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## Dear Fellow Dental Technicians,

n this current issue of the focus magazine, I would like to address something which has been in my heart for a long time. As my last president's message mentioned, we are quickly moving into digital technologies. These technologies are exciting and offer opportunities for everybody to expand and grow their business in areas not possible before. However, we have to remember that this digital move happens not just in our dental laboratories, it happens industrywide. Therefore, now more than ever, we should concentrate on the team approach between our clients, the clinicians, and our industry partners.

As always, communication is key. Every case should be done with the necessary team approach, whether it be implants, removable or fixed. We are not working for our client or serving just as a vendor, we are working together to create a new smile and improve patients' quality of life.

Our modern technologies and materials require instant and constant contact with our clients so that outcomes for our patients are precise and predictable.

This starts when we receive a new case and begin treatment planning. It continues with the execution of that plan and delivering the completed restoration to our clinicians. We should follow up with cases so that our team partner realizes that we care. The old saying, "no news is good news," doesn't count anymore.

If we get constant feedback, we can improve and make the team experience better. As an example, at my laboratory we are utilizing email, telephone and face-to-face meetings online via FaceTime or Skype. This allows me to communicate directly and instantly with clients and patients worldwide. This is crucial because our modern technologies and materials require instant and constant contact with our clients so that outcomes for our patients are precise and predictable. These technologies allow us to be involved in a case from day one until the case is finished.

In that communication and partnership vein, the FDLA board, is improving and strengthening our relationship with the Florida Dental Association (FDA), so we can continue a team approach on an organizational level. Together we are stronger and are more capable of things we would not be just by ourself. Supporting each other in statewide conferences, in new regulations, in informing about unlawful

or non-registered wrong doings on either side and many more.



I think one of the most impactful activities the FDLA board took part in this year was to visit Tallahassee as a board, where we had faceto-face discussions with FDA and the Florida Department of Health, Board of Dentistry to discuss the team approach to improve our state of the industry. I am very proud to have been able to be a part of this.

Alexander Wünsche, CDT, ZT President, Florida Dental Laboratory Association

#### FDLA Mission

Serving Florida's dental technology professionals as a valued part of the dental team enhancing oral health care.

#### FDLA Vision

Advancing the individual and collective success of Florida's dental technology professionals in a changing environment.

#### Values Statement

FDLA's board of directors and professional staff are guided by these principles:

- Integrity
- Leadership
- Recognition
- Safety
- Acceptance
- Innovation

#### focus

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## 6 Labs Embrace 3D Printing:Key Findings from the NADL3D Printing Survey

10 Current Dental Laboratory Market Trends And Their Impact on DSOs

## 18 Step-by-Step: Predictably Beautiful Coloring

By Al Fillastre, CDT

## 22 Tooth Preparation and Creating Options for the FRPD

By Bryan Johnson

#### 24 The Hub

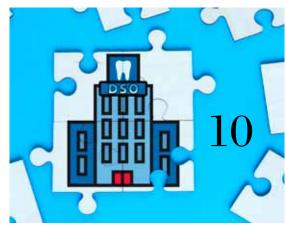
FDLA news and recent happenings.

#### 28 Zero In

FDLA calendar and classifieds.

#### 30 Focal Point

A Dentist's Perspective







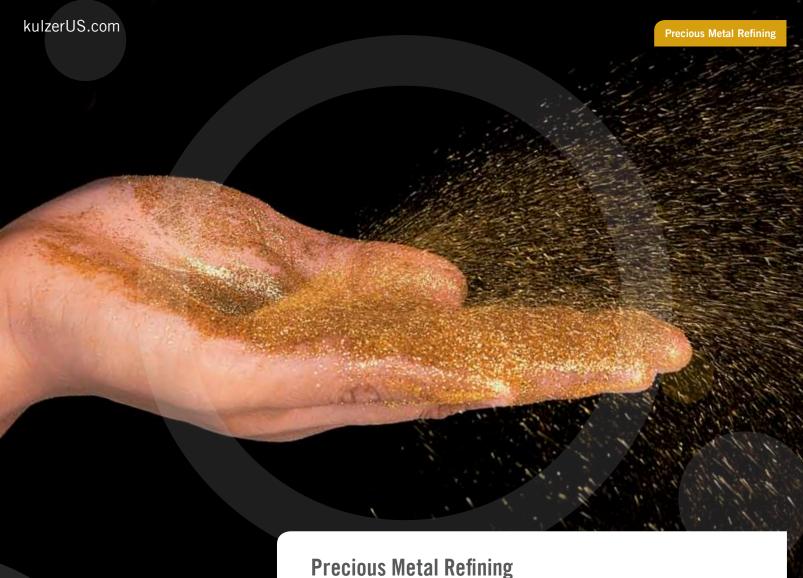
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## Labs Embrace 3D Printing:

## Key Findings from the NADL 3D Printing Survey

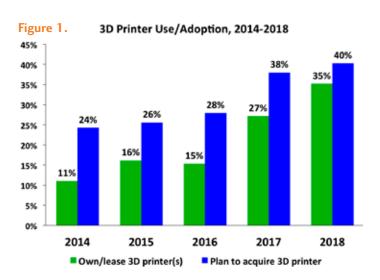


Figure 2. 3D Printed Applications/Products

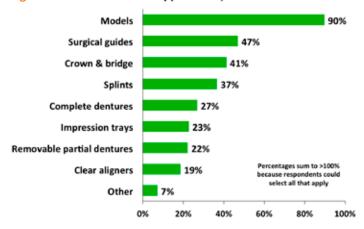
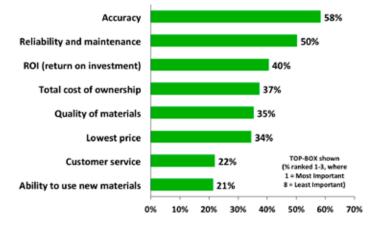


Figure 3. Key Purchase Criteria for 3D Printer Used Most



igital additive manufacturing, known more commonly as 3D printing, is the process of creating objects from three-dimensional digital models by building up successive layers of material. 3D printing has gained significant traction within the dental laboratory market over the last few years.

According to data from NADL's broader in scope, annual Materials and Equipment Survey, the percentage of dental labs using 3D printers increased from 11 percent in 2014 to 35 percent in 2018. Among labs without 3D printers, those planning to acquire one within the next one to five years increased from 25 percent in 2014 to 40 percent in 2018. The 2019 Materials & Equipment Survey data collection is currently in progress and results will be published in the fall of 2019.

To learn more about why dental laboratories purchase 3D printers, how they use them, and their level of satisfaction, NADL and Valmont Research conducted a special nationwide survey this summer, focused solely on 3D printing.

Invitations were sent by Valmont Research to NADL members, CDTs, and CDLs, and responses were collected during a three-week period during June and July of this year. The response rate was 8.3 percent, and 240 labs reported regular 3D printer usage.

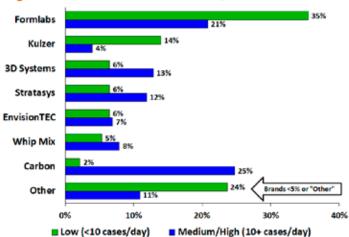
#### Digital Manufacturing is the New Normal

Among labs that use 3D printers, on average, 54 percent of their production processes are digital and 46 percent are analog. One-third of labs using 3D printers are digital dominant with digital processes comprising 75-100 percent of their total production.

Digital production is not only widespread, it's on the rise: 64 percent of labs with 3D printers anticipate their digital manufacturing will increase substantially over the next three to five years, and another 30 percent anticipate their digital manufacturing will increase moderately. Only 6 percent think their digital manufacturing will stay the same and none anticipate that it will decline.

Part of the growth of 3D printing is attributable to its wide range of applications. Labs surveyed use 3D printers to create models, surgical guides, crown and bridge, splints, complete dentures, impression trays, removable partial dentures, clear aligners, and more.

Figure 4. 3D Printer Brand Used Most by Case Volume



#### The Business Case for 3D Printers

Respondents identified the top three business drivers for selecting their preferred brand of 3D printer as increase productivity, create new business opportunities, and improve quality and consistency, in that order. When asked to rank key purchase criteria for selecting the 3D printer brand their lab uses most, the top factors were accuracy, reliability and maintenance, and ROI (return on investment).

Finding the right brand for the workflows labs want to support, however, is not simple. Many labs report frustration with 3D printers as they increasingly depend on them. There are also many brands to choose from; the survey included 19 different 3D printer brands and another 14 brands were identified by respondents.

Segmenting labs by case volume revealed substantial differences in brand preference. The leading brands among low-volume labs (up to ten 3D printed cases/per day; 48 percent of respondent labs) are Formlabs and Kulzer. Among medium- and high-volume labs (ten or more 3D printed cases/per day; 52 percent of respondent labs), the leading brands are Carbon, Formlabs, 3D Systems, and Stratasys.

Figure 6.

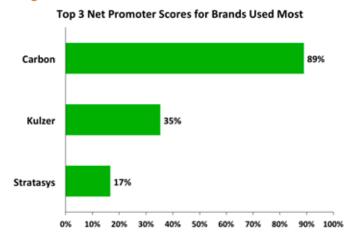
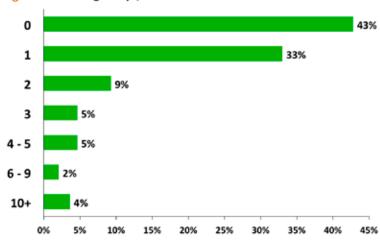


Figure 5. Average Days/Month 3D Printer Has Downtime



#### The Hidden Costs of 3D Printers

When it comes to technology, the bane of dental lab owners and managers is unplanned downtime, maintenance, and other interruptions. More than half (57 percent) of respondent labs report that their 3D printer(s) average one or more days of downtime each month, and 11 percent average four or more days of downtime each month.

#### **Customer Satisfaction**

To understand how well each 3D printer brand meets labs' needs, the survey asked respondents to rate their preferred brand to calculate the Net Promoter Score (NPS), a leading measure of customer satisfaction that can range from -100 to 100. Scores well above zero are considered satisfied, scores well below zero are considered unsatisfied, and scores close to zero are considered neutral.

On average, respondents were neutral on their satisfaction, with an overall NPS of 2.1—just slightly above zero. The three that scored highest on customer satisfaction are Carbon, Kulzer, and Stratasys with Carbon coming out on top with an 89 Net Promoter Score.

#### **Key Takeaways**

The results of this survey make clear that labs adopt 3D printing to improve their bottom line by increasing productivity, creating new business opportunities, and improving quality, consistency, reliability, and turnaround time.

With more than 30 brands of 3D printers included or identified in this survey, the marketplace is crowded and product offerings cover a wide range and satisfy labs' needs to varying degrees. Some 3D printer brands compete on price and are best suited for small, low-volume labs. Other 3D printer brands compete on quality, reliability, speed, and uptime, providing medium- and high-volume labs the ability to scale up their production. The adoption of 3D printing requires labs to learn and master new techniques, materials, and processes, and without sufficient training and support, labs are unlikely to get the most out of their investment.

Editor's Note: Information provided by NADL.



## Are You In Compliance?

#### Did You Know:

- ✓ FDA regulates dental laboratories
- FDA has a right to inspect all dental labs
- ✓ Dental labs that outsource to foreign labs must register with FDA
- If you manufacture sleep apnea devices or anti-snoring devices, then you must register with FDA
- A contract manufacturer must register and pay an annual fee to FDA
- ✓ All dental labs should have a documented quality system
- ✓ CAPA (Corrective Action) is required and helps you reduce remakes
- You must formally evaluate your vendors and subcontractors for compliance to regulatory requirements
- ✓ You must be able to trace your patient contact materials in the event of recall
- ✓ You must conduct an internal audit of your quality system at least annually
- ✓ You must document all complaints from dental clients
- ✓ You must implement an effective corrective action process for complaints
- ✓ You must comply with FDA to become DAMAS certified

#### A Quality System Must Cover:

- ✓ Review of Non-conforming product
- Assignment of Management Responsibility
- Corrective and Prevention Action procedures
- ✓ Defining of Purchasing Controls
- ✓ Control of Labeling and Packaging
- ✓ Identification and Traceability of Patient Contact Materials
- ✓ Handling, Storage, Distribution & Installation of materials and finished items
- Production and Process Controls
- Records retention and control
- Documented Final Quality Control

#### How To Reduce Waste In Your Lab

- 1. Develop preventive maintenance schedules for all equipment critical to the manufacturing process.
- Document repair records and review the records regularly to determine if equipment should be retired and replaced.
- 3. If equipment requires calibration, ensure that it is properly calibrated.
- 4. Keep areas where equipment is located clean and free of debris.
- 5. Train workers on proper use of the equipment and provide operating instructions at point of use. •



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46%	47%	48%	48%	50% Incisal 47% Cervical	50%
High Strength	High Strength High Translucency	High Strength Super Translucency	High Strength Super Translucency	High Strength Ultra Translucency	Ultra Translucency
Crowns	Crowns	Crowns	Crowns	Crowns	Crowns
Small Bridges	Small Bridges	Small Bridges	Small Bridges	Single Unit to 3-unit Bridges	Up to 3-unit Bridge
Large Bridges	Large Bridges	Large Bridges	Large Bridges		

Patent No. US 10,238,473 US 9,649,179 US 9,668,837 US 8,936,848

Patent No. US 10,238,473 US 9,649,179 US 8,936,848















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## CURRENT DENTAL LABORATORY MARKET TRENDS



he dental lab industry has been rapidly changing over the past two decades. Firstly, the number of dental laboratories has declined dramatically. The National Association of Dental Laboratories (NADL), using data from the U.S. Department of Labor and Bureau of Labor, reflects a 22 percent decline in the number of U.S. dental labs with multiple employees—from 7,800 in 2004 to 6,100 today. However, the largest drop has been in the category of sole-proprietor labs.

"There was a time when there were almost 5,000 one-person dental laboratories run by sole proprietors. Not all of those individuals have left the profession, some were acquired by other small to mid-size laboratories, or decided to become

an employee of another laboratory. However, there were certainly a number of the one person laboratories coming out of the last recession that closed their doors due to economic conditions," said NADL Executive Director Bennett Napier, CAE.

Today, the NADL estimates there are only a few hundred sole-proprietor labs remaining. This reduction, mostly in smaller labs, is due to several factors:

- An aging ownership demographic (much like demographics we see with dental providers) has led to an increasing number of lab sales and consolidations.
- The proliferation of new technology required many lab owners to make capital expenditures to provide the new products and materials their clients were demanding. If lab owners decided not to make these capital investments, they chose to exit.
- Technology also increased competition by making it easier for dentists to work with labs anywhere in the world, as opposed to working with a local lab.
- 4. The economic recession in the late 2000s, coupled with the rapid rise in the price of gold, led to a rise in the amount of work sent to offshore laboratories. That percentage of work done offshore by laboratories peaked at 45 percent a few years ago. While it has come down, around 35 percent of lab work sold in the U.S. still comes from outside the country.

While the number of dental labs has decreased, the number of U.S. lab workers has seen only a slight decline—from around 47,000 in 2001 to 46,000 in 2018. Even though there are fewer dental laboratories, demand for services has increased and dental laboratories have been able to meet demand through increased capacity due to the integration of technology, such as CAD/CAM systems, digital files received from IOS, 3D printing, and more.

The changing dental laboratory industry has also impacted practitioners. Now more than ever, dentists (whether in a small practice or DSO environment) must be aware of the quality of their dental labs.

"Traditionally, general dentistry practices tended to do business with a local lab in order to get personal service. This led to a high number of small labs around the country that provided service to practices in close proximity. Often, the owner also was the lead technician or even the only technician. The utilization of technology in domestic labs, combined with new, man-made materials, has meant greater opportunity for

American dentists to get competitively priced products domestically," said NADL President and Apex Dental Laboratory Group, Inc., Co-Founder, Vice President and CEO Travis Zick.

In the past, dental labs were often viewed as order takers or prescription fillers, much like a pharmacy.

"The role of today's dental lab is so much different. The service and value a lab can bring are much higher than it has ever been," said Zick. "For example, labs today can better assist with complex case planning. With the help of technology, we are able to work collaboratively through a full-mouth case with our clients to ensure a positive outcome at each step of the process—and much more quickly than in the past, when every step was done by hand."

#### **TECHNICAL TRAINING**

Since the 1970s, more than 27,000 dental technicians have graduated from formal dental laboratory technology schools. In 1992, there were 56 CODA-accredited dental technology programs across the country. Today, the U.S. has only 13 accredited dental laboratory technology programs. Accredited programs can only produce a graduating class of around 300 students each year.

Reversing the trend of school closures is extremely important to the future of the lab profession. In order to be successful in the dental relationship, a comprehensive foundation of knowledge is necessary, now more than ever. As a byproduct of school closures, dental laboratories have worked to create in-house training programs for new hires.



THE NUMBER OF U.S. LAB WORKERS HAS SEEN ONLY A SLIGHT DECLINE—FROM AROUND 47,000 IN 2001 TO 46.000 IN 2018.

76%
OF LABS SUPPORT
MANDATORY
REGISTRATION

NUMBER OF
STATES REQUIRING
TECHNICIAN
LICENSURE

NUMBER OF STATES
REQUIRING LAB
OR TECHNICIAN
REGISTRATIONS

82%
OF LABS SUPPORT
1 CDT REQUIREMENT

OF LABS SUPPORT

MATERIAL & POINT OF

ORIGIN DISCLOSURE



#### **TECHNOLOGY TRENDS**

The proliferation of technology, both in terms of dental materials and equipment in dentistry and even more on the laboratory side, makes it crucial that there is open and consistent communication between the dentist and dental technician.

Dental technicians, by and large, work closely with dental manufacturers on the development of new restorative materials as well as the capital equipment that allows manufacturing of the substructure or the full restoration to meet the dentist's need for the patient. Due to this dynamic, technicians and labs are poised to offer dentists expert guidance on material selection and help filter through the sales pitch on which brand is best to meet the patient's need.

In addition, the rise in acceptance of digital impression systems has markedly improved the restorative outcome. In study after study, the detail of the digital file has facilitated both a better restoration and turnaround time. Remake percentages typically go down significantly both for the dentist and dental technician. This saves money, chair time and improves patient satisfaction.

It is important to share some statistical outcomes when dental laboratories and dentists use ISO systems:

Research from 2012 found non-digital GPs used between three to four labs (anterior, posterior, implants, esthetic cases). In comparison, IOS Digital GPs used between one to two labs for several reasons:

- Enhanced communication
- Consistency in impression receipt
- Consistency in returned restorative products and orthodontic appliances
- Consistency in price across multiple products and services
- Ability to shop a more complete digital portfolio of products and services
- Simplicity

Multiple research studies, including those published by the National Association of Dental Laboratories, indicate dental laboratories are one of the four primary resources for trusted information by dentists on materials and products:

- Peers/colleagues
- Lab Technicians
- Trusted industry insiders/KOLs
- Journals, publications, social media from reputable sources

Dental laboratories were early adopters of digital technology, and mass utilization of new technology has occurred much faster in the dental laboratory market compared to the clinical setting. According to NADL research, 80 percent of the laboratory industry uses CAD/CAM as a primary manufacturing method for a wide range of products and services. 3D printing is a newer tool, but it has increased rapidly over the past two to three years with the introduction of new printing systems, which are more reliable and accurate than those used in the past.

Because of the advantages of additive manufacturing, the integration of 3D printing by the majority of the dental laboratory market will likely occur in a 10- to12-year period, as compared to the 25 years it took for broader adoption of CAD/CAM.



MASS
UTILIZATION
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MARKET
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THE CLINICAL
SETTING.

### NUMBER OF U.S. DENTAL LABORATORIES

2001: **12,800** 2019: **6,500** 

CODA ACCREDITED DENTAL TECH PROGRAMS

1992: **56 PROGRAMS** 

2019: **13 PROGRAMS** 

#### REGULATION OF LABORATORIES/TECHNICIANS

In a July 2008 American Dental Association survey of its members on dental laboratory issues, more than one-third of dentists indicated that they believed dental technicians and laboratories are regulated or licensed. In fact, there are no states in the U.S. where technicians are required to be licensed. Only six states mandate any baseline technical competency for technicians, another five require the dental laboratory to register with the state. Florida, Kentucky, South Carolina, Washington, and Texas set the baseline competency and continuing education requirements for dental technicians based on the certified dental technician (CDT) designation administered by the National Board for Certification in Dental Laboratory Technology. This is the only recognized certifying body for dental technicians by the ADA.

With minimal regulation, and few training options available today, dental groups and DSOs need to know and understand who is producing their restorations. The person who served you a sandwich at lunch yesterday could very well be the "technician" producing your patients' dental restoration today. For this reason, it is increasingly important that technicians prove their knowledge by pursuing and obtaining a Certified Dental Technician designation from the National Board for Certification. Dental groups and DSOs can and should seek to work with dental laboratories and technicians who have voluntarily chosen to verify their skills and knowledge against a national standard.

The National Association of Dental Laboratories is continuing to work with state regulatory agencies throughout the U.S. to set minimum operating standards within dental practice acts. Just this year, Washington state passed legislation introducing registration and certification requirements for dental laboratories doing business in the state.



AS THE NUMBER
OF DSOS AND
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CONTINUE TO
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MARKET.



As an industry, the NADL supports increased regulation and registration. In fact, in response to a NADL survey:

- 76 percent of members support mandatory registration requirements.
- 82 percent support the requirement to have at least one CDT on staff.
- 92 percent support a requirement for material and point of origin disclosure from the lab to the dentist.

ADA policy supports registration of dental laboratories in state dental practice acts, as well as material and point of origin disclosure by dental laboratories. Furthermore, ADA policy supports the value of dental technician certification as it is deemed crucial for dentists to achieve the best patient outcomes. More states should consider proactive legislation that results in the preservation of a qualified domestic dental laboratory marketplace.

In addition to state regulatory changes, the dental lab profession has experienced an increasing amount of interest from the U.S. FDA over the past two years due to the increased use of technology in the laboratory.

Traditional dental laboratories have been exempt from registering with the FDA as medical device manufacturers for more than 30 years. The only exceptions have been those laboratories that directly import work from overseas, and labs who manufacture certain types of oral appliances (such as sleep apnea or anti-snore devices). However, due to the increasing use of digital technology in production, the FDA is beginning to view dental laboratories in a similar light to other medical device manufacturers.

In 2018, there were over 20 FDA audits of dental laboratories conducted in 14 states. There is a real possibility and likelihood that more systems and products coming out of dental laboratories in the future will fall outside the scope of the registration exemption, which would require labs to register with FDA.

## IMPACT ON THE FUTURE OF DENTAL GROUP PRACTICES AND DENTAL SUPPORT ORGANIZATIONS

As the number of DSOs and group practices continue to rise, there is a growing need for qualified dental laboratory partners in the market. This is especially critical with young clinicians, many of whom practice in the DSO space. According to the ADA Health Policy Institute, nearly 18 percent of all dentists between the ages of 21-34 are affiliated with a DSO. A good dental laboratory partner can help support DSO initiatives through collaboration and create a strong partnership that will result in fewer remakes, quicker turnaround times and growth in services delivered.

While there are fewer labs fulfilling the increasing demand for services through increased capacity, there is also a growing reliance on the lab itself as a trusted partner and advisor to the dentist, especially with the shifting demographics in dentistry.

At the same time, the rise in acceptance of treatment options beyond single unit restorations will continue to raise the value of the laboratory and technician as a partner and resource. Again, this is especially true for younger clinicians.

The number of case consults, digital plans, digital smile designs, and other areas of support for large cases will continue to drive growth in the dentist laboratory partnership.

Consumers have more awareness of treatment options, now more than ever. To meet patient demands and expectations, dentists and management within a DSO setting need access to qualified laboratory partners who not only provide single-unit restorations, but also support the clinicians and foster long-term partnerships.

Editor's Note: This article first appeared in Group Dentistry Now (https://groupdentistrynow.com/current-dental-laboratory-market-trends-their-impact-on-dsos-part-2-regulation-competency).



IN 2018, THERE WERE OVER 20 FDA AUDITS
OF DENTAL LABORATORIES CONDUCTED IN 14 STATES.



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## Step-by-Step: Predictably Beautiful Coloring

s zirconia's popularity continues to increase, it is becoming more and more difficult to navigate the ever-expanding variety of products on the market. It seems that every time one turns around, a new type of zirconia emerges with stellar promises of just how great it is.

I truly believe that confusion surrounding not only the proper use of coloring liquids, but the huge variety of products on the market has caused people to throw their hands up in despair and run to what seems like a much simpler approach with pre-shaded and/or layered zirconias. While I do understand this, these materials bring a slew of other challenges, including large inventory requirements, shade segregation, and nesting issues. Not to mention being stuck with someone else's interpretation of shade and the inability to customize shade or effects without excessive staining, which is another issue in itself.

Figure 1.

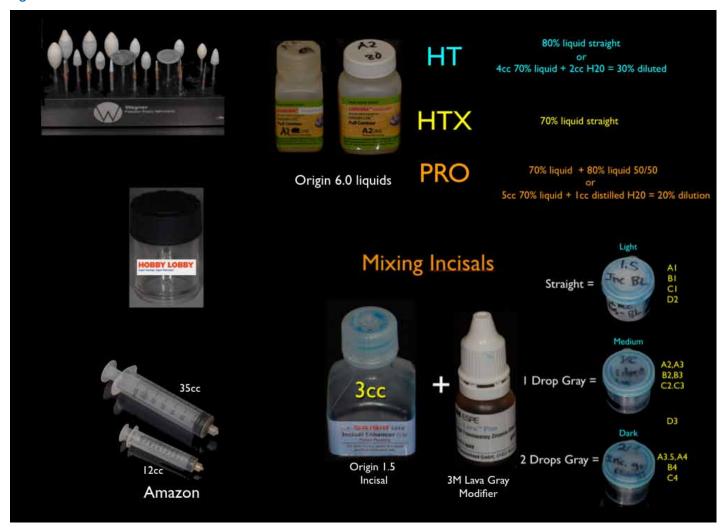


Figure 2.





In this article, I hope to demystify the coloring process for white zirconia and offer an approach that is easily understood as well as fast and effective. As the scope of this article is quite narrow, I will only say that an exhaustive study was done to evaluate the five most popular coloring systems and techniques and what is presented here is the result of that testing.

There are three basic types of zirconia available today developed in the following order: original HT, anterior translucent, and the new hybrid class that can be best described as a blend of the first two. For the WhipMix line, these are named HT (1255mpa, most opaque), HTX (670mpa, most translucent) and PRO (1140mpa, in between) respectively. It should be understood that as the translucency of zirconia increases, the concentration of the coloring liquid must also increase to achieve the desired shade. Because of its superior strength coupled with very natural translucency and value, the PRO zirconia has become the only product I now use to address any situation from single monolithic, layered anterior, and hybrid abutments, to Maryland Bridges and will be the focus of this article.

For coloring the PRO material, the Origin 6.0 70 percent liquids slightly diluted or the 70 percent + 80 percent mixed 50/50 gave the

best and most consistent results across the 16 shade Vita scale. The reason I prefer the 70 percent concentration is that I can use it for any of the three types of zirconia by simply changing the way I dilute it with distilled water.

Figure 3.

Apart from shade, achieving a natural incisal blend is paramount. While Origin does offer a line of incisal liquids, they did not give me what I was looking for. Therefore, I blend my own incisals by mixing the Origin 1.5 incisal with 3M Lava Gray modifier in varying amounts to achieve the required value.

## Step-by-Step Coloring Technique for shade A2

Green state finishing will not be discussed here, but suffice it to say that it is extremely important to do this well to avoid grinding on post sintered zirconia as much as possible.

For any basic shade, we will need four different liquids. While the specifics vary slightly for anteriors vs. posteriors, and singles vs. bridges, the concept is the same. This is a generic approach and you should feel free to vary it to address your particular situation or philosophy.

An
exhaustive
study was
done to
evaluate the
five most
popular
coloring
systems and
techniques.

Figure 4.



Figure 5.



#### STEP ONE: Chromatized Areas— One Shade Darker

- 1. Add one coat around the margin (inside and out).
- 2. Add multiple coats underneath pontics.
- For the interproximal embrasures, it's best if it runs into them while coloring underneath pontics.
- 4. In the buccal (lingual too, if desired) include a developmental groove on molars and lingual fossa on anteriors.

### STEP Two: Lateral Segmental Color—Body Shade

- Add one coat up the facial center (anterior) or buccal cusp height of contour (posterior) from the margin to incisal.
- 2. If a slight border is desired, add a touch on the very incisal edge (carefully).

### STEP THREE: Apply Appropriate Incisal

On facial and buccal surfaces, always utilize vertical brush strokes to keep application uneven. Straight lines should not be applied.

#### For Anteriors:

- Move along facial from mesial to distal extending as far down the facial as appropriate, but skip over the lateral segmental color on the first coat. Typically, it is appropriate to go a bit further down on the mesial and distal corners.
- 2. Continue around the proximal onto the lingual. Go further down the marginal ridges and across the incisal from one-fourth to one-third.
- Apply a second coat exactly the same way except this time you should cover the lateral segmental color. Again, use vertical strokes to avoid a horizontal line. The sloppier, the better.

#### For Posteriors:

- Work around occlusal table applying incisal on ridges only, avoiding fossae and developmental grooves.
- Once you get back to where you started, apply the incisal on buccal and lingual cusps as far gingivally as appropriate with vertical strokes and avoid straight lines.
   Do not add over the lateral segmental color on the first coat.
- 3. Apply a second coat on the occlusal table exactly like the first coat on only the ridges.
- Continue around buccal and lingual cusps just like first coat, however, cover the lateral segmental color this time.
- 5. Apply occlusal warmth one or two shades darker than the body onto the occlusal. Let the liquid run from the tip of the brush into the grooves avoiding the ridges as much as possible. Apply three to five generous coats. It takes more than you think to get a noticeable effect.

### STEP FOUR: Dip in body Color A Maximum of Five Seconds

- 1. On bridges, dip even quicker to avoid over chromatizing the pontics. This way, you do not need any chroma inhibitor.
- Be sure to hold units with plastic tweezers so inside of units fill. Never let any metal touch the liquids because they are quite acidic and will dissolve metal into themselves. This will cause greying over time.
- Also, make sure you have an appropriate container already filled with a body color that will allow full immersion of the bridge.

#### STEP FIVE: Drying

 Dry the units in a drying oven or under a heat lamp then sinter per manufacturers instructions. I do not approve of fast fire cycles as they diminish both the physical properties and optical qualities of the zirconia, but to each their own.

Figure 6.



Figure 7.



#### About the Author:

Al Fillastre, CDT, is the owner of Ceram-O-Arts Dental Laboratory in Lakeland.

Editor's Note: This article originally appeared in Inside Dentistry Today

## Tooth Preparation and Creating Options for the FRPD

n today's fast-paced world of dentistry and the rush to finish, for the eager patient, can result in longterm failure in some cases. Even with the best design given, we as technicians are only bound by our limitations of an un-prepared tooth—or teeth in some cases. The FRPD is widely used because of its unique ability to ride with the tissue. However, if proper tooth preparation is not performed, it can lead to a host of problems from premature wear of the appliance to inadequate clasping and general loss of support to provide a necessary function.



We have all suggested numerous scenarios for providing retention, making undercuts, adding composite, even going as far as making a crown for rests and undercut. In some cases, that's all that is needed. The crown route is the way to go as we have control of undercuts and survey area and guide planes. What I am about to tell you will be a foundation for consideration for any avenue of treatment. How do we get there? There are a few things that are a must:

- 1. Creating the survey zone and circumferential guide plane.
- 2. The amount of undercut and how it affects support.
- 3. Mutual reinforcement.

#### Creating The Survey Zone and Circumferential Guide Plane

An enamelplasty is performed right at the survey line of 2mm, around the entire tooth to make the circumferential guide plane. This will create a survey zone or a 2mm window of contact for the major connector and clasp. This will ease the path of insertion, enlarge contact area for the clasps, reduce chairtime, and increase support and retention. Some of the cases are so unbelievably retentive when this technique is used that a more minimalistic clasp approach can be used, therefore, increasing esthetics.

### The Undercut And How It Affects Support

A lot of our clients prescribe the appliances when they see a lot of undercuts, which is fine, but how much tooth contact will there be on numerous surfaces? Modifications need to be made to the clasp connector and other avenues of support should be taken into account.

#### **Mutual Reinforcement**

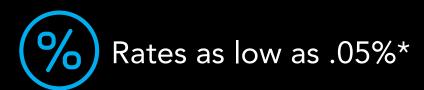
In a nutshell, mutual reinforcement is the concept of tying the major connector to the clasp. Some examples include continuous clasps, continuous circumference clasps and the clasp rest combination. This clasp combination will need some help (if a diastema isn't present) from your client. A small cut will need to be made to cross the table and the clasp tied to the connector. This is especially useful if rests are needed and will further stabilize the abutment.

Using this concept can make your appliances more stable, retentive and give new thought for design and function. •

#### **About the Author:**

Bryan Johnson is vice president and removable department manager at Sterling Dental Arts in Merritt Island. He is a second generation laboratory technician with 23 years experience and is the lead CAD/CAM laboratory designer.

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#### The Hub

#### FDLT Race for the Future 6.0

The Foundation for Dental Laboratory Technology's (Foundation) sixth annual Race for the Future took place in conjunction with the Chicago Triathlon in Chicago, Illinois. The clashing Lake Michigan waves may have put a stop to the swim portion of the triathlon, but it certainly did not stop the passion amongst the 35 participants racing for the future of the dental laboratory technology profession.

Between sponsorships and individuals creating a friendly competition with their friends and colleagues as they ask for funds in support of their race participation, the Foundation was able to bring in more than \$70,000 this year. With the successful track record of this incredible fundraiser, the Foundation is ecstatic to announce that the Race for the Future 7.0 will be taking place in conjunction with the 2020 Chicago Triathlon.

For additional race details and photos, take a look at the October 2019 JDT.





#### Washington Governor Signs Bill Creating Dental Lab Registry

In April, Governor Jay Inslee signed the WSDLA Dental Laboratory Registration Bill into law. This new law creates a dental laboratory registry within the Washington Department of Health and requires that:

All dental labs servicing dentists in the state of Washington must:

- 1. Register with the Washington Department of Health.
- 2. Disclose to the dentist materials used in the device.
- Disclose to the dentist the city, state and country where the device was made.

In addition, effective Jan. 31, 2021, the owner or an employee must annually complete 12-hours of NBC-approved continuing education. By Jan. 31, 2025, the owner or an employee must be a Certified Dental Technician in good standing with the National Board for Certification.

The Washington State Dental Laboratory Association is working closely with the Washington Department of Health determining how this bill will be implemented and to help ensure the responsibilities of laboratory owners are easy to implement and comply with this new law.



## FDLA meets with FDA and Dept. of Health, Board of Dentistry

Members from the FDLA Board of Directors recently met with representatives from the Florida Dental Association (FDA) and the Florida Department of Health, Board of Dentistry to discuss public policy and patient safety issues. We thank the leadership from both of these organizations for their support and continued collaboration in providing quality care to patients across Florida.





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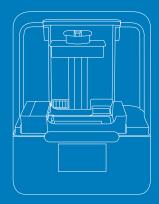
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#### The Hub

#### NBC Announces Transition to Computer-Based Testing for the Written Examinations

The National Board for Certification in Dental Laboratory Technology (NBC) is excited to announce that it will transition its written examinations entirely to computer-based testing with remote proctoring beginning Jan. 1. This decision comes exactly one year after announcing that it would be offering its paper-based written examinations in this new computer-based testing with remote proctoring format in an effort to increase accessibility to its candidates.

"We have had such a positive response to the new computer-based testing option since its launch back in July 2018," said NBC Chair Morris Fucarino, CDT. "Computer-based testing with remote proctoring presents a great opportunity for candidates to complete their CDT or RG written examinations online at a location, date and time of their choosing."

NBC is continuing its partnership with Assessment Systems Corporation to offer the CDT and RG written examinations online using a third-party remote proctor. It will also continue to offer its current paper-based format at volunteer locations until the end of 2019 as long as there are at least 5 candidates at that location.



"With paper-based testing, candidates had to rely on volunteer host sites to be able to schedule a written examination and that significantly limited people's opportunity to test," said NBC Vice Chair, Dennis Urban, CDT. "With computer-based testing, someone can test 24 hours a day, 365 days a year."

For additional information on becoming a CDT and the new computer-based testing option for the written examinations, please visit https://nbccert.org/certificants/certified-dental-technician/cdt-application.cfm or contact NBC by email at certification@nbccert.org or by phone at (800) 684-5310.

To read more about this transition, please visit http://nbccert.org/?xl9oy7



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CDTs in good standing can use their CDT documentation to renew their laboratory license. When they log into your account on CE Broker, click on Report Exemption and follow the directions for uploading a copy of their current CDT card.

If a laboratory does not have someone who is a CDT, they will still have to abide by the previous rules: 15 hours of general credit, one hour of laws and rules as well as two hours of prevention of medical errors. Please log onto www.CEBroker.com to verify you have the following credits:

REQUIRED SUBJECT AREA	REQUIRED NUMBER OF HOURS	IMPORTANT INFORMATION
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Medical Error	2	Must be Board Approved
Laws and Rules	1 to 3	Course can be a minimum of one hour or up to three hours. Coursework must be based on laws and rules that govern dental laboratories and dental technicians.

Once you have received a "complete" status on your CE Broker account, you are now ready to renew your license through the Florida Department of Health, Board of Dentistry.

#### Step 2:

- 1. Go to www.flhealthsource.gov and click the Account Login button in the top right hand corner of the page.
- 2. Click the Returning Business Establishment/School button.
- 3. Enter your User ID and Password, then click the Login button. Please use the Forgot User ID? or Forgot password? link if you do not recall your user ID or password.
- 4. Confirm or update your MQA Services Account email address, then click the Continue button.
- 5. You are now in the Dashboard. During renewals, a Renew My License option will populate no later than 90 days prior to your license expiration date. (Note: If you do not see the Renew My License option, please check back at a later time.)

If you need assistance with the registration process, please contact the Florida Department of Health, Board of Dentistry directly at MQAOnline Service @FLHealth. gov or (850) 488-0595.

More information regarding license renewals can be found here: https://floridasdentistry.gov/renewals/dental-laboratory/

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## A Dentist's Perspective

Recently, several Florida Dental
Association staff members stopped by
the FDLA headquarters. Afterward, we
followed up with FDA President Rudy
Liddell, DMD, to chat about oral health and the
state of dentistry in Florida.

What did you learn about the dental laboratory technology community and profession that you did not know already from serving on the NBC board?

"I look at digital workflow in the dental laboratory world like the advent of digital photography."

When you serve alongside the leaders of an organization, the thing that impresses the most is how passionate these individuals are regarding their profession. Before serving on the NBC trust, I did not realize that there was such a group. As I served with the other board members, I realized that their concerns very much mirror our concerns in organized dentistry, retaining current members and recruiting new members.

Long term, what do you think about digital technology and digital communication trends in terms of impact on the dentist/laboratory relationship?

I look at digital workflow in the dental laboratory world like the advent of digital photography. A lot of dentists think that old techniques are more accurate than scanning, but little do they realize that all their PVS impressions are scanned prior to fabricating restorations. I think this was the most eye opening aspect of my service on the NBC trust, just how much of the workflow has gone digital.



Consumer awareness of dental options is growing, what are the best and worst parts of that trend?

As consumer awareness of dental options increases, there are both positive and negative aspects. I have had patients speak about having a tooth removed and replaced by an implant as if having an implant and crown was an inexpensive alternative. Also, with the increased marketing of at-home orthodontic treatment, patients are making risky choices with their health care. I believe the doctor/patient relationship will continue to be critical to patients making wise, well-informed decisions on their dental treatment.

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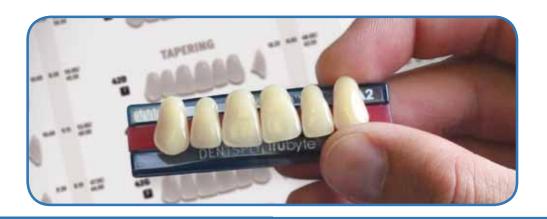
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