dentists may look to third party websites to purchase their supplies, eBay, or some overseas websites.

Risks: Using cheaper alternatives from third party do not always meet appropriate standards or approval.

**Equipment**

New technologies are very expensive so there has to be some return on investment (ROI) to make them worthwhile. Practice owners need to know if there is sufficient demand for a new technology and whether it will benefit patients. For practices that are still paper-based, new technologies will not work or cannot integrate into the practice. The associations need to help dentists adopt new technologies in their offices to become more competitive in the marketplace. Three pieces of “new” equipment/technology come to mind: CAD/CAM, 3D Printing, and Cone Beam Computerized Tomography (CBCT).

Computer-aided design and computer-aided manufacturing (CAD/CAM) refers to computer software that is used to both design and manufacture products. In a dental setting, CAD/CAM technology allows for the chairside design and manufacturing of inlays, inlays, crowns, dentures, orthodontic brackets and surgical guides in implantology. The rapid evolution of CAD/CAM technology has had a profound impact on all disciplines of dentistry, especially in the fields of prosthodontics and restorative dentistry. The integration of these systems with advances in biomaterials, such as high-strength zirconia ceramics has led to major alterations in education and patient care. Practices that have implemented such systems often require less chair time for complex procedures and some are completed in a single visit which eliminates lengthy wait times associated with the fabrication of restorations in external laboratories.

A further extension of CAD/CAM technology involves the use of 3D printing. 3D printing is the additive manufacturing of making 3D solid objects from a digital file. In dentistry, uses of 3D printing may include the production of surgical guides for dental implants, the manufacture of dental craniofacial and orthopaedic implants and the fabrication of copings and frameworks for implant and dental restorations. With the availability of 3D scanners, digital impressions and CBCT dental images, digital 3D imaging files are now easily obtained and custom appliances and guides can be fabricated with greater precision leading to improved patient outcomes.

Risks: Demanding capital requirements make it more difficult for new graduates to open a practice, and help explain the popularity of in-house specialists and the growth of corporate dentistry. The slow adoption and integration of novel treatment modalities into modern health care practice and the resistance of patients, clinicians and health care providers to change their
daily practice behaviour may result in capital equipment purchases not living up to their ROI. As interest rates rise, so will the cost to finance acquisition of such equipment.

**Real Estate**
Currently, real estate accounts for one of the larger production costs at about 5%. As the price of real estate rises, rents and leases are expected to rise also.

**In the future:**
- **Share space:** Cost-sharing with other doctors. Share with medical doctors, other allied health professionals, specialists.
- **Training:** Increase trainings, create modules in understanding property management, leases, and ownership laws.
- **Residential:** Allow for residential dental offices of small sizes.
- **Go Mobile:** Start a mobile dental practice.

Risks: Getting into a joint space can create more disharmony as people try and find their places.

**Other**
Increased growth in advertising and promotion are related to the efforts of the average practice to maintain or expand its patient base. If the percentage paid to the dentist is reduced, the overhead could be reduced. Due to supply and demand problems, this trend is occurring in Canada where practices are able to hire associates for less than 40%.

As interest rates rise, dentists should not overextend themselves financially. “Stress-test” individual systems to ensure an increase of interest rates can be sustained. Interest rates are rising, and the Canadian dollar is strengthening.

**Taxes**
Risks: Changes to federal tax rules regarding private corporations may have an impact.

**Conclusion**
Present efficiencies within the practice, industry and inter-industry can be improved upon, but it is important to know whether the practice is being effective and efficient. New measurement standards may change how we measure efficiency and may not necessarily be to maximize shareholders value but to maximize patients’ health.
Recommendations

- Increasing practice management courses at university which would include: employment legislation, work safety legislation, economics of running a practice, leases, setting up business structure. As with any new product, consider taking a look at the preliminary market assessment. Look at a library search, contact key users, focus groups and even look at a quick concept test with users before deciding on a decision.

- Provincial Associations or CDA to look at bulk purchasing for equipment and sundries.
6. Future of Health Insurance and Benefits Landscape

Situational Analysis
The current benefits landscape is both complex and diverse. At present about 62% of Canadians have some form of dental insurance, which is almost exclusively in the form of employee benefits. Approximately 6% of the population has public insurance and 32% has no insurance at all.

Employer-sponsored dental insurance remains a key driver of demand for the existing model of dental practice. Those with public insurance (or no insurance at all) as well as low incomes experience a disproportionately higher burden of dental disease. Furthermore, in some jurisdictions, reimbursement rates for public dental plans have deteriorated to the extent that traditional providers cannot meet the cost of providing the care, thus exacerbating access to care issues.

Currently, there is a significant shift in health benefits landscape underway and this is driven by multiple factors. This means that the health care environment is at a tipping point of a major shift with more of the burden shifting to the private sector.

- There are five generations in the workforce with rapidly evolving expectations and an aging population contributing to rising costs.
- Private sector health benefit costs are expected to rise by 130% over the next 8 years. The cost of pharmaceuticals, chronic disease rates and rising obesity rates are also contributing to increased costs.
- Whilst employers continue to offer traditional style benefits, millennials favour a shift to more flexible benefits and health care spending accounts. Customers want the flexibility to choose what and how much is covered. For this reason, companies and insurers are altering their offerings to appeal to a new generation of employees.
- Changes in labour market conditions, including new part-time employment, contract work, temporary jobs and self-employment result in less traditional employment-based dental insurance. Tomorrow’s employees will more often be free agents or, well paid contract workers who do not work in the same job for an entire career. For tomorrow’s worker, health benefits need to be more portable.
- A recent Canadian health care survey shows that fewer plan members believe that their plan meets their needs extremely or very well than previously, that more plan members
feel that their employer is more concerned about limiting costs than providing the best health benefits and that plan sponsors consistently underestimate the presence of chronic disease in the workplace.

- Increasingly, organizations are looking at prevention and early intervention as a key part of containing costs. For these reasons, companies continue to invest in health and wellness programs. At the same time, organizations are shifting the burden of the health care benefits to the employees and demanding increased vigilance of carriers to control costs.

As these trends unfold there is danger that dental benefits will enter into a “death spiral”. This is a phrase adopted from the arguments used by proponents of the Affordable Health Care Act in the US. In the context of Canadian dental benefits, it refers to the combination of a decreasing number of workers who have access to traditional benefits due to changing employment patterns combined with the emergence of more individualized, flexible, defined contribution plans. As consumers look at the relative value of different parts of their health care plans, those who are the lower utilizers of dental benefits are more likely to opt for other elements of their health care package. By reducing the risk pool for dental benefits to those with higher utilization, the relative cost of the dental benefit portion will surely rise. As the proportional cost of the dental benefits rises disproportionately compared with other elements of health benefits plans, the value proposition is significantly diminished, and so the cycle continues.

**Solution Analysis**

The workforce of tomorrow will be looking for portable dental benefits packages that can move with the individual as they move through their careers from one employer to another, from full-time employment to part-time employment to contract work or self-employment. This type of plan may be purchased by employers or by the individuals themselves. They may wish to continue that plan into retirement and will want to make individual choices concerning the type of coverage they purchase. The offering may be tiered with different levels of coverage, different deductibles and co-payments.

Given that 40% of the population either has no dental benefits at all or beneficiaries of the increasingly dysfunctional government plans, there is an additional opportunity for an entirely new dental benefits product. Increasing the size and diversity of the insured population would broaden the risk pool and spread the costs, making it possible for the first time to have truly useful individual plans.
Such a change could be coupled with penalties for those who are not covered by the employer or government plans and choose not to purchase individual insurance and with positive tax treatment for those that do. Governments would be able to align their plans or purchase such insurance on behalf of those who are currently covered under government plans. Government could also provide premium assistance for those in low income households. All this would broaden the risk pool further and ensure that more Canadians have access to dental insurance.

Such a scheme would need to be tiered with only basic or essential care offered by the government plans (sometimes defined as medically necessary). Tiers with more comprehensive treatment options could be added for those who currently enjoy employer-sponsored plans or those who wish to purchase them.

Such plans would need to be adaptable as health care shifts from the traditional fee-for-service model to a value-based model based on outcomes.

**Recommendation**

- There is a need to build a consortium to guide the changes to dental insurance as we know them. This consortium needs to include provider groups, led by CDA, insurance providers and government. These changes need to be supported by an information technology platform that is patient-centred and encompasses all types of data.
7. Paradigm Shift in Oral Health Care

Health care is undergoing significant changes; dentistry, although distinct from much of our healthcare system, is not immune from these trends.

Treatment
The type of treatments provided in dental offices is evolving. In the past, the treatment of disease occupied the major portion of a dentist’s time, and therapeutic procedures dominated what dentists did. Today, there is increasing focus on prevention of disease and maintaining good health overall.\textsuperscript{i} Even the father of dentistry, Pierre Fauchard (1678-1761), promoted the value of oral hygiene in prevention of disease and maintenance of oral health.\textsuperscript{ii} Presently, one of the most promising practices to bridge the gap between medical and clinical dentistry is gene therapy.\textsuperscript{iii} Gene therapy may yield greater precision and preventative practices as opposed to invasive surgery.\textsuperscript{iv} Siddique et al (2016) note that gene therapy can be used to “prevent, alleviate or cure underlying disorders including cancers, infectious diseases, and genetic and autoimmune diseases.”\textsuperscript{v} However, despite past successful trials additional studies and clinical trials are necessary before applying gene therapy to patients.\textsuperscript{vi} In concluding their study Birch et al (2015) ask the fundamental question: what changes must take place\textsuperscript{vii} in order to support and yield and effective prevention strategy for oral health?\textsuperscript{viii} They answer this question by approaching it from a more altruistic perspective noting that there will need to be an increase in financial incentives, an extension of scope for dental office staff such as hygienists and dental assistants playing an increasing role in patient treatment and planning, educated and responsible patients, as well as an enhancement of an effective governing regulatory strategy.\textsuperscript{ix} What can be taken away from the literature on the evolution of dental treatments is that an emphasis on quality and value\textsuperscript{x} will drive further changes in the healthcare delivery model for dentists.\textsuperscript{x}

Inter-Professional
The health care industry is also becoming more inter-professional. In addition to a trend towards preventative care delivered by non-dentists, there is a movement to more fully integrate dentistry within general health. Moreover, Weintraub (2017) eloquently states that:

\textit{Increasing integration of medical and oral health education and patient care will require OHPs to have more medical knowledge and to practice in intra- and inter-professional teams.}
Therefore, the profession must prepare itself and learn to take advantage of other health care providers, to promote both the oral health and overall health of the patient.\textsuperscript{xii} Thus, educators will need to implement curriculum to prepare for and adapt to the changes of the needs of patients in the future.\textsuperscript{xiii} Andrews (2017) takes the argument even further by stating that patients with complex medical issues will best benefit from inter-professional health care teams.\textsuperscript{xiv} On the other hand, much of the literature reviewed has been speculative and lacking in qualitative evidence on the impact of the inter-professionalism of health care, particularly for the profession of dentistry.

\textit{Education}

The paradigm shift in dentistry may require a greater role for the dental education community in technology transfer and in the dissemination and implementation of new practice models, since the dental community is best poised to adopt a leadership role in shifting the practice paradigm to prevention.\textsuperscript{xv} In doing so, the dental community would be accepting the rationale – long advocated by the American Dental Association – for entrenching evidence-based dentistry (EBD) within clinical decision making to yield the highest quality of care.\textsuperscript{xvi} Moreover, Garcia and Sohn (2012) emphasize the need for evidence-based health policy\textsuperscript{xvii} in two critical areas: community water fluoridation (CWF) and dental sealants; both having been subject to politically charged controversies. Concurring with Garcia and Sohn (2012), Dr. Chadwick (2017) elaborates further by arguing that the fundamental role of research in the dental community and oral health care is imperative to sustaining the vision of the profession as the beacon of oral health advancement.\textsuperscript{xviii} Nevertheless, a thorough analysis of the role the dental education community can have in maintaining evidence-based health policy to the profession would be critical to understand the impact and yield of such an initiative on the profession.

\textbf{Recommendations}

- An analysis of the role the dental education community has in the paradigm shift of the profession is critical in understanding future trends in the profession.
- Further research on health care trends is warranted to better understand both the implications to the profession of dentistry, and the degree to which the profession is prepared to meet the changing needs and attitudes of Canadians.

\textbf{Endnotes}


iv. *Ibid*

v. *Ibid*

vi. *Ibid*


ix. *Ibid*

x. Birch et al. note that risk based treatment planning is already advocated in many dental health systems and that caries is an excellent example of how this approach can operationalize whilst being guided by management application and patient education (p.4)


xii. Genco, R.J. and Genco, F.D. Common risk factors in the management of periodontal and associated systemic diseases: the dental setting and interprofessional collaboration. *J Evid Based Dent Prac.* 2014; 14 suppl: 4–16


xvi. *Ibid*


xviii. Chadwick, Gregory. Leveling the Three-Legged Stool. *Journal of Dental Education.* September 1, 2017 vol. 81 no. 91051-1052 doi: 10.21815/JDE.017.057. For more on the effects of research on the profession see: D’Souza RN, Colombo J. How research training will shape the future of dental, oral, and craniofacial research. *Journal of Dental Education.* (9
8. Summary of Recommendations

1. CDA, along with the PDAs, need to clarify and promote the definition of oral health.
2. We need to promote public awareness about the relationship between oral health and systemic disease, and that dentists are the experts in diagnosing oral disease.
3. Develop a list of primary care activities, such as smoking cessation, diet control and obesity and diabetic monitoring.
4. Support the value based, patient centered model by enhancing the scope of practice for dentists and allied dental personnel.
5. CDA along with PDAs need to be active in developing a national, universal electronic health record that includes dentistry.
6. Associations need to be active in encouraging further development of data collection processes, including diagnostic data. This will provide the ground work to fuel the success of tele-dentistry, thereby lowering the costs of and increasing the value of dentists.
7. Diagnosis needs to be a regulated act.
8. Further research concerning the future of “fee for service” and other reimbursement alternatives (including a two-tiered reimbursement system, private/public) for dentistry.
9. Need to establish a national practice management center that all licensed dentists can access via their provincial associations.
10. All provincial regulatory bodies need to review their existing standards of practice ownership (including corporatization) that will best promote the patient centered model of care.
11. The profession and associations need to be involved in integrating dentistry and medicine and to be part of the decision-making processes; this will start at the education level. CDA should consider further research into integrated practice units (IPUs or IPPMs) in which a dedicated team of clinical and non-clinical personnel provide the full range of care for the patient.
12. Dentists must prepare themselves to be collaborative with other healthcare providers in order to promote the oral health and the overall health of the patient.
13. Need to educate new and future dentists about various practice models in order to help new dentists decide on their path.
14. Further analysis is recommended to determine the impact corporatization will have on the future of the dentistry profession.
15. The Canadian Dental Association and its Corporate Members could choose to adopt policy positions and dedicate themselves to supporting their membership by providing general education on the roles and responsibilities of member-dentists.
16. Analyze the role the dental education community has in the paradigm shift of the profession which is critical in understanding future trends in the profession. Further research on healthcare trends is warranted to better understand both the implications to the profession of dentistry, and the degree to which the profession is prepared to meet the changing needs and attitudes of Canadians.

17. Explore the use of complementary dental personnel (therapists, extended duty hygienists, assistants) with emphasis on prevention.

18. Researching the rewards for quality of care/ value monitored (production/ patient satisfaction).

19. Consider changing the profession’s name – “Dentist” implies that the practitioner’s skills are limited to teeth. Perhaps changing the professional designation to something on the lines of “Doctor of Oral Health” would broaden the appreciation of both practitioners and patients.

20. Change the expectations of new graduates entering the profession towards quality of care and patient needs.

21. Examine initiatives to reduce the cost of dental education. For example, subsidize dental faculty fees and examine the need for a pre-dental degree.

22. Dentists need more training in ways to improve dental practice efficiencies, possibly while in dental school.

23. Increase practice management courses at university or through PDAs. For example, modules on employment legislation, work safety legislation, economics of running a practice, leases, setting up business structure.

24. PDAs or CDA to look at bulk purchasing for equipment and sundries.

25. There is a need to build a consortium to guide the changes to dental insurance as we know them. This consortium needs to include provider groups, led by CDA, insurance providers and government. These changes need to be supported by an information technology platform that is patient centered and encompasses all types of data.
## APPENDIX A

<table>
<thead>
<tr>
<th>Province</th>
<th>Who Can Own Voting Shares?</th>
<th>Who Can Own Non-Voting Shares?</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>Dentists, their legal representative (e.g., executor/administrator of their estate or trustee in bankruptcy), or a holding company whose voting shares are owned only by a dentist and whose non-voting shares are owned by a Permitted Shareholder (see note).</td>
<td>A dentist or his or her spouse, child, parent, sibling or other relative, or someone who resides with the dentist (such as a Permitted Shareholder), or a holding company whose shares are entirely owned only by a Permitted Shareholder or are held in trust by a Canadian resident on behalf of a Permitted Shareholder.</td>
</tr>
<tr>
<td>Alberta</td>
<td>Dentists.</td>
<td>A dentist who also owns voting shares (a Voting Dentist) or his or her spouse, common-law partner or child, or a trust, the beneficiaries of which are a Voting Dentist's minor children.</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>Dentists or their legal representative (e.g., executor/administrator of their estate or trustee in bankruptcy).</td>
<td>A Voting Dentist or his or her spouse, child or parent, a holding corporation whose shares are owned by an aforementioned individual, or a trust, the beneficiaries of which are aforementioned individuals.</td>
</tr>
<tr>
<td>Manitoba</td>
<td>Dentists or a Manitoba DPC.</td>
<td>A Voting Dentist or his or her spouse, common-law partner or child, or a holding corporation whose shares are owned by an aforementioned individual.</td>
</tr>
<tr>
<td>Ontario</td>
<td>Dentists.</td>
<td>A dentist or a Voting Dentist's family member (i.e., spouse, child or parent) or one or more individuals, as trustees, in trust for a Voting Dentist's minor children.</td>
</tr>
<tr>
<td>Quebec</td>
<td>At least one (1) dentist or a legal person, trust or other enterprise, the voting shares of which are owned by a dentist.</td>
<td>At least one (1) dentist, a relative (either by direct or indirect line of descent) or spouse of a Voting Dentist, or a legal person, trust or other enterprise whose voting shares are owned by an aforementioned individual.</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>A majority of the voting shares must be owned by a dentist.</td>
<td>There is no restriction on who can own non-voting shares.</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>A majority of the voting shares must be owned by one or more dentists.</td>
<td>A dentist or a member of his or her extended family, a trust, all of the beneficiaries of which are a dentist or a member of his or her extended family, or a holding company whose shares are owned by an aforementioned person.</td>
</tr>
<tr>
<td>Newfoundland and Labrador</td>
<td>Dentists.</td>
<td>Natural persons (i.e., individual human beings), including a dentist providing dental services through the DPC, or someone with an apparently familial or personal (i.e., non-commercial) relationship with a dentist providing dental services through the DPC.</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>Dentists.</td>
<td>There is no restriction on who can own non-voting shares.</td>
</tr>
</tbody>
</table>
APPENDIX B

The investor dentist and consolidated groups
• In this model, the buyer is an individual investor, who is also a registered dentist that is looking to increase the size of their enterprise by owning and operating multiple practices.
• The investor dentist may or may not treat patients at each practice location, and will often have the original owner remaining on staff as an associate.
• In this model, each individual office can operate under one practice name, or retain the brand of the original office, depending on the preference of the investor dentist.
• As an extension to the concept of the investor dentist, a consolidated group consists of two or more dentists who leverage their combined assets and capital to increase their overall buying power.

Franchising
• In this model, the franchisee will purchase and obtain the rights to use a franchise’s business model, brand, and support systems.
• Franchisees will benefit from the use of established protocols, brand recognition, and economies of scale, in exchange for the loss of control on how the business may operate. Internationally, franchising in the health sector has been explored in low and middle-income countries as an organizational model to overcome challenges related to access to care.
• In the United States and the United Kingdom, franchising exists throughout the healthcare system, with examples in senior’s care, vision and hearing, dental, paramedical, and pharmaceutical care.
• In Canada, healthcare models for franchising are also beginning to take form, particularly involving seniors and long-term care.

Public ownership
• Several jurisdictions in Canada have publicly-owned and operated dental clinics. Regional authorities, municipalities, and/or local public health units may offer preventive and restorative dental services covered by their publicly funded insurance programs at specific clinics in the area.
• In this model, local authorities will contract salaried dentists and dental hygienists to provide services in accordance with what is offered through the programs. Dentists will typically have fixed hours and are not associated with any office management and/or business operations of the clinic.
• These clinics are typically aimed towards high-risk and vulnerable populations, or those eligible for the publicly funded dental programs.
• Cost-efficiency, effectiveness, and quality of care has been shown to be similar when comparing public and private dental clinics, however, further studies in this area, particularly in the Canadian context, are required.
Managed service organizations

- A health care managed service organization (MSO) is typically owned by a group of physicians, a hospital-physician partnership, or private investors in association with physicians. MSOs generally provide management and administrative services to individual practices.
- This model allows physicians to concentrate on patient care and the clinical aspects of their practice, while relieving them of the day-to-day operations of running a productive business.
- MSOs will also purchase their services as a group, thus achieving economies of scale. More recently, dental service organizations (DSOs), an extension of MSOs into the dental field, have arisen in the United States and are increasing in popularity.
- In dental managed service organizations, a dentist reaches a business agreement with a third party, commonly known as a dental service organization or DSO.
- The degree of influence a DSO has over a dentist depends on the nature of the agreement and the ownership of the DSO.
- DSOs that are owned by dentists can operate very similarly to a professional association, and the associated dental practices are almost indistinguishable from large, traditional practices.

In Australia and New Zealand, approximately 15% of dentists are affiliated with DSOs. Since the establishment of a national registration in 2010, opportunities for the ownership of dental practices by non-dentists has been facilitated.\(^\text{19}\)

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\(^{19}\) Levitch (2012).
APPENDIX C

Dentists, by Sex

Dentists, by Age

Physicians

YEAR

YEAR

YEAR

PERCENTAGE

PERCENTAGE

PERCENTAGE

2005  2015

2005  2015

2001  2016

All dentists
Female dentists
Male dentists
Age younger than 35 years
Age 35-44 years
Age 45-54 years
Age 55-64 years
Age 65 years or older
Figure 3.
Net income by practice ownership in the U.S. Source: Adapted from Vujicic et al., 2012.

The chart below summarizes what legislation in each province / territory specifies for the ownership requirements of dental practices that are incorporated in Canada. All directors of a dental professional corporation must be dentists in all jurisdictions except in Nova Scotia and New Brunswick, where the majority of directors need to be dentists. All voting shares of the corporation must belong to dentists in all jurisdictions except for 2 where the majority of shares must belong to dentists.

In most cases, there is clear terminology in regulations that specifies that no member of a dental regulatory authority can practice the profession of dentistry under the control of or for the benefit, profit or advantage of a corporation, or for any person not being duly qualified and lawfully entitled to practice dentistry (directly or indirectly).

<table>
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<tr>
<th></th>
<th>NF</th>
<th>PE</th>
<th>NB</th>
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<tr>
<td>All directors / officers must be dentists</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>All voting shares must belong to dentists</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Majority of directors / officers are dentists</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Majority of voting shares belong to dentists</td>
<td>-</td>
<td>-</td>
<td>x</td>
<td>x</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Majority of non-voting shares can belong to relatives</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>x</td>
<td>ns</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>
APPENDIX F- Report for: NAICS 6212 - Offices of Dentists
Financial Performance Data

Source: Statistics Canada - Small business profiles, 2015

| Number of businesses | 22116 |
| Revenue range: | | |
| Low Value ($000) | 30 | 30 | 142 | 408 | 923 |
| High Value ($000) | 5000 | 142 | 408 | 923 | 5000 |

| Revenues and expenses | (thousands of dollars) - Averages | Whole industry (reliability) | Bottom quartile (25%) | Lower middle (25%) | Upper middle (25%) | Top quartile (25%) | Percentage businesses reporting |
| Total revenue | 638.8A | 79.80 | 244.90 | 645.70 | 1584.90 | 100.00 |
| Sales of goods and services | N/A | N/A | N/A | N/A | N/A | N/A |
| All other revenues | N/A | N/A | N/A | N/A | N/A | N/A |
| Cost of sales (direct expenses) | 34.7B | 0.90 | 5.10 | 26.80 | 106.00 | 12.50 |
| Wages and benefits | 14.8A | 0.20 | 1.70 | 11.80 | 45.70 | 5.70 |
| Purchases, materials and sub-contracts | 19.9C | 0.80 | 3.40 | 15.10 | 60.30 | 12.70 |
| Opening inventory | 0.5C | 0.20 | 0.30 | 0.40 | 1.20 | 2.70 |
| Closing inventory | 0.6C | 0.20 | 0.30 | 0.50 | 1.30 | 2.80 |
| Operating expenses (indirect expenses) | 394.7B | 28.90 | 115.30 | 420.40 | 1014.40 | 96.90 |
| Labour and commissions | 184.2A | 6.90 | 45.20 | 196.80 | 487.80 | 65.30 |
| Amortization and depletion | 19.5A | 2.00 | 6.20 | 21.00 | 49.00 | 77.90 |
| Repairs and maintenance | 6.5A | 0.50 | 1.50 | 6.90 | 17.10 | 51.70 |
| Utilities and telephone/telecommunication | 6.2B | 1.00 | 2.70 | 7.50 | 13.70 | 79.80 |
| Rent | 31.2A | 2.20 | 10.60 | 38.20 | 74.00 | 58.20 |
| Interest and bank charges | 4.5C | 0.60 | 1.70 | 5.40 | 10.40 | 61.70 |
| Professional and business fees | 38.0B | 2.90 | 9.70 | 34.10 | 105.30 | 87.30 |
| Advertising and promotion | 8.9C | 0.70 | 3.00 | 8.60 | 23.50 | 69.70 |
| Delivery, shipping and warehouse expenses | 0.1B | 0.00 | 0.10 | 0.10 | 0.30 | 4.90 |
| Insurance | 6.1A | 1.40 | 3.20 | 7.10 | 12.80 | 76.00 |
| Other expenses | 89.4C | 10.80 | 31.40 | 94.90 | 220.40 | 95.90 |
| Total expenses | 429.4A | 29.80 | 120.40 | 447.20 | 1120.40 | 97.00 |
| Net profit/loss | 209.4A | 50.00 | 124.60 | 198.50 | 464.60 | 99.90 |
### Profitable vs Non-profitable businesses

<table>
<thead>
<tr>
<th></th>
<th>Profitable</th>
<th>Non-Profitable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of businesses (%)</td>
<td>94.80</td>
<td>5.20</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td>650.5(^A)</td>
<td>425.3(^B)</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td>426.8(^A)</td>
<td>478.3(^B)</td>
</tr>
<tr>
<td><strong>Net profit</strong></td>
<td>223.7(^A)</td>
<td>-53.0(^B)</td>
</tr>
</tbody>
</table>

#### Profile

- **Revenue range**: Annual revenues $30,000 - $5,000,000
- **Provinces / Territory / Canada**: Canada
- **Incorporation status**: All businesses
  - Note: Balance sheet information is not available for all businesses and unincorporated businesses under the incorporation status.

- **Distribution by Total revenue**
  - Value in Thousands of dollars
  - **Data year**: 2015
  - **Industry**: NAICS 6212 - Offices of Dentists

**Legend for quality Indicators:**

- A=Excellent
- B=Very good
- C=Good
- D=Acceptable
- E=Use with caution
APPENDIX G - NAICS 6212 - Offices of Dentists

Source: Statistics Canada - Small business profiles, 2015

<table>
<thead>
<tr>
<th>Number of Offices of Dentists in Canada</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>By Total and By Incorporated By Province- 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAICS 6212 - Offices of Dentists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues $30,000 to $5 Million</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>All Offices</th>
<th>Incorporated Offices</th>
<th>Percentage Incorporated</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC</td>
<td>3,293</td>
<td>2,604</td>
<td>79.10%</td>
</tr>
<tr>
<td>Alberta</td>
<td>2,498</td>
<td>2,030</td>
<td>81.30%</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>421</td>
<td>306</td>
<td>72.70%</td>
</tr>
<tr>
<td>Manitoba</td>
<td>668</td>
<td>414</td>
<td>62.00%</td>
</tr>
<tr>
<td>Ontario</td>
<td>9,089</td>
<td>5,373</td>
<td>59.10%</td>
</tr>
<tr>
<td>Quebec</td>
<td>4,367</td>
<td>1,601</td>
<td>36.70%</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>525</td>
<td>396</td>
<td>75.40%</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>308</td>
<td>236</td>
<td>76.60%</td>
</tr>
<tr>
<td>PEI</td>
<td>83</td>
<td>57</td>
<td>68.70%</td>
</tr>
<tr>
<td>Newfoundland Labrador</td>
<td>202</td>
<td>110</td>
<td>54.50%</td>
</tr>
<tr>
<td>Territories</td>
<td>45</td>
<td>26</td>
<td>57.80%</td>
</tr>
<tr>
<td>CANADA</td>
<td>21,499</td>
<td>13,153</td>
<td>61.20%</td>
</tr>
</tbody>
</table>

There are 54 incorporated dental offices in Canada with revenues of $5 Million +
APPENDIX H - 2017 DIAC Survey Overview

Canadian Dentists Continue to Shift Their Way of Practising

*Canadian dental practices are changing in ways that could be a reflection of economic pressures, according to the latest results from the Dental Industry Association of Canada (DIAC) 21st annual Future of Dentistry Survey.*

➢ The majority (59%) of survey respondents were solo practitioners, more than a third (36%) were part of a group practice, and 4% were in a corporate dental practice.

➢ The number of practices with five or more dentists is increasing. A record 13% of practices had five or more dentists, up from 3.4% in 2016, and an average of 6.3% for the last 14 years.

➢ There are more operatories per practice—72% of survey respondents had four or more operatories. Of these, 30% had 5 or more operatories—an all-time high for the survey.

➢ The number of hygiene days per practice is increasing. In 2017, 44% of respondents had five or more hygiene days per week, an increase from 40.4% in 2016, and an average of 38.5% for the last 10 years.

➢ The average number of patients treated per day continues to decline. In an average day, dentists treated 12 patients, compared to the average of 12.5 patients over the last 10 years. The percentage of survey respondents who said they treated less than 15 patients a day grew to 83%, compared to an average of 77.5% over the last four years.

➢ Top challenges for survey respondents were “getting more patients” and “financial/paying bills/overhead.”
APPENDIX I- Percentage of dental procedures by procedure type.

The type of treatment provided in dental offices is changing. In the past, the treatment of disease occupied the major portion of the dentist's time, and therapeutic procedures dominated what dentists did. Today, most of the effort is the prevention of disease and the maintenance of wellness.

Source: American Dental Association Health Policy Institute analysis of data from the 2001-2014 Fair Health Database.
APPENDIX J

Dental School Location / Age Pyramid
Canadian Dentists
May 2017

Canadian University | Non Canadian University
APPENDIX K- Population to Dentist Ratio Trend

Change in Population to Dentist Indicators by Region of Canada
2005 to 2015 Trend

Source: CDA Membership Database/ Statistics Canada
APPENDIX L- Population to Dentist Ratio Trend

Source: DIAC Annual Survey Report 2017
Appendix 4

APPENDIX M- Number of Dentists in Practice Trend

Source: DIAC Annual Survey Report 2016
# APPENDIX N- Office of Dentists - Employer establishments by employment size category and province/territory (2016)

<table>
<thead>
<tr>
<th>Province/territory</th>
<th>Micro (1-4)</th>
<th>Small (5-99)</th>
<th>Medium (100-499)</th>
<th>Large (500+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>672</td>
<td>1,185</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>British Columbia</td>
<td>773</td>
<td>1,628</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Manitoba</td>
<td>159</td>
<td>282</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>71</td>
<td>155</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Newfoundland and Labrador</td>
<td>58</td>
<td>76</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>104</td>
<td>206</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nunavut</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ontario</td>
<td>2,392</td>
<td>3,874</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>19</td>
<td>40</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Quebec</td>
<td>891</td>
<td>1,665</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>80</td>
<td>219</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yukon</td>
<td>8</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Canada</td>
<td>5,229</td>
<td>9,344</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

**Percent distribution %**

|                      | 35.9 | 64.1 | 0 | 0 |

*Source: Statistics Canada, special tabulation, unpublished data, unclassified excluded, 2016.*
APPENDIX O- Health Insurance Sector Trends
PREDICTION #5: YOUR DANCE PARTNERS TODAY WILL NOT BE THE SAME ONES TOMORROW

EMPLOYERS WILL WORK WITH DOZENS OF SPECIALTY HEALTHCARE PROVIDERS — SUBSTANTIALLY IMPROVING COSTS, EFFICIENCY, HEALTH OUTCOMES, CUSTOMER SERVICE AND MORE

2025

PAST 25 YEARS, THE INDUSTRY HAS SURVIVED UNDER A PATERNALISTIC HEALTH INSURANCE MODEL

THE MARKET HAS CHANGED AND NOW EMPLOYEES DEMAND CHOICES AND BETTER SERVICE

BY 2025, THE INDUSTRY WILL BECOME COMPLETELY TRANSFORMED, AND YES, DISRUPTED, BY SPECIALTY VENDORS AND THEIR INNOVATIONS
APPENDIX P

CDA Policy Brief: Emerging dental practice models in Canada

Keith Da Silva, DDS, FRCD (C)

Carlos Quiñonez, DMD, MSc, PhD, FRCD(C)

The changing dental practice model

Dentistry has long been a health profession where most practitioners own their practices as well as the facilities where care is delivered. In addition to providing oral health care, dentists may also manage and maintain the business operations of the practice. Many dentists chose the profession because they wanted to be their own boss. However, data from the United States shows that the culture created by this traditional practice mindset is changing, albeit very slowly, as the percentage of dentists who own their practice has decreased only slightly between 1991 (91%) and 2012 (86%).

Practice patterns of the past may be shifting as many younger dentists gravitate toward employed positions in large group practices or the public sector. Although educational debt is important in predicting the practice choices of graduating dentists, other variables such as gender, race, and work-life balance play critical roles their employment choice. Of note, in most Canadian jurisdictions, only licensed dentists and dental specialists can own and operate a dental practice, however, different models have emerged that have been able to circumvent this requirement.

What are the current and emerging practice models in dentistry?

1. Solo dentist/private practice model

The solo dental practice is typically owned by one primary dentist who will work independently with their own oral health care team, as illustrated in Figure 1. As a solo dental practice grows, a dentist may choose to employ associate dentists to help meet the needs of their expanding patient base. The independence of this traditional practice allows a dentist to set their hours of practice, allowing flexibility in his or her personal schedule, and to determine the size and makeup of the office support staff. The decision to refer or treat a condition and decisions on the selection of materials, instruments, and laboratories become personal choices under the control of the dentist.
2. Dental group practice model

A group practice is a single legal entity that is owned by two or more dentists in partnership. Groups practices can be small, operating out of a single location, or expand to include many partners operating out of multiple locations, as illustrated in Figure 2. Group practices have centralized decision-making control over their assets and liabilities and have an organized system for sharing practice revenues and expenses. In the United States, where group practices are well established in both medicine and dentistry, it has been shown that the average number of patients seen in a group practice on an annual basis may be higher when compared to a solo office.

Figure 2: Dental group practice model at multiple locations
3. Multi-speciality practices

General dentists may choose to expand the scope of services offered in a traditional solo practice by integrating specialists into their office, providing care across almost all treatment plans within one location. An example of a multi-speciality dental practice is illustrated in Figure 3. Scheduling, resources, and cost-sharing are all pre-determined. This model allows the practice to establish a niche and distinguish itself, as well as create more efficient communication and financial operations. The overall patient experience may also be improved as they potentially will not have to travel to additional offices for speciality dental care.

Figure 3: Multi-specialty dental practice model in a single location

4. Automated micro-practice

The concept of a micro-practice has been gaining momentum amongst physicians in the United States. First described by Moore in 2002, a micro-practice is a low-volume, highly efficient solo practice that uses technology to keep overhead low and free up time for more doctor-patient interactions. A micro-practice usually operates with a single practitioner, and almost no support staff, all confined to very small office space (typically
one treatment room), allowing monthly operating expenses to remain low.\textsuperscript{6} This concept is illustrated in \textbf{Figure 4}. Automated patient communications, appointment scheduling, registration, and the use of a call center for patient questions are integral parts of this model.\textsuperscript{1} In this system, a physician will treat a small number of patients (10-12 per day), however, patients can often be seen the same day, and have reported high rates of satisfaction with their overall care.\textsuperscript{1,7,8}

\textbf{Figure 4}: Automated micro-practice model for dental care

The independent practice association (IPA) model is another emerging practice option that has become popular amongst physicians in the United States. IPAs are run by member physicians, and organize the private practitioners as a self-directed group as illustrated in \textbf{Figure 5}.\textsuperscript{1} The IPA functions as a central organization, that can manage purchasing, information technology and data services, compliance, marketing, billing and collections, and other office management functions for the member practices.\textsuperscript{1} This model allows practitioners to maintain the autonomy of their practice while taking advantage of professional management and economies of scale.\textsuperscript{1} IPAs may also have an advantage when dealing with contract negotiations with vendors and insurance companies due to the large number of participating members.
6. Inter-professional practice models

As the connection between oral and systemic health becomes better understood, the need to integrate dentistry and medicine will be critical. Improved collaboration between oral health care and general health care teams will be required to overcome dentistry’s previous isolation from medical care and promote referrals. One proposed model, as described by Guyton et al., involves dentists and dental specialists, dental hygienists, physicians and medical specialists, and nurse practitioners working together, either in the same setting or across a shared network. This interdisciplinary approach, as illustrated in Figure 6, may allow for better co-ordination for the treatment of chronic diseases using a value-based system for health care. This model could also include having nurse practitioners working within a dental practice, or dental hygienists working within a medical setting, to allow for greater screening and facilitation of referrals for further treatment.
7. Dental support organization-managed private practices

A dental support organization (DSO) is typically a stand-alone, legal entity built specifically to handle the non-clinical business functions of the dental offices which it manages. DSOs support affiliated dental practices by providing business services such as accounting, human resources, marketing, and legal and practice management. This model, as illustrated in Figure 7, provides support for the business aspects of the practice by management agreement, as well as providing assistance in matching contracted associates and other employees to the practice. It allows the traditional solo practice to function with centralized outsourcing of most of its business functions.

Figure 7: Dental support organization model for dental care
8. Walk-in clinics

Walk-in clinics are a common feature in Canada’s health care system. Patients are generally seen on a first-come first-serve basis without any scheduled appointments. The associated wait times can be longer, and while patients report greater satisfaction with traditional family physicians, walk-in clinics are preferred when compared to hospital emergency room departments. While there is limited literature regarding the success of the walk-in dental practice model, they do operate in Canada. Typically, they are available after-hours for the emergency treatment of acute dental conditions. Patients will often be referred to a general dentist for full comprehensive treatment and definitive care. A practice model for a dental walk-in clinic is illustrated in Figure 8.

Figure 8: Walk-in dental practice model

9. Teledentistry

Teledentistry is the use of information technology and telecommunications for dental care, consultation, education, and public awareness. A model for teledentistry services is illustrated in Figure 9. Scanners, video-cameras, and other forms of virtual communication can be used to care for patients, or supervise allied oral health care
providers, particularly to underserved populations such as in rural or less developed geographic locations. Legislation regarding teledentistry can vary greatly by jurisdiction, and further guidelines for its effective use needs to be developed.

Figure 9: Dental practice model using teledentistry

10. Mobile dentistry

A final model for a dental practice also addresses issues related to access to care and is illustrated in Figure 10. Mobile dental clinics, whether operating out of converted vehicles or via oral health professionals using portable equipment, has been used with some success to treat patients in underserved populations, such as those in remote rural areas, high risk communities, nursing homes, or long-term care facilities. Unfortunately, the number of providers offering these services are very limited at this time.
What are important considerations for emerging dental practice models in dentistry?

Dentists will continue to look for ways to improve their productivity and profitability, while maintaining a high level of quality care. As such, different practice models have emerged that dentists will need to choose from when determining the direction of their professional career. Some factors that may influence the choice of practice model can include:

- The benefit of pooling of resources and cost-sharing that can exist in group or multi-speciality type practices. These models have the potential to treat a larger volume of patients, while keeping overhead costs at a minimum.

- The desire to focus more time on individual patient care and clinical dentistry, and less time on practice management. This can be achieved by outsourcing business and office management duties to dental support organizations or joining independent practice organizations.
• Rising student debt loads upon graduation and inflated costs of start-up dental practices may lead new dental graduates to seek guaranteed employment and salaries outside of the traditional solo-practice dental office model.

• Shifting economic trends and market forces, as well as patient demands may see the emergence of more multi-speciality dental practices where patients will prefer to go for all their treatment needs.

• Mobile dental clinics and teledentistry may gain more attention in the future in an effort to deal with growing issues related to access to timely oral health care. This specifically relates to vulnerable populations such as seniors in long-term care facilities or those living in remote and rural areas.

• The integration of general health and oral health care in the future has the potential to dramatically change how patients are treated and how all health care professionals practice. Inter-professional and collaborative practices, in a value-based system of care, may see an increase in popularity in years to come.

What does this mean for the profession?

The dental practice of future will look different than it does today. The current system is not broken, but has opportunity in terms of improvements related to efficiency. Dental professionals will continue to look for ways to improve the business side of their practice, while maintaining quality patient care. Changing practitioner demographics, market forces, and patient expectations will play a significant role in determining the way future dental practice models will evolve, and thus, these trends will need to be tracked and monitored closely. Further research is also needed to evaluate the impact that many of these models will have on the overall quality of patient care.

References


8. Guglielmo WJ. What's a micropractice?. Medical economics. 2006 Dec 1;83(23):51-5.


15. Skillman SM, Doescher MP, Mouradian WE, Brunson DK. The challenge to delivering oral health services in rural America. Journal of Public Health Dentistry. 2010 Jun 1;70(s1).
Who can own a dental practice in Canada?

Ownership of a dental practice in Canada is determined by provincial/territorial legislation. To date, all jurisdictions in Canada mandate that the majority shareholder of any dental professional corporation or practice must be a registered or licensed dentist. Additionally, a dentist cannot practise dentistry in partnership, association, or as an employee of a non-dentist in a privately-owned business or professional practice. These regulations are currently governed by each provincial/territorial dental regulatory authority, which monitor all dental practices and will not permit any business entity, corporation, or non-licensed dentist to own a practice. However, this raises the question in reference to ownership, ‘what is a dental practice?’

From a legal perspective, ownership of a dental practice refers to owning the professional goodwill of that practice. The goodwill includes all patient records and files, including billing records and treatment plans, patient charts, diagnostic images and models, patient lists, and the use of a dental practice name. In Canada, a licensed dentist or their professional corporation are the only ones who can own this goodwill. However, despite these regulations, different types of business arrangements can and do exist both locally and internationally. For example, a non-dentist can own or lease the premises and physical assets of a dental office and can serve as a landlord to a dentist. Understanding the different models of practice ownership, will help Canadian dentists to effectively deal with the changing landscape and market with respect to how dental practices will be owned and operated in years to come.

What are different models for health care practice ownership?

1) The investor dentist and consolidated groups

A growing trend in Canada has seen the emergence and increase in volume of investor dentists who are purchasing dental practices at a high rate. In this model, the buyer is an individual investor, who is also a registered dentist, that is looking to increase the size of
their enterprise by owning and operating multiple practices. The investor dentist may or may not treat patients at each practice location, and will often have the original owner remaining on staff as an associate. In this model, each individual office can operate under one practice name, or retain the brand of the original office, depending on the preference of the investor dentist. As an extension to the concept of the investor dentist, a consolidated group consists two or more dentists who leverage their combined assets and capital to increase their overall buying power.

2) Franchising

Another model for health care practice involves owning and operating the business as a franchise. In this model, the franchisee will purchase and obtain the rights to use a franchise’s business model, brand, and support systems. Franchisee’s will benefit from the use of established protocols, brand recognition, and economies of scale, in exchange for the loss of control on how the business may operate. Internationally, franchising in the health sector has been explored in low and middle-income countries as an organizational model to overcome challenges related to access to care. In the United States and the United Kingdom, franchising exists throughout the healthcare system, with examples in senior’s care, vision and hearing, dental, paramedical, and pharmaceutical care. In Canada, healthcare models for franchising are also beginning to take form, particularly involving seniors and long-term care.

3) Hospital ownership of physician practices

In the United States, hospitals and their associated networks can be run by the government, or by for-profit or non-profit organizations. Over the last decade, the share of physician practices owned by hospitals has dramatically increased. It is estimated that 1 in 4 physician practices are now hospital-owned. This trend toward vertical integration between hospitals and primary care practices means that more producers of complementary services that were once independent are now either commonly owned or related by contract. While this model has the potential to improve the quality and efficiency of patient care, it has also been shown to that it can lead to higher costs related to care and increased hospital spending.
4) Public ownership

Several jurisdictions in Canada have publicly-owned and operated dental clinics. Regional authorities, municipalities, and/or local public health units may offer preventive and restorative dental services covered by their publicly funded insurance programs at specific clinics in the area. In this model, local authorities will contract salaried dentists and dental hygienists to provide services in accordance with what is offered through the programs. Dentists will typically have fixed hours and are not associated with any office management and/or business operations of the clinic. These clinics are typically aimed towards high-risk and vulnerable populations, or those eligible for the publicly funded dental programs. Cost-efficiency, effectiveness, and quality of care has been shown to be similar when comparing public and private dental clinics, however, further studies in this area, particularly in the Canadian context, are required.9

5) Managed service organizations

A health care managed service organization (MSO) is typically owned by a group of physicians, a hospital-physician partnership, or private investors in association with physicians. MSOs generally provide management and administrative services to individual practices.10 This model allows physicians to concentrate on patient care and the clinical aspects of their practice, while relieving them of the day-to-day operations of running a productive business. MSOs will also purchase their services as a group, thus achieving economies of scale.10 More recently, dental service organizations, an extension of MSOs into the dental field, have arisen in the United States and are increasing in popularity.11

6) Health maintenance organizations

Well established in the United States, health maintenance organizations (HMOs) are insurance companies or networks that provide a range of health services for a fixed annual fee. It is an organization that provides or facilitates managed care for health insurance, self-funded health care benefit plans, or individuals, often acting as a liaison with health care providers on a prepaid basis.12 HMOs may employ salaried physicians
who work directly out of HMO clinics, or they may contract the delivery of their health care services out to group practices or physician-based networks.\textsuperscript{12}

7) Integrated delivery systems

An integrated delivery system (IDS) is a network of health care organizations under a parent holding company.\textsuperscript{12} Some IDS have an HMO component, while others are a network of physicians, or of physicians and hospitals. It generally refers to an organization that provides a continuum of health care services.\textsuperscript{12} The largest example of an IDS in the United States is Kaiser Permanente\textsuperscript{®}, an organization that unites a financing group with all providers from hospital, clinics, and physicians through home care and long-term care facilities to pharmacies.\textsuperscript{13}

8) Corporate ownership models in other regulated healthcare professions

While the ownership of dental practices is regulated in Canada, that is not the case with all regulated healthcare professions. Over time, regulatory changes throughout the country has seen non-pharmacists granted permission to own and operate pharmacies.\textsuperscript{14} This has resulted in an overall decrease in the number of independently owned pharmacies, despite an increase in the total number of pharmacies in Canada.\textsuperscript{14} Big corporations have also become increasingly involved in the business of the delivery of veterinary services.\textsuperscript{15}

What are the impacts of alternative ownership models for dental practices?

There are many differences between private and alternative or corporate ownership of a dental office. Some key characteristics of a traditional privately owned dental practice include:

- Greater autonomy in practice choices, including services offered and materials used.
- Freedom to establish office protocols and business models.
- Complete control over hiring and staff composition.
- Greater potential for business growth, return on investment, and overall income.
- More office responsibilities and with longer hours.
- Variable fringe benefits.
These differ from alternative or corporate models of dentistry, which can be characterized by:

- More consistent hours and less time required for practice management and administration.
- Fewer choices related to overall clinical protocols and materials used.
- Varying degrees of input and control over office protocols and business models.
- Potential for cost savings by achieving economies of scale and pooling of resources.
- Fixed salaries or guaranteed income with the potential for greater benefits.
- Pooled resources for marketing, and potential for brand recognition.

What does this mean for the profession?

Dentists entering the profession will be faced with difficult choices when trying to determine how to set-up and operate their potential practices. While the ownership of a dental practice is still dictated by legislation in Canada, there are many different models that could exist that are still in compliance with the law. Further, legislation can change over time, and market forces, patient demands, and advocacy from healthcare providers, could result in future changes to how the ownership of dental practices are regulated. The rising costs of operating a dental practice, competition for space and patients, changing practitioner demographics, and an increasing number of practitioners, could also result in a shift towards alternate models of practice ownership. The rapidly evolving landscape and trends in ownership will need to be closely monitored by dentists, dental organizations, and dental regulatory authorities. Further research will also be required to evaluate how different models of dental practice ownership ultimately impact the quality of patient care.

References


Appendix R

CDA Policy Brief: Improving dental practice productivity, efficiency, and cost-structure

Keith Da Silva, DDS, FRCD (C)

Carlos Quiñonez, DMD, MSc, PhD, FRCD(C)

Background

Running a successful and profitable dental practice is no easy task. Although dentists excel at providing patients with quality oral health care, it is easy to become overwhelmed with the day-to-day operations and office management required for a productive dental practice. There is a constant need to recruit new patients, increase production and billings, and reduce practice related overhead costs. Many tasks which dentists are not formally trained to do well. Efficiency is the foundation to profitability and so it is always worthwhile to analyze how various policies and systems are serving this goal. Dentists have a long history of increasing their efficiency by delegating tasks to other oral health providers such as dental assistants, dental hygienists, and dental laboratory technicians. However, the current practice landscape and market forces present today’s dental professional with many unique challenges. These can include:

- New graduates with high debt loads and minimal resources to invest into new practices.
- A lack of formal training in practice management and financial planning.
- The rising costs of purchasing existing dental practices.
- The need for ongoing investment into new and costly dental equipment and/or technology.
- A desire for many professionals to achieve work-life balance, flexible schedules, and guaranteed income.
- Non-traditional competition to the dental practice, such as independent dental hygienist’s practices and corporately owned dental offices.
- Established dentists looking to extend their careers while decreasing work hours and maintaining ownership.

To be competitive in today’s market, dentists will need to systematically evaluate the way they practice and search for new ways to increase productivity and efficiency, while keeping their overall costs low.
What are the current trends for improving dental practice productivity, efficiency, and cost-structure?

1. Expanding the dental workforce

Allied or auxiliary dental personnel can include dental assistants, community dental health coordinators, dental hygienists, and dental therapists. In some jurisdictions, they may additionally have an expanded or wider scope of practice allowing them to carry-out therapeutic treatments and procedures which have traditionally been reserved for licensed dentists. In the United States, practices that have employed expanded function allied dental personnel have been shown to treat more patients, and report higher gross billings and net incomes than those practices that did not. The more services that they delegated, the higher the practice’s productivity and efficiency became. The effective use of expanded function allied dental personnel has the potential to substantially expand the capacity of a general dental practice, resulting in a higher patient flow and the ability to generate higher incomes. Similarly, the use of nurses and/or physician assistants in oral maxillofacial surgery practices has been shown to improve efficiency and decrease overhead costs without compromising the quality of care.

2. U-commerce

Ubiquitous commerce, also know as u-commerce, refers to commercial transactions that can be performed securely, at any time, from any equipment, and from any location, whether wired, wireless, or using web-based technologies. It is based on four underlying principles as first described by Watson et al., and detailed in Figure 1. While the more familiar ‘e-commerce’ represents an internet-enabled shift in retailing, u-commerce represents all forms of value and knowledge exchange between organisations and individuals, enabled by networks and technology. U-commerce, in a dental practice context, may relate to the ability of patients to obtain information about or demonstrations of preventative care or clinical procedures, regardless of the location or time at which they choose to access such information. Application of this technology could result in cost-savings in relation to office staff, time, and overall resources.
Figure 1: The four distinguishing features of u-commerce

- **Ubiquitous**: Represents the ability to connect at any time and in any place as well as the integration into most devices and processes.

- **Uniqueness**: Stands for the unique identification of each user regarding their identity, current needs, and location resulting in a personalized service.

- **Universal**: Is related to everyone’s individual devices which can be used multifunctionally and in any location or setting.

- **Unison**: Data integration across applications and devices to provide users consistent and fully access to required information independent of device and location.

Source: Watson, 2002

3. Mobile technology

Expanding on the concept of u-commerce, dental practices may improve the efficiency and profitability of their operations, and better manage patients, employees, and stakeholders by integrating smart mobile technology. Smart mobile devices are handheld, portable, personal computers that combine advanced computer technology with internet connectivity. The term ‘smart mobile device’ generally includes both to smartphones and tablets, however this has expanded recently to include smartwatches, smart bands, and smart keychains. Using a smart mobile device, a dental patient could, for example, use the voice recognition function to start a search query into the map function, find a dental practice nearby using the map’s wireless search capabilities and then click on the displayed phone number to call the practice and book an appointment, which can then be uploaded directly into a separate calendar application. Dental practices may also invest in customized downloadable applications or ‘apps’ that patients can utilize for scheduling, appointment reminders, billing/payment, and as an overall source of information. Integration of such applications into the dental practice may increase efficiencies of time, money, labour, and other resources for both office staff and patients.
4. Automated inventory management

Effective management of inventory is important for decreasing the overhead costs of a dental practice. Inventory costs are related to storing and maintaining material over a certain period. Ordering in bulk or excess quantity may result in savings during purchasing, reduced shipping fees, and less replenishment costs, however this can result in higher carrying costs and the need for increased storage space and so a proper balance must be achieved. Digitalizing inventory management will allow a dental practice to efficiently track supplies, control stock, and streamline data entry of standard items in quotes, invoices, and purchase orders. Investing in advanced inventory software and delegating the responsibility to specific office personnel with careful monitoring and evaluation can potentially result in efficiencies, reduced waste, and overall cost savings.

5. CAD/CAM technology

Computer-aided design and computer-aided manufacturing (CAD/CAM) refers to computer software that is used to both design and manufacture products. In a dental setting, CAD/CAM technology allows for the chairside design and manufacturing of inlays, onlays, crowns, dentures, orthodontic brackets, and surgical guides in implantology. The rapid evolution of CAD/CAM technology has had a profound impact on all disciplines of dentistry, especially in the fields of prosthodontics and restorative dentistry. The integration of these systems with advances in biomaterials, such as zirconia high strength ceramics, has led to major alterations in education and patient care. Practices that have implemented such systems often require less chair time for complex procedures, some being completed in a single visit, and can eliminate the need for lengthy wait times associated with the fabrication of restorations at external laboratories.

6. 3D printing

A further extension of CAD/CAM technology will involve the use of three-dimensional (3D) printing. 3D printing or additive manufacturing is the process of making 3D solid objects from a digital file. In dentistry, uses of 3D printing can include the production of surgical guides for dental implants, the production of models for prosthodontics, orthodontics and surgery, the manufacture of dental, craniofacial, and orthopaedic implants, and the fabrication of copings and frameworks for implant and dental
restorations.\textsuperscript{14} With the availability of 3D scanners, digital impressions, and cone beam computed tomography (CBCT) imaging in the dental office, digital 3D imaging files are now easily obtained and custom appliances and guides can be fabricated with greater precision leading to improved patient outcomes.\textsuperscript{14}

7. The changing scope of practice

Increasing the scope of practice and variety of services offered in a dental practice will have an impact on productivity. Oral health is an important component of general health and dental professionals are in an ideal position to be involved with the diagnosis and management of chronic diseases such as diabetes, hypertension, and obstructive sleep apnea.\textsuperscript{15} Included in this shifting practice paradigm will be consideration of the use of saliva-based diagnostic tests.\textsuperscript{16} Saliva is being studied as a diagnostic fluid for oral, dental, and craniofacial disorders, as well as for systemic disorders that range from breast cancer to diabetes.\textsuperscript{15} With the availability of chairside saliva-based diagnostic tools becoming a reality, dental practitioners should be considering how the analysis of saliva can be incorporated into their dental practices in the future.\textsuperscript{15} Additional services, such as smoking cessation, administering vaccines, and Botox\textsuperscript{®} injections, are also examples of treatments that could potentially be incorporated into a dental setting.

What are the impacts/challenges to increasing dental practice productivity, efficiency, and cost-structure?

Dental professionals often lack the time, and skills in economics and practice management to adopt and integrate many of the different strategies that could help them increase productivity and efficiency in their practices. Some of the obstacles that dentists may face include:

\begin{itemize}
  \item The emergence of dental practice management companies, continuing education courses, and expert opinions, often presenting differing views on how to ‘improve your practice’ that can leave dental professionals with conflicting opinions and strategies.
  \item Changing the scope of practice for dentists and allied dental personnel will require changes to overarching legislation and regulations which can be met with its own administrative burden and associated delays.
\end{itemize}
• New and innovative technology is often slow to reach the market and if a breakthrough product did appear, the results of industry-sponsored trials could be viewed skeptically by the profession, and considerable time would be required to establish the applicability of the findings to the broader population.\textsuperscript{4}

• The slow adoption and integration of novel treatment modalities into modern health care practice and the resistance of clinicians and health care providers to change their daily practice behaviors.\textsuperscript{17}

What does this mean for the dental profession?

In today’s current economic climate, dental professionals will constantly need to seek ways to improve their overall business to remain competitive. This will involve the continuous evaluation of all internal systems and processes to search for efficiencies, and methods to increase productivity and profitability. Recommendations to achieve a healthier and profitable practice now and in the future, include:

• Debt-reduction strategies and support for new dental graduates to allow them to start their careers with a more secure footing and can thus invest more time and resources into establishing their practices.

• Further training in practice management and economics needs to be readily available, and should be implemented into the existing undergraduate dental education curriculum as well as in accredited continuing education programs.

• The need for dental professionals to develop and utilize evidence-based critical appraisal skills to be able to determine which new and innovative technologies are worth investing in to better serve their patients and thus, improve their practice.

• Increased practice management support including best practice guidelines from regional, provincial, and federal dental organizations.

• Consultation with dental regulatory authorities regarding the changing nature of the profession and the evolving scope of practice for regulated dental professionals.
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APPENDIX S

CDA Policy Brief: Value-based agenda for health care

Keith Da Silva, DDS, FRCD (C)

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What is value-based health care?

Health care in Canada has evolved into a supply-driven system organized around what physicians do as opposed to a patient-centered system organized around what patients need. The focus is often on volume and profitability of the services provided, such as physician visits, hospital admissions, diagnostic tests, and procedures, while patient outcomes can be overlooked. In principle, this is similar to the delivery of health care in the United States, where it believed that both the patient’s and the health care system’s needs are not being met; where patient care is of low quality and system costs are becoming unaffordable.¹ A potential solution, that has been proposed in the United States as part of an overall reform to health care delivery, is built around a system of value-based care.²

Value-based health care is founded on the principle of improving the quality of care for patients.³ At its core is increasing the overall value for patients, that is, attaining the best possible health outcomes while maintaining the lowest possible costs. In this system, better health becomes the goal, not more treatment. Changing to a value-based healthcare system, will mean changing the way a patient receives care.³ As illustrated in figure 1, this involves adapting the following six interrelated components:
1. Organization into integrated practice units (IPUs)

IPUs are organized around a patient’s medical condition as opposed to the current system organized by speciality departments and discrete services. In an IPU, a dedicated team of clinical and non-clinical personnel provide the full range of care for the patient’s condition. A distinguishing feature, IPUs treat not only the disease but also the associated conditions, complications, and circumstances that commonly occur along with it. For example, being able to treat kidney and liver failure for patients with congestive heart disease, or vision and vascular issues for those with diabetes. IPUs also assume responsibility for engaging patients and their families in care. This can be in the form of providing education and counseling, encouraging adherence to treatment and prevention protocols, and supporting needed behavioral changes such as smoking cessation or weight loss.
2. Measuring outcomes and costs for every patient

Outcomes that matter to a patient need to be measured in addition to the total costs of care. To determine value, providers must measure the costs at the condition level, tracking the expenses involved in treating the condition over the full cycle of care. This involves accounting for the total resources used in a patient’s care, including personnel, equipment, and facilities; the capacity cost of supplying each resource; and the support costs associated with care, such as IT and administration. This will allow for the cost of treating a condition to be compared with the outcomes achieved.

Outcomes should be measured by medical condition (such as congestive heart failure), not by specialty (cardiology, nephrology) or specific intervention (dialysis). Outcomes must also cover the full cycle of care for the condition, and track the patient’s health status after care is completed. The outcomes that matter to patients for a particular medical condition must also be taken into consideration, and these generally fall into three tiers as outlined in Figure 2.

3. Move to bundled payments for care cycles

The way health care costs are assessed will need to change. Currently, the primary payment model is fee-for service where physicians are reimbursed according to treatment provided. This would change to bundled payments where one price is charged for the full cycle of a patient’s care for acute medical conditions, the overall care for chronic conditions for a defined period, or primary and preventive care for a defined patient population. Governments, insurers, and health systems in multiple countries, such as Sweden and Germany, are moving towards adopting this bundle payment approach with some success.

4. Integrating care delivery across separate facilities

Health care systems need to become integrated. For this to happen, a health care system must first clearly define their range of services. This range must be contained in order to focus and streamline effort. This will oppose the current norm, where health care centres...
strive to do everything for everyone. Health care systems will also need to concentrate their volume in fewer, more cost-effective locations.\textsuperscript{3} Less expensive procedures should take place in lower cost facilities while more complex, expensive procedures can remain in high-cost settings.\textsuperscript{3} Finally, care must be integrated across the entire network of a health care system, where providers will need to effectively communicate with one another and travel to different locations to promote a team perspective.\textsuperscript{3}

**Figure 2:** Hierarchy of outcomes important to patients

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The health status achieved or retained</td>
<td>Length of time to begin treatment</td>
<td>Chance and nature of recurrence</td>
</tr>
<tr>
<td>Survival</td>
<td>Length of hospital stays</td>
<td>Ability to live independently</td>
</tr>
<tr>
<td>Degree of health or recovery</td>
<td>Time to recovery</td>
<td>Long-term consequences of therapy</td>
</tr>
<tr>
<td>Functional level achieved</td>
<td>Time to return to physical activities</td>
<td>Need for future treatment</td>
</tr>
<tr>
<td>Degree of pain</td>
<td>Time to return to work</td>
<td>Maintained functional levels</td>
</tr>
<tr>
<td>Extent of return to physical activities</td>
<td>Stress related to recovery period</td>
<td></td>
</tr>
<tr>
<td>Ability to return to work</td>
<td>Pain during treatment</td>
<td></td>
</tr>
</tbody>
</table>

Source: Porter, 2013

5. Expand excellent services across geography
Health care delivery remains heavily local.\textsuperscript{3} If value is to be markedly increased, speciality providers for particular medical conditions need to serve far more patients and extend their geographic reach through the strategic expansion of IPUs.\textsuperscript{3} They can do this by having satellite locations staffed by their home institutions.\textsuperscript{1} Targeted geographic expansion by leading providers is rapidly increasing, with institutions such as the Vanderbilt Medical Center, Texas Children’s Hospital, Children’s Hospital of Philadelphia, MD Anderson Cancer Center, and many others taking the steps to serve patients over a wide geographic area.\textsuperscript{3}

6. Building an enabling information technology platform

Finally, all the aforementioned changes will need to be supported by an information technology platform that will facilitate communication and integration. This IT platform should be patient centered, use common terminology, encompass all types of data (ie. physician notes, imaging, orders, and lab tests), make medical records available to all involved, and make it easy to input and extract data from it from multiple locations.\textsuperscript{3} The system should include templates and expert systems for each medical condition.

What are the current trends in value-based health care?

- The Virginia Mason Medical Center in Seattle in was one of the first institutions to establish IPUs for the management of patients with lower back pain.\textsuperscript{1} On the first visit, a patient will meet with both a physician (who specialize in lower back pain) and physiotherapist. Since incorporating this system, it has been reported that patients in this system require less physiotherapy treatment, miss fewer days of work, require less imaging, and the hospital has been able to increase the number of patients seen annually.\textsuperscript{1}

- UMass Memorial Health Care is incorporating multiple components of the value-based agenda to treat patients who with diabetes.\textsuperscript{1,4} Aside from their main hospital, UMass physicians travel to surrounding community care centers to lend their expertise as well as utilizing a team of team of endocrinologists, primary care physicians, midlevel providers, diabetes educators and dieticians to accurately and efficiently diagnose and manage all of the patient’s health issues and concerns.\textsuperscript{4}

- In Germany, payments for health services are being bundled and resulting in the reduction of total costs for patients.\textsuperscript{1} The average cost of a hospital stay in Germany is
down to $5000 compared to the United States, where the average cost of hospitalization is $19,000.¹

- Large corporations, such Walmart Stores Inc., are embracing bundled health care payments for their employees.¹ Everything is covered for the employee, from travel to food, if they go to specific providers (those who practice within an IPU based system). Walmart then pays the providers in one bundled payment for all the patients care.

What are the impacts/challenges of value-based health care?

Value-based health care has the potential to reduce costs and improve patient outcomes by using a framework for more efficient care.² However, there are still many challenges to its mainstream adoption. These include:

- Motivating physicians and health care providers to change their practice models.⁵,⁶ Clinicians will need to prioritize patients’ needs and patient value over the desire to maintain their traditional autonomy and practice patterns.

- Engaging key stakeholders, including healthcare providers, government agencies, insurance companies, and patients, to come together and work towards a system of health care reform.⁷ The very foundation of how health care is financed and delivered will change under a value-based system, and input from all sides will be required.

- Comprehensive reform will require simultaneous progress in all the components of a value-based care system because they are mutually reinforcing. However, a health care strategy will involve a sequence of small steps over a long period of time rather than an attempt to change everything at once.⁸ A strategic plan will be needed for rolling out changes in each area while giving the actors time to adjust.⁸

What does this mean for the dental profession?

Oral health is an important component of general health and the role of the dental profession is evolving in response.⁹ While dental and medical care are currently distinct systems operating independently, there is room within the current dental practice for the diagnosis and management of many chronic diseases including hypertension, diabetes, and obstructive sleep apnea.⁹ As such, the oral health care providers should be included into IPUs for the management
of many interrelated medical conditions as part of an overall team approach in a value-based system. Imagine a periodontist and dental hygienist as part of a co-ordinated team managing total care for a patient with diabetes. The inclusion of oral health care workers in this system could further increase the value for the patient, and the overall efficiency of the health care system. However, true reform will require a move towards an integrated medical and dental health care system with universal insurance coverage for both and the restructuring of the current oral health care delivery system.

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APPENDIX T- Key Informants /Experts Consulted

Phil Emberley, Director of Pharmacy Innovation at the Canadian Pharmacists Association- the experience of pharmacy profession-

Marko Vujicic, ADA Health Policy VP- trends in dental practice and models of care-

Matilde Hernandez and Mariana Leon, Scientific Affairs at Colgate Palmolive Canada- future technologies, oral products and changing practice models of dental care

Walter Siqueira, CIHR New Investigator, University of Western Ontario- saliva and other promising diagnostic and therapeutic tools

Gottfried Schmalz, ISO Chairman- technologies and changing practice models of dentistry internationally

David Wong, Director Dental Research Institute UCLA- salivary diagnostics, future of health care and impact on dentistry

Mark Bartold, Emeritus Professor University of Adelaide- emerging technologies, diagnostics, changing models of care, interdisciplinary care

Chris McCulloch, University of Toronto periodontology professor- emerging technologies, diagnostic applications and changing models of practice

Joe Oxman, PhD Scientist with 3M USA- future of dental profession, emerging trends, technologies, diagnostics, interdisciplinary care

Peter Jugoon, Vice President Special Markets and Planning Henry Schein Canada- emerging dental technology

Stephen Abrams- Practising dentist in Toronto- How dentistry needs to change for the future

Mark Donaldson, Senior Executive Director Pharmacy Advisory Solutions- emerging technologies and pharmaceutical applications for dentists

Jeff Glaizel, Senior Business Lead, Ontario Telehealth Network- teledentistry and adoption challenges with new technologies

Jennifer Zelmer, former VP of Innovation, Canada Health Infoway -emerging digital technologies in health care and their impact on dentistry
Michael Glogauer, Professor University of Toronto- development of new diagnostic tools, technologies

Geoff Valentine, CDA Associate Director Practice– insurance and dental benefits issues

Benoit Soucy, CDA Director Clinical Affairs- insurance and dental benefits issues

Sue Armstrong, CEO CDSPI - practice management

Bernie Dolansky, Senior National Partner, Transition Consultant, Tier3 Brokerage- trends and issues in dental practices

Jeff Williams, ROI Corporation Associate- enhancing the dental practice, changing models

David Chong Yen, Accountant for many dentists- enhancing the dental practice, improving efficiencies improving productivity

Daniel Peak, Senior manager National, Private Payer Strategy at Sanofi Canada Inc.- Sanofi benefits survey and trends in drug insurance

Stephen Hancocks, Editor-in-Chief British Dental- trends in technologies, models of care in the UK

Jim Bramson, Chief Dental Officer United Concordia, ADA Past Executive Director- practice models, changes in dental industry in the USA, emerging technologies

Diane Kelsall, Canadian Medical Association Journal Editor- trends in the future of medical care

Jocelyne Feine, Editor Journal of Clinical and Translational Research, expert in therapies for chronic care

Nadine Burkett, ED of practice management consulting firm- enhancing dental practice

Brian Lindenberg, Senior Partner Mercer- the future of health benefits

Nicole Stewart, Principal Conference Board of Canada- future of dental benefits, trends and issues

Chris Bonnett, H3 Consulting (benefits consultant)- changing trends in private insurance

Robert Menes, National Director Marketing Equipment Technology Patterson Canada

Rick Carvalho, President IADR materials group- emerging technologies
Ira Lamster, Emeritus professor Columbia University- models of dental care/ enhancing scope of practice

Cheryl Cable, Alberta Dental Association- practice management and enhancing dental practice

Bill O’Reilly, Non-Executive Director of Dental Corporation Australia- trends in Australia

Peter Ward, Executive Director British Dental Association- trends in the UK