

MEASURING AND IMPROVING PATIENT SAFETY IN PRIMARY CARE SETTINGS IN KENYA

THE KENYA PATIENT SAFETY IMPACT EVALUATION (KEPSIE)



WORLD BANK GROUP

The KePSIE research team is led by Jishnu Das and Guadalupe Bedoya and includes Amy Dolinger, Ana Goicoechea and Jorge Coarasa

The KePSIE operational team is led by Khama Rogo and includes Njeri Mwaura and Frank Wafula.

Expanding global knowledge, producing global public goods

A hospital with poor hygiene was responsible for the first Ebola outbreak in 1976:

“In their hospital, they regularly gave pregnant women vitamin injections using unsterilized needles. By doing so, they infected many young women in Yambuku (then Zaire, now DRC) with the virus.” “Clinics that failed to observe this and other rules of hygiene functioned as catalysts in all additional Ebola outbreaks.” Their mistakes, “drastically sped up the spread of the virus, or made the spread possible in the first place. Even in the current Ebola outbreak in West Africa, hospitals unfortunately played this ignominious role in the beginning”

– **Peter Piot**

- Lack of patient safety in health care facilities is a leading cause of infections in low-income countries
- Yet, improving patient safety remains a challenge
- Even measurements of patient safety in primary care settings are lacking
- KePSIE: One of the worlds largest trials on improving patient safety, testing at scale complementary approaches to protect patients and prevent disease outbreaks
- KEPSIE provides
 - Validated tools to measure patient safety and assess facility performance in resource-poor primary care settings across multiple domains
 - Development of an inspection checklist in collaboration with the country and large-scale pilot of inspections using a professional cadre
 - Globally relevant empirical evidence on the effectiveness of government inspections and consumer empowerment to ensure patient safety

Project Components

- In 2012, Kenyan public and private stakeholders requested further WBG support to move the patient safety agenda forward.

Develop a regulatory framework

- Refine patient safety checklist
- Create a scoring system to categorize facilities according to patient safety risk
- Develop a transparent set of warnings and sanctions according to facility risk level

Design and pilot instruments to measure patient safety

- Facility characteristics
- Compliance with patient safety checklist
- Patient socioeconomic characteristics, choice of facility and perception of patient safety
- Providers knowledge and practice of infection prevention and control (IPC)
- Diagnostic accuracy and treatment appropriateness

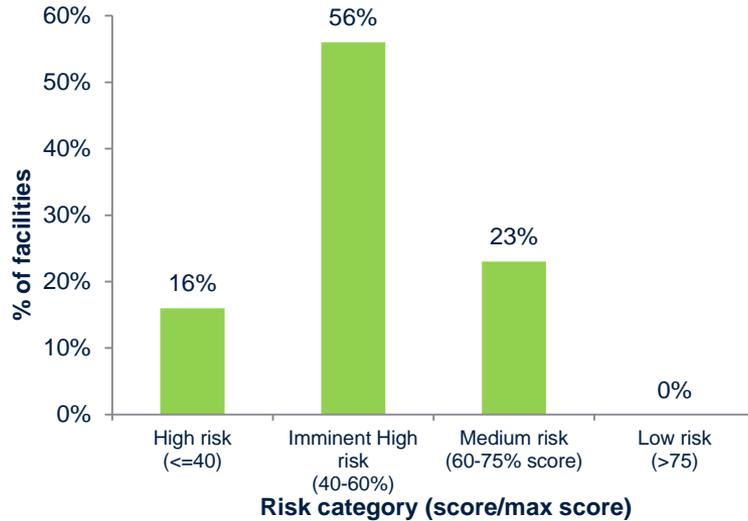
Test and measure impact of different mechanisms for patient safety improvement

- 100% probability of inspection (currently 8%) + strict enforcement of warnings and sanctions by joint health inspectors
- Information to providers on minimum patient safety compliance gaps and remedial actions
- Consumer empowerment and demand shifting through public disclosure of facility risk

A multidisciplinary WBG team has designed and piloted a first-of-its-kind patient safety measurement toolkit

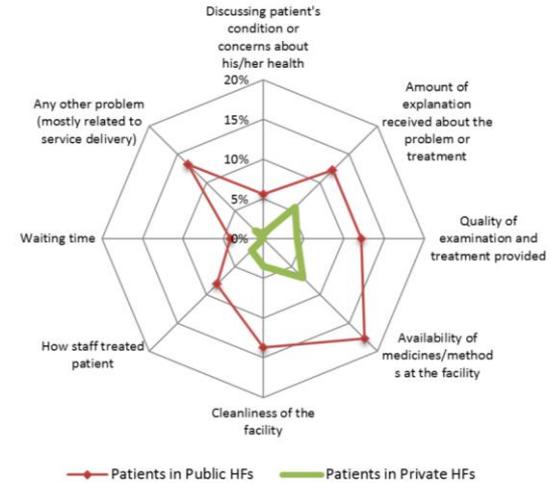
(sample results from pilot in 43 facilities in Nairobi)

A facility survey measures patient safety performance and level of risk

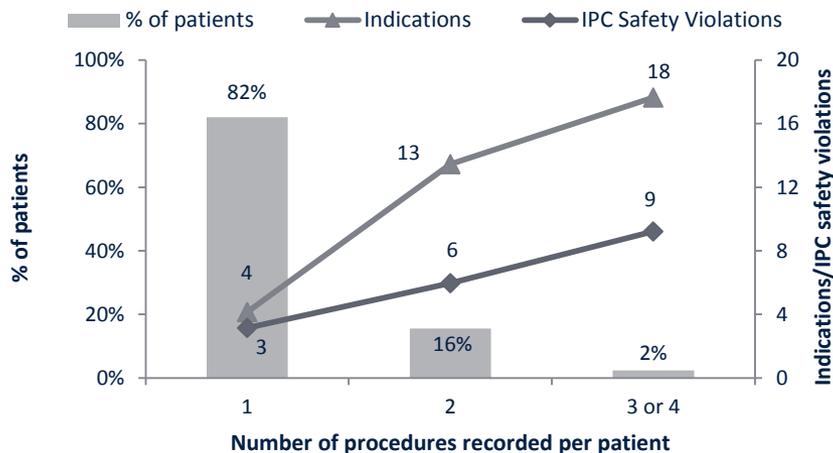


An exit survey measures patient experience

Patients Reporting Problems by Type of Problem and Facility



A direct observation tool measures provider's practice and knowledge of infection prevention/control



Standardized Patients measure accuracy of diagnostic and correctness of treatment

Looking across types of providers

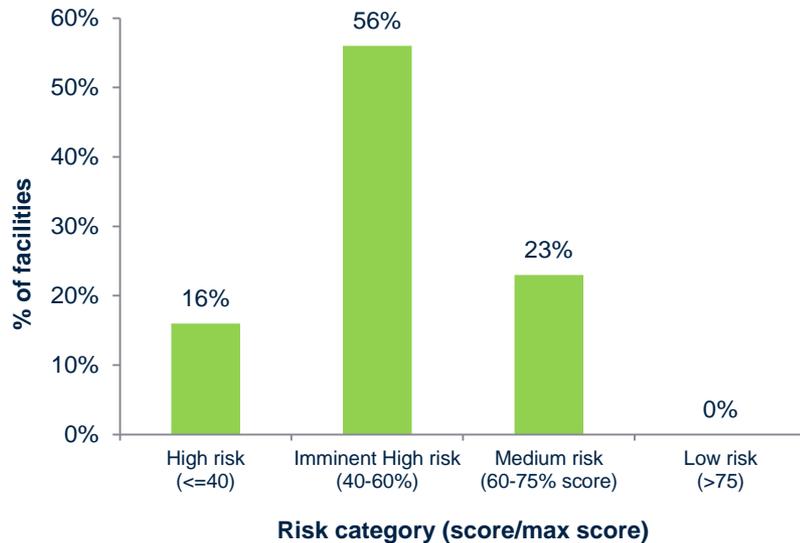
- No difference in overall correct treatment rates
- Private and FBO/NGO providers more patient-centered with more time and questions asked of the patient
- No difference in high use of antibiotics across all 3 sectors
- Much higher wait time in public clinics
- Much higher prices in private and FBO/NGO

Checklist Pilot Results

Low performance in structural measures, significant variation
 (mean score=54 %of the maximum score possible)

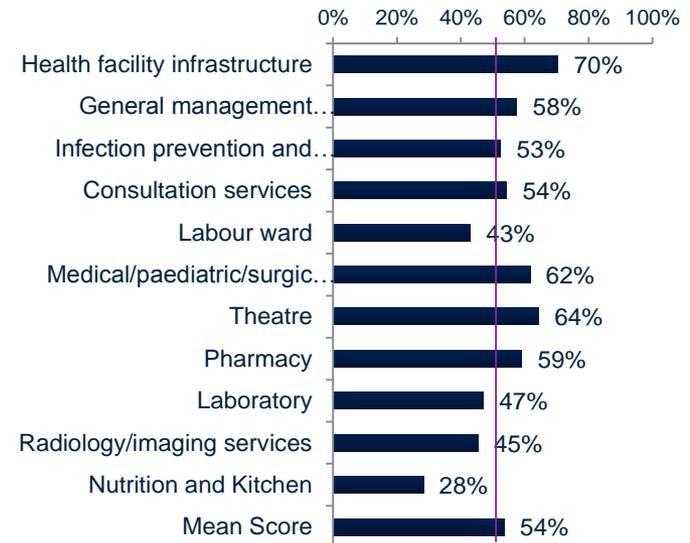
MOST FACILITIES (72 %) FALL INTO THE HIGHEST RISK CATEGORIES

Health Facilities by Checklist Performance
 Percent of facilities in each risk category



Facilities face constraints differentially throughout the services they offer

Health Facility Performance by Section
 Score as percent of the maximum score



- Remarkably poor ratings on systems for patient safety and quality of care across all units (SOPs, protocols)
- No significant differences in overall performance between private and public facilities

KEPSIE MEASURES: INFECTION PREVENTION AND CONTROL (IPC) IN OUTPATIENT SETTINGS

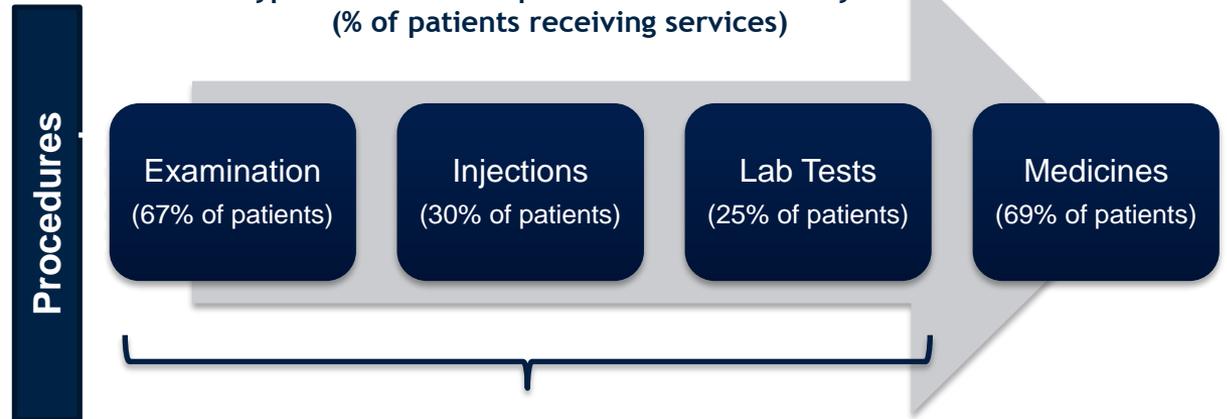
What do we build?

- ✓ Measures across procedures in a typical outpatient visit (directly observable; medicines → Standardized Patients)
- ✓ Measures across multiple IPC safety aspects
- ✓ Measures across multiple components along structure and process indicators



To our knowledge, this would be the first multi-dimensional measure of IPC to be applied at scale: most evidence is for one component (e.g., practice), and/or for one aspect (e.g., hand hygiene), for one or a few facilities, and for high-income countries

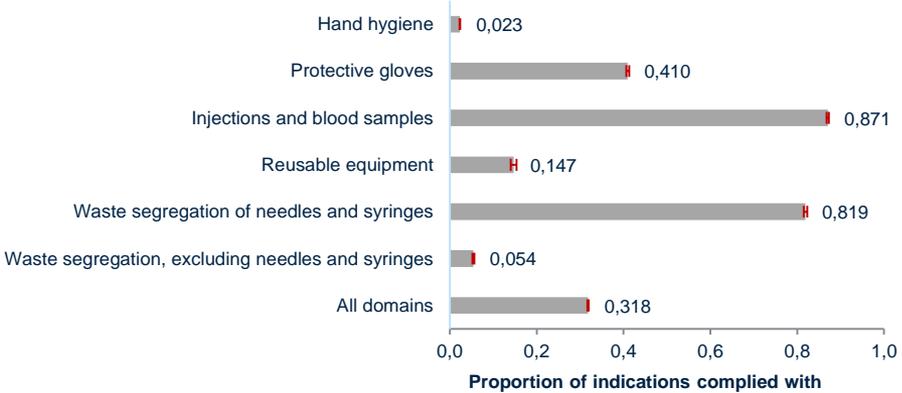
Typical Chain of Outpatient Services in Kenya*
(% of patients receiving services)



RESULTS (935 FACILITIES): IPC SELECT RESULTS

LOW OVERALL ADHERENCE (32% ACROSS 106,464 INDICATIONS), SIGNIFICANT HETEROGENEITY

Compliance with infection prevention and control practices, by infection prevention and control domain, Kenya, 2015



Heterogeneity across IPC aspects

Very high adherence to:

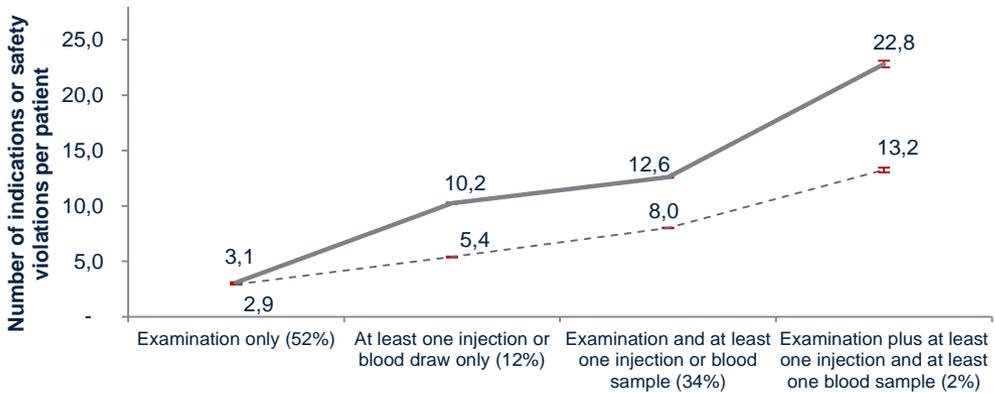
- Injection and blood draw safety
- Waste segregation of needles and syringes

Very low adherence to:

- Hand Hygiene (cornerstone of IPC)
- Disinfection of reusable equipment
- Segregation of other medical waste

Notes: The compliance is the proportion of indications for an infection prevention and control practice for which the corresponding action was taken. An indication refers to a situation in which an infection prevention and control practice must be undertaken to prevent the risk of a pathogen being transmitted from one surface to another (Table 1). The data in the figure relate to all 106 464 indications observed.

Infection prevention and control indications and safety violations, infection prevention and control study, Kenya, 2015



PS and Patient experience in a facility visit

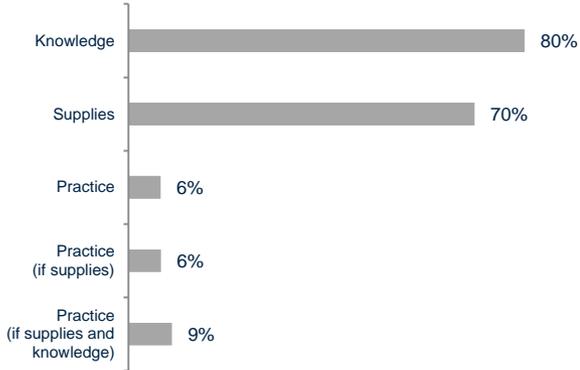
- Average indications was 7.5 and average safety violation per patient was 5.1
- Most patients (52%) faced on average 3 PS violations (mostly HH and device disinfection)
- The number of indications and safety violations increased with the number of procedures but compliance varied according to the specific procedures performed

Notes: An indication refers to a situation in which an infection prevention and control practice must be undertaken to prevent the risk of a pathogen being transmitted from one surface to another (Table 1). A safety violation occurred when the required action was not taken. The percentages in parenthesis give the proportion of patients who underwent the procedure or combination of procedures.

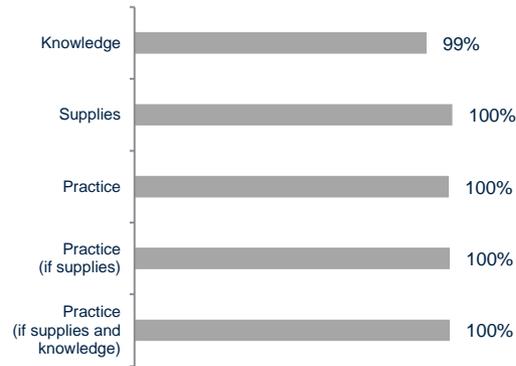
RESULTS (2): SELECT IPC PRACTICES, KNOWLEDGE AND SUPPLIES

PERCENT OF HEALTH CARE WORKERS THAT ADHERE TO PRACTICE, KNOW THE PRACTICE, AND HAVE ACCESS TO THE REQUIRED SUPPLIES

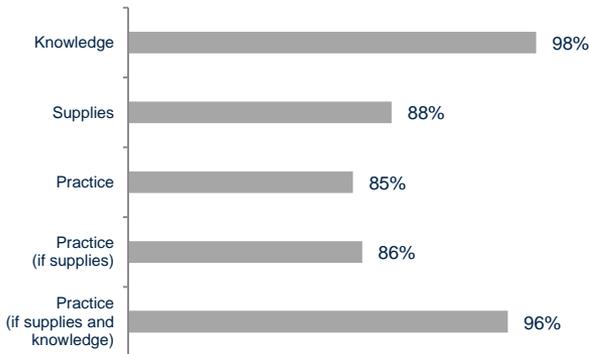
A: Hand hygiene after injection or blood draw



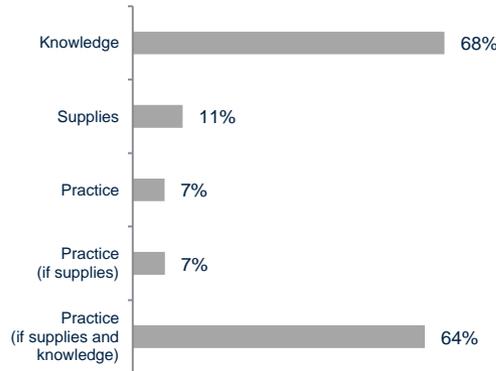
B: Needles used for only one patient [1]



C: Segregation for disposal of needles in puncture-resistant sharps container [2]



D: Segregation of medical waste in color-coded bins [3]



Select Highlights

- High HCW knowledge across all practices assessed
- Significant heterogeneity in supplies, particularly low for waste segregation
- Significant know-do gaps (difference between knowledge and effort) remain for several practices, even after conditioned on knowledge and supplies
- Practice, Knowledge and Supplies are perfectly aligned for the practice “use of needles and syringes for only one patient” and generally better aligned for injection/blood draw practices than any other
- Most of variation in practice is between HCWs (HCWs consistently adhere or do not adhere to a practice), and between practices (e.g., a HCW consistently does not adhere to HH but consistently adheres to using a new syringe and needle for each patient)

Global significance of KePSIE

- **Measuring and improving patient safety in resource-poor settings is urgent**
 - Validated measurement tools can be deployed across countries
- **Large scale randomized evaluation of complementary patient safety improvement mechanisms**
 - Largest proposed evaluation on patient safety in low-income country
- **Accounts for health system features common across countries**
 - Health systems are mixed with public, private, FBO and NGO clinics
 - Interventions cut across health, governance and private sector development, highlighting multi-sectorial nature of health system improvements, optimally leveraging WBG comparative advantage

READ MORE

- KePSIE Brief
 - <http://www.worldbank.org/en/programs/competitiveness-policy-impact-evaluation-lab/brief/kenya-patient-safety-impact-evaluation-kepsie>
- Large-N patient safety study across multiple domains (forthcoming, Bulletin of the WHO)
 - http://www.who.int/bulletin/online_first/BLT.16.179499.pdf
- Drug safety in Kenyan clinics using standardized patients (Drugs-Real World Outcomes)
 - <https://link.springer.com/article/10.1007/s40801-016-0100-7>
- Validation and first results using standardized patients to measure quality of care
 - Coming soon!