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**Could Dental school teaching clinics provide better care
than regular private practices?**

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ABSTRACT

Dental School Clinics (DSC) consist of unlicensed dental students delivering care under the supervision of licensed dental professionals. Care delivery is slow due to inexperience of the provider and the series of supervisory checks that are necessary. Cost of care to the patient is less. To date, there has been no evaluation of the benefits of receiving care in a DSC beyond the reduced fees. Research has shown the value of teaching hospitals in medicine and the purpose of this article is to evaluate the total sum of benefits (the value proposition) of receiving dental care in a DSC.

INTRODUCTION

In the dental profession we are privileged that many patients choose to seek care in DSC's which facilitates the training of future dentists and the sustenance of our profession. Dental School Clinics (DSC) are unique environments. Unlicensed, novice providers deliver care to patients under the supervision of licensed dental professionals. Utilization of novice providers is in conflict with financial sustainability goals of the academic institution. A DSC can have 30, 40 or more dental chairs and this environment is quite different to a private dental practice setting. In dentistry, patients value their relationship with their primary care provider and the constant transition of dental school providers (as they graduate) is another challenge to building a sustainable business model. Although there is a growth in the number of group practices¹ only 34.7% of United Kingdom (UK) practice operate in practices with 4 or more dentists.² In the United States (US), about 70% of dental offices are sole proprietors.³ This is a different environment compared to the structure of DSC's.

OBJECTIVE

A review of Dental academic institution websites across the world suggests that we, collectively, do poorly at marketing the unique product DSC's offer to their patients. The definition of a value proposition of a product is the sum benefits a consumer will gain from purchase of the goods or services being marketed – it is the reason why a consumer should purchase a product. Some Dental academic institutions focus on reduced cost as the only value proposition of care in a DSC. No dental academic institution website in the UK or United States (US) uses a marketing strategy that highlights the true value proposition their DSC's offer's customers. The objective of this article is to highlight the numerous benefits of receiving care in a dental school – the value proposition of a DSC.

SHARED GOALS

Dental schools are highly structured organizations with mission statements and guiding principles. Time magazine has reported on the importance of mission statements and describes how they can form a framework for self-evaluation and help employees focus their efforts toward company goals.⁴ Most private dental practices are small entities that do not have a mission statement that is explicitly stated – this creates the risk of acting in conflict with your mission and values.

For example, the goals of the dental profession are to optimize the oral health of the population at large. However, some activities of the profession may seem in conflict with this – for instance, an Office of Fair Trading investigation revealed that dentists have “deliberately misled” 500,000 patients to pay private practice fees when they were eligible for National Health Services (NHS) coverage in England.⁵ As a result of such conflicts globally, dentists have been criticized for being corrupt and money hungry rather than interested in the oral health of the population.⁶

HIERARCHY OF ACCOUNTABILITY

Clinical operations at dental schools are coordinated by Deans of Clinical Affairs. These Deans often have a broad range of administrative support staff and report to the Dean of the school. The school’s Dean, in turn, is held accountable by the Board of the School, the University Provost and President. This large hierarchy of accountability means that patient care is always considered, patient outcomes are regularly reviewed and patient satisfaction is constantly evaluated by various individuals and committees.

In contrast to this relatively high level of accountability in DSC’s, a private practice dentist graduates from dental school and is never subject to any further checks or accountability for the rest of their careers. Although severe breaches of standards can start a cascade of events including legal action, intervention by the

Boards of Registration in Dentistry and Dental Associations, a mediocre dentist with no severe breaches faces no barriers in continuing their career. Literature reveals that the simple existence of a hierarchy of accountability (regardless of how effective it is) can result in better performance in operations, including patient care – the Hawthorne effect.⁷ If this monitoring system is effective it can have an exponential effect on quality in DSC's.

QUALITY

The Commission on Dental Accreditation (CODA) accredits US dental schools. Standard 5 addresses patient care services in dental schools and it's intent is to promote patient centered, evidence-based care.⁸ These goals result in the formation of Quality Assurance and Quality Improvement committees that routinely evaluate patient satisfaction, clinical outcomes, error rates and monitor a dashboard of critical measures. This results in robust quality programs where error rates are proactively studied and re-make rates are monitored for negative trends. Commonly, no such monitoring system exists in smaller private practices.

Moreover, DSC's require student providers' work to be checked by a licensed dentist at regular intervals. These regular evaluations serve as check-points which have been shown to improve care⁹ in surgical procedures by preventing error¹⁰ and reducing distraction.¹¹ Hospital research has even demonstrated a reduction in mortality rate with the use of check-lists that serve as check-points.¹²

University of Michigan DSC's use an electronic system to request faculty evaluation and feedback. Evaluation of this data (IRB approval from University of Michigan Medical School Committee on Human Research, HUM 00131029) demonstrates that between October 2015 to April 2017 there were 29,974 unique patient visits and 131,248 requests for faculty checks. This means each patient visit had, on average, 4.38 faculty check-points.

In private practice the dentist is fully licensed and not subject to any formal checks. They rely on self-assessment, however, research has proven that self-assessment is very poor.¹³ In fact, research has shown that those who are weak at a given task are also poor at self-assessment of that task¹³ which creates the risk of being "unskilled and unaware."¹⁴ It is true that protection exists in terms of reporting of providers suffering from substance abuse and legal frameworks for frank incompetence. However, mediocre and sub-standard care that does not result in legal intervention or other critical incidents cannot be flagged in the current system where dentists are their own evaluator. It can be argued that the structure of constant evaluation and quality review has potential to facilitate superior care in a teaching practice.

PATIENT OUTCOMES

Teaching hospitals have been shown to have higher quality, safety and better patient outcomes in many areas compared to non-teaching hospitals.^{15,16}

Hospitals are certainly different to DSC's, however, consider the similarities. For example, University of Michigan School of Dentistry (a medium sized dental school) had close to 200,000 outpatient visits last year. As the population ages and lives longer with chronic disease, DSC's are regularly called upon to deliver complex care to complex patients. In medicine, there are many examples of a shift from in-patient procedures to outpatient care^{17,18} which suggests the differences between teaching hospitals and DSC's are reducing.

Research in medicine has demonstrated that high volume hospitals perform better in patient outcomes. These hospitals learn from errors and near errors and perfect the process to optimize outcomes. Bhatia et al found that patients who receive care for heart failure in hospitals with lower admission rates for heart failure have higher rates of readmission and emergency room visits.¹⁹ However, Bhatia was interviewed and went on to say "Larger community and academic hospitals are more likely to have better access to specialty physicians, diagnostic testing and bed availability."²⁰ These advantages are not unlike the advantages of a DSC's. In the DSC's at University of Michigan School of Dentistry between April 1st 2016 and April 30th 2017 there were 333 complete lower dentures fabricated (IRB approval from University of Michigan Medical School Committee on Human Research, HUM 00131160). While complete lower dentures can be very challenging to construct, large academic centers are able to learn from a high volume of cases and use continuous improvement to provide high quality care. Even if a small private practice delivered one complete lower denture every

single business day of the year it would fall short of the volumes reached in the DSC's of UMSOD.

Meguid et al conducted a study on close to 50,000 patients undergoing lung resection as a result of lung cancer. They found mortality rates to be lower at teaching hospitals.²¹ The investigators concluded that disseminating the processes of care in these teaching hospitals to other hospitals “may improve quality of care for lung cancer patients.”

Laucis et al studied knee and hip arthroplasty and found that each successively higher volume hospital had lower complication rates.²² Shahian et al studied how mortality for acute myocardial infarction, heart failure, and pneumonia varied across teaching hospitals and non-teaching hospitals. They found that, for each condition, teaching hospitals provided a 10% relative reduction in the adjusted odds of mortality for patients admitted to teaching hospitals and this was regardless of the teaching intensity.²³ Therefore, even the presence of a small amount of teaching improved outcomes at the hospital.

There is no study in dental medicine examining the impact of receiving care in a high volume DSC versus a small private practice. A challenge in dentistry is that clinicians tend to use experience, rather than guidelines and evidence to make clinical decisions.²⁴ It works “in my hands” is a common mantra touted by many in our profession. In academic dental institutions we are charged to teach our

students evidence based dentistry and ensure that they learn how to distinguish good and bad evidence.

PATIENT SATISFACTION

One may presume that smaller private practices consider and manage patient satisfaction at superior levels. However, it is worth recognizing that few dentists in private practice actually measure patient satisfaction.²⁵ However, without acquiring and synthesizing feedback it is impossible to improve the experience of the customer.²⁶ DSC's have robust processes for measuring patient satisfaction. At UMSOD, three types of surveys are administered every year for a total of about 4,000 surveys. Every patient who completes a treatment plan has the opportunity to complete a patient satisfaction survey. UMSOD also sends 200 surveys to patients who have chosen to discontinue care and 750 point-of-service (POS) surveys are given to individuals who just completed an appointment in the DSC. In our last administration of the POS survey we had 179 responses out of 250 surveys (71.6% response rate) and we found that 97.5% said they had a good understand of their treatment plan (IRB approval from University of Michigan Medical School Committee on Human Research, HUM 00131160), however, the percentage was lower for new patients which means we need to improve our education of new patients.

Moreover, CODA site visitors will review if findings from these surveys affect change at the DSC. Therefore, patients will have their voice heard and one can be assured of constant improvement based on patient feedback at a DSC. No such process to ensure patient satisfaction is gathered and affects change is in existence in private practice.

ACCESS TO CARE

Dental schools can be huge organizations with hundreds of care providers and hundreds of dental chairs. Access to care is extremely broad – although, your own provider may not be able to help you, any DSC will have a myriad of providers who are capable of providing emergency care on any given day.

Smaller practices cannot offer this level of service to it's customers. Many DSC's are also moving to offer regular appointments outside business hours. Moreover, DSC's have a tight support network for after hours emergencies. For example, at University of Michigan School of Dentistry, General Practice Residents are on call after hours and are supported by the division of hospital dentistry. Through the hospital there is also access to oral surgeons and the emergency room doctors.

Shahian et al found that major teaching hospitals are more likely to offer care to minorities and patients who need to be transferred from other hospitals for

advanced care.²⁷ Both are essential to an equitable and high-quality regional health care system. In fact, a study in dental medicine has shown that few dental students intend to treat complex patients with special needs unless they had this experience in the protective and supportive environment of their dental school.²⁸

Large teaching hospitals more often provide care to underserved populations. In fact, according to the Association of American Medical Colleges teaching hospitals provide a “disproportionate amount to care to the country’s medically underserved.”²⁹ As a dental equivalent, consider the example of Massachusetts (which is one of the few states that makes insurance distribution publically available) where only about 1,400 dentists accept Medicaid insurance³⁰ out of the 6,301 professionally active dentists.³¹ This is only 22% of all active dentists. At UMSOD, only 32.9% of patients have private insurance - 22.4% have Medicaid, 9.5% have Affordable Care Act (ACA) plans and 28.8% are uninsured (IRB approval from University of Michigan Medical School Committee on Human Research, HUM 00131160). It should be noted that the ACA in the US mandated that dental insurance must be offered, but did not mandate that it should be accepted – hence many remain without dental insurance in the US.

RESEARCH

Dental schools are the center for research and innovation in dental medicine. Universities are primary sites for scientific discovery, clinical trials and piloting

new technology. Research has shown that hospitals participating in clinical trials have better overall outcomes.³² The investigators concluded that hospitals participating in clinical trials had lower mortality rates (not just for the condition in the clinical trial) and provide better care. The highly structured environment of DSC's are more suited for implementing research protocols and may produce better outcomes because structure and reduced variability have been shown to reduce error rates^{33,34} and complications in hospitals.

Additionally, dental schools tend to utilize new technology sooner (through research grants and expanded buying power) than smaller practices and may be able to offer cutting edge standards of care sooner.¹⁵

MULTI-PERSPECTIVE DECISION MAKING

Many faculty will complain about how slow decision making and implementation in an academic institution can be in comparison with a small private practice. Moreover, faculty who remain connected to private practices may lament how they make decisions with little conflict in their practice compared to academic institutions. However, literature has shown that multiple diverse opinions lead to more conflict and ensures better decision outcomes.³⁵ A dentist in smaller private practices are the Chief Executive Officer, Chief Operations Officer and Chief Financial Officer. As such, her/his power is all encompassing and employees are not usually empowered to provide conflicting opinions. Literature has described

how powerful CEO's can obliterate dissension³⁴ and the problem is that multiple perspectives are not considered and final decisions may not assess all the important factors. Many private dental offices may run like this and utilize weak decision making processes. This is a strength of a DSC – that multiple opinions from individuals with various backgrounds (socioeconomic, academic, racial and ethnic) are available for every important decision.

Moreover, within the DSC a student may acquire several consultations (including specialists) in order to make a treatment decision – these consults are usually at no additional fee to the patient. For example, when the general dentist faculty wants a prosthodontic, periodontic or endodontic consultation they can ask a colleague and usually do not charge the patient an additional fee. This adds value in two ways: Firstly, more than one opinion is sought which strengthens the final decision and, secondly, an expert opinion can be gained without additional fee to the patient. Such partnership in care is rarely available to the patient in private practice model – even less so without additional fee.

CONCLUSION

Academic institutions have greater resources than small private offices and are able to provide administrative support to clinic operations. For instance, DSC's have administrators to review quality data, Quality Assurance committees to synthesize that information and Quality Improvement groups to implement

change when needed. DSC's also have a hierarchy of accountability, better access for underserved individuals, formal check-points to reduce error and multiple perspectives considered for all important decisions. The value proposition of DSC's is much broader than simply inexpensive care. Academic dental centers should market their product as a comparable service to teaching hospitals which are highly regarded for better outcomes in medicine.

REFERENCES

1. Changes to dental provision in the UK and the implications for the General Dental Council. Published Autumn 2012. Authored by General Dental Council of England
2. British Dental Association. Accessed 7/12/16 and available at www.bda.org/dentists/policy-campaigns/research/workforce-finance/gp/Documents/challenges_to_becoming_a_practice_owner_-_full_report.pdf

3. American Dental Association website. Accessed 4/25/2016 and available at
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0ahUKEwiYg6qh9rbNAhVIMFIKHRquA7sQFgguMAI&url=http%3A%2F%2Fwww.ada.org%2F~%2Fmedia%2FADA%2FScience%2520and%2520Research%2FHPI%2FFiles%2FHPIData_SDPC_2013.ashx&usg=AFQjCNEs6R_3hXjunpYm89K8n5McmWYsYQ&sig2=Lku7A16JaBgoIHHL7iN7w&cad=rja
4. Time Magazine website. Accessed 6/20/2016 and available at
<http://business.time.com/2013/01/24/why-you-need-a-mission-statement/>
5. The Telegraph newspaper website. Accessed 6/20/2016 and available at
<http://www.telegraph.co.uk/news/health/news/9295340/Dentists-forcing-500000-NHS-patients-to-pay-privately-report.html>
6. Public Broadcasting Service website. Accessed 6/12/2016 and available at
<http://www.pbs.org/wgbh/frontline/film/dollars-and-dentists/>
7. Harvard Business School website. Accessed 5/16/2016 and available at
<http://www.library.hbs.edu/hc/hawthorne/09.html#nine>
8. American Dental Association website. Accessed 5/12/2016 and available at
http://www.ada.org/~//media/CODA/Files/2016_predoc.pdf?la=en
9. Arriaga AF, Bader AM, Wong JM, Lipsitz SR, Berry WR, Ziewacz JE, Hepner DL, Boorman DJ, Pozner CN, Smink DS, Gawande AA. Simulation-based trial of surgical-crisis checklists. *N Engl J Med.* 2013 Jan 17;368(3):246-53. doi: 10.1056/NEJMsa1204720.

10. Enchev Y. Checklists in Neurosurgery to Decrease Preventable Medical Errors: A Review. *Balkan Med J.* 2015 Oct;32(4):337-46. doi: 10.5152/balkanmedj.2015.15481. Epub 2015 Oct 1.
11. Ragusa PS, Bitterman A, Auerbach B, Healy WA 3rd. Effectiveness of Surgical Safety Checklists in Improving Patient Safety. *Orthopedics.* 2016 Mar 1;39(2):e307-10. doi: 10.3928/01477447-20160301-02. Epub 2016 Mar 4.
12. Bock M, Fanolla A, Segur-Cabanac I, Auricchio F, Melani C, Girardi F, Meier H, Pycha A. A Comparative Effectiveness Analysis of the Implementation of Surgical Safety Checklists in a Tertiary Care Hospital. *JAMA Surg.* 2016 Feb 3.
13. Kruger J, Dunning D. Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. *J Pers Soc Psychol.* 1999 Dec;77(6):1121-34.
14. Ehrlinger J, Johnson K, Banner M, Dunning D, Kruger J. Why the Unskilled Are Unaware: Further Explorations of (Absent) Self-Insight Among the Incompetent. *Organ Behav Hum Decis Process.* 2008 Jan 1;105(1):98-121.
15. Shahian DM, Nordberg P, Meyer GS, Blanchfield BB, Mort EA, Torchiana DF, Normand SL. Contemporary performance of U.S. teaching and nonteaching hospitals. *Acad Med.* 2012 Jun;87(6):701-8. doi: 10.1097/ACM.0b013e318253676a.

16. Pisu M, Wang D, Martin MY, Baltrus P, Levine RS.
Presence of medical schools may contribute to reducing breast cancer mortality and disparities. *J Health Care Poor Underserved*. 2010 Aug;21(3):961-76. doi: 10.1353/hpu.0.0346.
17. Kamat AS, Parker A. Optimising neurosurgical outpatient care: a paradigm shift? *J Prim Health Care*. 2015 Sep 1;7(3):198-203.
18. Beans BE. Experts Foresee a Major Shift From Inpatient to Ambulatory Care. *P T*. 2016 Apr;41(4):231-7.
19. Bhatia RS, Austin PC, Stukel TA, Schull MJ, Chong A, Tu JV, Lee DS. Outcomes in patients with heart failure treated in hospitals with varying admission rates: population-based cohort study. *BMJ Qual Saf*. 2014 Dec;23(12):981-8. doi: 10.1136/bmjqs-2014-002816. Epub 2014 Jul 30.
20. Institute for Clinical Evaluative Sciences. Accessed 5/15/2016 and available at <http://www.ices.on.ca/Newsroom/News-Releases/2014/Heart-failure-patients-have-better-outcomes-when-treated-at-larger-community>
21. Meguid RA, Brooke BS, Chang DC, Sherwood JT, Brock MV, Yang SC. Are surgical outcomes for lung cancer resections improved at teaching hospitals? *Ann Thorac Surg*. 2008 Mar;85(3):1015-24; discussion 1024-5. doi: 10.1016/j.athoracsur.2007.09.046.
22. Laucis NC, Chowdhury M, Dasgupta A, Bhattacharyya T. Trend Toward High-Volume Hospitals and the Influence on Complications in Knee and Hip Arthroplasty. *J Bone Joint Surg Am*. 2016 May 4;98(9):707-12. doi: 10.2106/JBJS.15.00399.

23. Shahian DM, Liu X, Meyer GS, Torchiana DF, Normand SL. Hospital teaching intensity and mortality for acute myocardial infarction, heart failure, and pneumonia. *Med Care*. 2014 Jan;52(1):38-46. doi: 10.1097/MLR.0000000000000005.
24. Nalliah RP. Clinical decision making - choosing between intuition, experience and scientific evidence. *Br Dent J*. 2016 Dec 16;221(12):752-754.
25. Dentistry IQ magazine. Accessed 5/29/2016 and available at <http://www.dentistryiq.com/articles/2010/04/the-importance-of.html>
26. Kennedy MM. What kind of feedback are you soliciting? *Physician Exec*. 1997 Jul-Aug;23(6):56-8.
27. Shahian DM¹, Liu X, Meyer GS, Normand SL. Comparing teaching versus nonteaching hospitals: the association of patient characteristics with teaching intensity for three common medical conditions. *Acad Med*. 2014 Jan;89(1):94-106. doi: 10.1097/ACM.0000000000000050.
28. Vainio L, Krause M, Inglehart MR. Patients with special needs: dental students' educational experiences, attitudes, and behavior. *J Dent Educ*. 2011 Jan;75(1):13-22.
29. American Association of Medical Colleges website. Accessed 4/29/2016 and available at <https://www.aamc.org/download/335882/data/patientcareone-pager.pdf>

30. Massachusetts Dental Society website. MassHealth member participation rates. Accessed 6/12/2016 and available at <http://www.massdental.org/masshealth.aspx?id=2106>.
31. Kaiser Family Foundation website. Accessed 6/20/2016 and available at <http://kff.org/other/state-indicator/total-dentists/>
32. Majumdar SR¹, Roe MT, Peterson ED, Chen AY, Gibler WB, Armstrong PW. Better outcomes for patients treated at hospitals that participate in clinical trials. *Arch Intern Med*. 2008 Mar 24;168(6):657-62. doi: 10.1001/archinternmed.2007.124.
33. Anderson M, Fitzgerald M, Martin K, Santamaria M, Arendse S, O'Reilly G, Smit de V, Orda U, Marasco S. A procedural check list for pleural decompression and intercostal catheter insertion for adult major trauma. *Injury*. 2015 Jan;46(1):42-4.
34. Crosby E. Review article: the role of practice guidelines and evidence-based medicine in perioperative patient safety. *Can J Anaesth*. 2013 Feb;60(2):143-51. doi: 10.1007/s12630-012-9855-9. Epub 2012 Dec 5.
35. Eisenhardt KM, Kahwajy JL, Bourgeois LJ (III). How Top Management Teams Disagree. *California Management Review* VOL 39, NO. 2 Winter 1997