Q fever/Zika Update

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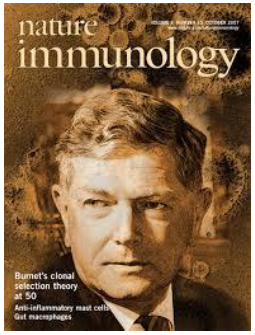

Q Fever - History

- ‘Q (Query) Fever’ described in 1935 by Dr Edward Holbrook Derrick in Brisbane.
- Macfarlane Burnet and Mavis Freeman isolated ‘rickettsial like rods’. Named *Rickettsia burnetii.*
- 1935 Gordon Davis in Montana studying RMSF isolated “Nine Mile agent”. Research continued by Herald Rea Cox.
- Considered a new rickettsial species
- 1938 Name changed to *Coxiella burnetii.*

Microbiology

- *C. burnetii* - obligate intracellular, small gram negative bacterium.
- 16 S rRna sequence analysis shows it is related most closely to *Legionella pneumo*.
- Mutates between its 3 forms - phase I, phase II (differ in their LPS) and spore like form.
- Phase I - virulent form found in nature and infected animals/humans
- Phase II - avirulent form - non infectious
- Phase I/Phase II serology

Epidemiology

- Zoonosis - found world wide
- mean of 500 clinical cases per year in Australia
- Vast majority of cases occur in Northern NSW and Sth Queensland with higher rates of non occupational cases
- More common hosts - goats, cattle and sheep. Most commonly as asymptomatic shedding, but can cause septic abortions.
- High bacterial load found in placenta and amniotic fluid of animals
- Ticks and other arthropods in life cycle with native animal vectors

- Contracted via inhalation
- Highly infective - one organism is sufficient to cause disease

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MEDICAL INTELLIGENCE ARCHIVE

Poker Players' Pneumonia

Joanne M. Langley, M.D., Thomas J. Marrie, M.D., A. Covert, M.D., David M. Waag, Ph.D., and Jim C. Williams, Ph.D.

N Engl J Med 1988; 319:354-356 | August 11, 1988 | DOI: 10.1056/NEJM198808113190607

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This article has no abstract; the first 100 words appear below.

Q FEVER, a zoonosis caused by the rickettsia *Coxiella burnetii*, is endemic in many parts of the world. Cattle, sheep, and goats are the primary animal reservoirs of infection.[1] Humans become infected after inhalation of aerosols contaminated by *C. burnetii*.[1] In Nova Scotia, Q fever is endemic in rural areas, accounting for up to 20 percent of cases of community-acquired pneumonia requiring hospitalization.[2] Q fever has been associated with exposure to products of feline parturition[3] and with skinning wild rabbits.[4] We report an outbreak of Q fever that occurred between March 5 and 16, 1987, among 12 adult . . .

MEDIA IN THIS ARTICLE

FIGURE 1

Epidemic Curve Showing the Date of Onset of Pneumonia among 12 Poker Players Exposed to a Cat Infected with *Coxiella burnetii* That Gave Birth in the Poker-Playing Room on February 14, 1987.

- Human to human spread is unlikely to occur (sexual transmission/childbirth)
- Usually animal/occupational exposure

Exposure

- Abattoir workers/Recreational shooters
- Visitors to abattoir - drivers/plumbers/cook
- Joggers on path near abattoir
- Vets/Farmers - visiting sale yards
- Cosmetic factory
- Workers at a Victorian Goat farm

- Southern Holland 2007-2010 > 4000 cases!
- Now - Western suburbs Melbourne

THE FLINDERS News

Friday February 17, 2017

News | Local News

Q Fever support group for the Mid North

Sarah Maunder
16 Oct 2015, 12:46 p.m.

Share Tweet Email

A Q Fever support group has started in the Mid North, reaching people online through a Facebook group.

The Facebook group was started by Q Fever sufferers Kendall Jackson and Barbara Willoughby.

Kendall Jackson was working as a rural reporter for the ABC, covering the Jamestown sheep markets when she contracted Q Fever in 2004.

She was at the event for only 20 minutes.

"That event is referred to as a Q Fever outbreak because 22 other people were infected that day," Mrs Jackson said.

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Goat farmer Sandy Cameron. and Dr John Stenos. Picture: Mike Dugdale

Geelong

Meredith goat's cheese maker's million-dollar push to find Q fever vaccine

Mandy Squires, Geelong Advertiser
October 23, 2015 11:18am

Pathogenesis

- Phase I organism internalised by Mono/Macrophage. Prolonged survival – stimulates CMI
- Lives within phagolysosome, with its metabolism enhanced by a acidic environment

Clinical Illness

- Subclinical - 60%
- 40 % Febrile illness - duration 1-2 weeks
- May require hospitalisation.
- Mortality rate <1%
- 0.2 %-5% develop chronic infection
- 10-50% post Q fever debility syndrome

Acute Illness

- Incubation period is 14-39 days (av 20)
- Self limiting flu like illness - abrupt onset of fevers, severe headache, chills, drenching sweats, myalgia, arthralgia, may have vomiting and/or diarrhoea or dry cough, but pneumonia is uncommon in Australia
- Hepatitis - biochemical common, jaundice rare
- Rarer - Meningoencephalitis, myocarditis, epididymo-orchitis and pericarditis all approx 1%

Illness - Victoria

- Spelman 1982 - Case series of 111 patients at Fairfield b/w 1962 and 1981
- All except 1 were male. 102 had been working in an abattoir within last 6/52
- Acute febrile illness.
- 7% Atypical pneumonia
- <3% Acute hepatitis with jaundice

Acute Illness - Victoria

- 100% Fever
- 30% Hepatosplenomegaly
- 42 % reported Chronic Fatigue like symptoms post Acute Illness
- 3/111 had chronic Q Fever (two after acute treatment)

Acute Illness: Investigations

- Usually normal WCC, with 8% with leucopenia and 3% raised
- Thrombocytopenia may occur
- 85 % abnormal LFT's. All Bilirubin <60 and only 8 had AST >200 (x4 normal)
- Usually elevated ESR and CRP.

Chronic Q Fever

- <5% overall
  - Endocarditis - typically in structurally abnormal heart or prosthesis
  - Recommendation now to screen with TTE and treat longer if abnormal valves.
  - Other forms -
    - Granulomatous Hepatitis,
    - Osteomyelitis,
    - Endovascular with infection of aneurysms/vascular grafts

Diagnosis

- Serological (IF)
  - Acute - Phase II IgG > 200 and IgM >50
  - or Rising Titre x4 at 3/52
  - or Single serum Phase II IgM 1:256
  - Chronic - Phase I IgG > 1024 - Suggestive

- PCR -
  - Blood
    - Rapid diagnosis in early illness
    - May be positive with endocarditis
  - Tissue eg valves/bone

Treatment

- Acute illness - 2 weeks of Doxycycline 100mg bd and consider longer treatment if abnormal heart valves

- Chronic Q fever - 2 years + of dual agents. Usually Doxycyline and Rifampicin or Fluoroquinolone - with plaquenil.
- May need valve replacement with endocarditis

Vaccine - Q Vax

- Developed by CSL in 1989
- Consist of killed purified phase I *C. burnetii,* stimulates CMI (only 50-80% seroconversion)
- 1994 only 1:7 meat workers vaccinated. Now 1:3.5. 100% effective in 1998 outbreak
- $80 - $100 requires pre skin test and serology to avoid reaction.

Q Fever debility syndrome

Inappropriate fatigue after exertion
Night sweats
Myalgias and arthralgias
Mood disturbance
Alcohol intolerance
May improve over first year or two
But then seems indefinite
Follows 30-50% of acute Q fever cases

Lancet April 6 1996

Mr S. O - 59 yo electrician

Mid May 2015 - working at rendering plant (Brooklyn)
Mid June - acute febrile illness - 2 weeks off work

Workmate suggested he might have Q fever

- treated Doxycycline
- Negative serology on 30th, became positive by 15th July

11th Aug - fatigue - post exertion. Not doing much.
No strength. Only few holes golf. Keen to return to work

Sept - failed light duties half days. Mediator called in.

Nov - light duties two days a week. Cart for golf. Exhausted after.

Feb 2016 - off work since Nov 2015. Tires easily. Frustrated

May 2016 - Not working. Unchanged fatigue. Pacing self better

Nov 2016 - Fatigue unchanged. Trying to retrain, 3 month course

Mr D.C. - first seen mid Oct 2016

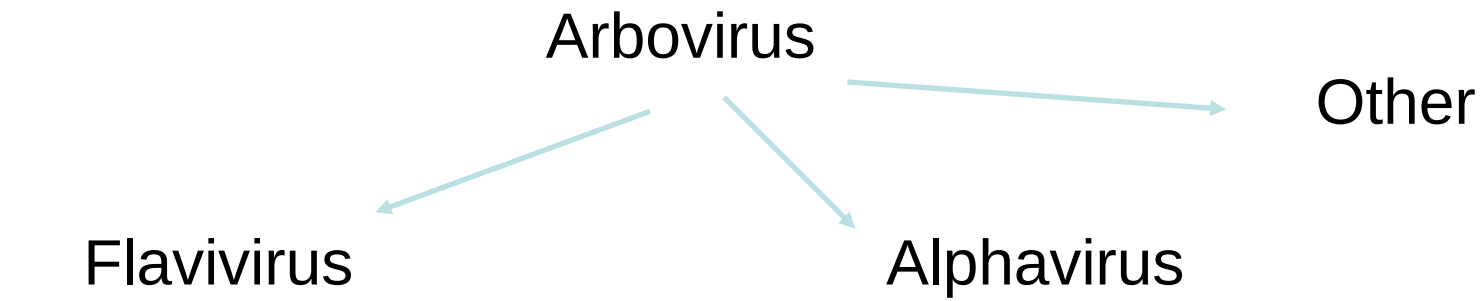
Febrile illness - late July 2016 - “sickest ever been”
11th Aug WGH ED - IV fluids and Panadol
Fever settled over next week - still tired - ?Q
Bloods 25th Aug and started doxy 31st Aug.

Back to work in September - short days only - not physical. Post exertion fatigue and sweats, myalgia. Struggled to get of bed. Decreased libido.

Oct - “OK two days a week. Like run over by a bus five days a week”. Difficulty concentrating on computer training.

Late Nov. - Full days at work - tired end of week.
Minimal exertion - tired and rest after 10 mins.
Alcohol intolerance, still reduced libido.

Zika Virus Update



Yellow Fever virus
Dengue virus
MVE virus
Kunjin virus
JBE virus
West Nile virus
Zika virus

Ross River virus
Barmah Forest virus
Chikungunya virus

Transmitted by bites from Aedes sp. mostly aegypti.

Incubation period 3-12 days
Resolves 4-7 days

Non severe disease

Low grade fever
rash,
conjunctivitis,
arthralgias,
myalgia,
headache
post illness fatigue

Complications

Foetal abnormalities

Guillan Barre Syndrome

Guidelines - DHS website

Risk of Transmission

High	Medium	Low
Central/South America	Fiji	PNG
	Cuba	Samoa
Thailand	Indonesia	Cambodia
Vietnam	Malaysia	Laos
Phillipines	Singapore	Vanuata
		Maldives

No risk if more than 2000 metres!

Advice

Travellers to high or moderate risk country

1. Pregnant women or risk of pregnancy - Defer travel

Post travel advice for pregnant women - avoid unprotected sex with a male partner who has been to a high or moderate risk country for the duration of the pregnancy or for 6 months, whichever is longer. Avoid unprotected sex with a female partner who has been to a high or moderate risk country for 8 weeks.

All women - avoid unprotected sex for eight weeks after return

Avoid unprotected sex with male partner who has potentially been exposed for six months.

Testing - serology/PCR

ALL SYMPTOMATIC INDIVIDUALS with EITHER

A history of travel within the last 2 weeks to a Zika virus affected country OR
A history of sexual exposure(vaginal/oral/anal) to a person diagnosed with Zika virus OR
A history of sexual exposure(vaginal/oral/anal) to a person who has travelled to a Zika virus affected country

ASYMPTOMATIC PREGNANT WOMEN who

Have travelled to a Zika virus affected country OR
Have had sexual exposure to a traveller from a high or moderate risk Zika virus affected country.
Refer to Interim recommendations for assessment of pregnant women returning from Zika virus affected countries.

ASYMPTOMATIC MEN or WOMEN who

Have travelled to a high or moderate risk Zika virus affected country AND
Are unable to wait the recommended duration for avoiding pregnancy or unprotected sex