Transition to Digital Dentistry

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Objectives

Become familiar with digital dentistry concepts.

Review keys aspects of transforming a practice to a digital workflow.

 \checkmark Selection of suitable technology and equipment.

 \checkmark Integration, implementation, and training of the staff in the technology.







2019

✓66% of Dentists use Digital X-Rays

✓16-26% of Dentists use Digital Impressions



Considerations

Existing Digital Technology (Digital Records) Providers & Staff Ages (<40 Yrs Old) Retirement Plan (< 5-7 Yrs)

Steep Digital Learning Curve (6-12 Months)









Advantages

Improve Patient Experience, Comfort and Perception
Accurate and Efficient
No Messy Impressions and/or Model Work
Better Patient and Laboratory Communication
Reduce Supply Costs

Mangano, F, et al. Intraoral scanners in dentistry: a review of current literature. BMC Oral Health, 2017; 17: 149.



Disadvantages

Difficulty Detecting Deep Subgingival Margins
 Inaccurate for Long Span Restorations
 Steep Learning Curve
 Initial Investment and Software Licensing Costs

Mangano, F, et al. Intraoral scanners in dentistry: a review of current literature. BMC Oral Health, 2017; 17: 149.



Evaluation & Decision Making

Hardware CBCT Optic Scanners 3D Printer Milling Machines Materials Lithium Disilicate Zirconia Titanium PMMA Software Designing Planning Nesting

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Joda, T, et al. The virtual patient in dental medicine. Clin Oral Impl Res., 2015; 26:725–726.









TRIOS 3®, 3 SHAPE



CS 3600®, CARESTREAM



TRUE DEFINITION®, 3M ESPE



OMNICAM®, SIRONA

Imburgia, M, et al. Accuracy of four intraoral scanners in oral implantology: a comparative in vitro study. BMC Oral Health 2017; 17:92.



Partially Edentulous scans more accurate than Fully Edentulous scans.



"...the digital impression technique provided better marginal and internal fit of fixed restorations than conventional techniques did."



Chochlidakis, K, et al. Digital versus conventional impressions for fixed prosthodontics: A systematic review and meta-analysis of ceramic partial crown in vitro. JPD 2016; 116(2):184–190.

Boeddinghaus, M, et al. Clin Oral Invest 2015; 19:2027-2034.

Schaefer, O, et al. J Dent 2014; 42:677-83.



3D Printing





Bakhari, S, et al. Three-dimensional printing in contemporary fixed prosthodontics: a technique article. J Prosthet Dent 2017; 7(8):1-5.



Resin Tray/Tank



Build Platform







Evaluation & Decision Making

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Lithium Disilicate Milling













Pressed Lithium Disilitate



Nakamura, K, et al. Zirconia as a Dental Implant Material: A Systematic Review. Int J Pros 2010; 23:299-307

Biocompatible

Promotes Cell Adhesion and Proliferation Minimun Thickness = 0.5 mm

Soon, G, et al. Review of zirconia-based bioceramics: Surface modification and cellular response. Ceramics International 2016; 42:12543-12555.





























Evaluation & Decision Making

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Technology	Company	Positives	Negatives	Cost	Yearly Fees
CBCT					
IOS Hardware & Software					
Facial Scanner					
Design/Planning Hardware & Software					
Lab Scanner					
Mill					
3D Printer					
Sintering Oven					
Glazing Oven					

Considerations

- ✓3-5 Year Lifecycle & Payoff
- ✓Open System for Future Expansion & Flexibility
- ✓ Speed, Accuracy, Reliability, & Support
- Reduction in Supply, Laboratory, & Delivery Costs
- ✓ Develop a More Efficient Workflow & Archival System
- ✓ Faster Laboratory Turnaround Time

Technology	Cost	Monthly Payment	Total Payment
Pota	\$40,000 S	t = 100 10	7 3488
Mill	\$40,000	\$1190	\$42,836
Mont	they.ofa	yment = .	\$2,9%
3D Printer	\$10,000	\$297	\$10,708

Payments Based on 3 Yr Lease at 4.5% Annual Interest



ROI Calculation

 $ROI = \frac{Net Profit}{Total Investment} X 100\% = \frac{\$ 15,312}{\$ 107,088} X 100\%$





IT Company

Technology Consultant Cyber Security & Back Up Systems Hardware & Software Maintenance

HIPAA Compliance







Support & Training

- ✓ Initial In-office Training
- Phone, Online, &
 Remote Control Support
- Continuing Ed & Internet Learning Videos





Remote Control Support






mplementation








































































Kim, KR, et al. Conventional open-tray impression versus intraoral digital scan for implant-level complete arch impression. J Prosthet Dent 2019; 122(6):543-549.





















Take Home Messages

Do not feel pressured to convert to digital.
Thoroughly research & evaluate the technology before any commitment.
Steep digital learning curve...precede slowly and steadily.
Learn to delegate and develop a team concept.

Digital dentistry will not replace dentists. Dentists who embrace digital dentistry will replace those who don't.





