

How dead livestock led to an Anthrax outbreak in Block X, Koraput, Odisha, India 2023: Findings from an outbreak investigation

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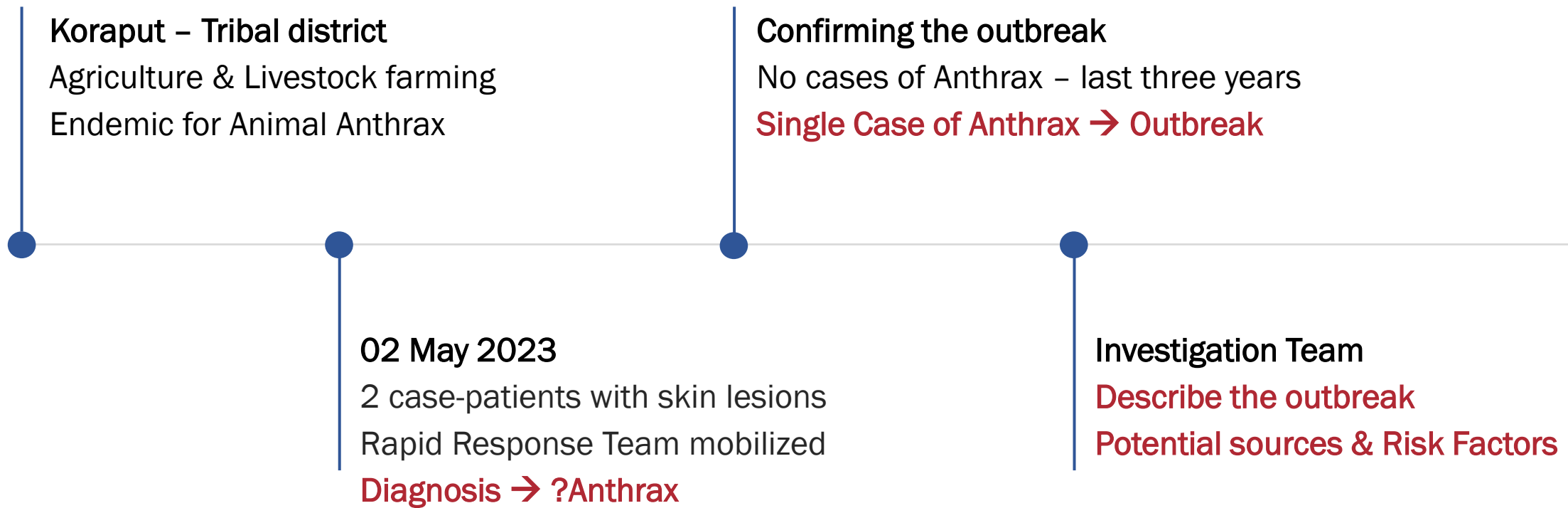
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Skin Lesions resembling Anthrax Eschars among villagers in Block X, Koraput, Odisha, 2023



Case Search and confirming Anthrax in skin and soil

Anthrax outbreak, Koraput, Odisha, 2023

● Confirmation of Diagnosis

Skin Swabs from case-patients

8/11 (73%) **RTPCR positive for Anthrax**

● Active Case Search

Suspect cutaneous anthrax: Occurrence of a painless skin lesion (papule, vesicle, or eschar)

Suspect gastrointestinal (GI) anthrax:

Occurrence of nausea, vomiting (or) bloody diarrhea between Mar 15 and May 18, 2023

● Descriptive Analysis

Time: Epidemiological Curve

Person: Attack rate (%)

Place: Spot map

● Environmental Investigation

Interview Village Leaders

Case-patients

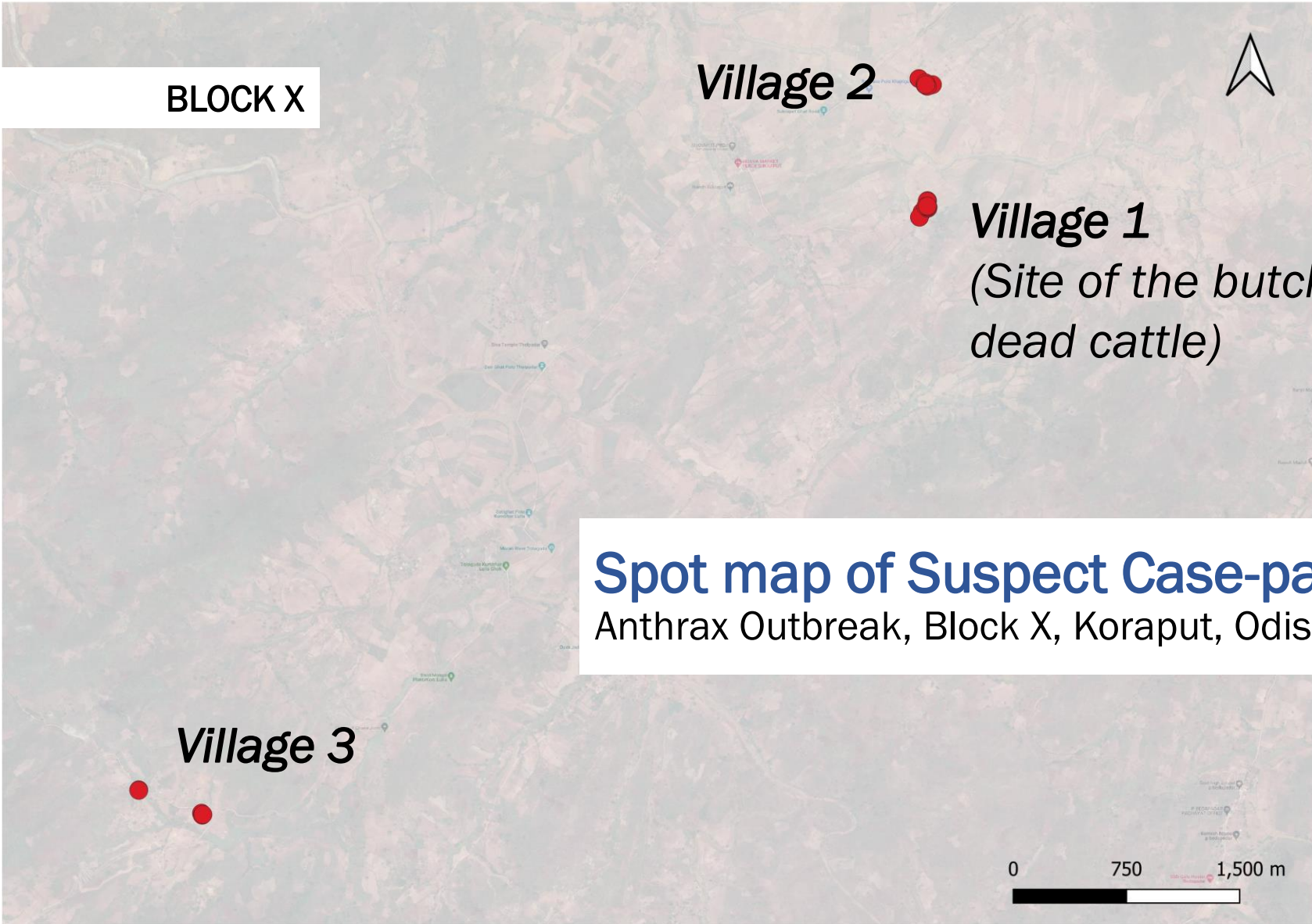
Veterinary Department

26 Cases across three villages

Anthrax outbreak, Koraput, Odisha, 2023

- 26 cases of Anthrax
- 17 Cutaneous & 14 Gastrointestinal
- Three villages
- Death of livestock in Village 1 on 19 April 2023
- Slaughtered & eaten by villages 1, 2, and 3





BLOCK X

Village 2

Village 1
*(Site of the butchering of
dead cattle)*

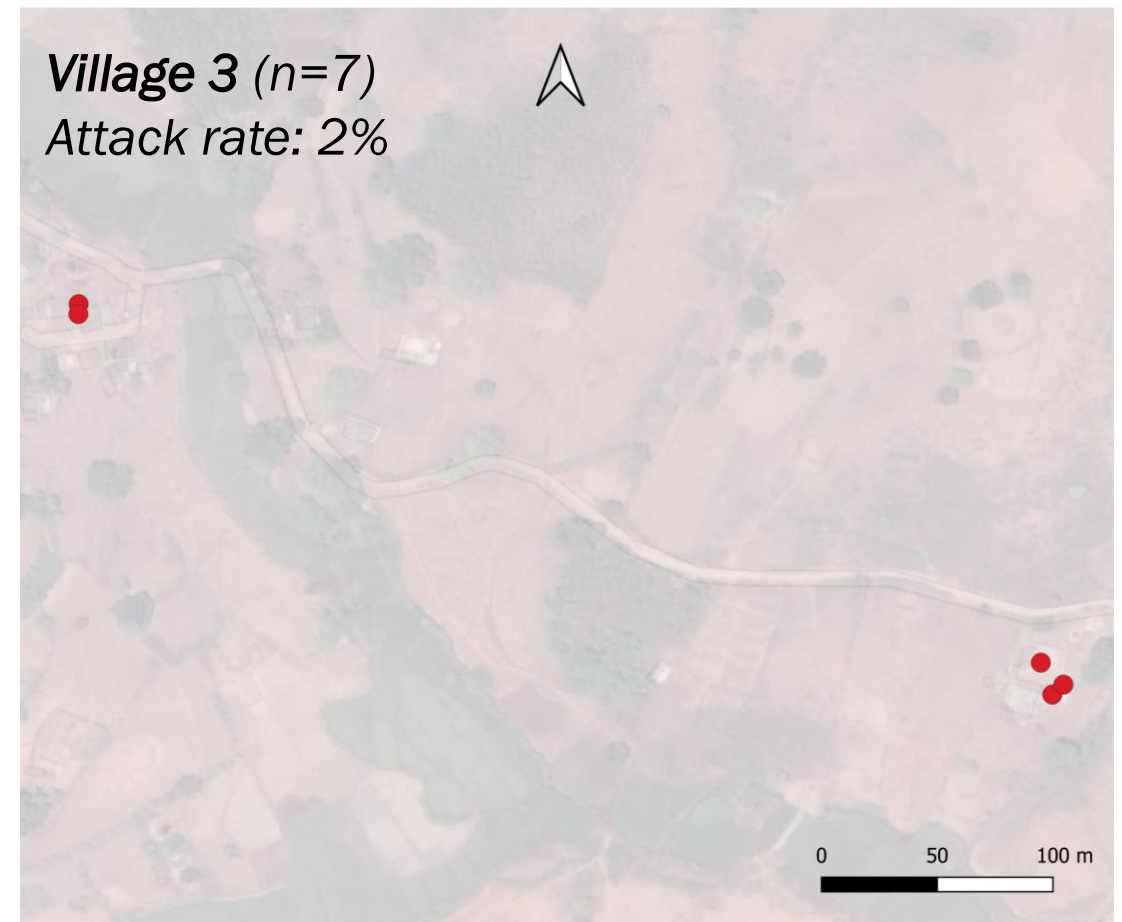
Village 3

Spot map of Suspect Case-patients

Anthrax Outbreak, Block X, Koraput, Odisha, March-May 2023 (n=26)

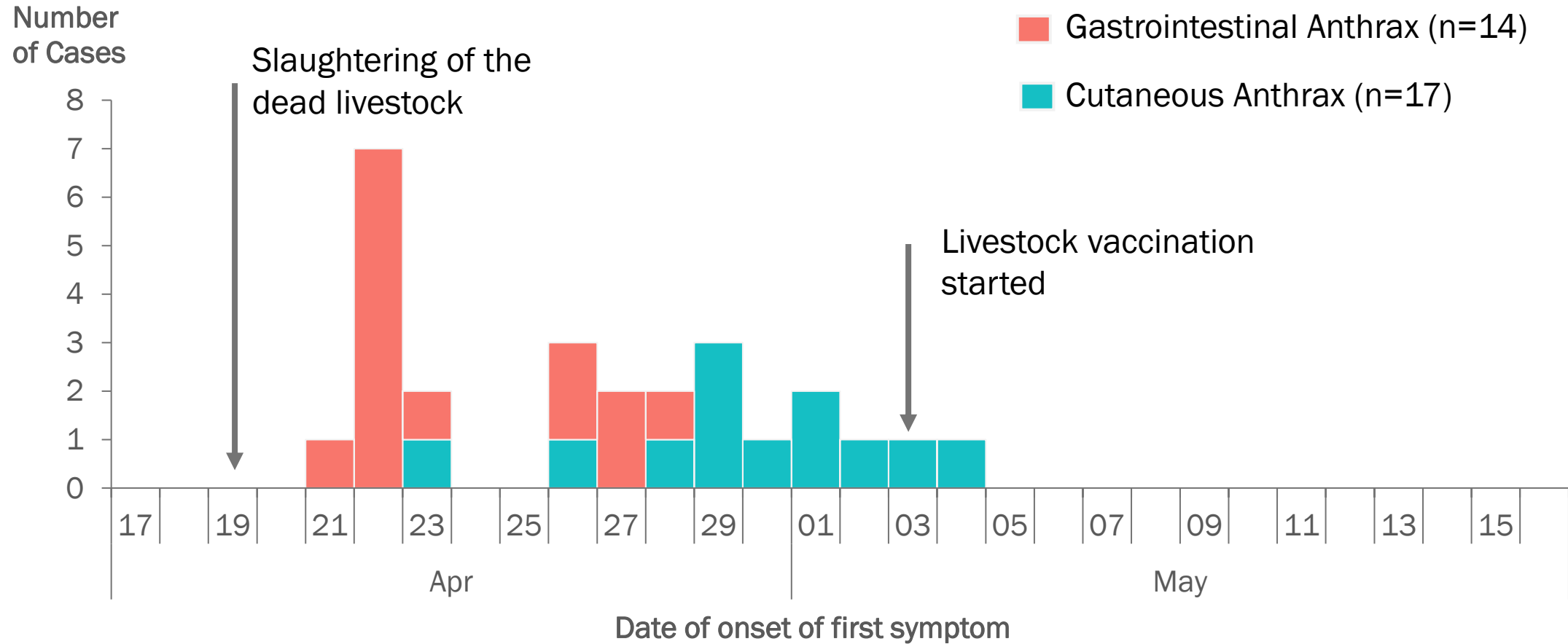
Majority of the cases were from Village 1

Spot map of suspect case-patients by village, Anthrax outbreak, Koraput, Odisha, 2023 (n=26)



Outbreak coincided with the death of livestock

Time distribution of the Anthrax outbreak, Koraput, Odisha, 2023 (n=26)



Age group 46 to 60 was most affected

Person distribution of Anthrax outbreak, Koraput, Odisha, 2023 (n=26)

| Characteristics | | Cases (n) | Population at risk (N) | Attack Rate (%) |
|-----------------|------------|-----------|------------------------|-----------------|
| Sex | Male | 18 | 344 | 5 |
| | Female | 8 | 319 | 3 |
| Age group | <15 | 6 | 205 | 3 |
| | 16-30 | 6 | 196 | 3 |
| | 31-45 | 5 | 100 | 5 |
| | 46-60 | 9 | 85 | 11 |
| | 61 & above | 0 | 77 | 0 |
| Total | | 26 | 663 | 4 |

More than 60% of the case-patients were involved in butchering

Distribution of possible exposures among case-patients, Anthrax outbreak, Koraput, Odisha, 2023 (n=26)

 **81%**
Close contact with livestock

 **62%**
Involved in butchering

 **100%**
Ate the carcasses



- Cutting **50%**
- Washing **46%**
- Deskinning **31%**

Proportion of case-patients with the exposures are shown in red

Delay in Anthrax vaccination leading to death of livestock

Results from environmental investigation, Anthrax outbreak, Koraput, Odisha, 2023

- Rainy season – Anthrax in Livestock
- **Delay in vaccination by the Veterinary Department**
- Sick livestock → Die → Slaughtered for meat
- **Soil sample + Bone residue**
- **Positive for Anthrax by PCR**



Burial site inspection
by the Veterinary Department

Hypothesis & its testing

Anthrax outbreak, Koraput, Odisha, 2023

The outbreak of suspected anthrax is due to the involvement in **butchering, (or) handling (or) consumption of carcasses** that died on 19 April 2023 in Village 1, Koraput, Odisha

Unmatched Case-Control Study

- Case: Cutaneous or GI Anthrax case-patient
- Control: Individual from a neighborhood without symptoms
- 1:4 ratio
- Logistic regression → odds ratio (OR) with 95% CI

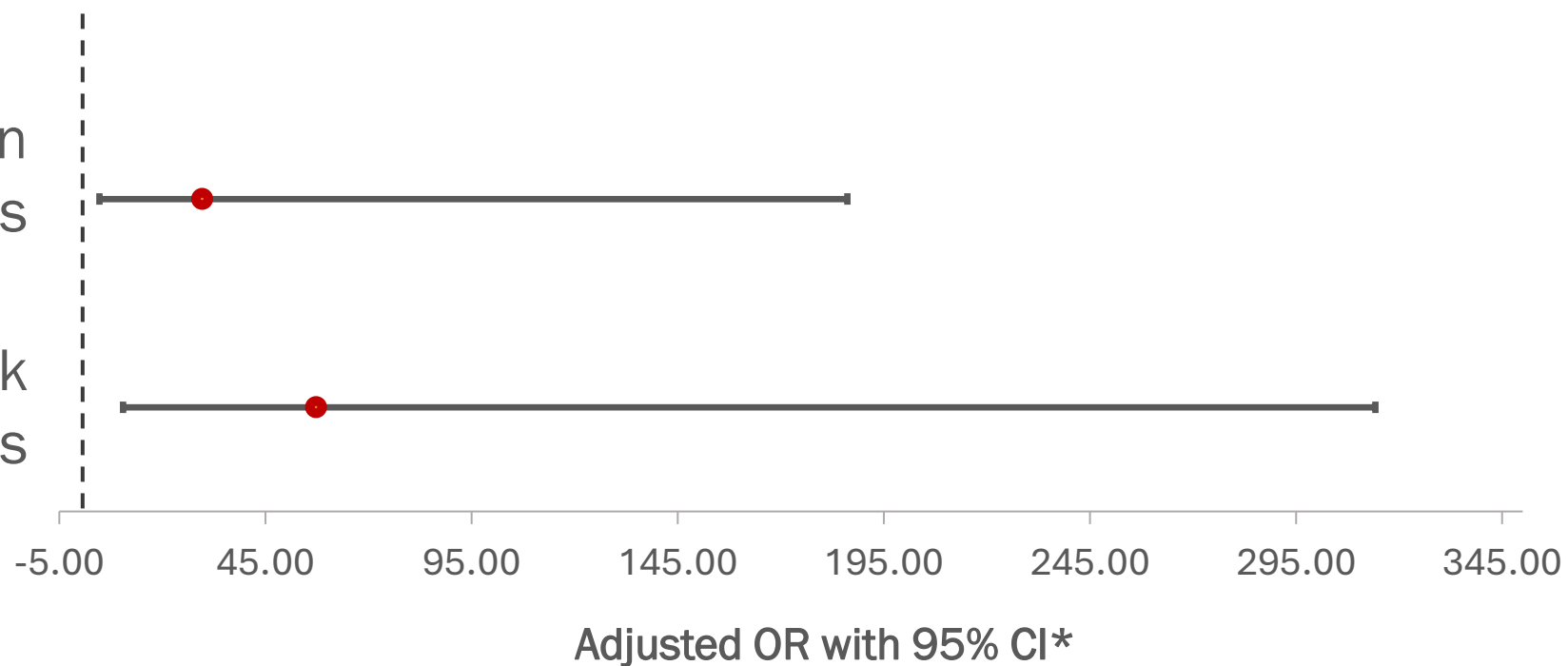
Contact with livestock & washing of the carcasses were associated with Anthrax infection

Anthrax outbreak, Koraput, Odisha, 2023 (N=130)

Possible exposures

Involved in washing of carcasses

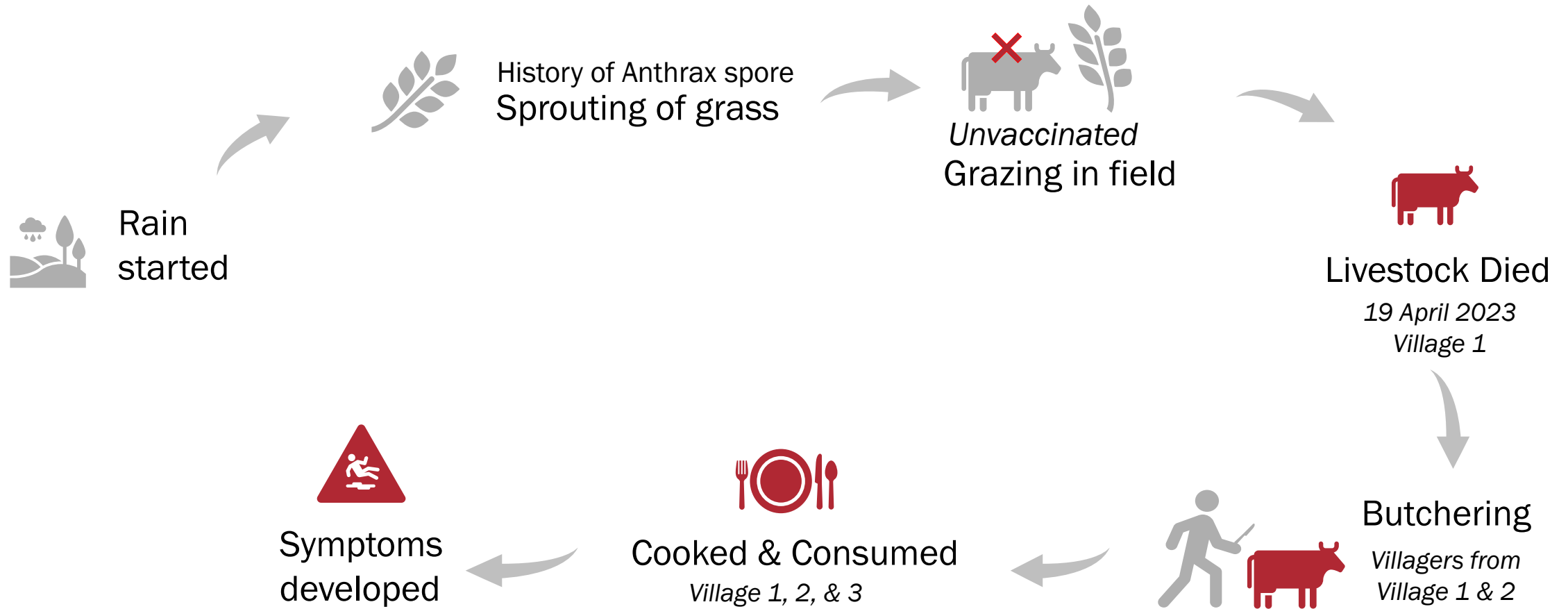
Contact with livestock or their fluids



*Adjusted for Age, Gender, Education status, Occupational exposures like Gardening and Cutting firewood from the forest, Washing the meat of the butchered animal, and any Contact with livestock or their fluids.

Connecting the dots!

Anthrax Outbreak, Koraput, Odisha, Mar-May 2023



Public health action & Recommendations

Public Health Action

- Continuous supply of chemoprophylaxis to the community
- Completion of animal vaccination

Recommendation

- Establish a protocol for surveillance – Anthrax in livestock
- Regulations to avoid butchering of sick animals

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THANK YOU



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