EDSA Magazine

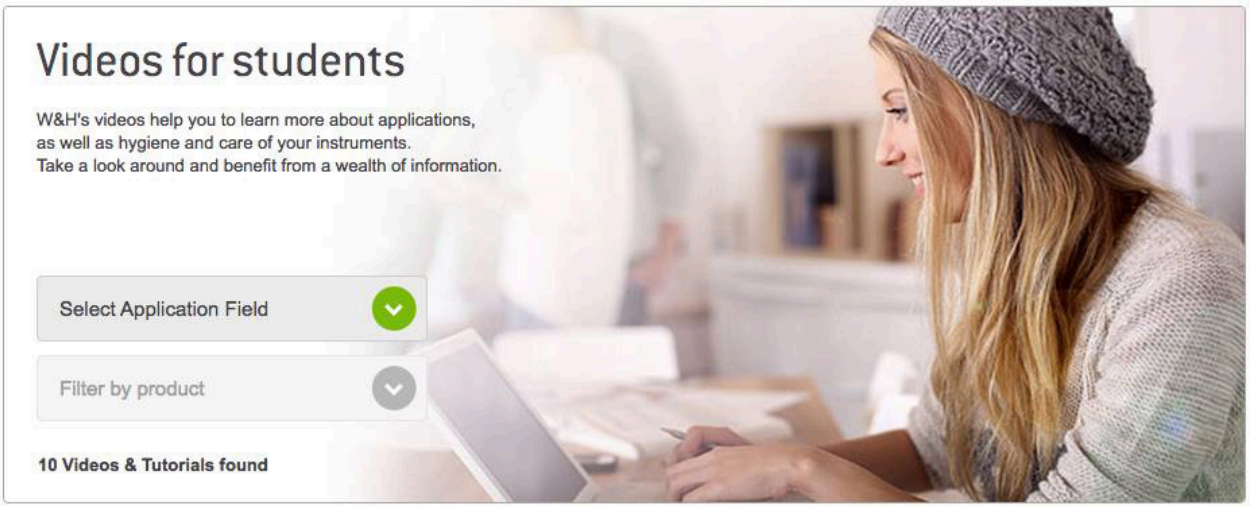
SUMMER 2015

NEW EDUCATIONAL WEBSITE

PEOPLE HAVE PRIORITY

The W&H company has just launched a new educational website, designed for dental students. A full "Whikipedia" of dental terms is available (100,000 references) is available as well as 10 brand new videos. You will learn the differences between instruments, the use of color coding, tips about infection control and much more to come.

This website is designed to be interactive and the collaboration between EDSA and W&H will aim to provide high quality educational material regarding instrumentation. You can contact the training officer training_officer@edsaweb.org for further information to ask for new videos on specific subjects.

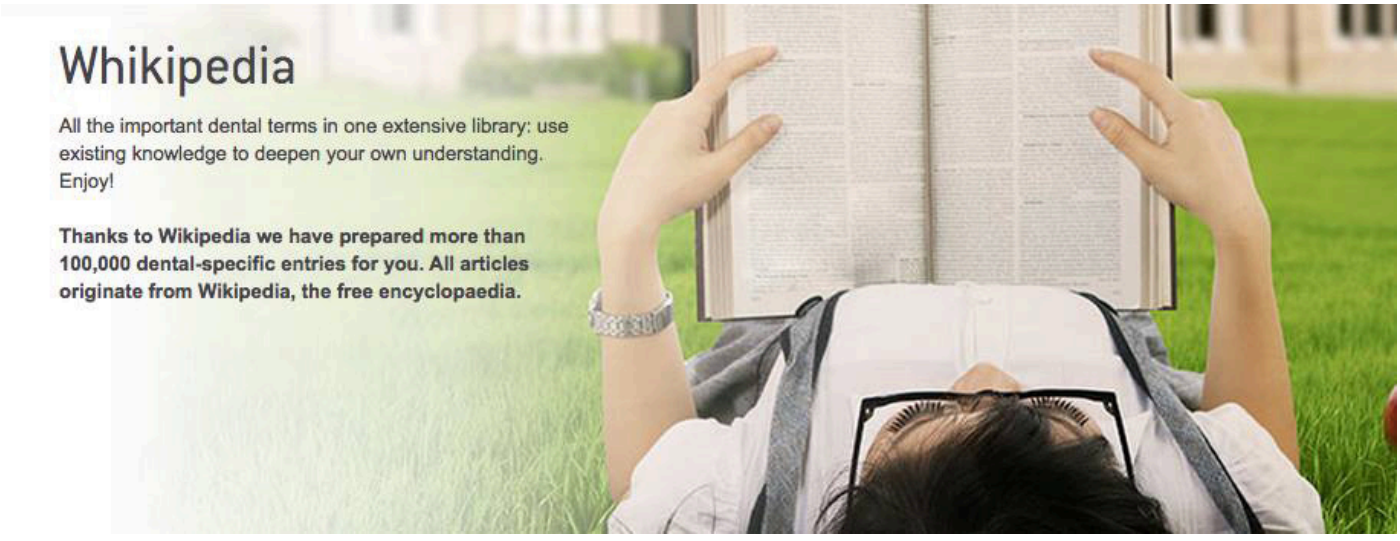


Differences between air and motor driven instruments Which instrument for what purpose?

Difference between turbine handpiece and speed-increasing handpiece

Differences between compressed air supply systems

Live from IDS 2015



EDITORIAL

Dear EDSA friends,

Welcome to the summer issue of the EDSA Magazine. In this issue we tried to cover the subjects that you, our beloved readers showed the most interest in. In the first part you will find reports from two great events and two presentations of new members. For those who are thinking about specializations there is a very interesting article written by Reena Wadia, which covers all the things you have to think about before the final decision is made. We are pleased to present an interview with one of the most successful dentists alive, Dr. Galip Gürel and Dr. Markus Hürzeler, which can be found at page 18 and 22. As we can not imagine modern dentistry without photography you can learn some essential things about how to do it right at page 28.

While finishing this magazine, I could not stop thinking about how fast the years have passed. It seems that year 2015 is a year of goodbyes for me, for some I was looking forward to say goodbye, for some not and to some I never will and EDSA is one of them. With this magazine my journey as an active member of the EDSA is coming to an end and will be passing the torch to a new generation of students. I am sure that they will make an outstanding job and enjoy it as much as I did.

Last but not least, I would like to thank all of the authors for their participation in this issue and encourage all of you to participate in the next years as well. I would also like to thank all who participated in my EDSA journey and who made it one of the best experiences in my life. I can now say that I have one more family that is called EDSA family. I've enjoyed every single moment of it and it's been an honour to be part of it, thank you.

Miha Pirc

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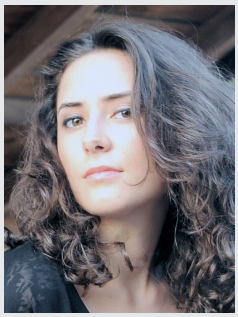

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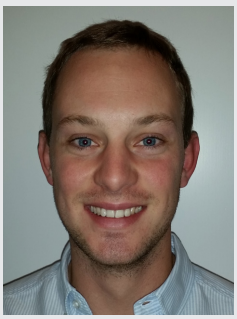

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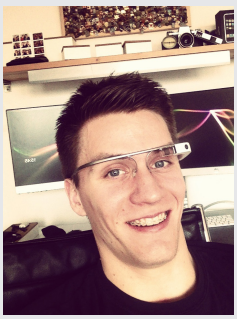

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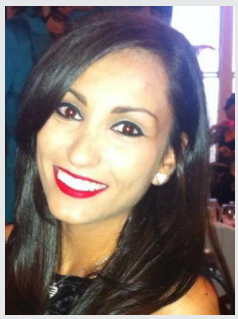

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57th EDSA Meeting & 11th EDSA Congress & III Young Dentists Portugal Annual Congress Coimbra, Portugal

28.2. - 6.3.2016

Coimbra is one of Portugal's oldest cities and is home to one of the world's first universities. Coimbra is a district cvapital, the largest city of Portugal Mainland region with around 150,000 inhabitants. The River Mondego crosses the city and its margins are good places to be in contact with nature and open-air sports. World famous music artists such as Madonna, U2, Rolling Stones, among others, have performed in the Coimbra city stadium.
There are also several popular events, such the student festivities "Latada" (new students' parade) and "Queima das Fitas" (graduate students' parade). Coimbra is a friendly city to the young people with over 30,000 students.

Coimbra is a safe university city, with good transports, several accommodation options and an excellent public network of health care services. There are a number of public health units in the city, namely the hospitals of the University of Coimbra (CHUC), the largest health care center in Portugal.

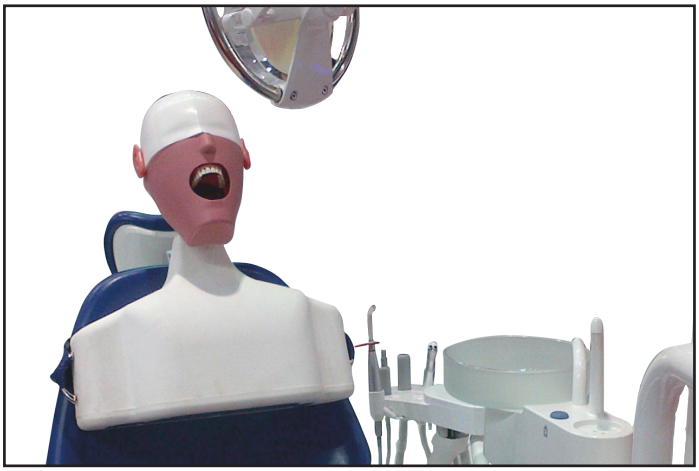
University of Coimbra was classified as World Heritage by the UNESCO in 2013 for its role as the center of production of Portuguese language literature and thinking and for the universal value of its campus, which dates back to the 16th century. Today this impressive university is still one of the world's most illustrious and the city's biggest attraction.

In the 70s, the Faculty of Medicine of the University of Coimbra decided to create a Dental Medicine Degree which is in operation since the academic year of 1985/86. To meet this new challenge, a new Department of Dental Medicine, Stomatology and Maxillofacial Surgery is created and integrated into the CHUC.

We are honored to receive the 57th EDSA Meeting & 11th Congress between the 28th of February and 6th of March. The meeting will take place in the central auditorium of our faculty and the Congress will be in the Conference Center of our hospital. The 3rd Young Dentists Portugal Congress will happen at the same event.

Our Dental Students Association of Coimbra (Núcleo de Estudantes de Medicina Dentária da Associação Académica de Coimbra) and the Young Dentist Portugal will join efforts to provide the best Meeting and Congress of all time.

See you all there!



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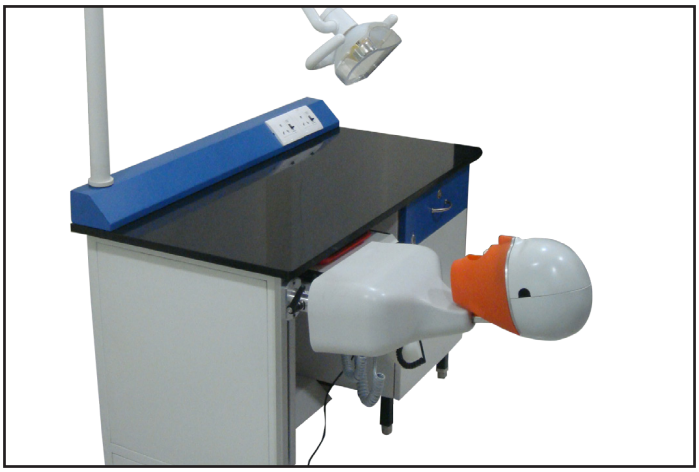

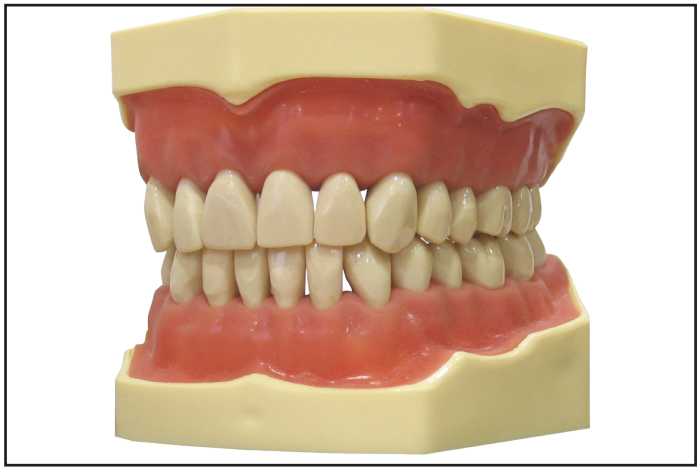

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REPORT

68TH WORLD HEALTH ASSEMBLY

The second year in a row EDSA has been present at the WHA as a part of the IFMSA delegation. The extremely important role of the information acquiring and worldwide promotion has been fulfilled again.
Our great friends from IFMSA have invited us again to be a part of their delegation.
A quick logistical teardown: IFMSA organises a pre-event, called the preWHA, during which all delegates get trained in order to acquire skills and get the best out of the meeting, but more on that later on.

Basically, the WHA (World Health Assembly) is an extremely hectic event that takes place in the Palais des nations, Geneva, 18–26 May 2015. The Health Assembly is the decision-making body of World Health Organization, and is attended by delegations from all WHO Member States as well as non-State actors (that's us) and focuses on a specific health agenda prepared by the Executive Board. Its main functions are to determine the policies of the Organization, supervise financial policies, and review and approve the proposed program budget. The Health Assembly is held annually in Geneva, Switzerland.

More than 3000 delegates from WHO's 194 Member States – composed of the world's health ministers, diplomats and public health representatives - attended the Health Assembly.

A series of daily technical briefings addressed the post-2015 sustainable development goals, the Ebola outbreak, climate and health, preparations for the third UN High-level meeting on non-communicable diseases in 2018, cancer prevention and control, and the development of global health sector strategies for HIV, viral hepatitis and sexually transmitted infections.

At the Health Assembly two main types of meeting are held, each with a different purpose: Committees meet to debate technical and health matters
(Committee A), and financial and management issues
(Committee B), and approve the texts of resolutions, which are then submitted to the plenary meeting.
- Plenary is the meeting of all delegates to the World Health Assembly. The Health Assembly meets in plenary several times in order to listen to reports and adopt the resolutions transmitted by the committees. The Director-General and Member States also address the delegates at the plenary.
In addition, technical briefings are organized separately on specific public health topics to present new developments in the area, provide a forum for debate and to allow for information sharing.

The preWHA was an extremely interesting event. All delegates were divided into 4 streams: Adolescent health,Antimicrobial resistance, Climate Change and Health, Health Systems and Human Resources for Health. The preWHA itself consists of workshops: Global Health Diplomacy & Global Health Advocacy, trainings: soft-skills and Introduction to WHA, stream sessions and panel on which we were discussing each streams progress.

The following daily reports show the most significant happenings during the WHA itself:

Day 1 - May 18th 2015
In the afternoon, WHO Director-General Dr. Margaret Chan outlined her plans to create a single new WHO program for health emergencies, uniting outbreak and emergency resources across the 3 levels of the Organization. "I have heard what the world expects from WHO," said Dr. Chan. "And we will deliver." The Organization is calling for a new USD100 million contingency fund.

Day 2 - May 19th 2015
By following all relevant discussions in Side Events, and Technical Debriefs (today with a special focus on the post Ebola crisis), we are tackling all sides of this discussion, and actively advocating for the inclusion of Human Resources of Health as a key priority of the roadmap to Resilient Health Systems.

Day 3 - May 20th, 2015
WHO Member States agreed a new global malaria strategy for 2016-2030 and approved the Organization's proposed program budget for 2016-2017. The Global Malaria Strategy aims to reduce the global disease burden by 40% by 2020, and by at least 90% by 2030.

Day 5 - May 22nd, 2015
The World Health Assembly continued progress Friday, reaching agreements on polio eradication; further implementation of the International Health Regulations (2005); surgical care and medical products. Delegates at the World Health Assembly agreed on a resolution in which Member States recommit to stopping polio and to preparing for the phased withdrawal of oral polio vaccines, and noted that Polio eradication can only be achieved through global solidarity. The recent Ebola outbreak Only one-third of all countries (64), however, reported that they had met the minimum requirements in 2014. Committee recommendation to extend the deadline to 2016 for all countries that need more time to implement them.

Day 6 - May 23rd, 2015
WHO will establish an emergency program, which will be guided by an all-hazards health emergency approach, that emphasizes adaptability, flexibility and accountability, humanitarian principles, predictability, timeliness and country ownership. WHO will set up a US$ 100-million contingency fund to provide financing for in-field operations for up to 3 months.

Day 7 - May 25th, 2015
The World Health Assembly today agreed resolutions to tackle antimicrobial resistance; improve access to affordable vaccines and address over- and under- nutrition.

Day 9 - May 26th, 2015
Three new resolutions were passed today: one on air pollution, one on epilepsy and one laying out the next steps in finalizing a framework of engagement with non-State actors.

The meeting has been of the greatest experiences of my life. Incredible people and public health activists have enriched my personal enthusiasm for Global health. On behalf of EDSA I am confident we will continue our involvement in Public Health, emphasising oral health.

Luka Banjšak

REPORT

EUROPERIO8 AND EDSA REUNION

Europerio8 and EDSA ReunionBetween the 3rd and 6th June of 2015 the eighth EFP (European Federation of Periodontology) Congress took place in London. The Europerio is organized every three years and is recognized as a leading dental conference in periodontology and implantology. The number of participants indicates the importance of the event. There were 7.812 participants at the Europerio7 in Vienna and more than 9.600 registered participants from all over the world at the Europerio8 in London this year.
The organizers managed to organize an event with well known speakers and a broad spectrum of lectures. Up to six simultaneous lectures were organized for specialists of periodontology and implantology, general dentists, oral hygienists and researchers, so that everyone could find something of interest to him.

The first day began with a presentation of a short movie called "The Sound of Periodontitis", where the patients' perspective to periodontal disease was shown. After the movie and the following discussion we realized that even though periodontal disease is a silent disease there are plenty of signs that appear in the early stages of the disease and it is our responsibility to note them and treat them as soon as possible to prevent the disease.

The second day started with a plenary lecture called A Geneticist's Apology: Nature, Nurture, or Neither? by Professor Steve Jones, followed by a movie that showed the association between diabetes and periodontal disease. The rest of the day was dedicated to mucogingival surgery and lectures about the appropriate choice of the right technique. According to Dr. Zuhr the sub-epithelial connective tissue graft is considered to be a gold standard for gingival augmentation but there are still some uncertainties. This is why it is important to understand the histology of tissue.
Then we attended lectures about treatment of gingival recessions. Several techniques were presented and explained. At the end new techniques and the use of alo- and xenografts were presented.

The first half of the third day was dedicated to lectures about critical factors of periodontal regeneration and the second half to critical factors in the aesthetic outcome of dental implants. The lecturers were presented by renowned dentists such as Dr. Hürzeler, Dr. Schwarz, Dr. Sailer, Dr. Zucchelli etc.

On the last day Professor Lindhe had a lecture on bone remodelling in the edentulous ridge. It was announced that his lecture was to be his final act, concerning the Europerio congresses.
The congress was closed with a longer discussion entitled "25 years of European Periodontology".

With such numerous attendance at the congress, also evening activities were well taken care of. The past president of the EDSA, Maja Sabalic, organized an EDSA reunion. More than 15 participants who were or still are active in the EDSA came to the reunion and every single one enjoyed talking to old friends. It was a true privilege to see so many familiar faces and to learn what they were all doing after they had finished their studies. It helped me to realize once again that the journey of the EDSA never stops and just moves to another level.

Rok Ovsenik & Miha Pirc

NEW

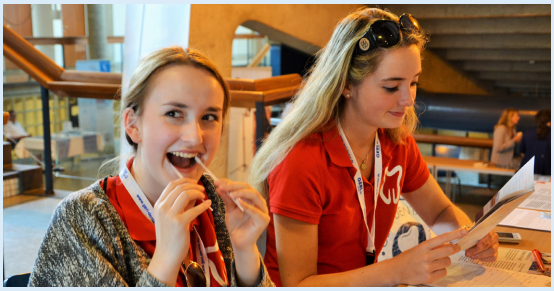
BdZM - The German Dental Students' Association

In April 2015 the German Dental Students' Association (BdZM) became an official member of EDSA, and we are thrilled to announce our commitment on continental level.

Our board consists of seven students in six dental schools across Germany representing the needs of 14,500 dental students in 30 dental schools. Our primary aim is to keep, even and develop the standards of dental education throughout the country.

We see ourselves as the common voice of all local student councils. We support and inform councils via e-mail, personal contact and during a special assembly every semester, where students nationwide meet to partner up on changes and concerns in our education.

As the dental students' voice, BdZM joins national congresses in dentistry to represent the matters and concerns of German dental students. We are actively forming educational standards and discussing current dental political affairs. By forming networks, projects and cooperation we aim to build a dental future worthwhile to be in. The German Dental Students' Association holds close collaborations to our partner organizations the German Dental Association (BZÄK) and the German Dental Alumni Association (BdZA).



By joining EDSA BdZM agrees the active exchange of knowledge and experiences not only national but also international is a crucial step to ensure best results in our common aims.
BdZM is happily spreading and supporting the EDSA idea across the nation. In our first three months we gave our input to dental education, participated in EDSA questionnaires, build up an EVP System and supported the prevention programs I-Top and the Alliance for a Cavity Free Future.
On this solid start, we gladly join the 56th EDSA/ADEE meeting in Szeged in double power and look forward to our second term of successful partnership to come.

Arne Elvers-Hülsemann, BdZM-Board, International Affairs, Uni Kiel, Germnay
Sabrina Knopp, BdZM-Board, Uni Köln, Germany

NEW

Student Society of the University of Szeged

Student Society of the University of Szeged, Faculty of Dentistry is an organization for making students life more enjoyable and easier during their studies. Same as our department our students association became separate from the faculty of medicine. We are a small group that organizes everything in the student's life. Our group has 5 main people, and 15-20 volunteers who're helping us.

Our duty is to stand up for student-rights, represent them in front of the Faculty and arrange wide range of programs for their free time. In the past few years we created some iconic programs, such as International Dental Student Meeting which is a unique chance for Hungarian students and for students from all around the world to share their culture with each other, and we also make special events with students from the faculty of medicine and pharmacy.

Another activity - in cooperation with MFHE that is the Hungarian Dental Student Association - that has become part of our life is dental check-up. This programme takes place at nearly every event where numerous people get together. It is an excellent opportunity for students to become familiar with a situation communicating with patients out of the Dental Clinic, and being a useful member of a dental screening programme as a first professional experience.

So mainly we would like to shake up the students life and help them with their problems with studies, teachers and any other problems that they are facing.

EUROPEAN VISITING PROGRAMME
Lyon, France (february 2015)

The Faculty of odontology of Lyon in France welcomed a European Visiting Programme session from February 22nd to march 1st. This week of exchange allowed 20 students from 10 countries to benefit a rich academic, cultural and social programme. It was the first time the European Visiting Programme was run in France.

The week has been organized by a LOC of 10 people from various backgrounds. Some are members of the Local Dental Students Association ExCo, some are professors at the faculty and others are Lyon students active the life of the university. The Dean of the Faculty, Professor Denis Bourgeois, was very supportive of the project. LOC was chaired by Valentin Garyga, ExCo member of the French National Dental Students Association (FNDSA) and EDSA's official delegate for France.

Students came from prime European institutions: Oslo (Norway), Cardiff (UK), Zagreb (Croatia), Valencia (Spain), Ljubljana (Slovenia), Copenhagen (Denmark), UMF Carol Davila Bucharest (Romania), Kaunas (Lithuania), Yeditepe (Turkey). Marco Mazevet, EDSA president, and Sarah Barmio, FNDSA president, were here to represent their associations. The 20 guests benefited from a 3-2-1 schedule: three days at the faculty, two days at the clinic and one day for cultural discovery.

During the three days at the faculty, a rich academic programme was arranged. An initiation to implantology with Zimmer was held. A workshop on microscopic endodontics with Zeiss, Micro-Méga and Dentsply was arranged under Prof. Maurin's supervision, lecturer in endodontics. A dental photography seminar was also arranged for students to get an introduction to intra-oral photography. A demonstration and round-table about CAD-CAM in Europe was held in collaboration with Sirona and Dr Gérentes, lecturer in prosthodontics.

Research presentations by junior and experienced researchers were held during a dedicated evening: the « Research Night ». Fields as diverse as oncology, biomaterials, enamel remineralization, stem cells, public health and junctional epithelium were covered. Students were given the chance to later discuss freely with some researchers during round-tables about public health and students' access to research. Two days were arranged at the clinic and students got the possibility to observe laser surgery, microscopic endodontics, implantology, periodontal surgery and prosthodontics.

The post-graduate programme in periodontology welcomed students who wanted to get more information. An initiation to early detection of oral cancer was organized in the surgery and oral pathology department: students were trained to use the Goccles system. Goccles is a system of glasses using the fluorescence of the mucosa to curing light in order to enhance the contrast of pre-cancerous oral lesions.

A cocktail on the highest floor of Lyon in Oxygène Tower was thrown to launch the week. Dinners were arranged at high-end restaurants, notably at "Institut Vatel" teaching restaurant, a world-renowned hospitality management school. "Brasserie Sud", a Paul Bocuse-managed restaurant, was also the scene of a more casual dinner. Also, participants got the chance to enjoy a French cliché dinner: only wine and cheese! A laser-tag competition was also organized and helped strengthen the links between participants. Spontaneous parties occurred and allowed French students to get to know these 20 international participants.

A meeting was organised at the end of the stay. In addition to a debriefing that will lead to improvements in future EVP sessions, participants also discussed paths towards increased international relations between their institutions.

The Faculty of Odontology in Lyon will renew this experience in 2016 and looks forward to welcoming more students from diverse backgrounds and countries!

More information on: www.evp-lyon.com

SPECIALTY TRAINING – 5 QUESTIONS

The concept of graduating and then hiding away in your dental surgery for the rest of your working life is no longer a realistic proposition for the young dentist. However, professional development may not be as easy as it sounds. In fact, the consensus amongst most young dentists is that there is currently very little guidance on career pathways. Difficulty in finding an associate position adds to the problem; a struggle to find a job would not even have crossed our minds when applying to dental school! No job and little guidance often mean that specialty training is considered as a final resort to help 'pass time' when nothing else is available. It's important not to fall into this trap and overlook the fundamental and most important question – 'should I specialise? Before jumping into making any other decisions, it is imperative you explore this further by contemplating on the first 3 questions…

1. Is it right for you?

Becoming a specialist allows a dentist to focus their career on a chosen field of dentistry. So the first consideration should be whether or not you want to hone in on one particular area. Is there a specialty that really excites you that you can imagine yourself practising for most of your working time? Do you feel you have an aptitude for a certain specialty? Or perhaps as a specialist you would hope to have the resources to provide the highest standard of advanced care? If you are content with the level and variety of care you can provide as a general practitioner and enjoy that mix, then specialising might not be the right choice for you.

2. Have you thought about the financial implications?

If you decide to do a specialty training programme is likely to be is the most expensive career investment you make. Course fees are approximately £11,000 for part-time programmes and can range from £15,000 to £54,000 for full-time programmes; that's the yearly fee so don't forget to multiple these figures by 3 or 4 as the full-time course usually runs over 3 years and the part-time course over 4 years! So it's clear to see that if you decided to complete a full-time programme, you would need a significant amount of savings or a loan of some sort. If you were working part-time you would either need the former or would have to ensure that you are earning enough to pay the fees. Importantly, the loss of earnings over the course period needs to be accounted for. A simple example calculation will bring to light the significance of this loss: Most young dentists would hope to complete around 6,000 UDAs per annum. If the value of these UDAs is £10, this gives you an annual gross of £60,000. If you decide to specialise and work part-time, you need to give half of this up, that's £30,000 per year. This is, in effect, more expensive than the actual course! On top of the course fees and loss of earnings, you need to take into account the expense of purchasing any books or additional instruments and equipment that may be required.

3. What personal sacrifices may you have to make?

Specialty training is not an easy ride and requires hard work, drive and determination. It will change your work-life balance; this essentially means that a lot of your previous free time will be dedicated to self-learning. Of course there is also the stress of exams and projects that comes with this too. It will be like going back to dental school and you'll need to get those revision cards out again and start sticking to deadlines – some people don't mind the idea of this, others will detest it with a vengeance!

Going down a specialty-training route is an exciting journey (well it definitely has been for me so far) and no doubt it will be a rewarding career once you are qualified as a specialist. However, it is important to take a step back and first contemplate on the above before making any further plans. If you are extremely enthusiastic about a particular subject, regularly read the specialty journals, have invested in specific instruments or often admired other specialists around you, hoping that one day your lifestyle will be the same, then those may just be the clues to give you that extra push once you've accounted for all the other considerations! So the next 2 questions are for those of you who have made a considered decision to specialise…

4. When's the best time for you to specialise?

In order to meet the GDC's entry requirements, you must demonstrate broad based training, normally over a period of 2 years of postgraduate study and ensure you have achieved

the foundation competences as set out in the Dental Foundation Curriculum. As a result, a minimum of 2 years post qualification is essential. If you apply for speciality training at this point, all essential and ideally desirable entry requirements should have been fulfilled.

Advantages of commencing specialist training early include the ability of younger adults to more rapidly absorb information and swing back into the mode of revision than someone who has been away from studying for over 10 years. Often, personal circumstances and commitments are less of a burden at a younger age. Importantly, there is not usually a significant financial setback to earnings on beginning the training programme in comparison to a well-established dentist. Moreover, if an individual is highly passionate about a particular speciality and is confident in pursuing it further, there may be little benefit in waiting for another few years before applying.

However, a more established dentist is likely to have a broader and stronger base of general dentistry before entering specialty training and this can help in understanding concepts and picking up skills. At an early stage, some may not have a clear idea of which specialty they wish to enter, or may be unsure of whether they wish to ultimately complete specialty training; in these cases, it is important to follow an initial career plan which keeps other options open.

5. What can you do to maximise the chances of your application being successful?

I. **The basics** - It is essential to hold a dental degree registered with the GDC, complete a period of dental foundation training and achieve the MJDF or MFDS postgraduate qualification.

II. **Clinical experience** - Varied clinical experience, both in practice and a hospital setting are imperative. Some hospital posts may be more relevant for particular specialties so it is important to pick your training posts wisely.

III. **Academic achievements** - Undergraduate as well as postgraduate prizes and presentations will enhance any application. Publications demonstrate initiative, enthusiasm, intellect and good organisational skills. It is important to get experience of some form of research, as this can be an integral part of a training programme. It is useful to accomplish some of this during hospital posts, as access to material, supervision and guidance is more readily available. Audits are easy to complete in a general practice setting; try to base your audit on a unique topic so it stands out from the usual themes.

IV. **Continual professional development** - Attendance to courses and lectures shows a passion for education. Choose your courses and lectures wisely; ensure these are plentiful for your chosen specialty as these provide evidence of your interest in the subject.

V. **Join societies** - Membership of the relevant societies is highly recommended; you may even consider attending their seasonal meetings or conferences.

VI. **Do your research** – Look at the online prospectuses, visit the teaching schools and talk to the current specialty trainees. This will offer you an invaluable insight into the differences between various programmes and schools. The current trainees will also be able to share with you lots of useful tips for the application and provide a realistic idea of what your day to day life will be like during training.

VII. **Don't rush** – Usually the first part of the application process is an online submission. Ensure that all deadlines are clear in your diary as submission dates for applications are strict. You need to leave plenty of time to work on your application, as many drafts may be required.

VIII. **Prepare well for the interview** - A good interview requires practice and thorough preparation. The better prepared you are for the interview, the more confident you will be in yourself and the more likely you are to succeed. Arrange a mock interview with a colleague with experience of the specialist interview process. It's useful to ask the recent specialty registrars of their interview experience. Interviews are usually not very technical but some light background reading on the specialty is recommended. Interview help books are available and can provide excellent information on techniques as well as favourite topics, for example, clinical governance. For the interview, arrive on time and dress in smart attire. At the end of the interview, you may be asked if you have any questions, only ask if it is relevant. Maintain professionalism throughout the interview, do not interrupt or criticise anyone, regularly smile and thank the panel for their time.

IX. **Keep trying** – If you are not successful first time round, do not be discouraged. Find out what you may need to work on and make a plan of action. You will gain useful experience of the application process, which this will stand you in good stead for your next opportunity.

Reena Wadia

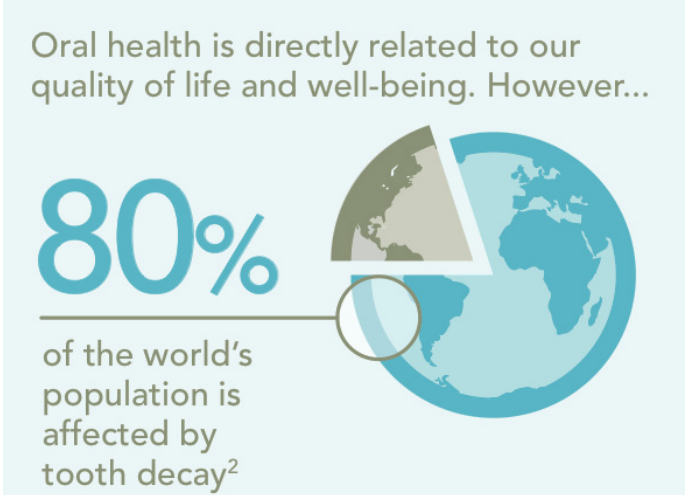
More articles and videos on this topic can be found at: www.reenawadia.com.

ACFF - EDSA

On the 30th of May 2015 The European Dental Students association was invited to the launch of the Italian chapter of the Alliance for a Cavity Free Future (ACFF) as well as its pan-European meeting.

The Chairman, Prof. Nigel Pitts, wants to include dental students to this ambitious project that has a simple goal: A child born in 2026 across Europe shall be free of any dental cavities throughout his lifetime.

Unreachable? Many associations and institutions are helping making this a reality, such as the European Association of Dental Public Health, the European Organisation for Caries Research, the Platform for better Oral Health in Europe, the European Dental Hygienists Federation, the European Academy of Paediatric Dentistry and many international lecturers. All of these organizations combined together allow the cavity issue to be tackled from different angles, with various means. Education for young dentists, social media communication, sugar intake, assessment and evaluation of dental caries as well as and public institutions' contacts are thought of and discussed.



The project received a warm welcome amongst the dental students in the association. Most are keen on participating. So far, a questionnaire has been lead by Mrs Alyette Greiveldinger and received more than a hundred responses from 15 different countries. Students were asked what they thought about the project, the caries curriculum, and their ideas on how to communicate efficiently with their generation about oral health issues. Some volunteered spontaneously to help the project in their respective countries. A workgroup to discuss the different possibilities of partnership between the association and the alliance will be held in Szeged, Hungary.

The EDSA has already been invited to the next European meeting of the Alliance (February 2016) in Copenhagen.

Alliance for a Cavity-Free Future
ACFF
Stop Caries NOW for a Cavity-Free Future
European Chapter

We thank the Alliance for including the students into such an extensive public health project and are really looking forward for a strong collaboration.

For more information: http://www.allianceforacavityfreefuture.org/

Marco Mazevet

EDSA, CURAPROX and iTOP present

You will be leaving Prague with tears – and a true smile.

5-8 of November 2015

APPLY NOW FOR A GREAT WEEKEND IN PRAGUE – AND REAL ORAL HEALTH KNOWLEDGE!

You will love Prague, and so you'll have a little tear in your eyes when it's time to leave – after a great weekend, Thursday night till Sunday. 30 dental students from all across Europe will come to Prague. Be one of them, come with us, make new contacts and have fun!

And you will know a lot of fascinating things about a true smile – even wear one in your face: You will learn how to brush your teeth correctly via iTOP: individually trained oral prophylaxis. The knowledge and skills you learn here you will not learn at University and these skills will make you a great dentist – and help you to keep your own teeth healthy and shiny for your whole life.

All this is invaluably priceless: € 79.–, meals and accomodation are all included.

So. What to do?

Choose your weekend, April or November, and get booking fast. Here for dates and booking:

www.curaproxstudentcamp.com

Also check out **www.edsaweb.org** and **www.facebook.com/itopforstudents**

CURAPROX
STUDENT CAMPS

ALWAYS MAKE YOUR NEXT CASE YOUR BEST CASE

Dr. Galip Gürel graduated from the Istanbul University School of Dentisty and continued his education in the United States at the Department of Prosthodontics in the Univercity of Kentucky.
One of the true pioneers in his field, Dr. Gürel lectures extensively all over the world and is Visiting Lecturer at the Center for Continuing Education, New York Univercity College of Dentistry, specializing in the latest advances in estetics dentistry. He is a Diplomate of the American Board of Esthetic Dentistry. Dr. Gürel is Founder and President of EDAD (The Turkish Academy of Esthetic Dentistry), Edito-in-Chief of Quintessence International (Turkey) and a member of the editorial boards of the Journal of the American Academy of Cosmetic Dentistry and Spectrum. He has been practicing in his own clinic in Istanbul, specializing in Aesthetic Dentistry, since 1984. A renown sportsman, Dr. Gurel has been the Captain of the Turkish National Team of Water Polo for 110 times, a World Champion of the Camel Trophy and a participant of the Paris-Dakar Rally.

To begin with, could you tell us something about yourself? What brought you to the world of dentistry?

I was born in Ankara, the capital of Turkey in 1958 in a family where both of my parents were dentists, so I just grew up with that thought. In our era we didn't have that much connection with the rest of the world so mostly people chose the profession of their father or family, so I was very fortunate to choose a profession that I felt in love with. I became a dentist at the University of Istanbul, Turkey and then went to the US to the University of Kentucky for two years for Prosthodontics programme.

How did your early career look like? How did you decide what you want to specialize?

Well, actually I was an above the average student and my first thought at my second year was to be a surgeon, then in my third year I thought about the possibility of becoming an orthodontist, but in my fourth year when we started working on patients I started enjoying doing a lot of prosthodontics. That became my passion, and I started looking for opportunities of becoming better and better, and this is how I ended up in Kentucky. Of course this was only the beginning and when I came back to Istanbul I started looking for better and better options, first trying to find some more advanced dental technicians, which improved me a lot. Then I started documenting the cases and then presenting those cases, and then started teaching at more prestigious universities around the world, like the NYU, Yeditepe University in Turkey and at the University of Marseille in France. So this is how I slowly started gaining experience.

How did you develop into the dentist you are now, where and how did you gain the most knowledge?

In the previous question I started explaining how I started getting a better dentist, but the thing is that, as one of the main mottos, I always thought that my next case should be my best case. That makes you a challenge, and every time you want to make it better and better and better. Dentistry is a profession that is a newer ending story, especially if you are dealing with aesthetics and you have to search for better solutions every time, such as being minimally invasive, making smile designs that look natural, fit to patients' facial appearance and even the personality, so these are the things that you should keep as a target in front of you when you start working. I would say that my biggest weakness, when I started working in the early 80s and came back to Turkey, was that there were no sufficient labs, which would try to do better and bring the design to a different level, so after a while I decided to work with some good technicians abroad and that really added a lot to my career. We started discussing things with those technicians, and naturally it had a very positive effect on the development of my career. Then we started documenting a lot of cases and presenting them. Every presentation of the case is a challenge, because you have to present it in front of very prestigious groups and you have to stand behind of what you are saying. You have to have a 100% control of what you are presenting, it can not be something that you've heard from someone, or that you did do just a few cases and try to defend what you are doing. You should do tons of cases with failures and success, so that you have answers to anyone that asks you questions. And this in my opinion gives you the most advancement in becoming a better dentist.

What does your average work day look like?

I wake up at 6.30a.m. and do exercise till 8.30a.m., after that we have a very strong breakfast till 9.30a.m. At 10.00 a.m. I start seeing patients and work non stop without lunch breaks, maybe only a salad, till 6.00p.m. if not to 7ish. After that I either spend time with my friends or read some literature.

In your opinion what makes a good dentist?

I think it's passion and trying to achieve better and better results all the time. And probably saving a lot of time for your private life. You shouldn't be a slave of your profession as there are many other things to do besides that, such as being with friends, being outdoors, doing sports, hobbies. These things make your creative part better and better, as if you are in your office 24/7 you will never be as creative as if you do other things as well. And your challenge should always be yourself and not other dentists. Challenges can be in many ways, for some it can be money, for some the number of patients, for some making the best of what you can and basically this is what I have chosen in my life. Because when you do the best that you can and the work is done well, the word will spread out, patients will refer you to the other patients. I've never believed in advertising, in a way I find it cheap, because our work should speak for itself.

What is your opinion on specialty training? How should a student choose their specialization and is it a necessity?

I think that when you're in school and still in the mood for studying it would be great if you could get a specialty training. I mean, there are many dentists who have been very very successful without any specialty training, and these are the ones who have trained themselves a lot after they've graduated. In school we get the basic knowledge of everything and to put something on top of it is up to you. Specialty programme for me is an excellent achievement. I don't care which specialty programme you want to get in, but it will help you a lot if you can get in the programme.

What should students be doing during their time at dental school in order to become better dentists? Are there any specific courses that you would recommend and how should they go about selecting them?

Well, I think that if you concentrate on your lessons, the classes and get it done seriously when you start treating the patients and start finding your weak points. It's the best time to do so, as university has all the responsibility and provides you patients. So instead of just treating the patients just in order to get enough points, try to find some challenging patients and discuss them with your teachers and try to find the solutions by yourself. Of course, being up to date, following the literature, besides what they teach you at your school is extremely important. There are quite a few really nice courses, like the ones we are doing in Istanbul for instance. It's a two-day aesthetic course from A to Z, going through the basics, treating live patient from A to Z with the design, prepping the teeth, making the impressions, making provisionals and in the afternoon long treatment planning session. The next day doing everything that we did on the patient live, doing on the hands on programme, so the attendees do everything from A to Z there and in the afternoon hopefully if the technicians finish the work (it's usually fairly successful) I did the day before, we will be trying in the veneers and bonding them. So it's a full aesthetic course. I am sure there are many others very very good courses, like the ones from John Kois, Franks Spear, Mauro Fradeani, etc.

You are working with different technicians from all around the world. How does it work?

I think it works amazing. The question is finding the right technician to work with. In the beginning of my career in the early 80s we didn't even have emails and internet, so you would even write them letters, try to make phone calls and it was really tough. Now it is easy. If you find a technician that will prove his talent, I think it is a great way to work with. I don't really think you have to work with different technicians all around the world, it can be maybe two or three different technicians in your country, even your city, which you think will be the best for you.

What is the most important in choosing the dental technician?

I think we should really try to find a passionate technician. A technician that is after the technology, after knowledge and a technician that will carry you to the next level. So I always had a great chance of working with the best ceramists and in every case we had something to share, to talk about and

came out with some new extraordinary ideas at some tough cases. If there is a technician that is lazy about working, lazy about delivery, lazy about learning I wouldn't recommend that kind of a technician, even if they make my job for free. It's a waste of time and it will not bring you anywhere. When you find a good technician I wouldn't worry about the cost of the restoration from him, because believe me, it will pay back and patients will love it. They see the energy and what's being built.

How do you implement smile design planning in your office?

Our office is a reasonably big office, but we still do very boutique treatment. We have 6 operatories, one is dedicated to hygiene, one to ortho and surgery and the other 4 are shared with my full time associates. The whole team with dental assistants, front desk, two labs, consists of 38 people, but still every patient gets a very VIP treatment. So, whenever a patient comes to the office for the first time, it is me with one of my associates who welcome the patient. We try to understand their needs, so if it is an easy straightforward case we can do the treatment planning immediately. If it is a very complex case we make a lot of documentation, including X-rays, panoramic X-rays, CT scans if needed, a lot of pictures (intra and extra oral). We bring this documentation together and meet with a team every Thursday morning for one hour to discuss the treatment planning. From there we come out with the treatment plan. Once we have a plan it is my turn to set the aesthetic design. Therefore, when a patient comes in my opinion as of today, the best smile design can be done with my own hands, which means it is a direct mock up. So even if the teeth are not in the correct positions, I can just play around with what is existing and maybe put some composite to missing teeth, or in the overlap part I can just show one tooth through the mock up. Eventually at that point, when I do the smile design with my own hands in a direct mock up, patients most of the time have almost 90% of the idea where the case is going. I very much recommend you to do that, because verbal communication, as you will see in your practices in the near future, has its limits and doesn't solve all the problems. When someone says: "I want my teeth longer." you have a question: "How long? 1mm, 2mm, 5mm?" and mock up is the best way to see that. Sometimes patients even imagine things that are not realistic. So then if you explain to them and show them that it can not be done, then you don't do that. They might find another dentist, but if you are sure about what you are talking and have the correct treatment planning the other dentist that does the case will have a failure and the patient will come back to you. The main story is that you have to know how the case and patient will look like before you start, from there you can always back up very easily.
So it looks like this that I do the smile design and once I've done that, one of my associates will take over the case and guide the patient to the hygiene, ortho, perio, composites, but when it comes to the final prosthodontic part I will take the patient over again. We try the smile preview design and if the patient likes it leave it in their mouth and prep through it, make the impressions, make the provisionals and at the next appointment try in and finishing.

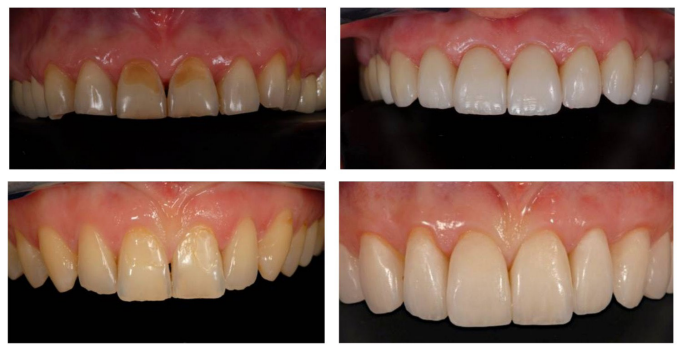
You are lecturing all around the globe, graduated at the University of Istanbul and continued your education at the University of Kentucky. How would you compare European dentistry to dentistry at the other continents?

Well, if we are talking about dentistry I can not generalize something like that. At every continent, in every country and in every city there are good dentists, average dentists and there are below average dentists. So it's something lucky to find a good dentist. My differentiation between the US and Europe is that patients in the US demand whiter, brighter, more harmonious, per se "Hollywood type" of smile. In Europe the colours are not that bright, they are more natural, the way you try to make smile design has some perfect imperfections in it. In my opinion overall in the end the smile design that people in Europe are looking for is more natural looking. In the states it's the brightest, biggest, whitest, however now things are slightly changing and European patients are also looking for whiter teeth and some patients in the states are looking for more natural restorations.

What do you see as trends for the future of dentistry?

In my opinion there were two major milestones in dentistry. One was the introduction of bonding, that some materials can bond to dentin and enamel, and the other one were implants. Now they've come to an amazing level and we see that the dentistry is moving towards the digital world. So I wouldn't say that the future is now, because it is already happening that we are dealing a lot with digital dentistry. It doesn't eliminate the need of a good dentist and ceramist, but is a comfort for them and helping them to do things sometimes faster and sometimes much more precise. In the near future, I think the digital dentistry as we know it now will get better and better and more advanced. One of the

things that we've recently patented is the intraoral robotic tooth preparation device. It means that once you do your design preview in the patient's mouth (either mock up, wax up, digital smile design, skin technique) and they approve the aesthetics out of plastics, then machine will be scanning that, you take it out and it will scan the existing teeth, and you will direct the software to prep the teeth, let's say 0.5mm for a veneer, and the robotic device will start prepping the teeth to a 30-micron precision. I think that it will be a game changer, because it will make every dentist to prep the teeth in the same way. Another great advantage of it is that since the software will have in it's memory the contours of the final design and the amount of the tooth it means that it will know the exact shape of restoration. So as the machine will be prepping the teeth, on the chair side with the CAD-CAM technology you will be producing the veneers, and the whole thing will be completed in less than 3 to 4 hours. I think this is very exciting and hopefully we will be getting the first prototypes in a year and a half and see where is the machines limit. We are now using a lot of 3D printing and all of these things are very interesting.



What are some career milestones still left for you to achieve?

I think that I want to finalise what I've been doing with this machine. I've been in the profession for almost 34 years now and have done a lot of my missions and tried to share my knowledge with people all around the world. I set the Turkish Academy of Aesthetic Dentistry, which was the first academy of aesthetic dentistry in Turkey. I never hide anything that I know from the audience, never played a superman, saying: "this is before, this is after, I am the greatest." I am just the opposite and always wanted to show the details so that everyone can do it in the simplest way. I luckily wrote a book, The Science and Art of Porcelain Laminate Veneers, which is still a bestseller and was published in 2003. So I think I made my mission in teaching and sharing my knowledge all around the world and have a very nicely working office that works almost in a 100% family atmosphere and some of these people have been working with me for almost 30 years and I think I managed to do that in a nice way. So I think that I've almost completed my mission. Now I am doing some tough cases, that I am enjoying doing, and when the robotic device comes out it will probably push me to a semi retirement.

What is it like having famous clientele? Are you under more pressure or are they generally like ordinary patients?

I never categorize patients for being famous, or normal patients, whatever would normal mean. I really never get excited, for me the most important thing is the attitude of the patient. I always pray to God and ask him to send me positive patients. Patients with negative attitude, negative character are patients that suck all of the energy out of you, and you can never work creatively with those patients. On the other side if it is a nice patient with positive energy the case will go so smooth that you won't believe it. So if patients are famous or not makes no difference to me. I never get excited even though we have treated very VIP people. I just hope nobody gets patients with negative energy.

What advice would you give to students who want to follow your footsteps?

I think it's very straightforward, you should love what you are doing. If you have many hesitations maybe you don't need to push it and as a student you can change your major, but if you start liking it as you are at the university, always try to put something on top of it, because the world is changing so fast, the technology is changing so fast, and whatever you learn in school now will be history in five years. Not everything but some of the things for sure. You have to keep up with that. There are a lot of opportunities now, such as very nice meeting, congresses, some web channels, a lot of articles, researches, so try to upgrade yourself. And also just like my moto 'Always make your next case your best case', and in doing so what is the most important be passionate but never be a slave of your profession, just leave it in your office. When you are done, you are not a dentist anymore, go out, enjoy your life, friends, family, hobbies and just live your life and the rest will come.

Thank you Dr. Gürel for your time!

Miha Pirc

I NEVER WANTED TO BECOME A DENTIST

Prof. Dr. Markus Hürzeler is one of the most well known specialist for complex implant cases. With the use of his methods even the hardest cases are successfully treated. He lectures internationally, maintains his practice in München, Germany with Dr. Zuhr and leads courses at his office. He is also a professor at the University of Freiburg.

To begin with, could you tell us something about yourself? What brought you to the world of dentistry?

I never wanted to become a dentist because my grand-father was a dentist, my father was a dentist, and my mother was a dentist. When you are young you never intend to follow the foot-steps of your father. But the closer the time came where I had to make the decision what I would like to study the more I favored dentistry. At the end, it was a decision of my inner voice and my personal feeling.

How did your early career look like? How did you decide what you want to specialize?

Right after finishing my studies I started as an Assistant Professor on the Department of Preventive Dentistry and Periodontology in Zurich. For me this was the right decision. I had the opportunity to work clinically in the same way like I did it at the end of my education and I started to learn how to perform research. Since I worked on the Department of Preventive Dentistry and Periodontology I became familiar with restorative dentistry and in addition with periodontology. Soon I recognized my bias for periodontal surgery. One of my teacher was Prof. Moermann the founder of the CEREC System. What nobody really knows today he originally started his career in periodontology. His thesis was about the healing of free gingival grafts. He motivated me to move more in this direction. Even so we did some research with the Cerec-System he also taught me plastic periodontal surgery. This topic fascinated me and I started my career in periodontology. I met so many great mentors who helped me so much. First it was Dr. Thomas Gaberthüel and then Prof. Dr. J.R. Strub and then Dr. G. Carnevale. All this friends supported me in my career. It is important that you recognize who of this friends do really want to support you and then you need to display patience. There I can see the major problem in nowadays; younger people are not patient enough. They want to be finished too fast. To become a great surgeon needs time and experience. This is only possible when you are patient.

When and how did you meet Dr. Zuhr and how do you split your work?

Dr. Zuhr and myself met in 1996 the first time. I was fascinated from his personality and from his clear thinking for his age at that time. We started to work very closely together. I did more implant dentistry and he was responsible for periodontal surgery. Our driving energy was always predictability in every approach we chose. How could we make our reconstructive surgical approach more predictable. This led us to develop the microsurgical concept which today is our base for every surgical procedure. We are proud to see that our thoughts became more and more standard in periodontal surgical thinking.

How did you develop into the dentist you are now, where and how did you gain the most knowledge?

As I already mentioned above I think the most important issue is to notice who really means well with you and then to learn from him; and on the other hand be patient and not be to fast satisfied about what you have already achieved. There is always more to learn about our profession. You should learn your entire life. Dr. Zuhr and myself still learn new things everyday and we change our concept according to our new knowledge. This must be your driving force during your professional life.

What does your average working day look like?

The average day starts at 7.00 a.m. We treat patient till 5 p.m. and then we discuss new research projects, new trends, and we have meetings with the industry or we need to prepare lectures for the next week-end. Beside that we have an ed-

ucation center. There we give approximately 14 week-ends per year continuing education courses. The courses also need to be prepared. So the days end normally at 7 p.m.

In your opinion what makes a good dentist?

A good dentist is a dentist who always questions what he is doing and does always ask himself what would I do to myself if I would have the situation the patient on my chair has right now. We are very much convinced if every dentist would think like this, dentists would not extract so many teeth today. We can see this in our clinic. We treat many patients who are dentists and they always have one expectation. Even when the tooth is mobile like the tail of a cow they always want to safe the tooth. But then you have to learn the possible concepts to do so. You would be surprised what kind of teeth can be maintained. Maintaining teeth is the main reason why most of us became dentist.

What is your opinion on specialty training? How should a student choose their specialization and is it a necessity?

This is a very difficult question. In our opinion it is mandatory to go through a postgraduate special program to become a specialist in any field of dentistry. But now you will ask me where are the good programs. This is really not so easy to find a great postgraduate program.

What should students be doing during their time at dental school in order to become better dentists? Are there any specific types of courses that you would recommend and how should they go about selecting them?

I am sorry but I can not give recommendation here. There are good programs. Maybe a good postgraduate program in the United States makes sense. There are also good programs at different Universities in Europe. But it always depends on the Chairman of the program, but sometimes they change their position very fast.

You are lecturing all around the globe, having hands on workshops on a regular basis, working with patients, doing researches, how do you manage to do all these things?

As always behind a strong man is always a very strong woman. Both of us, Dr. Zuhr and I, we have very supportive women behind us. Our families give us the energy we need to do all these things we are doing.

What do you see as trends for the future of dentistry?

Dentistry will change in the near future. We become as dentist more and more dental coaches for our patients. We need to create a very close relationship with our patient and then we need to help our patients that they can maintain their own teeth as long as possible. We need to be as conservative as possible with extracting teeth but also with healthy tooth structure. In the future we will prepare teeth to a lesser extend. Instead of preparing teeth and fabricate bridges we will maintain the healthy teeth and place dental implants. Implants will help safe teeth. How to maintain the natural teeth as long as possible will be the challenge of the future.

What are some career milestones still left for you to achieve?

We have a lot of new vision and ideas. We always work on new concept to make dentistry as simple as possible for us but also for our patients. Believe me we are working right now on very interesting concepts in this directions. In addition, there is a lot to do in research. The more you know the more questions come up. Sometimes you get the feeling that dentists believe that they know a lot about autogenous soft tissues healing. Dr. Zuhr and myself think that we really know nothing. So we have to study many, many issues. Our driving force is not the personal career it is more to find better solutions for our patients.

Do you have any hobbies, what do you do in your free time in order to cope with the every day stress?

Both of us like the mountain. In addition, we like to do sport. So in summer time you find us on the mountain bikes and in winter time you will find us skiing and touring in the mountain with our families.

What advice would you give to students who want to follow your footsteps?

Be patient, be enthusiastic about what your are doing, generate passion for your profession, and always think about why you became a dentist.

Thank you for your time Dr. Hürzeler.

Miha Pirc

AISO VOLUNTEER PROJECT

A dramatic humanitarian crisis has arisen in the Federal Democratic Republic of Nepal as a result of the intense shock waves of 25 April 2015, with its epicenter located between Kathmandu and Pokhara; statistics estimate over 10,000 victims. In these same regions, specifically in the Chitwan district, just three months earlier, the first IADS (International Association of Dental Students) volunteer project for dental students, of 2015, was undertaken in collaboration with the team from "Sai Ram Dental Care Pvt. Ltd.", Nepalese dental association, well-established in volunteer dental programs.

The "Dental Project in Chitwan", as the project was called, was attended by 25 young graduates and aspiring graduates, from 15 different countries round the world, including three AISO members, of the Italian delegation.

Following the rapid spread of news about the alarming conditions in which a large portion of the Nepalese population had been hurled, the allocation of an on-site rescue team was officially announced, headed by Dr. Ajay Neupane, to ensure basic necessities to the victims affected by the earthquake and to contribute towards confronting the serious sanitation and food emergency conditions.

Among the international humanitarian aid associations, the Italian Association of Students of Dentistry has been active in its initiative, realizing the true spirit of cooperation through which we have witnessed a nationwide participation in our cause, involving all AISO members and other participants in the IADS project from different nations which, in turn, have spread the spirit of solidarity and humanitarian aid in their countries.

At the same time in many Italian universities fundraising activities were held through stands set up ad hoc and the creation of a network of information in collaboration with other student associations and also spreading the initiative through online newspapers and personally sensitizing students and academics from different degree courses. AISO, within a few days, has reached an exemplary level of success in its charity fundraising campaign, donations totalling € 3,518.49, immediately sent to the Nepalese team!

Under the slogan "Helping Children Tackle Post Earthquake Trauma", in the first week of June, more than 260 children in primary and high school in the villages of Devaghat and Sorpani have been reached, providing each student with a backpack, notebooks, pencils and colours; without forgetting to include a toothbrush and toothpaste and other items for the personal hygiene. Volunteers have also spent entire days bringing comfort to children, struggling to take the first step towards overcoming the psychological trauma.

Every day we think about our future, regardless of the world around us, but it is the latter, at times, to hinder our dreams... The solidarity of each person who has contributed, every college student and every single AISO member, has been manifested and expressed through this national campaign.

Our slogan?
Together we can make the difference for Nepal! Let's give people back the strength to keep on smiling!

Lucas Queiroz Caponi

Website: aisoweb.it

ARE E-CIGARETTES AS SAFE AS WE THINK

Are E-cigarettes as Safe as we Think?

As dental clinicians, we are able to observe first hand, the truly detrimental impact traditional cigarettes can have upon a patient's oral health. It is our moral duty to encourage patients to stop, not only to improve their oral condition but from a holistic perspective, care for them as a whole individual. The issue is, what is the best way of achieving this?

Background

The concept of the electronic cigarette (e-cigarette) has been a subject of discussion among clinicians and researchers in recent years. Since their emergence in 2003, the market for e-cigarettes has expanded immensely with their estimated usage within the UK population standing at 2.6 million in 2015 - a 370% increase since 2012 (Use of Electronic Cigarettes 2015). However, it is this rapid uptake combined with a lack of regulation and a general lack of information regarding their quality, chemical composition and potential long-term consequences that have raised concerns about their place within society.

The e-cigarette was invented in 2003 by Chinese pharmacist Hon Lik with its intention to be a safe alternative to traditional cigarettes (Yamin et al 2010). There are now hundreds of various models being marketed but generally an e-cigarette consists of 3 main components: a liquid containing cartridge, a heating element and a battery (Benowtiz 2014). The liquid, which usually consists of propylene glycol and glycerol, is vaporised for inhalation with some models also delivering varying degrees of nicotine too (Grana et al 2014). The e-cigarette was designed to provide the same rewarding satisfaction as combustible cigarettes without the latter's detrimental health impact and also function as a device for patients to turn to for smoking cessation. However, is the e-cigarette truly a safe alternative and is it a device that we should be encouraging patients to use?

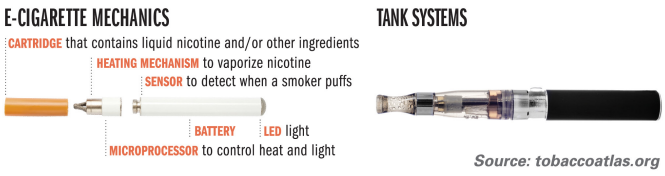


Fig 1. A schematic demonstrating a standard electronic cigarette model

Are they safer than traditional cigarettes?

The health implications of traditional tobacco smoking have been well documented for many years with its impact upon patient's oral health having severe consequences. Its causal relationship with oral and pharyngeal cancer is well known with numerous studies indicating current smokers have an increased relative risk of 3.43 and 6.76 respectively (Gandini et al 2007). Smoking is also considered a significant contributing environmental factor in increasing a patient's periodontitis risk (specifically chronic periodontitis and necrotizing ulcerative gingivitis) with current evidence suggesting that this increased susceptibility is due to the impact smoking has upon on a patient's host immune and inflammatory response (Palmer et al 2005). However, despite the truly damaging impact smoking has upon an individual's wellbeing, recent figures indicate that almost a third (26%) of the European population currently smoke as demonstrated by figure 2 (European Commission 2014).

A conventional cigarette contains more than 4000 chemicals, many of which are considered biologically harmful, and each puff is thought to produce more than 1 x 1015 free radicals (Pyror et al 1993). E-cigarettes of course differ considerably from this so one would think a switch to these devices should be a no brainer?

As alluded to above, a significant issue with the e-cigarette market is the considerable lack of regulation in producing these devices. There is no official body that monitors how they are produced and hence there is no doubt there are significant discrepancies between brands. Numerous studies have been carried out to investigate the chemical constituents of various models with traces of known carcinogens, such as acetaldehyde and polycyclic aromatic hydrocarbons being identified (Farsalinos et al 2014, Kim et al 2013, Burstyn et al 2014). It is important to note that, crucially, these reported values are significantly lower than those reported in combustible cigarettes (estimated to be several hundred/thousand fold less). This logically indicates that despite not being completely risk free, the usage of such devices can be considered a substantial improvement and a safer alternative to their traditional counterparts.

Role in Smoking Cessation

The concept of e-cigarettes aiding in smoking cessation has also contributed to their huge attraction. It is the rapid delivery of nicotine into the lungs and its absorption into the bloodstream that plays a crucial factor in cigarette smoking addiction (Benowitz 2008). Nicotine is thought to play a role in contributing to some smoking-related diseases but the general consensus is that this role is considerably less significant than that of the combustible products also included in traditional cigarettes. The use of nicotine replacement therapies (NRTs) such as patches and gums, have been used for over 30 years. However, despite some successful cases, it is reported that this clean provision of nicotine just

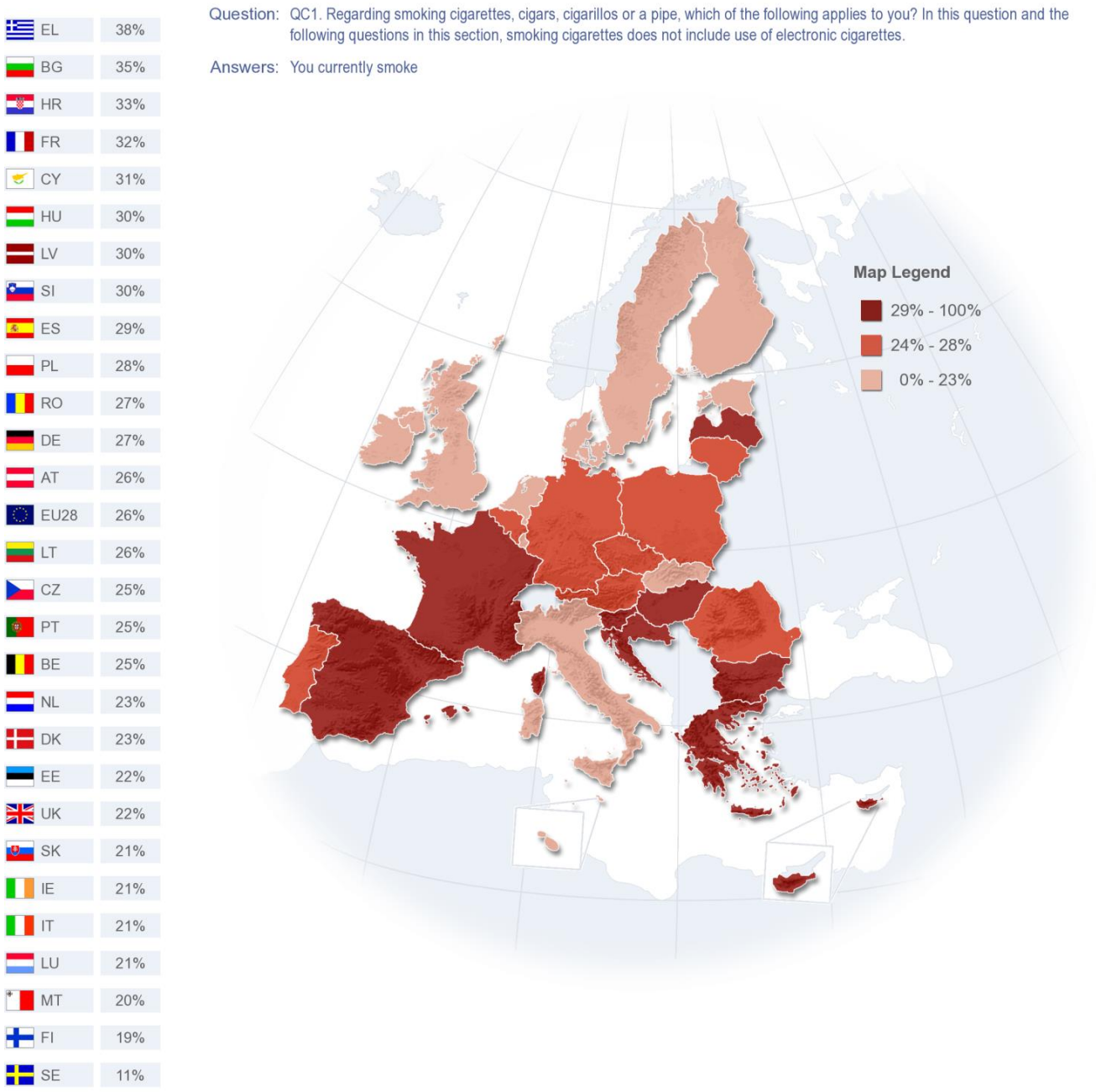


Fig 2. A heat map indicating the proportion of smokers in various European countries

doesn't provide the same satisfaction as smoking and hence their efficacy in aiding smoking cessation is questionable.

The idea of actually inhaling the nicotine is considered somewhat more appealing. There have been several studies investigating how effective e-cigarettes actually are in aiding smoking cessation. The results of many of these studies have indicated that the use of e-cigarettes more often than not help individuals reduce their cigarette consumption and appear to be more successful in doing so than alternative NRTs (Orr et al 2014, Dawkins et al 2012, Capponnetto et al 2013). However, there does not seem to be any solid evidence suggesting they are more effective at achieving complete tobacco abstinence (Bullen et al 2013). Furthermore, as outlined by the most recent Cochrane review concerning this matter, the majority studies investigating electronic cigarettes have several limitations; namely their short study period and limited sample size (McRobbie et al 2014). It is therefore clear that more long-term studies are required before assuming any conclusions.

Impact upon the rest of the population?

The consequences of passive smoking is a major issue when considering smoking. It is widely believed that this is eradicated with e-cigarettes. Unfortunately, several studies have indicated vapour from e-cigarettes breach WHO air quality guidelines when used indoors. Granted, these levels are estimated to be 15 times lower than emissions from combustible cigarettes, but it should be highlighted that a large proportion of people still believe that e-cigarettes are completely safe and due to a lack of legislation, are able to use them indoors with many people unaware of the potential consequences (Protano et al 2015). Interestingly, in the recent Eurobarometer report investigating population data on

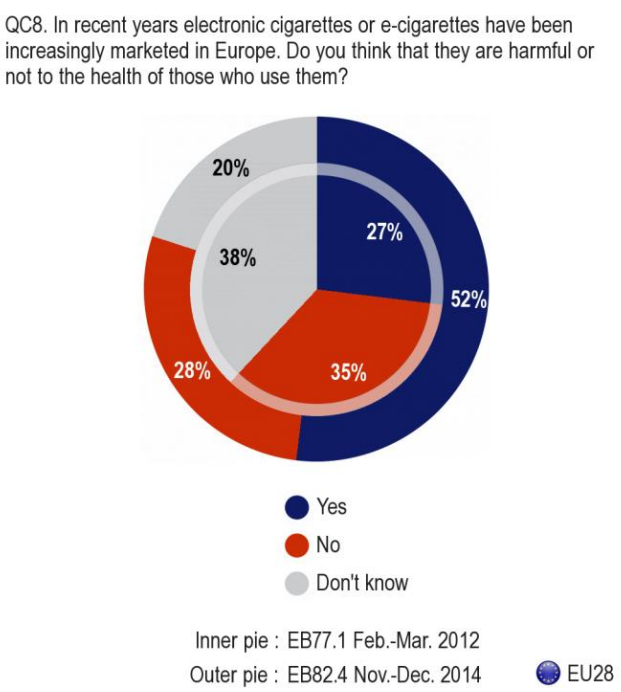


Fig 3. A diagram representing the response of the European populations when asked if they believed electronic cigarettes were harmful or not.

e-cigarettes, the health awareness for these devices has significantly increased in the past 2 years as shown by figure 3 (European Commission 2015). Despite this, 48% of Europe are either unsure or confident that e-cigarettes are completely safe and one would hope to see further improvements in this regard.

Another concern is that the widespread use of such devices may lead to the renormalisation of cigarette smoking in society as it may perhaps suggest this behaviour is socially acceptable (Benowtiz 2014). Furthermore, some may see e-cigarettes as a gateway to combustible tobacco smoking. Of course this is only the possibility, but in the long term, both these factors may actually contribute to a rise in traditional smoking as well as vaping.

Despite all this, I genuinely think that electronic cigarettes have the potential to save lives. Although not perfect devices, they are substantial improvements on their combustible counterparts whilst still providing the same satisfaction. They may not be particularly more effective than other nicotine replacement therapies at complete smoking cessation but the fact they have shown to be successful in cutting down consumption is truly valuable. However, this is only a potential. The worry is that without proper regulation and guidelines, the growth of electronic cigarettes may actually be a cause of concern for both users and non-users. The need for such regulation is paramount and this should extend from the manufacturing procedure to how the consumer is able to use it. Further investigations do need to take place to gain clarification but until then, the discussion of the electronic cigarette is something worth keeping an eye out for.

Benjamin Neo

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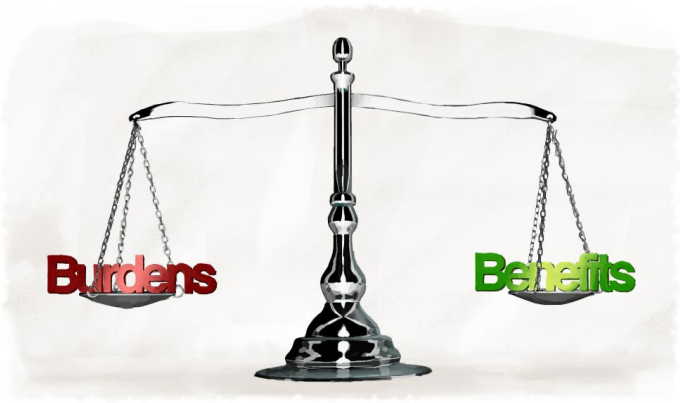
CLINICAL ACADEMIA AS A DENTAL UNDERGRADUATE

Having recently graduated from King's College London with my BDS, my six yearlong university journey is now over. On reflection I am fortunate to have such fond memories of the adventures and struggles of my time in London. I will very much miss the familiar courtyard of Guy's however am rather excited to finally be set free into the 'real word' and make use of all that King's has taught me. My intercalated BSc however was the turning point, which made me challenge myself more than my whole dental degree and opened my eyes to a multitude of opportunities beyond BDS.

Not having known much prior to my BSc about clinical academia I would like to share with you my journey in this little known aspect of dentistry and a few tips that might hope to encourage any other young dentist in stepping into this exciting field.

Why Research?

The idea of research can sound very cumbersome. Recollections of useless, failed experiments from school and all the pointless coursework which school demanded. However, research at university gave me the opportunity to do something original and exciting. To try your hands at something you find interesting, not just what was on a list to be replicated never to get the ideal result. To answer a question you have always wondered about. Life is full of unanswered questions; it is up to us to find the answers.



Intercalating?

Intercalating is what kick started my interest in research. To begin with, I was rather clueless of what it would entail. I jumped into it on the advice of my tutors and friends. It is a big commitment to make, leaving your year group and doing an extra year which can often feel like a never ending battle with journal articles. It is an extra year of university however with many funding options available it doesn't have to burn a hole through your pocket. It can even be the most cost effective year, a BSc in one year that can be funded through the NHS Bursary.

Throughout the year you get the same level of teaching and experience as an MSc or first year PhD student, yet you receive protection, advice and opportunities of an undergraduate. This makes a big difference, as one is not expected to know everything, allowed to make mistakes and learn through them!

When it comes to opportunities, there are a plethora of scholarships, prizes and conferences you can apply to, which only get funded when you are an undergraduate. The year will have multiple assignments, a research project and the dreaded dissertation. However, the skills it develops for example critical analysis and lateral thinking cannot be gained through the rest of BDS and are so key in practicing in the current evidence based atmosphere. So, if you like to question and challenge the status quo then the iBSc is for you!

Summer studentships?

After my intercalating BSc, I applied for and was awarded a paid studentship to carry on my research project during the long summer. This was great fun in addition to finally getting paid rather than paying to learn and a chance to complete my project the way I wanted to rather than the limited time the iBSc year provided. It was also a good way to strengthen the skills I had developed throughout the year, especially in preparation for my first conference presentation.

These research grants and studentships can be carried out standalone as well. So if you are interested but not certain enough to spend a whole year out of BDS, this can be a valued taster into the world of clinical academia.

Conferences?

One of the major perks of clinical academia is getting to jet set all over the world, visit beautiful cities and most of all to make fantastic friends. Life is never boring as a clinical academic and definitely not isolating. Working and collaborating with a whole host of colourful people is refreshing and stimulating.

My first conference was the International Association of Dental Research European Congress (IADR-PER) in Helsinki 2012. A 10 minute oral presentation sounds easy enough to begin with, yet when you begin it can become very daunting as it is a completely new skill which takes time to develop. To date I remember the first few practice runs and how terrible they were. It looks so easy when professors lecture yet it's important to remember and appreciate the years of experience they have. However once the presentation is done and dusted there is a fabulous new city to explore. This is my favourite part of the conference, not the presenting or all the new research you absorb, but the people you meet. The memories, friendships and conference parties will last with you forever.

Mentoring?

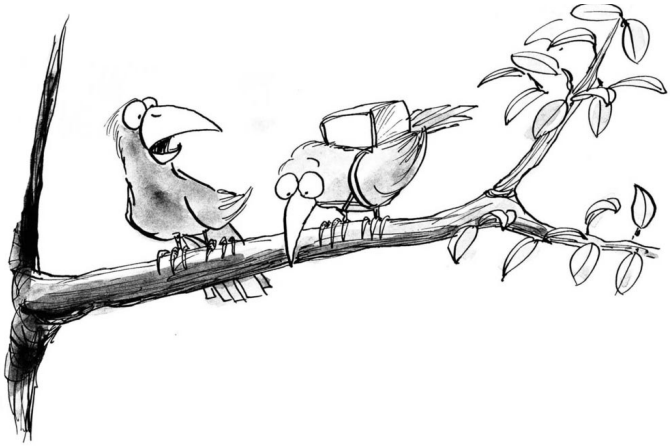
The single most important advice I can think of for anyone interested in clinical academia is to have good mentors. They are so important in encouraging your hopes and dreams, as well as guiding your career through the wealth of their experience. They can inspire you or discourage you, having experienced both I have learnt the best way is to grow from the encouragement and learn from the criticism. A good mentor relationship can really help support you in the dark times and open doors to exciting opportunities.

I have been fortunate at KCLDI, where Professor Watson and Professor Woolford in particular, have always supported my interest in biomaterials research – from the time I first considered intercalation all throughout my undergraduate degree.

Through my intercalation, I had the to opportunity to work with Professor Sauro, who is now a professor in Valencia. His hard work and dedication to biomaterials research, and his energetic attitude to life, have been a source of inspiration for my own academic interests.

Still interested?

I hope I have clarified some of the mystery that surrounds clinical academia and managed to encourage a few of you to explore this exciting aspect of dentistry. It is not everyone's cup of tea, yet if you never try something new you never know what you might be missing.



"Let's try it without the parachute."

As with anything the best way to decide is to find what really interests you and speak to as many people as you can who can guide you. Read around your subject and about the work of key people in that field. You can then approach a supervisor with your exciting ideas and see if they have a place on their team. If you are proactive, you are much more likely to be accepted. It is never a good idea to do research just for your CV as you will quickly tire of it and it is always difficult to convince others of your work if you lack true enthusiasm

Doing a structured programme like intercalating or a studentship is a great way to develop your skills, but if you don't have the time then even small projects through your BDS can be a good introduction.

Finally, my most important golden nugget of advice is to find someone who truly inspires you and learn from them to support all your hard work and enthusiasm.

Babbar Ashavin

CLINICAL PHOTOGRAPHY FOR DENTISTS OF THE DIGITAL AGE (PART 2)

INTRODUCTION

In the previous release, technical matters like the camera and lens choice were discussed. The theory underlying photography was also reviewed extensively.

This release will maintain a more practical approach. From ergonomics to the key aspects of a proper dental photography workflow, most questions related to dental photography in practice will be answered.

In addition, a series of standard and recommended photographs will be explained. Such photographs are the pre-requisites for a good assessment of an intra-oral situation.

ERGONOMICS

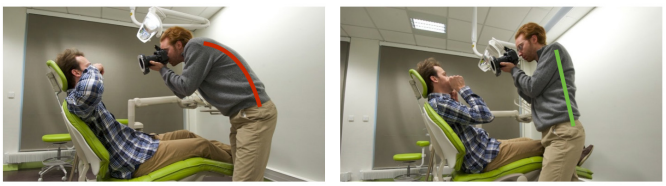
Occupational back pain

Dental practitioners are one of the most at-risk professions for shoulder and back pain due to poor working posture. Such distortions cause pressure on nerve roots, producing pain. On the long run, muscles and ligaments are overstressed which may result in muscle spasms.

Epidemiologists refer to this phenomenon as occupational back pain. Thus, necessary precautions when working should be taken (eg. working length, working position, loupes, proper lighting system…). Dental photography makes no exception as a typical set-up (camera body + 105 mm lens + twin flash) weighs approximately 2 kilograms.

Healthy working position

When working, the long axis of the torso should remain nearly vertical and the shoulder line horizontal. The patient height should be adjusted so that no additional effort is required to frame the picture.



NO YES

Illustration 1: Examples of poor and good positions

A firm grip on the camera and lens is needed in order to minimize muscle tension and shakiness. On the right hand, the thumb shall be placed on the dial, the forefinger on the shutter release and the last three finger shall be tightly placed on the body grip. The left hand shall be placed underneath the lens, with the thumb facing the lens hood; this ensures maximum stability, minimum muscle tension and allows easy and convenient manipulation of the focus ring.

TEAMWORK & EFFICIENCY

Working with a chair-side assistant is of great help when it comes to photography. In addition to the camera, a typical dental photograph requires a mirror, one or two cheek retractors, a contrastor and an air spray.

For pre- and post-operative photos, the patient will hold the retractors and the assistant will take care of the mirror and air spray. The dentist will then be able to focus on the camera and the contrastor if needed.
For peri-operative photos, the assistant will take care of the camera and air spray, the patient will manage the retractors and a larger mirror will be used by the dentist.

For improved ergonomics, one may consider using the OptraGate® system from Ivoclar Vivadent AG (Schaan, Principality of Liechtenstein). OptraGate® allows a complete and circular lips and cheeks retraction while being very comfortable for the patient.

To ensure an efficient workflow, standardization is also a good idea. Every new patient should get benefit from at least a summarized photo protocol. This will help the practitioner during treatment planning, case monitoring, and communication. Standard shots should be defined inside the dental practice and everybody in the dental team should be trained to perform them effectively. Writing a short instruction manual or protocol will guarantee a qualitative and time-efficient approach to photography. Only a good patient-assistant-dentist teamwork allows fast, reproducible and qualitative photographs in a hassle-free environment.

Lastly, given the large number of pictures taken in a photo-oriented dental practice, having a way to recall the patient name and the reason for the visit is highly recommended, especially if the assistant is in charge of unloading the camera on the computer. Some cameras offer the possibility to record and attach a voice memo to the pictures. However, a slate (eg. a Velleda slate) can easily be used. A slate is very likely the most cost-effective tool for such a purpose: by taking a picture of the slate with the name of the patient, the date of the visit and the reason for coming

GENERAL ADVICE

First of all, the dental chair should be set so that the patient is positioned accordingly to the photo about to be taken (see below).

Then, the camera should be set (speed, ISO, aperture) so that there is no light on the photo except the flash's light : when taking a picture with the flash off, it should be fully black.

The flash power should be set high enough to bring enough light to have a perfect looking picture. When using a ring flash, there is virtually nothing more to do. When using a twin flash system, one may want to tilt the two flash heads 30-45° inwards in order to better picture the tooth surface.

The focus can be done either manually or using the autofocus, depending on the practitioner's convenience. Manual focus may be of help in some difficult situations as it allows practitioners to have a very precise control over the focus zone. However, autofocus is a very useful and convenient feature allowing faster workflow.

GUIDELINES FOR DIRECT VISION

For direct vision (smile line, full face), the dentist should be placed right in front of the patient, who is in a sitting position.

Smile lines
- Direct sight
- Full face
- No retractors
- Axis of the lens: horizontal and perpendicular to the face
- 3 configurations: no smile, natural smile, full smile
- Ask the patient to swallow his saliva before taking the photo

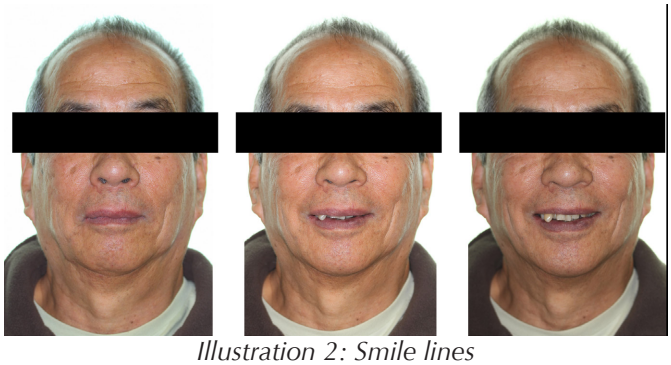


Illustration 2: Smile lines

Intra-oral, frontal, both arches in occlusion
- Direct sight
- With retractors, pulled horizontally
- Axis of the lens: horizontal and perpendicular to the face
- Ask the patient to swallow his saliva before
- Use the air spray to dry teeth seconds before taking the photo

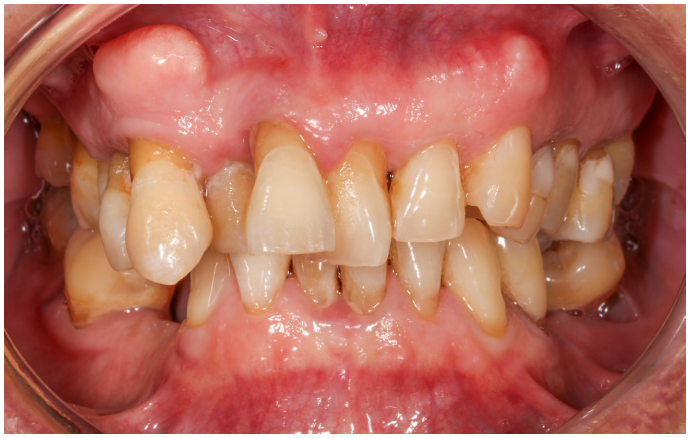


Illustration 3: Both arches in occlusion

Intra-oral, frontal, both arches, in propulsion
Same procedure as before but the patient is asked to put his mandible in propulsion until the upper and lower incisors are in contact. This photograph will help assess the patient's occlusion.

Intra-oral, frontal, upper or lower arch only
Same procedure as both arches but use a contrastor in addition.

Illustration 4: Use of a contrastor

GUIDELINES FOR INDIRECT VISION

For occlusal shots, the patient be positioned in a fully supine position. For a maxillary view, the dentist should be right behind the head of the patient, standing at the 12 o' clock position. For a mandibular view, the dentist should face the patient and stand at the 9 o' clock position, leaning against the chair over the patient. Authors advise the reader to take two photos of each arch: one without articulating paper and one with.

For lateral shots with mirrors (intercuspation in posterior teeth), the dentist should be placed on the opposite side.

Occlusal, maxilla:
- The dentist is behind the head of the patient
- With retractors, slightly pulled towards the nose to fully retract the lips and cheeks
- Axis of the lens: vertical and perpendicular to the face
- Mouth wide open
- The mirror should slightly rest on the patient's lower jaw, ensuring a 45° angle between the camera and the mirror and a 45° angle between the mirror and the maxilla
- Ask the patient to swallow his saliva before and ask him to

breathe by the nose
- Use the air spray to dry teeth seconds before taking the photo and to prevent fog to appear on the mirror

Occlusal, mandible:
- The dentist is next to the patient, by his arm
- With retractors, slightly pulled towards the chin to fully retract the lips and cheeks
- Axis of the lens: vertical and perpendicular to the face
- Mouth wide open
- The mirror should slightly rest on the patient's upper jaw, ensuring a 45° angle between the camera and the mirror and a 45° angle between the mirror and the mandible
- Ask the patient to swallow his saliva before and ask him to breathe by the nose
- Use the air spray to dry teeth seconds before taking the photo and to prevent fog to appear on the mirror

For buccal and lingual/palatal shots, the patient is in a sitting position.

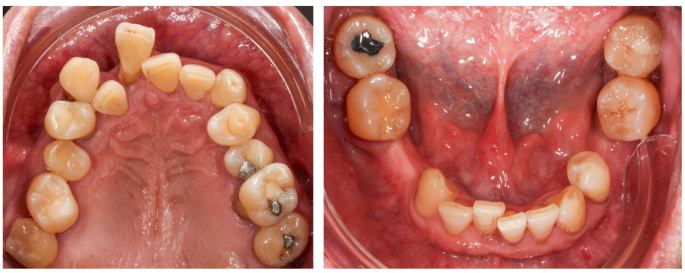


Illustration 5: Mandibular and maxillary occlusal views

Buccal:
- The dentist is on the opposite side to the one he wants to photograph
- With one retractor only, on the side of the dentist, slightly pulled towards the exterior of the mouth to fully retract the lips from the front teeth
- Axis of the lens: horizontal and with a 45° angle to the mirror
- The mirror is inserted with the mouth of the patient slightly open. Then, the patient gets in occlusion and the mirror is gently pushed at the very end of the arch. Lastly, the patient turns his head to face the dentist and the mirror is moved to ensure a 45° angle between the camera and the mirror and a 45° angle between the mirror and the teeth
- Ask the patient to swallow his saliva before and ask him to breathe by the nose
- Use the air spray to dry teeth seconds before taking the photo and to prevent fog to appear on the mirror

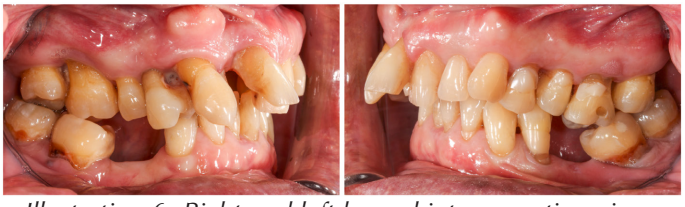


Illustration 6: Right and left buccal intercuspation views

Lingual / Palatal
- With retractors, slightly pulled towards the exterior of the mouth to fully retract the lips
- Axis of the lens: oblique, with a 45° angle to the mirror
- The patient turns his head so that the mirror faces the lens
- Ask the patient to swallow his saliva before and ask him to breathe by the nose. You can use the suction tip to help.
- Use the air spray to dry teeth seconds before taking the photo and to prevent fog to appear on the mirror

Any view using the mouth mirror:
- The dentist is on the opposite side to the one he wants to photograph
- With one retractor or two retractors, depending on the situation
- Axis of the lens: oblique and with a 45° angle to the mirror
- Ask the patient to swallow his saliva before and ask him to breathe by the nose. You can use the suction tip to help.
- The mouth mirror can also be used as a small retractor

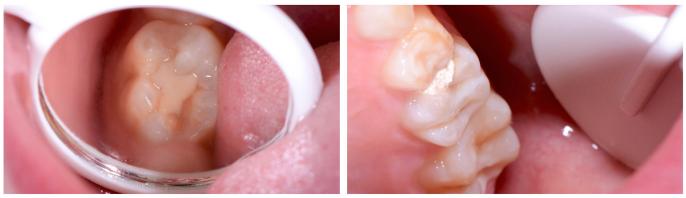


Illustration 7: The two uses of a mouth mirror

KEY ASPECTS OF THE DENTAL PHOTOGRAPHY WORKFLOW

Understanding the workflow

Eyes are certainly the dentist' best perception instruments. When it comes to photography, the camera, lens and flash replace them. The whole sequence, from taking the picture to analyzing it on screen, is critical: every step of the workflow must be clearly understood and mastered to ensure predictable and reproducible results.

To understand the importance of a correct workflow, one can perform a simple test: taking a photo of a multi-color paper sheet (with a camera in its out-of-the-box configuration), displaying it on a regular computer screen, and comparing it with the real sheet. Except in very few situations, it is almost certain that the picture on the screen and the actual sheet of paper will neither match in terms of tint nor saturation nor brightness. This mismatch is the direct consequence of an uncontrolled digital workflow.

The dental photography digital workflow comprises 3 major steps:
- Taking the pictures
- Transferring and organizing them
- Processing them to enhance the result

The different elements of a proper workflow will now be discussed.

Computer and camera equipment
Computer equipment will not be discussed here as only professional photographers and videographers need the most up-to-date hardware configurations. Except for 3D imaging, any dentist's computer needs will be fulfilled with a standard, medium-priced computer. The software configuration is actually more important than the hardware part (see above).

Typical set-ups for dental photography have been discussed in the previous release (Clinical photography for dentists of the digital age, part one, Garyga V, Dougnac-Galant Th, EDSA Magazine, April 2015).

The most important piece of advice - despite seeming like a ridiculous one - is to make sure one always has spare batteries for both the camera and the flash system as well as spare memory cards. A low battery in flash heads will result in under-exposed or over-exposed and non-reproducible images : it will lead the camera to miscalculate the amount of ambient light and of flash light.

File format
Shooting in the RAW file format (eg. CR2 for Canon, NEF for Nikon) is recommended. RAW files contain much more information than the traditional JPEG ones, resulting in a higher image quality and an increased flexibility during the post-production. But the most powerful argument in favor of the RAW file format is the legal one. In most countries, from a legal standpoint, only RAW files are considered as 'original'. One can use them for legal purposes such as medical malpractice litigation. Therefore, RAW files must never be shared with third parties: the photo must be converted to JPEG before sharing it. The conversion can be done either using the camera manufacturer's software or a dedicated photography software.

Camera modes
There are mainly two camera modes that can be used for dental photography: manual (M) or aperture priority (A or Av). Both have advantages and drawbacks.

In aperture priority mode, one selects an aperture value (and an ISO value) and the camera will choose the shutter speed in order to aim for a balanced, well-lit image. The camera is easy to set, but the photos are not 100% predictable since the camera's chip is responsible for one of the three photo parameters.

The manual mode gives full control over the camera making the images fully predictable. The only limit of the manual mode is that a few test shots are required before finding the correct shutter speed, aperture and ISO values. Since digital cameras offer the possibility to immediately check the results, mastering the manual mode is actually quite easy. Therefore, people wanting fully reproducible pictures are advised to operate the camera in manual mode: the results are well worth the time needed to properly set the camera.

Histogram
It is possible to check for the photo's general aspect on the back screen of the camera, notably for sharpness and framing. However, back screens are not accurate enough to allow a precise verification of the exposure. To accurately check the exposure of a photo, one must use a dedicated feature of the camera : the histogram. The histogram is a graphic representation of the image light and dark pixels. It helps assessing the distribution of light and dark tones. The histogram can be activated in virtually all digital cameras on the market (see user manual on how to activate it).

If the histogram curve is on the left side, the image is a bit dark. If it is on the right side, it's a bit bright. A tall bar (peak) on the right side means that some bright pixels are pure white. A peak on the left side means some pixels are pure black. For photographers, there is no such thing as a perfect histogram because there are plenty of reasons to have pure black (night shots) or pure white (bright metal reflections, the sun). On the opposite side, dental practitioners are advised to make sure the histogram of their photos is well balanced. This is critical for white tones: white tones notably depict enamel surface and enamel edges. An over-exposed photo will result in a loss in details and a limited ability to accurately assess the micro-geography of the tooth.

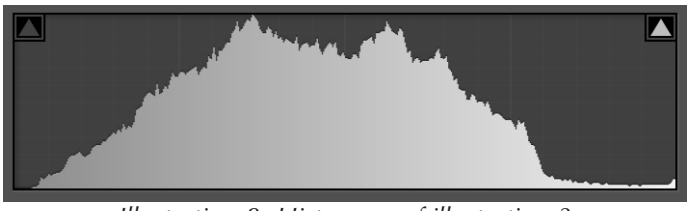


Illustration 8: Histogram of illustration 3

Transfer
Newcomers usually plug their camera directly to the computer to transfer images. The vast majority of cameras on the market are equipped with slow, out-dated USB 2 port. Given the large size of RAW files (around 30 MB for a Nikon D3s) this is not viable when transferring a lot of photos as a dentist is expected to do. Firstly, the transfer time will long and secondly doing so will drain the camera's battery out since the camera must be turned on during the transfer.
To overcome this limitation, one can use a dedicated card reader. Most card readers come with a USB 3 port (over 10 times as fast as USB 2) and accept all types of memory cards. The process with a card reader couldn't be simpler: the card is removed from the camera and inserted in the card reader to be automatically recognized by the computer. And if a photo is needed while the card is unloading on the computer, one will simply put another card in the camera and it's ready to work again. Put simply, card readers help save time, energy and money while being very ergonomic.

Photo library

There are mainly three ways to keep photos organized:
- Creating a folder for each patient
- Using a photography program
- Taking advantage of a feature included in the practice's management software solution

Manually creating a folder for every patient works fine for very organized people but it is time-consuming and will not allow anything else than storage (keywords, photo editing, etc).

Some practice management software solutions offer the possibility to store and edit clinical photographs. While the editing capabilities are very likely to be more limited than in a dedicated software product, some practitioners would prefer this option because of its all-in-one approach. However, the authors do not recommend it due to the inability of practice management software solutions to handle RAW files.

Lastly, using a dedicated photography program (such as the well-known Adobe Lightroom®) is a very interesting solution. It will help maintain an efficient workflow, will keep photos organized (eg. with tags such as « ceramics », « surgery » and so on). and will allow in-depth photo editing. Its only drawback is that the photos will not be included in the patients' records managed by the dental practice's dedicated software solution. Still, having both programs running at the same time does not seem to be a major drawback in regard of the authors' experience.

Image editing / Image processing

Image editing is probably the most inconstant parameter in photography. Several articles would be needed to cover all its aspects. Given that the needs of dentists are much more limited than the ones of photographers, only a quick review of the main parameters will be done.

For basic processing, only 5 sliders are useful:

1. *Exposure*: it will shift the entire image to brighter or darker. When using the exposure slider, it is always useful to keep an eye on the histogram displayed in the editing program.
2. *Contrast*: it is the scale of difference between black and white in the picture. A slightly increased contrast is considered to make the image look stronger, with bolder colors and textures emphasized. When using the contrast slider, one shall make sure the image still looks realistic after editing : extremely high or extremely low contrasts look artificial.
3. *White balance*, which is divided into two sliders:
   - Color temperature: it changes the aspect of the image to a more bluish or yellowish render. It is the major parameter of the white balance.
   - Color tint: it is the same as color temperature but between green and purple. It is the minor parameter of the white balance.
4. *Saturation*: it is the intensity of color in the image. A saturated image has more intense colors. One is advised that over-saturated images while looking attractive, depict a fake situation and, therefore, great care should be taken when using the pictures with patients, colleagues or dental technicians.
5. *Sharpness*: it is the clarity of detail in a photo. It can be a very useful slider to emphasize tooth structure, but increasing sharpness too much will result in a noisy image, with very small artificial dots.

The contrast, saturation, and sharpness sliders are very powerful ones. From the authors' experience, practitioners new to dental photography tend to over-increase those parameters, resulting in artificial images. Such artificial images bear lots of artifacts that will misguide the dental technician. It is therefore strongly advised to have a parsimonious use of these sliders and to make sure the after processing images are an accurate depiction of the clinical situation.

Color and contrast accuracy

All must understand that what is seen on screen in not the real photo. It is only the perception of what is rendered by the screen. A different screen will lead to a different perception. Since out-of-the-box monitors are not 100% color or contrast accurate, it would be advised to keep this limitation in mind when using photos for communication with dental technicians: taking an intra-oral photograph with the appropriate shade tabs offers a much more precise reference for the technician.

The most advanced users will use special-purpose screens, calibration charts for the cameras, and colorimeters to accurately set their monitors. However, only the most demanding applications of high-end cosmetic dentistry) would require such workflow. Colorimetry is a very difficult topic to master and special-purpose monitors are priced two to ten times the price of a regular monitor.

Back-up

The backup is certainly the most important part of the workflow. For legal reasons, one must ensure to have a safe copy of all his patients' records (including photographs) at all times. The golden rule of data backup is the following: regular, automatic, with at least one copy at all times and at least one copy in a remote location. Put in practice, this means one can either copy the picture folder to an external hard drive (manually or with a dedicated and automatic software) and store it home or one can also use a secure cloud-based back-up service.

In theory, cloud-based services are interesting because they operate on a fully automatic way and data are stored in a remote and secure location. However, given the sensible nature of medical records, the european legislation makes it mandatory to use only accredited and highly protected

cloud providers. Such solutions are much more expensive than a self-managed backup solution. The cloud market, while very dynamic, is not mature yet : at the current situation, cloud-based solutions are a viable option for virtually none dental practice.

Therefore, a self-managed storage and back-up solution is recommended to anyone confident enough to maintain it: if designed properly it offers great reliability, high flexibility, and unbeatable cost-efficiency. For most users, an external hard drive stored at home and an external hard drive stored at the office are enough as long as back-ups are updated regularly (a weekly basis seems enough).

CONCLUSION

To sum up, ergonomics, teamwork and image editing are at least as important as the in-camera exposure settings. Only a well-thought photo protocol, mastered by all members of the dental team, will ensure an efficient, reproducible and qualitative implementation of photography in one's dental practice.

Communication, notably with the patient and the dental technician, will largely benefit from it. Also, thanks to the magnification power of a macro lens, photography helps assess details the practitioner was previously unaware of, making photography a perfect tool for those who want to constantly self-assess and improve.

While a comprehensive dental photography workflow takes some time to implement, it undoubtedly brings much added-value to one's practice and clinical experience.

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This article is part of a series dedicated to clinical photography for dentists. In the upcoming issues, the authors will notably discuss advanced flash settings, colorimetry, using photographs for communication and for learning as well as advanced image editing.

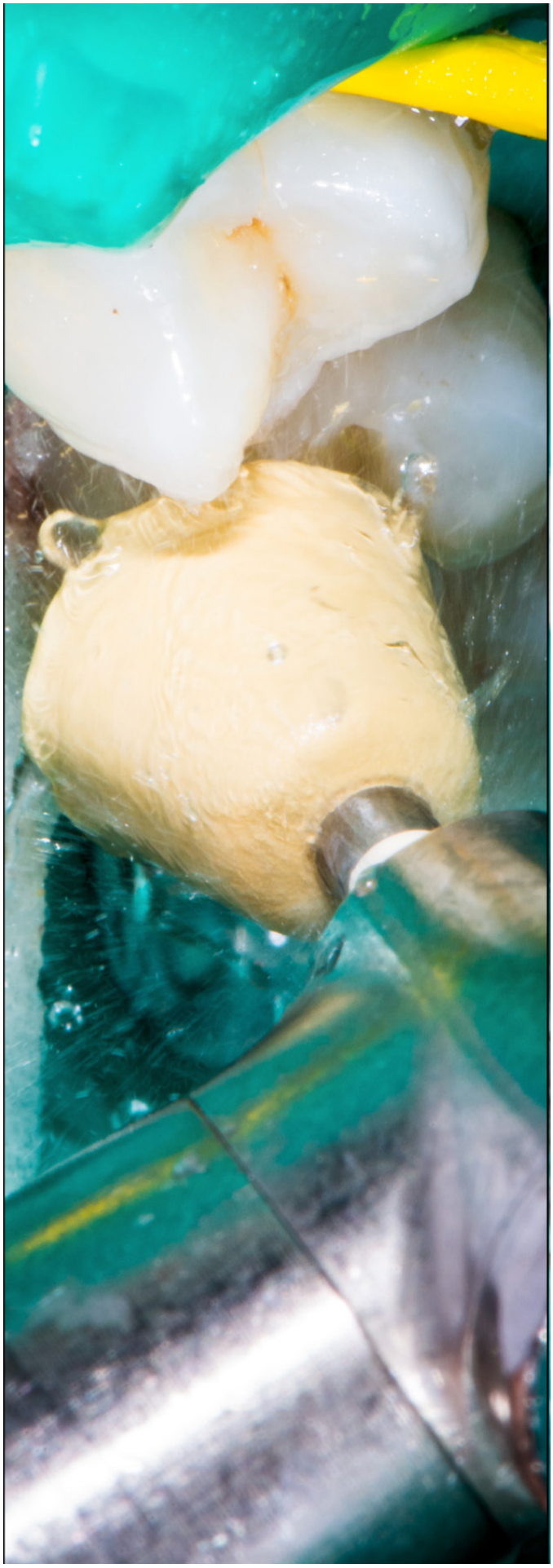

Illustration 9: Composite polishing

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Summer 2015