



Johor Brucellosis Outbreak 2015-2016: The Culprit Revealed

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Introduction: Brucellosis

- ▶ Zoonotic bacterial infection caused by pathogenic *Brucella sp*⁶
 - ▶ *B. melitensis*
 - ▶ *B. abortus*
 - ▶ *B. suis*
 - ▶ *B. canis*
- ▶ Transmitted by
 - ▶ inhalation
 - ▶ infected aerosols,
 - ▶ entry through skin wound
 - ▶ ingestion of unpasteurized dairy products^{1,2}.

Introduction: Brucellosis

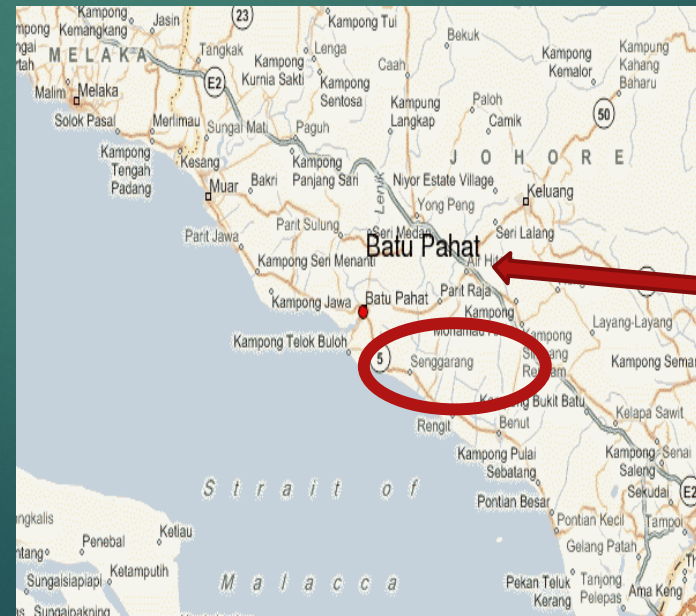
- ▶ Characterised by acute or insidious onset of febrile episode with following symptoms
 - ▶ Night sweats
 - ▶ Fatigue
 - ▶ Anorexia
 - ▶ myalgia
 - ▶ Weight loss
 - ▶ Headache
 - ▶ Arthralgia
 - ▶ Arthritis/spondylitis
 - ▶ meningitis
- ▶ progress to chronic disease with complications (if untreated)
 - ▶ cardiovascular,
 - ▶ osteoarticular,
 - ▶ gastrointestinal,
 - ▶ hepatobiliary,
 - ▶ Neurological
 - ▶ Ophthalmic systems

Introduction: Brucellosis

- ▶ Incidence rate varies globally
 - ▶ Saudi Arabia reported the highest incidence at 137.61 cases per 100,000 per year.
 - ▶ The incidence rate in Malaysia in 2015 was 0.14 per 100,000 population.
 - ▶ In 2015, State of Johor reported 22 cases (IR = 0.6 / 100 000 population)
 - ▶ main risk factor: ingestion of unpasteurized goat's milk from the local farm⁸.
- ▶ Case fatality rate below 1 percent globally⁴.

Introduction: Johor

- ▶ Southernmost of Peninsular Malaysia
 - ▶ Bordering Singapore.
- ▶ Batu Pahat District one of TEN districts in Johor
 - ▶ covers an area of 1,872.56 km²
 - ▶ 447,624 population.
 - ▶ 14 administrative sub-districts (mukim) -Senggarang
- ▶ 10 registered goat farm managed by local people
 - ▶ 3 in Senggarang including **farm A**
 - ▶ Production for local supply
 - ▶ fresh goat milk
 - ▶ meat
 - ▶ Monitored by Dpt Veterinary Service
- ▶ No case in 2014



Introduction:

- ▶ Early April 2015, the Batu Pahat District Health Office (BPDHO) received notification
 - ▶ Post natal patient treated for post-partum pyrexia had Brucellosis (blood C&S)
- ▶ BPDHO District Health Officer conducted investigation to
 - ▶ determine the source,
 - ▶ assess extent of the outbreak
 - ▶ institute control measures.

Methodology : Descriptive epidemiology

- ▶ Descriptive epidemiology
 - ▶ Case definition:
 - ▶ a person presented with fever and one or more of the following: night sweats, arthralgia, headache, fatigue, anorexia or myalgia, drank fresh goat's milk (unpasteurized) from **Farm A** from December 2014 until April 2015 with laboratory confirmation of Brucellosis.
 - ▶ Case findings and investigation
 - ▶ All cases notified to the BPDHO were reviewed.
 - ▶ Tools: Standard Min of Health "Brucellosis Investigation Form"
KKM/BKP/ZOONOSIS/BRUCELLOSIS/1/2011
 - ▶ Method:
 - ▶ Interview the cases for verification
 - ▶ Review cases medical record in hospital

Methodology : Descriptive epidemiology

- ▶ Laboratory investigation
 - ▶ Patients' blood samples for testing
 - ▶ PCR
 - ▶ Culture and sensitivity
 - ▶ Serology
 - ▶ Goats milk for Ring Test (by DVS)
 - ▶ Goats' blood for serological (by DVS)
- ▶ Environmental investigation
 - ▶ Visit to the farm with DVS
 - ▶ See the farming practice of the farmer
 - ▶ Inspect Control of livestock movement
 - ▶ Inspect Pasteurization of goat milk prior to distribution

Limitation

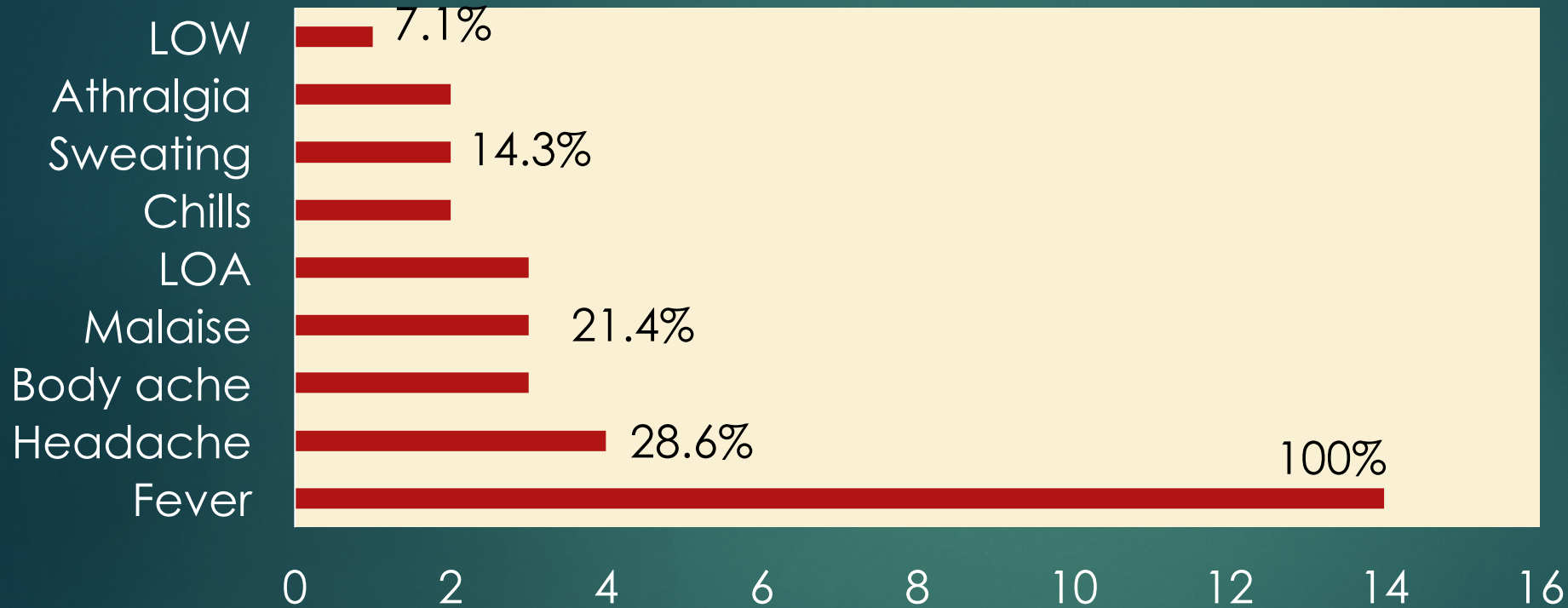
- ▶ Recal bias
- ▶ Challenge in tracing individual who consumed goat milk from Farm A

Results

- ▶ Fourteen cases of Brucellosis were epidemiologically related in two districts of Johor (Batu Pahat(10 cases) and Muar(4 cases)
- ▶ 100% (14/14)cases positive for Brucella mellitensis.
- ▶ All the patients had history of drinking unpasteurized raw goat's milk.
- ▶ Source of the milk was originated from a single farm: **Farm A**
- ▶ Supply milk to Muar Hospimart, Batu Pahat Hospimart, UTHM and local community.
- ▶ Goat's blood serological tests revealed that 44% (22/50) were positive,
- ▶ none of the milk sample showed positive milk ring test.



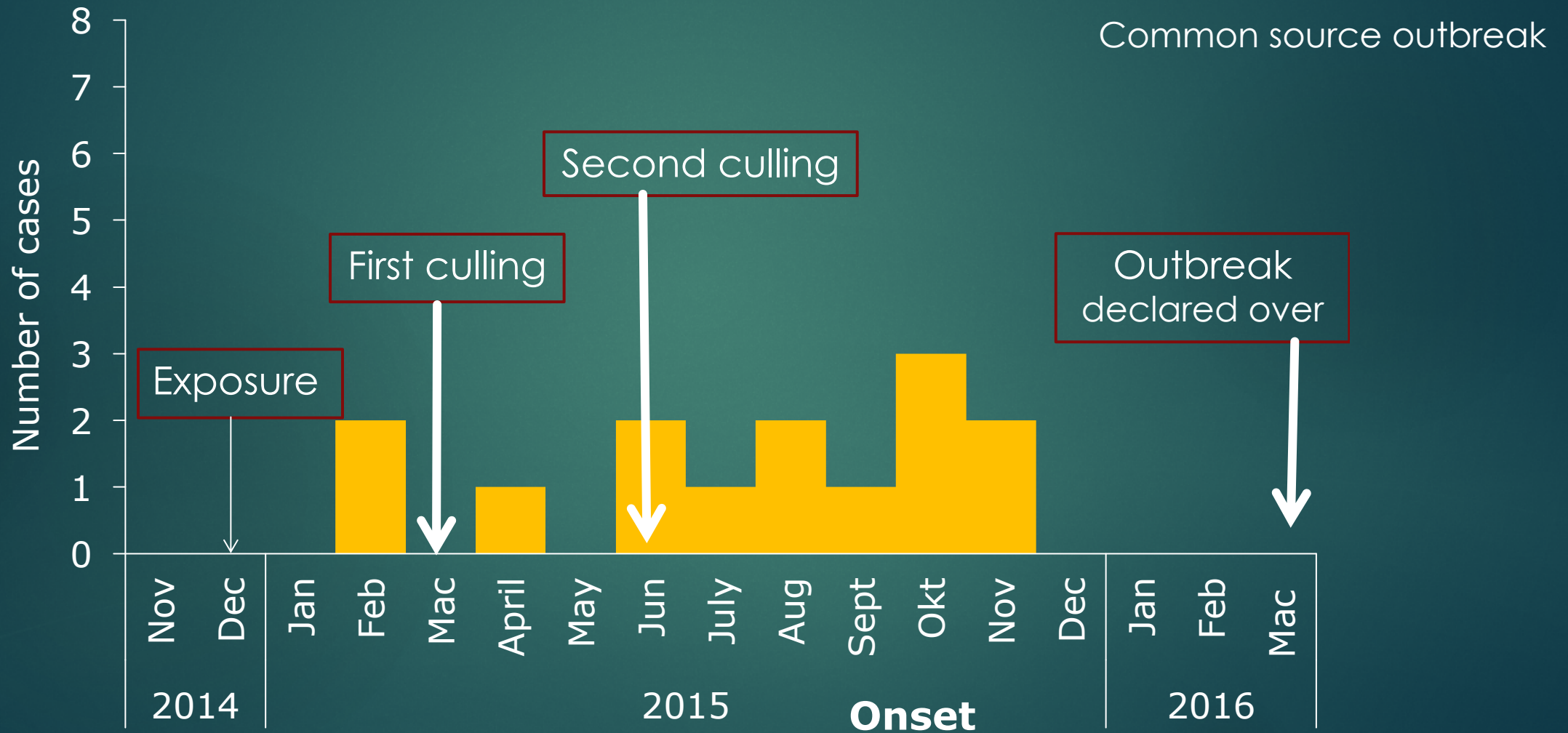
Results: Clinical symptoms of Brucellosis cases, Johor, 2015



- Gender
 - Female 9
 - Male 5
- Median Age 29yo
 - Min 4 yo
 - Max 81 yo

- All cases admitted to hospital
- All discharged well

Results: Epidemic curve Brucellosis Johor 2015



Results: Environmental

- ▶ No livestock's movement control practice by the farm owner, easily spreading of the infection among livestock.
- ▶ Poor husbandry & poor disinfectant practice by the farmer.
- ▶ Milk was not pasteurized, although pasteurization equipment available.
 - ▶ the demands for unpasteurized raw goat's milk were higher among customers.

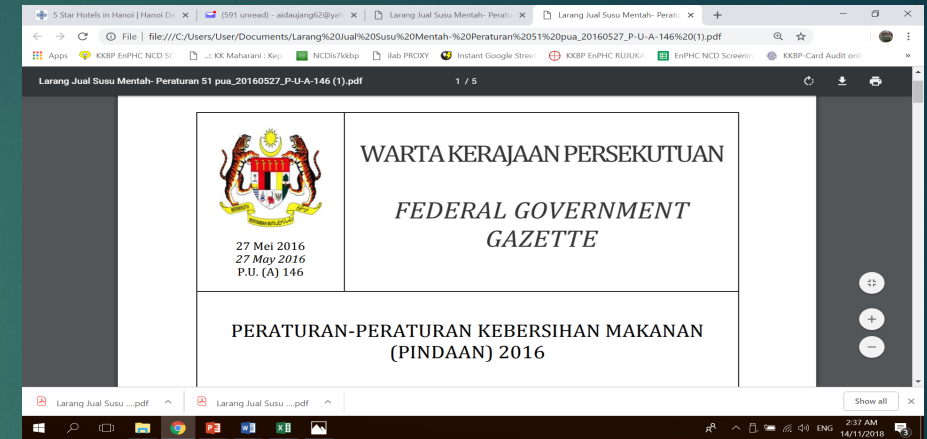


Public Health Action taken

- ▶ Cases were warded and treated with antibiotic
- ▶ Interagency management approach with
 - ▶ DVS, Agriculture department, UTHM
 - ▶ Sampling of goat milk and blood for Brucella
 - ▶ Culling of infected livestock
 - ▶ Control of movement of livestock in the goat farm
 - ▶ Encourage farmer to practice good husbandry of farm

Public Health Action taken

- ▶ Suggested to start enforce pasteurized milk from farmers for distribution
- ▶ Issue was taken up at the ministry level
 - ▶ Gazzetted in Mei 2016
 - ▶ rules enforced in Dis 2016
 - ▶ Peraturan 51 pua_20160527_P-U-A-146.pdf
- ▶ Health alert to all hospitals and clinics in Batu Pahat and Muar - regarding the outbreak. To notify if suspect Brucellosis case.
- ▶ Health promotion and education on taking pasteurized/cooked milk to the community and rest of public



Pewartaan pindaan ke atas Peraturan 82, Peraturan-Peraturan Makanan 1985 dan Peraturan 51, Peraturan-Peraturan Kebersihan Makanan 2009 berkaitan larangan penjualan susu mentah telah dibuat pada 27 Mei 2016.

Peraturan ini berkuatkuasa pada 1 Disember 2016.

Conclusion

- ▶ This was a *Brucella mellitensis* outbreak in Johor 2015-2016, involving two districts, with 14 reported cases, due to ingestion of non-pasteurized milk from **Farm A** which did not practice good husbandry farm.
- ▶ Preventive measures were implemented and manage to contain the outbreak despite facing several limitations.
- ▶ Managing this type of outbreak requires an interdisciplinary collaboration or One Health approach that consists of the development of an infrastructure for disease surveillance and reporting in both veterinary and public health departments, various campaigns for control in livestock and health promotion programs.

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Thank you for your
attention