

# DENTAL TRIBUNE

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Systems, technology  
let practices deliver  
profitable, emergency  
cosmetic dentistry



By CRAIG CALLEN, DDS

>>> Page 2

The most  
important years in  
implantology



By DR GEORG BACH,  
GERMANY

>>> Page 4-5

Reduce treatment time  
with digital dentistry



Grant Bullis, Glidewell Laboratories  
director of implant R&D and digital  
manufacturing

>>> Page 8

## PPA INTERNATIONAL CONFERENCE

### Research required to bring positive changes and improvement in our health-care system: Dr. Najibul Haq

KASHIF ARIFF-  
DT PAKISTAN

The second International Conference of the Pakistan Prosthodontics Association was recently held in Peshawar under the aegis of the Pakistan Prosthodontics Association with Dr FazleGhani in the chair.

The conference started with a day-long scientific program by Professor Dr. NajibulHaq, Dean Peshawar Medical & Dental College, Peshawar. This was followed by the introductory Remarks by Dr. Fazal Ghani, Chairman PPA Conference & President Elect PPA. Professor Dr. Najib -ul- Haq, emphasized on the role of research in bringing positive changes and improvement in our



health-care system. This whole day was reserved for presentations of the postgraduate

students.

This was followed by two scien-  
*Continued on page 11*

## FDI welcomes the Minamata Convention on Mercury

GENEVA- FDI World Dental Federation welcomes the ratification of the Minamata Convention on Mercury, taking place in Minamata, Japan, recently. The choice of Minamata, where serious health damage occurred as a result of mercury pollution in the mid-20th Century, is highly symbolic.



FDI has made it a priority to be involved in the drafting of the Convention from the outset. It was gratified to see consensus develop around the phase-down approach to dental amalgam-a mercury-added product containing 50% mercury-during the fifth and last meeting of the Intergovernmental Negotiating Committee on Mercury (INC5).

This phase-down approach was advocated by FDI, the World Health Organization (WHO) and the International Association for Dental Research (IADR)

#### "Challenges for the profession"

Says Dr Stuart Johnston from the British Dental Association, who led the FDI negotiating team throughout the Continued from front page five neg-

*Continued on page 11*

## PMDC held accountable for heavy college fees

DTP REPORT

A division bench of the Lahore High Court on Monday issued notice to the Pakistan Medical and Dental Council (PMDC) on a petition against charging of heavy fees by the private medical colleges from students.

The bench comprising Justice Amin-ud-Din and Justice Abid Aziz Sheikh sought reply from the Pakistan Medical and Dental Council till November 28. The bench also ordered submission of judgment and details whereby fees of Shaikh Zayed Medical College had been revised.

The bench allowed the petitioner to implead Pakistan Medical Association (PMA) as necessary party in this petition. The petitioner submitted that the private medical colleges had already enhanced the fee structure and the tuition fee was now so high that the middle class or the low middle class were unable to pay the same, otherwise, they had to sacrifice their assets in any form for payment of fee.

He submitted that private college of 100 seats was receiving Rs 300 million a year and making profit of not less

*Continued on page 11*



## PDA's new Central Council pledges unified progressive efforts

DTP REPORT

The newly elected Central Council of the Pakistan Dental Association (PDA) - Dr. Saqib Rashid Panel recently assembled in Karachi for an august and solemn Oath-taking ceremony to assume their new role as the office bearers. The formal gathering hosted many of the leading personalities in

the dental profession of Pakistan. The cheerful and interactive ambience reflected the congenial relations among the dental fraternity and their commitment to support the new team to make the PDA an effective and resourceful body.

The participants expressed their faith in this youthful and enthusiastic central council, which has the will and capability to

take comprehensive measures for enabling revolutionary progress in the profession.

The Oath was administered by Professor Dr. Issa Arain - the Senior practitioner and Dental Academician, who also addressed the gathering, congratulated the new council members and donated Rs. 51,000 from his personal account as a sup-

*Continued on page 11*

## FDI World Dental Congress New Delhi - Registrations open

FDI offers special Early Bird  
Discounts on Registrations

The FDI Annual World Dental Congress 2014 will be held from 11th to 14th September in New Delhi India. For the proactive Dentists and other Oral Health practitioners who have already planned to attend the insightful event, FDI is now offering Special Early-Bird Discounted rates for registration and participation. This will help the delegates to avoid the last minute rush. Abstract submissions for the conference will begin on 3rd of December 2013.

The Indian Dental Association will be hosting the FDI Annual World Dental Congress 2014 in Greater Noida, NCR New Delhi, India. Having an international outreach, it will be a unique event in the 2014 dental calendar as a global audience of more than 10,000 visitors are expected to attend.

FDI 2014 New Delhi will offer a rich scientific programme which inclu-

*Continued on page 11*

# Systems, Technology let practices deliver profitable, emergency cosmetic dentistry

By CRAIG CALLEN, DDS

When opportunity knocks, is your practice ready to answer? As dentists we have opportunities every day to help our patients and contribute to improving our bottom line by being ready to provide emergency cosmetic dental treatment. Working such patients into our schedule generates treatment fees at a higher-than-normal profit margin, and helps generate longer-term business.

Some dentists will reserve a half hour every day for such emergencies.

Because our practice has six operatories and a great staff, we are able to work these patients into our schedule.



**Fig. 1:** Assistant takes X-ray and gets it to them dentist to help with initial diagnosis. Photos/ Provided by Craig Callen, DDS



**Fig. 2:** Frantic, 32-year-old woman in pain with a fractured central incisor requests an emergency appointment because she couldn't go into work looking the way she did.

## Emergency case

For example, recently we received a frantic call from a new patient, age 32.

She had fallen the day before and severely fractured her central incisor. She was crying and said she could not go to work looking the way she did. She also had pain from an exposed nerve.

Our systems kicked in right away. At our morning huddle we had already discussed where to schedule any emergencies for that day. The front desk

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scheduled the patient and gave her a fee range to expect for



**Fig. 3:** Thanks to office systems that anticipate such occurrences - and appropriate technologies that enable response - the patient leaves two hours later, happy to have her smile back.

treatment. The patient arrived at the appointed time and filled out her forms. One of our assistants seated her in the treatment room and obtained a digital X-ray film, which I reviewed while treating a patient in another room. I made a preliminary diagnosis and informed the assistant. The assistant printed the necessary consent and prescription forms from our computer.

## Relieve pain, restore smile

When I had a short break, I stopped in and talked to the patient and informed her of the need for a root canal, post and a crown. She was grateful that we could care for her that same day, relieving her pain and restoring her smile. While the patient watched a CAESY Education Systems video on the proposed treatment, our staff entered the treatment into the computer, used the Internet to verify her insurance benefits and make an application for her to CareCredit to help finance her portion of the fee. The front desk staff helped the patient complete our financial arrangement form.

After numbing the patient, the staff took digital pre-op

photos, and I returned at my next break to treat the patient. First I completed the root canal using a Brassler Endosequence NiTi system with battery-powered handpiece, performing root-length determination with a Root ZX.

My EFDA-certified assistant (Expanded Functions Duties Auxiliary) set up our Cerec CAD/CAM scanning unit. I placed a fiber post and build-up using Unicem II. The tooth was prepped. It was noted that the patient's other teeth had some older composite bonding.

The preparation was scanned, and the crown was designed and milled using a B1 block of Empress porcelain from Ivoclar.

The EFDA assistant fitted the crown to place. I verified the fit, and the crown was etched and silanated. I bonded the crown in, again using the Unicem II. The EFDA assistant adjusted the bite and obtained a final polish with our Brassler porcelain polishing kit.

## Two hours later

In total, the patient was in our office for about two hours. I spent about half an hour chairside with her as I moved back and forth with previously scheduled patients.

The patient was extremely happy to have her smile back and said she next wants to replace her old composite bonding with porcelain. This will enable us to better balance out the width of the centrals. We were able to help the patient and add some nice bonus production to our day. A real win-win situation. By having the systems in place, technology available and a well-trained staff on hand, we were able to easily help a patient and our bottom line.

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# The most important years in Implantology

BY DR GEORG BACH,  
GERMANY

## Introduction

It all started with an inquiry from a well-known professional journal of implantology asking for a contribution to acknowledge their having been in business for 15 years. Then there was the incidental telephone call by an academic teacher who had accompanied and supported me in my first steps in implantology. When I asked him about the upcoming publication project, I received a both spontaneous and surprising reply, "The last 15 years-those were the most important years in implantology!"

This from a renowned university professor who was instrumental in establishing implantology-I was impressed. Later on I had to ask myself, "Is this really true?" The result of my tracing this development is this article-a personal retrospective.

## Phases of implantology

If one considers oral implantology with regard to its major developments, three phases are evident: (i) the empirical and experimental phase; (ii) the arrival of implantology in universities and science; (iii) the mass phenomenon of implantology. I would like to add that this is a rough and probably superficial division to some extent. Please, however, allow me to apply it within the scope of this personal-and not exhaustive review.

Looking back at these past fifteen years, I will barely touch on phase II, but will discuss phase III fully. This entails different directions and priority areas that colleagues working in implantology experienced. When I browsed through implantology textbooks and journals from this period, I realised even more that implantology had undergone considerable change in this relatively short period of 15 years.

I would like to recount my highlights of implantology from this period in the following paragraphs.

## Farewell to the tristesse of papers

A seemingly minor issue to start with: the variety and

quality of dentistry-specific print media and of digital media, particularly print layout, has developed substantially during the past 15 years. This holds true not only for implantology, but also for dentistry as a whole. The appearance of some professional journals up until the mid-1990s was reminiscent of an official legal amendment, but amazing things have happened since. The quality of colour printing (which is the norm now, but used to be subject to a surcharge for authors who wanted to include colour images), the accuracy of images, the paper-all of these make for a high quality appearance and leave a lasting impression on the reader. This has clearly been an advantage also for implantology because now highly complex correlations can be more easily conveyed and "sometimes a picture is worth a thousand words".

Ideally, e-learning and electronic professional journals supplement the current training needs of the younger generation of dentists especially.

## The end of dogmas

While implantology was marked by many dogmas from its beginning and the mid-1990s, this had changed at the time when our 15-year observation period begins. However, implantology was later called into question in its entirety. Whether it was healing times, waiting times after augmentation or prosthetic concepts-everything underwent scrutiny. On the one hand, some of these dogmas did in fact prove to be no longer sustainable because of remarkable developments, especially improvements in implant surfaces. On the other hand, the mark was at times overshot in the elimination of other dogmas, creating the need to backtrack.

This was a painful experience for both patients and implantologists. One dogma that we encountered in the observation period was that of a strict refusal of immediate implant placement. There is general consensus today, however, that under suitable conditions an immediate implant placement can be a high quality and sustainable alternative to established procedures. One clinical case



shows an immediate implant placement in the maxillary anterior teeth: the extraction and the immediate implant placement of a maxillary anterior tooth that was not worth preserving under the guidance of a drilling template and implant position (Fig. 1), transfer into the oral cavity (Fig. 2), and the condition immediately after insertion of the implant crown (Fig. 3).

## The prospering of the implant market

A welcome variety of new implants, implant forms and prosthetic options has become a reality in the past 15 years. Special implants were developed for special indications so that now even a mandibular molar can be replaced by a corresponding sized implant, followed by insertion of a corresponding sized implant crown. Figures 4 to 7 show the clinical and dental appearance of these in a patient. Implantologists who placed several hundred implants annually were considered the big players on the implant market in the 1990s. Achieving the mark of 100,000 implants placed per year in Germany signified that the peak had been reached. This was not the case, since the one-million mark was also reached within the scope of a rapid, almost unimpeded development.

While the increase has been slower in recent years and global economic developments even caused a brief decline, today we can assume that the implant market will continue to grow.

The maximum growth phase

falls into our observed period.

## Development in the eyes of implant manufacturers

From manufacturer to global player this would be an accurate description of the development of some implant manufacturers. The development of some of these companies over the past 15 years, the size of their companies and the number of their employees today are indeed impressive. And these prosperous companies share other characteristics as well: the acquisition of products and entire firms in order to expand or supplement their product portfolio and their pressing on to the field of digital dentistry (CAD/CAM, planning, etc.), into which these global players invest large sums of money. Revenues must be generated so that these investments can be made-and they are still made, albeit declining owing to the economic crisis.

Still, the implant market is booming. Although the consistently two-digit annual growth rates some implant manufacturers had started to become used to have become more moderate today, a great deal of money can be made with implants. As a result, an ever-increasing number of implant suppliers and systems make it impossible for the individual user to keep track. Aside from new systems, an increasing number of generics are being launched on the market.

## Focus on red-white aesthetics

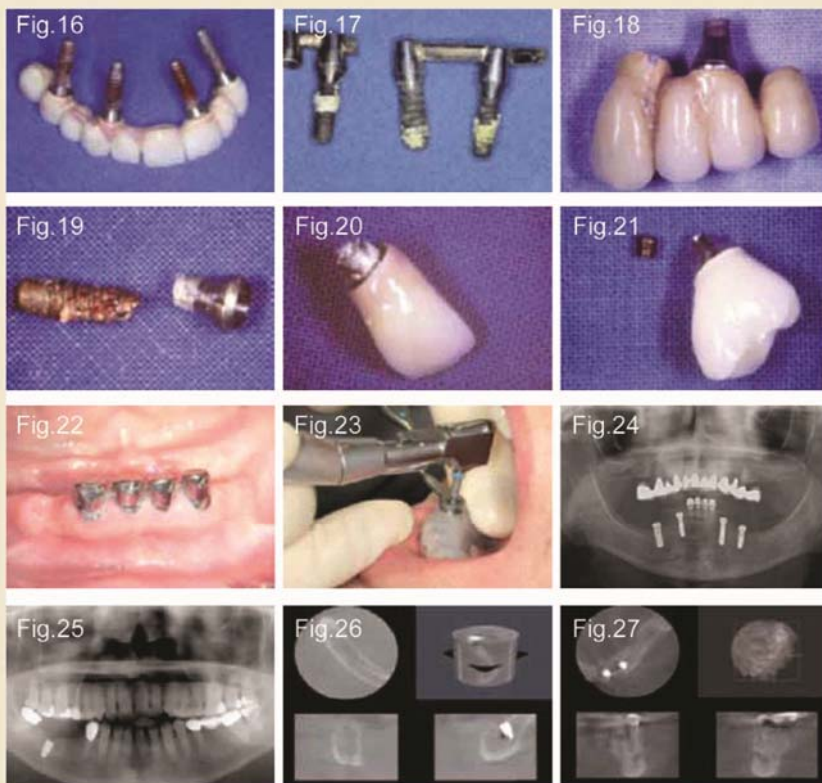
The President of the German

Society for Dental Implantology (Deutsche Gesellschaft für Zahnärztliche Implantologie), Prof. Frank Palm, aptly remarked, "What was celebrated as a triumph for some colleagues 20 years ago is today taken to court." Dentists who practised implantology were not prepared to find themselves confronted with a debate that had spread from North America to Europe: that of red-white aesthetics. This new focus on achieving the highest possible aesthetics for implant-prosthetic treatments was linked to implantology and distanced itself from surgery, which had been dominant up until that time.

In the early phase of implantology, the main focus was on safe placement and the best possible placement in the bone, sometimes even at the expense of subsequent prosthesis treatment owing to unfavourable placement of the artificial abutment teeth. Now, however, prosthetic standards and issues have become the centre of the discussion. Placement techniques were modified and new techniques were established in order to satisfy these requirements. Patients no longer, or only occasionally, accept demanding and complex cases like the following case.

Both implants in the anterior maxillary region were placed too far buccally, and there was a gap of 5.5 mm between the implant shoulder and the cemento-enamel junction of the adjacent teeth (Figs. 8-10).

Treatment with a long-term



temporary restoration would only have yielded an unsatisfactory aesthetic result.

However, under certain surgical and dental conditions—as shown in our second example—superior results and stability for a period of ten years can be achieved even with challenging initial situations. In 1999, an immediate implant was placed in region 12. The following images show the steps of treatment (Figs. 11–13). The last image shows the condition after ten years (Fig. 14).

This development was made possible mainly by massive improvements in the area of augmentations, which are now performed with significantly higher predictability. This development was further enhanced by a considerable improvement in the training of implantologists. These improvements are significant for both undergraduate study and postgraduate training. Thus, the universities and professional associations who have contributed immensely in this area deserve much credit in this respect.

These improvements are significant for both undergraduate study and postgraduate training. Thus, the universities and professional associations who have contributed immensely in this area deserve much credit in this respect.

#### The battle of healing times

It was but an episode, yet one that caused an incredible furor at the time:

the debate about shortened healing times. Stimulated by a media hype in which the specialised press only played second fiddle and the lay press appeared to be in the lead, the healing times of some implant manufacturers were inflated. Values were corrected downwards almost on a daily basis.

Some manufacturers went along with it, while others remained firm. Some participants felt they needed to be at the forefront, others

stayed out of it.

A short but remarkable ascent was followed by a rapid crash.

A personal highlight for me was an article in a tabloid newspaper that said, "Extraction in the morning; directly followed by augmentation and implantation; a firmly seated supra-structure implemented at lunch time, and then endless servings of spare ribs!" As can be seen from this euphoric statement, some got carried away, while others had to painfully back-track. What remains is the realisation that, owing to improved surfaces and other conditions, the long healing times recommended in the early phase of implantology can in fact be reduced considerably, but not at any cost.

#### New options for improving the implant site

The afore-mentioned dominance of prosthetic implantology was only possible because many new and safer augmentation procedures were established during the observation period, enabling dentists to design the osseous bed for the implant as desired.

Revolutionary augmentation procedures in the area of the maxillary posterior teeth, which had been the focus of discussion in the first year of the period in question, constituted another important approach for real progress.

Thanks to surgical techniques for sinus lifts, which underwent an incredible number of modifications also with regard to less invasive procedures, it was possible to treat areas of the jaw that had previously been considered impossible or that could only be restored for implantation by way of highly invasive orthodontic procedures. While initial sinus-lift procedures were generally

reserved for highly specialised centres, they have now become common knowledge in implantology and are offered and performed extensively.

#### Establishing virtual implantology

It seems easy to figure out what the old-school fraction must have thought about the new planning and placement options for oral implants.

This fraction had already had a hard time accepting the development from surgical to prosthetic implantology, and they were strictly against the new digital procedures that were emerging incredibly quickly. With the rapid spread of dental volume tomography, which opened a new dimension to dental image diagnostics, a multitude of planning programs and aids were placed on the market.

The suggestion by some opinion leaders to define validity and establish standards with regard to these new techniques, which are generally based on 3-D X-ray data, was especially frowned upon. I feel that a good compromise has been reached, owing to anticipatory and serious discussions held during consensus conferences and congresses, as well as at universities and within the dental associations.

These new techniques are immensely helpful in the treatment of complex cases, and they are even indispensable for highly complex cases. The treatment of simple cases usually does not require the use of these techniques.

In fact, they should not be used in such cases owing to the radiation exposure when obtaining 3-D data.

#### Of promises and realities

Themes of the congresses

during the first decade of the observation period contained generally positive statements and depicted new opportunities in implantology, which exceeded the then current options by far and expressed a belief in boundless growth.

This coincided with many positive statements and evaluations by implant manufacturers and distributors.

However, all this changed considerably during the past five years.

Suddenly, new topics were given priority, which shaped specialists' conventions—topics that had previously been partially suppressed if not negated. I remember only too well the implant congress held by a very important American implant manufacturer in Frankfurt/Main in 1998, where I reported on a concept for the treatment of peri-implantitis developed at the University of Freiburg and was then rebuked by the main speaker, who was from the USA, during the ensuing panel discussion. He asserted that he had "not seen one case of peri-implantitis in twenty years of implantology—this phenomenon does not exist and, if it occurs, it can only be attributed to a lack in skill on the part of the implantologists."

How times have changed. However, trouble-shooting and complications in implantology and even the word

"failure" have been mentioned in the themes of many congresses held by leading professional associations of implantology in the past years.

#### Patients' expectations

While a consistently positive and at times even euphoric tone prevailed regarding the topic of implants for many years, a few critical voices and later increasing criticism emerged at the beginning of the observation period. This was concurrent with a noticeable increase in the number of implants-based on the considerable increase in implantology failures and complications. The following images depict total implantological failure—the loss of a purely implant-supported complete maxillary restoration caused by an infaust peri-implantitis (Figs. 15–17), leaving profound osseous defects.

However, in line with the consistently positive evaluation of implants and the persisting promise that the use of implants would yield optimum results always—and often publicised by the lay press—our patients' expectations have increased considerably in the past 15 years.

Patients assumed that, regardless of the individual situation, he or she would always receive the optimum results. In this regard, it seems reasonable to maintain a self-critical attitude and to concede that we did not always contradict this general

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assumption vehemently enough.

And then what was bound to happen, happened: at times, the result was not what the patient had expected. An awkward situation arises when the dentist, based on the initial diagnosis, considers the result to be successful and the patient considers it a failure. A long-time legal expert sums up this situation accurately by stating that, "Two-thirds of all pending court proceedings were filed by patients whose expectations were disappointed." Rather unfortunately, the increasing number of court proceedings are mostly related to implantology. It cannot be by chance that the premiums for mandatory professional liability insurance have increased considerably.

#### Emerging criticism

German periodontists Dr Thomas Kocher referred to implantology as "the red light district of dentistry."

Whether this evaluation is justified is a matter to be decided individually.

Personally, I do not agree with this evaluation, but a grain of truth might be found in its reference to overtreatment. In this regard, the extraction of teeth in favour of implants, even when not indicated, is a concern voiced increasingly by periodontists and those in favour of conservative treatment. We have to address this issue by individual evaluation of each patient, as well as through academic discussion. Implant versus tooth preservation has been a frequent debate at conventions and implant symposia in recent years. In my opinion, this would not have been possible ten years ago.

#### Trouble-shooting concepts

Unexpected complications, such as implant fracture and failure of implant supra-structure connections (Figs. 18–21), necessitated the development of surgical and prosthetic troubleshooting concepts and modification of constructions in implant and abutment design. However, these were not readily available and have not yet been finally agreed upon. In other words, they cannot be said to be common knowledge in implantology, at least not in the treatment of periimplantitis.

Similar statements can be made with regard to pre-implantology arguments, where a pleasing variety of surgical techniques and materials is listed, but no generally valid scheme has been agreed upon.

The fact that the need to dev-

Continued on page 8

# Fair and sustainable financial models for Health Care Institutions

DR TAYABA  
DT PAKISTAN

Health care leadership is perhaps the most unpredictable of the leadership domains. Where other sectors are based on genuine sales and revenue results, the same is considered a taboo to discuss in healthcare industries. This is excluding the profit making healthcare structures which show no regard for patient oriented care. Despite understanding the strong economic models underlying the system, very few are ready to admit that healthcare management requires business oriented thinking. Going against the tide seems too daunting for a senior healthcare practitioner who is trying to get in grips with his new role as administrator.

In this new age of technological, social and media development, the healthcare leader now faces more complex issues than ever before. In order to survive, a healthcare leader needs to become more than just a good healthcare provider. Apart from knowledge, which forms the basis, other important tools determine the success of a good healthcare business leader. A decision to develop a strong business orientation of the healthcare system is the first and the most difficult step this new leader has to take. This means much opposition from those who believe that healthcare and business cannot co-exist. This is not a waltz; it's a full out battle between the two physician mind sets. However, the terrible management of physicians in trying to keep flailing healthcare systems afloat has become glaringly obvious. Managed care of USA, although the most heavily funded, remains the most crippled systems of the world. The reason is not the lack of resources; it is the lack of utilizing these resources efficiently.

New business leaders may have to devise a strategy that is linked much closer to business plans, but which cannot delineate or eliminate any population pool from the target market. While some private institutes having unique services may get away with this market segmentation, the same cannot be done in larger public sector healthcare organizations. With an entire population to target, the strategies for different consumer sets will differ. This does not mean changes in treatment policies or plans. It means that health business leaders need to become leaner, more efficient and more future oriented in order to address some of the biggest resource challenges to come.

This phenomenon is becoming a global concern. The rise in the baby boomer population seeking treatments and an exorbitant increase in chronic medical conditions merely reinforces that the resource gaps will continue to widen. This is perhaps more felt in the developing countries which have witnessed the worst eras of brain drain in healthcare sector to date. Aga Khan University Hospital for example, has for years struggled with retaining its top nursing professionals, which form the backbone of the healthcare delivery structure. The same was witnessed among dental surgeons recently when many migrated to Canada and Australia in hopes of better future there.

In such situations, the compensation and remuneration plans need a very critical analysis and revision. From a health business leader's perspective, the resources must be retained and optimised in order to ensure the healthcare systems remain afloat. This prioritizes the human resource strategy across the breadth of the health care sector, focusing on creating rewarding careers which deter brain drain. The leader faces the dilemma of critically allocating resources between the different stakeholders.

One model of leadership emerging and being advocated in Pakistan is the patient centricity model. The model proclaims that the ills of the healthcare system can only be remedied if the health care stakeholders and institutes start focusing on the patient. This is in stark contrast to a challenge a business health leader is facing. With so many fronts to compete on, both locally and internationally, it will take more than clinical and bookish knowledge to tide this over.

The second argument that arises here is this. Are the number of medical students and doctors actually in decline? An annual estimate of 3500 medical professionals coming out of the medical colleges doors remain jobless, which forces them to leave for abroad. But not all of these 3500 students leave the country? Are they being properly utilized? Can the country afford to waste its healthcare resources when a population of more than 183 million currently needs health care services?

The role of the health care business leader comes in here. Rather than focusing on a few well established health care systems in Pakistan, these leaders must resolve to create similar successful models by implementing the global concept. It is impossible and impractical to emulate the western health care systems which have huge amounts of resources. They hold the leverage of bringing in resources from deprived countries like Pakistan to make up for any lack in manpower. Pakistan's health leaders therefore need to come in contact with business gurus of Pakistan and create a well formed strategy to turn the health care system around. Without it, the country's healthcare systems are standing on a thin stick of structure waiting to collapse.

# New healthcare demands new thinking: A Strategic Leadership Perspective

DT PAKISTAN

A heartening development in the area of healthcare is the more active role physicians, particularly young physicians are taking towards creating better working conditions and models of healthcare. In a country like Pakistan, healthcare issues are plenty. You can see an almost absent government budget for health, shifting the burden to private healthcare systems. On the other hand, there are private healthcare systems marketing to the niche and wealthy segments of the society, demonstrating the most outrageous costs in providing services that can be equitably distributed to other general healthcare systems. The inequity therefore is abound, and with growing challenges of health tourism, brain drain, inability to equip the systems with information technology and lack of focus, the challenges are likely to grow in the future.

The healthcare systems are currently lacking strong leadership. To rephrase, the health care systems are lacking strategic leaders. There are many dimensions and reasons which lead to this conclusion. Health leaders in Pakistan are working in silos, which makes collaborative efforts weak. Alongside, these leaders face challenges due to lack of resources, which makes them choose between alternatives, and forgo many new developments. The healthcare leaders feel frustrated at the lack of health leader potentials. The potentials feel frustrated at the slow pace of development and lack of coordination. The economic recession is further reducing any new enterprises in the system.

Health leaders blame the block in the physician mindsets about health care system as the main challenge in overcoming health challenges. Leaders argue that while economics may be a factor, it does not in any way influence a leadership potential if there is one. If this is the case then is it safe to assume there is no leadership potential present?

This seems farfetched given the uncanny leadership potentials visible in other industries such as IT. But perhaps the key issue in the current healthcare scenario lies in the much reduced numbers of strategic leaders. Strategic planning and execution are skills that very few healthcare professionals learn to master. This is because such courses and programs are not available in their routine degrees and programs. This may be a key reason why very few leaders think on strategic paths, merely because they are not well versed in them.

Another reason is that current health leaders have not conclusively agreed to create health leadership institutes. By institutes the reference is NOT to the many courses and workshops that abound the country, but by creating striving cultures which develop leaders through a rigorous process of training and introspection. Yes introspection, for leadership of the highest levels cannot take place unless we critically evaluate our own weaknesses and work on removing them. The inferences of introspection should then be put to work by the strategic leaders. The need for strategic leadership can help overcome some of the challenges of healthcare system. But what exactly does strategic leadership require?

## AN ANTICIPATING MIND

Clinical leaders are well equipped with both knowledge and emergency management. However, when it comes to organizations, they are rarely in the same thinking mode. The anticipating mind is perhaps the biggest skill a leader can have. Yet it is also a skill that is mastered in years. This requires an ability to think outside the box with multiple perspectives, to gauge and sense changes, to keep vigilance on the competitors and changing trends, and above all maintaining the most up to date knowledge. An avid reader, thinker and proactive leader can anticipate problems beforehand and address the challenges effectively.

## THE CHALLENGER

A strategic leader will not only challenge his team, but also himself to find answers to problems. He questions the whys of everything. He trusts the best of technology and the most experienced of gurus for game plan changes. If this means he has to

take bold and unpopular decisions, so be it. This is easier said than done, for our healthcare systems in particular lack this thinking approach. The new healthcare systems require abandoning the old and reviewing old concepts, similar to the business process re-engineering approach. The need to constantly involve the entire stakeholder in the process is an essential need to success for a future health leader.

## INTERPRET

As a leader you may be ahead of the pack by knowing all there is to know about the industry out there. But as a successful leader, you must be able to interpret these changes accurately. A wrong interpretation leads to wrong decisions, which may fail the health care facility or system drastically. Learning to work with conflicting resources, avoiding bias and the ability to pick information from unlikely sources ensures success as a leader.

## THERE ARE NO GOOD OR BAD DECISIONS: THERE ARE DECISIONS

Most business protagonists live by this thought process and have reaped results. But when healthcare comes in, the bold and brazen approach requires a little fortitude and deliberation. Decision making ability is perhaps the most critical skill a health professional develops. Yet the clinical decisions are completely different from the business and strategic healthcare decisions. This requires developing an entirely new set of thinking patterns. The key ability is to filter the decisions according to their importance. A strategic leader has to attain both short term and long term goals. He must be able to base his decisions on his knowledge, expertise, team but above all intuition. For this is intuition that will make him stand out from being a conventional leader to a dynamic shape shifter of a system.

## ALIGNMENT

With all these pressures, particularly in the multifaceted healthcare systems, can you achieve alignment? A very difficult and sensitive task, but a job of a strategic leader nevertheless. As a strategic leader, you must be able to align each and every stakeholder who will be affected in the process. You must be able to provide the maximum benefit to all while neglecting none. This requires coming down from the pedestal of leadership that leaders are so unwilling to get off. Alignment means coming down to people's levels, understanding their concerns and then work your way up again to your decision to see how it will affect everyone. Any discord or sense of discontentment puts to ruins even the brightest and excellent of plans. As a strategic leader, you must become a people's person.

## LEARN

Learn from your peers, your leaders, mentors, juniors, your mistakes, philosophy, history and everything in between. Learn to read people, events, self and the times. In our world, the learning process particularly in healthcare has become confined to CMEs and seminars. Yet this is not the forte of a strategic leader. The strategic leader absorbs what is offered in these educational events but looks beyond these situations. The leader will assess what is new and what is obsolete before it actually becomes obsolete. The leader must continue to learn in order to advance to the higher levels of leadership. Of the five levels, the fifth level leadership can only come when humility is developed that one does not know enough.

## FINAL WORD: STRATEGIC LEADERS SHOULD DEVELOP A HEALTHCARE CULTURE

To become the future of healthcare and lead it to a state we all desire, the strategic leaders need to develop a culture. This culture of healthcare needs to evolve from our own parental cultural roots, but should amalgamate well in the context of modern technology, resource management, introduction of new health genres and personnel and engaging international clients. A strategic leader must be able to assimilate information from both abroad and local scenes to create a mind map for the followers. But even more importantly, a strategic leader can only be complete when he is devoted to create his progeny of leaders through coaching and mentorship, the highest levels of leadership.

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# Reduce treatment time with digital dentistry

Grant Bullis, Glidewell Laboratories director of implant R&D and digital manufacturing

**A** 72-year-old female patient complained of a loose lower denture that was painful to wear and chew with. A routine examination revealed a pronounced lack of bone volume in the lower ridge in conjunction

with a relatively high floor of the mouth, making relines ineffective. The decision was made to proceed with a screw-retained, provisional fixed denture supported by four implants. The restorative protocol for this case used state-of-the-art techniques to improve the accuracy of implant placement, optimize the function and esthetics of the provisional, and reduce the time required for treatment.

## Treatment objectives

The objective of the treatment plan was to improve patient comfort and chewing function by replacing the patient's existing mandibular denture with a screw-retained fixed implant bridge. The provisional denture and final restoration would be designed with dental CAD software, using the setup from the existing denture.

## Treatment planning

The patient's existing denture was modified with fiducial markers to serve as the CBCT scan appliance. To ensure maximum accuracy of the surgical guide, an extraoral scan of the denture was then taken. A CBCT scanner was used to scan the intraoral lower denture, maxillary denture and the bite.

From these DICOM datasets, stereolithography (STL) files were extracted.

The bite scan was used to articulate the scans of the lower denture and the maxillary denture.

Once the datasets were accurately merged in the treatment-planning software, the implants were virtually selected and placed at the optimal positions and angulations for the available bone volume and prosthesis support. Multiunit abutments were used to correct the angle of the two posterior implants and to provide a common restorative platform across all implant sites (Fig. 1).

The DICOM data was segmented



**Fig. 1:** After digitally evaluating the quality and quantity of mandibular bone, implants and multi-unit abutments were virtually placed with the appropriate angling and depth for the bone morphology of the patient. (Photos/Provided by Glidewell Laboratories).



**Fig. 2a-2c:** The DICOM data was segmented for density, and models of the patient's mandibular arch, provisional denture and surgical guide were 3-D printed and articulated, so the entire surgical and prosthetic stack could be examined and a surgical index fabricated on the articulated model between the guide and maxillary cast.



**Fig. 3a-3c:** From left, a surgical index was used to help ensure accurate positioning of the surgical guide; the provisional prosthesis in place; and, finally, the framework and setup were processed into acrylic at the lab to produce the final denture.



**Fig. 4a-4d:** From left, the digital impression; printed try-in prosthesis model; the setup on the milled bar; and the final prosthesis.

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## Implant placement

After administering mandibular

anesthesia, the surgical guide was placed with the aid of the surgical index.

The surgical guide was used to prepare the osteotomies and guide the placement of four 4.7 mm implants. Primary stability of all four implants was acceptable, and multi-unit abutments were mounted on top of the implants.

The temporary prosthesis was held in place with a luting index, and cold cure acrylic was used to fix

the prosthesis to the multi-unit temporary cylinders. After curing, the prosthesis was removed and finished extraorally.

## Final restoration

The final restoration protocol made use of intraoral scanning, dental CAD/CAM and 3-D printing to deliver the final prosthesis in just three appointments.

**o First appointment:** The patient's provisional prosthesis was used to guide the design of the final restoration. First, a scan was taken of the provisional in the mouth, taking care to capture adjacent anatomical landmarks. Next, the opposing denture was scanned extraorally.

Two additional scans were taken of the lower denture seated in the mouth as well as the edentulous arch. At the laboratory, technicians used the scan data to design the final prosthesis, which included the milled titanium bar.

**o Second appointment:** The denture setup was placed with one screw tightened on the milled bar, and radiographs were taken to verify passive fit of the substructure.

After making a minor fit adjustment, the provisional was reinstalled and the verified denture setup was sent back to the lab.

**o Third appointment:** The lab processed the denture to the titanium bar with acrylic to finish the final prosthesis (Figs. 3a-c). The provisional was removed and the final fixed implant denture was delivered (Figs. 4a-d).

## Conclusion

Guided surgery and dental CAD/CAM are complementary technologies that can make the surgical and restorative phases

of implant therapy more efficient and predictable. Because we can predict the implant position using guided surgery, prosthesis design can be done presurgically.

Advanced treatment protocols that leverage digital impressions, treatment planning, guided surgery and dental CAD/CAM technology are transforming implant therapy, shortening treatment times and improving prosthetic outcomes.

## The most important years in implantology

### Continued from page 4

I consider the establishment of 3-D diagnostic imaging, with all associated possibilities, to be the significant development during the 15-year observation period. It is true that only implantologists used the new 3-D technology during the initial phase of dental volume tomography (because they made up the group of dentists who could actually afford this expensive equipment); nevertheless, 3-D technology constituted a quantum leap for dental diagnostic imaging as a whole.

Today, we have almost unbelievable possibilities at our disposal that even the greatest optimists would not have considered possible 15 years ago: highly complex patient cases can now receive minimally invasive treatment and have implants placed even without the need for augmentation.

Our first case shows a highly atrophied mandible, in which four implants could be placed without any prior augmentation owing to 3-D data and planning (Figs. 22-24). Three dimensional diagnostics are sometimes also employed to clarify facts when complica-

tions have arisen, for example neural lesions after implantation (Figs. 25 & 26) and bone necrosis after administration of bisphosphonates, and erroneously diagnosed as periimplantitis (Fig. 27).

### My personal conclusions

It is difficult to draw a conclusion regarding the development of implantology over the past 15 years because it has been so multifaceted and rapid. To conclude, I would therefore like to quote my academic teacher and former supervisor, Prof. Wilfried Schilli, who, as a founding member of the International

Team for Implantology, was undoubtedly among the pioneers of implantology and has contributed to improving implantology through his university work: "Who would have thought that implantology could develop like it did in less than twenty years."

This very true statement encompasses many aspects: the admiration and appreciation of what has been achieved, the satisfaction with having initiated a procedure that is considered to be the safest in the entire field of medicine, and some criticism regarding any development in oral implantology that did not turn so well or went off course.DT



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