DIGITALIZATION AND DENTAL TEAM

Working Group - Dental Team

CHAIR : DONIPHAN HAMMER

Preamble

The dental world is developing and changing the dental profession.
Every year, manufacturers present new technologies (equipment, products, materials, services, etc.) that aim to save time, raise the level dental practice with the objective to be more efficient in management in order to offer optimal oral care to the patients.

The dental team including, dental technician, must be ready to take up these challenges of tomorrow and know how to apprehend the new technologies and digitalization from a technical and relational point of view with the patients

Part I

    A) Techniques and digitalization towards simplified diagnosis, presentation and realization.

• Prosthetic and orthodontic

CAD/CAM (Computer Assisted Design / Computer Assisted Manufacturing*)*
It consists in creating dental prostheses from digital files. It allows the recording of data in digital form (acquisition), data processing, virtual modeling (CAD) as well as the material realization (CAM) of a custom-made medical device.
The data acquisition by digitization can be done by intraoral camera directly in the office or in the laboratory by dedicated scanners
Taking and keeping these data is the task of the dentist while collecting can be the task of the dental team

    ➢ *Direct CAD/CAM*
Is the computer-assisted design and fabrication of prosthetic components without the need for a dental laboratory. All the steps are performed in the office. By training in direct CAD/CAM, the practitioner can master all the steps of dental production, from image acquisition to the finishing of the restorations produced by the milling machine or 3D printer.

    ➢ Semi-direct CAD/CAM
At least one step goes through the laboratory. The acquisition is done in the office by the practitioner, the qualified person of the dental team collect the data and send them to the laboratory. The production (of the framework and the cosmetic) is done either in the laboratory or in the office.

    ➢ Indirect CAD/CAM
The impression is taken analogically by the dentist, the laboratory takes care of the rest of the process (scan, design, production, finishing).

    ➢ The intraoral cameras or optical impression camera

As seen previously, the use of the optical camera can be done in prosthesis. However, it can also be used in orthodontics, implantology case preparation and patient motivation. The optical impression cameras offer practitioners and dental team a significant help: easy to use, precise and fast, saving time since the processing of the digital data is immediately processed. Moreover, with an educational aspect, it makes the session more comfortable for the patient.

Direct and semi-direct CAD/CAM techniques offer advantages both to the practitioner and the dental team

- Δ The use of optical impressions saves a considerable amount of time and the entire standardized protocol guarantees reliable restorations.
- Δ The manufacturing steps and times are shortened, as well as the number of sessions (reduced to one in direct CAD/CAM).
- Δ The restorations are more precise, the risk of error is reduced and data storage is facilitated.
- Δ Having new tools and materials to meet their needs and those of their patients.
- Δ CAD/CAM in the office enhances the practitioner's work and improves professional image

- Radiology

Radiology is one of the fields which has known progress from the silvery radiography to the Digora orthopantomogram radiology until facial scan and CBCT. The image resolution is becoming remarkable as the decrease of doses of X-rays delivered. The time saving is very important as well as the storage and processing of data

- Computer-guided surgery

New technologies have also been of particular interest to surgical practitioners. This is all the more current with the guided placement of implants which has considerably helped and improved the precision of the surgical procedure.

- Digital tinting

Aesthetics being important in our discipline, digital shading technologies have been developed. They make it possible to carry out a dental shade of quality by determining the luminosity, the saturation, the chromaticity and the translucency of a tooth.

- Patient dental simulation software

See the result before the treatment itself has even begun is ideal. This is why, thanks to dental simulation software based on virtual reality and with the aim of reassuring and motivating the patient. It is possible to show him what the result could look like and receive patient's fully understood informed consent. The facial scanner will be used in treatment procedures. This will allow for more accurate and patient-specific therapy planning. During the visit and before treatment begins, facial expressions and occlusion can be scanned, recorded and performed with a treatment simulation.

Full updated dental team will organize the whole framework of all these interventions at different steps. They will play an active role from the ergonomics to the protocols, through the setting of the software and the management of the stocks of materials/data

In dental laboratories all these changes lead to a radical change in the profession of dental technician by reducing manufacturing of medical devices to a minimum, transition to CAD-CAM production, increase the computer skills and qualification of the dental technicians. The work and relationships with other member of the dental team in the office evolves notably in the transmission of information (print, data, …)

B) The new technologies of management, administration and communication.

- Patient digital data management – e-health

Many data are now digitalized, which simplifies and make it easier to a daily use and archive. Regular backup reduces the risk of data loss. Dental team must respect the local GDPR.

- Online appointment scheduling platforms and management tools

These new tools have revolutionized the scheduling and management of appointments and recalls as well as the organization of the dental practice (stock etc.)

- Communication tools

New technologies can maintain the link with patients before and after appointments/treatments.
Thanks to SMS, e-mails, the website and social networks the dental team will be able to share and exchange information with patients.
There is also TV programs in the waiting room, with educational videos and information dedicated to general health, oral prevention and treatments.

- e-information

The dental team must have proper e-skills to control and check the records available on the various internet search engines. They can then check and complete the permanent information about their practice such as its physical address, phone number, category (activity and specialty) and hours.
It is also essential to control his e-reputation as well as the management of verified patient reviews and if necessary to boost his local referencing, in just a few clicks

Part II

After having listed all the tasks and processes concerning the digitalization and the digitization within the dental offices, which tasks can be dedicated (green) or not (red) to the members of the dental team. Some points remain unresolved or undecided due to the discussions between the members of the working group leading to a reflection specific to each country or a point of vigilance (orange).

The work of the dental team working group to be considered and eventually amended by each dental national association considering their own regulations

A) Techniques and digitalization towards simplified diagnosis, presentation and realization

	Dental Assistant	Dental Ass with specialization*	Dental Chair Ass.	Admistrative Assistant - Secretary	Dental Hygienist	Technician Lab.
Prosthetic						
• Direct CAD CAM	red	red	red	red	red	red
• Semi CAD CAM	red	(1)	(1)	red	(2)	green
• Indirect CAD CAM	red	(1)	(1)	red	(2)	green
Radiology 2D (3)	red	green	green	red	green	red
Radiology 3D (3)	red	(4)	(4)	red	(4)	red
Computer-guided surgery	red	red	red	red	red	green
Digital Tinting	red	green	green	red	(5)	red
Dental Simulation Software	green	green	green	red	green	red

Dental Assistant with specialization*: Dental Assistant Prophylaxy etc

WG highlighted points:

(1) : This part only concerns the data management and not the technical part such as the impression or the modelling
(2) : Depending on the finished and manufactured product (e.g. bleaching tray)
(3) : It is reminded that the radiology item does not include the diagnosis but only the technical act
(4) : The point of vigilance is on the fact of the dose delivered by 3D vs 2D radiology
(5) : Needed in case of bleaching

B) The new technologies of management, administration and communication.

	Dental Assistant	Dental Ass with specialization*	Dental Chair Ass.	Admistrative Assistant - Secretray	Dental Hygienist	Technician Lab.
Patient Data management	(1)					
Online appointment and management tools						
Communication Tools						
E-information /reputation						

WG precision:

(1) : The point of vigilance is on the difference between the collection of the data and the management, knowing that the latter requires an additional competence

Conclusion

New technologies are changing dentistry
To provide good care, to work in better conditions and to be in phase with the evolutions and the society's demands, dental team must evolve.
Even if the use of new technologies is not easy, despite the costs, their adoption in the dental office requires a certain amount of knowledge in order to get the best out of them.
The use of the new technologies must therefore be integrated into initial training and/or in continuing education.

ERO reminds us that there are different job descriptions and competences for the dental team. It is the updated skills and knowledge of the members of the dental team that contribute to develop the dentistry of the future.

ERO strongly recommends that its member countries update the job and training standards of the dental professions in order to meet the challenges of digitalization in dental practices.