



# Plan

- 1. Context**
- 2. Objective**
- 3. Methodology**
- 4. Results**
- 5. Conclusion**
- 6. recommendations**

# 1. Context (1)

- Antimicrobial resistant (AMR) is a public health problem with negative impact on health, economy and well-being.
- It's one of the 10 global health issues to track in 2021 according to WHO.
- Every year, 700M people die of infections caused by AMR but seems to be underestimated.
- By 2050, it's estimated to cause 10 million deaths and have an economic lost of almost 100 billion dollars. With 90% of deaths in Africa and Asia. (The O'Neil Institute, 2014).

# 1. Context (2)

- It's well established that environmental wastewater plays a role in AMR transmission.
- E. Coli is one of the pathogens selected for AMR surveillance.
- Open defecation is the most important driver of E. Coli shedding in the environment.
- In most of African countries, wastewater is not treated before being released in the nature.
- It's used at the community level for daily activities such crop irrigation, clothes washing, car washing... Exposed people may develop resistant infections.

## 2. Objective

- No data available documenting AMR status in DRC using environmental wastewater.
- In absence of AMR surveillance system using wastewater

The objective of this study was to identify E. Coli resistant to commonly used antibiotics using environmental wastewater.

# 3. Methodology (1)

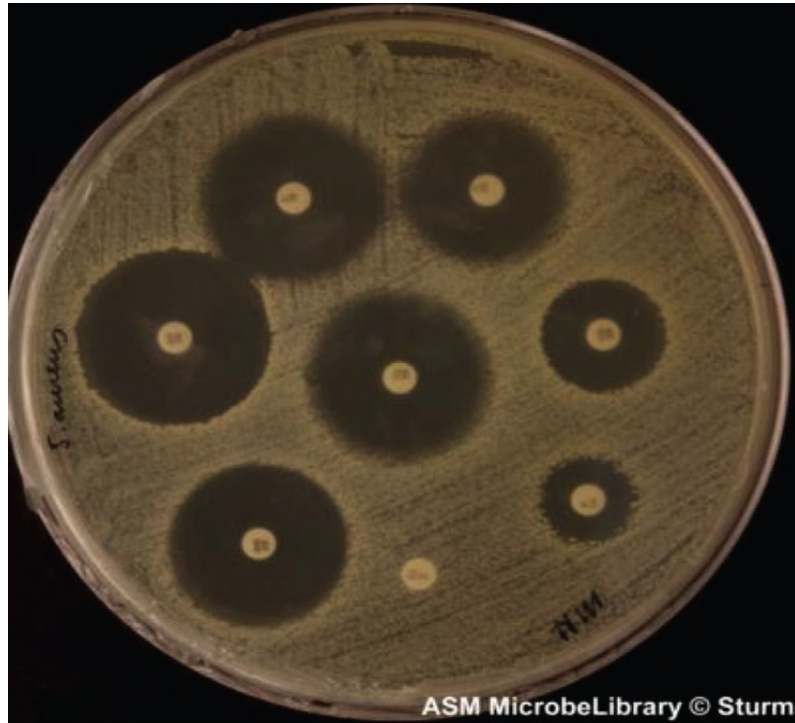
## Study type and study sites

- A cross-sectional study was conducted from May to June 2021 using environmental wastewater collected at 10 sampling point in Kinshasa, the capital city of DR Congo.
- 100ml of wastewater collected at each sampling point twice with two weeks of interval.
- For a total of 20 samples collected from rivers and lagoons from the public abattoir and hospitals.



## 3. Methodology (2)

- Lab data analysis conducted at the environmental lab at the Kinshasa School of Public Health.
- E. Coli susceptibility tested using disc diffusion method.



### 3. Methodology (3)

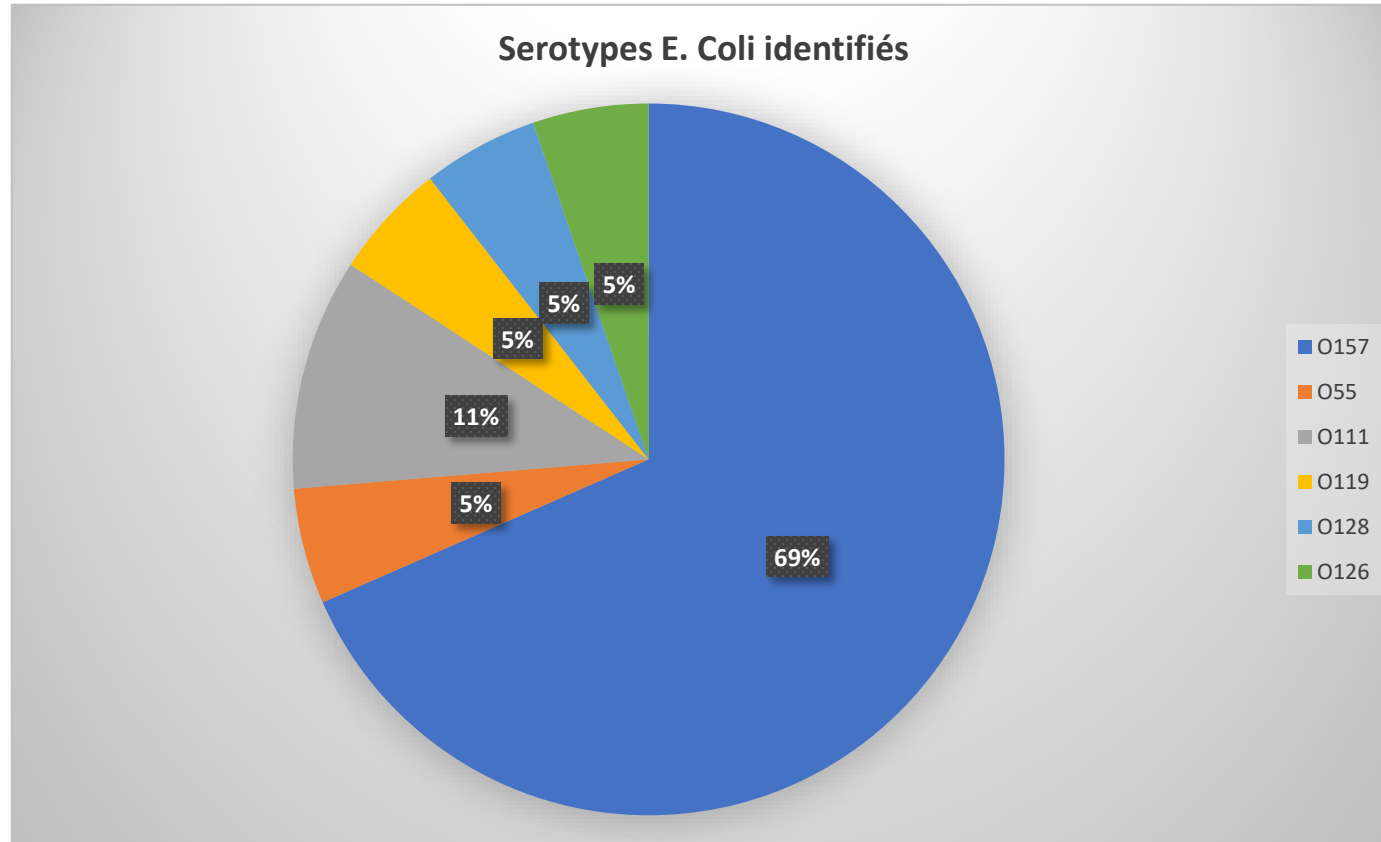
The following commonly used antibiotic and most available in pharmacy were tested:

- Amoxicillin,
- Ampicillin,
- Norfloxacin,
- Ceftriaxone,
- Gentamycin, and tetracycline.



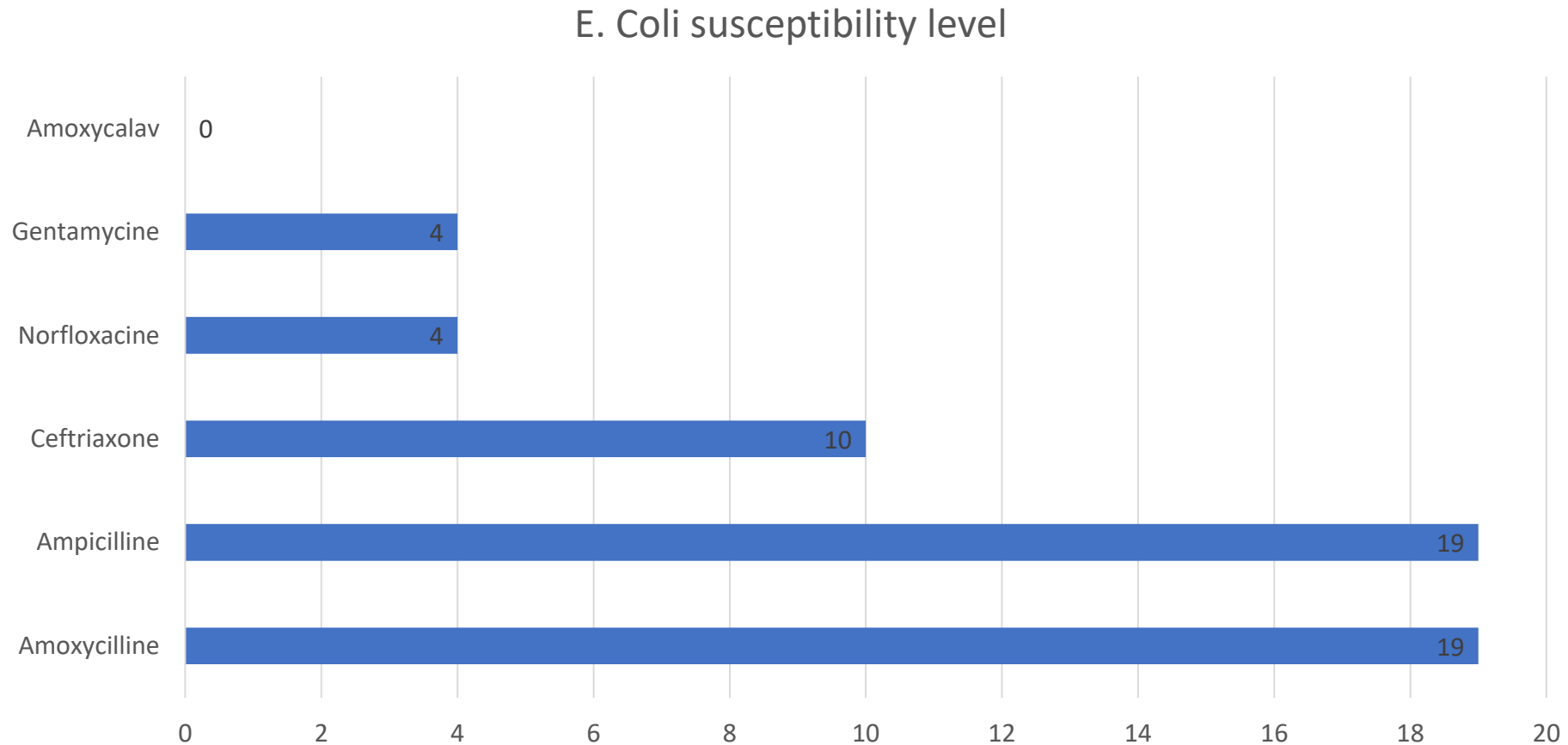
## 4. Results (1)

- E. Coli isolated from all the samples collected.
- With up to 69% of E. Coli o157.



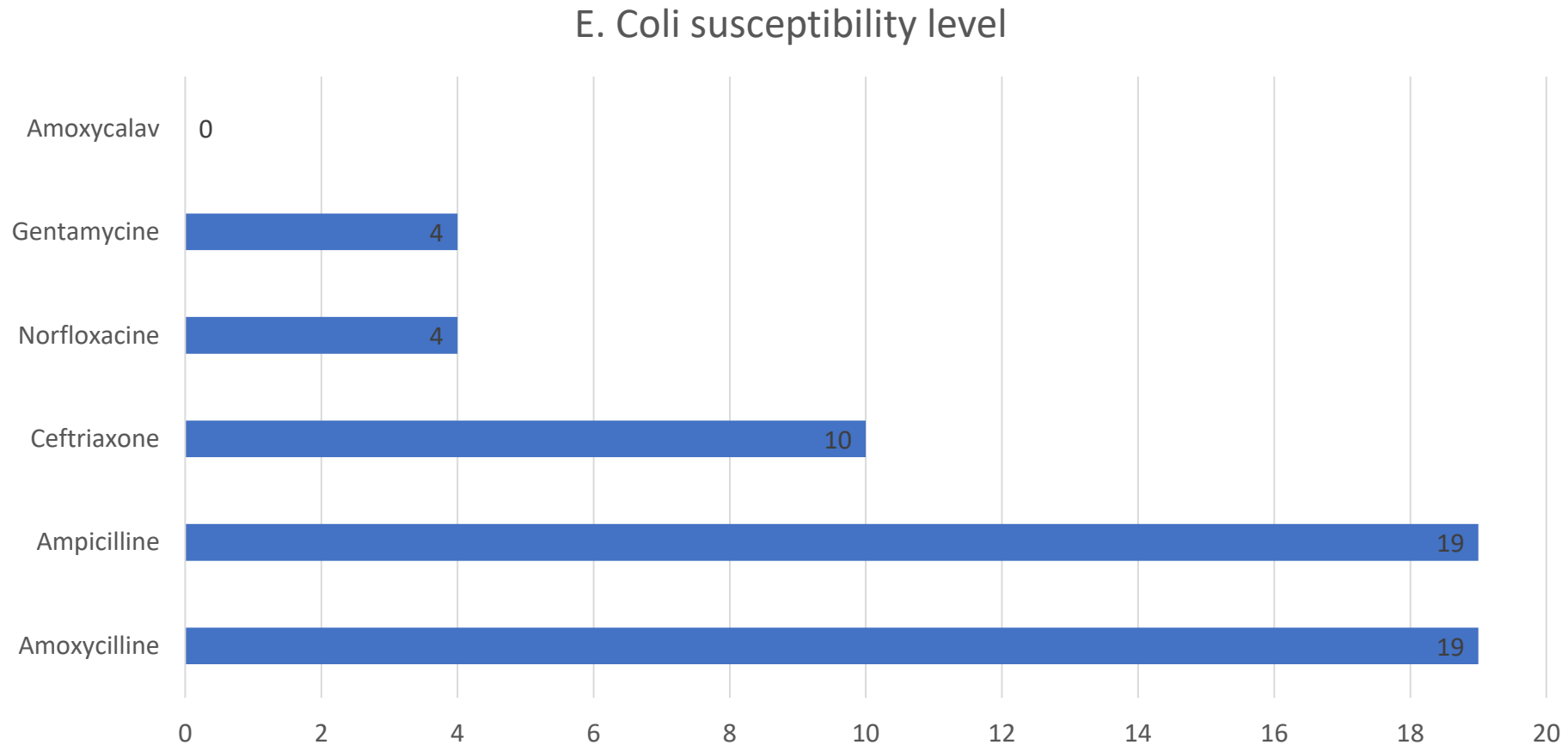
## 4. Results (2)

More than 80% of E. Coli resistant to Ampicillin and Amoxicilline



## 4. Results (2)

More than 80% of E. Coli resistant to Ampicillin and Amoxicilline



## 5. Conclusion

This study found a high level of E. Coli resistance to commonly used antibiotics, amoxicillin and ampicillin. This calls for urgent measures of wastewater treatment before being released in the community. The One Health approach is very critical

## 6. Recommendations

- Strengthen AMR stewardship both in human and animal health.
- Improve AMR awareness at the community level.
- Improve AMR surveillance using the OH approach.
- Wastewater treatment before release in the community.
- Safety and protection during wastewater reuse.

