

Supplementary materials

Supplementary table 1: Descriptive statistics comparing the “full dataset” versus the “analysis dataset”

	Full dataset (N=787) ^a	Analysis dataset (N=493) ^b
	n(%)	n(%)
Male	383 (48.7)	250 (50.7)
Age*	38.4 (15.5)	40.8 (14.0)
Type of house individual resides in†		
Hut	282 (86.2)	218 (87.6)
Both	38 (11.6)	25 (10.0)
Permanent house	7 (2.1)	6 (2.4)
Household size (number of individuals)*	9.3 (5.3)	8.1 (3.8)
Number of rooms in house of residency*	2.6 (1.7)	2.5 (1.7)
Number of windows in house of residency*	4.3 (3.4)	4.5 (3.4)
Number of people sharing a room in house of residency*	3.7 (2.0)	3.6 (1.6)
Education of survey respondent in corresponding household		
None	63 (8.8)	49 (10.6)
Primary	458 (63.8)	304 (65.9)
Secondary	147 (20.5)	88 (19.1)
Tertiary	50 (7.0)	20 (4.3)
Religion		
Other Christian	544 (67.1)	314 (69.5)
Muslim	187 (23.1)	81 (17.9)
Anglican	80 (9.9)	57 (12.6)
Size of corresponding household’s cattle herd*†	19.6 (32.1)	23.9 (36.5)
New stock purchased in the past year	181 (23.6)	109 (22.9)
All animals kept together	214 (28.9)	133 (28.9)
Distance to used kraal		
Very close	95 (12.5)	51 (10.7)
Close	399 (52.4)	235 (49.4)
Far	268 (35.2)	190 (39.9)
Co-house with livestock at night	43 (5.8)	26 (5.6)
Livestock management system		
Tethering	450 (59.1)	244 (51.4)
Communal grazing	261 (34.3)	191 (40.2)
Tethering and communal grazing	43 (5.7)	34 (7.2)
Fencing and communal grazing	4 (0.5)	4 (0.8)
Tethering and fencing	3 (0.4)	2 (0.4)
TB knowledge reported by survey respondent of corresponding household	750 (95.3)	464 (94.1)
Frequency of milk consumption per week*	2.3 (2.9)	2.5 (3.0)
Sometimes consume raw milk†	155 (24.8)	125 (28.5)
TST results in mms*	13.5 (15.0)	13.5 (15)
TST positive at 15mm cutoff	184 (37.3)	184 (37.3)
Total number TB positive individuals in household*	0.92 (1.04)	0.95 (1.0)

^aIndividuals over 18 years of age, with non-missing exposure data

^bIndividuals over 18 years of age, with non-missing exposure and non-missing outcome data

*Mean(SD)

†Missing more than 10% of observations (house type: missing 244 observations; cattle herd size: missing 170 observations)

Supplementary table 2a: Distribution of exposures across TST negative versus TST positive individuals with TST positivity at varying cut points

	TST negative	TST positive
	<i>n</i> (%)	<i>n</i> (%)
5mm cut point ^a		
No TB reactors in cattle herd	145 (35.8)	260 (64.2)
At least one TB reactor in cattle herd	25 (28.4)	63 (71.6)
Never consume raw milk	97 (30.9)	217 (69.1)
Sometimes consume raw milk	52 (41.6)	73 (58.4)
10mm cut point ^b		
No TB reactors in cattle herd	169 (41.7%)	236 (58.3%)
At least one TB reactor in cattle herd	31 (35.2%)	57 (64.8%)
Never consume raw milk	114 (36.3%)	200 (63.7%)
Sometimes consume raw milk	58 (46.4%)	67 (53.6%)

^aTST negative individuals total 170, while TST positive individuals total 323

^bTST negative individuals total 200, while TST positive individuals total 293

Supplementary table 2b: Modified Poisson regression analyses with varying TST positivity cut points

	Crude prevalence ratio (95% CI)	Adjusted PR, total effects (95% CI)	Adjusted PR, direct effects (95% CI)
<i>5mm</i>			
At least one TB reactor in the cattle herd	1.09 (0.91, 1.31)	- ^a	1.09 (0.93, 1.28) ^c
Sometimes consume raw milk ^a	0.85 (0.72, 0.99)	0.83 (0.71, 0.97) ^b	0.85 (0.72, 0.99) ^d
<i>10mm</i>			
At least one TB reactor in the cattle herd	1.10 (0.89, 1.35)	- ^a	1.09 (0.91, 1.30) ^c
Sometimes consume raw milk ^a	0.84 (0.71, 1.00)	0.83 (0.70, 0.99) ^b	0.86 (0.72, 1.01) ^d

Sex was not found to be a statistically significant effect modifier at these cutpoints.

^aNo confounders identified

^bAdjusted for self-reported knowledge of TB. Cattle herd size not adjusted for due to large amounts of missingness.

^cAdjusted for TST positivity in other household members

^dAdjusted for TST positivity in other household members and self-reported knowledge of TB. Cattle herd size not adjusted for due to large amounts of missingness.

Supplementary table 3: Inclusion of individuals less than 18 years of age; modified Poisson regression

	Crude prevalence ratio (95% CI)	Adjusted PR, total effects (95% CI)	Adjusted PR, direct effects (95% CI)
At least one TB reactor in the cattle herd	0.86 (0.63, 1.18)	- ^a	0.86 (0.62, 1.18) ^c
Male	0.62 (0.48, 0.80)	- ^a	0.61 (0.47, 0.79) ^c
Female	1.29 (0.82, 2.01)	- ^a	1.29 (0.82, 2.01) ^c
Sometimes consume raw milk ^a	0.75 (0.55, 1.00)	0.74 (0.54, 1.00) ^b	0.70 (0.51, 0.97) ^d

^aNo confounders identified

^bAdjusted for self-reported knowledge of TB. Cattle herd size not adjusted for due to large amounts of missingness.

^cAdjusted for TST positivity in other household members

^dAdjusted for TST positivity in other household members and self-reported knowledge of TB. Cattle herd size not adjusted for due to large amounts of missingness.

Supplementary table 4a: Sample characteristics stratified on household type, full dataset

	Reside in monogamous households (N=734)	Reside in polygamous household (N=53)
	n (%)	n (%)
Male	357 (48.6)	26 (49.1)
Age*	38.5 (15.5)	36.2 (14.3)
Type of house individual resides in†		
Hut	34 (12.4)	4 (7.6)
Permanent house	233 (85.0)	49 (92.5)
Both	7 (2.6)	0 (0)
Number of rooms in house of residency*	2.7 (1.7)	1.3 (1.1)
Number of windows in house of residency*	4.0 (3.2)	8.2 (4.3)
Number of people sharing a single room in house of residency*	3.8 (2.1)	3.2 (0.6)
Education of survey respondent in corresponding household		
None	60 (8.8)	3 (7.9)
Primary	424 (62.4)	34 (89.5)
Secondary	147 (21.6)	0 (0)
Tertiary	49 (7.2)	1 (2.6)
TB knowledge reported by survey respondent of corresponding household	703 (95.8)	47 (88.7)
Size of corresponding household's cattle herd*†	16.3 (26.3)	50.6 (57.3)
Frequency of milk consumption per week *	2.3 (2.9)	2.8 (2.8)
Sometimes consume raw milk†	155 (27.1)	0 (0)
Presence of at least one reactor in cattle herd	130 (17.7)	17 (32.1)
TST results in mms*†	18 (19.7)	20.6 (21.0)
TB positive at 15mm cutoff†	169 (37.1)	15 (40.5)
Total number TB positive individuals in household*	0.91 (1.1)	0.96 (0.8)

*mean(SD)

†Missing >10% of observations (TST results: missing 294 observations; sometimes consume raw milk: missing 163 observations; house type: missing 460 observations; cattle herd size: missing 230 observations)

Supplementary table 4b: Analyses restricted to monogamous households, log binomial regression

	Crude prevalence ratio (95% CI)	Adjusted PR, total effects (95% CI)	Adjusted PR, direct effects (95% CI)
At least one TB reactor in the cattle herd	0.80 (0.56, 1.15)	- ^a	0.80 (0.56, 1.15) ^c
Male	0.57 (0.43, 0.76)	- ^a	0.58 (0.43, 0.77) ^c
Female	1.22 (0.74, 2.01)	- ^a	1.22 (0.74, 2.01) ^c
Sometimes consume raw milk ^a	0.74 (0.54, 1.01)	0.73 (0.54, 1.00) ^b	0.71 (0.51, 0.98) ^d

^aNo confounders identified

^bAdjusted for self-reported knowledge of TB. Cattle herd size not adjusted for due to large amounts of missingness.

^cAdjusted for TST positivity in other household members

^dAdjusted for TST positivity in other household members and self-reported knowledge of TB. Cattle herd size not adjusted for due to large amounts of missingness.

Supplementary table 5: Results from three multi-level modified Poisson regression models, clustering on village

	Empty model	Random intercept	Random intercept and slope*
Fixed effects			
At least one TB reactor in the cattle herd (Model 1)	-	-	-
Male	-	0.63 (0.37, 1.10)	0.63 (0.37, 1.10)
Female	-	1.24 (0.68, 2.24)	1.26 (0.70, 2.27)
Sometimes consume raw milk (Model 2)	-	0.75 (0.50, 1.13)	0.78 (0.63, 0.98)
Village-level cattle TB prevalence (Model 3)	-	0.99 (0.94, 1.04)	1.00 (0.93, 1.070)
Random effects			
At least one TB reactor in cattle herd (Model 1)	-	-	0.031
Sometimes consume raw milk (Model 2)	-	-	0.015
Village-level cattle TB prevalence (Model 3)	-	-	0.0024
Village-level variance	0.0329		
Model 1		0.033	0.048
Model 2		0.047	0.005
Model 3		0.026	0.055
Proportional change in village-level variance	REF		
Model 1		-0.003	-0.459
Model 2		-0.429	0.848
Model 3		0.207	-0.672

Supplementary table 6: Risk factors for cattle TST positivity, log binomial regression

	Crude prevalence ratio	Crude 95% confidence interval
New stock purchased in the past year	0.95	0.47, 1.92
Co-housing with humans	1.51	0.45, 5.10
Management system		
Communal grazing	REF	REF
Tethering	2.27	1.21, 4.25
Both	11.67	0.48, 5.83
Cattle herd size		
Missing	REF	REF
1-5	0.53	0.22, 1.26
6-20	0.51	0.26, 1.00
21-100	0.30	0.10, 0.86
>100	0.51	0.08, 3.14

Supplementary table 7: Sample characteristics stratified on missing versus recorded herd size

	Herd size recorded (N=324)	Herd size missing (N=169)
	n (%)	n (%)
Male	177 (54.6)	73 (43.2)
Age*	41.7 (13.9)	38.9 (14.2)
Type of house individual resides in†		
Hut	218 (87.6)	0 (0)
Permanent house	6 (2.41)	0 (0)
Both	25 (10)	0 (0)
Number of rooms in house of residency*	2.35 (1.92)	2.72 (1.19)
Number of windows in house of residency*	5.14 (3.84)	3.3 (1.96)
Number of people sharing a single room in house of residency*	3.37 (1.42)	4.01 (1.85)
Education of survey respondent in corresponding household		
None	15 (5.1)	34 (20.5)
Primary	210 (71.2)	94 (56.6)
Secondary	50 (16.9)	38 (22.9)
Tertiary	20 (6.78)	0 (0)
TB knowledge reported by survey respondent of corresponding household	315 (97.2)	149 (88.2)
Frequency of milk consumption per week *	2.16 (2.74)	3.09 (3.30)
Sometimes consume raw milk†	18 (6.52)	107 (65.6)4
Presence of at least one reactor in cattle herd	56 (17.28)	32 (18.9)
TB positive at 15mm cutoff	130 (40.1)	54 (32.0)
TST results in mms *	14.60 (15.28)	13.38 (14.4)
Total number TB positive individuals in household*	1.15 (1.12)	0.57 (0.66)

*mean(SD)

†Missing more than 10% of observations (sometimes consume raw milk: missing 54 observations; house type: missing 244 observations; cattle herd size: missing 170 observations).