

Household Transmission of *M.* *tuberculosis*

Commentary

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Household (HH) contacts who were HIV-infected

- 40% HIV + patients presented with a strain acquired through a contact network *outside* the household

HIV Status	n	RFLP Pattern Compared with Index Case Isolate	
		Match	No Match
		--- n (%) ---	--- n (%) ---
HIV negative	39	33 (84)	6 (16)
HIV positive	22	13 (59)	9 (41)
Total	61	46 (75)	15 (25)

Community Transmission Risk

- Two people living in the same HH do not always have the same strain of MTB suggesting significant transmission outside of HH
- Classen et al (Thorax 1999): found that 55% of HH had an individual with a different strain
- Verver et al (Lancet, 2004): found that only 19% of transmission occurred within the HH
- Schaaf et al (IUTLD, 2003): was only able to link 42% of children to the HH contact
- Non-HH contacts can play significant role in transmission in high incidence areas

Where *does* transmission take place?

- Concept of “*place finding*” instead of “case finding” to allow us to maximize interventions to reduce transmission
- How social interactions affect TB transmission
- Extensive social mixing high density, low income communities in sub-Saharan African
- High numbers of indoor contacts and intergenerational mixing in households and transportation, churches, schools, and bars

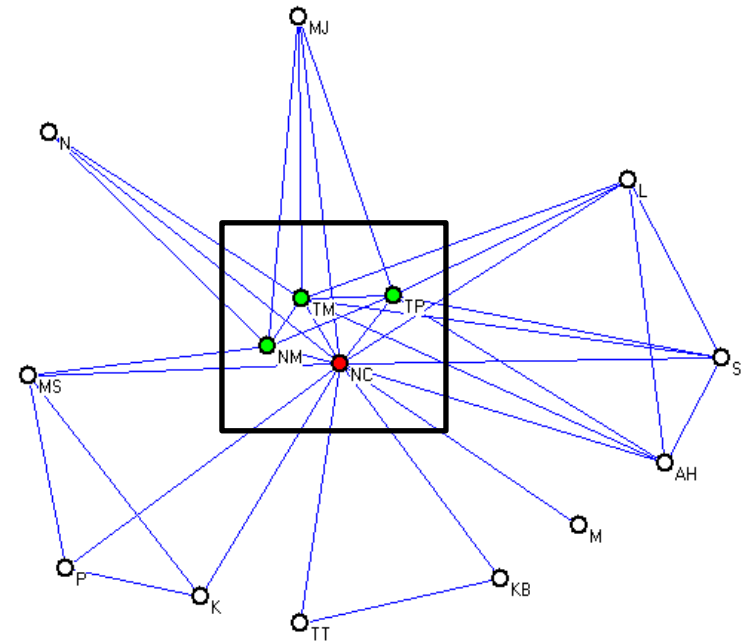
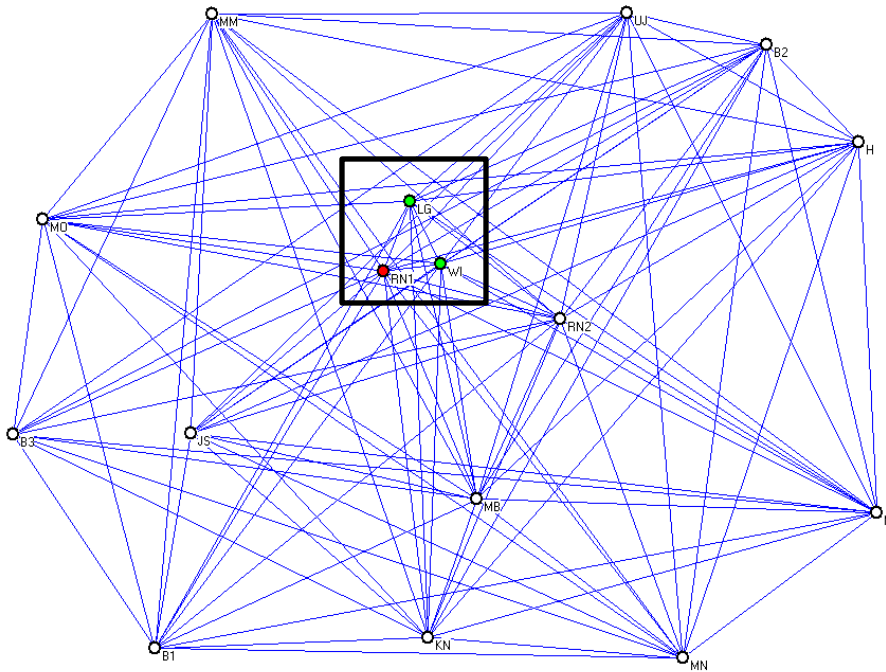
What is the role of Clinic in TB transmission in HIV-infected patients?

- HIV infected patients spend significant time in the clinic environment
- Murray et al (IUTLD, 2009) mapped “hot spots” and found that clinics had the 2nd highest TB transmission risk (after bars)
- Need novel strategies to reduce transmission in health care facilities but first need to understand the transmission patterns

Clinic

TB Contact Networks Kampala Uganda

Clinic



Approach--combining methods from molecular biology, epidemiology and social network analysis

Unanswered Questions & Research Needs

- Is the household a useful/effective entry point for TB control in HIV-infected persons?
- What is the priority for overall TB control in HIV infected persons : community versus more targeted individual TB/HIV management?
- How can we identify the social networks that enhance TB transmission in HIV-infected persons?
- What community interventions could be tested to reduce transmission of MTB?

END