

# THE LANCET

## Global Health

### Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

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## Online appendix

### Infection prevention and control compliance in Tanzanian outpatient facilities: a cross-sectional study with implications for the control of COVID-19

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### Re-weighting sensitivity analysis

In the selection of the study health facilities, we implicitly oversampled certain types of facility (by ownership and level). As a sensitivity analysis, we re-weighted the data to account for the oversampling using information on the universe of health facilities in the country. Table A1 shows the number and percentage of facilities by ownership and level in the population and in our study sample. Using this information, we generated a probability weight, also shown in Table A1.

The sensitivity analysis involved running weighted regressions of the same models as described in the main paper. Since the analysis was conducted at the level of indication and done separately for each domain, the facility weight was divided by the number of indications observed within each domain. Table A2 reports the results of this sensitivity analysis. The findings were qualitatively similar to those reported in the main paper when we weighted the data to account for oversampling with respect to facility level and ownership.

### Hawthorne effect sensitivity analysis

Directly observing health workers gives rise to the possibility that they alter their behaviour. The specific concern in our study is that health workers temporarily increased IPC compliance when they were observed by the research team, above their usual level of performance. We assessed the presence of a Hawthorne effect by examining whether compliance with IPC practices was associated with order number of patients observed. The idea behind the sensitivity analysis is that, if there was a Hawthorne effect, health workers would eventually get used to being observed and IPC compliance would revert to a lower level closer to actual practice. In the data this would show up as a negative association between IPC compliance and order of patient observation.

We analysed data at the level of patient observation. The dependent variable was IPC compliance, defined as the proportion of indications for which the health worker complied with the correct action. The independent variable of interest was the order number of patients observed. Each health worker was observed for an average of 4.9 patient interactions (SD 4.2). We ran four OLS regression models. Model 1 included no other covariates. Model 2 included an indicator for each IPC indication. Model 3 additionally controlled for facility and health worker characteristics (the same as in the main paper). Model 4 replaced the facility and health worker characteristics with health worker fixed effects, and is our preferred model.

Figure A2 shows IPC compliance by order of patient observation. IPC compliance beyond the 15<sup>th</sup> patient observation was not reported because the sample size was less than 30 thereafter. There is some variation in mean IPC compliance but essentially the line is flat, suggesting no strong association between compliance and order of patient observation. Table A3 reports the regression

results. Across the four models, there is no consistent direction in the association but the coefficient is small in magnitude in all instances. In the unadjusted model, the coefficient is positive but insignificant ( $p=0.241$ ). In our preferred model with indicators for each indications and health worker fixed effects, the coefficient is again positive but insignificant ( $p=0.658$ ). In models 2 and 3, the coefficient is significant, but the magnitude suggests a weak association. In model 3, for example, an increase of one in patient observation order is associated with a reduction of 0.2 percentage points in mean IPC compliance.

### Other sensitivity analyses

Table A4 reports the unadjusted results, showing the correlation between IPC compliance and the characteristics of health facilities and health workers. It reports the p value from a Pearson's chi-squared, accounting for clustering at the facility level. Table A5 reports results in which we included in the regressions additional controls for patient age and gender. The findings were very similar to those reported in the main paper. Table A6 reports results for a different definition of compliance with infectious waste management – one that is less stringent than national guidelines in Tanzania – in which we no longer required the bag and bin colour to match for red and yellow bins. There were some differences in the findings with respect to health facility ownership / level and health worker age.

### Comparison with Bedoya et al (2017) study in Kenya

For interested readers, we compared our results on IPC compliance with those reported in a study conducted in Kenya which used methods and tools that informed our study (Bedoya et al, 2017). We compared IPC compliance for each indication reported by the Kenya study (Table A7). To aid interpretation, we note a number of methodological differences between the two studies. First, while both studies included faith-based and private for-profit facilities, the study in Kenya also included public health facilities, but our study in Tanzania did not. Second, there were differences in the definition of a small number of indications (see the notes of the table). Third, the categorisation of indications by domain was not the same in the studies, which is why we compare IPC compliance by indication, rather than domain.

**A STUDY TO EVALUATE THE EFFECTIVENESS OF THE “SAFECARE” APPROACH IN TANZANIA**  
**Observation Tool**

A: GENERAL DETAILS (ALL SITES)						
<b>1. Field Interviewer ID:</b> _____	<b>2. Facility ID:</b> _____	<b>3. Date (DD/MM/YY):</b> ____/____/____	<b>4. Site:</b> <input type="checkbox"/> Consultation room <input type="checkbox"/> Dressing room	<input type="checkbox"/> Injection room <input type="checkbox"/> Laboratory	<b>5. HCW ID:</b> _____	<b>6. Patient consent:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>7. Red bin in room:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>9. Yellow bin in room:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>11. Start time:</b> : _____	<b>12. End time</b> : _____	<b>13. Patient ID:</b> _____	<b>14. Patient gender:</b> <input type="checkbox"/> Male <input type="checkbox"/> Female	<b>15. Patient age (approximate):</b> <input type="checkbox"/> <5 <input type="checkbox"/> 5-17 <input type="checkbox"/> 18-29 <input type="checkbox"/> 30-49 <input type="checkbox"/> 50+
<b>8. Red bag in red bin:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>10. Yellow bag in yellow bin:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>16. Observation result:</b> <input type="checkbox"/> Completed <input type="checkbox"/> Partially completed		<b>17. If partially completed, give reason:</b> <input type="checkbox"/> Ended by provider <input type="checkbox"/> Ended by patient <input type="checkbox"/> Ended by interviewer <input type="checkbox"/> Other (specify): _____		
B: HAND HYGIENE (CONSULTATION OR DRESSING)						
<b>18. Are gloves used?</b> Yes <input type="checkbox"/> No <input type="checkbox"/>	<b>19. Are gloves....</b> If yes:	<input type="checkbox"/> New <input type="checkbox"/> Reused <input type="checkbox"/> Cannot say	<input type="checkbox"/> HR <input type="checkbox"/> HW w/soap <input type="checkbox"/> HW no soap <input type="checkbox"/> None <input type="checkbox"/> Cannot say	<input type="checkbox"/> HR <input type="checkbox"/> HW w/soap <input type="checkbox"/> HW no soap <input type="checkbox"/> None <input type="checkbox"/> Cannot say	<input type="checkbox"/> None <input type="checkbox"/> Cannot say	<input type="checkbox"/> Cannot say
<b>22. Patient contact or exam (tick all that apply):</b> <input type="checkbox"/> Touching skin <input type="checkbox"/> Cleaning body fluids <input type="checkbox"/> Mouth or throat exam <input type="checkbox"/> Nose exam <input type="checkbox"/> Ear exam <input type="checkbox"/> Eye exam <input type="checkbox"/> Wound cleaning or dressing <input type="checkbox"/> Wound exam <input type="checkbox"/> Stiches <input type="checkbox"/> Preparation of medicine <input type="checkbox"/> Inserting a suppository <input type="checkbox"/> Vaginal, male genital or rectal exam <input type="checkbox"/> Listening to chest <input type="checkbox"/> Handling container of body fluid <input type="checkbox"/> Taking temperature  <input type="checkbox"/> Other (specify): _____  <input type="checkbox"/> No patient contact and no exam (skip to 31)		<b>23. Hand hygiene before contact or exam:</b> <input type="checkbox"/> HR <input type="checkbox"/> HW w/soap <input type="checkbox"/> HW no soap <input type="checkbox"/> None <input type="checkbox"/> Cannot say	<b>24. Hand hygiene took</b> If yes: _____ seconds	<b>25. Hand hygiene with gloves on:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>26. Drying method:</b> <input type="checkbox"/> Clean disposable towel <input type="checkbox"/> Nothing <input type="checkbox"/> Reused towel or clothes <input type="checkbox"/> Cannot say	
		<b>27. Hand hygiene after contact or exam:</b> <input type="checkbox"/> HR <input type="checkbox"/> HW w/soap <input type="checkbox"/> HW no soap <input type="checkbox"/> None <input type="checkbox"/> Cannot say	<b>28. Hand hygiene took</b> If yes: _____ seconds	<b>29. Hand hygiene with gloves on:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>30. Drying method:</b> <input type="checkbox"/> Clean disposable towel <input type="checkbox"/> Nothing <input type="checkbox"/> Reused towel or clothes <input type="checkbox"/> Cannot say	
C: WASTE SEGREGATION AND DISINFECTION ( CONSULTATION OR DRESSING )						
<b>31. Thermometer used:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes: 32. Type <input type="checkbox"/> Standard <input type="checkbox"/> Infra-red 33. Disinfection (before or after use): <input type="checkbox"/> Disinfected with rubbing alcohol/bleach <input type="checkbox"/> Not disinfected, but cleaned <input type="checkbox"/> Not disinfected, not cleaned <input type="checkbox"/> Left in disinfectant <input type="checkbox"/> Cannot say	<b>34. Stethoscope used:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes: 35. Disinfection (before or after use): <input type="checkbox"/> Disinfected with rubbing alcohol/bleach <input type="checkbox"/> Not disinfected, but cleaned <input type="checkbox"/> Not disinfected, not cleaned <input type="checkbox"/> Cannot say	<b>36. Tongue depressor used:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes: 37. Type: <input type="checkbox"/> Plastic <input type="checkbox"/> Wooden <input type="checkbox"/> Metallic 38. Segregated.... <input type="checkbox"/> Black or blue bin <input type="checkbox"/> Yellow bin <input type="checkbox"/> Red bin <input type="checkbox"/> Other bin <input type="checkbox"/> Disinfected with rubbing alcohol/bleach <input type="checkbox"/> Not disinfected, but cleaned <input type="checkbox"/> Not disinfected, not cleaned <input type="checkbox"/> Cannot say	<b>39. Otoscope used:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No  If yes: 40. Disinfection (before or after use): <input type="checkbox"/> Disinfected with rubbing alcohol/bleach <input type="checkbox"/> Not disinfected, but cleaned <input type="checkbox"/> Not disinfected, not cleaned <input type="checkbox"/> Cannot say	<b>41. Gloves used:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No  42. If yes: Segregated.... <input type="checkbox"/> Black or blue bin <input type="checkbox"/> Yellow bin <input type="checkbox"/> Red bin <input type="checkbox"/> Other bin <input type="checkbox"/> Left on hands <input type="checkbox"/> Left outside <input type="checkbox"/> Cannot say	<b>43. Swabs/gauze/bandages used on patient:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No  44. If yes: Segregated.... <input type="checkbox"/> Black or blue bin <input type="checkbox"/> Yellow bin <input type="checkbox"/> Red bin <input type="checkbox"/> Other bin <input type="checkbox"/> Left outside <input type="checkbox"/> Cannot say	



Figure A1. Compliance with IPC practices for injection and blood draw safety

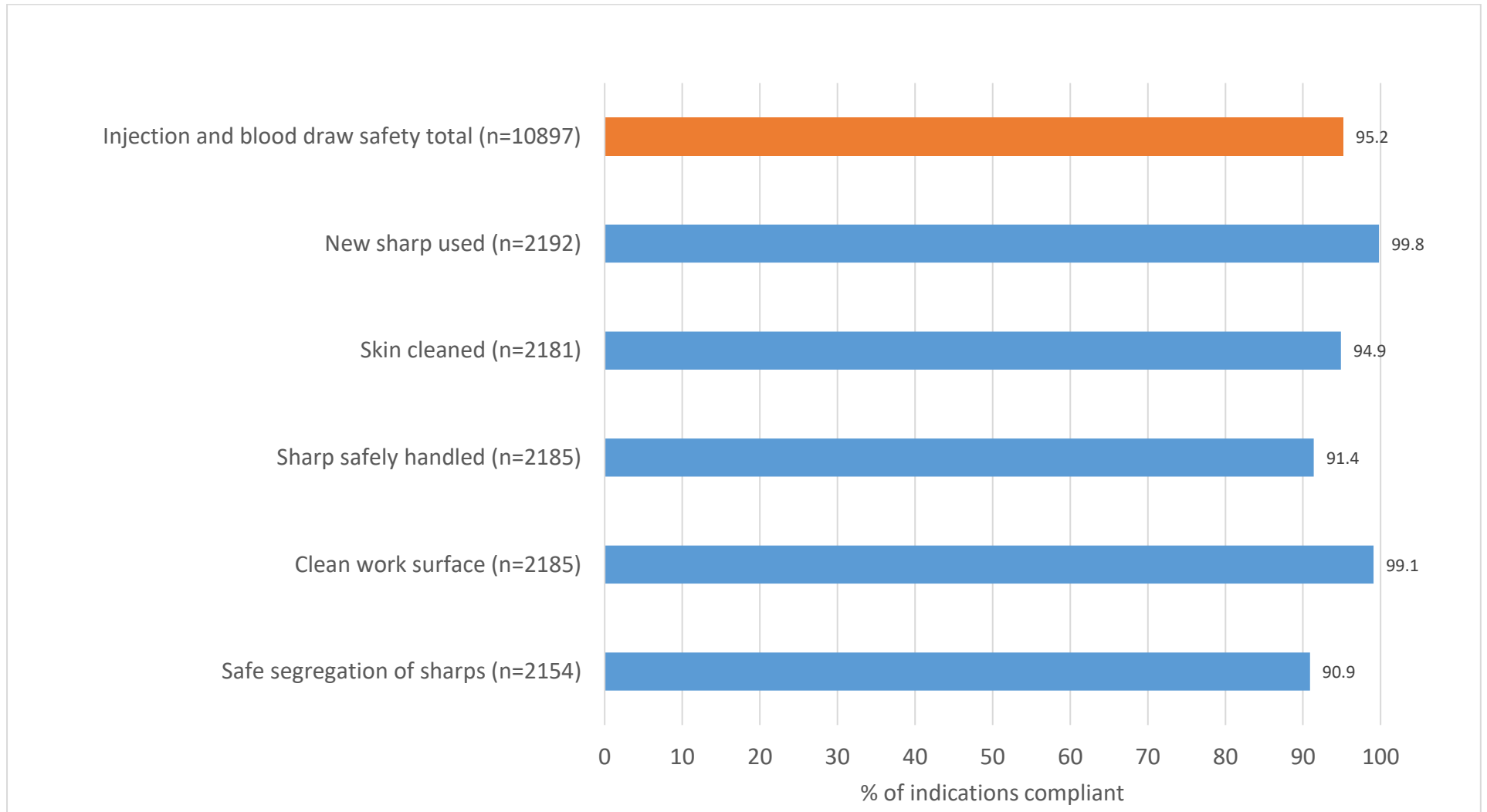


Figure A2. IPC compliance and order of patient observation

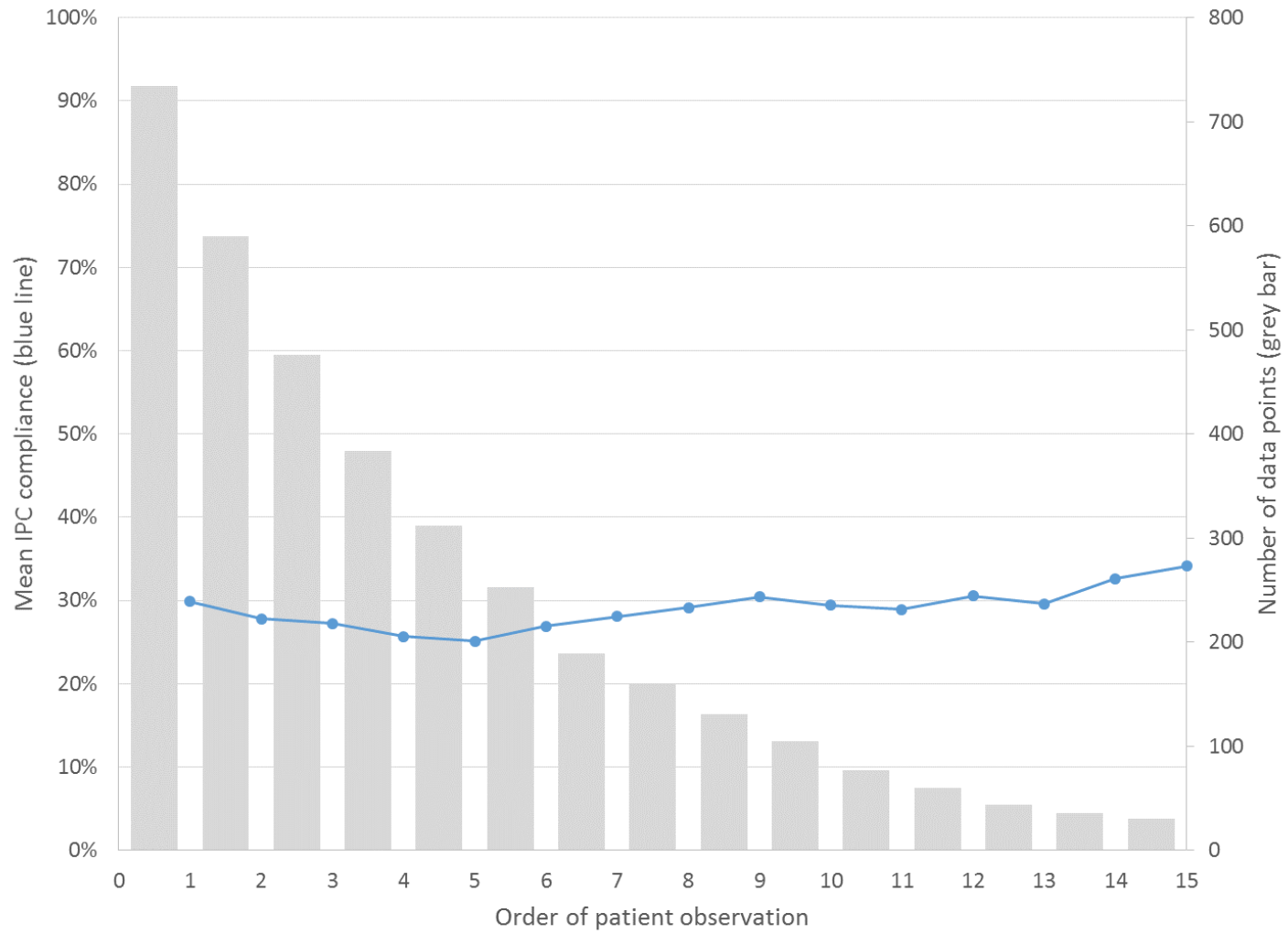




Table A1. Calculation of survey weights

	Population of facilities (A)		Study facilities (B)		Facility weight (A/B)
	N	%	N	%	
Private for-profit dispensaries	755	43%	79	36%	9.56
Private for-profit health centres	109	6%	19	9%	5.74
FBO dispensaries	658	37%	39	18%	16.87
FBO health centres	150	8%	47	21%	3.19
FBO hospitals	100	6%	36	16%	2.78
Total	1772		220		8.05

Table A2. Multilevel mixed effects logistic regressions with survey weights

	Hand hygiene [N=8,651]			Glove use [N=4,912]			Disinfection of reusable equipment [N=751]			Waste management [N=4,296]		
	%	OR	P value	%	OR	P value	%	OR	P value	%	OR	P value
<b>Facility characteristics</b>												
Facility level and ownership												
Private for-profit dispensaries	7.5	Reference		72.2	Reference		3.3	Reference		47.9	Reference	
Private for-profit health centres	8.4	1.22 (0.52 to 2.87)	0.654	66.7	0.89 (0.35 to 2.86)	0.810	0	NS		41.9	0.79 (0.30 to 2.08)	0.640
FBO dispensaries	7.9	0.62 (0.25 to 1.51)	0.294	72.6	1.75 (0.88 to 3.49)	0.113	2.6	2.84 (0.18 to 44.3)	0.456	43.5	0.53 (0.25 to 1.13)	0.100
FBO health centres	9.7	1.21 (0.55 to 2.67)	0.635	65.6	0.70 (0.36 to 1.37)	0.300	4.4	4.76 (0.17 to 135)	0.360	35.8	0.30 (0.14 to 0.67)	0.003
FBO hospitals	3.9	0.54 (0.24 to 1.21)	0.132	76.0	1.11 (0.62 to 1.97)	0.721	4.9	382.57 (0.15 to >1000)	0.136	40.3	0.35 (0.14 to 0.85)	0.021
Facility location												
Dar es Salaam	5.9	Reference		76.8	Reference		3.6	Reference		48.4	Reference	
Other urban/peri-urban	7.3	1.40 (0.67 to 2.93)	0.365	69.8	0.79 (0.42 to 1.50)	0.476	4.4	4.24 (0.49 to 39.96)	0.191	41.2	0.63 (0.32 to 1.25)	0.186
Rural	9.2	1.58 (0.60 to 4.15)	0.358	70.8	0.78 (0.38 to 1.60)	0.498	1.2	0.09 (0.0004 to 15.43)	0.355	45.9	1.22 (0.54 to 2.78)	0.634
<b>Staff characteristics</b>												
Age (years)												
<30	7.1	Reference		80.3	Reference		3.2	Reference		45.0	Reference	
30-49	8.5	0.96 (0.55 to 1.65)	0.869	73.4	0.50 (0.29 to 0.88)	0.017	5.3	2.41 (0.21 to 27.98)	0.482	44.8	1.18 (0.76 to 1.83)	0.462
≥50	7.8	1.00 (0.56 to 1.78)	0.988	41.0	0.25 (0.13 to 0.49)	<0.001	1.1	0.01 (0 to 344)	0.408	41.3	0.93 (0.47 to 1.86)	0.350
Gender												
Male	4.9	Reference		68.1	Reference		2.8	Reference		45.5	Reference	
Female	11.6	2.12 (1.25 to 3.60)	0.005	75.2	0.86 (0.50 to 1.45)	0.567	4.4	6.63 (0.06 to 689)	0.424	43.6	1.22 (0.80 to 1.86)	0.350
Cadre												
Medical doctor	4.4	0.94 (0.38 to 2.35)	0.902	29.2	0.96 (0.27 to 3.34)	0.946	4.1	0.37 (0.01 to 37.76)	0.558	53.4	0.40 (0.10 to 1.69)	0.213
Assistant medical officer/clinical officer	6.3	Reference		29.9	Reference		2.7	Reference		58.3	Reference	
Nurse/midwife	28.4	3.92 (2.03 to 7.56)	<0.001	76.2	5.94 (2.35 to 14.99)	<0.001	0	NS		52.0	0.94 (0.27 to 3.23)	0.918
Nursing/medical assistant	7.6	0.71 (0.33 to 1.53)	0.386	65.8	4.36 (1.55 to 12.26)	0.005	13.5	2.07 (0.11 to 38.76)	0.626	39.1	0.43 (0.10 to 1.74)	0.234
Laboratory technician/assistant	3.8	0.27 (0.13 to 0.55)	<0.001	84.3	14.22 (7.20 to 28.01)	<0.001	3.7	8.38 (0.17 to 405)	0.283	43.4	0.27 (0.08 to 0.94)	0.040

Table A3. Testing for a Hawthorne effect: is compliance associated with order number of patients observed?

	Model 1: unadjusted		Model 2: IPC indication		Model 3: facility and health worker characteristics		Model 4: health worker fixed effects	
	Coefficient (95%CI)	P value	Coefficient (95%CI)	P value	Coefficient (95%CI)	P value	Coefficient (95%CI)	P value
Order number of patients observed	0.002 (-0.002 to 0.006)	0.241	-0.005 (-0.007 to -0.002)	<0.001	-0.002 (-0.005 to 0)	0.050	0.0004 (-0.001 to 0.002)	0.658
Number of observations	3686		3686		3686		3686	
Number of facilities	220		220		220		220	

Notes: Table shows results from OLS regressions in which standard errors are clustered at the level of facility. Data are analysed at the level of patient observation. The dependent variable is IPC compliance defined as the proportion of indications for which the health worker complied with the correct action. The independent variable of interest is the order number of patients observed. Each health worker was observed for an average of 4.9 patient interactions (SD 4.2). Model 1 includes no other covariates. Model 2 includes an indicator for each IPC indication. Model 3 additionally controls for facility and health worker characteristics. Model 4 replaces the facility and health worker characteristics with health worker fixed effects.

Table A4. Unadjusted results

	Hand hygiene [N=8,651]		Glove use [N=4,912]		Disinfection of reusable equipment [N=751]		Waste management [N=4,296]	
	%	P value	%	P value	%	P value	%	P value
<b>Facility characteristics</b>								
Facility level and ownership		0.0180		0.3878		0.5817		0.0678
Private for-profit dispensaries	5.3		75.5		4.6		49.1	
Private for-profit health centres	8.5		71.4		0.0		41.4	
FBO dispensaries	6.3		79.8		3.2		49.0	
FBO health centres	10.2		71.0		5.6		36.6	
FBO hospitals	4.2		75.8		8.1		40.1	
Facility location		0.9743		0.2369		0.9529		0.1540
Dar es Salaam	6.5		79.4		5.0		49.2	
Other urban/peri-urban	6.9		73.0		6.0		40.2	
Rural	6.9		75.0		4.8		44.4	
<b>Staff characteristics</b>								
Age (years)		0.9947		<0.0001		0.1695		0.1249
<30	6.8		81.1		7.2		45.4	
30-49	6.9		76.0		7.9		43.7	
≥50	6.9		52.6		2.2		33.7	
Gender		0.0001		0.0100		0.3962		0.4421
Male	4.9		71.8		4.8		42.2	
Female	10.2		78.7	8.1	44.6			
Cadre		<0.0001		<0.0001		0.8093		0.0004
Medical doctor	8.7		29.1		6.9		NS	
Assistant medical officer/clinical officer	6.2		32.6		4.9		62.6	
Nurse/midwife	22.2		81.7		NS		54.2	
Nursing/medical assistant	13.0		76.0		NS		45.1	
Laboratory technician/assistant	2.3		82.7		NS		40.3	

Table A5. Multilevel mixed effects logistic regressions, adjusting for patient characteristics (not reported)

	Hand hygiene [N=8,651]			Glove use [N=4,912]			Disinfection of reusable equipment [N=751]			Waste management [N=4,296]		
	%	OR	P value	%	OR	P value	%	OR	P value	%	OR	P value
<b>Facility characteristics</b>												
Facility level and ownership												
Private for-profit dispensaries	5.3	Reference		75.5	Reference		4.6	Reference		49.1	Reference	
Private for-profit health centres	8.5	1.65 (0.58 – 4.70)	0.352	71.4	1.03 (0.48 – 2.21)	0.942	0.0	-	-	41.4	0.74 (0.31 – 1.76)	0.493
FBO dispensaries	6.3	0.84 (0.33 – 2.13)	0.719	79.8	1.63 (0.85 – 3.13)	0.139	3.2	1.99 (0.07 – 54.63)	0.683	49.0	0.74 (0.35 – 1.55)	0.420
FBO health centres	10.2	1.87 (0.80 – 4.34)	0.146	71.0	0.82 (0.45 – 1.49)	0.511	5.6	1.72 (0.07 – 44.14)	0.743	36.6	0.36 (0.18 – 0.71)	0.004
FBO hospitals	4.2	0.86 (0.34 – 2.16)	0.749	75.8	1.32 (0.70 – 2.48)	0.395	8.1	15.32 (0.43 – 548.16)	0.135	40.1	0.47 (0.23 – 0.96)	0.038
Facility location												
Dar es Salaam	6.5	Reference		79.4	Reference		5.0	Reference		49.2	Reference	
Other urban/peri-urban	6.9	1.22 (0.54 – 2.76)	0.635	73.0	0.74 (0.41 – 1.31)	0.299	6.0	3.17 (0.15 – 67.36)	0.460	40.2	0.67 (0.35 – 1.28)	0.219
Rural	6.9	0.87 (0.34 – 2.22)	0.768	75.0	0.64 (0.33 – 1.25)	0.193	4.8	0.36 (0.01- 14.7)	0.589	44.4	1.14 (0.54 – 2.40)	0.727
<b>Staff characteristics</b>												
Age (years)												
<30	6.8	Reference		81.1	Reference		7.2	Reference		45.4	Reference	
30-49	6.9	1.08 (0.80 – 1.45)	0.621	76.0	0.64 (0.50 – 0.82)	<0.001	7.9	2.55 (0.24 – 27.36)	0.440	43.7	0.83 (0.62 – 1.09)	0.182
≥50	6.9	0.91 (0.64 – 1.29)	0.605	52.6	0.33 (0.24 – 0.46)	<0.001	2.2	0.08 (0.00 – 1.61)	0.100	33.7	0.74 (0.48 – 1.15)	0.185
Gender												
Male	4.9	Reference		71.8	Reference		4.8	Reference		42.2	Reference	
Female	10.2	1.98 (1.50 – 2.60)	<0.001	78.7	0.89 (0.70 – 1.14)	0.370	8.1	2.42 (0.19 – 30.30)	0.492	44.6	1.01 (0.77-1.33)	0.945
Cadre												
Medical doctor	8.7	1.20 (0.73 – 1.98)	0.464	29.1	0.59 (0.33 – 1.06)	0.077	6.9	1.15 (0.05 – 25.85)	0.928	NS	NS	NS
Assistant medical officer/clinical officer	6.2	Reference		32.6	Reference		4.9	Reference		62.6	Reference	
Nurse/midwife	22.2	6.01 (4.03 – 8.96)	<0.001	81.7	10.32 (6.84 – 15.55)	<0.001	NS	NS	NS	54.2	0.82 (0.44 – 1.52)	0.524
Nursing/medical assistant	13.0	2.65 (1.66 – 4.22)	<0.001	76.0	6.03 (4.11 – 8.86)	<0.001	NS	NS	NS	45.1	0.58 (0.32 – 1.06)	0.076
Laboratory technician/assistant	2.3	0.27 (0.16 – 0.43)	<0.001	82.7	12.13 (9.11– 16.15)	<0.001	NS	NS	NS	40.3	0.25 (0.14 – 0.44)	<0.001

Table A6. Multilevel mixed effects logistic regressions with varying definitions of compliance for infectious waste management

	Requiring bag and bin colour to match for red and yellow bins (as presented in main paper) [N=4,296]			Not requiring bag and bin colour to match for red and yellow bins [N=4,296]		
	%	OR	P value	%	OR	P value
<b>Facility characteristics</b>						
Facility level and ownership						
Private for-profit dispensaries	49.1	Reference		62.2	Reference	
Private for-profit health centres	41.4	0.74 (0.31 – 1.77)	0.498	60.7	0.71 (0.32 – 1.57)	0.397
FBO dispensaries	49.0	0.74 (0.35 – 1.55)	0.420	64.9	1.08 (0.53 – 2.15)	0.826
FBO health centres	36.6	0.36 (0.18 – 0.72)	0.004	55.6	0.71 (0.37 – 1.34)	0.291
FBO hospitals	40.1	0.46 (0.22 – 0.95)	0.037	55.9	0.61 (0.31 – 1.20)	0.151
Facility location						
Dar es Salaam	49.2	Reference		59.9	Reference	
Other urban/peri-urban	40.2	0.66 (0.34 – 1.26)	0.210	58.7	1.29 (0.71 – 2.34)	0.409
Rural	44.4	1.13 (0.54 – 2.38)	0.741	59.0	1.52 (0.76 – 3.02)	0.234
<b>Staff characteristics</b>						
Age (years)						
<30	45.4	Reference		61.7	Reference	
30-49	43.7	0.83 (0.62 – 1.09)	0.182	59.9	0.82 (0.42 – 1.04)	0.107
≥50	33.7	0.74 (0.48 – 1.15)	0.185	47.9	0.62 (0.42 – 0.92)	0.016
Gender						
Male	42.2	Reference		57.9	Reference	
Female	44.6	1.01 (0.77-1.33)	0.945	61.0	0.92 (0.73-1.17)	0.495
Cadre						
Medical doctor	NS	NS	NS	NS	NS	NS
Assistant medical officer/clinical officer	62.6	Reference		73.0	Reference	
Nurse/midwife	54.2	0.82 (0.44 – 1.52)	0.524	71.3	0.70 (0.41 – 1.20)	0.198
Nursing/medical assistant	45.1	0.58 (0.32 – 1.06)	0.076	60.0	0.63 (0.37 – 1.07)	0.085
Laboratory technician/assistant	40.3	0.25 (0.14 – 0.44)	<0.001	56.5	0.36 (0.21 – 0.55)	<0.001

Table A7. Comparison of IPC compliance in Tanzania and Kenya

Indication	Kenya (Bedoya et al, 2017)		Tanzania (this study)	
	N	Compliance	N	Compliance
Hand hygiene before touching a patient	8062	1.5%	1464	4.4%
Hand hygiene after touching a patient	8073	1.6%	1464	9.2%
Hand hygiene before a clean/aseptic procedure	1187	2.7%	680	7.1%
Hand hygiene after exposure to body fluids	1021	6.8%	677	13.4%
Hand hygiene after contact with patient surroundings	13599	0.7%		
Hand hygiene before injection/blood draw procedure	7393	1.9%	2185	3.4%
Hand hygiene after injection/blood draw procedure	7369	6.4%	2185	8.3%
New gloves are used for each patient	3633	63.9%	2043	80.0%
Hand hygiene is performed after wearing gloves	3658	5.4%	1788	3.6%
Health workers wear gloves for potential contact with blood, body fluids, mucous membranes	9383	39.8%	2872 <sup>1</sup>	71.1%
Gloves are removed and discarded after patient interaction/before leaving care area	3635	56.9%	1993	72.2%
Needles are used for only one patient	7235	99.9%	2192 <sup>2</sup>	99.8%
Syringes are used for only one patient	2952	99.1%		
Skin is prepared using aseptic procedure	7437	69.8%	2181	94.9%
Health workers disinfect (standard) thermometers after patient use	1302	29.5%	224 <sup>3</sup>	13.0%
Health workers disinfect stethoscopes after patient use	1622	2.8%	579 <sup>3</sup>	0.7%
Syringes segregated in a puncture-resistant sharps container	2856	73.5%		
Needle segregated in puncture-resistant sharps container	7201	85.2%	2154 <sup>2</sup>	90.9%
Health workers segregate other medical waste related to injections and blood draws, including swabs/gauze and excluding syringes and needles and gloves, into the corresponding red or yellow color-coded bins with matching bags	7010	6.8%	2120 <sup>4</sup>	18.7%
Health workers segregate other medical waste related to patient examination, including swabs/gauze into the corresponding red or yellow color-coded bins with matching bags if it is infectious in nature	1836	0.3%	186	13.4%

Notes: 1. This combines two indications presented in the main paper. 2. This number includes all sharps (needles and lancets) 3. In our Tanzania study, this indication was also coded as compliant if disinfected before patient use 4. In our Tanzania study, this indication was also coded as compliant if segregated into the sharps container.