COMPUTER IN DENTISTRY

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Computer science is a discipline that involves the understanding and design of computers and computational processes. Here, the emphasis is not on information, but how it is represented, processed, manipulated, and managed in computing systems.
DENTAL INFORMATICS

- Dental informatics is the application of computer and information science to improve dental practice, research, education and management.
SCOPE OF DENTAL INFORMATICS

- Telecommunication: -
- Is the science that deals with communication at a distance.
- Transmission of digital images efficiently resulted in new approaches to image compression and transmission.
- Another example is aggregating information from many different sources, such as information about the same patient from different healthcare providers.
Use In Dentistry

- 3-D image modeler and predictors
- After visit summaries
- Alerts and reminders
- Computerized Billing
- Connectivity to patients
- Diagnostic predictive modeling
- Decision support
- Digital radiograph
- Electronic Oral Health Records (EOHS)
- E-prescribing
- Evidence based Treatment Planning
- Hepatic feedback simulation training
- Insurance form generation and claims processing
- Intra-oral cameras and imaging
- Intelligent time series comparative X-ray Analysis
CLINICAL APPLICATION

- Dental / medical history
- Treatment planning
- Progress note
- Charting / oral health status
- Digital imaging
- Diagnostic application
- Therapeutic applications
- Decision support applications
Computing in Dentistry

- Designed to allow students to functions in technology-rich practice environment.
- Builds logically on Introduction to Computing.
- Focus is on clinical practice.
- Innovative combination of print and electronic media.
- Digital dentistry contain **three things:-**
  - Which *improved efficiency, both cost & time*,
  - *Improved accuracy* in comparison to previous method,
  - *High level of predictability* of outcomes
Digital Dentistry

- Intra-oral Cameras
- **CAD/CAM**: computer-aided implant dentistry - including design and fabrication of surgical guides.
- Computer-aided crown manufacturing – Dental Restoration like Full anatomical crown, partial crown, Inlays, FPDs Framework, Telescopic Primary Crown,
- 3-D Printing
- Digital Radiography: -
- Cone Beam Computed Tomography (CBCT)
- MRI
- CT
- Electrical and surgical/implant hand pieces
- Computer-aided implant dentistry
- Photography (extra oral and Intra oral)
- Shade matching
- Occlusion and TMJ analysis & diagnosis
- Computer – controlled delivery of Nitrous Oxide
- Dental LASER
- Digital X-Rays
Digital Dentistry Application

ADMINISTRATIVE APPLICATION

- Patient appointments & recalls
- Correspondence, Billing & Accounting,
- Inventory controls & Supply orders,
- Dental insurance claims,
- Documents preparation & word processing,
- Referral information,
- Missed appointments & follow ups.
Digital Dentistry Application

- **CLINICAL APPLICATION**
  - Patients records storage & Retrieval,
  - Patients evaluation, examination & treatment planning,
  - Patient motivation & awareness
  - Appliance designing using CAD, CAM techniques.
  - Radiovisuography (RVG) technique, clinical diagnosis and treatment planning,
  - Storage of patient photographs, radiographs, and study models,
  - Computerized imaging techniques,
  - Computerized cephalometrics & Growth prediction.
Digital Dentistry Application

- Others Application:
  - Creating a data base of survey information,
  - Case presentations,
  - Conference presentations,
  - Reviewing of literature & continuing medical education.
DIGITAL RADIOGRAPHY

- Digital images can be stored on the computer easily and they transferred to different dentists or orthodontist for referrals
- It enhance the digital image (such as alter brightness and contrast) with a series of processing techniques,
- Contain low radiation (when following the ALARA principle)
- Significant time reduction, ease of storage & organization
- Image enhancement for quick and improved viewing.
Digital Dentistry Disadvantages

- The main limitation of digital dentistry is cost,
- To adopt new technology often requires a higher capital investment.
- One of the popular pitfalls in adopting new dental technology is lack of desire on the part of the clinician and the team to be adequately trained.
- Some clinician will purchase a new technology but they never read owner’s manual or seek advanced training on how to operate the technology efficiently.
Thank You