2020

# ICDigest

journal of the european section
international college of dentists


Thessaloniki 2019

## Fellowship, Science, Humanitarism and Recognising Service

## Interview Gil Alves Alcoforado

President 2019-2020

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The International College of Dentists is the preeminent global dental honor society recognizing outstanding professional achievement and meritorious service while advocating for humanitarian and educational initiatives.

**Motto**
Recognising service as well as the opportunity to serve.

**Core Values**
***Leadership:*** Uphold the highest standard of professional competence and personal ethics.

***Recognition:*** Recognize distinguished service to the profession and the public worldwide.

***Humanitarianism:*** Foster measures for the prevention and treatment of oral disease by encouraging and supporting humanitarian projects.

***Education:*** Contribute to the advancement of the profession of dentistry by fostering the growth and diffusion of dental knowledge worldwide.

***International Professional Relations***
Provide a universal forum for the cultivation of cordial relations within the profession and to assist in preserving the highest perception of the profession worldwide.

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# Time to grow the Fellowship

For an organisation to realise its mission, it must at least sustain, if not grow its membership. The European Section of the International College of Dentists is no exception.

At the Section's 2019 Induction Ceremony in Thessaloniki, the College's Global President, Bettie McKaig, now sadly deceased, commented that less than 0.1 percent of dentists in Europe are Fellows of the College. This contrasts with up to 3.0 percent of dentists being Fellows in other parts of the world. Given the achievements and standing of dentistry in Europe, it could be argued that many exceptional colleagues have not been recognised by Fellowship of the College. With c.340,000 dentists in the European Union, let alone the rest of Europe, the Fellowship of the European Section would need to be increased from around 700 to more than 10,000 to reach the 3.0 percent of dentists honoured by Fellowship of the College in other parts of the world – a 15-fold increase in Fellows! Goals to achieve and accommodate such growth may rightly be viewed as unrealistic; however, some growth of the European Section would appear to be indicated.

***Being a Fellow is as much, if not more about giving than receiving***

Is the College and its European Section too elitist? Are existing Fellows of the Section failing to identify and nominate colleagues worthy of Fellowship? Do exceptional colleagues fail to appreciate and accept the significant honour and benefits of Fellowship of the College? Does membership of subject specific dental organisations, focussing on, for example, implant and aesthetic dentistry have more appeal than Fellowship of the College? These and many more questions could be asked, and the answers debated endlessly, possibly with little consensus. Time to set aside whatever has happened, or not happened, in the past and to make a fresh start, coincident with the dawn of the second hundred years of the College. With an illustrious history, a reputation for highly successful annual meetings and opportunities to contribute to important humanitarian activities, let alone the professional fulfilment of belonging to the world's largest and most prestigious honour dental organisation, the European Section of the College should have no difficulty expanding its membership of Fellows.

Perhaps one of the more appealing aspects of Fellowship of the College and membership of its European Section is that <60% of the annual subscription goes to support humanitarian projects and related activities. Being a Fellow of the College and member of its European Section is as much, if not more about giving than receiving. Giving is always enriching, and all the more rewarding when the giving is through a fellowship of exceptional colleagues anxious to help people less fortunate than themselves. That said, the College should continue to strive to keep a balance between humanitarian activities and its other purposes, notably promoting professionalism and evidenced-based excellence in the care of patients -goals in professional life which are difficult to sustain if working in isolation and, in contrast to active engagement in a forward-looking professional body, relying on the internet and social media to keep connected.

In making a fresh start at the dawn of the second hundred years of the College, all existing Fellows, including the Fellows of the European Section, are encouraged to seek out, recruit and nominate at least one colleague who values professionalism, wishes to improve global oral healthcare and make the world a better place, let alone enhance the Fellowship of the College. In this way, the European Section may not increase its membership 15-fold, but would at least double its membership and, in the process, become rejuvenated through the recognition of many more colleagues who satisfy the key criterion of personifying the core values of the College.

Someone nominated you to be honoured; 2020 is the year for you to nominate at least one, if not two or more colleagues worthy of similar recognition.

**Nairn Wilson, Editor-in-Chief**

# New Editorial Board Member

The ICDigest Editorial Team is delighted to welcome Professor Tomislav Jukić, Regent for District XIV -Central and Southern Europe, as a new member of the Editorial Board. Tomislav (Tomi) graduated as a Doctor of Dental Medicine from the Faculty of Dental Medicine in Sarajevo. He obtained his PhD at the Faculty of Medicine in Osiek where he is presently an Associate Professor, with a newly established study programme in Dental Medicine in the Osiek Faculty of Medicine.

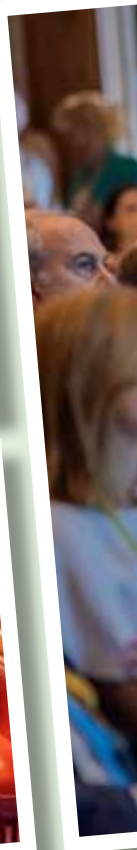
## *'Let's meet in Porto 10-14 June 2020!'*

### The Philip Dear Foundation

The Philip Dear Foundation (PDF) is a charitable fund for educational and humanitarian purposes which the European Section established in June 2005 to celebrate its 50th anniversary and to commemorate Philip Dear, considered by many to be one of the key Founding Fathers of the European Section.
Anyone wishing to make a donation, or give notice of a legacy to the PDF, possibly in memory of a family member, friend or colleague, in the event of some monetary good fortune, or simply out of personal generosity to allow the Foundation to expand and enhance its activities, may do so by contacting the Treasurer of the European Section, Maren de Wit (medewit@witmede.nl), or by making an electronic transfer to ICD European Section NL22 ABNA 0414 5452 81. It is always enriching to give!

# Reflections on Thess

**Mauro Labanca**
Registrar, European Section of the International College of Dentists



The 64th Anniversary Meeting of the European Section of ICD was held in Thessaloniki, Greece between 5th and 9th June 2019. The event was superbly organised and hosted by the President of the Section, Dr. Argirios Pissiotis, along with his wife Christina, and the local Organizing Committee, comprising ICD Fellows: Argyrios Koumas, Thodoros Lambrianidis, Nikos Economidis and Liza Koulouzidou.
In accordance with tradition, the 2019 annual meeting of the European Section was not only well organised, but elegant, informative and enjoyable. Guests of Honor were now sadly deceased Dr Bettie McKaig, International President of the ICD -the first lady President in the 100-year history of the ICD, and her distinguished husband Ross Vaughan.

On the Wednesday the traditional ICD European Section Golf Tournament was held at Porto Carras Resort in Chalkidiki, -a beautiful peninsula close to the city of Thessaloniki. The same evening the Regents Dinner was held at the Byzantine Museum of Thessaloniki. This occasion provided opportunity for Officers, Regents, Vice-Regents and Past-Presidents to meet the Guests of Honour, to catch up and socialise, together with spouses and partners, ahead of the Board of Regents meeting held the following day in the Congress Hotel, the Makedonia Palace.
On Thursday evening, the Welcome Reception was held in the Macedonian Museum of Contemporary Art. Here the 250 delegates enjoyed a guided tour of the Museum and its eclectic collection, followed by drinks and hors d'oeuvres, accompanied by music provided by a violin trio. The delegates were quickly into the spirit of the meeting, with many clapping and dancing to the selection of local and contemporary music.

# aloniki

The Scientific Programme was held on the Friday morning in the Makedonia Palace Hotel. The theme of the programme was 'Risk Management in Dentistry". It consisted of two parts, the first dealing with biological risks and the second with restorative risks. Each part was followed by a moderated discussion, providing opportunity for the delegates to comment and pose questions. In the afternoon, the Humanitarian Forum included presentations on six humanitarian projects supported by the College and the Philip Dear Foundation. Meanwhile the accompanying persons enjoyed a city tour of Thessaloniki and wine tasting followed by lunch at one of two renown wineries in the vicinity of Thessaloniki. That evening the delegates, guests and speakers enjoyed a beautiful dinner by the sea in the Port of Thessaloniki, taking in a breathtaking view of the city and wonderful sunset. The evening gave delegates and guests opportunity to relax, get acquainted with inductees for Fellowship, and spend quality time with Fellows and friends.

As is custom and practice at annual meetings of the Section, the Saturday morning was free for delegates to simply enjoy the facilities of the hotel, walk through the city centre, or join a sightseeing trip. A number of delegates took the opportunity to visit the Polycentric Museum of Aigai to see the Macedonian Royal Tombs of Phillip the Second, King of Macedonia and father of Alexander the Great.

In the afternoon the Induction Ceremony of the Section was held in the Makedonia Palace Hotel. Forty-two new Fellows were introduced by the Regents and received their ICD Key, Certificate and Fellowship pin. Dr. Tom Feeney, Past President of the European Section, was presented with the Master Fellowship Award. The Ceremony ended with Argirios Pissiotis passing the Presidency of the Section over to the President-Elect, Gil Alves Alcoforado of Portugal, and the new President thanking Argirios for his outstanding contributions to the Section, notably during his term as President. The Induction Ceremony was followed by a reception. The evening continued with cocktails and the 2019 Gala Dinner of the Section, also held in the Makedonia Palace Hotel. The evening finished with dancing to live music and some partying to the early hours -a perfect finish to yet another memorable annual meeting of the European Section of the ICD.

The following day there was a post-congress tour to Meteora -a spectacular rock formation in central Greece, hosting one of the most precipitously built complexes of Eastern Orthodox monasteries. ■

Scientific Programme 2019

# Risk management in dentistry

In making treatment planning decisions, clinicians must assess the risks involved in every recommendation put to patients.

**Profs Aris Petros Tripodakis and Antonis Konstantinides**

## Presidential introduction

**Prof Argirios Pissiotis**

Risk is defined as a chance or possibility of danger or incurring loss or injury. It is recognized that harm may befall a patient even in the best health facilities delivering the highest possible standards of care. The practice of medicine in general is often a process of balancing a risk against the efficacy of a diagnostic or therapeutic procedure. Risk management is a proactive approach involving the systematic identification, quantification and assessment of risks, the appraisal of options to reduce or eliminate them and the recognition by all concerned of the implications of the remaining risks

Taking account of available evidence guides the dentist to select the most appropriate treatment options and present them the patient in the process of identifying the treatment of choice. If the patient insists on something different, he/she should be ready to assume responsibility for the associated risks. Since Fellows of the International College of Dentists are a multidisciplinary group, it was considered appropriate in include lectures in this two-session programme on risk management in different aspects of dental care.

Session I, moderated by Professor Antonis Konstsntinides, consisted of lectures addressing biological risk management, specifically risk management in Periodontology, Endodontology, Oral Biology and Oral Radiology.

Session II, moderated by Professor George Eliades, consisted of lectures in restorative risk management, specifically in Operative Dentistry, Prosthodontics, Implant Dentistry and the management of temporomandibular disorders.

## Session I: Biological risk management

**Moderator: Professor Antonis Konstantinides**
**Emeritus Professor, Aristotele University of Thessaloniki**

**Prof Antonis Konstantinides**

## Risk management in periodontal diseases

**Antonis Konstantinides**

We know that some individuals have greater risk of developing severe periodontitis, and some do not respond predictably to standard treatment procedures. Differences in periodontitis progression in these individuals may be explained by the presence of risk factors. Risk factors influence an individual's probability of future disease progression and response to standard therapies. They are classified into:

- Environmental factors, including smoking, overload of pathogenic bacteria, stress, preventive care and diet.
- Genetic variations which modify the immune-inflammatory response, alter wound healing and influence bone and connective tissue remodeling.
- An acquired disease, for example, uncontrolled Type 2 diabetes that influences the individual's host response to bacterial challenge.

The net result of one or more of these modifiers is a change in the rate of certain physiological pathways influencing the biological response to the bacterial challenge, and the impact of the challenge.

Four risk factors were considered – genetics, smoking, stress and pathogenic bacterial overload.

## Genetics

It is widely accepted that differences among individuals at risk of developing most diseases have a substantial inherited component.

Factors in the environment, e.g., diet, smoking, preventive care and exposure to pathogens, interact with each person's genetic predisposition to determine his or her health outcomes.

Most cases of periodontitis appear to fit this complex gene/environment model, with a broadly similar contribution to determining periodontal health or disease. Despite more than 800 studies on periodontitis and genetic polymorphisms reported to date, knowledge of which genes are most important remains extremely limited.

Evidence of the role of genetic factors in periodontal diseases is provided by studies involving twins. Kornman and colleagues (1997) demonstrated that alterations (polymorphisms) in specific genes encoding inflammatory cytokines such as interleukin-1a (IL-1a) and interleukin-1β (IL-1β) were associated with severe chronic periodontitis in non-smoking subjects. A test based on inherited genetic variation at the interleukin-1a alpha (IL-1a) and IL-1β cytokine genes was first proposed by Kornman as being able to predict the risk, progression, and severity of periodontitis. The test has been commercialized as PST, Perio-Predict, and ILUSTRA. To date, the test does not appear to be widely used.

A number of reviews of the large number of studies on the IL-1 gene polymorphisms indicate that genetic variation at these loci may be associated with, at most, a modest effect on disease risk. (Huynh-Ba, et al., 2007; Nikopoulos,2008).

Huynh-Ba et al. (2007) concluded: "There is insufficient evidence to establish if a positive IL-1 genotype status contributes to progression of periodontitis or treatment outcomes."

A similar lack of supporting evidence for the use of IL-1 genetic testing to predict implant success has also been reported (Andreiotelli, et al., 2008; Huynh-Ba, et al., 2008.)

A recent meta-analysis of the available data suggested that IL-1 polymorphisms have a small (odds ratio~1.5) but significant effect on periodontitis risk, although only for chronic periodontitis in white populations) Karimbux et al., 2012). Overall, it appears that changes in IL-1 genes may be only one of several genetic changes involved in the risk for chronic periodontitis. Other candidate genes possibly related to risk of chronic periodontitis include:

•Interleukin (IL)-1 gene cluster (IL-1A, IL-1B, IL-1 receptor antagonist), IL-4, IL-6, and IL-10, TNF-alpha, Leukocyte receptors for the constant (Fc) part of immunoglobulin (FcγR), Vitamin D receptor, pattern recognition receptor genes (TLRs, cluster of differentiation [CD]-14) and matrix metalloproteinase (MMP)-1.

It may be concluded that genetic factors represent only part of the risk associated with a predisposition to periodontitis. Onset of the disease at an early age often indicates a genetic predisposition. With periodontitis there are no therapeutic means to alter the influence genetic polymorphisms. Treatment planning is, therefore directed towards microbial control.

## Smoking

Smoking is a major risk factor which increases the prevalence and severity of periodontitis. Smokers have reduced treatment outcomes. Smoking cessation support should be an integral component of periodontal therapy.

Given that half of the cases of periodontitis are attributable to smoking, then patients who smoke may be better served if dental professionals put more than half of their efforts in the treatment of periodontitis into smoking cessation therapies as part of 'personalized care'.

## Antimicrobial therapy

Periodontopathic bacterial can be isolated with greater frequency in smokers from clinically health sites. Any potential clinical benefit of reducing populations of these bacteria must be weighed against the significant and well-documented possibility of contributing to the development of antimicrobial-resistant strains. The current evidence to support systemic antibiotics as a personalized approach to managing periodontal diseases in patients who use tobacco is, at best, limited.

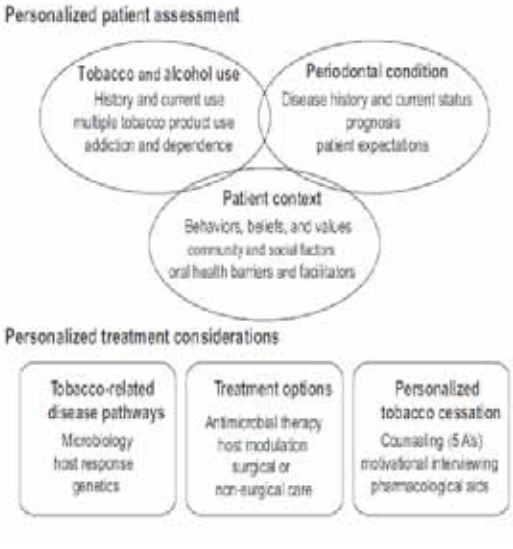



**FIGURE 3** In evaluating, counseling and treating the tobacco-using periodontal patient, the dental care provider should consider personalized factors, such as patient values, nicotine dependence and microbiology, to develop appropriately tailored therapies

**Personalized periodontal treatment**

## Host modulation

Systemic delivery of sub-antimicrobial doses of antibiotics in the tetracycline family or local high-dose delivery of doxycycline gel or minocycline microspheres are the only widely used approaches to host-modulation therapies, specifically for their effect on the suppression of a destructive host response in smokers. Sub-antimicrobial doses of tetracycline family antibiotics have been shown to depress the activity of several matrix metalloproteinase, inhibit the release of IL-1β from mononuclear cells and act as a remover for destructive oxygen species released during the oxidative burst.

## Helping your patients to quit smoking

Dental interventions to help patients quit smoking are effective, with quit rates of 15% to 20%, as compared with c.5% in control groups (Rosseel et al., 2009).
Methods of smoking cessation include willpower alone, self-help materials, brief intervention programmes in primary care, nicotine replacement therapy and the prescription of drugs.

## Stress

The key points on the influence of stress on periodontitis include:

- Emotional stress may interfere with normal immune function and may result in increased levels of circulating hormones, which can affect the periodontium.
- Stressful life events, such as death and/or divorce, appear to lead to a greater prevalence of periodontal disease.
- An apparent association exist between psychosocial factors and risk behaviors such as smoking, poor oral hygiene, and chronic periodontitis.
- Adult patients with periodontitis who are resistance to therapy are more stressed than those who respond to therapy.
- Individuals with financial strain, distress, depression, or inadequate coping mechanism have more severe loss of attachment.
- Although epidemiologic data on the relationship between stress and periodontal disease are limited, stress may be a putative risk factor for periodontitis.

## Pathogenic bacterial overload

The quantity of plaque on the tooth surface is not of major importance in periodontitis. However, the composition, or quality of the plaque biofilm is important.
In terms of quality of plaque, four specific bacteria have been identified as etiologic agents for periodontitis: Aggregatibacter actinomycetemcomitans (formerly, Actinobacillus actinomycetemcomitans), Porphyromonas gingivalis, Tannerella forsythia (formerly Bacteroides forsythus) and Treponema denticola.
Moderate evidence also suggests that Campylobacter rectus, Eubacterium nodatum, Fusobacterium nucleatum,Prevotella intermedia, Prevotella nigrescens, Peptostreptoccus micros, Streptoccus intermedius are etiologic factors in periodontitis.

## Risk management in Endodontology

The delicate and meticulous manipulations necessary for a successful root canal treatment (RCT) include the risk of causing minor or even major damage due to so-called

**Prof Theodoros Lambrianidis,**
**Aristotele University of Thessaloniki**

"iatrogenic errors". The sequence of interdependent steps characteristic of a RCT may be interrupted or even fail at any time or stage of the process due to iatrogenic error. These procedural errors, if limited, may merely complicate RCT or simply affect its prognosis, imposing the necessity of periodic clinical and radiographic follow-up examinations. In more severe cases, however, iatrogenic damage may lead to surgical endodontics or even tooth extraction.

Iatrogenic errors during RCT usually affect dental and/or periodontal tissues. In some cases, however, they may implicate organs quite distant from the oral cavity such as in accidents involving swallowing or inhaling an instrument or in cases of emphysema. Potential errors should be carefully considered in the treatment plan decision-making process, so they can be anticipated, prevented, diagnosed or managed correctly.

Of all the potential iatrogenic errors in RCT, vertical root fractures (VRFs) and fractured instruments will be considered. VRFs present challenges in diagnosis but have straightforward management, as opposed to fractured instruments that are relatively easy to diagnosis but complicated management.

## Vertical root fractures

VRF, as reviewed by Tamse et al., 2015, is a longitudinally oriented fracture of the root that originates from the apex and propagates to the coronal part. It may involve the whole root length or a section, one side or both.

## Diagnosis

There is no known single pathognomonic sign, symptom, or radiographic feature to definitively diagnose VRF. Of-

ten, the clinical signs are very similar to those found in failing RCT or in periodontal disease. Diagnostic difficulties become more complicated when there is no radiographic bone loss. VRFs are sometimes diagnosed years after restoration of a root treated teeth. Their clinical characteristics vary. Radiographic signs presented by Pitts and Natkin (1983) also vary (Table 1).

## Management

Extraction of the affected root or tooth. Some case reports have proposed alternative management but there are associated risks and uncertain clinical outcomes.

## Prevention

VRFs are prevented by minimal removal of sound dentine, controlled force during lateral compaction, the use of a ferrule when restoring an endodontically treated teeth with a crown, the use dowels only when necessary and, when necessary, preferably the use of fiber-reinforced resin dowels.

## Fractured instruments

Fractured instruments is an undesirable and troublesome incident that frustrates practitioner and patient. It happens to everyone who practices endodontics (Lambrianidis, 2018).

## Diagnosis

Given that endodontic instruments are metallic, diagnosis of a fractured instrument, if not apparent clinically, is readily confirmed radiographically.

## Management

Prior to initiating efforts to retrieve a fractured endodontic instrument, medico-legally and for better patient cooperation, the patient must be informed, advised on the procedures necessary for correction, alternative management modalities and the impact the iatrogenic error and the treatment options will have on prognosis.

The management options include:

- No intervention in hopeless non-restorable cases and in cases with no clinical or radiographic signs of pathology, if no scheduled treatment is to be performed to include these teeth.
- Orthograde/conservative management. The optimal management is retrieval. At present, there is no standardized procedure for safe and consistently successful instrument fragment removal. The ultrasonic removal technique is the most popular technique among both general dental practitioners and endodontic specialists.
- Surgical management or tooth extraction.

The use of a microscope is considered a prerequisite in the management of fractured endodontic instruments.

## Conclusions

- A fractured instrument is not a primary cause of treatment failure. It is a causative factor of failure as it hinders cleaning and shaping part of the root canal.
- There is no standardised procedure for safe, successful and consistent retrieval of instrument fragments
- A decisive factor is the preparation of a straight-line access to the fragment.
- The longer the time needed to manage a fragment the greater the risk of complications and the lower the success rate. Approximately 45min working time should suffice.
- To avoid time-related complications, it is prudent to have a defined cut-off point.
- The use of microscopes, ultrasonic and refined ultrasonic instruments increase the potential for the retrieval of fragments.

## Risk management in oral cancer

Diagnosis of oral cancer falls primarily to dentists as a professional responsibility, with considerable ethical and legal ramifications.

The presentation outlined:

- The clinical responsibilities of the dentist in oral cancer diagnosis

**Table 1. Clinical characteristics and radiographic signs providing either conclusive or suggestive evidence of VRF.**

| Clinical characteristics | Radiographic signs |
|---|---|
| Display of fracture line | Separation of root fragments |
| One or more sinus tracks | Radiolucent fracture lines |
| Deep narrow periodontal pocket | Radiopaque areas |
| Mobility | Halo- like apical radiolucency |
| | Periodontal like bone lesions |
| | Root resorption along the fracture line |
| | Displacement of retrograde filling material |

**Dr Eleni Gagari, Assoc Prof Kapodistrian University of Athens**

- The ethical and psychological dilemmas dimensions of the process
- The legal liability an oral cancer diagnosis entails, including handling of personal information
- The overall handling and management of the process, including proper written and verbal communications, and the patient so he/she may receive appropriate care.

Timely diagnosis of oral cancer in dental practice saves lives. It should not put the practitioner at legal risk, nor should it compromise the patient's chance of receiving the best possible care for their life-threatening problem.

## Risk management in dental radiology

There are two the main risks in dental radiology:
1. Failure in radiologic diagnosis.

**Dr Christos Angelopoulos, Assoc Prof**
**Aristotele University of Thessaloniki**

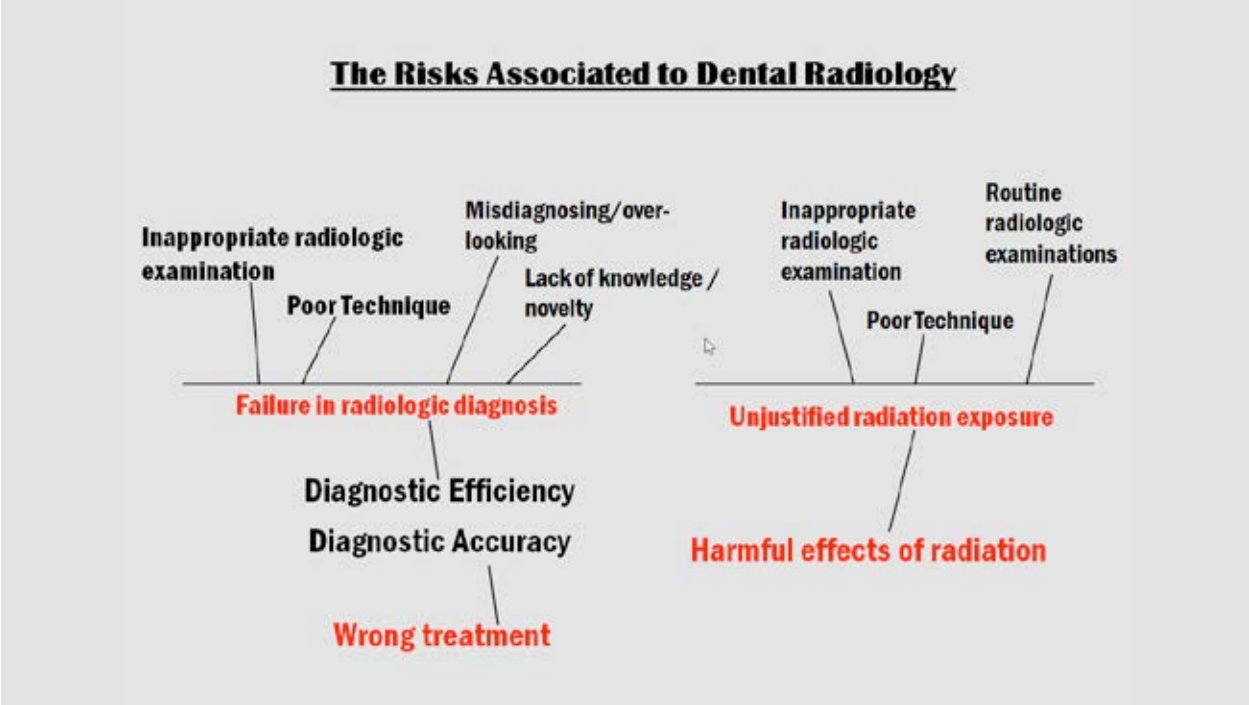
2. Radiation associated risks because of unjustified radiation exposure.

## Failure in radiological diagnosis

Failure in radiological diagnosis is crucial because it may lead to the wrong treatment. A number of different factors seem to be contributory (solely or combined) to a wrong diagnosis: the selection and utilisation of an inappropriate radiologic examination and poor radiologic technique are the most important technique–related factors, On the other hand, misdiagnosing or overlooking diagnostic information are linked the diagnostician's performance and may be associated with lack of experience or attention, lack of knowledge or novelty of the diagnostic methods applied.

Often, radiographs are prescribed or performed routinely, not based on the individual patient's condition but out of convenience or habit. For example, the frequent prescription of panoramic radiographs which may be not be appropriate for diagnostic purposes such as caries of periodontal diagnosis. This may result in poor or incomplete diagnosis and, in turn, wrong treatment. Also, there are consequences of relying on defective radiographs, including technique errors.

The experience and knowledge of the diagnostician is equally, if not more important. Overlooking or misdiagnosing disease is not uncommon and may occur to the best diagnosticians. This may be exacerbated in the absence of experience, or with novel diagnostic procedures. When this is combined with poor technique or an inappropriate radiologic examanination, the associate risk may increase significantly.



### Radiation associated risks

The risks associated with ionising radiation used in the dental diagnostic examinations is rather small but not negligible. These risks may increase with unjustified X-rays -X-rays obtained but not necessarily needed, radiologic examinations that need to be repeated because of poor technique, or due to the selection of inappropriate radiographic views which have no diagnostic yield.

To manage possible risks in dental radiology one should:
- Adhere to guidelines and standards of care
- Understand the limitations of radiographic diagnosis
- Ensure the highest diagnostic accuracy and efficacy with high-quality radiographic examinations, limited to the most appropriate views
- Learn from mistakes and apply quality assurance protocols in dental radiology
- Obtain radiographs ONLY when needed.

## Session II: Restorative Risk Management

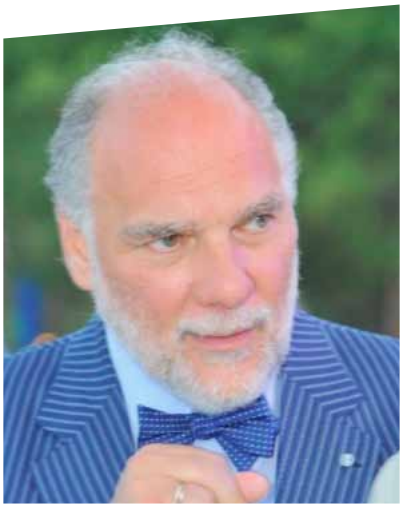
**Moderator: Prof George Eliades**

### Risk management in adhesive restorative dentistry

**Prof George Eliades, National & Kapodistrian University of Athens**

Adhesion of restorative materials to hard dental tissues has been of fundamental importance to the clinical application and success of highly aesthetic restorations of a wide range of materials, including resin composites, ceramics and ceramic hybrids. The diversity in the properties of these materials and the need to reduce the number of steps in adhesion protocols, have led to the development of simplified adhesive systems. Nevertheless, many of these systems have been found to create new problems related to interfacial strength and the setting capacity and properties of adhesives and luting agents. Typical examples include the inadequate bonding to enamel of self-etch adhesives, the incompatibility of mild and strong self-etch adhesives with the self-curing mode of dual-cured materials, the low degree of conversion of many dual-cured self-adhesive cements and core build-up materials when not sufficiently photopolymerised, depth of cure limitations in several bulk-fill composites and the presence of polymerized silanols in many modern universal silane primers and adhesives.
To solve most of these problems, additional steps were advised, thus transforming modern "single-step" approaches to multistep ones, matching in several cases the original multistep approaches they were developed to replace. Notwithstanding these issues, the quality of the substrate and especially of the dental hard tissue remains a challenge for strong and durable adhesion.

### Risk management in fixed prosthodontics



**Prof Aris Petros Tripodakis**
**Visiting Professor Tufts University**

A prosthesis should not be considered a lifeless product of craftsmanship, rather a part of the living, functioning human body. Dental prostheses in the oral cavity need to respect biologic, functional and esthetic prerequisites. Any violation of these prerequisites constitutes reversible or irreversible iatrogenic trauma, the latter inevitably leading to unfortunate permanent failure. Such failure can affect just one tooth, but sometimes the whole dentition and the lower third of the face. Such damage is of greater importance, as the human face is integral to the appearance and personality of the person.

A most important aspect of minimizing the risk of failure in Fixed Prosthodontics is adherence to treatment modalities that are based on evidence. Evidence Based Dentistry has influenced many clinical actions of dentists, enhancing clinical outcomes. However, in oral rehabilitation the risk of failure remains high and is always present, while successful clinical outcome depending on numerous parameters. The inability of the clinician to repetitively achieve perfection and the multifactorial difficulties encountered in each case, are the basic sources of failure. Moreover, in Prosthodontics procedures are complicated by interaction between clinical and laboratory procedures in the constructing of prostheses.

### Iatrogenic trauma

Failure management starts with minimising iatrogenic trauma. Respecting hard and soft dental tissues promotes biologic adaptation. For example, if full crown coverage is required, the intra-crevicular finish line must respect the epithelial attachment. Contemporary adhesive, all-ceramic prosthodontics provides opportunity for maximum preservation of sound tooth structure, thus reducing the risk of iatrogenic damage.

The provision of Fixed Prosthodontics involves three consecutive, well-defined phases: diagnosis, the transitional phase and construction. The interaction between dentist, patient and dental technologist in all three phases is critical to effective risk management.

### Diagnostic phase

Beyond diagnostic procedures pertaining to individual abutment teeth, diagnosis and treatment planning in fixed prosthodontic aims to ensure the success of the final prosthesis, including its three-dimensional setting in the oral cavity and the ways in which it supports and enhances the appearance of the perioral structures. When teeth are lost, the volume of the residual ridge is reduced and perioral tissues loose support. Fixed prostheses need to restore both missing clinical crowns and restore support to the face.
Study models are the basis of communication between the dentist and the dental technologist. The models, together with the information from the clinical evaluation of the patient informs the technologist. Diagnostic waxing must not be a "typodont" but personalized for the individual patient.

### Transitional phase

Based on the above, the dental technologist will construct the transitional restoration. When inserted this prosthesis aims to become the blueprint of the final prosthesis by "test-driving" the biologic and esthetic response. Following any necessary adjustments, the transitional restoration, which involved a degree of subjectivity in its production, forms the template for the final prosthesis, with the approved of the patient.

### Construction phase

An impression of the approved transitional restoration in the mouth model should accompany the final impression to form the working model. The dental technologist will then design the virtual or analogic framework guided by the transitional prosthesis, leading to the completion of the final restoration with minimized risk of rejection by the patient and failure in clinical service.

## Risk management in Implant Dentistry

The treatment of partially or fully edentulous patients using dental implants has evolved rapidly over the past four decades. Although it is now a very predictable clinical procedure, demonstrating a high success rate, various biological, mechanical and technical complications have been reported, with the incidence and prevalence having steadily increased. The dental practitioner must take care in formulating treatment plans and maintain the necessary skills to place and restore implants.

**Dr Alexandros Grous, Athens**

Contemporary implant dentistry should be provided in accordance with the evidence-based literature to maximize the performance and longevity of implant supported prostheses.
Osseointegration of dental implants is not guaranteed, but the risk of failure is greatly reduced if the production and provision of the prosthesis is meticulous.

The purpose of this presentation was to discuss clinical cases to highlight important points from the perspectives of risk management. These include:

- Carefully evaluating the patient's medical condition and suitability for implant treatment
- Taking the necessary precautions to minimize the risk of failure
- Identifying factors that may hinder success and informing the patient of how they may affect the outcome
- Acquiring and developing the necessary clinical skills in both surgical and prosthetic treatment
- Obtaining informed consent from the patient as part of the treatment record
- Suggesting a maintenance protocol designed to achieve long-term success and enhancing the patient's compliance to it.

Even taking all the suggested precautions, it is of paramount importance for the patient to understand that there is no guarantee of success. In addition, any anticipated difficulties in the prosthetic treatment phase should be fully discussed during the treatment planning phase to provide the patient with realistic expectations of the final result, specifically the expectation that the dental implants and prosthesis may well break or fail after several years in service.

**Asoc Prof Ilia Roussou, National & Kapodistrian University of Athens**

## Risk management in temporomandibular disorders

Managing pain and dysfunction associated with temporomandibular disorders (TMD) and orofacial pain in general, can be a complex problem. The complexity arises from the many problems that can be associated with function of the stomatognathic system. The equilibrium and restoration of function of the stomatognathic system is an everyday challenge. Even more so for orthodontists and prosthodontists since their treatments often involve the three-dimensional repositioning of the mandible relative to the maxilla. The risks for disrupting normal function during dental treatment is high. It is therefore important for the dentist to study and fully understand the normal function of the temporomandibular joints (TMJs), how the mandible relates to the cranial base and, of course, how occlusion and any dental prosthetic restorations should, when clinically indicated, be adjusted without jeopardizing the stability of the stomatognathic system.

*References available on request*

One of the most common risk factors is misdiagnosing the aetiological factor of dental pain and dysfunction. Orofacial pain includes many different identities that may all cause pain in the face. This may be neuropathic pain, neurovascular pain, or pain related to psychological conditions and temporomandibular disorders (TMD). Dentists often provide patients complaining of pain with an appliance and medications, or even worse perform some dental intervention such as occlusal equilibration. Such intervention is equivalent to every patient complaining of toothache having root canal treatment or an extraction.

Another important risk factor in treating orofacial pain patients is over-emphasis on the importance the occlusion might have as an aetiological factor. Occlusion, more specifically occlusal discrepancies are certainly one of the many etiological factors that can cause a temporomandibular disorder, however, it is critical for the practitioner confirm this to be the case before considering any intervention. The literature suggests that occlusion is a risk factor only if it compromises the stability of the stomatognathic system in a three- dimensional way. Therefore, whenever the occlusion causes a significant shift of the mandible away from the musculoskeletal stable position, or overload of the temporomandibular joints, the dentist should fully assess the situation. Any dental procedure should be treatment planned once the patient is pain free and has regained normal function.

Epidemiological studies suggest that 40-60% of the general population have at least one sign of a temporomandibular disorder (TMD). Also, some procedures such as dental anesthesia, third molar extraction, endodontic treatment might cause or exacerbate such a disorder. That means that its not uncommon for patients to present seeking TMD advice or treatment. Dentists should at least have the knowledge to recognise TMD, advise the patient and be able to prevent such disorder from happening during routine dental treatment. ■

Scientific Programme 2019

# Poster Abstracts

**Prof. Dr. Tomislav Jukić**
**Programme Moderator and Regent for District 14 European Section**

## Orthodontic, ENT and 3D ultrasound assessment of resting tongue posture in anterior open bite primary dentitions.

**Sanda Lah Kravanja[1], Maja Mušič Marolt[2], Irena Hočevar-Boltežar[3], Maja Ovsenik[4]**
1. Dental Centre dr. Lah Kravanja Bovec, Slovenia; 2, University Medical Centre, Slovenia; 3, ENT Clinic, Ljubljana, Slovenia; 4, Medical Faculty and University Medical Centre, Ljubljana, Slovenia.

The aim was to assess resting tongue posture in preschool children with and without anterior open bite (AOB) using three-dimensional ultrasonography (3DUS) and to compare the findings to orthodontic and ENT assessments.
**Methods:** 446 children, 3-7 years of age, were investigated in local kindergartens. Each child was assessed for AOB, orofacial and ENT impairment, oral habits and speech by an orthodontist, an ENT specialist and a speech therapist. Questionnaires were answered by parents. Participants with AOB in the primary dentition formed the research group, the rest were included, at random, in the control group. Resting tongue posture was assessed in each child by a radiologist using ultrasound (Voluson 730, General Electric Healthcare). 3DUS data were analysed using 4D View Programme 5.0. Statistical analysis of the collated data was performed with statistical significance set at $p < 0.05$.
**Results:** 32 children with a mean age of 5.0 years ± 0.9 years presented with AOB in the primary dentition, giving a prevalence of AOB of 7.2 %. The AOB subjects presented a higher occurrence of orofacial and ENT irregularities, speech disorders and low tongue posture. 3DUS detected that a relatively large number of the AOB subjects had low tongue posture but no significant differences were found between the data obtained from the research and control subjects ($p>0.05$).
**Conclusion:** 3DUS assessment is non-invasive, radiation free, child-friendly method for functional assessment of tongue posture in preschool children. While low tongue posture was relatively common amongst the AOB subjects, no significant differences were found between the data obtained from the research and control subjects.

## Experience of communication skills assessment on the example of the Odontology Department of Tbilisi State Medical University

**M.T. Mamaladze[1], N.O. Nizharadze[1], L.O. Sanodze[1]**
1. Tbilisi State Medical University, Georgia

Every few years new ideas and trends become apparent in medical and dental education. This is not to say that previous ideas and trends should be abandoned, but rather that changes in current arrangements and understanding call for the further development of recognised procedures or new approaches.
In the Odontology Department Tbilisi State Medical University (ODTSMU), at the instigation of Head of Department Professor Marine Mamaladze, Objective Structured Clinical Examinations (OSCEs) have been accepted and adopted to assess clinical competencies and skills. OSCE examinations are organised in stations that simulate clinical reality with different scenarios. An essential skill for OSCEs, but more crucially for future clinical practice is communication competency. Communication competency assessment is rapidly becoming the in-vogue examination format in the ODTSMU curriculum; hence OSCE stations focus on the candidate's communication skills. By using OSCE virtual stations with standardised patients (Stations 1-4 - Diagnosis; Station 6,7- Patient complaining about treatment; Stations 8,9 - Communicating "bad news"; Stations 10, 11- Review of patient's gnathological chart and Station 5- Rest station) students can be assessed in communication competency along with other core skills (factual knowledge and clinical abilities) in the undergraduate curriculum. To pass the OSCEs communication performance test the student must demonstrate competence in communication skills (building and main-

taining a relationship with the patient with empathy; delivering information; breaking bad news; critical thinking; making decisions; problem solving considering possible risks; behaviour to colleagues) in the different tasks at each station.

## Riso inepto / γέλως άκαιρος / inept laughter. Catullus: a Roman comment about bleaching and social behavior.

**Emmanuel Mazinis[1], Theodor Lambrianidis[1]**
1. Aristotle University of Thessaloniki.

Gaius Valerius Catullus (84-54 BC) was an influential Roman lyric poet of the late Republican period. His surviving works still influence poetry and other forms of art. Catullus was a contemporary of Cesar, Pompey and Cicero and fiercely criticised the social, political and military leaders of his generation. Catullus's poems have been preserved in an anthology of 116 Carmina.
In Carmina n39, Catullus progresses to a degrading description of Egnatius. Egnatius smiles as frequently as possible because he believes his bright white teeth make him handsome. He has also a beard. Dainty and well-trimmed small beards (not thick and bushy ones) were considered fashionable for young men-about-town in the late Republic (c. 60-27 BC).
The Romans used a mixture of goat milk and urine to try to whiten their teeth. The urine's ammonia served as the bleaching agent.
Egnatius smiles in the Court but also at a funeral when the bereaved mother is weeping. He is so self-absorbed that he can neither feel sympathy for others nor respect their emotions; his only concern is to show off his shining white teeth. Catullus characteris es Egnatius with a phrase attributed to ancient Greek poetry: the fool laughs even when there's nothing to laugh at.
Egnatius' sickness lies in his self-delusion; the aspect of himself in which he takes the greatest pride (his white teeth) is the fact that reveals his unsavory character and most clearly reveals his filthy and anti-social actions.

## Total functional composite rehabilitation

**Stanislav A. Blum[1]**
1. Center of Functional Orthodontics and Prosthetics, Saint-Petersburg, Russia

**Introduction:** Patients with temporomandibular dysfunction (TMD) usually require complex occlusal rehabilitation. If the goal is to stabilize the occlusion and the intracapsular structures and normalise muscle activity, it is often necessary to change the occlusion.

**Materials:** To diagnose functional disturbances we complete a comprehensive examination, including the use of the Helkimo Index, CT-Scans of the temporomandibular joints (TMJs), cephalometric analysis, axiography and myography.
Following splint therapy we complete diagnostic wax-ups in articulated casts, mounted using individual parameters (SCI, Bennet, ISS). We rebuild the occlusal anatomy using composite materials, transparent matrices and adhesive protocols.

**Conclusion:** Patients have better muscle balance and jaw movement, as assessed by axiography, folowing completion of occlusal build-up.

## Prosthetic full mouth reconstrution (retreatment of the "dental tourism" consequence)

**Natalia Lopukhova[1]**
1. The "Denta-Luxe" Dental Center,Tver, Russia
Presented as a full article pages 30-33 in this issue of ICDigest ■

# Humanitarian Forum

In this Centennial year for ICD there is a shift of interest from a focus on exchanging academic knowledge towards another important core value -humanitarianism. Also noticeable is the increased attendance of Fellows at Humanitarian Fora, where volunteers share their experiences and achievements in humanitarian activities, supported by the Philip Dear Foundation (PDF) or funded privately or by NGO's in different countries.

**Walter van Driel**
**European Section President-elect and Webmaster**

In former years, more than half of the Annual Meeting delegates left the room when an Open Forum was scheduled. The Open Forum was used to address practical issues in the constitution and running of the European Section. Officers and Regents were introduced, their functions were discussed, and arrangements for the election of new Officers were debated together with the content of the ICDigest and developments in the website. The objective was to keep Fellows informed and engaged. Also, it provided an opportunity for questions to be addressed to the Officers of the Section. All very commendable, but not popular.
Change occurred at the Annual Meeting in Maastricht, where, for the first time, the Forum focused on humanitarian projects. Since then, Forum interest and attendance has increased.

The room for Thessaloniki the 2019 Humanitarian Forum stayed packed with Fellows full of admiration for the valuable and impressive work discussed in the presentations which evoked many different emotions. All ICD Fellows contribute to humanitarian project, given that <60% of their membership dues go into supporting this necessary work, and there is no shortage of opportunities for Fellows to contribute further.
As moderator of the 2019 Humanitarian Forum, I could summarise this emotional afternoon with a statement I have made when Editor of the ICDigest: *"The ICD European Section is a family, bound together in a desire and determination to promote our noble profession for the benefit of all mankind. Indeed, giving back in small measure to the world of what we have been privileged to receive."*

## Oral health: the key for social inclusion

**Mariana Dolores**
**Mundo A Sorrir**
**volunteers**

Mundo A Sorrir (Smiling World) is a Portuguese NGO, based in Portugal and founded 14 years ago.
With the mission of promoting health and oral health as a universal right, Mundo A Sorrir is active in five countries (Portugal and four African countries), having benefited over 600,000 underprivileged people, with the help of 1600 volunteers. Through prevention, medical assistance, training and research Mundo A Sorrir has several projects with social impact.
Project CASO (Centro de Apoio à Saúde Oral) uses oral health as a tool to promote social inclusion in countries where most dentists (<90%) work in the private sector. In such countries, the most disadvantaged in the population do not have the financial ability to access oral healthcare and are excluded from it. CASO has impacted the life of over 7,000 people who saw their quality of life and life opportunities increased by having better oral health. Data

collected from 680 of the people helped in the first two years of the project indicate that 12% did not clean their teeth at the time of the first visit, 6% had never been to the dentist, and 64% stated that the reason for their last visit to the dentist was dental pain. After our intervention, 83% stated that they performed oral hygiene twice daily and 89% reported that they had no dental pain. Regarding psychological and emotional impacts, more than 90% reported after our intervention that they feel "more satisfied with life ingeneral", "less embarrassed" about their teeth or mouth, and more "at ease" to eat, talk and smile. Such outcomes reflect the impact that oral health has on social inclusion.

On average, each person helped needed 10 appointments to complete treatment, with 70% of the beneficiaries requiring a denture to typically replace a significant number of lost teeth.

**Mundo A Sorrir volunteers.**

**Clinical area for the treatment of homeless patients.**

## Dental care for homeless people: Project The Hague – Netherlands

**Frans Nugteren**

Although The Netherlands has one of the best health and care systems in the world, it also has groups of individuals whose lives take a 'bad turn' and they end up being homeless and often addicted to drugs, such as Ritalin and crack cocaine. Until recently there was no access to dental care for this vulnerable group of patients, < 85% of whom have dental pathology requiring treatment, which is compromised by dental fear and low compliance.

One of the main reasons for homelessness is domestic disputes, often affecting young people. In some cases, those affected are taken from their home by child protection agencies. Many of those left behind end up on the street, where they are easy prey for drug dealers and exploitation for prostitution.

Around 2000, a group led by Jetta Klijnsma -Minister of Social Affairs in The Netherlands and including individuals from Hague City Council visited Berlin which, at the time, was running a volunteer-manned, free of charge dental clinic providing dental care to large numbers of drug addicts and homeless people. Jetta Klijnsma, who invited two homeless people to lunch every week in the City Hall and had noticed that her guests could not manage to eat certain foods, was inspired to open a similar clinic in The Hague. The Head of Municipal Health Services, Willem Beaumont, and Frans Nugteren got together to find a suitable location, workout the finances and start the programme. They are continuing to contribute to the programme one day a week.

When the clinic was opened, it was big news, with extensive coverage in newspapers and local and national television. The headlines read: "finally somebody is listening to us."

Different groups came together to make this all possible. It involved many people. Funding was provided by insurance companies and the local government of The Hague, which also provided the clinical facilities. Westeinde Hospital in the centre of The Hague provided a good location for the clinic. And lastly, three other dentists and two assistants were recruited to the programme.

In addition to meeting the dental needs of homeless people, the clinic deals with dental emergencies which would otherwise present at hospitals or dental practices not receptive to managing casual patients with special needs.

The clinic focusses on relief of pain, stabilising oral and dental conditions and simple, readily attainable, long term solutions for dental problems which facilitate the maintenance of adequate oral hygiene.

Despite the project having been going strong for 16 years, there continues to be a substantial need for the dental care of homeless people. It is hoped that more humanitarian-minded, young dentists will volunteer to continue this most worthy of projects.

## Strategising for sustainable volunteerism

Robert Morris

Can an HIV/AIDS project based on volunteerism in a Saigon setting without government support be sustainable over the long term? This volunteer project started with five HIV affected orphaned infants and now has a client population of some 380 infants, young children and widowed mothers, affected by AIDS. Mai Tam House of Hope project (maitamhouseofhope.com) subsists on grants, fundraising, volunteerism, and donations from benefactors. It receives no government funding which is not abnormal in the Vietnam setting. Now going into its fifth year, can it succeed within the context of this model? The question remains about sustainability where there is no official funding. Alongside the success of this original project, the Mai Tam founders have been able to expand into several other areas of health and social services. Within the context of these projects, success and sustainability is directly related to the extraordinary abilities of the Vietnamese nationals involved in the HIV/AIDS orphan project; they plan and work within existing constraints in the hope that government funding will soon materialize.

The 'No More Victims' project (nomorevictims.org) was established to bring innocent Iraqi children, victims of war, to the United States for medical care and reconstruction and then return them to Iraq. The volunteerism continued, but the sustained efforts of highly dedicated individuals in Massachusetts have been fraught with failure. This project, for whatever reason, has gone off the rails and may be incarcerated, highlighting the need for effective strategic planning to secure sustainability.

**Beneficiaries of the Mai Tam House of Hope project - now successful young adults.**

Conclusion: These efforts of volunteerism outside of the oral health sector have allowed hundreds of disadvantaged children to have a life equal to their peers, but even the noblest of volunteerism efforts can go awry.

## Untouchable people of South India

**Vincente Lozano de Luaces**

The ICD has donated two dental chairs to Kanekal Hospital and a further two to Bathalpalli Hospital. The four chairs were transported to India and delivered on behalf of ICD by Professor Lozano de Luaces. Thanks to this donation from the Philip Dear Foundation, 'dalit' (the lowest caste in India) patients may be treated in the two hospitals, located in the southern state of Andhra Pradesh.

**Two of the four donated dental chairs.**

Prior to the donation, dentists had to treat 'dalit' patients in very old dental chairs which had no light and were uncomfortable for both dentist and patient. Many 'dalit' patients brought chairs from their homes to be treated. With this donation, volunteer dentists of the Spanish NGO RDT and Indian dentists are much better able to carry out their work among the 'dalit'.

## Continuing humanitarian activities of ICD Europe in the Philippines

**Hani Farr**

In February 2019 almost 400 residents, students, adolescents and children in the Gawad Kalinga (GK) Hope Village on the Negros Island in the Philippines celebrated oral hygiene days, with a great commitment and enthusiasm. Thanks to the great support provided by ICD Europe and other sponsors, this

exemplary humanitarian effort was made possible.
Since the beginning of the project, eight years ago, inspired by the caries prophylaxis programme 'Apollonia 2020', oral hygienic and the attitude to dental treatment in the GK Hope Village has greatly improved. Dental services are underpinned by preventive measures and education on the nature, development and prevention of oral diseases. Even small children are now motivated and eager to pursue a preventive dental care approach.

All medical, dental and educational materials, including brochures and relevant dental articles, provided to local teachers and volunteers are essential for the success of the project, as are the kits of toothbrushes and toothpaste donated by ICD Fellows in Austria and the European Section of the ICD.

Local teachers have received extensive instruction on the anatomy of oral cavity, tooth structure, caries risk factors, healthy foods, oral hygiene techniques and regular dental inspections.
With increasing numbers requiring support and limited infrastructure infrastructures, a second oral hygienic facility will be provided in 2020, thanks to the generous support of the European Section of ICD. It is hoped that dental


**School children celebrating an oral hygiene day.**

preventive measures will become an integral element of the local educational curriculum to further improve oral health and self-confidence and contribute to improvements in lifestyle, general health and well-being.

## Blessed to support: Axion Hellas

A few years ago, we were approached by the NGO Axion Hellas. The Axion Hellas mission is to support people living on the most remote islands of the Greek archipelagos.
The initiation process was very intense, in the process of becoming an integral member of a team of volunteers capable of operating under extreme conditions, given that our missions are accomplished between late September and early May when the Aegean Sea is at its worst.
Action Hellas, with the moto "We Support Society" has three sections. The major section is the Medical Team, including 60 doctors in 25 different specialties, including

**Phophi Kamposiora and George Papavasiliou**

three dentists. All our equipment is mobile in order to be transported in RIBs (Rigid Inflatable Boats). We perform medical and dental examinations, primary care procedures and small surgical interventions.

The second section is the Social Support Team. In close cooperation with major national and international support teams we visit schools and various groups on islands for presentations, 'happenings', theatrical plays and expeditions.
The third section is the Construction Team. In cooperation with local authorities and with the support of Greek philanthropists, our Construction Team designs and constructs playgrounds, athletic and recreation areas as well as undertaking improvements to schools and military facilities, according to each island needs.
In Axion Hellas, we do three missions a year, each lasting from four to ten days. The team comprises 110 -160 volunteers. Most of us are transported by the RIBs. The mission must be completed regardless of the conditions, as long

**An Axion Hellas RIB.**

as safety is not compromised. The feeling of reaching an island, a small dot on the GPS, after several hours of rough seas, and being welcomed by the world renown hospitality of the Greek islanders is indescribable. During winter many islands can only be reached by transport every three to five days, so even routine procedures, e.g. endodontic therapy, can become a major problem.
In the last three years we have accomplished eight missions. We have visited 27 islands, examined over 4500 people and performed more than13000 procedures. Being part of Axion Hellas, we are blessed to be able to offer support.

*See page 5 for more information about The Philip Dear Foundation.*

# Dentistry leading up to 1920

## A contribution to the Centenary Celebrations of the International College of Dentists

**Margaret Wilson**
**Honorary Curator of the British Dental Association Museum and Editor of the Dental Historian**

Following the end of World War 1 in 1918 and the devastating Spanish influenza pandemic (Fig.1) which accompanied the soldiers returning to their home countries (Fig.2), the world was on the threshold of huge changes.

The League of Nations held its first meeting in 1920 following the Paris Peace Conference. Its main aim was to stop further wars and settle disputes between countries.
The1920's saw the start of an economic boom and numerous cultural changes. In North America, 1920 saw the beginning of the Jazz Age, women were "bobbing" their hair and wearing knee length skirts.
Electricity was being introduced into the home in cities and this was to bring on an age of consumerism with the sale of cars, telephones, radios etc. In many countries, across this decade found Women's Suffrage Movements being successful with more women than ever were being employed in the work place.
However, 1920 was not all 'sweetness and light'. Inter-country wars were continuing in Europe and Asia. There was a severe famine in Russia, and in 1923 there was a huge earthquake on Honshu.

### Western Dentistry in 1920s

The 1920's heralded a decade of new technologies.
In 1908 GV Black published his book on Operative Dentistry. This text formed the basis of teaching of dental students for decades. The preparation of teeth to receive restorations of gold and amalgam was described in great detail, and this mechanistic approach was to remain the standard method of managing dental caries for many decades.

Removal of carious dentine and shaping of enamel was facilitated by better instrumentation and equipment. Dental surgery layout was about to be changed forever

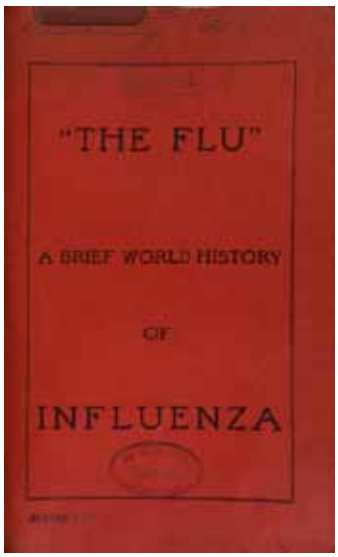
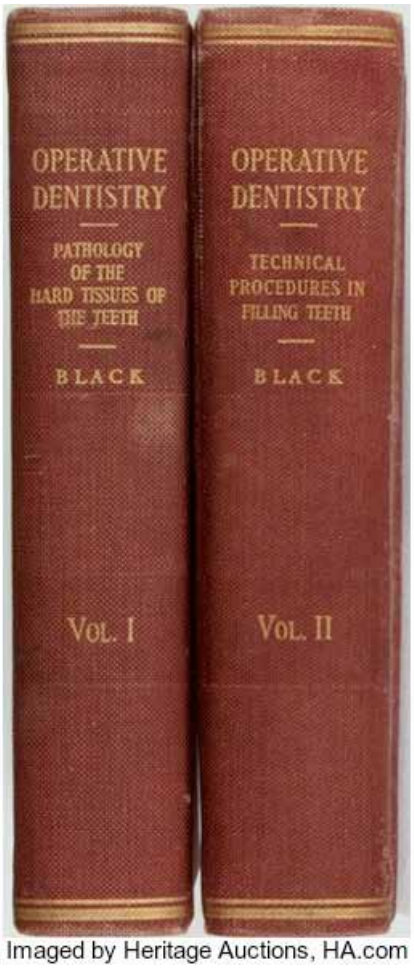



**Fig 1. Report of the Spanish influenza pandemic. US National History of Medicine**

**Fig 2. Dental examination of troops returning from war in 1918. US National History of Medicine**

by the introduction of electricity. Cord driven dental drills powered by electricity replaced foot pedal drills, enabling dentists to prepare cavities much more efficiently and quickly. Electric motor driven engines also enabled automatic mallets to be used for placing gold restorations. In about 1920, the Tri Dental Station was produced by the Ritter Dental Manufacturing Company (Fig.4). This revolutionised the design of the dental surgery by combining a bracket table, an electric powered cord driven dental drill and a light. The unit had gas, water and a spittoon all plumbed directly to the dental equipment. The light had the advantage of being able to be directed and focussed onto the patient in the dental chair

Dentists were beginning to consider buying their own dental X-ray machines. The use of radiography in dental practice quickly became one of the greatest assets to oral diagnosis. Dental diseases were common and restorative materials, by todays' standards, were limited to gold, amalgam or cements. Silicate cements were produced in two or three tooth-coloured shades to restore cavities in anterior teeth. Many people were unable to afford costly gold restorations, so dental extractions were common place, rendering a large section of the population edentulous or partially dentate.



Imaged by Heritage Auctions, HA.com

**Fig 3. GV Black's textbook**

Oral surgery and the treatment of facial trauma had made many advances as a result of the management of war injuries. In Paris, Professor Pierre Sebileau, and in England, Major Gillies RAMC, were making remarkable facial reconstructions based on their experiences in WW1. This was the beginning of oral surgeons collaborating with prosthodontists when caring for patients with sections of missing jaws and ridges.

General anaesthesia, using nitrous oxide, ether and chloroform had already been in uses for many years and had contributed to pain free extractions. However, it was only in 1905 that the first local anaesthetic, Procaine, was synthesised and eventually marketed as Novocain. These early local anaesthetics had a number of side effects so were mainly used sub mucosal with varying lengths of anaesthesia until epinephrine was added. Nerve block anaesthesia was considered to be very risky with the contraindications for its use being patients with epilepsy, hypertension, children and elderly patients. This was the pre-antibiotic era and there was much debate about focal infection, the necessity of early drainage of pus and the fate of pulpless teeth and extraction of decayed teeth

The introduction of vulcanised rubber played an important role in the provision of dentures (Fig.5). The Dental Vulcanite Company was formed in 1864 and required all dentists wishing to use vulcanite to buy a licence from the company. This added to the costs of denture construction. After the Dental Vulcanite Company licences expired in 1881, vulcanite dentures could be provided relatively cheaply. Vulcanite was a vast improvement over bone or ivory dentures and could include suction cups to help retain the upper denture. The main disadvantage was the appearance, as vulcanite was supplied in three colours -orange/red, pink or black. Black was the strongest material, so palates were often made out of black vulcanite with orange or pink flanges. The appearance was greatly improved by the addition of labial and buccal porcelain inserts intended to mimic natural mucosa.

In this decade, prosthodontists were very concerned about the mechanism of mastication. Being able to replicate the movement of the jaws was considered of vital importance in the provision of dentures. This was the beginning of the "golden age" of articulators. Professor Gysi of Switzerland and Norman Bennett of England were particularly interested in the rotation centre of the condyle. The selection of appropriate shaped denture teeth was also considered to be important. Many methods were suggested for relating the selection of artificial teeth for dentures to the shape of the face.

Orthodontics was practised across the world. In 1900 Edward H Angle opened the first postgraduate school of orthodontics in 1900 and in 1907 published his text book "Malocclusion of the Teeth" and introduced the journal-The American Orthodontist.

In dental academia, the aims for 1920 were: The systematic and standardization of graduate and post graduate courses, raising of standards in all dental schools and all scientific papers should include a complete bibliography.

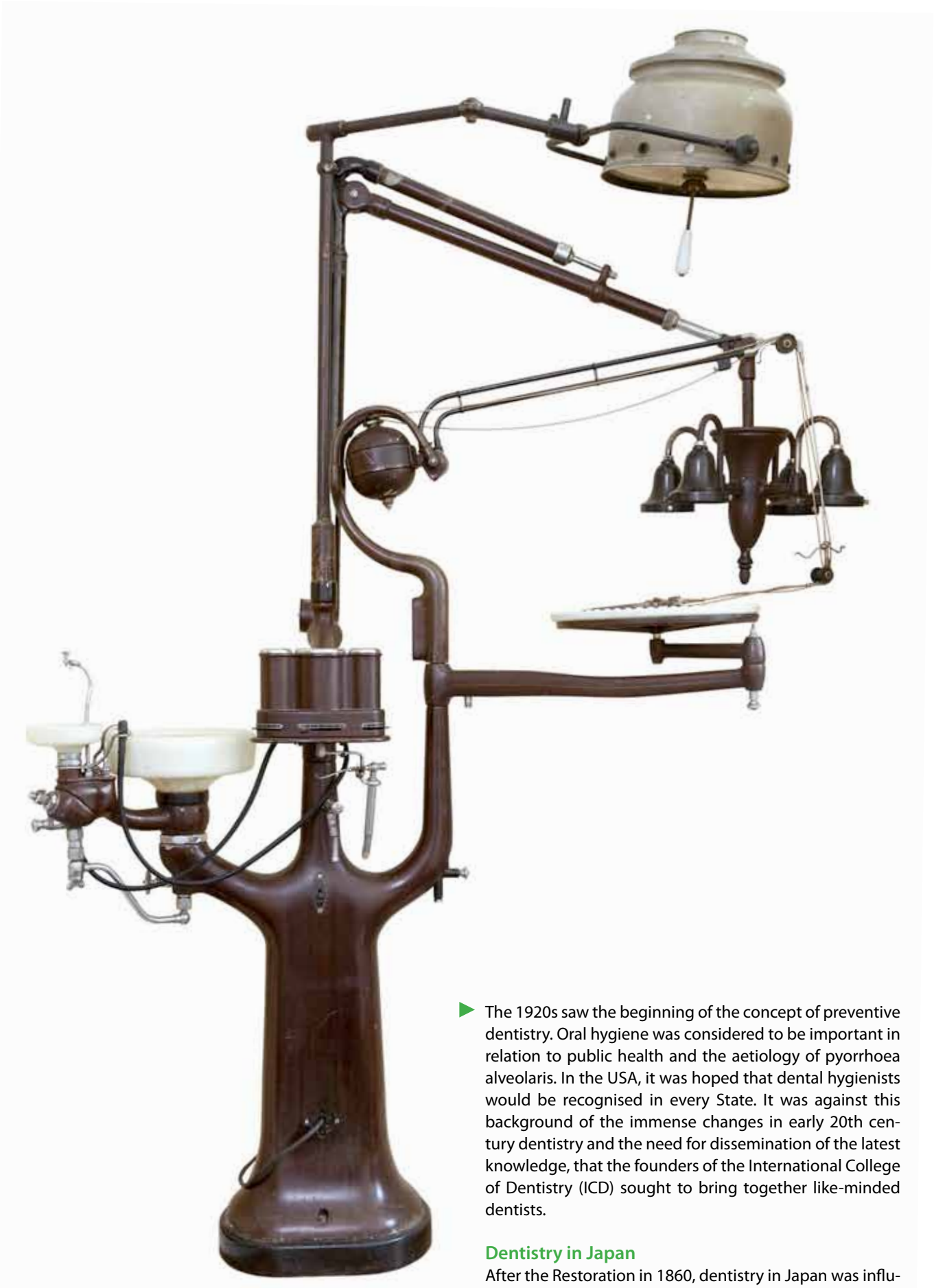


Fig. 4 Ritter Tri Dental Station. Wellcome Collection

The 1920s saw the beginning of the concept of preventive dentistry. Oral hygiene was considered to be important in relation to public health and the aetiology of pyorrhoea alveolaris. In the USA, it was hoped that dental hygienists would be recognised in every State. It was against this background of the immense changes in early 20th century dentistry and the need for dissemination of the latest knowledge, that the founders of the International College of Dentistry (ICD) sought to bring together like-minded dentists.

## Dentistry in Japan

After the Restoration in 1860, dentistry in Japan was influenced by foreign dentists who introduced Western-style dentistry into Japan. The first foreign dentist to open a dental office in Japan in the Yokohama Foreign Settlement


**Fig. 5 Vulcanite denture with porcelain inserts. British Dental Association Museum**

**Fig. 6 Dr Tsurukichi Okumura**

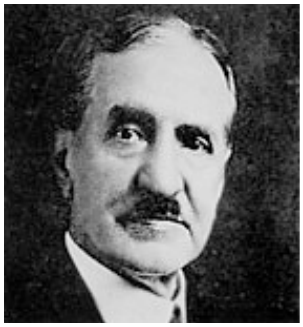


**Fig. 7 Dr Louis Ottofy**

was Dr W C Eastlake in 1865[1]. Eastlake was English by birth but trained in America. Over the years many Japanese dentists were trained in dental schools of North America. In 1890, the Takayama Dental School was opened in Tokyo. This was the first dental school in Japan and was the predecessor of the Tokyo Dental College.

Dental education and practice in Japan became distinct from medical education and practice with the laying down of The Dental Law of Japan in 1906. This Law covered all aspects of training, qualifications and registration.[2] The dental education was largely based on the curricula of American dental schools. With regulation, the training of Japanese dentists increased. In 1920, the number registering as dentists was 796. This was made up of 287 graduating from designated dental colleges, 499 who passed the dental examination and 10 who graduated from foreign dental schools. By 1921 there were 10 dental schools in Japan. The dental treatments offered were: gold foil and amalgam fillings, indirect gold and ceramic restorations, dentures made from precious metals, vulcanite, celluloid and aluminium, dental extractions under general anaesthesia, root treatments and orthodontics.

## The International College of Dentistry

In November 1920, Dr Louis Ottofy of USA and Dr Tsurukichi Okumura of Japan, decided to establish an international organisation of dentists. Their goals, at a time of great change and innovation in dentistry, were to disseminate the latest dental knowledge and also to found a society that would enable cordial relations to be nurtured within the dental profession across the nations.

Dr Tsurukichi Okumura of Japan (Fig. 6) graduated from the University of Pennsylvania in 1906. In Japan, he was one of the 16 Directors of the Dental Federation of Japan which comprised 72 'Dentists' Associations'. He was a member of the Oral Hygiene Investigation Committee which worked on: systems of oral inspections and the statistical analysis of these inspections, the publication of an oral hygiene chart, an investigation into the times of tooth eruption, compiling lectures on dental hygiene and preparing moving picture films.

## Dr Louis Ottofy

Dr Louis Ottofy was born on the 22nd October 1860 in Budapest, Hungary (Fig.7). The Ottofy family arrived in Baltimore on March 17th 1874. The family moved to Cincinnati where Louis was apprenticed to a pharmacist. In 1875 he moved to St Louis and enrolled in the Missouri Medical College. In October 1877 he started in the Western College of Dental Surgery graduating in 1879. He became a member of the Chicago Dental Society in 1885, later to become the Secretary and President of the Society in 1896-1897. In 1888 he opened a practice in the outskirts of Chicago. In 1899 he was the first President of the Englewood Dental Society. This society gave up its Charter in 1911 to become the first branch of the Chicago Dental Society. In the American Dental Association, he became the chair of the Committee of Dental Literature and Nomenclature. He was Dean and Professor of Dental Pathology of the American College of Dental Surgery, Chicago 1893-1906. He went on to be a Major in the Dental Corps US Army in 1918 and Educational Director of the McCarrie Schools of Mechanical Dentistry, Chicago in 1926, having practised in Japan, The Philippines and the US, before being appointed Dental Dean of Philippine University.

Dr Ottofy and Dr Okumura were eminent and highly respected members of their dental associations. In 1920, when they came together, there combined foresight, determination and energy resulted in the formation of the International College of Dentists (ICD), with disseminate of dental education and knowledge worldwide at its core. In realising this ambition, they attracted likeminded dentists to join ICD which, over the last 100 years, has grown and developed into the world's largest and most prestigious honour dental organisation. It is a testimony to the vision of Drs Ottofy and Okumura, and all the unsung heroes who have followed in their footsteps, that the International College of Dentists is what it is today. ■

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## Celebrate with ICD in Nagoya...and experience the wonders of Japan

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# International Council Meeting - Milan 2019

The International Council, the governing body of the ICD, held its 2019 annual meeting in Milan between 27th and 29th October 2019. Thirty-three Councillors, representing Fellows in 122 countries participated. The Council finalised new guidelines and agreed innovative solutions to more effectively govern the College. Outside of meetings, Council members and guests engaged with Section V, European Section Regents and industry partners while enjoying Milan.

**Argirios Pissiotis and Mauro Labanca, International Councillors European Section**

Topics discussed included Constitution and Bylaws, the International Capitation Fee, membership recommendations and classifications, College Awards, Section probationary status, the College's Centennial Celebrations and strategic planning.

In looking forward the International Council gave consideration to beginning the next 100 years of the illustrious history of the College with a strong framework of organisational directives. As part of updating the College's strategic plan, the College Mission Statement and Core values were modified to more accurately reflect the character, goals and objectives of the College. The modified Mission Statement and Core Values are reproduced on page 2 of the issue of ICDigest.

Amongst the College Awards made at the meeting the European Section Registrar, Mauro Labanca, was presented with a College Meritorious Award to recognise his involvement in the excellent arrangements for the meeting in Milan.

The Officer Installation Ceremony took place at the Council lunch on closing day of the meeting. The 2019-2020 International Officers are as follows:
President, Professor Akira Senda (Japan); President-Elect, Richard Smith (USA); Immediate Past-President, Bettie McKaig (USA); Treasurer, Keith Suchy (USA); Editor, Dov Sydney (Israel). ■


**Officers and International Councillors of the ICD in Milan.**


**Mauro Labanca receiving his College Meritorious Award from President Bettie McKaig.**

# Full mouth reconstruction retreatment following 'dental tourism'

In everyday practice we see the outcome of previous treatment and, in many cases, can only guess what the occlusion was like originally. Retreatment, where indicated clinically, demands full diagnosis, comprehensive treatment planning, time and money.

**Natalia Lopukhova**
**Denta-Luxe Dental Center, Tver, Russia**

In recent years, I have managed an increasing number of the patients suffering from pain and functional and occlusal disorders following intensive treatment provided during a vacation in another country. This trend is not unique to my practice, let alone Russia. It has become a global problem. At the time of writing this article I had six patients under my care who had had an extensive course of treatment during their vacation. Contrary to good sense, sometimes patients allow themselves to be drawn by attractive, possibly dubious marketing. Some of them play so called "Russian roulette" with their teeth.

It is easy to find a huge number of opportunities on the internet for dental care while on vacation. The purpose of this article is not to criticise the international marketing of dental care, but to present a case with clinical consequences of 'dental tourism'.

The case presented is not my best case, but it illustrates the points to be made and, importantly, the patient insisted that her case be published to make others give more thought to participating in 'dental tourism'.

All of my unhappy 'dental tourists' have had similar issues and complaints and presented with similar conditions and problems.

The complaints included:
- Temporomandibular dysfunction with pain radiating to the ear, neck and across the face
- Muscles pain
- Speech and chewing dysfunction

Clinical findings comprised:
- Anteroposterior or rotational displacement of the mandible
- Unilateral or bilateral loss of posterior occlusal support
- Occlusal overload of the anterior teeth
- Very steep occlusal plane (OP)
- Limited free space
- Changed vertical dimension (VD)
- Non-carious defects
- Gingival recessions
- Atypical tooth wear
- Enamel cracks
- Excessive teeth mobility
- Chipping of ceramic restorations

## Helen

Helen, 51 years of age, sought help after "treatment on vacation" (Fig.1). The treatment comprised 15 zirconium crowns. The day after the crowns were placed, she began suffering increasing pain. She returned home hoping that her teeth would "settle down". But her pain simply got worse. When she presented, she was taking large amounts of analgesics, affecting her stomach, but with no relief.

Helen's main concerns and complaints included:
- Severe pain in and around both TMJ's – more on the left side
- Pain radiation to her neck, head and left zygomatic region
- Limited mouth opening, together with some TMJ clicking

**Fig.1 Helen before treatment**

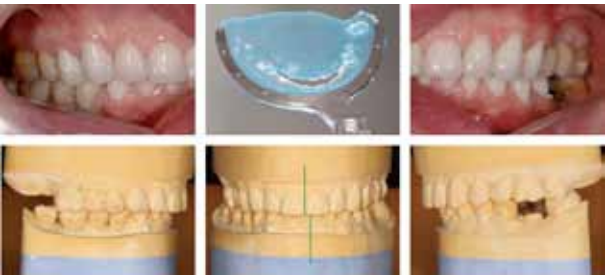


Fig. 2 Teeth and articulated study models in centric occlusion, together with a wax occlusogram - note the mandibular midline shift to the left.

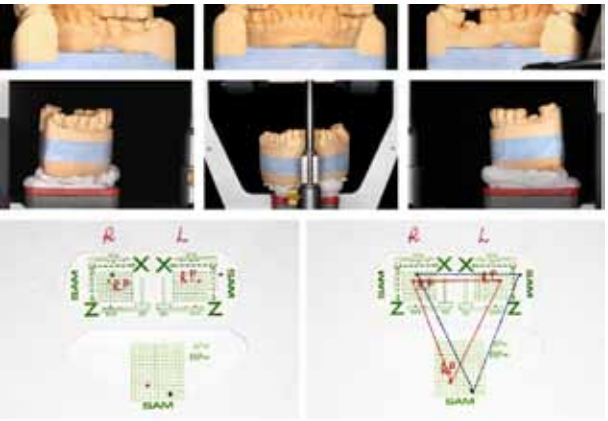


Fig. 3 Further views of the articulated study casts with details of the CPM diagnosis

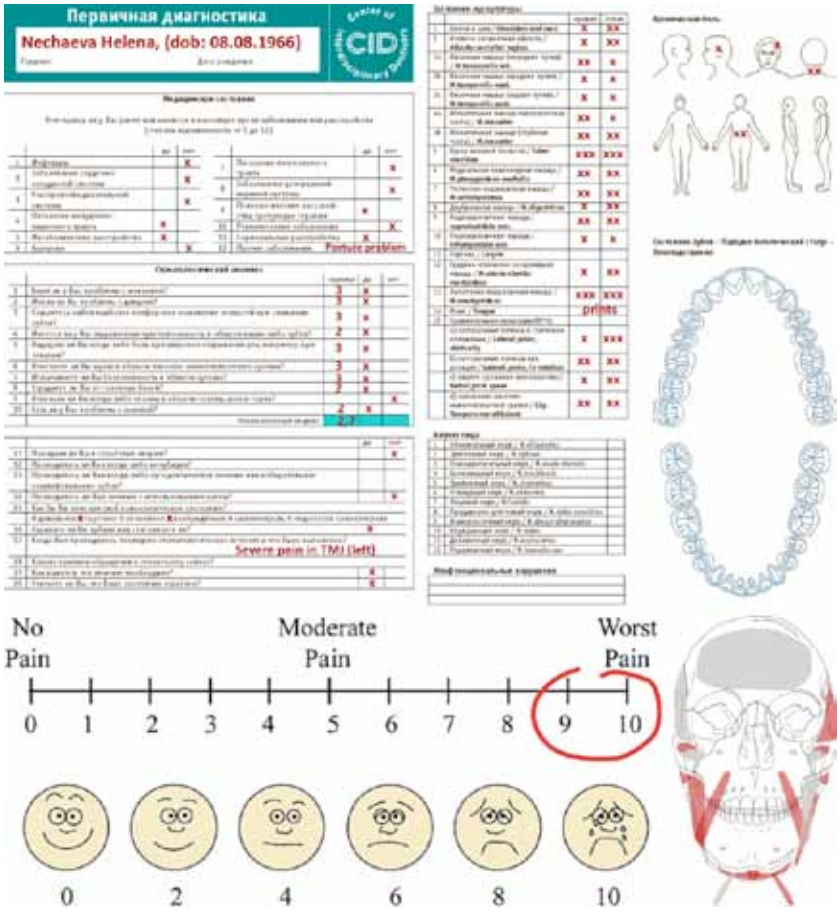



Fig. 4 Muscles palpation results

- Neck stiffness
- Fast weight loss - 13 kg in a month
- Depression
- Speech problems
- Somatic, psychological and postural problems
- Difficulty sustaining her business

## Centric occlusion

In Fig.2, it is apparent that the mandibular midline is deviated to the left. The crowns are over- contoured and facetted. Overloading of the incisors is clearly indicated by the occlusogram.

In Fig.3 the loss of posterior occlusal support and the extent of the displacement of the mandible is apparent.

Helen scored her pain intensity as 9 /10 on the Pain Scale, indicating that the pain was the worst she had ever experienced. (Fig.4)

The anterior guidance was very steep with an anterior guidance inclination of 60° and a sagittal condylar inclination (SCI) of 29° (Figs.5,6)

## Problem list

- Changed position of the mandible
- Very steep anterior guidance
- Loss of the posterior occlusal support
- Reduced freeway space
- Wrong vertical dimension
- Asymmetrical OPI
- Overloading of the incisors
- Postural problems
- Somatic problem
- Psychologic problems

## Treatment plan

- Splint therapy for pain relief
- Medical consultation to address somatic and related problems
- Re-articulation of the study models
- Wax-up of reconstruction
- Provisional reconstruction of occlusion
- Period of adaptation
- Replacement restorations

## Splint therapy

The splint therapy (Fig.7) relieved the severe pain, resulted in repositioning of the mandible, with upper and lower midline alignment and a substantial improvement in mouth opening (42mm).

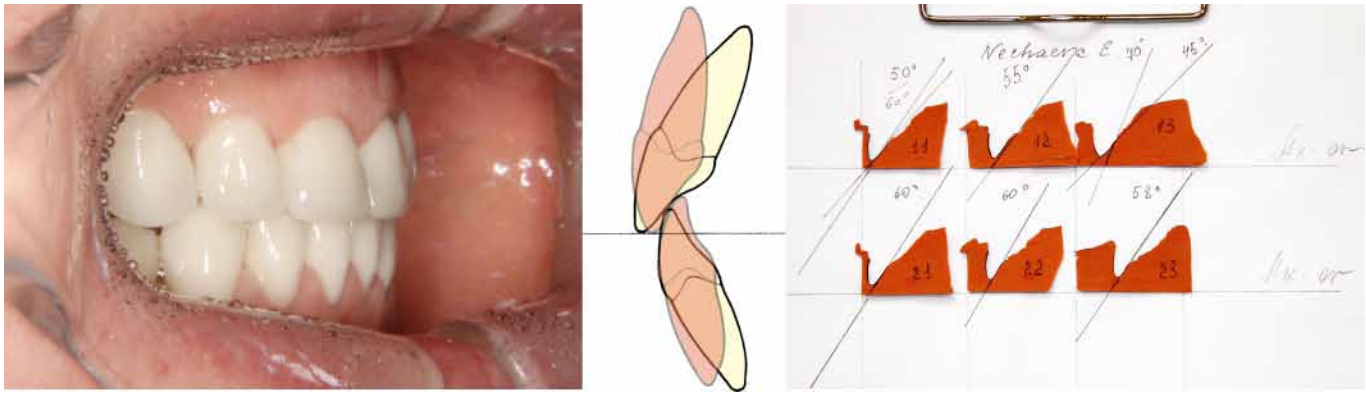


Fig. 5 Lateral view of the crowns with details of anterior guidance inclination


Fig. 6 Condylography, articulator settings and cephalometry before treatment

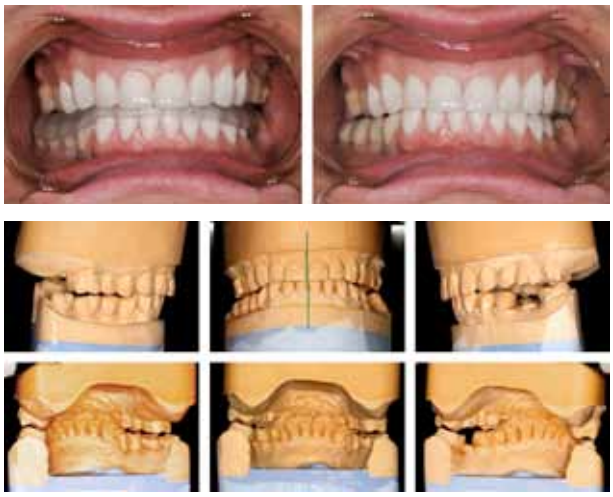


Fig. 7 Splint therapy followed by re-articulation of the study casts

Fig. 8 Helen's clinical images prior to the provision of the crowns

Fig. 9 Details of the wax-up

## Diagnosis

- Skeletal Class III brachiofacial type
- Asymmetric OPI
- Freeway space critically reduced
- Distalisation of the mandible with rotation to the left
- Absence of occlusal contacts in the buccal segments in the retruded position

An advantage in Helen's case was that she had previously been a patient of the practice and her former record and clinical images (Fig.8) had been retained, providing further information which helped inform the wax-up of the reconstruction (Fig.9).

Subsequent to the provision of provisional crowns, adjustments as indicated clinically and Helen adapting to her reconstruction, the replacement crowns were place (Fig. 10)

Fig.10 The replacement crowns

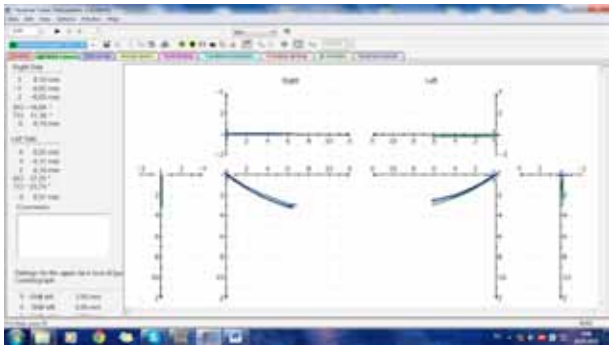


Fig.12 Condylography -protrusion /retrusion following treatment

Fig.11 Helen following treatment

## Review

Apart from being free of any pain or discomfort at review, Helen was happy with the clinical outcome (Figs. 10,11) and her speech and other problems had resolved. The main cephalometric and other parametters (Fig. 12) were greatly improved. The prosthodontic treatment, although not returning Helen to the occlusion she had prior to the provision of the crowns, was considered to have been successful, confirming the adaptability of the stomatognathic system.

## Concluding remarks

I agree with the Editor's (Nairn Wilson's) view on 'dental tourism' patients that "many have a high risk of postoperative complications, typically having had too much dentistry done too quickly. Those with complications find themselves in difficulties as they are unable to return to whomever provided the treatment and dentists back home, including dentists who may have treated them prior to their 'dental tourism', may be reluctant to retreat the case. This leaves some 'dental tourism' patients in discomfort, if not pain and desperate to find someone to help them. Also, many 'dental tourism' patients tend to have little, if any understanding of the long-term maintenance of whatever restorations they have acquired, possibly even thinking that no follow-up care is required." ■


*Acknowledgements*

***Special thanks to my dental technicians Eugene Algoyev and Naib Arsameckov pictured with me below. I would also like to express my gratitude to my teachers, Professors Rudolf Slavíček (Austria) and Sadao Sato (Japan). This article, based on Lopukhova, N.B. Comprehensive rehabilitation of a patient with the consequences of "dental tourism" Maestro of Dentistry, 2017; 3(6), and translated with the kind help of Dr George Bezvestry is included in ICDIgest 2020 courtesy of Maestro of Dentistry.***

# Interview with the President: Gil Alves Alcoforado

**Interviewed by the Editor-in-Chief Nairn Wilson**

### What attracted you to a career in dentistry?

I was greatly influenced by my father, as a highly regarded, prominent dental practitioner. All the family, however, including my father, wanted me to go into Engineering, in preparation for a career in my mother's family foundry business. Although Engineering was not completely outside my field of interests, I was always attracted to surgery -any kind of surgery. During a summer school vacation, I asked my great-uncle Fernando, an Ophthalmologist, if I could watch some of his eye surgeries. I saw eleven surgeries in a week. The decision was then taken. I would study Medicine. At that time, Portugal did not have degree programmes in dentistry. One studied General Medicine and then specialised in Stomatology. I started my Medical studies in 1973. When I reached third year of Medical School, the first Dental School in Lisbon was established. I immediately signed up and was one of the first sixteen students admitted. I graduated DMD in 1980.

### Who were your mentors?

As for mentors, I consider myself very privileged. First, my father. Considering he almost missed being present at my birth to become one of the first European Fellows of the ICD, I grew up having the perfect role model. While attending Dental School, I had four Professors who impressed me and influenced my future life as a dentist: Pedro Lacerda, Alberto Oliveira Pinto, JJ Fontes Pereira de Melo and Jorge Leitão. Subsequently, César Mexia de Almeida whetted my appetite for Primary Prevention. It was thanks to this new love that I participated in projects with the NGO Mundo-a-Sorrir. Also, one of our ICD Past-President António Vasconcelos was a great mentor to me. Tavares, who believed in me from very early in my career, invited me to give my first international lectures.

## *I was always attracted to surgery -any kind of surgery*

While undertaking specialty training in Periodontology at the University of Bergen, I was privileged to have some extraordinary teachers who imbued me with important biologic notions. These notions have influenced my professional career, especially as a Periodontist. I am indebted to Professors Tore Kristoffersen, Tryggve Lie, Knut Meyer and Ivar Hoff, the latter two being ICD Fellows.

Inspired by what my father taught me, I have always reflected on my shortcomings, rather than my successes. If we can identify our shortcomings, we are able to overcome then much more easily.

Many clinicians and researchers have influenced my path, seeking daily improvement. By looking at different ways of dealing with problems, I have tried to learn as much as possible. I am very seldom satisfied with what I do, which helps me reflect on what I have just finished doing, looking for faults and thinking how I could have done a better job. This has been my daily routine for many years, and this is what I try to teach my students.

### What has given you most pleasure in your career?

In one word: improvement. Improving is a constant challenge for me. My moto reflects this: "Better than yesterday, worse than tomorrow". Many in the dental profession share this attitude. When you succeed, it is extremely rewarding.

### What did induction to the Fellowship of ICD mean to you?

In my opinion I was inducted a little too soon. I was a periodontist trying to put Periodontology on the dental map in Portugal. I was the only fully trained periodontist in Portugal for seven years, even though I tried very hard, and eventually succeeded, in motivating other colleagues to go abroad for specialty training in Periodontology.
When I was inducted as a Fellow of ICD in 1985, I felt a huge responsibility. I made a commitment to do everything in my power to deserve such honor.

### How has Fellowship of ICD influenced your career?

I have always felt that becoming a Fellow of the ICD entails more responsibility than honor. A new Fellow should feel honored at having been inducted, but with new responsibility to work even harder and better to serve society. This is enshrined in our motto, dating back to the inception of the College in 1920: "Recognizing Service and the opportunity to Serve". After the Induction, I felt the urge to "SERVE". This should be the attitude of every new Fellow.

### What would you like to achieve during your year as President of the European Section?

I would like to be able to convey, this year and thereafter, to every colleague who becomes a Fellow of the ICD, the importance of adhering to the ICD motto.
As one of my duties as President, I must carefully plan and make the necessary arrangements for the Annual Meeting and use this event to reinforce adherence to the mission and core values of the College. It will be a great pleasure to welcome Fellows and Inductees, as well as their spouses, partners and families to Porto, hopefully from many different countries to strengthen the fellowship and impact of the College

Another duty as President is to help expand the European Section. The Section has enormous potential to grow but, unfortunately this is happening in a few countries only. All existing Fellows should try harder to recruit and nominate new Fellows, but never compromising on the recently revised, key criterion: Outstanding professional achievement and meritorious service while advocating for humanitarian and educational initiatives.

### What part will ICD play in the future of dentistry?

Given that the Fellowship of ICD includes many exceptional and distinguished dentists across the world, it should serve as a window to the most advanced, high-quality dental treatments presently available. Our scientific programmes should showcase the best dental care in Europe and provide a forum to discuss the most important Issues facing the profession. One of these issues is ethics in contemporary clinical practice. Furthermore, in my humble opinion, the ICD should get even more involved in humanitarian projects, motivating an ever-increasing number of Fellows to give something back to the community in return for what dentistry has given to them.

## *Better than yesterday, worse than tomorrow*

Speaking from my own experience, we should all take time out to engage in volunteer work. Beating inertia and not knowing where to start are some of the problems. When I had to stop working for several months in 2003 following back surgery, I realised it was time to start volunteer work. I was inspired by my good friend Steve Mackler, also an ICD Fellow, who was awarded a prize for his humanitarian work by ICD USA. I started by providing primary prevention in several after-school projects for unprivileged kids. Later, with the help of Mundo-a-Sorrir, I was able to start contributing to larger projects, both in Portugal and in several African countries.
I believe the ICD should have, as one of its main goals, structured humanitarian projects to make volunteering easier and the ability to help Fellows establish their own projects. This is exactly what we, in the ICD European Section, are trying hard to put into place through the Philip Dear Foundation. ■

# Digital dentistry – the future is already here

Scanning teeth instead of taking an impression, milling crowns and inlays, using computer generated orthodontic aligners, instead of metal brackets, and printing a surgical guide or surgical insert, making surgery easier with better healing, are not things of the future, they are a reality today.

**Pessia Friedman-Rubin**

All of the procedures described above, which only a decade or so ago sounded like science fiction, have, for many colleagues, become part of their everyday clinical practice. IT driven technologies have become an integral part of the contemporary clinical practice of dentistry.

Digital dentistry is now well-established and will become more efficient and user-friendly. This will allow dental professionals to work in even smarter and faster ways than before, with the prospect of ever-increasing precision and predictability.

This trend is reflected by the increasing number of publications on digital dentistry and the growing numbers of dental scanners, milling machines and 3D printers that are sold every month. Many dental schools around the world are making digital dentistry an integral part of their curriculum.

Digital dentistry compromises any dental technology or device that uses digital or computer-based components instead of traditional mechanical or electrical methods. Computer-aided dentistry streamlines many processes and removes many, different manual procedures that can now be automated.

Numerous digital technologies cover almost any aspect of dental treatment, including intra-oral cameras, CAD/CAM, the design and construction of surgical guides, computer-aided crown manufacturing, 3D printing, digital radiography, cone-beam computed tomography (CBCT), dental laser therapies, virtual and augmented reality and more. And artificial intelligence (AI), which is coming over the horizon, is anticipated to take the art and science of dentistry to yet another dimension.

The topic is very broad and cannot be fully discussed in this article which focusses on CAD/CAM, 3D printing and production units, describing only some of the most common applications.

## CAD/CAM

Traditional approaches required the dentist to take impressions of patient's teeth which were then sent to the laboratory to be cast to produce models. This procedure typically takes a few days and requires deliveries from the clinic to the laboratory and back. There are also risks for human error – distortions in impressions and faults in models. As for the patient, he/she has to make at least one more appointment to receive, for example, an indirect restoration. These practices are becoming obsolete with the adoption of 3D digital technologies which are making procedures more efficient and, if not now, in time cheaper (Fig.1).

The digital technologies used in dental laboratories and dental offices can be applied to inlays, veneers, crowns, fixed partial dentures, implants abutments, and even full mouth reconstructions, including complete dentures.

After scanning, for example, a prepared tooth and adjacent tissues (Fig.2), computer-aided design (CAD) software is used to approximate the desired restoration shape, with reference to the morphology of the adjacent teeth and in some approaches a library of tooth morphologies.

Once the design has been completed, the data is transferred to computer-aided manufacturing (CAM) software that controls the production unit.

Using a computer and highly sensitive scanners and production units increases the precision of the prostheses.

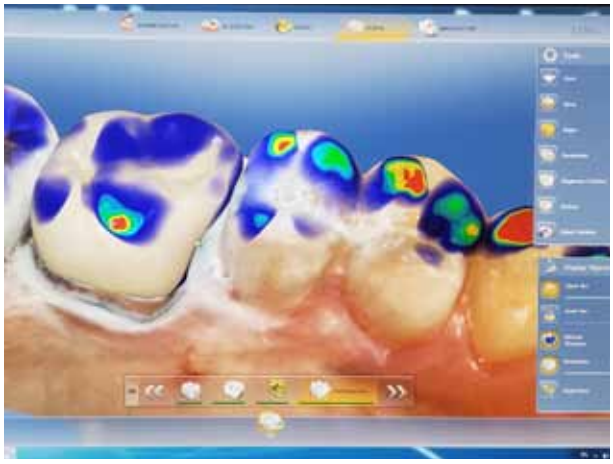


**Fig. 1 Digital imaging of teeth. Image courtesy of Dr Eran Dolev.**

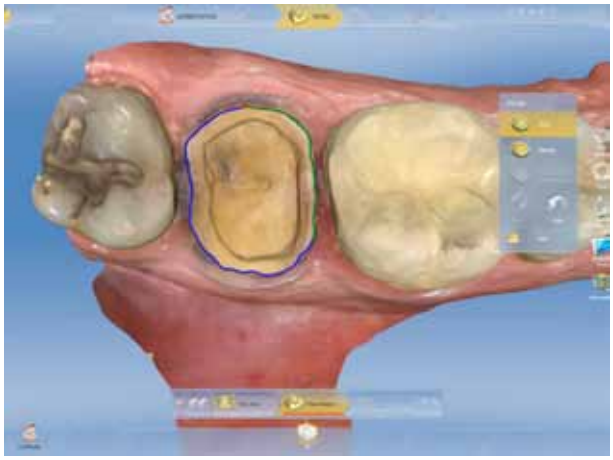


**Fig. 2 Digital imaging of a crown preparation with highlighting of the preparation margin. Image courtesy of Dr Eran Dolev.**

Furthermore, since modeling and production are computer-based procedures, digital dentistry reduces the risks and uncertainties introduced by human errors. Mistakes in any step of the scanning or the preparation process are immediately identifiable, and they can be fixed on the spot. There is an overall reduction in production time, saving costs and enhancing patient care.

CAD/CAM dentistry uses subtractive processes (such as CNC milling) and additive processes (such as 3D printing) to produce physical 3D models. In some cases, the term "CAD/CAM" is used in dentistry to describe prostheses made by milling technology. This is not accurate as the term "CAD/CAM" does not relate to the method of production.

## Subtractive manufacturing

Subtractive manufacturing is based on milling the workpiece from a solid larger block by a process known as computer numerical control (CNC) machining. There is a range of dry-milling and wet-milling devices. The machines differ in the materials that can be milled. Different mills are capable of working with different materials.

Dry milling materials include zirconia, wax, PMMA, composite resin and glass fiber reinforced resin. Wet milling materials usually include glass ceramics and composite resin. Dentists must be familiar with the available materials, specifically their advantages and disadvantages so they can offer patients the most appropriate material for each clinical situation.

3D printing is a rapidly growing technology in numerous fields, with medicine* and dentistry being no exception. 3D printing is based on a digital model designed by a computer or scanned with a 3D scanner. The digital model is turned into a physical three-dimensional object, usually by successfully adding material layer by layer. This is where the term 'additive manufacturing' comes from. The software that designs and prints is easy to use and can be readily mastered. Printing can be done both in the dentist's office and in laboratories It brings a new level of speed and ease to traditional procedures.

The most common applications of 3D printing in dentistry are transparent aligners, night guards and splints. Aligners, which serve as alternatives to braces, have become especially popular because of their low visibility and the fact that they can be removed when users eat and brush their teeth. Stereolithography (SLA) produces models at high resolutions sufficient for orthodontic treatment.

A set of aligners is custom-made to fit a patient, with each aligner taking tooth alignment to the next stage. 3D printing is the main technology that enables dental professionals to customize clear aligners cost-effectively. Milling machines require expensive setup and tools, while 3D printers print aligners or splints at small cost.

## Additional uses

Additional uses of 3D printing in dentistry are in oral surgery, implant dentistry, maxillofacial prosthesis, and prosthodontics.

In oral surgery printing of surgical guides, surgical models, including 3D physical models, and inserts to make-good bone defects have reduced risks, minimize complications ▶

during surgery and shorten treatment times. Surgical reconstruction of facial defects is planned using CT imaging and 3D artificial intelligence. Surgical procedures considered impossible only a few years ago have now become a reality.

A surgical guide can be created by imaging the surgical implant site using special 3D software. The 3D printed guide, used at the time of the dental implant placement permits flawless placements.

In periodontology and implant dentistry, 3D printers can print bone inserts that can act as biomimetic scaffolds for the regeneration of alveolar bone.

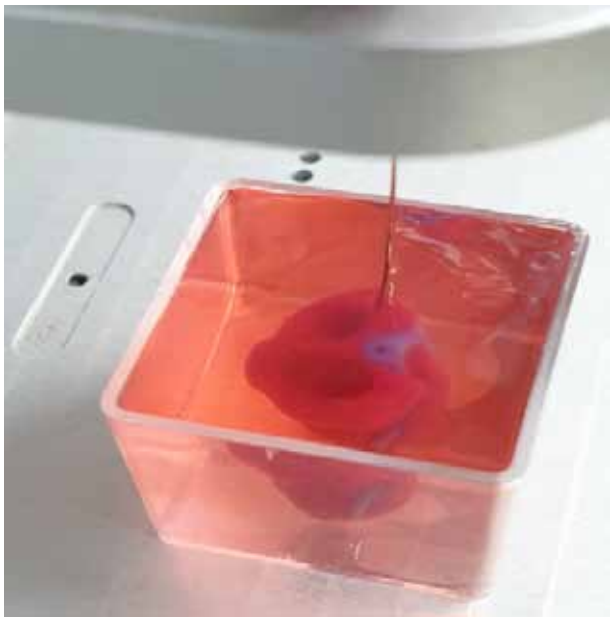
Fear of technology and software complexity pushes some professionals away from revolutionary ways of treating patients. But there is nothing new about fears and anxieties in embracing new technologies and approaches in dentistry. What is new today becomes tomorrow's routine.

## Acknowledgements

Special thanks to Dr. Omri Emodi and Dr. Eran Dolev for their contributions to this article.

**3D heart-Israeli breakthrough*

*Recently, a group of Israeli researchers has taken cardiac engineering to a new level. For the first time in history, scientists at Tel Aviv University have 3D printed a heart. This is a breakthrough that is hoped could one day render organ donation gratuitous.The experimental organ is about the size of a rabbit's heart. The next stage is to teach the organ to beat. Professor Dvir, leading the project, believes that it will be another decade before organ printing is fully developed for use in humans but believes that this is future of transplants.*



**First 3D printed heart. Image courtesy of Tel Aviv University Spokesperson's office.**

## Meet a "digital Dentist"

**Dr.Eran Dolev. DMD**

Prosthodontist, Coordinator, Department of Oral Rehabilitation School of Dental Medicine Tel-Aviv University, Tel Aviv, Israel.

Eran is one of the first dentists to have used CAD/CAM technologies in Israel. He put digital dentistry into the curriculum of the Tel-Aviv dental school, and most importantly a candidate for Fellowship of ICD.

**What are the benefits of digital dentistry for you?**

"Digital Dentistry is giving me a chance to do treatments that couldn't be done before, for example, onlays without the need for temporary restorations and associated problems such as hypersensitivity.

Given the auto-correction of the software, I was able to learn what mistakes to avoid.

I can provide better services to my patients -scanning instead of impressions, one-visit restorations, and procedures that were not possible before.

I got new enjoyment and fulfilment from routine dental work and see great importance in teachin young dentists and students about the digital dentistry-

***It's not only our future but our present…***

# News from Districts

**Michael Thomas**
**Member Editorial Board of ICDigest**

It has been some time since a feature on news from Districts has been included in ICDigest. The Editorial Board decided in 2019 to revive this feature. It is hoped this revival will be of interest and encourage further contributions in future editions.

There are currently 15 districts in the European Section, Section 5, of the International College of Dentists, representing 34 countries. Eight districts provided a response to a request for information on significant developments, trends and challenges in dentistry in their District during the last twelve months. Further information was obtained from DentArt magazine, published in Ukraine in the Ukrainian and Russian languages, which has introduced a permanent feature on the views, events, opinions and activities of the ICD, focussing on District 15, Central and North-eastern Europe to which Ukraine belongs, and presently comprises 26 Fellows. The first of these features included an article by Professor Oksana Denga from Odesa, focussing on the co-operation between ICD and Ukrainian dentists over the past 10 years. Cooperation between Ukrainian dentists and ICD began with the arrival of US Professor Paul Becker in Ukraine in 2005. Professor Becker worked in the Department of Peadiatric Dentistry of Odessa National Medical University (ONMedU) for three years. Through initiatives involving ONMedU, the Institute of Dentistry and Oral and Maxillofacial Surgery of the National Academy of Medical Sciences of Ukraine (SE "ISMFS NAMS") and other universities in Ukraine, supported in part by ICD, various renowned, international speakers were invited to lecture at annual conferences in Ukraine. During this time several Ukrainian dentists were inducted as Fellows of ICD. (Fig.1)

**Fig. 1. Prof Myroslava Drohomyretska (Ukraine), Prof Bogdan Mirchuk (Ukraine), Prof Oxana Denga (Ukraine), Dr. Oles Shevchenko (Russia), Prof Corrado Paganelli (Italy), Prof Paul Becker (USA), Prof Lubov Smaglyuk (Ukraine) at the ICD supported International conference on problems in modern dentistry held in Odessa. Photgraph courtesy of Professor Oksama Denga.**

Also, a further article reported assistance provided by North Carolina dentists to the children of Moldova, with the support of Henry Schein, together with a report on the international conference "Serving to a dentist's profession" held in Poltava (Ukraine) in March 2019.

## Italy

District 10, Italy, has concerns, similar to those reported by other Districts, about the provision of oral healthcare care to the population as a whole. This district currently has 43 Fellows and three Life-Fellows. The development of digital technologies is prevalent within this District - a common theme throughout Europe, along with recognition of the need to improve access to preventive services to at least limit oral and dental disease, including the increased incidence of tooth surface loss associated with the erosive effects of high energy and other acidic drinks.

## Benelux

On 31st October 2019 the Benelux District, District2, which presently comprises 37 Fellows and one Master, held a gathering of 21 fellows and two guests at the "Industrieele Grootte Club" in Amsterdam. In addition to considering the upcoming ICD meetings in Porto, Nagoya and Amsterdam, the inductees for Porto were presented and potential new Fellows introduced. Dr. Hans Beekmans, an ICD Fellow since 2001, gave a presentation on the needs and prescription of minerals and vitamins in relation to oral health. Within the Benelux region, there has been an increasing number of large chains of dental clinics starting new clinics and developing new business models. Also, there has been an increase in all-digital practices, including the use of electronic charting, imaging, CAD-CAM and digital optical imaging replacing conventional impression techniques. There are, however, continuing challenges with the delivery of oral healthcare given a reduced workforce as a result of increased part-time working and an ongoing lack of dental awareness in the most vulnerable sections of the population. The Benelux district aims to recruit more younger candidates for Fellowship of ICD, recognising the need to increase the number of female Fellows. Dr. Frans Nugteren was honoured as a Knight of the Order

**Fig. 2: Dr Nugteren's decoration of the Knight of the Order of Orange-Nassau.**

of Orange-Nassau (Fig. 2) by the King of the Netherlands on 26th April for his care and treatment of the homeless population. Colleagues who attended the conference in Thessaloniki will recall Dr Nugteren's humanitarian forum presentation.

## Central and South-eastern Europe

In 2019, following the formation of District 15 (Fig. 3), District 14 became the District for Central and South-eastern Europe. This district currently comprises 28 Fellows and one Life-Fellow. Vice-regents have been appointed in the countries of the District, with the aim of increasing the number of Fellows and in the hope that further districts may be established in the future. In this part of Europe there remains many challenges to delivering a high standard of oral healthcare, with large differences being recognised between social, state supported and private dentistry. Digital dentistry and CAD-CAM techniques are expanding, but large amounts of dental caries and periodontal disease remain untreated. There is a lot of dental tourism in the District, driven by fees being lower than in some countries in the region.

## Denmark, Norway, Sweden and Finland

District 3, formerly Scandinavia, has undergone some geographical changes and now includes Finland and Iceland. There are currently 39 Fellows in the District with four inductees to be presented in Porto.

## England, Scotland and Wales

District 4, England, Scotland and Wales, held a dinner at the Royal Thames Yacht Club on 29th November 2019 (Fig.4) . The district currently comprises 90 Fellows and two Masters, with several inductees to be presented in Porto.

**Fig. 4: Attendees at the District 4 ( England, Scotland and Wales) dinner. Left to right: Simon Gambold, Seema Sharma, Gillian Gambold and Philip Dowell.**

**Fig. 3: Professor Tomislav Jukic, Regent District 14, hands the ICD Flag to Professor Dr Serhiy Radlinsky, then stlll Vice-regent District 14 for Eastern Europe, for the new ICD District 15.**

Funding of dental provision is an issue across the District, as is a lack of dental services in rural areas -an increasing problem, linked to fewer dental healthcare professionals coming to work in the UK, given uncertainties over the future relationship with the EU.

## Switzerland

In District 13, Switzerland (Fig.5) the number of non-Swiss qualified dental practitioners has increased, subsequent to the introduction of arrangements for freedom of movement. The Swiss Society of Dentists has noted that the confederation has issued a total of 8600 dentist diplomas since 1896. Since free movement was introduced in 2002, 4900 foreign diplomas have been validated in Switzerland. Competition in oral healthcare provision has therefore increased considerably. The cost of dental services remains high, resulting in increased interest in dental tourism. It is estimated that about 10% of the population, who are not entitled to social assistance and are experiencing financial difficulties, do not receive dental care. Foreign investment is leading to the establishment of larger clinic networks which are increasingly attractive to practitioners who do not wish the financial and administrative burden of practice ownership.

### Concluding remarks

The primary objective of the ICD remains "to advance the science and art of dentistry for the health and welfare of the public internationally". The Districts within the European Section of the International College of Dentists demonstrate a continued commitment to achieve this object along with object four, "to cultivate and foster cordial relations among those engaged in the profession of dentistry and other health professions" as has been highlighted in this report. ■


**Fig. 5: Fellows from Switzerland enjoying meeting colleagues in Thessaloniki.**

# International College of Dentists
European Section

## 65th Annual Meeting of the European Section
## Porto, Portugal 10-14 June 2020

Gil Alves Alcoforado

**Dear Fellows and Guests,**

It is an enormous pleasure and privilege for me to invite you all to come to Porto for the 65th Annual Meeting of the European Section of the International College of Dentists.

Oporto, or Porto, as the locals call it, was chosen as the place to hold the Annual Meeting this year as Portugal has become a trendy destination, and if there is a city that leads this trend it is Porto. The city wins the heart of everyone who visits, given its cultural diversity, welcoming people and delightful hotels.

Porto is the second-largest city in Portugal, after Lisbon, with the name "Porto" reflecting the name of the country "Portugal". Established by the Celts on the mouth of the Douro River, Porto was occupied by the Romans during the fourth century, transforming it into an influential commercial port then named "Portus Cale". In 456AD, the city was invaded by Theodoric II, King of the Visigoths, who remained in power until 716AD, when it fell to the Moorish Muslim invasion.

Alfonso III of Asturias warred against the Muslims and successfully conquered Portus Cale in 868A. In the subsequent years, Portugal emerged as a political entity. In 1096, King Alfonso VI of Castile married his daughter Teresa of León to Henry of Burgundy and as a dowry gave Henry Portugal, with Porto being capital city at that time.

Afonso Henriques, son of Henry of Burgundy and Teresa of León, defeated the King of León in 1139 and established a new kingdom from the southern part of the Kingdom of Galicia. This was the base for Portugal's independence.

Porto is now one of Portugal's most important ports. It sits along the banks of the beautiful Douro River and is the home of the world-famous port wine. Consequently, the city boasts many wineries together with many and varied restaurants where you can sample a delicious and assorted cuisine. Porto is an ancient city and as such you will find numerous quaint streets which make for charming walks. I hope you will enjoy your stay in this beautiful city.

The conference hotel is the Palácio do Freixo on the banks of the Douro River near Central Porto. This will be the venue for the Welcome Reception and Scientific Programme. On the Friday, while the Fellows are attending the Scientific Programme, the accompanying persons will enjoy a city tour allowing them to explore the city's shops, ferried by the local tuk-tuk's, followed by lunch by the river with a tram ride on the way back to the city. On Friday evening, the Conference Dinner will be held at a winery - Caves Real Companhia Velha - where we will have the opportunity to tour the premises and sample the wine. The Induction Ceremony and Gala Dinner will be held at Palácio da Bolsa in downtown Porto.

On the Sunday, the post-conference tour will consist of a bus ride to Pinhão, a town on the Douro River, where we will board a traditional boat used to ferry wine casks up and down the river. The boat will take us to a local winery - Quinta Nova where we will be having lunch.

I will look forward to welcoming you to Porto.

*Warmest regards,*

*Gil Alcoforado*
*President of the ICD European Section*

## Scientific Programme

## Prevention in Dentistry and Humanitarian Form

- President's and Scientific Chair's welcome and introduction
- Keynote address – The future of clinical genetics - Purificação Tavares
- Oral prevention in the individual – Cristina Manso
- Oral prevention in the community – José Frias Bulhosa
- Discussion
- Coffee break and visit to sponsors
- Prevention in Orthodontics – Nimet Guiga
- Prevention of TMJ disorders – Maria João Rodrigues
- Pain management in dentistry – Mauro Labanca
- Prevention in Periodontology and Implantology - Björn Klinge
- Discussion
- Lunch, e-Poster Session and visit to sponsors

### Humanitarian Forum

- Introduction - Miguel Pavão
- Presentations on humanitarian projects supported by the Philip Dear Foundation
- Coffee break and visit of sponsors
- Presentations on humanitarian projects supported by the Philip Dear Foundation continued
- Discussion

*A complete overview of the itinerary for the meeting in Porto may be found at: www.icd-europe.com*

# Business Meeting and Induction Ceremony 2019

The 64th Business Meeting and Induction Ceremony of the European Section of the International College of Dentists was held in the Alexandros Hall of the Makedonia Palace Hotel, Thessaloniki on Saturday June 8, 2019.

**Aris Petros Tripodakis**

## Introduction

Holding the European Section's meeting in Thessaloniki, next to ancient Pella and to Aigai and, even more so, holding the Induction Ceremony in the Alexandros Hall of the Makedonia Palace, made reference to Alexander the Great, as an inspirational leader, inevitable. Alexander the Great, a military and political genius, in uniting the East with the West, fulfilled the dream of spreading the Hellenic message of civilization across the known world. Conveying the accumulated wisdom from his teachers, the Greek philosophers Aristoteles and Diogenes, Alexander became the founder of western civilization. The foundation of multiple cities - more than forty Alexandrias, spread over the invaded lands, became the nuclei of a milieu of merged cultures with citizens sharing the same values. Political governance, trade routes and common language were the tools Alexander used to accomplish his ultimate aim: putting people in communication with each other. Thus, the goal of universality was established.

The International College of Dentists was formed in 1920 to recognise and honour dentists of outstanding professional achievement and meritorious service for the benefit of mankind by granting them Fellowship of the College. Through universalism, the College, over its illustrious 100-year history has grown its Fellowship in more than 120 countries, with more than 12.000 Fellows around the world.

**Marble bust of Alexander the Great**

The European Section of the College, following its foundation in 1955, initially extended to just the western and some central European countries, given political barriers and circumstances. With the expansion of the European Union and the political changes that occurred in Eastern Europe in the 90's, the Section, like Alexander the Great was able unify East and West. Subsequent to District 14 being established in Slovenia in 2008, more than 50 colleagues from 16 Central/Eastern European countries have been inducted as Fellows of the College.

The 64th Business Meeting of the Section and Induction Ceremony commenced with a brief audio-visual history of the College, based on the inspiration of Alexander the Great and produced by the Master of Ceremony (view the video at https://vimeo.com/387674801).

## Presidential address

President Argirios Pissiotis gave a concise, eloquent, introductory speech focusing on growth and development as the priorities and goals of the European Section of the ICD. Inspired also by Alexander's cultural universalism, aimed to uniting East and West, the President urged Fellows to help expand the Section, notably in countries of Eastern Europe. With great pleasure, he announced the recent division of District 14 to form a new District 14 for Central and Southeastern Europe, led by Regent Dr. Tomislav Jukić based in Slovenia and an additional District -District 15 for Central and Northeastern Europe to be led by the Regent Dr Sergey Radinsky, based in Ukraine.

## Address by ICD President

The late Dr Bettie McKaig commenced her address with the following quote: "If service is beneath you, leadership is beyond you". She complimented the European Section on its legacy of leadership within the Global ICD. Having served on various international Committees, she had concluded that various media and internet tools give the College the opportunity to be the catalyst for increased interactions, deeper understanding, and enhanced empathy between cultures across the world. Thus, ICD Fellowship, reaching out and achieving increased understanding amongst those with different lives, strives to become a gold standard in human communion.

The platform party. Left to right: Dr Bettie McKaig, ICD President; Prof Gil Alves Alcoforado, President-Elect European Section; Prof Argirios Pissiotis, President and Deputy Registrar European Section; Prof Mauro Labanca, Registrar European Section; Dr Maren de Wit, Treasurer European Section; Prof Nairn Wilson, Editor European Section

## Induction

During the Induction Ceremony - a celebration of recognition of outstanding professional achievement and meritorious service, forty-two new Fellows, as pictured and named below, were introduced by their respective Regents and inducted as new Fellows of the College, each receiving their certificate of Fellowship and College key.

## Master Fellowship

Following the induction of the new Fellows, the Regent of Ireland, Dr Richard Graham, in an emotional address, presented Dr Tom Finney for the prestigious honour of Master Fellow.

## New Officers

The newly elected officers of the European Section were announced as follows:

- Vice-President - Dr Dov Sydney, former Regent of Israel and Malta, Master Fellow and current ICD Editor.
- President-Elect - Dr Walter van Driel, former Editor of ICDigest and current European Section Webmaster.

## Induction of new President

The outgoing President Argirios Pissiotis inducting President-Elect, Professor Gil Alves Alcoforado as President of the European Section for 2019-2020, with the presentation of the presidential medal and Section gavel. President Alcoforado, in thanking the Section for the honour bestowed on him and committing himself to serve the Section as President to the best of his ability, thanked and praised Argirios Pissiotis for his outstanding term of office as President. Immediate-Past President Pissiotis was presented with his Past-President's pin and received a long applause.

## Reception and Gala Dinner

Following a video inviting Fellows to attend the Worldwide ICD Centennial Celebration Meeting in Nagoya Japan in November 2020, all present adjourned to a reception in honour of the new Fellows of the Section, prior to the memorable Gala Dinner which concluded the 64th Annual Meeting of the Section. ■

Prof. Argirios Pissiotis, President

Prof Aris Petros Tripodakis, Master of Ceremony

The late Dr Bettie McKaig, President of the ICD

Dr Tom Finney being honoured as Master Fellow

Professor Gil Alves Alcoforado being inducted as President of the European Section

# The European Sectio


Dr Gerwin Vincent Arnetzl


Dr Maija Eltz


Dr Gertjan Dicker


Dr Eric Fritschy


Dr Ann-Christin Grevér


Dr Camilla Trolle


Prof. Albert Leung


Dr. Kevin Lewis


Dr. Nicholas Lewis


Dr Seema Sharma


Prof. Vassiliki, Anastassiadou-Velliadou


Dr. Nikolaos Efthimiadis


Dr. Emmanouel Mazinis


Dr. Olga Naka


Dr. James Griffin


Dr. Derek Maguire


Dr. Leonard Maguire


Dr. Aislinn Machesney


Dr. Elisabeth Martinelli


Dr. Edward Sammut


Dr. Hilla Ziv-On Eksztain


Dr. Andrea Gandolfi


Dr. Antonio Olivo


Dr. Mariana Alves


Prof. Mário Polido


Dr. Jose-Maria Malfaz


Prof. Theodore Eliades


Dr. Yuliya Cherepynska


Dr. Viktorija Markova


Prof. Ana Minovska


Dr. Jože Pungeršek


Dr. Ventsislav Stoev

# n 2019 Inductees


Dr Peter Dyer


Dr. Daviderpal Kooner


Dr. Eleni Gagari


Dr. Nikolaos Lygidakis


Dr. Augusti Papathomas


Dr. David Reaney


Prof. Ana Cristina Manso


Prof. José João Mendes


Dr. Andreea Nasser (ROU)


Dr. Jure Poglajen

## Reflections on induction to ICD


Mark Wright, Regent District 4 – England, Scotland and Wales

*It wasn't until 2004 that I became aware of the ICD and all the wonderful projects the College supports across the world. At the time I believed Fellowship was only awarded to academics and the high achievers within our profession. As a general dental practitioner, I was not only overwhelmed to have been recognised by my peers for services to our profession, but also humbled by being considered worthy of Fellowship in such a prestigious organisation. It was in 2005 in Stockholm that I was inducted as a Fellow of the College, meeting likeminded colleagues from all over Europe. From that date onwards, the hand of Fellowship has been extended to me, not only within our European Section, but also worldwide. I have made numerous new friends, shared knowledge and ideas, learnt how dental education varies around the world, but most importantly learnt how, together, we as Fellows of the College can help sustain the various humanitarian projects supported by the College.*

*"It's always good to be part of something good"*
***Yuliya Cherepynska, Ukraine***

*"…being surrounded by people who share the same principles in life and in their profession is uplifting."*
***Andreea Nasser, Romania***

*"… becoming a Fellow of ICD was an amazing experience…".*
***Ana Minovska, Republic of North Macedonia***

*"…a new window of oppportunity to share the experience and professionalism of exceptional dentists."*
***Ventsislav Stoev, Bulgaria***

*"…a pleasure and honour to be inducted into an organisation with such a high reputation and long tradition."*
***Jože Pungeršek, Slovenia***

# Future Annual Meetings of the European Section International College of Dentists

**2020 Porto,** Portugal • 10-14 June 2020

**2021 Amsterdam,** The Netherlands • 23-27 June 2021

**2022 Jerusalem,** Israel 12-15 June 2022

See www.icd-europe.com for further information on the Annual Meetings of the Section.