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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

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Overview

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

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- 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

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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”

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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

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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.

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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

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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

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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

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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"

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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

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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?

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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

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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?

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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