Distributed Medicine and Interpersonal Interaction:
Implications for Technology Design

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Introduction

• Exciting opportunities for using new technologies in clinical settings
  – Especially HIV/AIDS clinics in Africa
• Too often telemedicine systems lack social sophistication
  – Deep understanding of the work
  – Impact of technology on social processes
  – Social acceptability of technology
Overview

- International AIDS Research Collaboratory project
- Promise of Distance Spanning Technologies (DSTs)
- Findings from Computer-Supported Cooperative Work literature
- Suggestions for design practice
International AIDS Research Collaboratory

- Collaboratory = Collaborate + Laboratory
- Working with HIV/AIDS researchers collaborating between the United States and southern Africa
  - Technology needs assessments
  - Implementing new technologies
  - Studying the use of the technologies
Data Collection

• Open-ended interviews and observations with medical researchers
  – More than 50 interviews between February 2002 and the present
  – Many interviewees are practicing clinicians
  – Often involves demonstrating new technologies

• Often heard the “Remote Expertise Story”
The Remote Expertise Story

• Many clinics in southern Africa do not have adequate medical staff
  – Especially in rural areas, townships, etc.

• Difficult to deliver continuing education
  – Especially serious for HIV/AIDS care
  – New and rapidly changing treatments

• One solution: Use information technology to connect local clinic doctors with remote specialists
Potential Benefits of DSTs

• Allows for efficient and widespread use of limited expertise
• Cost savings compared to travel
• Immediate response from specialist
• Additional benefits from having technology available
  – Professional support, patient education, clinical monitoring, etc.
This Isn’t New

- Doctors have been consulting over the phone for a long time
- Part of every-day work for the doctors we interviewed
  - One even did a consultation in the middle of the interview
- Certain medical specialties typically done remotely
  - e.g. Radiologists often read X-rays without ever meeting the doctor or patient face-to-face
This Is New

• New technologies
  – Video-conferencing, Voice-over-IP, etc.

• New clinical context
  – Rapid deployment of HIV/AIDS treatments
  – Increasing demands on clinical staff
  – New symptoms, drugs, etc.
  – Disease not as well-understood as some others

• New relationships
  – Greater interaction across cultures
Why the “New” Matters

• Underlying the requests for video and similar technologies is an urge to “be there”
  – Allows for both sight and sound
  – Feels more “present” than phone

• Attempts at “being there” are problematic
  – Mixed results from Human-Computer Interaction and Computer Supported Cooperative Work research
Being There: Technical Concerns

- Each step closer to “being there” adds significant cost.
- More complex technologies tend to be harder to use and support.
- The technology will never get us all the way to “being there”
Being There: Social Concerns

• Tendency for increased social problems in technology-mediated distance work
  – Less trust, More conflict
  – Delays in getting work done

• Technology design can influence interactions
  – Perceptions of lying affected by video quality
  – Influence in decisions affected by camera placement
DSTs in Clinical Practice

- We don’t know impact of technology use on clinical practice
  - Decision making / Diagnosis
  - Doctor-Patient relations
  - Overall treatment success

- Potential for both positive and negative effects
  - Access to expertise → better decisions?
  - Technological mediation → worse decisions?
Implications for Design

• Understand the work we are trying to support
  – Healthcare tends to be both information rich and unpredictable

• Look for “Beyond Being There” solutions
  – Hollan & Stornetta, 1992

• Design with social awareness

• Don’t assume technical solution is the only or correct solution
Unanswered Questions

• Technology and medical decision making: what is the interaction?
  – What are the important technical and social parameters
  – How do we evaluate Telemedicine systems? Do we need full clinical trials?

• Cost tradeoffs for these technologies

• What are the “second order” effects of Telemedicine?
Conclusion

- Distance-spanning technologies could be very beneficial in clinical settings, especially in HIV/AIDS care in Africa
- We must not naively assume that the impact will be positive
- Designing effective telemedicine systems requires accounting for social as well as technical requirements