LACK OF CORRELATION OF BURKHOLDERIA PSUEOMALLEI COUNT IN BLOOD, URINE, SPUTUM AND PUS

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Background

Melioidosis

- Melioidosis, a disease caused by infection with the Gram-negative bacillus *Burkholderia pseudomallei*
- Distribute and survive in water and soil
- Disease is acquired through bacterial inoculation or contamination of wounds, inhalation or ingestion, most are community acquire.
- Mortality rate is around 40% in Thailand.

Melioidosis

- Endemic in South East Asia and northern Australia
- Cases are most frequently reported from northeast Thailand
- The third common cause of death from infectious diseases in northeast Thailand, after HIV/AIDS and tuberculosis
- 2000 cases reported in North east Thailand half is expected to death

Melioidosis

- Pneumonia, hepatosplenic abcesses, septic arthritis or urinary tract infection may occur secondary to bacterial dissemination.

- Quantitative blood culture and quantitative urine culture are prognostic factors for the mortality of melioidosis.

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The aim of this study was to determine whether the bacterial count in blood was correlated with bacterial count in urinary tract, respiratory secretion and abscesses.

Material and method

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- A prospectively study was performed between July 2004 and October 2006 at Sappasithiprasong Hospital, Ubon Ratchathani, northeast Thailand.
- Adult patients (aged ≥14 years) with suspected melioidosis. Multiple samples were taken from suspected cases.

Quantitative of *B. pseudomallei* in Blood

- 15 ml of blood from patient
- 10 ml in Isolator lysis centrifugation tube
- Centrifuged at 1500 g and 4 C for 30 minutes
- Using sediment was 0.5 ml inoculated onto Ashdown's agar plates
- All agar plates were incubated for four days at 37◦C in air

Quantitative of *B. pseudomallei* in Blood

- 5 ml in BacT/ALERT FA bottle (BioMérieux, Durham, NC)
- Bottle was maintained at 37◦C in air
- Sub-cultured onto horse blood agar after 1, 2,

and 7 days and at additional time-points if cloudy.

Quantitative of *B. pseudomallei* in respiratory secretion and pus

- Using a serial dilution based on positivity by direct immunofluorescent microscopy.
- Positive samples were serially diluted to 1:100, 1:1,000, 1:10,000, and 1:100,000
- Spread 10 mcl of each dilution onto an ASH
- All ASH plates were incubated at 37°C in air for 4 days

Quantitative of *B. pseudomallei* in urine

- Using 1 mcl of fresh urine plated onto MacConkey agar plate and ASH plate
- The remaining urine centrifuged at 3,000 rpm for 5 minutes
- Removed supernatant, and was plated
- Spread the pellet onto one half of an ASH plate.
- All ASH plates were incubated at 37◦C in air for 4 days

Result

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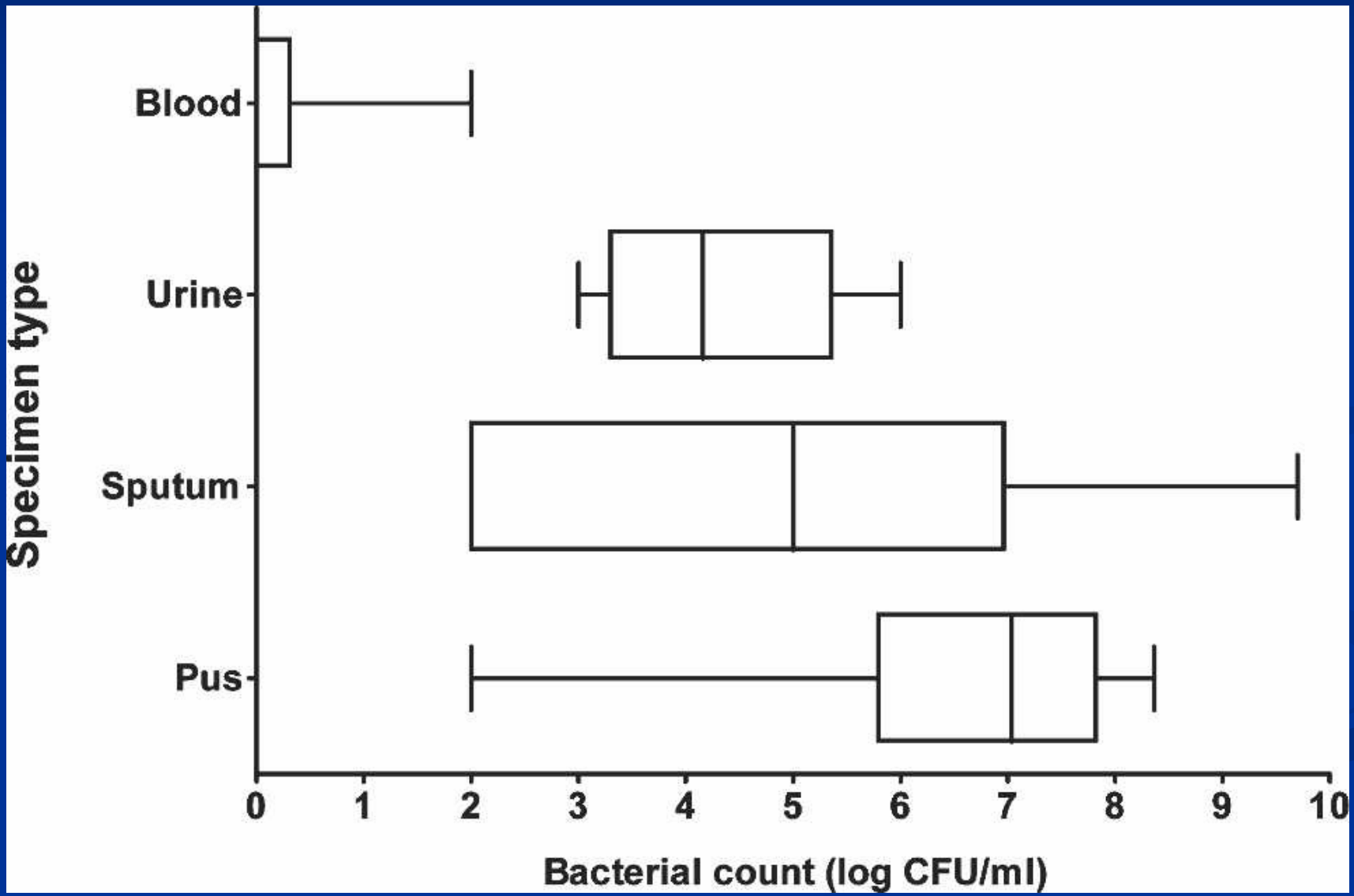
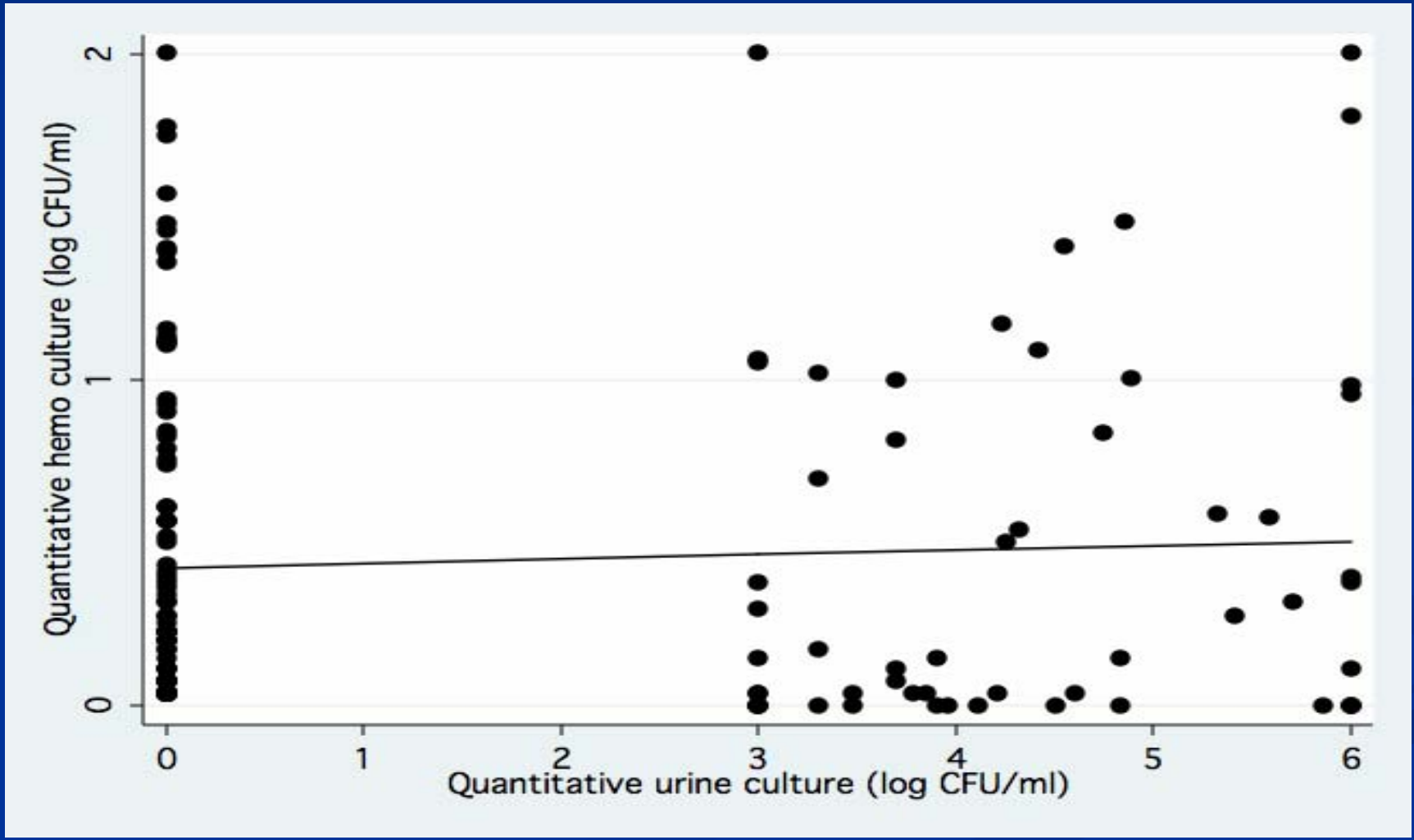
- 414 patients with culture-confirmed melioidosis had a total of 830 specimens

- 203/414 blood, 56/268 urines, 94/120 respiratory secretions and 23/28 pus samples were culture +ve for *B. pseudomallei*

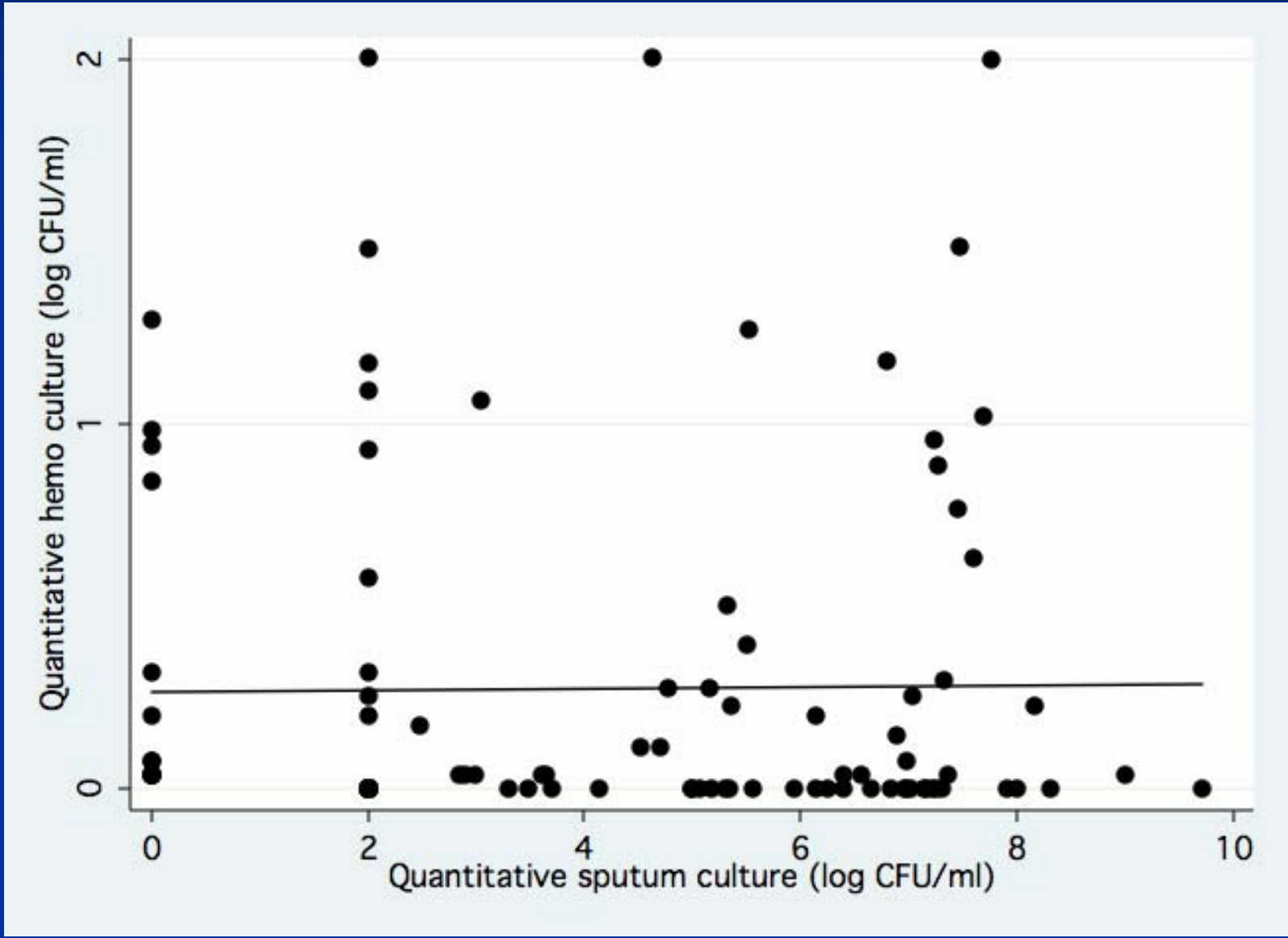
Result of Quantitation of *B.pseudomallei* in clinical sample



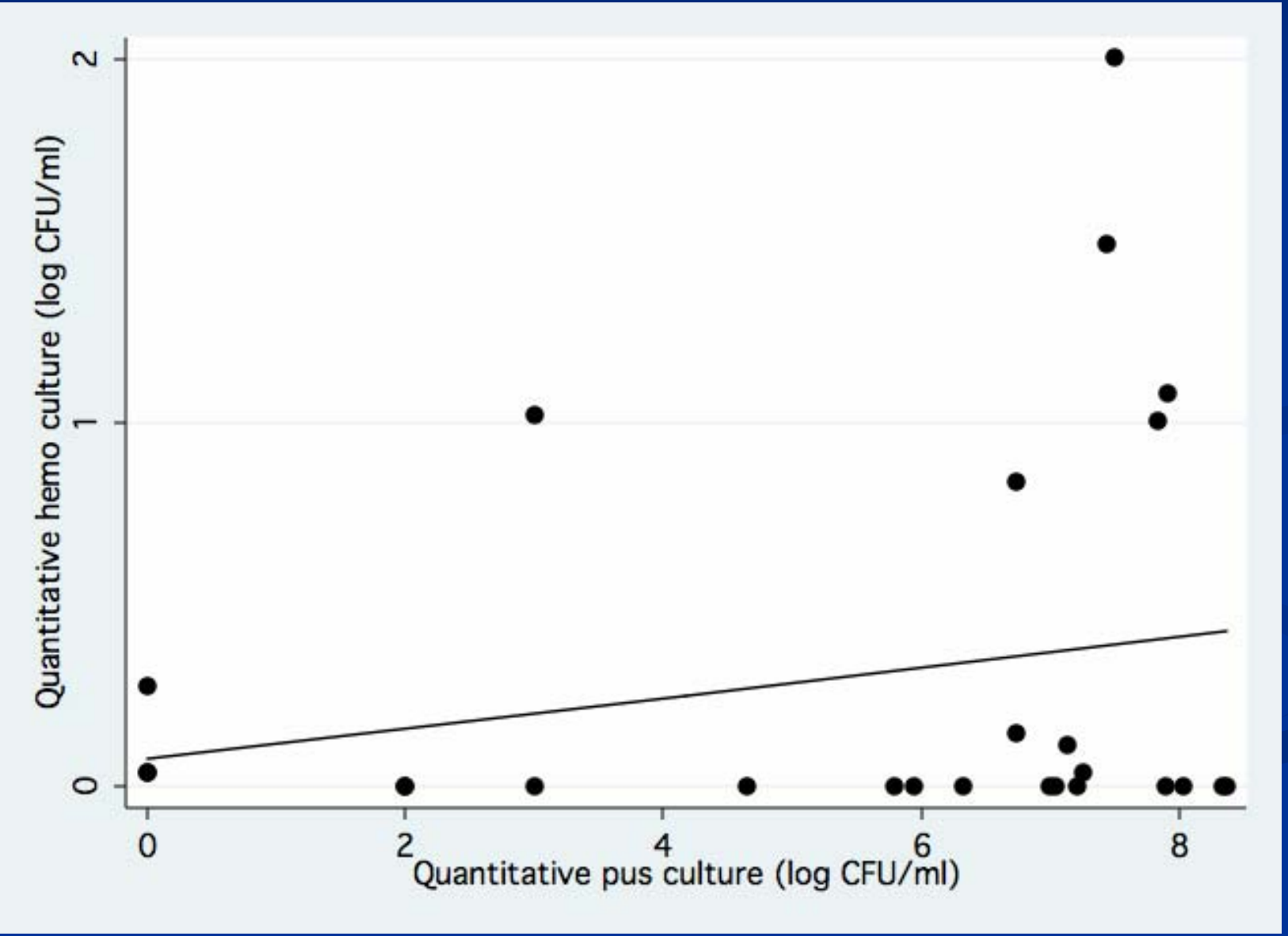
Scatter plot of *B. pseudomallei* quantitative culture of blood and urine



Scatter plot of *B. pseudomallei* quantitative culture of blood and sputum



Scatter plot of *B. pseudomallei* quantitative culture of blood and pus



Summary

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- Correlation between bacterial counts in blood and other samples were not found

- These data do not support the idea that bacteria in the bloodstream passively filter into the urine

Limitation of studies

- This study has the limitation that we could not control for variable route of infection, antimicrobial administration, and differences in bacterial strain and host susceptibility.

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