

**Characteristics of male social networks of fishermen in three communities in a high HIV prevalence region of Kenya**

James Moody, Lila Sheira, Edwin Charlebois, Zachary Kwena, Madelynn Wellons, Sarah Gutin, Kawango Agot, Bernard Ayieko, Elizabeth A. Bukusi, Harsha Thirumurthy, Carol S. Camlin

(Grant info.: R01MH120176, K24MH126808)

**Background**

In communities at Lake Victoria in Kenya, HIV incidence (2.4-9.3/100 PY) and prevalence (24-26%) remain high, and treatment uptake is suboptimal (53-61%). Fishermen are highly mobile and have low uptake of HIV testing, treatment and pre-exposure prophylaxis (PrEP). Social network-based interventions might help to overcome their barriers to HIV testing and prevention services. In the 'Owete' Study, 'promoters' in three communities distributed HIV self-tests (HIVST) and promoted linkage to PrEP (for HIV- men) or anti-retroviral therapy (ART) (for HIV+ men) to their peers. Here we describe the fishermen's networks, and the identification of network-central men to recruit as promoters of HIV testing, prevention and care. Understanding network structure can inform design of peer-based HIV prevention interventions.

**Methods**

At each beach, we collected data on health-related behaviors, and multiple social relations including working in fishing industry, hanging out for fun, exchange of food and finances, discussion of health issues, emotional support, and sharing of personal secrets. Alters were uniquely identified by survey participation and/or partial phone number. These relations provide unprecedented detail on the rich social embeddedness of fishermen.

**Results**

Figure 1 displays the network of relations for our smallest beach, showing a cohesive weak-tie structure with embedded 'cliques' of strong ties. When considering all ties, the average man is connected to (*average degree*) 13 other men, 98% are in the *largest connected component*, and 75% are embedded in a set that includes shared ties to 7 others (a *k-core* of 7). These figures drop substantially when considering men sharing at least 4 relations, to an average degree of 2, 60% in the largest component, and the highest k-core (4) containing only 7 people.

**Conclusions**

The structure of social relations in the setting is characterized by a broad substrate of weak-tie cohesion embedded with strongly re-linked smaller cliques. This suggests a setting that can easily spread reputational information: gossip is free to circulate widely across weak social ties. At the same time, this rich social milieu contains close peers with multiplex and trusting relations that crosscut work and leisure; these sets are good targets for peer health interventions.

# Figure 1

Relations amongst respondents in one sampled Beach

