



# Healthcare Delivery During Crises

## Experimental Evidence from Sierra Leone and the 2014 Ebola Outbreak

October 29, 2019

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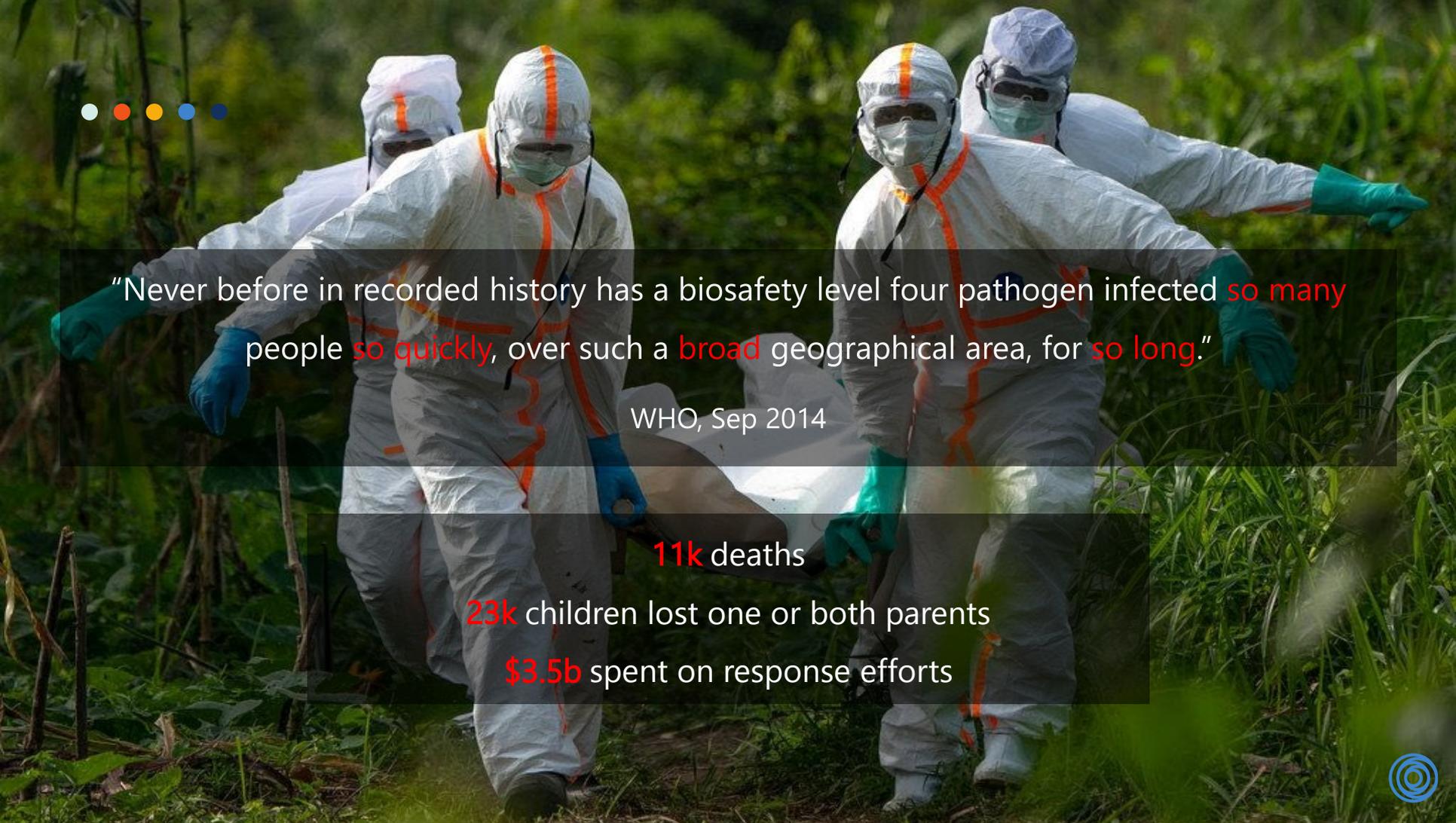
Oeindrila Dube  
(Chicago-Harris)

Johannes Haushofer  
(Princeton)

Bilal Siddiqi  
(UC Berkeley, CEGA)

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(Wageningen)





"Never before in recorded history has a biosafety level four pathogen infected **so many** people **so quickly**, over such a **broad** geographical area, for **so long**."

WHO, Sep 2014

**11k** deaths

**23k** children lost one or both parents

**\$3.5b** spent on response efforts





# How can we improve healthcare delivery during crises?

Lancet Global Health Commission (2018):

- > 8 million people die in low- and middle-income countries from treatable conditions due to poor care and non-utilization of the health system
- “[A]ccess to health care is not enough”— a high-quality health system builds confidence and trust, which encourages utilization (during emergencies)
- “Demotivated providers cannot contribute to a high-quality health system”

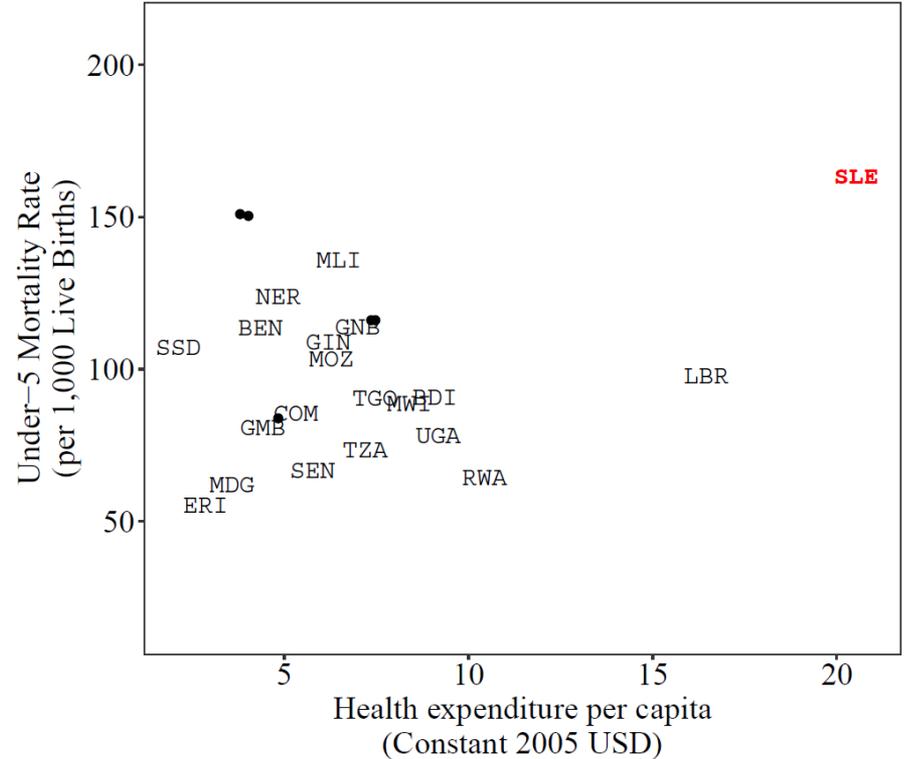
**How can we motivate providers to improve the quality and resiliency of health systems?**





## Healthcare in SL isn't... great.

- Maternal mortality: worst in 2011
- Under-5 mortality: 2<sup>nd</sup>-worst in 2011
- In 2010, Sierra Leone launched a free maternal and under-5 healthcare initiative
- But government worried staff would continue to charge fees, miss work





## Community monitoring

1. Scorecards rating local health problems on range of indicators\* discussed with community and clinic staff
2. Interface meeting for community and staff to develop joint action plan
3. Three follow-up meetings to monitor progress on action plans

## Non-financial awards

1. Competition among clinics to be the best or most-improved in each district, based on range of indicators\*
2. Posters to advertise and follow-up meetings to sustain interest
3. Large, public award ceremonies where politicians confer prizes (plaques, certificates, wall clocks)

\*similar indicators used for both interventions: maternal & child mortality, vaccination, absenteeism, etc.



# Test impacts using RCT

254 clinics in 4 districts

(Bo, Bombali, Kenema,  
Tonkolili)

Baseline survey: September 2011  
508 communities, 2,540 households

**Control**

84 clinics  
1,680 households

**Community monitoring**

85 clinics  
1,700 households

**Non-financial awards**

85 clinics  
1,700 households

Endline survey: June 2013  
508 communities, 5080 households





## Impacts on use and effectiveness of health system

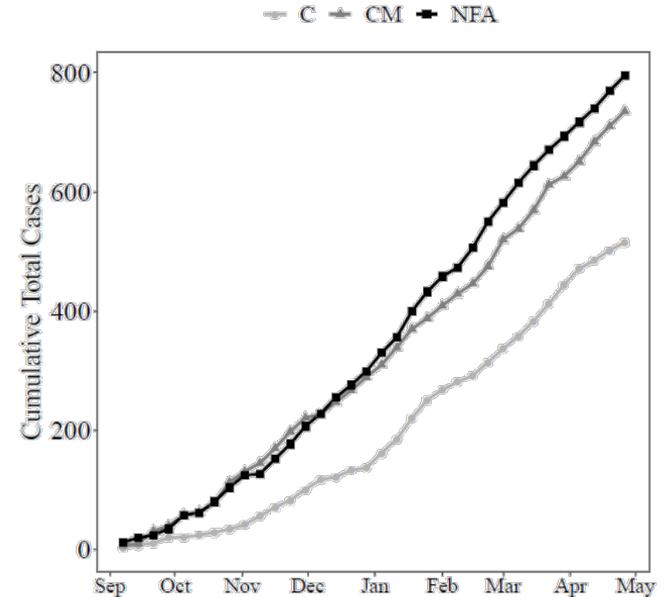
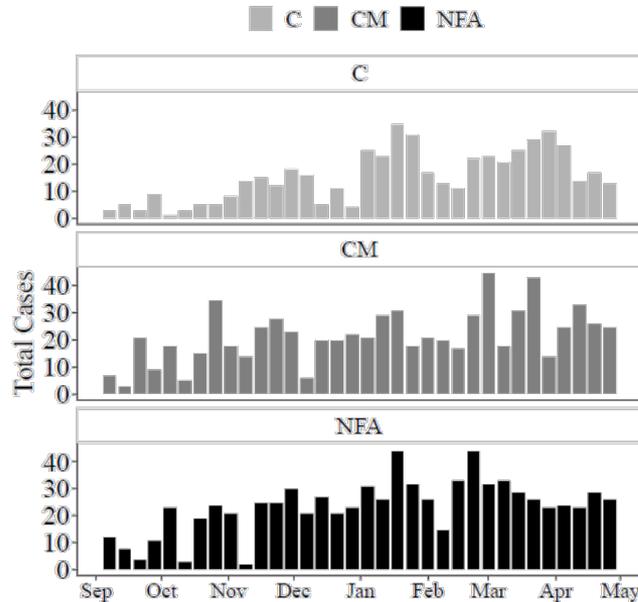
- People are more likely to use clinics and more satisfied when they do
  - 5% percent increase in number of health episodes in which individuals sought western care
  - Satisfaction increases by one-tenth of a standard deviation
- In CM group, big improvements in maternal utilization and child health
  - 11% increase in births in western facility
  - 38% decrease in under-5 mortality (from 39 children to 24 out of every thousand)
  - 27% increase in under-5 weight-for-length
  - 10% increase in vaccine completion (marginally insignificant)
- People more likely to believe that western medicine is effective (exploratory finding)





# Measuring Ebola

- CDC's Viral Hemorrhagic Fever (VHF) database
- Geocode using Open Street Map
- Weekly counts of suspected and confirmed cases





# The interventions make the health system more resilient

- Both CM and NFA increase reporting by ~60%
- Large effects on patient survival
  - Control: 1 patient death for every 4 reported (total) cases in last 2 weeks
  - Treated: 1 patient death for every 7 reported (total) cases in last 2 weeks
  - Effect larger in CM (1 patient death for every 10 reported cases)
- Large impacts on containment
  - Estimate that treatment reduces reproduction rate (# cases generated by infected individual) by 17% through increased reporting





## No evidence of other mechanisms

- Not due to unintended increase
  - Transmission requires direct contact with bodily fluids
  - Contact tracing doesn't show more external contact for treatment groups
  - 99% of cases were reported after onset or within two days
  - Nosocomial transmission unlikely: Dec 2014, HCWs trained in isolation, no-touch treatment, comprise less than 5% of cases—so nosocomial transmission unlikely
  - Constant ratio between confirmed and total cases suggests stable reporting behavior
- Not due to spillovers (across roads, borders, coethnic networks)
- Not due to better surveillance (no impacts on clinic capacity, lab testing)





## To conclude...

- Light-touch interventions to motivate healthcare workers improved confidence in, and use of, the health system:
  - Medium-run effects on utilization, child health, satisfaction, efficacy of western medicine
  - Increased reporting during Ebola crisis and reduced mortality
- Confidence in public services helps curb epidemics



### Perspective

#### An Epidemic of Suspicion — Ebola and Violence in the DRC

Vinh-Kim Nguyen, M.D.

“Indeed, I’ve come to realize that the most important part of my job is building trust with the communities we serve. Greater trust means more patients presenting early, and early presentation strongly affects the prognosis for many conditions.”



