Discovering Work through Ethnography:
The Case of Healthcare Documentation Production

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HCI and CSCW - Perspectives on Use

- Both Human-Computer Interaction (HCI) and Computer-Supported Cooperative Work (CSCW) refer to broad categories of theoretical perspectives and methodological approaches
- Most generally speaking, the difference lies in an individual (HCI) versus group (CSCW) orientation to examining the use of information and communication technologies.

> "…in the way that HCI has previously looked to psychology for an understanding of human behaviour CSCW turns to sociology and in particular ethnography to provide insight into the social nature of work" (Hughes et al 1994: 429).

- Other differences involving methodological approach and theoretical foundations also exist.

Defining CSCW (Bannon 1993)

CSCW as……

1. simply a loose agglomeration of cooperating and at times competing communities;
2. a paradigm shift;
3. software for groups;
4. technological support of cooperating work forms;
5. Participative Design.

CSCW and Sociality

- Coined in 1984 by Irene Greif and Paul Cashman

> "Emphasis was put on the co-located or distributed work group whose working lives were premised on the need to cooperate with one another in the performance of their roles" (Anderson, 1996:4).

Ethnographic Studies of Work
Description

- The area of *workplace studies*, or *ethnographic studies of work*, has been specifically applied to examine the use of technology in the workplace, especially around computer-supported cooperative work (CSCW)
- More generally, workplace studies refers to an approach in which the activity of work is examined as an everyday activity taking place within a specific context
- Less concern is give to *descriptions* of work and more attention to how work is *actually* done.

Ethnographic Studies of Work
Goal

- The idea or goal is to get as close to the actual phenomena of interest as possible, and capture the visible competencies necessary to carry out the activity in which people are engaged
- Not just how things are *supposed* to be done, but how they are *in practice* done
  - Rule-following versus ad hoc'ing

"(Abstract characterizations of ordering structures of work) are not necessarily wrong but fail to appreciate, take for granted, and in other ways ignore the real world, real time ways in which an organization's staff comes to comply with rules and procedures" (Crabtree 2001: 9).

Ethnographic Studies of Work
Examples of Studies

•Air traffic control towers	•Truck manufacturing plants
•NASA mission control	•Astrological observations and discovery
•Copy machine repair technicians	•Molecular biology labs
•Mobile workers	•Operating theatres and other medical settings
•Paralegal workers and document evaluation	•Police use of mobile data terminals
•Information systems architecture and design	•International Monetary Fund report preparation
•Expert systems in customer service work	•Service encounters in immigrant-owned stores
•Healthcare Documentation and Medical Records	

Ethnography, CSCW, and Design

"For CSCW it is vital that designers understand the work setting as a socially organised setting as a preliminary to design, and it is in this respect that ethnography has a role to play. In other words, the prime objective is not so much ethnography as such, but ethnography as a means of uncovering the 'real world' character of work, and it is by this test that ethnography needs to be judged in system design" (Hughes et al 1994:436).

Technological Imperative in Healthcare Documentation

- There is a growing trend toward the implementation of information and communication technology in the creating and handling of medical records (such as EHRs, EMRs, and speech recognition technology)
- The belief is that the presence of electronic technology will automatically result in fewer errors and better medical care
  - "Less Paper, Less Fuss, Better Patient Care" (2007)
- This has created a sense of *techno-fetishism*, where the newest technologies are assumed to be the best, driving increasing desire for new production technologies.

National Health Information Technology Infrastructure

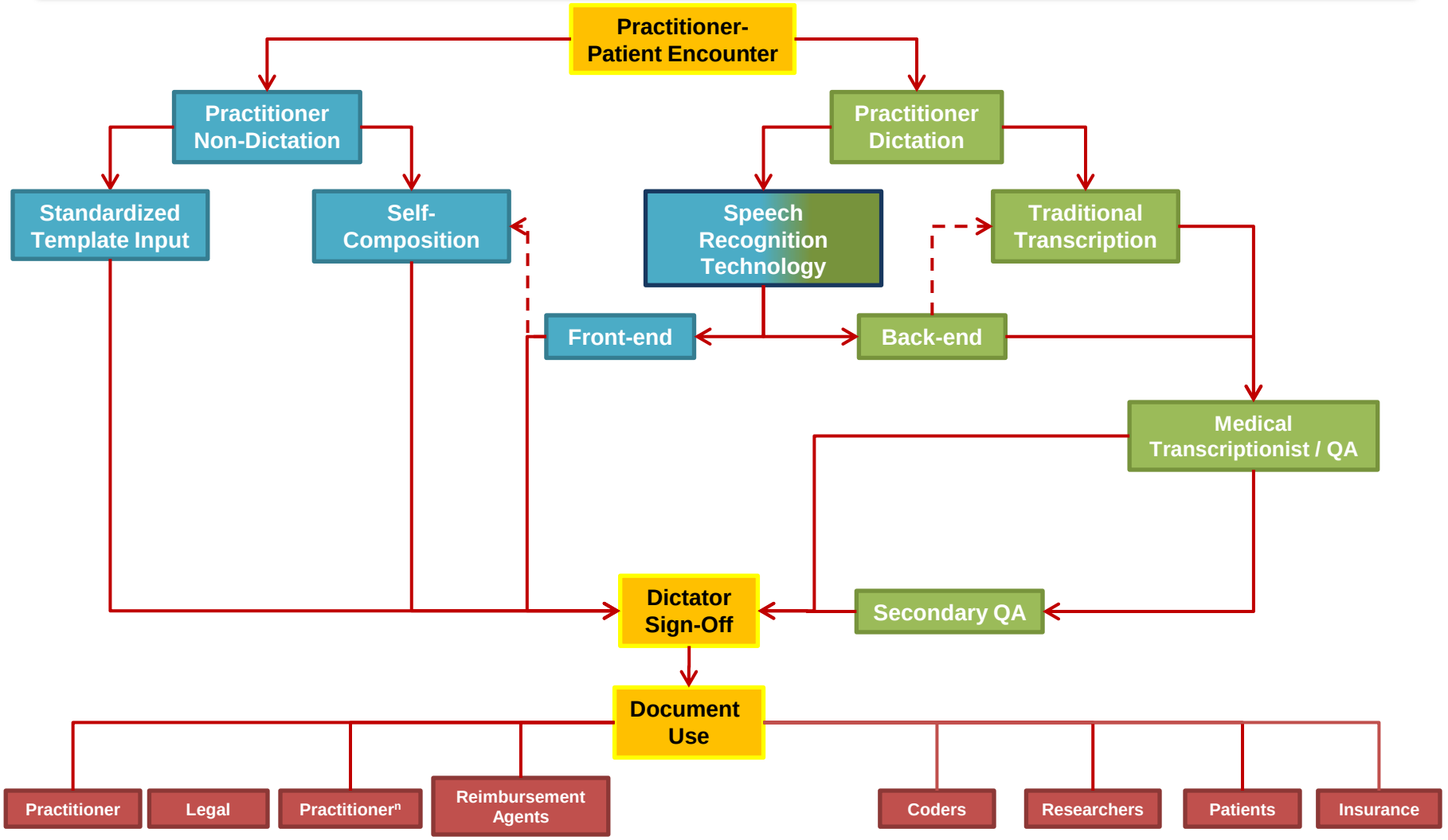
- **Lower Health Care Costs by Investing in Electronic Information Technology Systems:**
  Use health information technology to lower the cost of health care. Invest $10 billion a year over the next five years to move the U.S. health care system to broad adoption of standards-based electronic health information systems, including electronic health records. (whitehouse.gov)

"Our recovery plan will invest in electronic health records and new technology that will reduce errors, bring down costs, ensure privacy, and save lives."
President Obama, Address to Joint Session of Congress
Tuesday, February 24th, 2009

Dominant Perceptions of Healthcare Documentation Creation

- Typists, not transcriptionists
- Transcription is a commodity
- What doctors dictate is accurate
- Transcription is a cost, and does not add value
- The more technology (and faster the delivery), the better the documents (and process)
- MT “interpretation” is problematic and source of error (issue of verbatim)

The Case of Healthcare Documentation Production

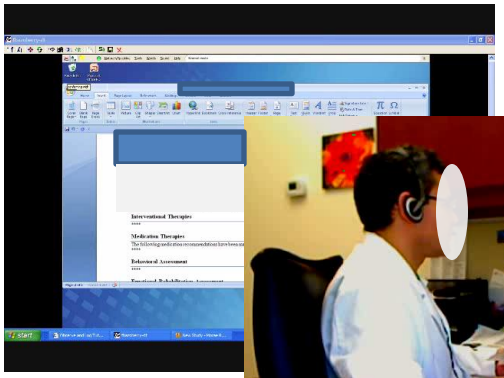


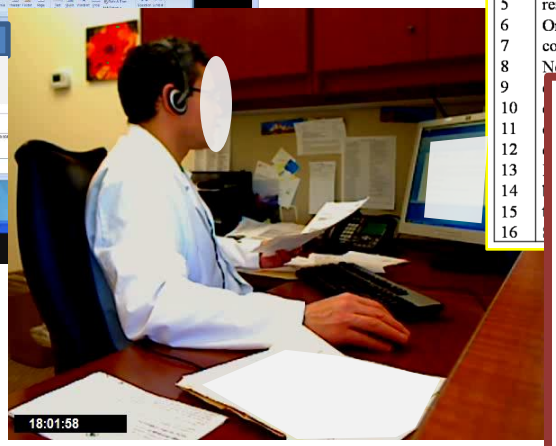
Data Collection
Medical Transcription

- **Survey**
  - Total of 3807 respondents
- **Interviews**
  - Over twenty one-on-one interviews with MTs
  - Thirteen one-on-one interviews with MTSO management
- **Focus Groups**
  - Five MT focus groups at 2007 ACE, with over twenty total participants
  - Assist with three technology focus groups at 2008 ACE
- **Committee Work**
  - Serving on SRT special committee, and working with BP in quality assurance committee
- **Site Visits**
  - Numerous site visits to New England regional transcription facilities, as well as MTSOs in India. Other East Coast site visits planned.

Data Collection
Technology in Healthcare Documentation

- **Site Visits**
  - Observation and interviews of MDs and NP using front-end speech recognition product
  - Observation interviews of MDs using EMRs and EHRs
  - Observations and interview of MTs using back-end speech recognition products





1	</FAMILY HISTORY/>
2	He describes that he has been so healthy. No family history of c
3	system my hand history of headaches in the past. The patient is
4	EOMI. Today his blood pressure is 122.76 and pulse is 50, eight
5	respirations 16 per minute.
6	On general examination he is a well built muscular young man
7	comfortably without acute medical distress. Next Head:
8	Normocephalic and atraumatic Neck: Thyroid is not enlarged. N
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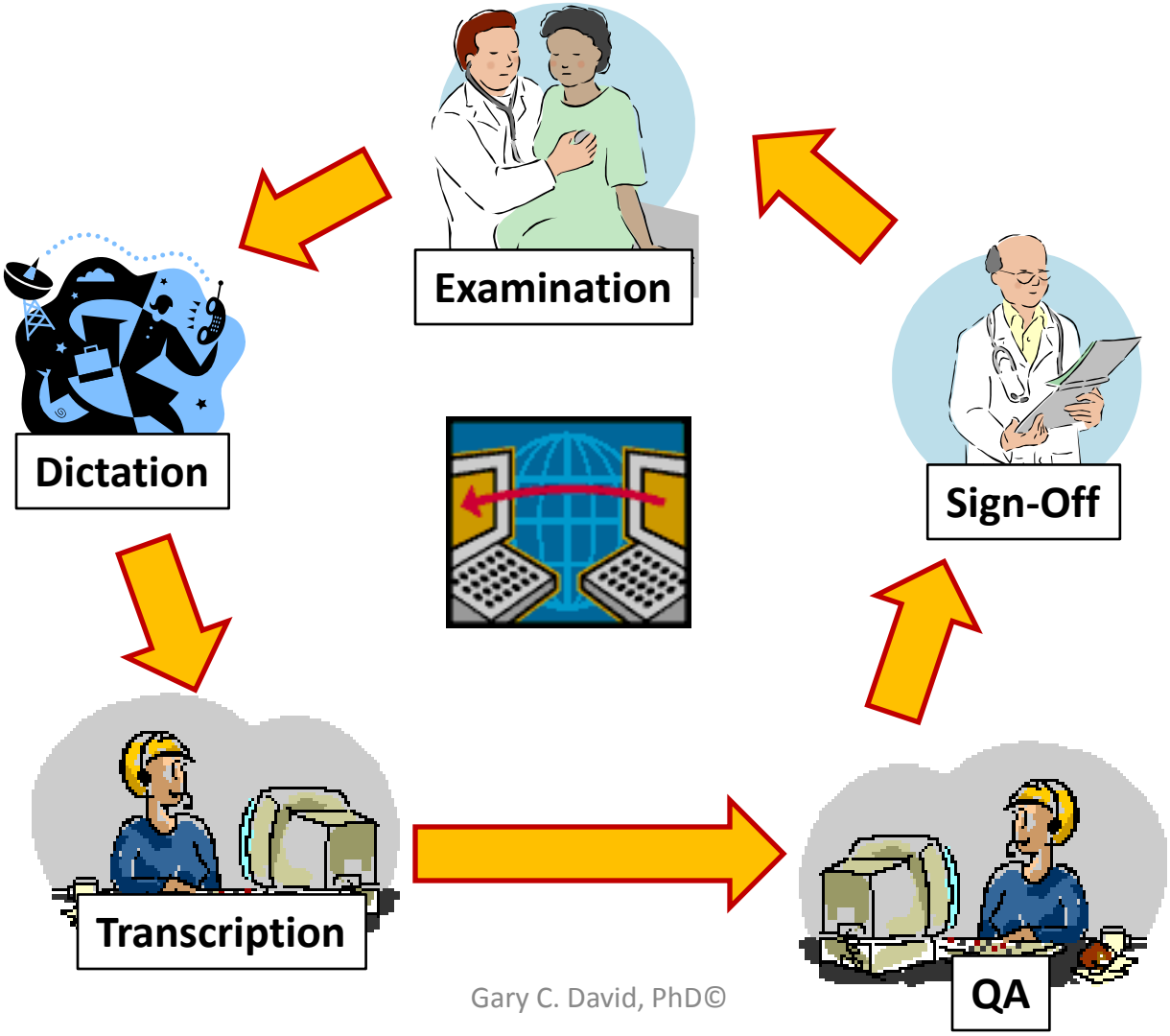
1	**Family History:** He describes that his parents are healthy. There is no family history of
2	migraine except his sister had a history of headaches in the past.
3	
4	**Physical Examination:** Today his blood pressure is 122/76 and pulse is 58. His
5	temperature is 97.4, respirations 16 per minute.
6	
7	On general examination he is a well built muscular young man laying in the bed
8	comfortably without acute medical distress. Head: Normocephalic and atraumatic.
9	Neck: Thyroid is not enlarged. No bruit over the carotids. Cardiac: S1-S2 audible. No
10	significant cardiac murmurs. Lungs: Good air entry into the lungs. On neurologic
11	examination the patient is quite awake, alert and oriented to time, place and person. He
12	has fluent spontaneous speech with normal comprehension, naming and repetition.
13	Cranial Nerves: Visual fields are full. Extraocular movements are intact. There is no
14	nystagmus. Pupils are 4 mm in size bilaterally and symmetrical and reactive to light.
15	There is no papilledema. Nasolabial folds are symmetrical, soft palate and tongue are
16	normal.
17	
18	Sensory testing over the face is normal and symmetrical.

Traditional Transcription

Central Findings of Project

- Shifting the perception of MT:
  - From ‘manual labor’ to ‘knowledge work’
  - From ‘individual and isolated’ to ‘collective and collaborative’.
  - From ‘passive recipient’ to ‘active participant’

Collaborative Nature of Transcription



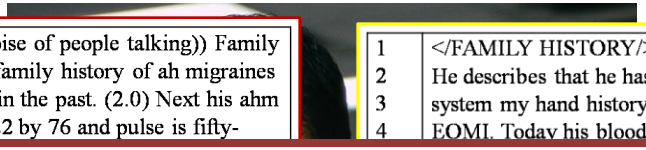
Transcription ≠ Typing

- Listening to what is said; transcribing what is heard
- Typing is a physical act that (almost) anyone can and does do
- Transcribing is a professional act that calls upon a range of professional sense-making abilities rooted in experience and training

What generates revenue?

- Doctors do not generate revenue; documents generate revenue
- It is not the specific act of the doctor that generates revenue. Rather, it is the representation of that act in a document that generates revenue.
- Anything that puts the integrity of that document at risk similarly puts at risk the revenue stream of the healthcare provider.

Back-End Speech Recognition: Editing versus Transcribing



((8.0 pause from previous utterance, with background noise of people talking)) Family history ahm he describes that his parents are healthy no family history of ah migraines except ah (.) his sister ma(x) had a history of headaches in the past. (2.0) Next his ahm (1.0) on examination (4.0) today his blood pressure is 122 by 76 and pulse is fifty-eight (.) te... minute. N... (0.5) layin... normal sw... cortex) ca... is a good a... alert and o... normal co... visual fiel... pupils are ... pappileder...

</FAMILY HISTORY/>
He describes that he has been so healthy. No family history of eye gain except he system my hand history of headaches in the past. The patient is on examination. EOMI. Today his blood pressure is 122.76 and pulse is 50, eight, temperature 97.4, ... in the bed ...it over the ...ungs: Good air ...e, alert and ...with normal ...ields are full. ... 4 mm in size ...al. Nose and

Family History: He describes that his parents are healthy. There is no family history of migraine except his sister had a history of headaches in the past.

Physical Examination: Today his blood pressure is 122/76 and pulse is 58. His temperature is 97.4, respirations 16 per minute.

On general examination he is a well built muscular young man laying in the bed comfortably without acute medical distress. Head: Normocephalic and atraumatic. Neck: Thyroid is not enlarged. No bruit over the carotids. Cardiac: S1-S2 audible. No significant cardiac murmurs. Lungs: Good air entry into the lungs. On neurologic examination the patient is quite awake, alert and oriented to time, place and person. He has fluent spontaneous speech with normal comprehension, naming and repetition. Cranial Nerves: Visual fields are full. Extraocular movements are intact. There is no nystagmus. Pupils are 4 mm in size bilaterally and symmetrical and reactive to light. There is no papilledema. Nasolabial folds are symmetrical, soft palate and tongue are normal.

Sensory testing over the face is normal and symmetrical.

The Question of Verbatim

- ver·ba·tim (vər-bā-təm) - in the exact words: word for word

  Function: *adverb*
  Etymology: Middle English, from Medieval Latin, from Latin *verbum* word. Date: 15th century
- Work that is done "verbatim" negates the expertise and training of the MT
- When customers ask for "verbatim", they do not actually want the literal definition. This creates the problem of determining what they actually mean.

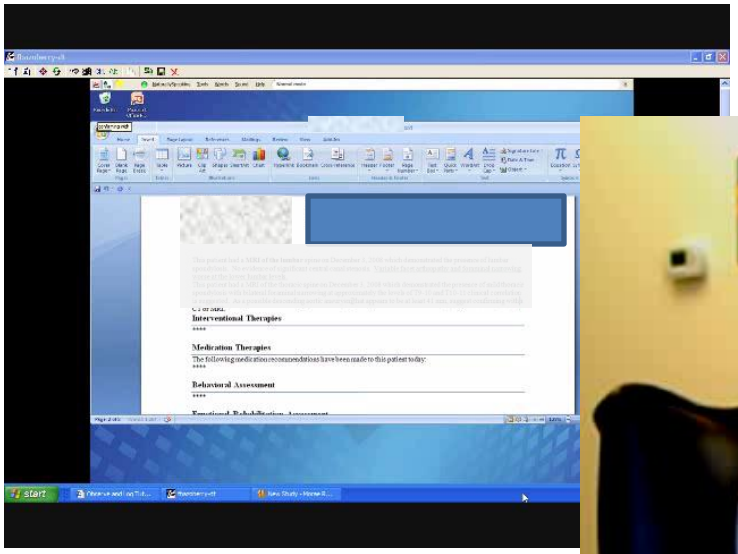
What Doctors Dictate

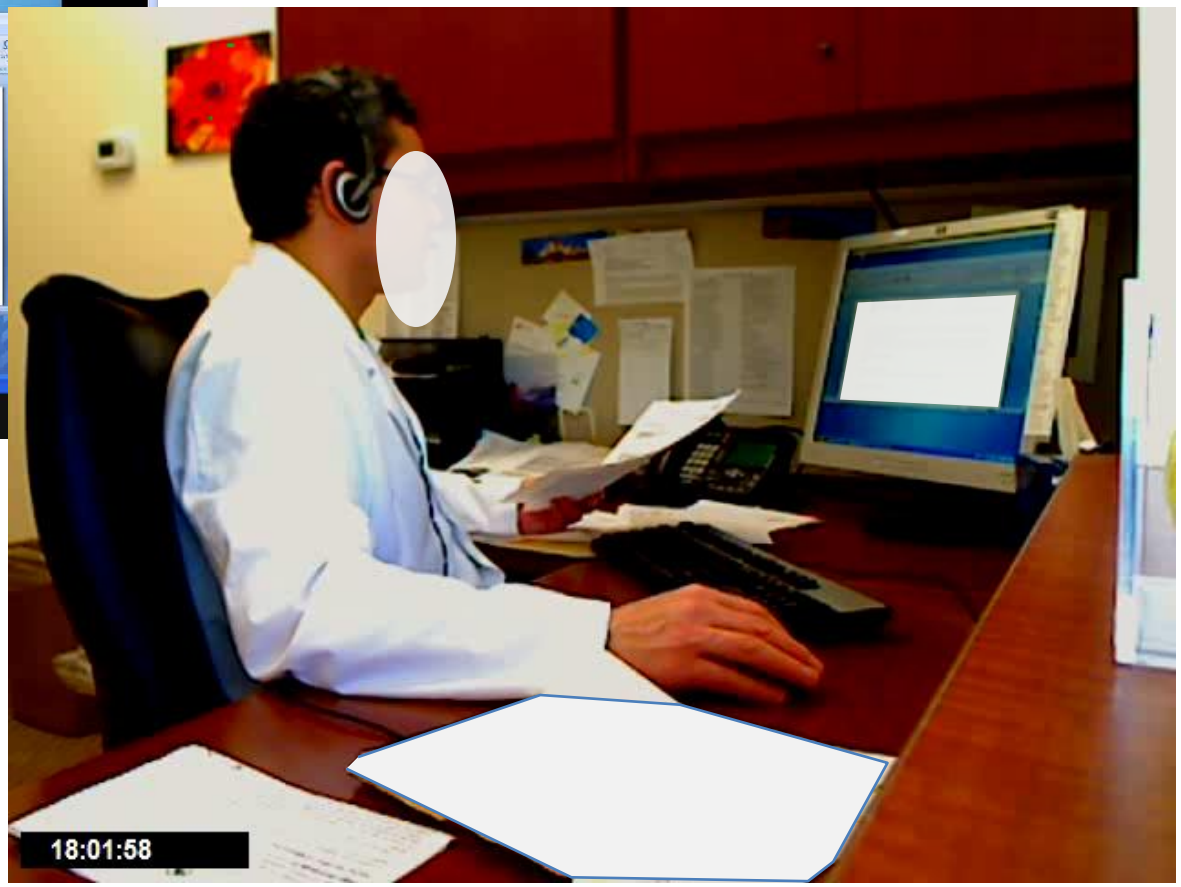
"A study based on a sample of 220 dictated medical records totaling 9,726 lines of transcription found 27% of the 96 more-serious flaws were attributed to the speaker, typically a physician, and not the transcriptionist. Twenty of 38 critical flaws (53%) and six of 58 major flaws (10%) were traced to the speaker" (Conn 2005).

- Doctors have a reputation of being poor dictators, and the work of the MT is done DESPITE doctor dictation, not because of it.

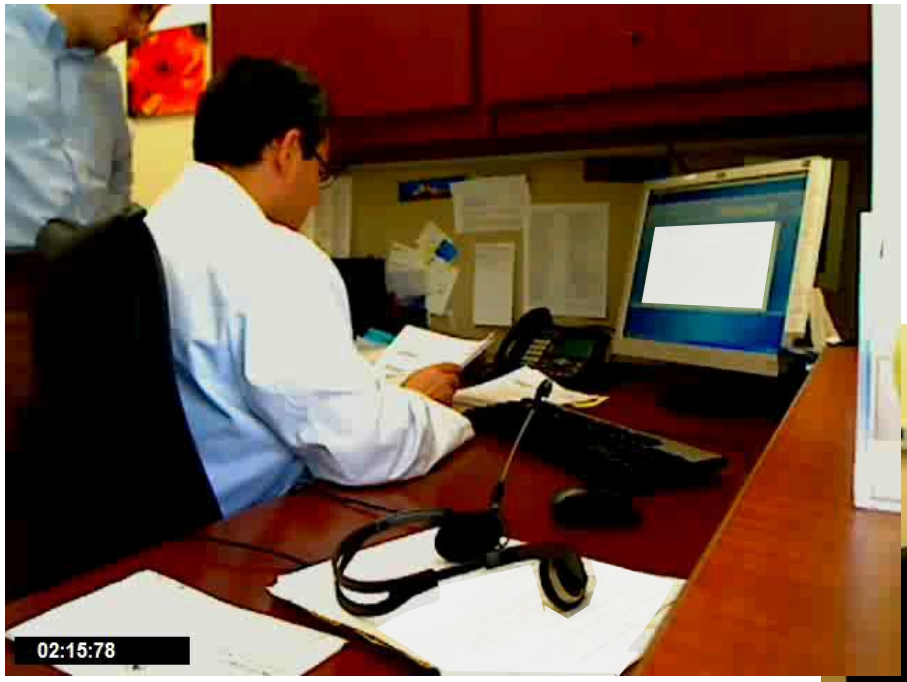
- If you assume that doctors are not necessarily correct in their dictation, then the work of the MT becomes framed much differently than if you think doctor dictation is inherently correct and complete.

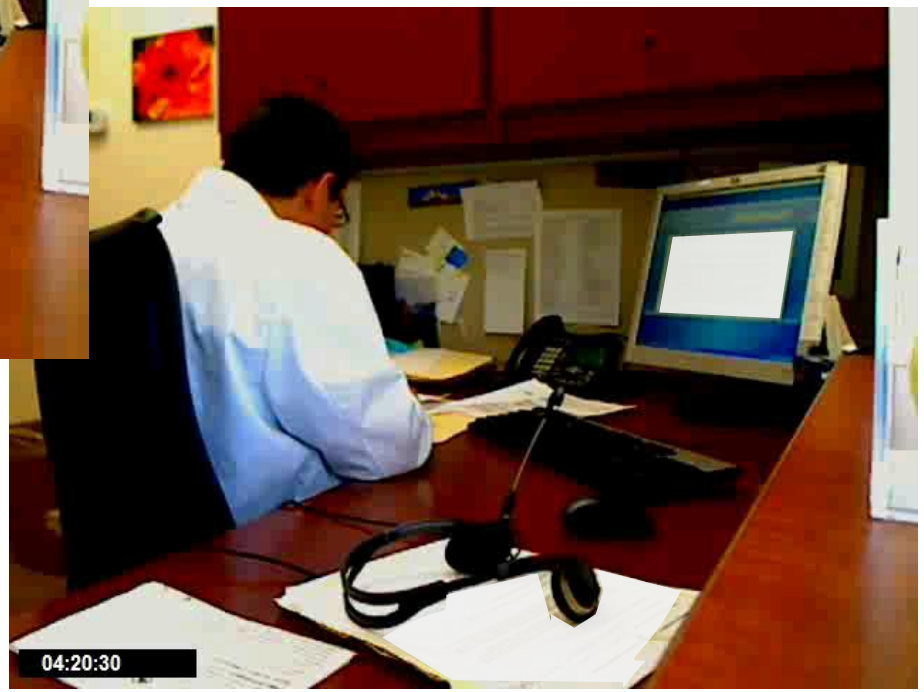
Direct Entry:
Front-end Speech Recognition





Quantity versus Quality of Information in EHRs





Impact of Computers on Patient Exams

- Some findings of research (UK)
  - Either remaining silent or restricting contributions as they typed and/or looked at the screen
  - Delaying their utterances until done using computer
  - Pausing in the midst of their utterances as they watched the computer
  - Confining visual attention to monitor or keyboard
  - Glancing at patients during screen change, but immediately returning to monitor
  - Abruptly shifting topic in order to elicit information that was required by computer

Greatbatch et al (1995:33)

Impact of Personal Health Records

Definition of PHR:

"An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared and controlled by the individual." (NAHIT 2008: 19)

Google Health BETA

Microsoft HealthVault BETA

Would you change the content of your records if you knew that your patient would see them?

The role of technology

- Hospitals and other healthcare providers need to think in terms of *strategic technological use*
- Just because you *can* do something with technology does not mean you *should*
- Role of the industry to help providers understand what technology should be used where
- The need to provide an analysis and assessment of technological impact across a range of qualitative and quantitative metrics

Research Next Steps

- Continue to collect data from field sites (technology-in-action) Summer 2009
- Awareness of medical, technological, and social implications of health information technology
- Going to Washington, DC in June for discussions around healthcare documentation.

QUESTIONS?

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