

Additional file 3. All indicator heatmap by hospital bed number

	Level 4 small hospitals (n=23)	Level 4 large hospitals (n=23)	Level 5 & 6 hospitals (n=15)	Total (n=61)
Human resources for health				
At least five medical specialists	39%	44%	67%	48%
At least one surgeon	96%	96%	100%	97%
At least one internist	48%	57%	73%	57%
At least one paediatrician	70%	91%	100%	85%
At least one obstetrician-gynaecologist	87%	91%	100%	92%
At least one anaesthesiologist	44%	26%	93%	49%
Lab tests				
<i>Rapid test</i>				
HIV rapid test	87%	91%	87%	89%
Syphilis rapid test	96%	91%	100%	95%
Urine rapid test for pregnancy	100%	91%	100%	97%
Urine dipstick 3	35%	44%	53%	43%
Haemoglobin A1c rapid test	57%	57%	87%	64%
Colorimeter or haemoglobinometer	70%	61%	67%	66%
Glucometer	96%	96%	93%	95%
Glucometer test strips/discs	96%	100%	93%	97%
<i>Basic lab test</i>				
Any blood chemistry test	83%	78%	93%	84%
Renal function test	70%	74%	93%	77%
Other tests for bilirubin	65%	70%	67%	67%
ABO blood grouping testing	83%	74%	80%	79%
Rhesus blood grouping testing	83%	74%	87%	80%
Cross-match testing	57%	70%	80%	67%
<i>Infectious disease test</i>				
Onsite PCR for HIV viral load or HIV early-infant diagnosis	0%	4%	27%	8%
Xpert MTB/RIF rapid diagnostic testing for TB	61%	83%	87%	75%
Urine microscopy	91%	83%	93%	89%
Malaria smears	91%	83%	93%	89%
Microscopy test CSF body fluid counts	83%	78%	93%	84%
Cryptococcal antigen testing	74%	78%	80%	77%
Gram stain testing	91%	78%	93%	87%
Culture and sensitivity test	57%	74%	87%	71%
Blood cultures test	17%	22%	80%	34%
<i>Advanced lab test</i>				
Fine needle aspiration cytology	22%	44%	67%	41%
Core needle biopsy of lump specimen	35%	44%	67%	46%
Prostate Specific Antigen (PSA) Testing	48%	61%	80%	61%
Blood gas measurement	9%	13%	60%	23%
Cardiac marker (CK, Troponin) test	9%	30%	53%	28%
PAP smear read in facility	17%	13%	33%	20%
VIA/VILLI read in facility	96%	78%	73%	84%
Prepare and examine tissues or samples for cancer	0%	4%	53%	15%

Oxygen and respiratory support

Surgery oxygen equipment functioning - Oxygen tank/cylinder with attached pressure gauge, pressure regulator

87% 83% 73% 82%

Maternity paediatric-sized oxygen delivery apparatus functioning

87% 74% 93% 84%

Outpatient pulse oximeter functioning

39% 48% 60% 48%

Maternity pulse oximeter functioning

35% 52% 67% 49%

Paediatrics/neonatal oxygen functioning

100% 100% 100% 100%

Emergency pulse oximeter functioning

65% 65% 100% 74%

Ventilator available

52% 52% 87% 61%

Chest tubes available

30% 61% 80% 54%

Adult CPAP equipment available

13% 30% 40% 26%

Emergency paediatrics and neonatal CPAP available

17% 26% 20% 21%

Equipment

ECG offered

39% 35% 93% 51%

ECG equipment functioning

26% 35% 87% 44%

Ultrasound offered

83% 91% 100% 90%

Ultrasound equipment functioning

83% 91% 100% 90%

X-ray offered

87% 87% 100% 90%

X-ray equipment functioning

87% 83% 100% 89%

CT scan offered

26% 22% 80% 38%

CT scan equipment functioning

26% 17% 73% 34%

24 7 availability

Emergency service 24/7

26% 13% 47% 26%

Medical officer onsite or oncall in facility 24/7

78% 70% 93% 79%

Formal triage tool used 24/7

26% 17% 47% 28%

Emergency surgery and anaesthesia 24/7

17% 13% 40% 21%

Emergency radiology 24/7

91% 87% 100% 92%

Emergency diagnostics 24/7

96% 87% 93% 92%

Emergency pharmacy 24/7

87% 83% 93% 87%

Blood transfusion

91% 83% 100% 90%

Infection prevention and control

Facility has IPC guideline

87% 70% 87% 80%

Technical IPC committee

96% 100% 93% 97%

Dedicated (full-time) IPC staff

57% 52% 73% 59%

Guidelines for cleaning

48% 57% 33% 48%

Step-by-step techniques for specific tasks

44% 57% 60% 53%

Cleaning roster or schedule specifying responsibility

48% 61% 73% 59%

Cleaning beds observed

44% 61% 67% 56%

Cleaning counters/tables observed

48% 61% 60% 56%

Cleaning toilets observed

48% 70% 67% 61%

Quality and safety

Monthly quality assurance committee meeting

26% 35% 53% 36%

Documentation of quality assurance information reviewed

52% 44% 67% 53%

Ongoing quality improvement using Plan-Do-Check-Study-Act approach

64% 67% 67% 66%

Multi-disciplinary quality improvement team

65% 61% 80% 67%

Departmental specific work improvement teams

65% 61% 80% 67%

Documentation of improvement achieved as a result of quality improvement process

48% 52% 33% 46%

Kenya Quality Model for Health completed in 2017 or 2018	48%	44%	60%	49%
Formal case reviews carried out at least monthly	57%	57%	67%	59%
Death reviews results recorded	91%	91%	100%	93%
Guidelines of events that are considered adverse and required to be reported	22%	35%	33%	30%
Notes or reports that show evidence of review and plan of action for the reports about adverse events	22%	39%	27%	30%
Written guidelines that define nosocomial infections and the process for reporting	9%	9%	40%	16%
Report or record shows nosocomial infections reported over the past 6 months	9%	4%	33%	13%
Written policies and procedures for identifying and managing drug-use problems	70%	65%	67%	67%
Surgery related mortality and morbidity review meetings at least monthly	44%	39%	60%	46%
Surgery related mortality and morbidity review meeting results recorded	44%	57%	53%	51%
Written guidelines or instructions for reporting on adverse events related to surgery	9%	26%	33%	21%
Notes or reports that show evidence of review and plan of action for the surgery reports	9%	17%	27%	16%
Guidelines of postoperative infection definition	17%	26%	33%	25%
Notes or reports that show evidence of review and plan of action for the reports about postoperative infection	13%	17%	13%	15%
Indicator on deaths prior to discharge among patients who had a procedure in a surgical theater monitored	9%	22%	53%	25%
Indicator on deaths prior to discharge among < 15 year old patients who had a procedure in a surgical theater monitored	9%	17%	47%	21%
Indicator on post-operative surgical wound infection numbers monitored	9%	17%	40%	20%
Facility monitor unplanned and unexpected hospital readmissions for any conditions	30%	26%	40%	31%

Surgery

Surgery equipment & medication

Basic operating table functioning	96%	96%	100%	97%
Overhead operating light functioning	96%	96%	100%	97%
Cardiac monitor functioning	87%	83%	100%	89%
EKG electrodes functioning	83%	70%	100%	82%
Thermometer functioning	96%	87%	93%	92%
Blood pressure apparatus functioning	70%	91%	93%	84%
Suction apparatus functioning	100%	96%	100%	98%
Anaesthesia machine available	83%	74%	93%	82%

Surgery service

Wound debridement service available	100%	100%	100%	100%
Acute burn management service available	96%	96%	100%	97%
Closed repair of fracture service available	96%	91%	100%	95%
Closed reduction of dislocated joint service available	96%	91%	100%	95%
Cricothyroidotomy service available	78%	57%	80%	71%
Male circumcision service available	100%	96%	93%	97%
Hydrocele reduction service available	100%	91%	93%	95%
Biopsy of lymph node or mass service available	100%	100%	100%	100%
Appendectomy service available	100%	96%	100%	98%
Hernia repair service available	100%	96%	100%	98%
Open reduction and fixation service available	100%	83%	100%	93%
Any procedures using laparotomy service available	100%	96%	100%	98%

Internal medicine

Internal medicine equipment & medication

Defibrillator available	57%	39%	73%	54%
Renal dialysis/haemodialysis machine available	44%	65%	93%	64%
Lumbar puncture kit available	22%	26%	80%	38%

Internal medicine service

ART prescription and follow-up for U5 children service available	96%	96%	93%	95%
HIV/AIDS care and support service available	100%	96%	100%	98%
Diagnose and/or manage diabetes available	100%	100%	100%	100%
Diagnose and/or manage acute myocardial infraction available	83%	74%	93%	82%
Diagnose and/or manage chronic respiratory disease available	100%	100%	100%	100%
Diagnose and/or manage chronic kidney disease available	83%	91%	100%	90%
Screening, diagnosis and/or treatment services for breast cancer available	78%	87%	93%	85%
Screening, diagnosis and/or treatment services for colorectal cancer available	35%	30%	60%	39%
Screening, diagnosis and/or treatment services for prostate cancer available	61%	83%	87%	75%
Palliative care service available	48%	65%	100%	67%

Paediatrics**Paediatrics equipment & medication**

Phototherapy machine available	52%	52%	67%	56%
Infant incubator available	74%	78%	87%	79%
Bed or location for KMC caregiver overnight	61%	70%	80%	69%
Exchange transfusion blood available today	26%	17%	60%	31%
Incubator available today	96%	100%	100%	98%
Radiant warmer available today	91%	96%	93%	93%
Artificial ventilation available today	48%	57%	73%	57%
Device for intraosseous access available	17%	30%	53%	31%

Paediatrics service

KMC for premature or LBW used	83%	87%	93%	87%
Newborn sepsis service available	100%	96%	100%	98%
Newborn sepsis full antibiotics regimen and follow-up always available	91%	87%	87%	89%

OBGYN**OBGYN equipment & medication**

Blood pressure apparatus functioning	91%	100%	100%	97%
Infant scale (with 100 gram gradation) functioning	87%	96%	100%	93%
Resuscitation table (with heat source) functioning	91%	100%	93%	95%
Self-inflating bag and mask for resuscitation functioning	87%	91%	80%	87%
Newborn bag and mask size 0 for resuscitation of pre-term babies functioning	91%	91%	87%	90%
Newborn bag and mask size 1 for resuscitation of term babies functioning	96%	96%	93%	95%
Magnesium sulphate injection available	96%	96%	100%	97%
Dexamethasone injection available	91%	91%	73%	87%
Misoprostol tablet 200 mcg available	74%	70%	73%	72%
Oxytocin injection available	100%	96%	100%	98%

OBGYN service

Active management of third stage labour (AMTSL) service available	100%	100%	100%	100%
Monitoring and management of labor using a partograph service available	96%	96%	100%	97%
Hygienic cord care service available	100%	91%	93%	95%

Parenteral administration of antibiotics carried out	100%	100%	100%	100%
Parenteral administration of oxytocic for treatment of postpartum haemorrhage carried out	100%	100%	100%	100%
Assisted vaginal delivery using manual vacuum extraction (MVE) or forceps carried out	57%	74%	73%	67%
Manual removal of placenta carried out	100%	100%	100%	100%
Removal of retained products of conception using D&C or manual vacuum aspiration carried out	83%	83%	100%	87%
PMTCT available	100%	100%	100%	100%
Treatment of pre-invasive cervical cancer available	44%	48%	53%	48%
Mental health / neurology				
Any mental/neurological services offered	65%	96%	93%	84%
Mental health inpatient ward available	26%	48%	80%	48%
Neurological health inpatient ward available	13%	22%	67%	30%
Depression diagnosis and follow-up available	48%	87%	87%	72%
Psychosis diagnosis and follow-up available	52%	91%	87%	75%
Epilepsy diagnosis and follow-up available	57%	91%	87%	77%