

# **Anthrax in Heroin Users, Scotland 2009 / 2010**

**2012 International Conference on  
Health and Security (ICHHS)**

**Washington DC, USA**

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# Anthrax in Drug Users

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25 July 2012 Last updated at 10:18

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## Case of anthrax confirmed in Lanarkshire heroin user

**A case of anthrax has been confirmed in an injecting drug user in Lanarkshire.**

The area's health authority said the patient was being treated at one of its hospitals and was in a critical but stable condition.

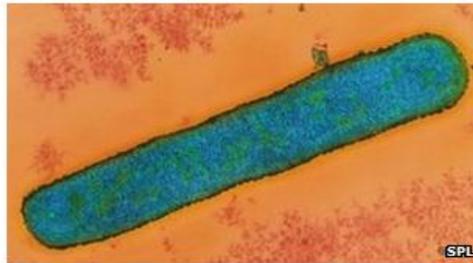
NHS Lanarkshire believes the patient could have contracted the anthrax bacteria from a contaminated batch of heroin circulating in the area.

Anthrax is an acute bacterial infection most commonly found in hoofed animals such as cattle, sheep and goats.

It normally infects humans when they inhale or ingest anthrax spores, but cannot be passed from person to person.

### Blood poisoning

Symptoms can include a raised, itchy, inflamed pimple which turns into a blister with extensive swelling.



Anthrax cannot be passed from person to person

### Related Stories

[Anthrax outbreak '50 year high'](#)

## 2012

- New cluster of anthrax cases among drug users in Europe;
- Cases in Germany, Denmark, France, UK;
- Anthrax strain isolated from new cases is linked to outbreak strain identified in UK, Europe 2009 / 2010.

# Anthrax Disease

- Disease of herbivores, zoonotic in humans
- Occupational human exposures (wool-sorter's / rag pickers' disease)
- US cases - anthrax contaminated letters
- UK cases – exposure to spores from goat-skin hide used on West African Djembe drums
- 3 classic human presentations:
  - cutaneous (black eschar)
  - gastrointestinal
  - respiratory
- 4<sup>th</sup> – injectional - illegal drug use



# Anthrax Outbreak 2009 / 2010

## December 2009:

- First confirmed cases of anthrax infection in Glasgow (Scotland) – all heroin addicts; mainly injection (IV) users;
- Most likely source / transmission vehicle for anthrax therefore postulated to be *contaminated heroin*
  - outbreak of *Clostridium novii* among UK heroin users in 2000; associated with contaminated heroin;
- Heroin use – illegal activity – Police / (Scottish) Crown Office jurisdiction;
- Investigation both a Public Health (epidemiological) and a Police (criminal / public safety) matter.



Dr Jo Turner and Dr Mike E Jones, *Consultant Physicians, Regional Infectious Diseases Unit, Western General Hospital Edinburgh.* Stevenson J et al *Brit Med J* 2010; 340: c889

# Initial Outbreak Hypotheses

- **Deliberate contamination by criminals / terrorists:**
  - Considered an unlikely target for terrorist action;
  - No intelligence to support hypothesis.
- **Natural or non-deliberate contamination:**
  - a) Local drug dealers / distributor level (in Scotland) via contaminated cutting agents (e.g. citric acid) or storage locations (e.g. farms);
  - b) National / international dealer / distribution chain level (UK/Europe/near-East);
  - c) Country of heroin origin (e.g. Afghanistan / Pakistan) via anthrax contaminated poppies or resin.

# Outbreak Management Issues

- National Outbreak Control Team established; HPS coordinated multi-agency OCTeam:
- Crown Office (Scotland) suspended criminal investigation of “cases”; Public Health investigation was agreed as priority.

<b>Public Health Focus</b>	<b>Police Focus</b>
<ul style="list-style-type: none"><li>• Identify new cases and determine particular epidemiological ‘risk factors’ for infection;</li><li>• Assess risks to heroin users by exposure routes (IV / IM / SC / smoking / inhalation);</li><li>• Assess risk to anyone exposed to heroin: social and domestic contacts; HCWs; morticians / pathologists; police and prison staff;</li><li>• Provide guidance on minimising risk to heroin users, contacts and general public.</li></ul>	<ul style="list-style-type: none"><li>• Identify and terminate local dealer operations and distribution networks;</li><li>• Locate and seize (suspect) heroin supplies;</li><li>• Trace supply networks in Scotland, UK, Europe and beyond (Interpol);</li><li>• Coordinate forensic investigation of heroin and cutting agents;</li><li>• Support Crown Office investigation of fatalities (Procurator Fiscal post-mortem examinations).</li></ul>

# Anthrax in Scottish Drug Users 2009/10

**ANTHRAX**  
IS KILLING HEROIN USERS  
ACROSS SCOTLAND



**READ THIS -  
IT MAY SAVE YOUR LIFE**

EARLY TREATMENT WITH ANTIBIOTICS  
CAN BE LIFE SAVING.

ScottishdrugsForum



*Main risk communication messages to heroin users:*

*No safe method to take heroin*

*Seek urgent attention if symptomatic*

*Seek help to quit heroin*

# Outbreak Management Issues

## Surveillance and Case Investigation

- Regional Public Health depts. reported cases to HPS – for collation and analysis of epidemiology data;
- Some local clinicians / Public Health staff were reluctant to share “confidential” patient information with Police;
- CMO (Scotland) wrote to NHS staff clarifying legal / ethical position and obligation to cooperate with Police;
- Separate Police interviews & investigations; separate databases but exchanged data with HPS to eliminate data discrepancies and agree single “case history” for each case.

# Lessons Identified

- **Different investigation models:**
  - Public Health:  
Highly structured questionnaire based interviews to identify associations between cases and common risk factors.
  - Police:  
Free flowing interviews; data input to HOLMES relational database; use of spider diagrams to link cases / dealers / networks.
- **Case' stories changed between Public Health / Police interviews** - had to be reconciled to agree critical data;
- **Normal Public Health control interventions not available** - e.g. voluntary / compulsory withdrawal of a contaminated “product” or infection vehicle.

# Lessons Identified

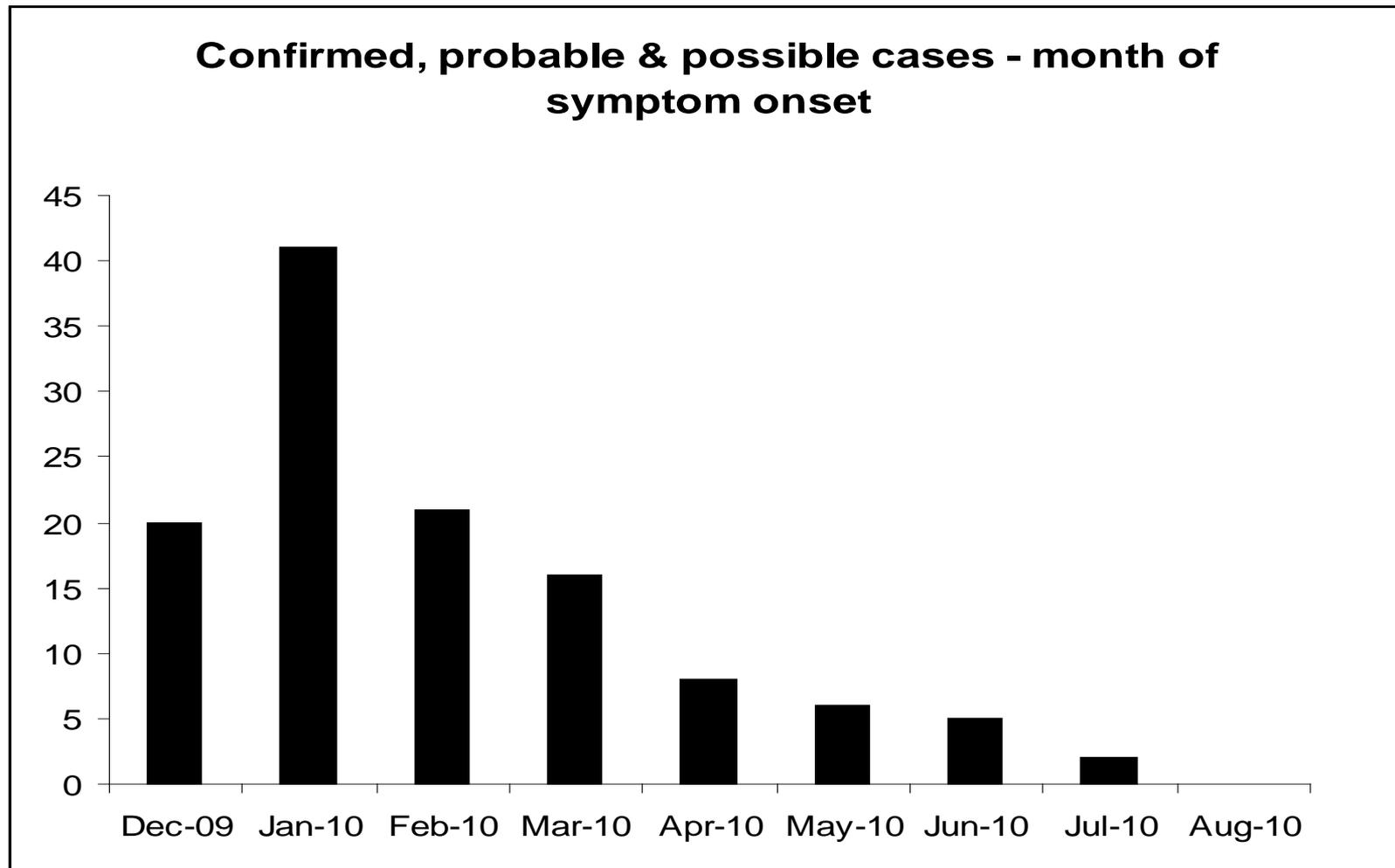
- Risk to anyone other than deliberate heroin users was extremely low:
  - theoretical cutaneous/inhalational risk to HCWs/ police / prison staff conducting personal / property searches;
  - advised avoiding heroin aerosolisation and use of basic respiratory protection.
- Impact of Public Health / Police control measures was difficult to determine;
- Reliance on success of risk communication messages to heroin users and police efforts to disrupt heroin supply networks;
- Outbreak lasted much longer than initial police estimates of normal heroin supply turnover suggested (almost 12 months in UK overall).

# Anthrax in Scottish Drug Users 2009/10

## Outbreak Epidemiology

- 207 patients identified as suspected cases in Scotland
- 47 “confirmed” (microbiologically) cases
- 35 “probable” cases; 37 “possible” cases
- 88 patients “negative” for anthrax - drug users with compatible illness but no microbiological evidence.

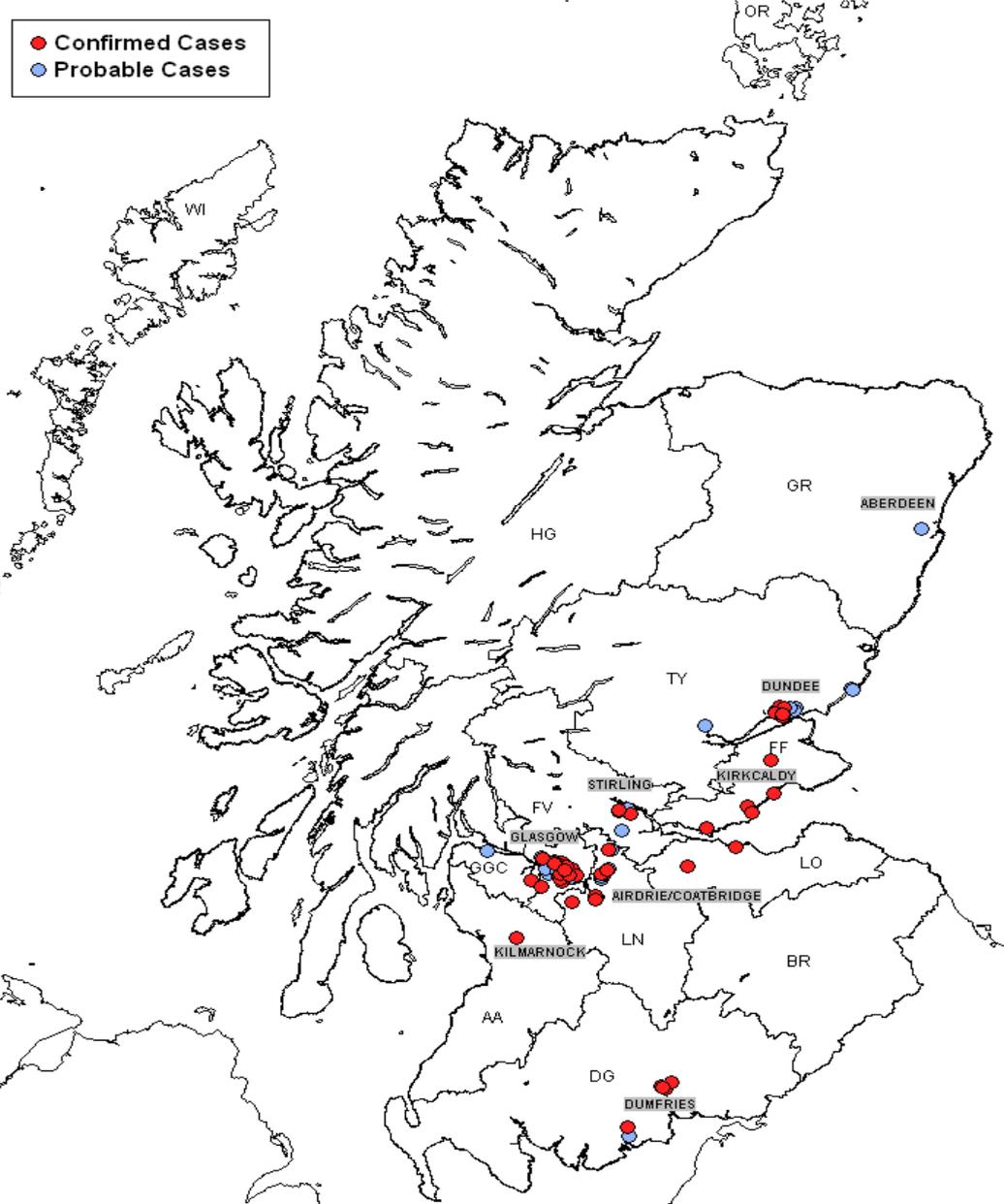
# Anthrax in Scottish Drug Users 2009/10



# Anthrax in Scottish Drug Users 2009/10

MAP 1

Anthrax Cases Scotland December 2009 - December 2010



# Conclusions

- No pre-arranged formal mechanisms for “joint” Public Health / Police investigation; had to rely on mutual cooperation;
- Need for improved understanding among Public Health professionals of legal / ethical obligations re: joint investigations;
- Scope for increased Public Health / Police mutual understanding and sharing knowledge: investigation techniques, approaches to data capture / analysis, etc.

# Conclusions

- All anthrax isolates had a novel “indistinguishable” strain;
- Common strain found in German case (Jan 2010) and effectively ruled out heroin contamination at Scottish or UK level;
- Single strain suggested a single common (animal) source
- Anecdotal evidence regarding animal (e.g. goat) skins being used in illegal smuggling of heroin;
- Evidence supported heroin contamination somewhere in processing / distribution chain e.g. Balkans / Turkey Afghanistan / Pakistan;
- Police and strain typing work (NAU / TGen) held keys to identifying the most likely geographic location and animal source of anthrax contamination.

National Anthrax Outbreak Control Team. An Outbreak of Anthrax Among Drug Users in Scotland, December 2009 to December 2010. Health Protection Scotland, 2011.

<http://www.documents.hps.scot.nhs.uk/giz/anthrax-outbreak/anthrax-outbreak-report-2011-12.pdf>