

# Odyssean Malaria Outbreak in Gauteng Province, September 2014

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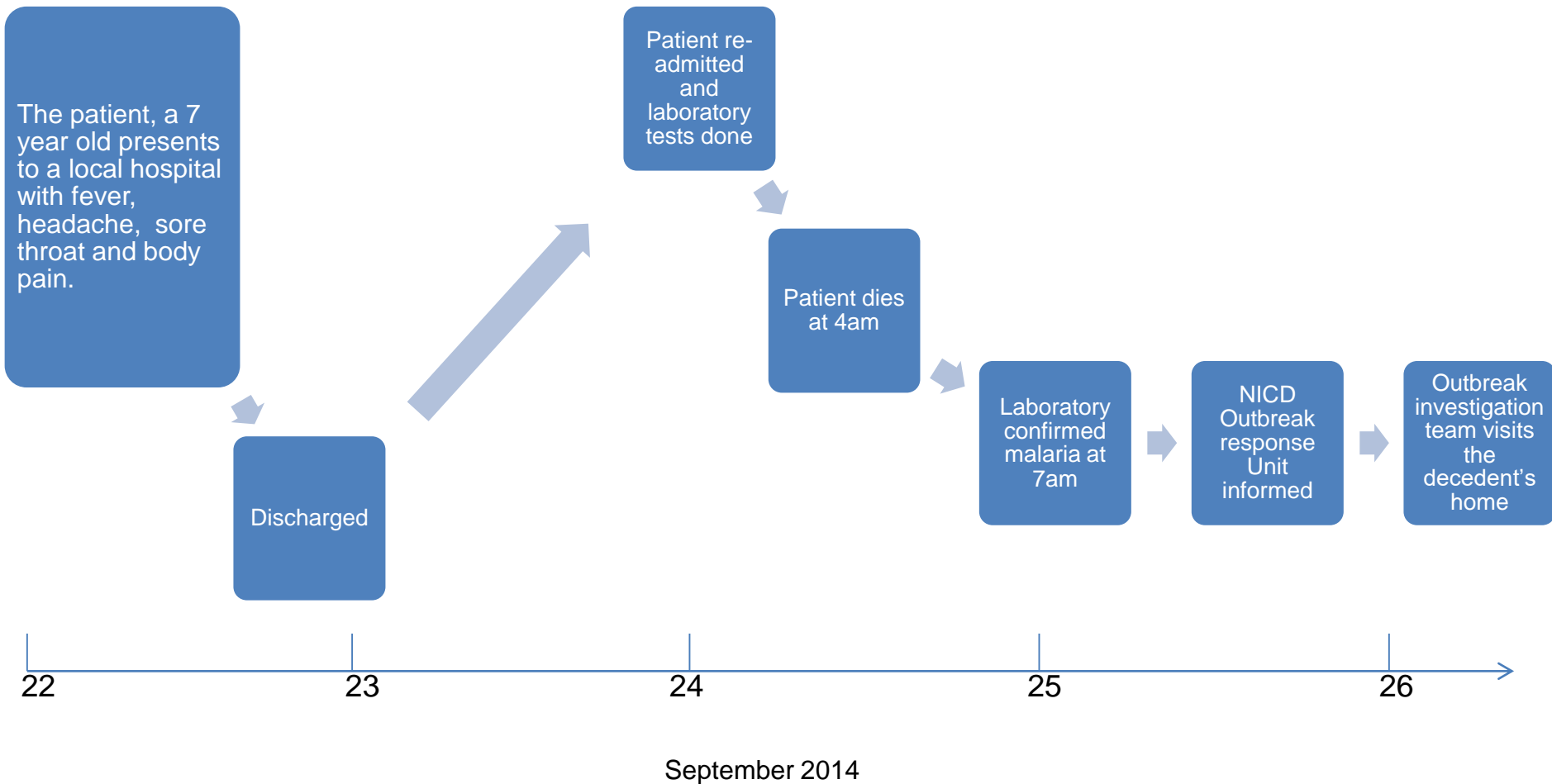




# Odyssean Malaria

- Acquired in a non-malaria-endemic area; has a high mortality rate
- For 2007-2013, Odyssean malaria in South Africa (SA) had 9.5% case fatality rate (14 laboratory-proven and 7 probable cases of odyssean malaria and 2 deaths<sup>1</sup>)
- All malaria cases in non-endemic areas require investigation
- Malaria non-endemic areas include Mpumalanga, Limpopo and KwaZulu Natal
- SA has targeted elimination of malaria by 2018

# Timeline of Current Investigation



# Objectives

- Identify risk factors associated with developing of malaria
- Conduct an environmental health assessment of the area
- Determine the possible origin of the malaria vector and breeding sites in the vicinity

# Methods

## Epidemiological Study

- Odyssean malaria case definition: any person in a malaria non-endemic area with a positive laboratory malaria test and no travel history, with no recent blood transfusion, injection or needlestick injury
- Case Investigation: family interviewed
- Clinical records review
- Clinicians interviewed



# Methods

## Environmental Study

### Inspection

- Decedent's home and immediate surrounds
- Local swimming pool facility
- Proximity of decedent's home to the N17 highway and nearby industrial areas



# Methods

## Entomological Study

- Inspected the decedent's house *Anopheles* species mosquitoes.
- Examined and sampled stagnant water from leaking municipal supplies and river water for mosquito larvae

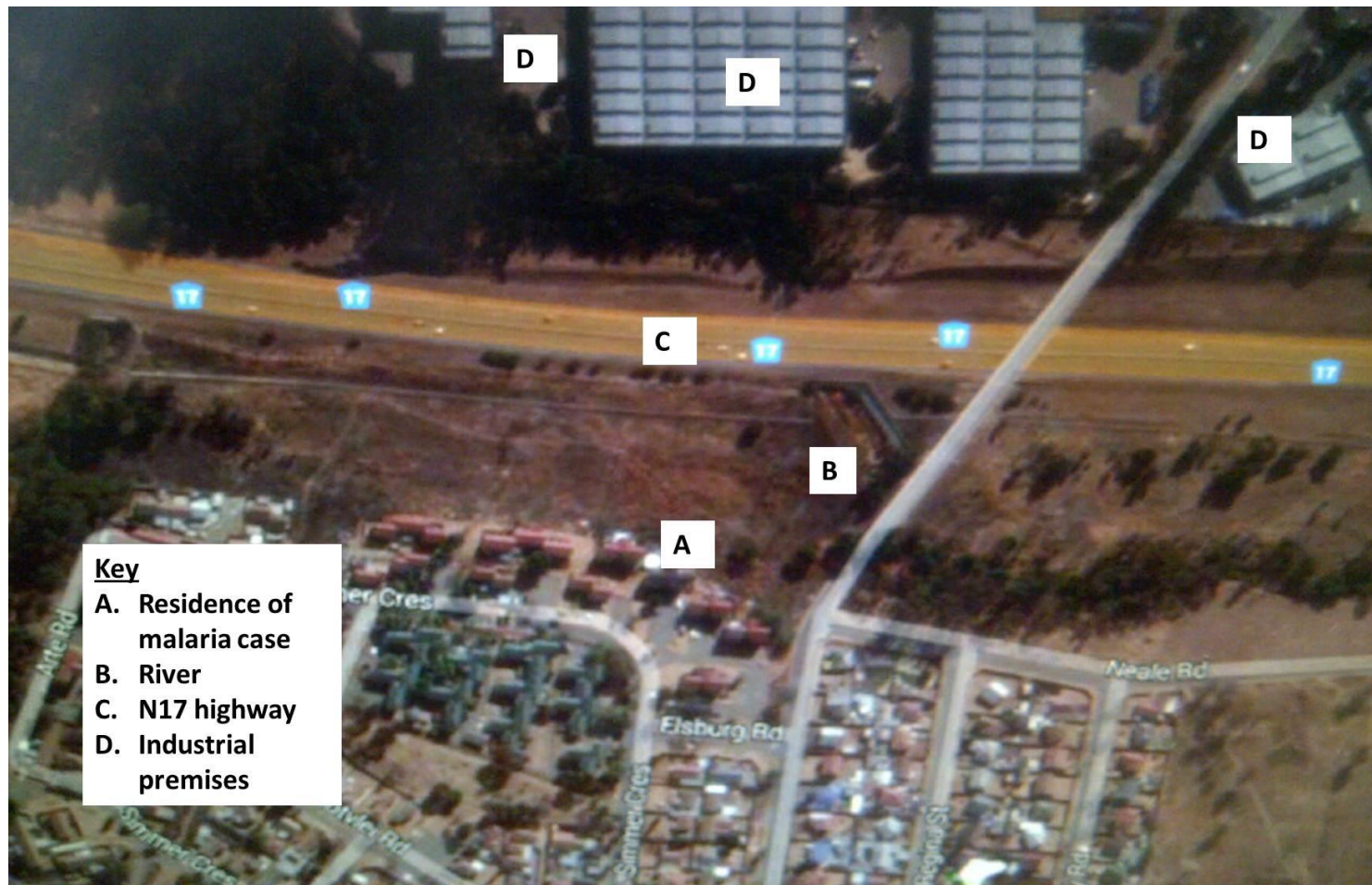


# Epidemiological Findings

- **Travel History** - The decedent and her relatives- no travel to malaria endemic areas in the past six months
- **Health History** - No blood transfusions, injections or needle stick injuries in the past six months
- **Laboratory findings**
  - Platelet count was  $17 \times 10^9/L$  (normal range:  $180-440 \times 10^9/L$  )
  - The blood smear showed malaria parasites and the rapid malaria antigen test for *P. falciparum* was positive (on 25/09/14; 3 days after initial visit to hospital)



# Aerial photography of residence and surroundings



# Entomological Findings

- No malaria transmitting mosquito was found in the sleeping area of the decedent
- Only one female *Culex* sp. (non-malaria transmitting) mosquito was collected from the living room of the decedent's house
- Six *Culex* spp. larvae were collected from open water pools approximately 100 m from the decedent's house

# Discussion

- Decedent acquired malaria via an infected female *Anopheles* species mosquito
- Delayed suspicion/diagnosis resulted in worsening health condition and eventual death
- Missed malaria diagnosis in non-endemic areas leads to a high case-fatality

# Limitations

- The probability of finding odyssean mosquitoes is low, but it is important to check for temporary local breeding sites
- Identifying sources of infective mosquitoes is speculative, but in many cases, busy highways are nearby, suggesting that passing traffic is a possible source of vectors

# Recommendations

- Health communication to sensitize public and health care providers during malaria season in non-endemic areas
- Test for malaria in patients showing malaria-like symptoms and with low platelets
- Malaria rapid tests in non-endemic areas
- Fumigation of all vehicles coming from endemic areas

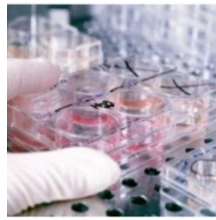
# Acknowledgements

- Gauteng District Environmental Health Practitioners
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- Entomology Unit, NICD
- SAFETP
- The decedent's family



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# Thank you

# Questions?



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