Listeriosis in Hong Kong - the perspective of a public health medical laboratory

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Listeriosis

- Bacterial disease caused by *Listeria monocytogenes*
- Route of transmission:
  - Food-borne (bacteria can multiply in refrigerated foods): Non-pasteurized milk or milk products (e.g. cheese), ready-to-eat meat
  - Maternal-foetal: Any stage of pregnancy (in utero or perinatal)
- Incubation period:
  - Variable: 3-70 days
  - Estimated median: 3 weeks

Listeriosis

- High risk groups for disease:
  - Neonates
  - Elderly
  - Immunocompromised
  - Pregnant women / foetus
  - Alcoholic, cirrhotic or diabetic adults
- Normal host (children and those under 40 years of age) acquiring infection may exhibit only an acute mild febrile illness

Listeriosis

- Clinical manifestation:
  - Newborn and adults: Meningoencephalitis and/or sepsis
  - Pregnant women: Fever, or may be asymptomatic
  - Foetus / infant: Stillborn, sepsis, meningitis

Clinical laboratory diagnosis

- Sterile site specimens: Cerebrospinal fluid, blood, amniotic fluid, etc.
- Direct microscopy and bacterial culture
- Serotypes:
  - Most common: 1/2a, 1/2b, 4b
  - 1/2a most frequent in food
- Genotyping: E.g. pulsed-field gel electrophoresis

Listeriosis in Hong Kong

- Prior to inclusion as notifiable disease, invasive disease caused by *Listeria monocytogenes* would usually be reported to the Centre for Health Protection
- Designated as notifiable disease since 14 July 2008

Case definition - Listeriosis

Listeriosis

(Last updated on 27 September 2006)

Description

An invasive disease caused by *Listeria monocytogenes* manifests most commonly as meningitis or septicaemia; infection during pregnancy may result in fetal loss through miscarriage or stillbirth, or neonatal meningitis or septicaemia.

Case definition - Listeriosis

Laboratory criteria

Any one of the following:

- Isolation of *Listeria monocytogenes* from a normally sterile site (e.g. blood or cerebrospinal fluid or, less commonly, joint, pleural, or pericardial fluid, or placental or meconium or fetal tissue)
- During a common source outbreak, isolation of *Listeria monocytogenes* from stool

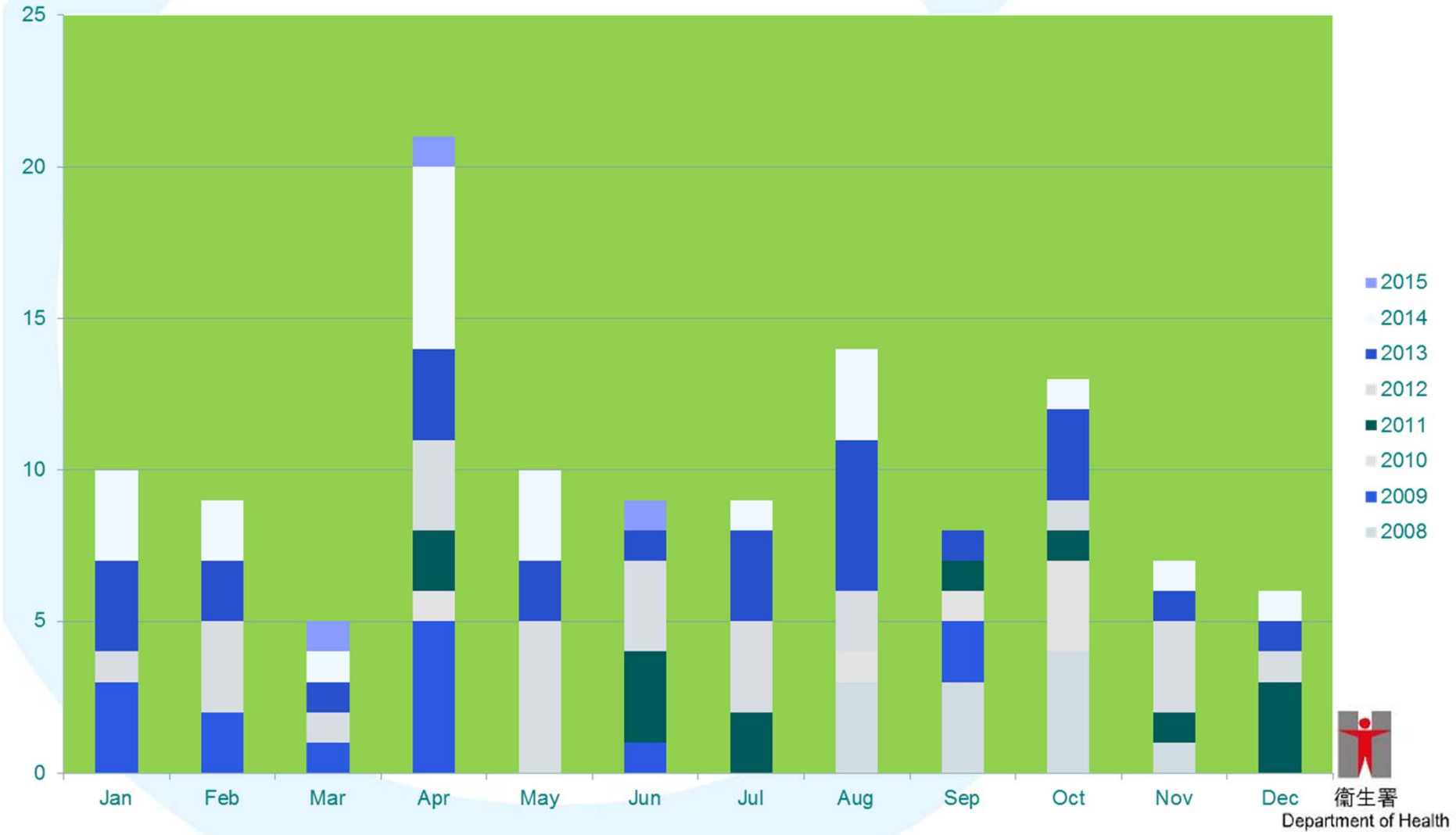
Confirmed case

A clinically compatible case that is laboratory confirmed.

Notified cases in Hong Kong

- 2008 (14 July onwards): 11
- 2009: 14
- 2010: 6
- 2011: 13
- 2012: 26
- 2013: 26
- 2014: 22
- 2015 (to June): 3

Notified cases in Hong Kong



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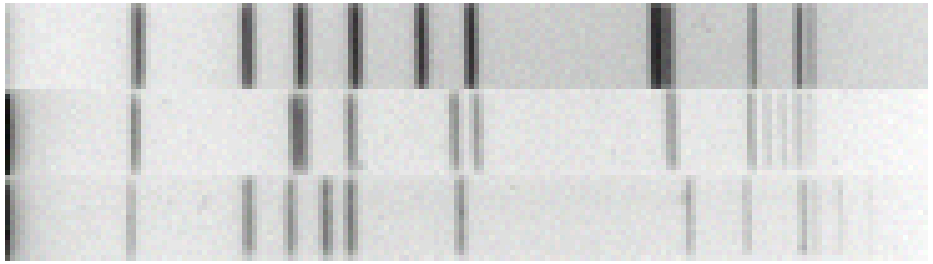
Case study 1

- Prior to being designated as notifiable disease, generally <10 cases per year
- Within a 3-month period, 4 patients with blood cultures positive for *Listeria monocytogenes*
- Epidemiological investigations did not reveal exposure to common source
- The 4 patients attended 4 different hospitals

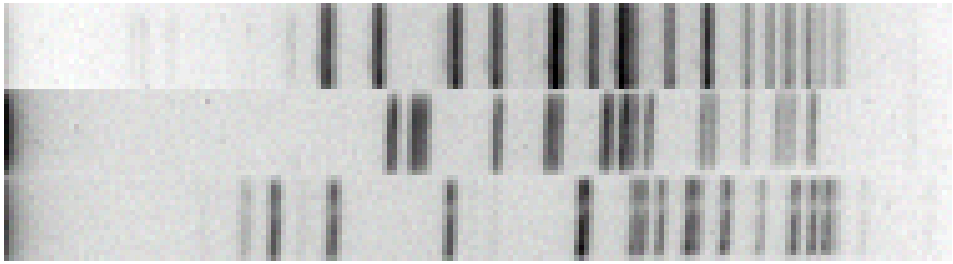
Typing results

- Isolate not saved for one patient
- Three isolates of different serotypes
- PFGE patterns of isolates significantly different

PFGE-AscI



PFGE-ApaI



Interpretation

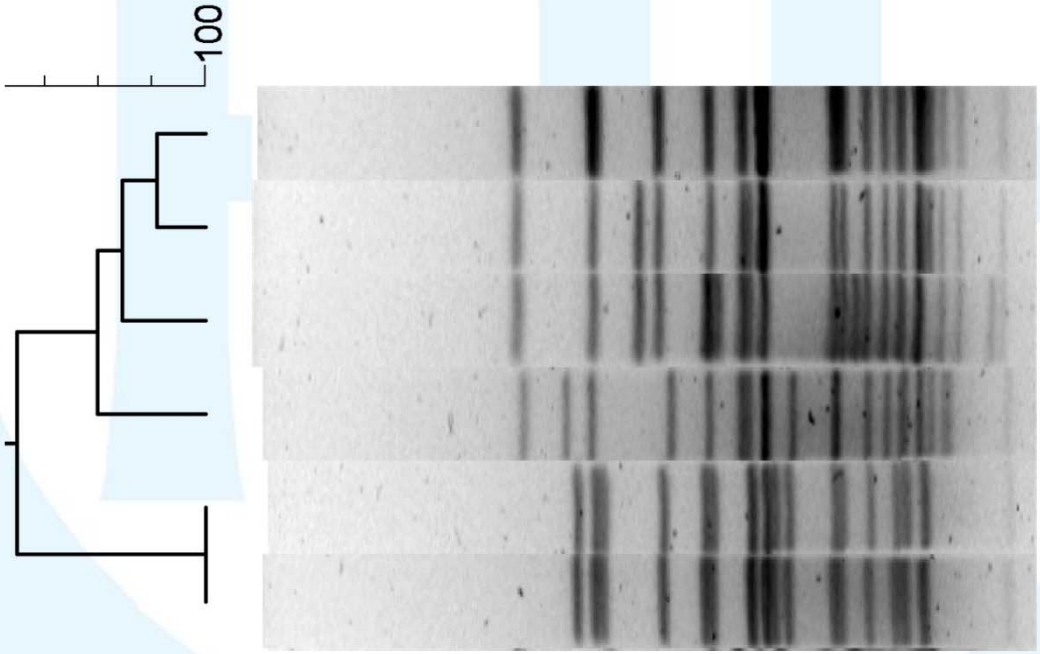
- Typing results did not suggest clonal origin of organism
- Still requires public education to avoid consumption of high risk foods especially for at risk populations
- Disease incidence subsequently returned to baseline

Case study 2

- Perceived increase in notifications of listeriosis with onset in August 2013
  - January to July: 1-3 cases per month
  - August: 5 cases
  - (September to December: 1, 3, 1 and 1 case respectively)
- Request for typing study on isolates from cases since July

Typing results

- PFGE with ApaI



F 79 Blood culture

F 85 Blood culture

F 48 Blood culture

F 34 Blood culture

F 32 Placental swab

F 1M Ear swab

Perspective

- Provision of advice on appropriate laboratory testing
- Support on diagnostic and public health laboratory investigations
- Interpretation of laboratory findings based on epidemiological and clinical information
- For clinical diagnosis and to support rational public health control and preventive measures for listeriosis

Thank you

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