Supplementary materials

Description of variables construction

All variables used in the analyses are described in the tables below. The first column lists the variable names used in this replication exercise, as found in the associated do files. The second and third columns indicate when the variable was measured (or when its components were measured), and whether it comes from a facility-level or household-level survey. If the relevant information was not collected during one of the surveys, a "-" is included. If there is sufficient information to calculate a variable, but it is not used in any of the original analyses, the box is shaded in gray.

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
absenceRate	-	facility	3	{number of workers from facility at baseline (hs4q1) - number of staff present at endline (hs1q1 or hs13q7) - number of staff out for outreach at endline (hs5q8)}/number of workers from facility at baseline
avgAdultOP	facility	facility	1, 5, 7	BL: facility-level average of hs8q3-hs8q4 (monthly counts of total number of outpatients in daily patient records - total number of outpatients younger than 5 years old in daily patient records; over Sept 2003-Nov 2003) EL: facility-level average of hs7q3c, hs7q3e, hs7q3g, hs7q3i, and hs7q3k (monthly counts of outpatients 5 years and older from daily patient records for March, May, July, September, November 2005)
avgAdultOPStd	facility	facility	7	same as avgAdultOP, but standardised by standard deviation in control group
avgANC	-	facility	5	facility-level average of hs7q6b, hs7q6c, hs7q6d, hs7q6e, hs7q6f, hs7q6g, hs7q6h, hs7q6i, hs7q6j, and hs7q6k (monthly counts of antenatal care patients, including reattendance, from antenatal care register for February - November 2005)
avgChlRecd	facility	facility	1	facility-level average of number of tablets received of chloroquine (measured in tablets) over Jan-Dec 2003 (section 5)
avgCotRecd	facility	facility	1	facility-level average of number of tablets received of cotrimoxazole (measured in tablets) over Jan-Dec 2003 (section 5)

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
avgDel	facility	facility	1, 5	BL: facility-level average of hs8q5 (monthly counts of total number of deliveries from maternity unit records for Sept 2003-Nov 2003) EL: facility-level average of hs7q5b, hs7q5c, hs7q5d, hs7q5e, hs7q5f, hs7q5g, hs7q5h, hs7q5i, hs7q5j, and hs7q5k (monthly counts of deliveries from maternity unit records for February - November 2005)
avgDeliveryCharge	household	household	1	s7q19 ("Did they charge you for delivery?") = "yes"
avgDrugCharge	household	household	1	s5q3b1 ("At health facility "X", what did you have to pay for and how much did you pay?") = "drugs" and s4q2 ("Were you (child) given any drug or injection at the health facility?")="drugs (tablets) only" or "drugs (syrups) only" or "both drugs (tablets and/or syrups) and injection" or "other e.g. eye drops, ointments"
avgEryRecd	facility	facility	1	facility-level average of number of tablets received of erythromycin (measured in tablets) over Jan-Dec 2003 (section 5)
avgFP	-	facility	5	facility-level average of hs7q7b, hs7q7c, hs7q7d, hs7q7e, hs7q7f, hs7q7g, hs7q7h, hs7q7i, hs7q7j, and hs7q7k (monthly counts of people seeking family planning services, including reattendance, from family planning register for February - November 2005)
avgGenTxCharge	household	household	1	s5q3c1 ("At health facility "X", what did you have to pay for and how much did you pay?") = "general treatment" and s2q10 ("What was the purpose of the visit/what symptoms did you have?") = "fever" or "vomiting" or "diarrhea" or "cough" or "loss of appetite" or "joint pains" or "sore throat" or "headache" or "stomach pain" or "bleeding" or "weakness, tiredness" or "tooth ache" or "pneumonia" [i.e., excluding visits for vaccination, immunization, delivery, supplementary nutrition, condoms, antenatal service, family planning, and other]
avgInjectionCharge	household	household	1	s5q3g1 ("At health facility "X", what did you have to pay for and how much did you pay?") = "injection" and s4q2 ("Were you (child) given any drug or injection at the health facility?")="injection only" or

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
				"both drugs (tablets and/or syrups) and injection"
avgMebRecd	facility	facility	1	facility-level average of number of tablets received of mebendazole (measured in tablets) over Jan-Dec 2003 (section 5)
avgOutreach	facility	facility	13	BL: facility-level average of number of outreach visits done by the facility between September and December 2003 (hs3q6) EL: facility-level average of number of outreach visits done by the facility between September and December 2005 (hs4q16c, hs4q16d , hs4q16e, hs4q16f)
avgQuiRecd	facility	facility	1	facility-level average of number of tablets received of quinine (measured in tablets) over Jan-Dec 2003 (section 5)
awareOfCBM	-	household	13	Indicator for whether the household is aware of the CBM program (s6q19)
BCGImm	household	household	4, 9-11	indicator for s8q11e/s8q10e ("How many times has [each child under 5 years] been immunized with BCG?") > 0; missing if "don't know"
CBOBefore	other	-	7, 12	indicator for whether one of the implementing CBO's was present in the community prior to the intervention; given by the authors (cbo_present_before)
childUnder5InHH	household	household	8	s8q1 ("Does this household have any children under 5 years old?") = "yes"
daysNoPwr2004	facility	-	1	HF2004 hs2q17c ("How many days last month did you experience power shortages that lasted longer than 30 minutes?") or if hs2q16 ("Does this health facility have electricity?")="no", daysNoPwr2004=31
death	-	household	6, 12	using s8q3 ("In this household, has any child under 5 years old died since January 2005?" = "yes") and s8q3b ("At what age did the child die?"), identified each child death and the cohort of the child who had died

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
deathRatePer1000	-	household	6, 7, 12	using immunization records, total number of children currently living under five years (at time of endline, age = s8q10a) are counted and summed, by facility-level cohort; using s8q3 ("In this household, has any child under 5 years old died since January 2005?" = "yes") and s8q3b ("At what age did the child die?"), total number of children who were in each age range and died in the past year are counted and summed, by facility-level cohort; facility-level estimates of mortality are calculated for each cohort (e.g., facility-level mortality rate for children under one = {number of children in that facility's catchment area who died in the past year and were under one at the time of death / (number of children in that facility's catchment area who died in the past year and were under one at the time of death + number of children in that facility's catchment area who are currently alive and under one year)}) [note: while immunization data were collected at baseline, no question about deaths in the past year were asked]
deathRatePer1000Std	-	household	7	same as deathRatePer1000, but standardised by standard deviation in control group
discFacLCMtgs	-	household	2	s6q24 ("In the LC meetings, do you discuss the functioning of health facility "X"?") = "yes"
distNearestLC1	facility	-	1	hs2q24g ("Distance to village headquarters (LC1)") in km
distNearestPubProv	facility	-	1	hs2q27e ("How far away (in km) from here are the closest health centers and hospitals?"): if previous is missing: hs2q26e ("How far away (in km) from here are the closest dispensaries/DMUs?"); if both previous are missing hs2q28e ("How far away (in km) from here are the closest clinics?")
DPTAppropriate	household	household	9	= DPTImm if child is > 2 months, = DPTImmInf if child is < 3 months
DPTImm	household	household	4, 10-11	indicator for s8q11d/s8q10d ("How many times has [each child under 5 years] been immunized with DPT?") > 2; missing if "don't know"
DPTImmInfant	household	household	4, 10-11	indicator for s8q11d/s8q10d ("How many times has [each child under 5 years] been immunized with DPT?") > 0; missing if "don't know"

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
drankSafely2004	facility	-	1	HF2004 hs2q14 ("Can you drink safely from your source of water today?") = "yes"
equipmentUsed	household	household	1, 3	BL: s3q8 ("Did the staff use any equipment when examining you (child)?") = "yes" EL: s3q9 ("Did the staff use any equipment when examining you (child)?") = "yes"
floorCondition	facility	facility	3	4 - hs13q15 ("What was the condition of the floor?") 1 = "clean", 2 = "fairly clean", 3 = "dirty", 4 = "very dirty" [BL hs12q16]
freeToExpress	household	household	1	s3q6 ("Did you feel free to express yourself to the person who examined you (child)?") 1="no, not at all", 2="a bit, but the person was impatient", 3="with some difficulty", 4="with no difficulty, the person examining me encouraged me to express my problem"
furnitureCondition	facility	facility	3	4 - hs13q17 ("What was the condition of the furniture?") 1 = "clean", 2 = "fairly clean", 3 = "dirty", 4 = "very dirty" [BL hs12q18]
healthInfo	-	household	3	s6q9 ("Do you receive information about the importance of visiting health facility "X" for medical treatment and the dangers of self-treatment?") = "yes"
hhs	other	-	1	number of households in catchment area; given variable, from authors: "data was collected from UBOS maps and from the 5 km radius of the health facility"
hhsPerVillage	other	-	1	divided number of households in catchment area by number of villages in catchment area; from authors: "data was collected from UBOS maps and from the 5 km radius of the health facility"
impOfFP	-	household	3	s6q10 ("Do you receive information about the importance of visiting health facility "X" for family planning services?") = "yes"
informAbtDrugDel	household	household	1	s6q1 ("Do you know WHEN health facility "X" receives drugs?")="yes"
lowQualRoof	household	household	8	s9q9 ("Which material is the roof of the respondent's house made of?") = "thatched" [exclude "other" responses]
lowQualWalls	household	household	8	s9q8 ("Which material are the walls of the respondent's house made of?") = "mud and poles" or "un-burnt bricks" [exclude "other" responses]
measlesImm	household	household	4, 9	indicator for s8q11b/s8q10b ("How many times has [each child under 5 years] been immunized for measles?") > 0; missing if "don't know"

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
monitoringIndex	-	facility	7	first component of pca analysis using suggestionBox, numWaitingCards, posterFreeServices, posterPtRts, discFacLCMtgs, and recdInfoAbtHUMC
newspaper	facility	-	1	hs2q21 ("Do the staff have access to a newspaper in health facility?")="yes"
NGOPct	household	household	1	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); NGO facility percentage was identified by dividing total household-level visits to an NGO facility by total household-level visits to any provider
numAdults	household	household	8	s1q3 ("How many adults live in this household (greater than or equal to 15 years old)?")
numBirthsOverall	-	household	6, 12	using immunization records, total number of children currently under one year (at time of endline, age = s8q10a) are counted and summed with count of number of children who died in past year (s8q3, "In this household, has any child under 5 years old died since January 2005?" = "yes") and were less than one year when they died (s8q3b, "At what age did the child die?")
numChildrenUnder5	household	household	8	s8q2 ("How many children in this household are under 5 years old?")
numWaitingCards	-	facility	2	hs12q9 ("At the health facility, do you see that patients have numbered waiting cards in the waiting room?") = "yes"
otherGovtPct	household	household	1	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); other government facility percentage was identified by dividing total household-level visits to another government facility by total household-level visits to any provider

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
otherHFPct	household	household	1	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); other health facility percentage was identified by dividing total household-level visits to another facility by total household-level visits to any provider
paidAttn	household	household	1	s3q5 ("Did you feel that the person who examined you (child) paid attention to your problem?") 1="no, the person was not interested", 2="yes, the person was half attentive", 3="yes", 4="yes, the person was interested and asked questions"
patRightsIndex	-	facility	7	percent known of five patient rights, by the respondent: hs3q18a ("free health care"), hs3q18b ("should be attended to within one hour"), hs3q18c ("right to confidential treatment, i.e., the staff should not be talking about patients' health or illness with other people"), hs3q18d ("polite treatment to the patient and its attendants, without discriminaton, i.e. on first come-first serve basis"), and hs3q18e ("right to receive information on the drugs received at the health facility and how they are utilized")
pipedWater	facility	facility	1	hs2q13a ("What is the main souce of drinking water for this health facility during the rainy season?")="piped" or hs2q13c ("What is the main source of drinking water for this health facility during the dry season?")="piped"
polioAppropriate	household	household	9	= polioImm if child is > 2 months, = polioImmInf if child is < 3 months
polioImm	household	household	4, 10-11	indicator for s8q11c/s8q10c ("How many times has [each child under 5 years] been immunized for polio?") > 2; missing if "don't know"
polioImmInfant	household	household	4, 10-11	indicator for s8q11c/s8q10c ("How many times has [each child under 5 years] been immunized for polio?") > 0; missing if "don't know"
polite	household	household	1	s3q4 ("Did the person who examined you (child) behave politely towards you?") 1="no, he/she was rude", 2="no, he/she was indifferent, did not care", 3="yes,

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
				they were polite", 4="yes, they were extremely polite"
posterFreeServices	-	facility	2	hs12q5 ("In the facility, do you see information posted that services are free?") = "yes"
posterPtRts	-	facility	2	hs12q4 ("In the facility, do you see information posted on "patients rights and obligations?") = "yes"
pregnant	household	household	6, 12	BL: s7q1 ("Has anyone in your household been pregnant since January 2003?") = "yes" EL: s7q1 ("Has anyone in your household been pregnant since January 2005?") = "yes"
projectFacilityPct	household	household	1, 5	BL: s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); project facility percentage was identified by dividing total household-level visits to a project facility by total household-level visits to any provider EL: s1q11b-s1q11i ("During the period January 2005 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); project facility percentage was identified by dividing total household-level visits to a project facility by total household-level visits to any provider
pvtForProfPct	household	household	1	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); private-for-profit facility percentage was identified by dividing total household-level visits to a private-for-profit facility by total household-level visits to any provider

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
radio	facility	-	1	hs2q19 ("Does the staff have access to radio at the health facility?")="yes"
recdInfoAbtHUMC	-	household	2	s6q27 ("Since January 2005, have you received information about the Health Unit Management Committee and their roles and responsibilities?") = "yes"
secondaryEdu	household	household	8	s9q6 ("What is your [respondent, i.e., person who went to a project health facility most recently] highest level of education?") = "secondary school" [exclude "other" responses]
selfTxPct	household	household	1	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); self treatment percentage was identified by dividing total household-level episodes of self treatment by total household-level visits to any provider
sepMatUnit	facility	-	1	hs2q1 ("Is this facility a dispensary or a DMU?")="dispensary with maternity unit (DMU)"
smell	facility	facility	3	4 - hs13q18 ("What was the smell in the health facility?") 1 = "clean, disinfected", 2 = "fairly clean", 3 = "unclean, dirty", 4 = "very unclean, musty, dirty" [BL hs12q19]
stockouts	facility	facility	3	facility-level average of average monthly stockouts of erythromycin (hs8q1b1 - hs8q1b9) cotrimoxazole/septrin (hs8q3b1 - hs8q3b9), and mebendazole (hs8q5b1 - hs8q5b9), over April 2005 - December 2005 [note: data are also available on chloroquine and quinine, but these are excluded from this measure; if included, number of facilities with data falls from 42 to 36; coefficient estimate in main regression in Table 3 drops to -0.10 (p=0.17); missing data: erythromycin: 8/50; chloroquine: 1/50; cotrimoxazole 0/50; quinine: 9/50; mebendazole: 0/50]
STTHPct	household	household	5	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); self

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
				treatment/traditional healer percentage was identified by dividing total household-level occurrences of self treatment plus visits to a traditional healer by total household-level visits to any provider
suggestionBox	-	facility	2	hs12q10 ("At the health facility, do you see a suggestion box?") = "yes"
totalALevel	facility	-	1	count total number of staff in facility with hs4q6a ("Highest level of education")="University" or "A-level"
totalBelowALevel	facility	-	1	count total number of staff in facility with hs4q6a ("Highest level of education")="O-level" or "Primary school" or "nursing school" or "institution" or "training in medical facility" or "none"
tradHealerPct	household	household	1	s1q14b-s1q14i ("During the period July 2003 until today, who in your household, where and how many times did he/she seek care?"): total visits to each type of provider are summed at the household level for all members who were at least 15 years old (i.e., exclude visits for household members < 15 years); traditional healer percentage was identified by dividing total household-level visits to a traditional healer by total household-level visits to any provider
village1	other	-	1	number of villages in first strata around the health facility; given variable, from authors: "data was collected from UBOS maps and from the 5 km radius of the health facility"
village3	other	-	1	number of villages in third strata around the health facility; given variable, from authors: "data was collected from UBOS maps and from the 5 km radius of the health facility"
villagen	other	-	1	number of villages in catchment area; given variable, from authors: "data was collected from UBOS maps and from the 5 km radius of the health facility"
vitASupp	household	household	4, 9-11	s8q11f/s8q10f ("How many times has [each child under 5 years] received a vitamin A supplement?"); missing if "don't know"
vitASuppInfant	household	household	4, 10-11	indicator for s8q11f/s8q10f ("How many times has [each child under 5 years] received a vitamin A supplement?") > 0; missing if "don't know"

Variables	Measured at Baseline	Measured at Endline	Tables Used In	How constructed
waitingTime	household	household	1, 3	BL: time left the HF (s2q9) - time arrived at the HF (s2q3); drop if date of departure is different day from arrival or if departure time is prior to arrival time EL: time left the HF (s2q11) - time arrived at the HF (s2q4); drop if date of departure is different day from arrival or if departure time is prior to arrival time
wallCondition	facility	facility	3	4 - hs13q16 ("What was the condition of the walls?") 1 = "clean", 2 = "fairly clean", 3 = "dirty", 4 = "very dirty" [BL hs12q17]
WAZ	-	household	6, 12	s8q12b ("weight"), s8q12a ("age in months"), gender for children under 18 months excluding observations with recorded weight above the 90th percentile in the growth chart reported in Cortinovis *et al.* (1997)