




Using tablet technology to develop portable electronic medical record for outreach clinic


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A brief overview of electronic medical records

- ◆ EMR or EHR can improve quality of care and patient safety, leading to cost-benefit
- ◆ EMR are commonly used in academic settings but overall adoption is slow
- ◆ Many commercial options are available
- ◆ President Bush announced in 2004 that most Americans would have EMR by 2014




Too many acronyms are used

- ◆ Automated medical record (AMR)
- ◆ Clinical data repository (CDR)
- ◆ Computerized medical record (CMR)
- ◆ Computerized patient record (CPR)
- ◆ Computer-based patient record system (CPRS)
- ◆ Electronic health record (EHR)
- ◆ Electronic medical record (EMR)
- ◆ Electronic patient record (EPR)
- ◆ Hospital information system (HIS)
- ◆ Lifetime data repository (LDR)
- ◆ Virtual health record (VHR)
- ◆ Virtual patient record (VPR)




Core functions of EMR according to the Institute of Medicine

- ◆ Health information and data
- ◆ Results management
- ◆ Order management
- ◆ Decision support
- ◆ Patient support
- ◆ Administrative process
- ◆ Reporting
- ◆ Electronic communication and connectivity



How much are EMR used?

- ◆ EMR are available in the office setting of only 17% of US physicians
- ◆ Only 4% have a fully functional EMR
- ◆ Subjective reports on the influence of EMR on practice quality and satisfaction with the system are encouraging
- ◆ Cost of achieving widespread adoption of EMR is in the hundreds of billions



So... is this session about EMR?

- ◆ This session is about a specific EMR (IntuaCare)
 - Can be used on a portable device
 - Can be accessed in a remote location
 - Able to generate point-of-care notes
 - Has all other characteristics of a full EMR




Our problem



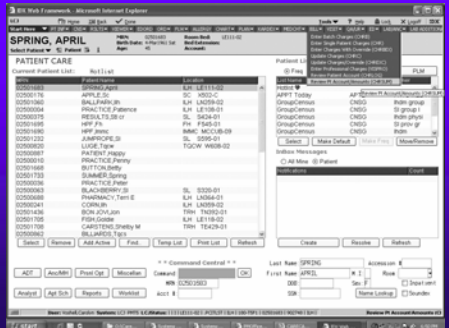
Main clinic: Omaha




Outreach clinic: Grand Island

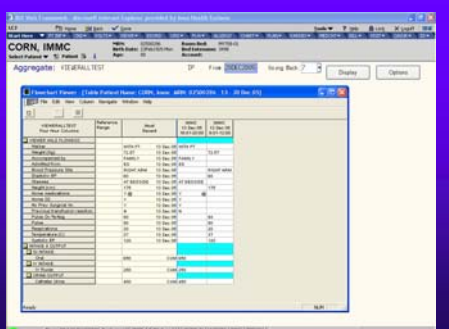



EMR at the main hospital






Information is classified in clinical notes, labs, radiology





Why not use the same EMR at the outreach clinic?

- ◆ The outreach clinic is located in a facility that does not belong to the UNMC system
- ◆ The required information “was there” but not in the way that we wanted (from an HIV perspective)
- ◆ We also wanted a space for “important notes” that are not require to be in the permanent medical record
- ◆ The hospital database is not easily searchable
- ◆ We want a customizable EMR



What was the situation before tablets become available?


- ◆ Only paper access. No software access.
- ◆ Completeness of medical record was difficult to assess
- ◆ Documentation of health care related actions could be made only after returning to the main clinic
- ◆ Long delay from the time of clinical dictation to note becoming available



What did we do?




Ryan White Title III Capacity Development Grant



Deciding what type of device we wanted

- ◆ Advantages of a tablet PC
 - More natural form of input
 - Note-taking is possible
 - Portability
 - Horizontal orientation or portrait
- ◆ Disadvantages of a tablet
 - Higher cost
 - Screen size
 - Input speed (but this is a learning curve)
 - Screen damage risk






A team effort


- ◆ Team to develop this project included: clinicians, administrative staff and informatics experts





Initial goal: to develop a template for an uncomplicated encounter

- ◆ The result: a standard SOAP note
- ◆ Template allows loading of information already entered: vitals, height and weight
- ◆ Clicking boxes is useful for well established facts, normal findings or frequently abnormal findings
- ◆ More problematic to detail unusual abnormal physical findings or positive symptoms in the review of systems



What to do with an abnormal finding? Add more selections

- ◆ Saves time for the practitioner
- ◆ Warrants exhaustive evaluation of a given symptom
- ◆ Standardizes the findings
- ◆ May potentially be used for quality improvement or research purposes
- ◆ Not the only alternative



We discovered that we need freedom




- ◆ Voice recognition system
- ◆ Tablet handwriting recognition
- ◆ Tablet keyboarding
- ◆ Dictation




Connected server or mobile set?



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User reluctance





Timeline

- ◆ Sep 06: Award obtained
- ◆ Oct 06: Team organized
- ◆ Dec 06: Tablet selected
- ◆ Mar 07: Template created
- ◆ Apr 07: Staff trained
- ◆ May 07: First note available
- ◆ June 07: Widespread use



We were successful!






What have we learned?

- ◆ Success requires involvement and enthusiasm in the project.
- ◆ Common understanding that the Tablet will become a useful tool
- ◆ Creating ownership
- ◆ Extensive and back and forth communication with IT
- ◆ Widespread engagement among staff



What else have we learned?

- ◆ Greater benefits when everybody uses the system
- ◆ The system supports freshmen better than experienced physicians
- ◆ Best way of learning is by hands on and by experienced users sharing with new users.
- ◆ Start with simple cases, before going into complex scenarios



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