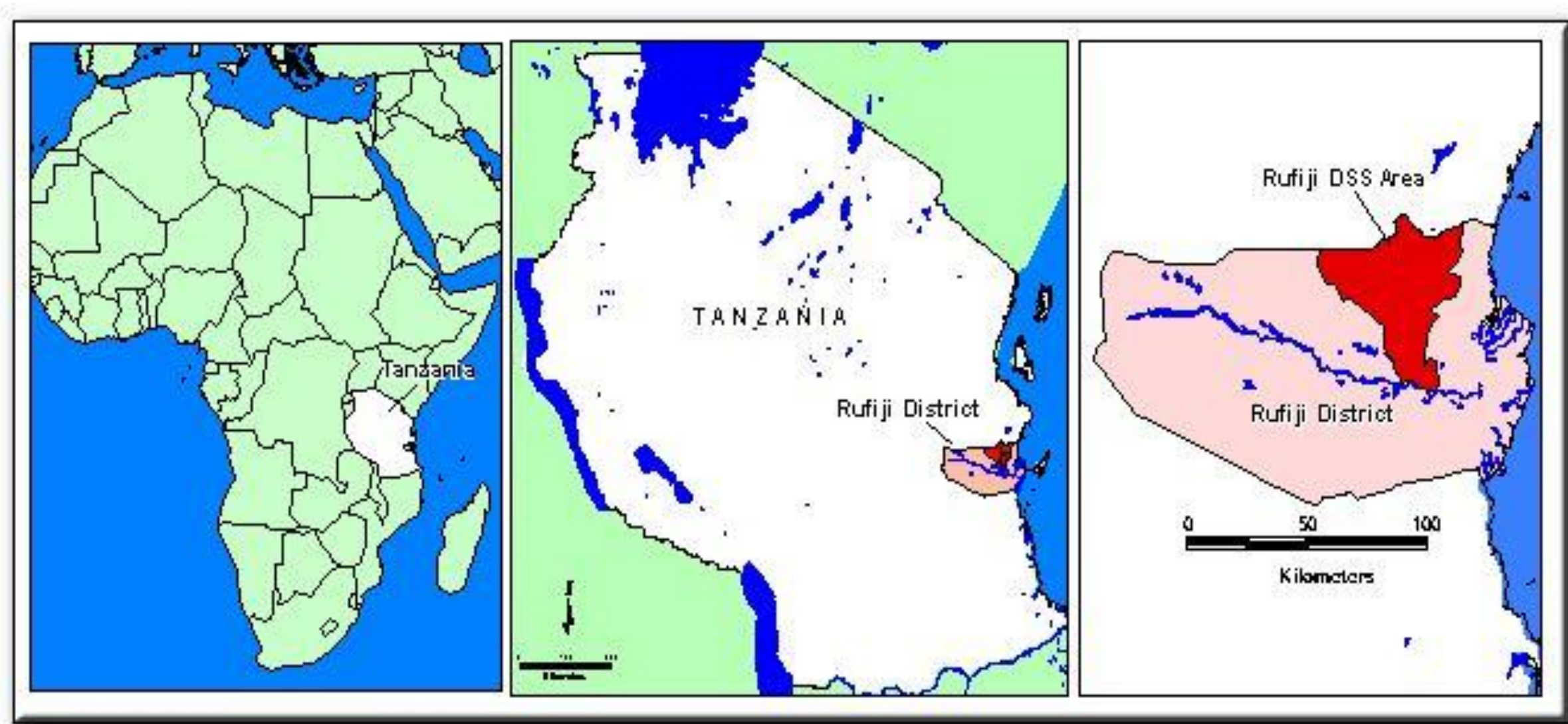


## Background

Studies in SSA find substantial population-level reductions in adult AIDS mortality accompanying ART scale-up to district-level hospitals, but there is scant evidence to date regarding the impact of scale-up to lower level facilities. We analyze the association between increased availability of Care and Treatment (C&T) in both district-level and lower-level facilities and population-level AIDS-related mortality among individuals 15 years and older, in the Rufiji Health and Demographic Surveillance System (HDSS), Tanzania. We assess whether this scale-up led to differences over time in the characteristics of the population at highest risk of dying from AIDS. Finally, as men's uptake of HIV testing and C&T has been reported to lag behind women's, possibly because of perceived gender roles and because women come into contact with PMTCT services more often, we investigate gender variation in AIDS-related mortality.



## Population and Methods

### Study population

- End 2010: ~40,000 individuals ≥15 years in 33 villages
- Families living off fishing, farming, day labor and petty trade
- Adult HIV prevalence in Coast region dropped from 10.5% to 8.4% in women and rose from 3.9% to 4.2% in men between the 2003/4 and 2007/8 national HIV indicator surveys

### Demographic surveillance since 1998

- Data on births, migrations, unions, deaths and causes of death (by verbal autopsy method) are collected once every four months

### HIV Care and Treatment program in the HDSS area

- Care → CD4 testing, disease staging every 6 months, continuous cotrimoxazol prophylaxis
- Treatment → initiated if CD4 <200 cells/ml OR if WHO stage 4 OR if WHO stage 3 and CD4 <350 cells/ml
- Introduced in two hospitals (2005/2006) and in two health centers (2008/2009). CD4 testing only available in hospitals

### Analysis

- Relative risk of dying from AIDS-related causes overall and by gender and period: i) pre-ART (1999-2004), ii) after C&T was introduced in hospitals (2005-2007, 1<sup>st</sup> scale-up) and iii) expanded to health centers (2008-2010, 2<sup>nd</sup> scale-up), using direct mortality rates
- Cox Proportional Hazards regression to determine groups at high risk of AIDS mortality in each period, by characteristics of
  - individuals: age, sex, educational attainment, distance to nearest Care and Treatment Clinic
  - household: distance to the main road, distance to nearest Care and Treatment Clinic

## Results

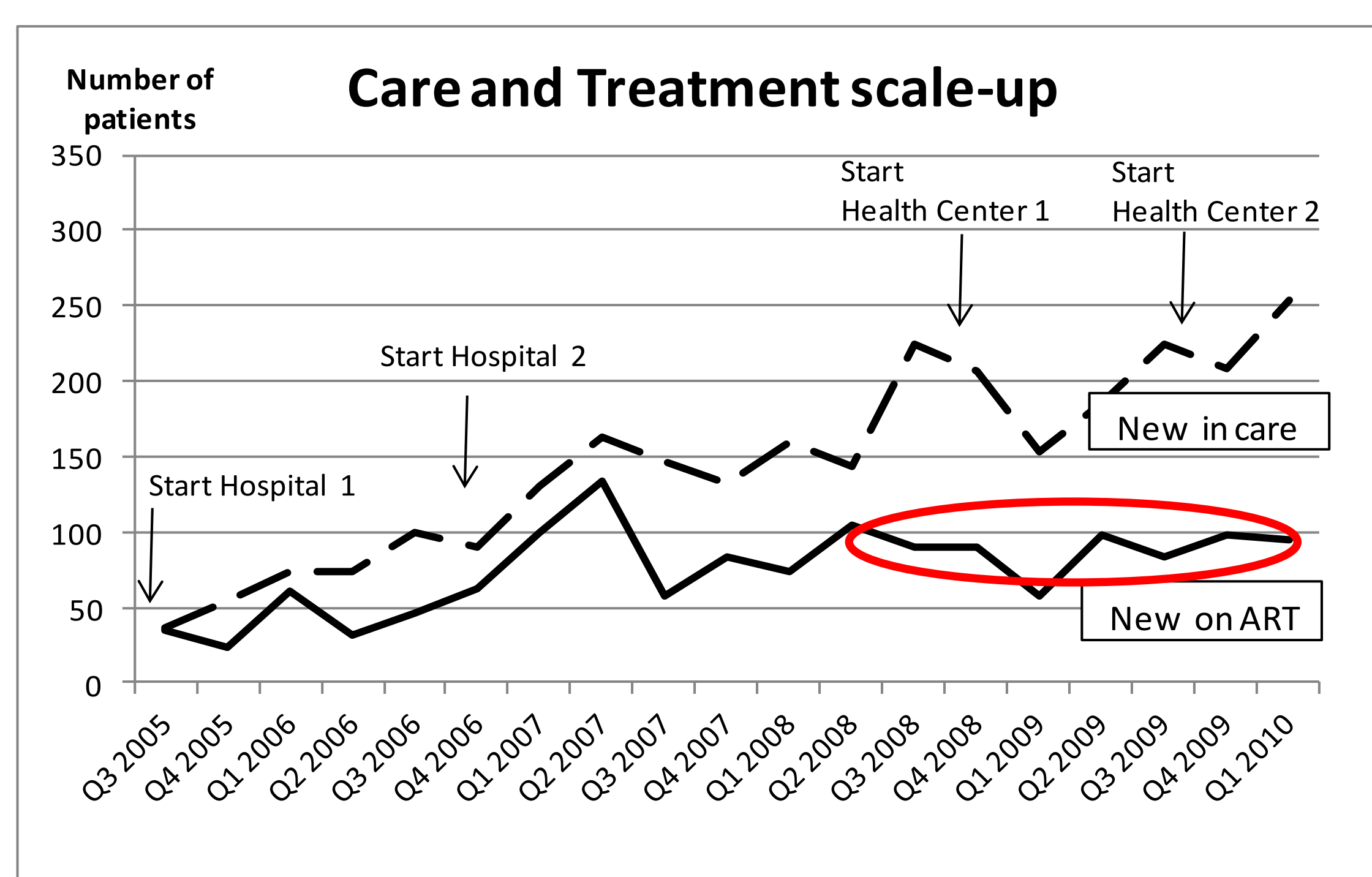


Figure 1

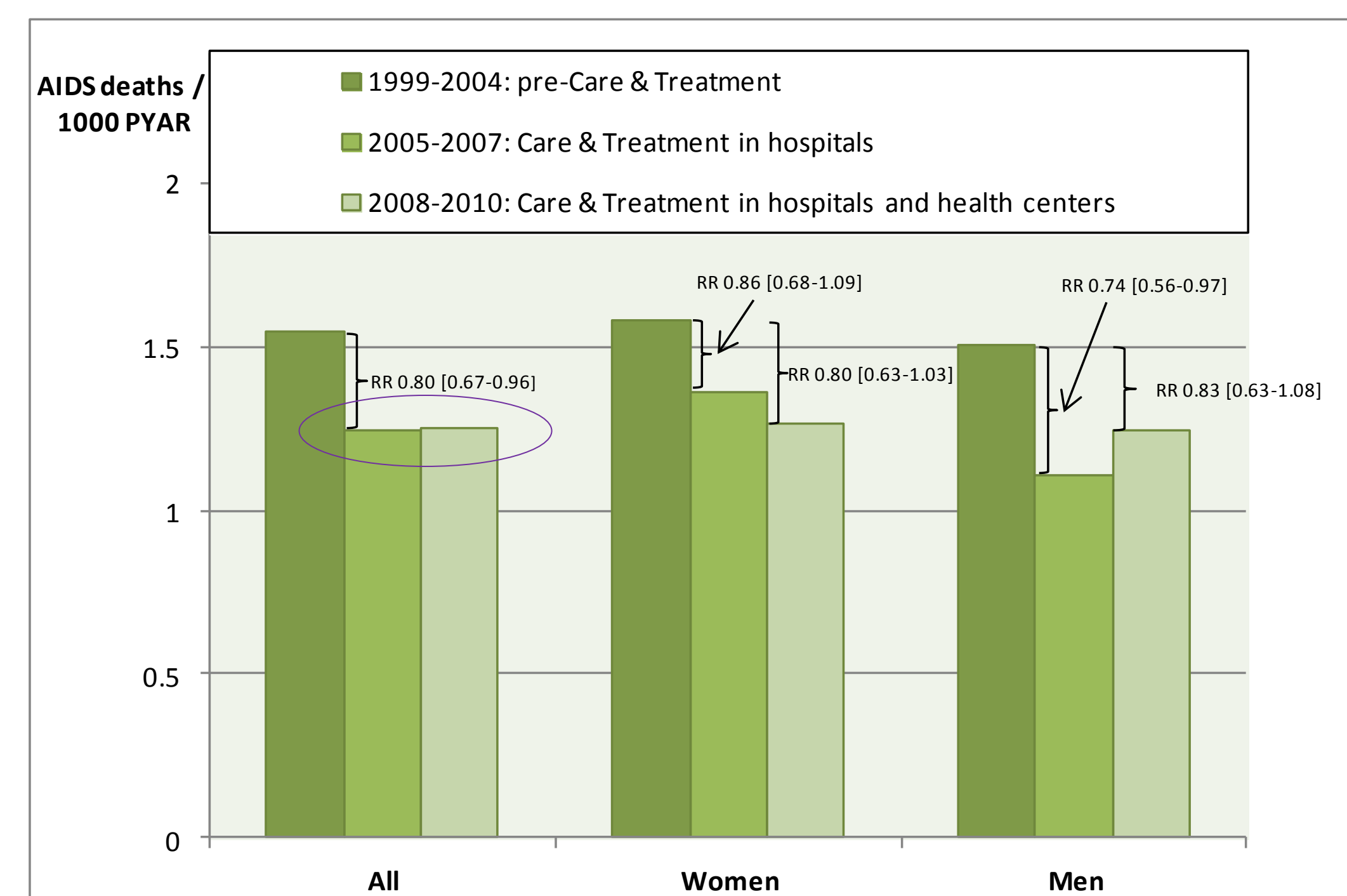


Figure 2

Women	Pre-ART (1999-2004)		1 <sup>st</sup> C&T period (2005-2007)		2 <sup>nd</sup> C&T period (2008-2010)	
	HR	95% CI	HR	95% CI	HR	95% CI
<b>Marital status</b>						
Single	1	-	1	-	1	-
Married	0.8	(0.5-1.4)	1.1	(0.6-2.0)	2.0	(0.8-5.0)
<b>Divorced/widowed</b>	<b>1.2</b>	<b>(0.7-2.2)</b>	<b>2.3</b>	<b>(1.2-4.4)</b>	<b>3.9</b>	<b>(1.5-10.1)</b>
Not applicable	1.5	(0.2-11.3)	0.6	(0.1-4.6)	1.3	(0.2-10.4)
Not known	9.1	(5.3-15.7)	1.0	(0.2-4.6)	-	-
<b>Age ≥ 35 years</b>	<b>1.4</b>	<b>1.1-1.8</b>	<b>1.5</b>	<b>(1.0-2.1)</b>	1.5	(0.9-2.5)

Model adjusted for work status, distance to main road, distance to nearest CTC and education. The hazard ratios for these factors showed little change over time and are not shown in the table.

Table 1a

Men	Pre-ART period (1999-2004)		1 <sup>st</sup> C&T period (2005-2007)		2 <sup>nd</sup> C&T period (2008-2010)	
	HR	95% CI	HR	95% CI	HR	95% CI
<b>Marital status</b>						
Single	1	-	1	-	1	-
Married	0.9	(0.5-1.7)	1.3	(0.6-2.7)	0.5	(0.2-1.2)
<b>Divorced/widowed</b>	<b>1.5</b>	<b>(0.7-2.9)</b>	<b>1.9</b>	<b>(0.8-4.4)</b>	<b>0.9</b>	<b>(0.3-2.5)</b>
Not applicable	3.2	(0.4-24.6)	3.5	(0.7-16.2)	4.1	(0.8-20.1)
Not known	11.8	(6.5-21.6)	2.2	(0.4-10.7)	2.2	(0.4-11.9)
<b>Age ≥ 35 years</b>	<b>3.9</b>	<b>(2.8-5.3)</b>	<b>4.6</b>	<b>(2.5-8.4)</b>	<b>7.8</b>	<b>(3.3-18.8)</b>

Model adjusted for work status, distance to main road, distance to nearest CTC and education. The hazard ratios for these factors showed little change over time and are not shown in the table.

Table 1b

- ▶ Expansion to health centers accelerated care scale-up, but not treatment scale-up (Fig 1)
- ▶ Population-level AIDS mortality dropped by 20% in 1<sup>st</sup> scale-up period, and stalled in 2<sup>nd</sup> period (Fig 2)
- ▶ Larger mortality decrease in pre-men than women in 1<sup>st</sup> period, but mortality rose again in men in 2<sup>nd</sup> period (Fig 2)
- ▶ Population-level AIDS mortality in men and women now equal, despite men having half the HIV prevalence of women (Fig 2 & Methods)
- ▶ In 2010, ART coverage (number on ART/ number in need of ART) was 57% in women and 34% in men [F. Levira, personal communication; coverage estimated as described in Somi et al. Using clinic and survey data to estimate coverage of HIV care and treatment services in Tanzania. 6<sup>th</sup> IAS conference, Rome 17-20 Jul 2011]
- ▶ C&T scale-up associated with increased mortality disparity for divorced / widowed women (Table 1a)
- ▶ C&T scale-up associated with increased mortality disparity for older men (Table 1b)



Dugout canoe crossing the Rufiji river bordering the HDSS area

## Conclusion

- ▶ The scale-up of C&T to lower level health facilities helped to contain population-level AIDS mortality in this district, but did not accelerate mortality reduction. Possibly, roll-out of treatment services to lower level health facilities without commensurate roll-out of treatment initiation and monitoring services limits the impact of scale-up
- ▶ Targeted programs to include and retain –especially older- men in C&T should be implemented. Because few ‘natural’ contacts with the health system exist for men, and because few men are formally employed, novel HIV testing programs need to be designed in addition to the existing workplace and health facility based services