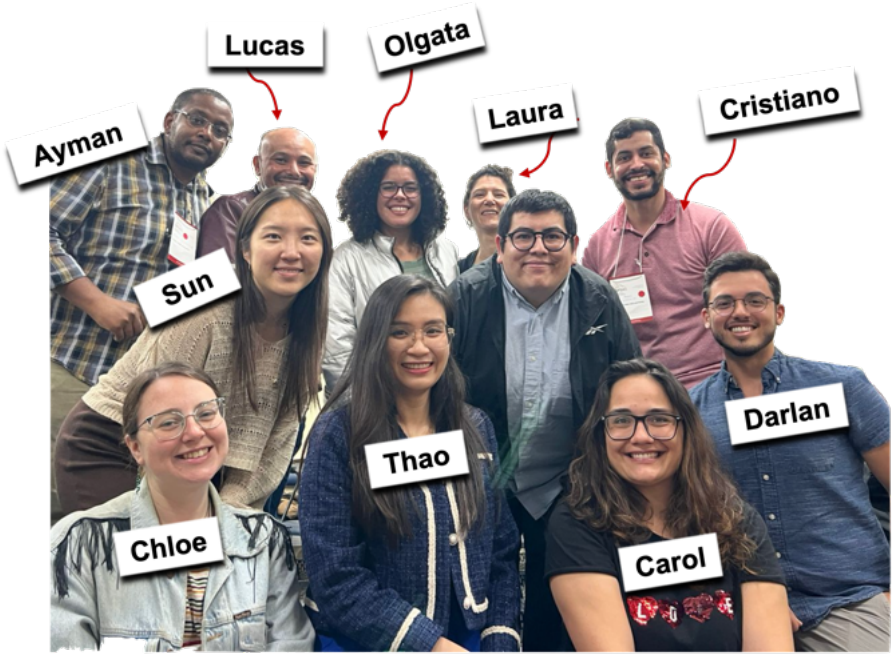
Yellow Fever Outbreak in the Amazon

Group 9

SPSAS

Emergency Operation Center (EOC)

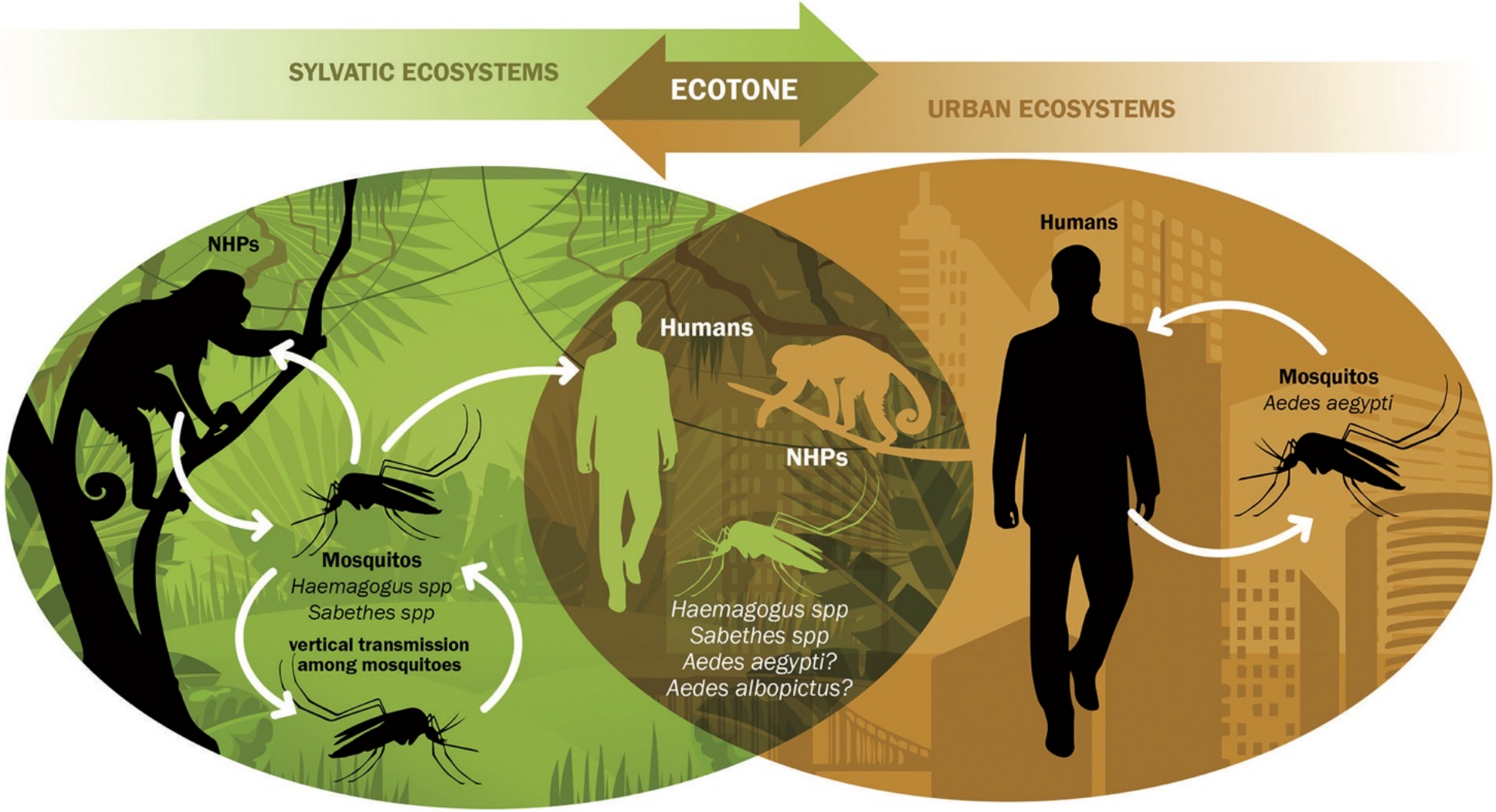
Following suspected cases/deaths



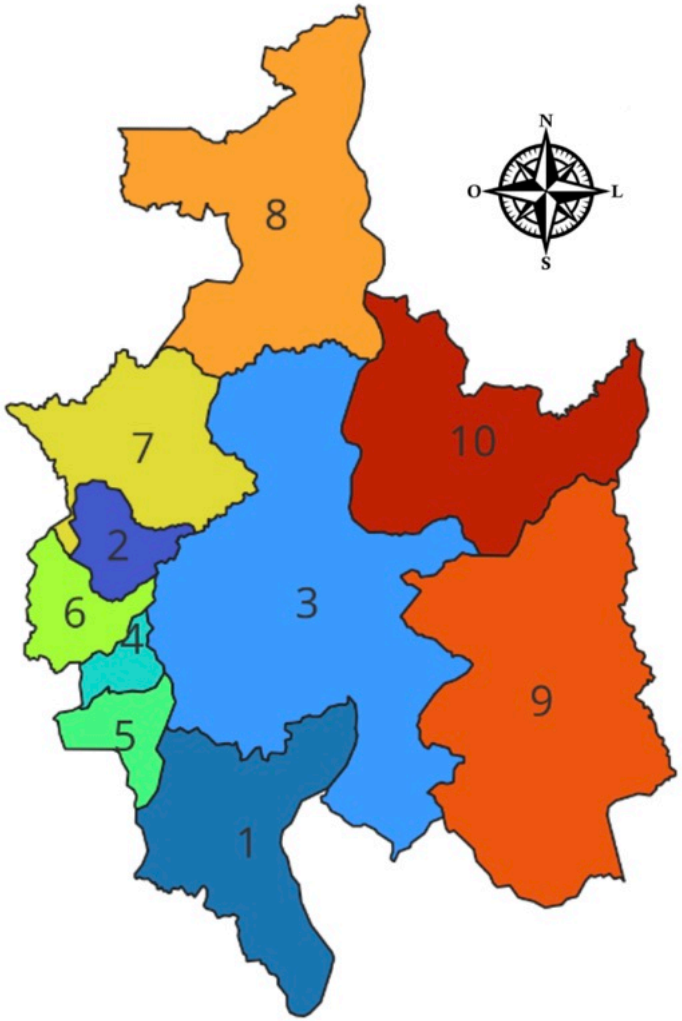
- **Other stakeholders**
  - Mayor
  - Health secretary
  - Health Care professionals

Planning / Analysis / Logistics / Communications

Yellow Fever: An overview



Municipality X



- **100.000** inhabitants
- **70%** vaccinated
- **Endemic** for yellow fever
- Mining + deforestation
- **Situation**
  - 1 **death** of YF
  - 2 suspected **cases**
  - Rumors of 3 dead **primates**

Approaching the situation

1) Outbreak confirmation

- Lab confirmation for **human** and **primate** cases
- Investigate **travel history**
- Cases' origins and correlations
- Clinical-epidemiological info

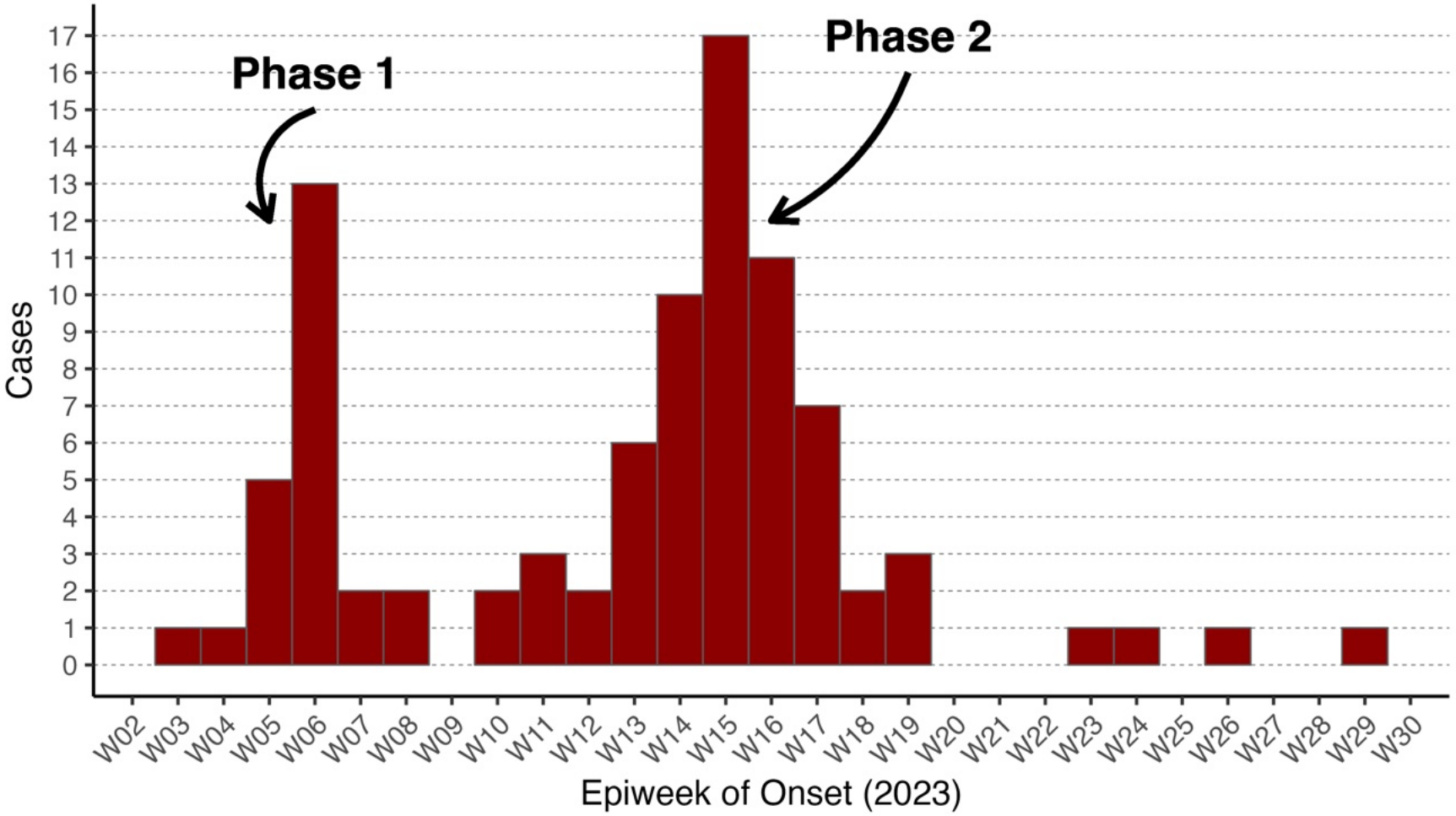
2) CONTROL

- **Alert** government/health system
- **Assess** and **promote** vaccination status
- Active search
- **Environmental surveillance** for
  - **Mosquitoes** / **Primates**
  - Urban cycle?

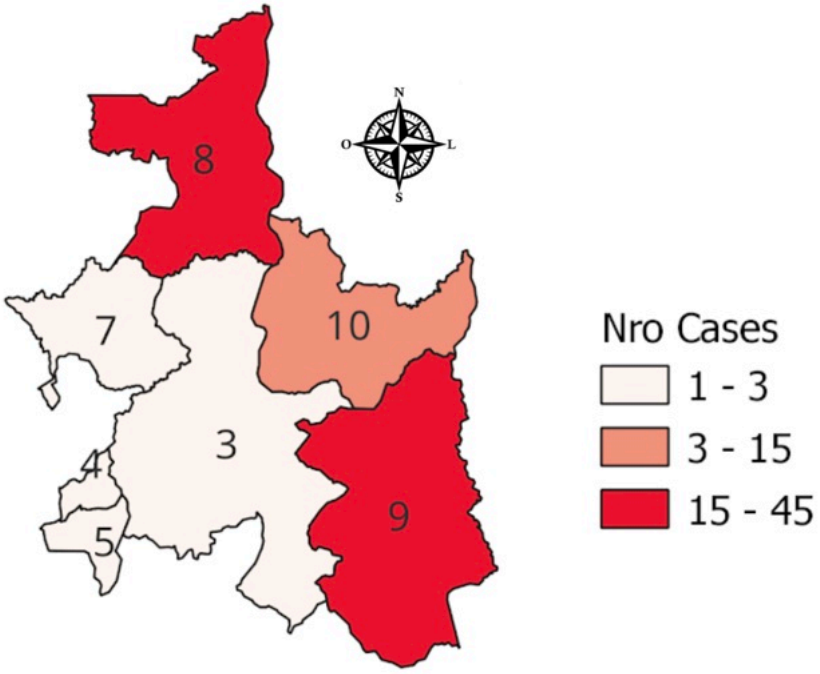
3) NEXT STEPS

- For **negative cases** perform metagenomic analysis
- To be **continued**

Epidemic progression



Spatial distribution



Number of Yellow Fever cases per region

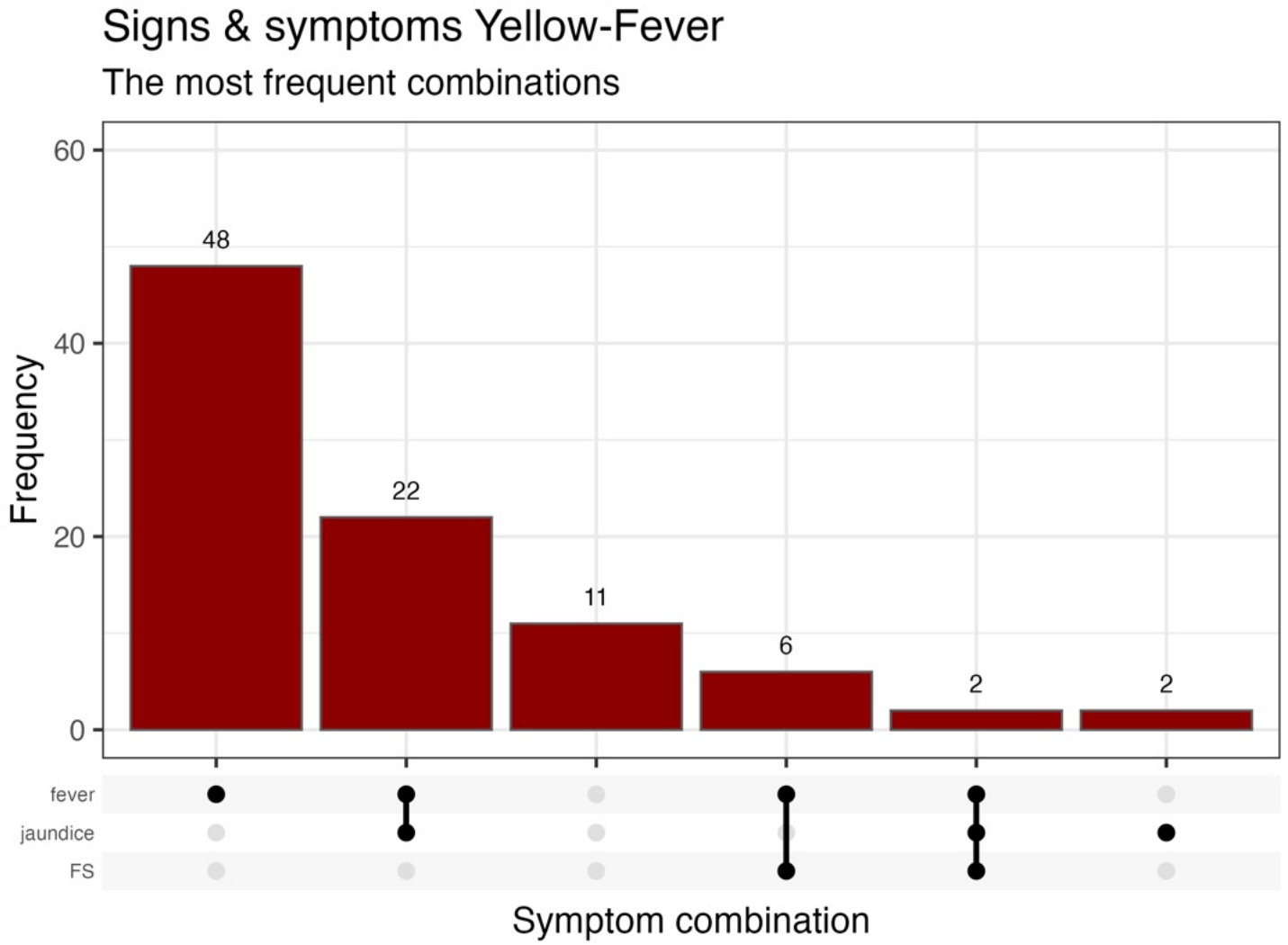
- The cases were **concentrated** in region **8, 9, and 10**.
- We hypothesize that these regions are **closest to mining** area and the **forest**
- **Risk of spread** to other areas in the city

Demographics

- **93%** are in regions **8/9/10**
- **78%** are men: average 43.5 yo
- **80,28%** of hospitalization are men
- **71,43%** unvaccinated
- **56.34%** of Lethality

VARIABLES	OR (Logistic with 0 = Recovered/ 1 = Deceased)	95% CI
Having faget signal		
Yes	1	
No	0.24**	(0.08 - 0.77)
Hospitalization		
Yes		
No	0.35	(0.08 - 1.47)
Gender		
Female	1	
Male	**4.22****	**(1.12 - 15.88)**
Having jaundice		
Yes	1	
No	0.25**	(0.07 - 0.92)
NA	0.32	(0.08 - 1.31)
Constant	2.20	(0.49 - 9.85)
Observations	82	
*** p<0.01, ** p<0.05, * p<0.1		

Symptoms


Signs & symptoms Yellow-Fever
The most frequent combinations
Frequency
60
40
20
0
48
22
11
6
2
2
fever
jaundice
FS
Symptom combination

Plan of Action

PREVENTION

Vaccinations

- Request more vaccines.
- **Logistics:** campaigning, accessibility.
- If limited resources:**prioritize** higher incidence and mortality population.

Vector control

- Space spray
- Mosquito surveillance in the households
- Mosquito repellents
- Bed nets

RESPONSE

Health-care

- Primary care and Hospital
- Fluids, medicines and Beds
- Human resources
- Health education

Labs

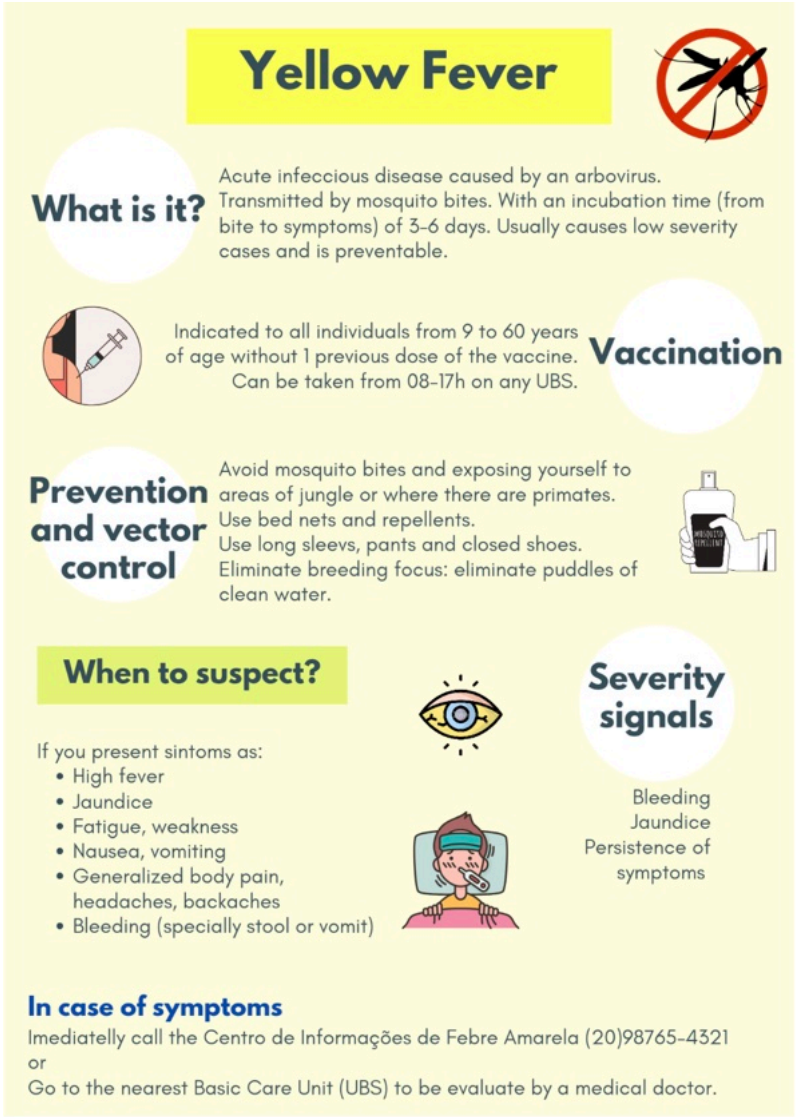
- Diagnosis

Secondary Response

- Social and Economical Support

Communications

- **Strategies for defined target groups:**
  - Authorities
  - General public
  - Health workers
  - Schools
  - Community health agents
- **Daily situation report and weekly meetings**



New chalenges

Most mining workers are undocumented immigrants

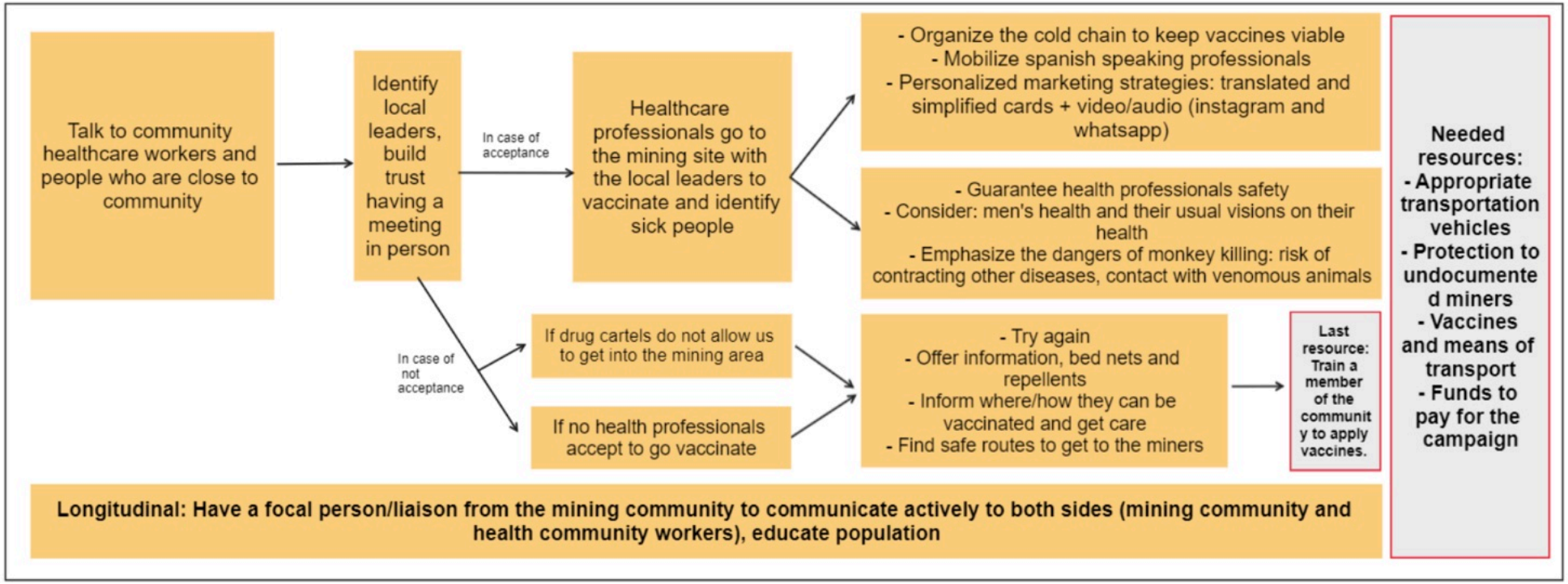
Rumours that mining workers are killing monkeys.

Mayor and population pressure authorities to allow hunting of wild animal.

Drug cartel is partially controlling the mining area hindering access

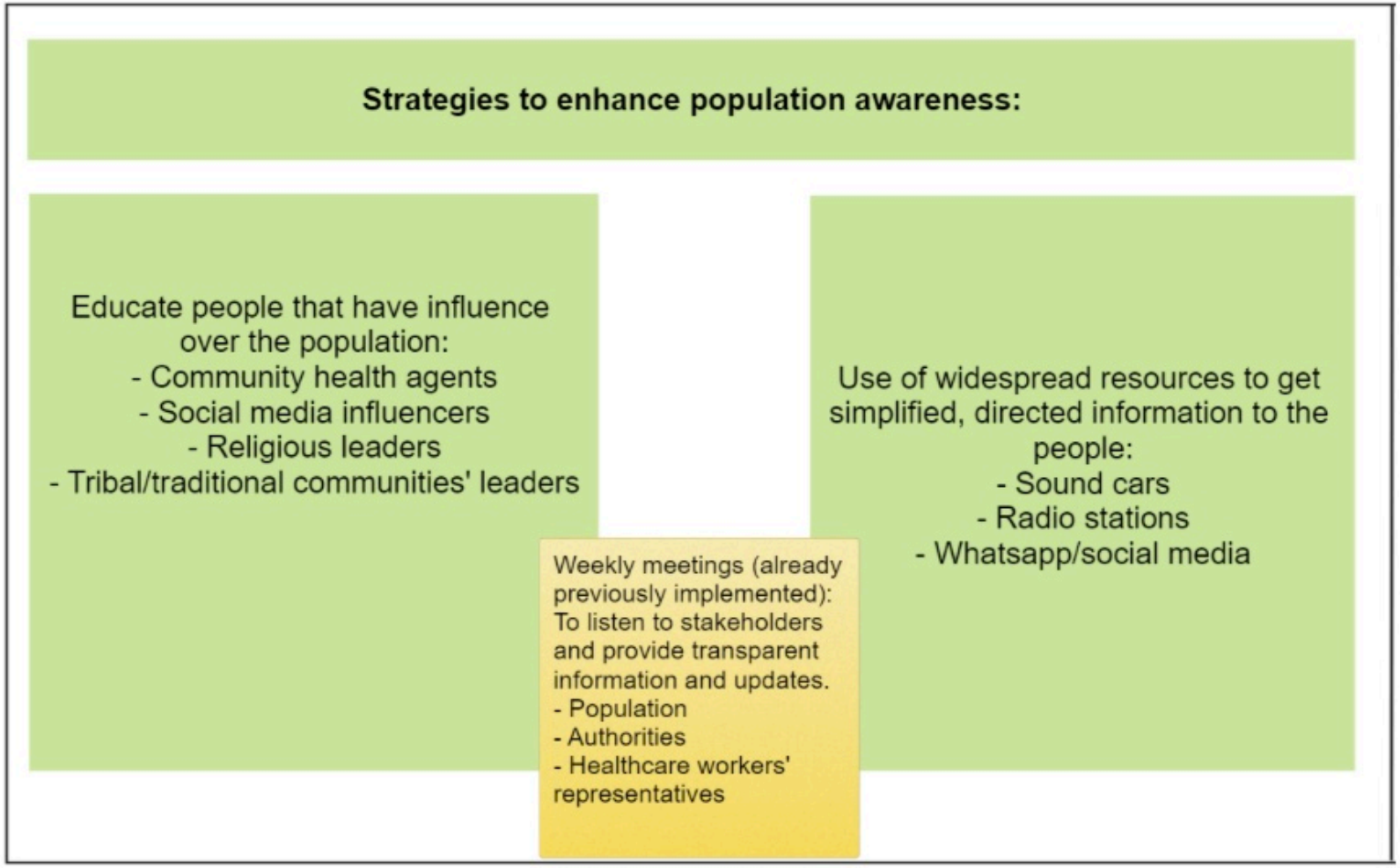
Adapting to the new challenges

Approaching the miners



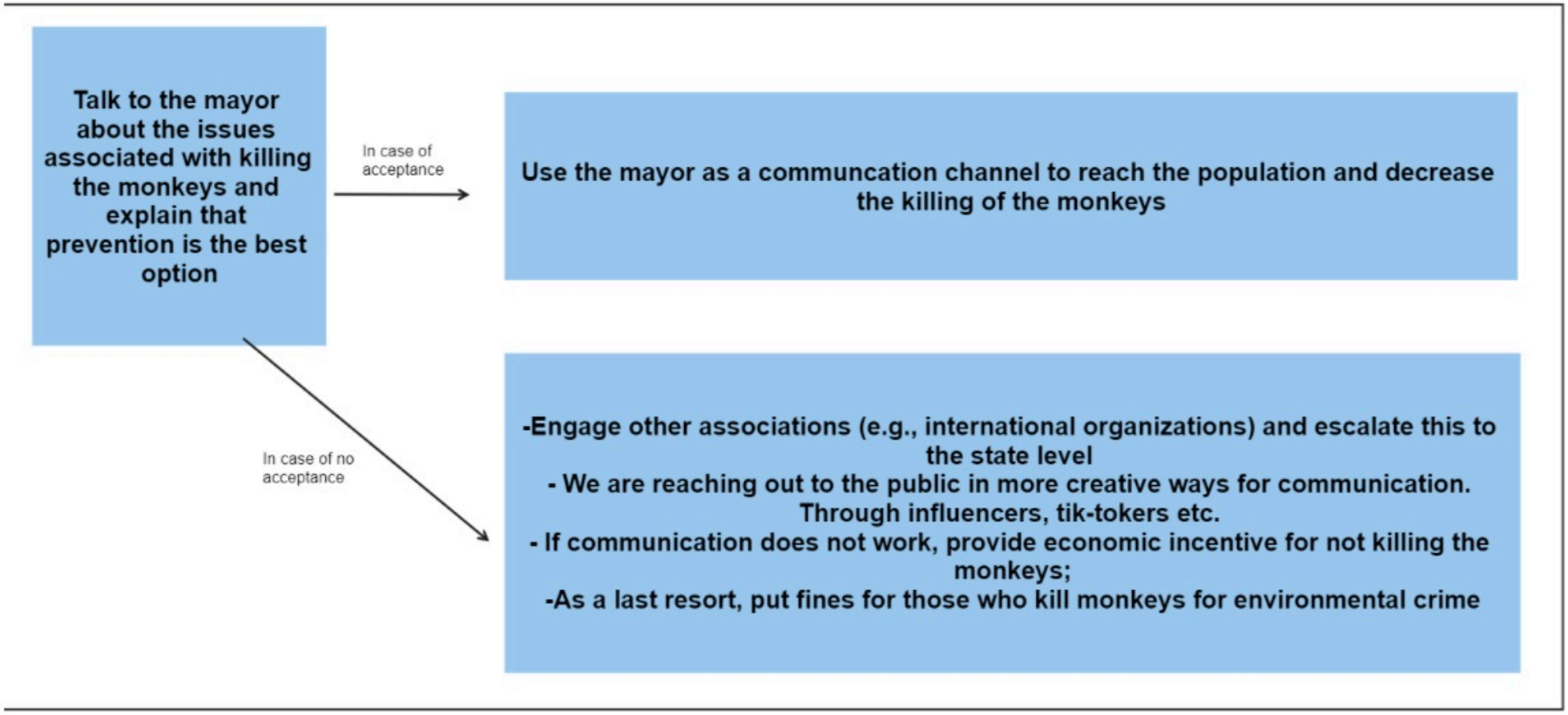
Adapting to the new challenges

Approaching general population



Adapting to the new challenges

Approaching authorities



Addressing resource limitations

Shortage of vaccines, ICU beds …

Priorities

Investigate increased mortality

- Diferential diagnosis
- Virus mutations
- Miners conditions, delay in treatment

Guarantee vaccination & hospital beds

Address vaccine hesitancy

Enhance prevention measures

Improve monitoring & data collection

Propose future research

Lessons learned

- We need **collective** efforts from **multidisciplinary** backgrounds
- Define **priorities** and secondary steps
- Focus on hypotheses and plans that can give us **quick answers**
- Communicate and engage with **stakeholders** and **population**
- Think **outside the box**
- Make the most out of the **information we have** rather than focusing on what we don’t have
- Capitalize on our **strengths** and our partnerships
- Public health is **political**
- **Life** can always get **harder**

Thank you!