

# Gaining new information on an old problem

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## *Australian Paediatric Surveillance Unit*

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**SYDNEY**  
**CHILDREN'S**  
**HOSPITAL**

# A Clinical Scenario

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# Another Clinical Scenario

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What is the diagnosis ?

What optimal tests should we perform?

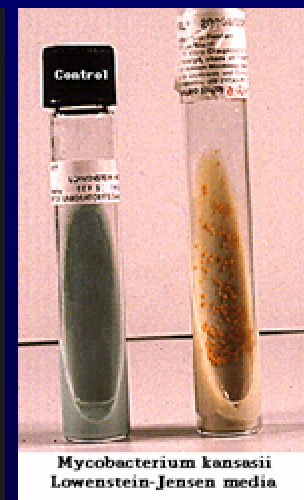
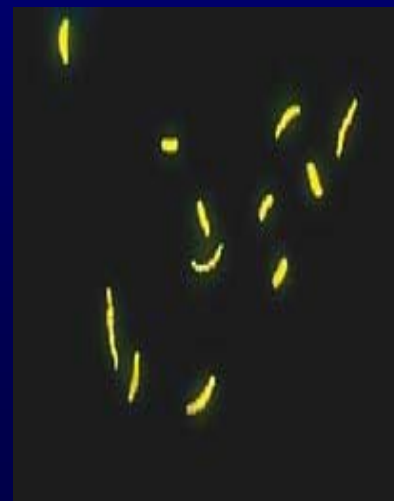
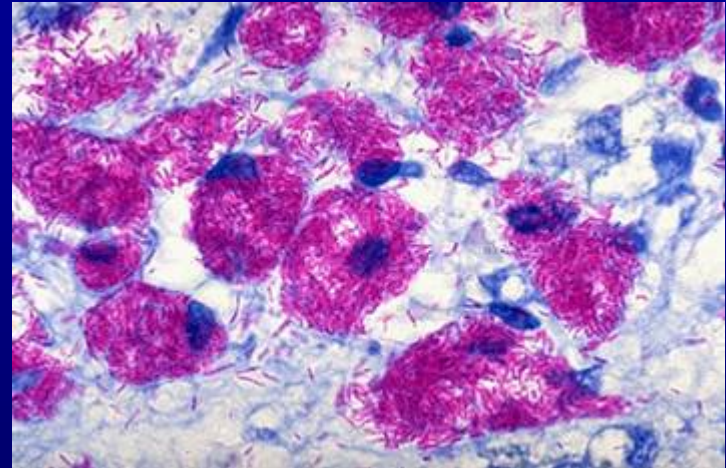
What is the optimal management ?



How common is this among children in Australia ?

# Non tuberculous mycobacteria (NTM)

- ◆ Soil and water organisms
- ◆ Cervical lymphadenopathy (in healthy children)
- ◆ Sometimes skin/soft tissue
- ◆ Rarely pulmonary and otologic
- ◆ Problematic to some “risk groups”



# Clinical syndromes and types of causative organisms

Clinical disease	Common	Less common
Lymphadenitis	MAC(80%) , <i>M scrofulaceum</i>	<i>M kansaii</i> , <i>M fortuitum</i>
Cutaneous	<i>M abscessus</i> , <i>M marinum</i>	<i>M chelonae</i> , <i>M fortuitum</i>
Pulmonary	MAC (60%) , <i>M kansaii</i> (20%)	<i>M abscessus</i> (10%) <i>M fortuitum</i>
Otologic	<i>M abscessus</i>	<i>M fortuitum</i>
Disseminated	MAC	<i>M kansaii</i>

Committee on Infectious Diseases American Academy of Pediatrics  
2000 Red Book

# Non tuberculous mycobacteria (NTM)

- ◆ Granuloma formation
- ◆ Delayed type hypersensitivity (DTH) response – positive skin testing



*Daley A et al, Arch Dis Child (1999)*  
*Huebner RE et al, Ped Inf Dis J (1992)*  
*Pang et al, Tubercle Lung Dis (1992)*

For reproduction of slides, acknowledgement of the editors and their clinical departments is appreciated.

# Skin testing

- ◆ Extensive cross reactions between with human PPD (Mantoux) and the Avian PPD (shared antigens)
- ◆ Avian > positive than Mantoux
- ◆ Positive Avian reaction
  - 70% to 98% in several studies
- ◆ Dual skin testing
  - Sensitivity of 78%
  - Dominant skin reaction >3mm: > 95% specific

*Daley A, Isaacs D et al Arch Dis Chil 1999;80:377-79, Huebner RE et al Ped Inf Dis J 1992;11:450-456, Pang et al Tubercle Lung Dis 1992; 73:362-367*

## What is known

### *Incidence in healthy children*

- ◆ Lymphadenopathy  
1: 100 000 pa  
(Norway, USA, Canada and New Zealand)

### *Prevalence in CF*

- ◆ 3 – 30% of respiratory samples +ve for NTM

## ? Australia

- ◆ Incidence
  - healthy children in Australia?
  - other groups?
- ◆ Australian demographics?

### Australian laboratory data

(2000)\*

- estimates 1.8/100,000 clinically significant NTM isolates  
(adults + paediatrics)

\* Haverkort, F. *Comm. Dis Intell* (2003)

## What is done

### *Diagnosis*

- ◆ Combination of
  - clinical features
  - laboratory findings
  - +/- skin testing

Nb: Can be confused with  
*Mycobacterium tuberculosis*  
infection (TB)

## ? Australia

### *Diagnosis*

- ◆ What is the practice in Australia for diagnosis of NTM infection?

# How to manage

# ? Australia

## *Lymphadenitis*

- ◆ Nothing
  - ◆ Surgical
    - excision
    - not always possible (facial nerve)
  - ◆ Medical
- ◆ How do clinicians manage this condition?
    - medical therapy vs surgical therapy or combination?
  - ◆ What proportion of children develop complications ? (e.g. draining sinuses or recurrent disease)

# Surveillance of NTM infections in childhood in Australia

## AIMS

- ◆ Estimate the incidence of newly diagnosed NTM infections in Australian children
- ◆ Describe the spectrum of disease, risk factors, diagnostic practices, management and response(s) to treatment
- ◆ Describe diagnostic investigations including the frequency of skin testing and clinical utility of test

# Method

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- ◆ Monthly APSU card reporting\* (suspected or proven NTM infections)
- ◆ Questionnaire to respondents with cases
- ◆ Follow up questionnaire (6 weeks)
  - complications or additional management?
- ◆ Corroboration with state reference mycobacterial laboratories
  - species identification
  - additional “missed” isolates

\* *Paediatricians and Paed. Surgeons*

# Case definitions

## Definite NTM infection

NTM species identified either by isolation or polymerase chain reaction (PCR) from a sterile site

## Probable NTM infection

Compatible clinical entity

**AND**

One or more supportive investigation

**AND**

In low prevalence population of *Mycobacterium tuberculosis*(MTB) or where diagnostic tests for MTB infection done and negative

## Compatible clinical entities

Lymphadenitis (any site)

Skeletal infection

Pulmonary disease

Disseminated infection

Cutaneous infection

Otologic disease

## Supportive investigations

Microbiology

Histopathology

Radiology

Skin testing

# Investigators

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- ◆ Cheryl Jones – CHW
- ◆ Andrew Daley, RWH & RCH, Melbourne
- ◆ Guy Henry, SCH, Randwick
- ◆ David Burgner, PMH, Perth
- ◆ Clare Nourse, Mater Hosp, Brisbane
- ◆ Paul Goldwater, WCH, Adelaide
- ◆ Mycobacterium Reference Laboratories