Clinical research for evidence-based care

Combining multiple data sources

Data collection in clinical practice

Identification of individuals
Data Collection in Clinical Practice

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Agenda

• Identify individuals
• Current status of computer usage in dental practice
• Electronic Data Collection (EDC)
• Data integration
• Workflow integration
• Combining data from multiple sources
Computer ownership, Internet connectivity and selected computer uses in dental practice (1984-2000)

(Schleyer T.K, Spallek H, Bartling WC, Corby P. The technologically well-equipped dental office. Journal of the American Dental Association 2003: 134 (January); 30-41.)
Background

• many new digital technologies for dentistry in the last 20 years:
  – digital radiology
  – intraoral/digital cameras
  – computer-based patient records
  – CAD/CAM
  – decision support
  – …

• approx. 87% of all dentists use computers
• approx. 26% of those use them at chairside
Chairside data entry (100 offices)
Storage of patient information

- Appointments
- Treatment planning
- Completed treatment
- Oral health status
- Intraoral images
- Extraoral images
- Diagnosis
- Radiographs
- Dental history
- Medical history
- Progress notes
- Chief complaint

Number of offices using paper and computer, or computer:

- Computer
- Both
- Paper
- Not at all
Barriers and Disadvantages

- space for computers
- staff training
- steep learning curve
- computer crash
- infection control
- time consuming to enter data
- cost
IT environment in dental practice
The “window sill” configuration.

Where is the monitor?

In the opposite corner of the room, let’s walk over…
Why collect data electronically?

- AHRQ’s PBRN initiative is to “establish or improve electronic collection and aggregation by the network of data derived from the individual practices”

- Electronic Data Collection (EDC) improves compliance in long-term data collection

- Integration of the data collection process with practice operations and workflow
Data Integration Objective

integrate data collection progressively with the practice management system already in use in the practice
Data Integration – Level 0

- Practice and research/data collection IT Infrastructure separate
- Use of Tablet PCs as primary data entry device
- Distribution of preconfigured systems to dentists.
Data Integration – Level 1

• Data collection takes advantage of existing electronic patient data

• Tablet PC application uses bridging to retrieve patient data from PMS.

• Dentists use same Tablet PC to record study-related data.
Data Integration – Level 2

• Research Study Data Collection and Management Fully Integrated into the PMS

• Tablet PC application uses bridging to retrieve patient data from PMS.

• Dentists use their own PMS to record study-related data.
Workflow Integration Objective

• embed the *knowledge* required to conduct research into the IT infrastructure

• Electronic Data Collection (EDC) improves compliance in long-term data collection

• integration of the data collection process with practice operations and workflow
Workflow Integration – Level 0

• research- and data collection-related activities, from the standpoint of IT, are separated from practice operations.

• unfamiliar with the process of conducting research or data collection

• need for training and support
Workflow Integration – Level 1

- Research Protocol Management Integrated into the PMS
- Knowledge about research protocols is integrated into the PMS.
- IT infrastructure supports the study participant's flow through the research study.
Workflow Integration – Level 2

• Research Process Integrated into Practice Workflow

• management of the research process in the practice itself is integrated into the IT infrastructure

• “cradle-to-grave” support for conducting research in dental offices