Outbreak of wound botulism among people who inject drugs, Scotland, Dec 14 – May 15

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NHS Greater Glasgow and Clyde

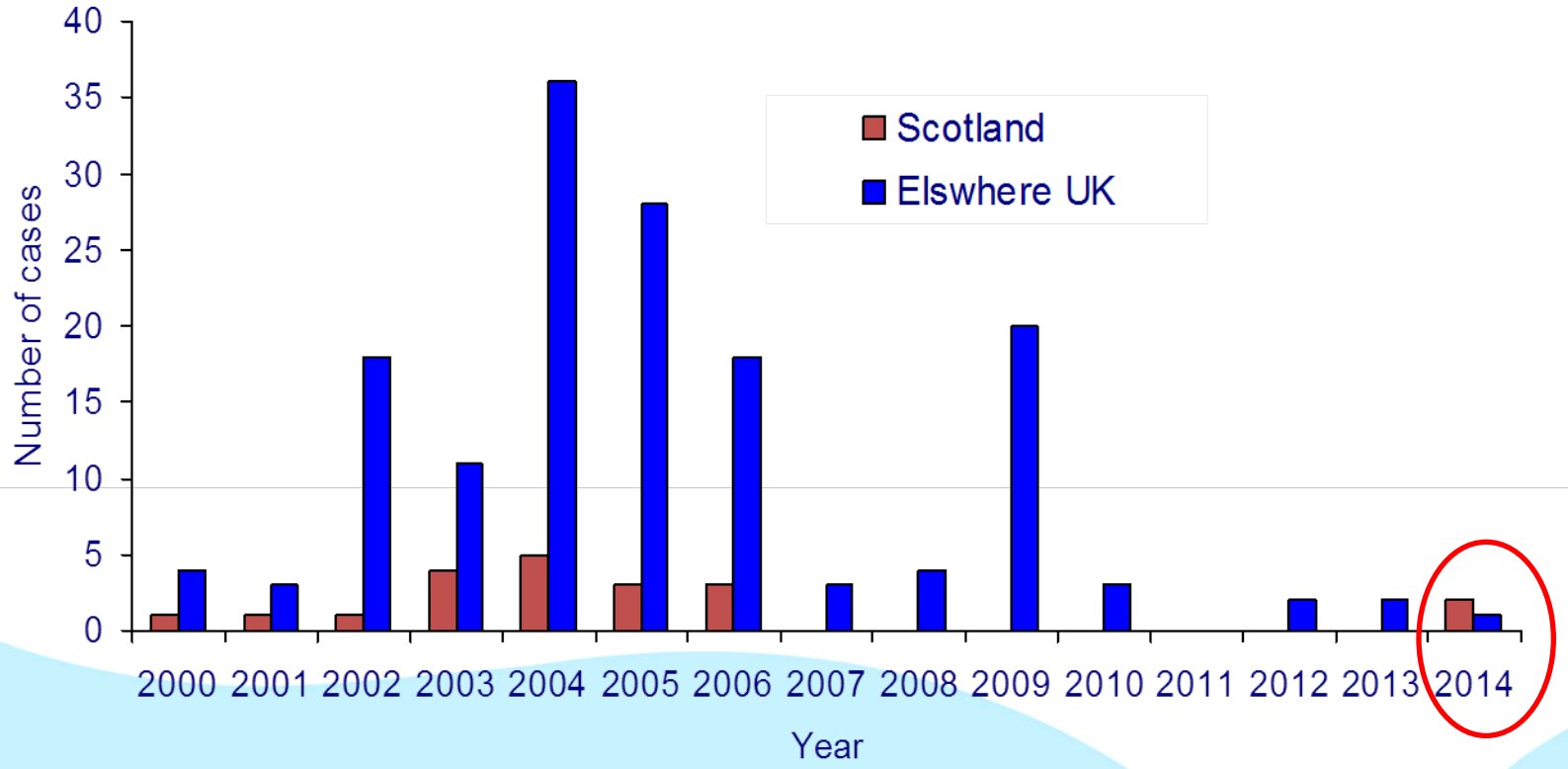
Context

- Bacterial infections major problem in PWID
  - Abscess, sore or open wound
  - Severe illnesses
  - Hospital admissions
- Previous outbreaks in PWID in Scotland
  - C novyi, 60 cases (2000)
  - Anthrax, 119 cases (2009)

Background

- *C. botulinum*
  - Worldwide distribution
  - *Clostridium* spores found in soil
- Toxin potentially fatal paralytic illness
  - Difficulty swallowing, slurred speech, dry mouth
  - Double vision, blurred vision, ptosis
  - Descending paralysis
- Infant, foodborne and wound botulism

Number of annual cases of wound botulism in the UK (2000-2014) (confirmed and probable)



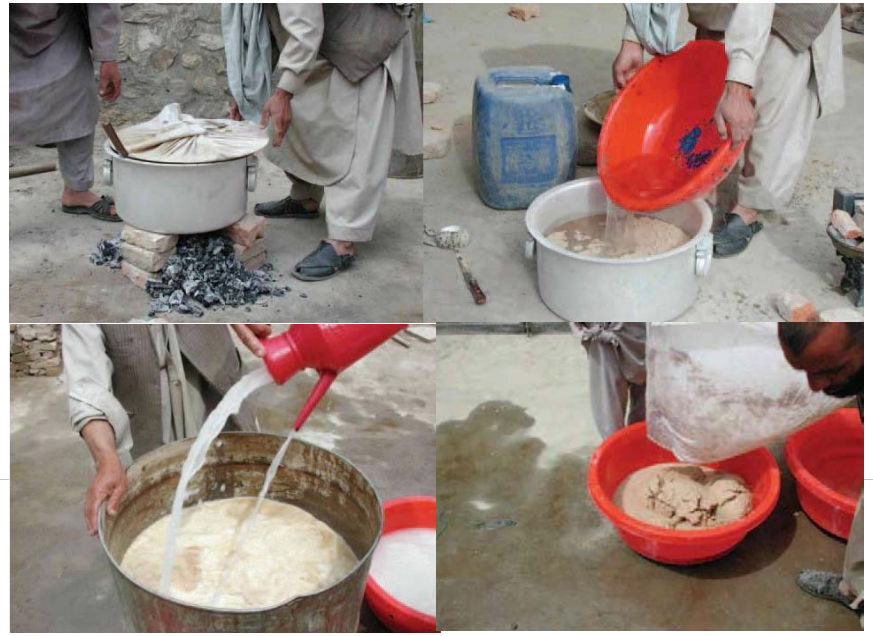
Outbreak detection

- 24th Dec 2014 - 38 yr old female from Glasgow presenting with dysphagia
- 1st January 2015 - 34 year old male from Glasgow presenting with symptoms of botulism.

Where does heroin come from?

1. Opium

2. The great Afghan bake off



3. Pressing

4. Bash

5. Street ready

Local Multidisciplinary Incident Management Team

Objectives

1. To prevent further exposure among those at risk.
2. To reduce morbidity and mortality in those affected.
3. Ensure appropriate clinical management of cases (medical and addiction needs)
4. Communicate with the public and other relevant agencies.

Police investigation

Information sharing between NHS and Police Scotland

Operation Bilafond
Contaminated Heroin

There have been a number of cases where people have contracted Botulism after using contaminated heroin. Drug use can pose a serious risk to life; the risk is heightened if the substance is contaminated.

The focus of Police Scotland is Keeping People Safe. We want to reduce the risk to you and others by tracing the source and removing it from circulation.

Police Officers may visit you to obtain any information you may have to help us achieve this. Our focus and priority is to use any information provided for the purpose of protecting public health by locating and removing the source of contaminated heroin from our communities.

If you have any information please contact Police Scotland on **101** or in an emergency dial **999**. You can also call Crimestoppers in confidence on **0800 555 111**.

If you want to get help or find out more information about substance misuse then get the facts at **www.scotland.police.uk** or **www.knowthescore.info**

March 2015

POLICE SCOTLAND
Keeping people safe

scotland.police.uk @PoliceScotland PoliceScotland

HPS notified of a possible case by CPHM/PHE

↓

HPS pass non-identifying information about case to Police Scotland

↓

Police Scotland approach NHS Board for further information about case

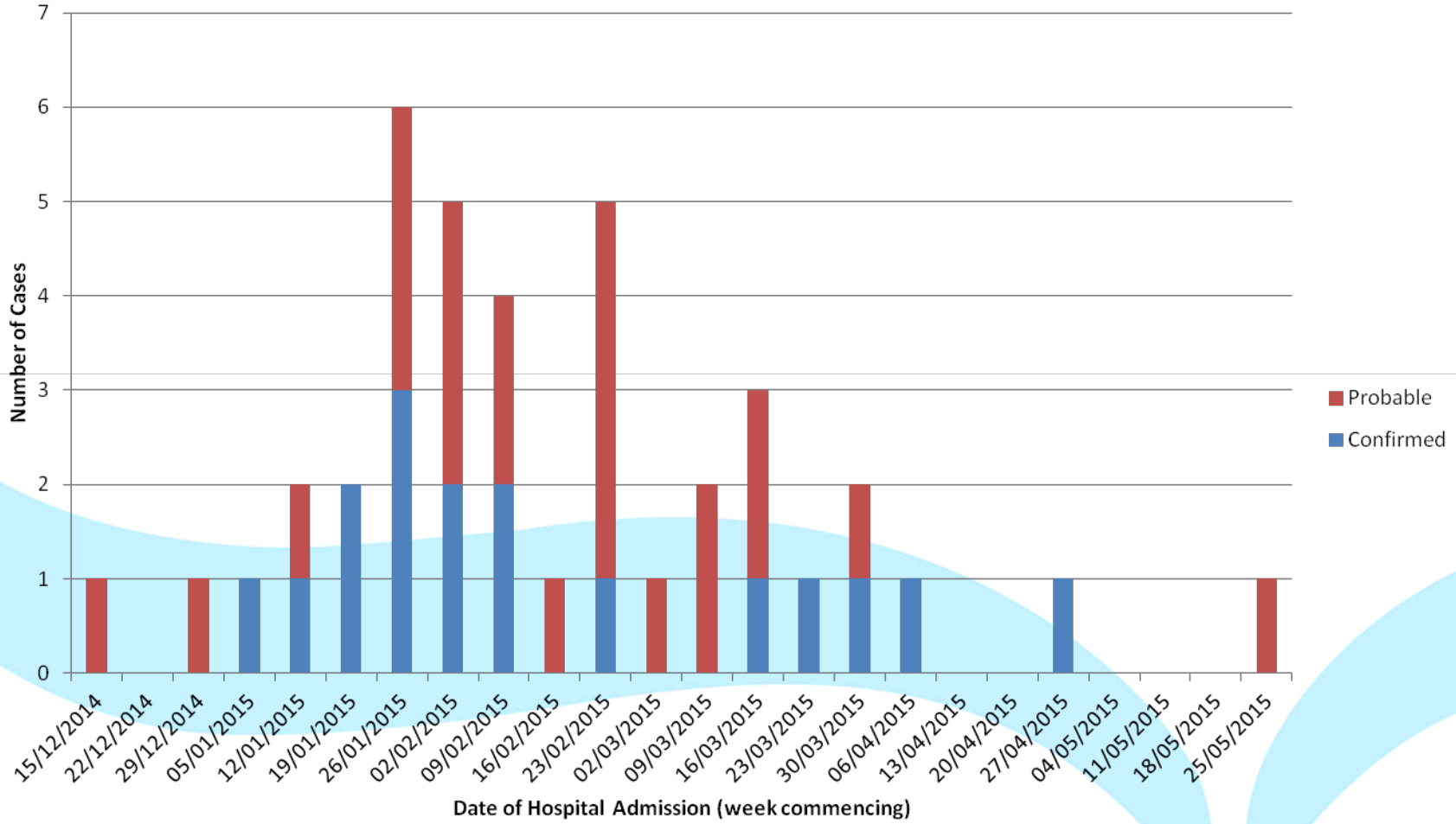
↓

NHS Board decide whether or not to share patient identifiers with Police Scotland

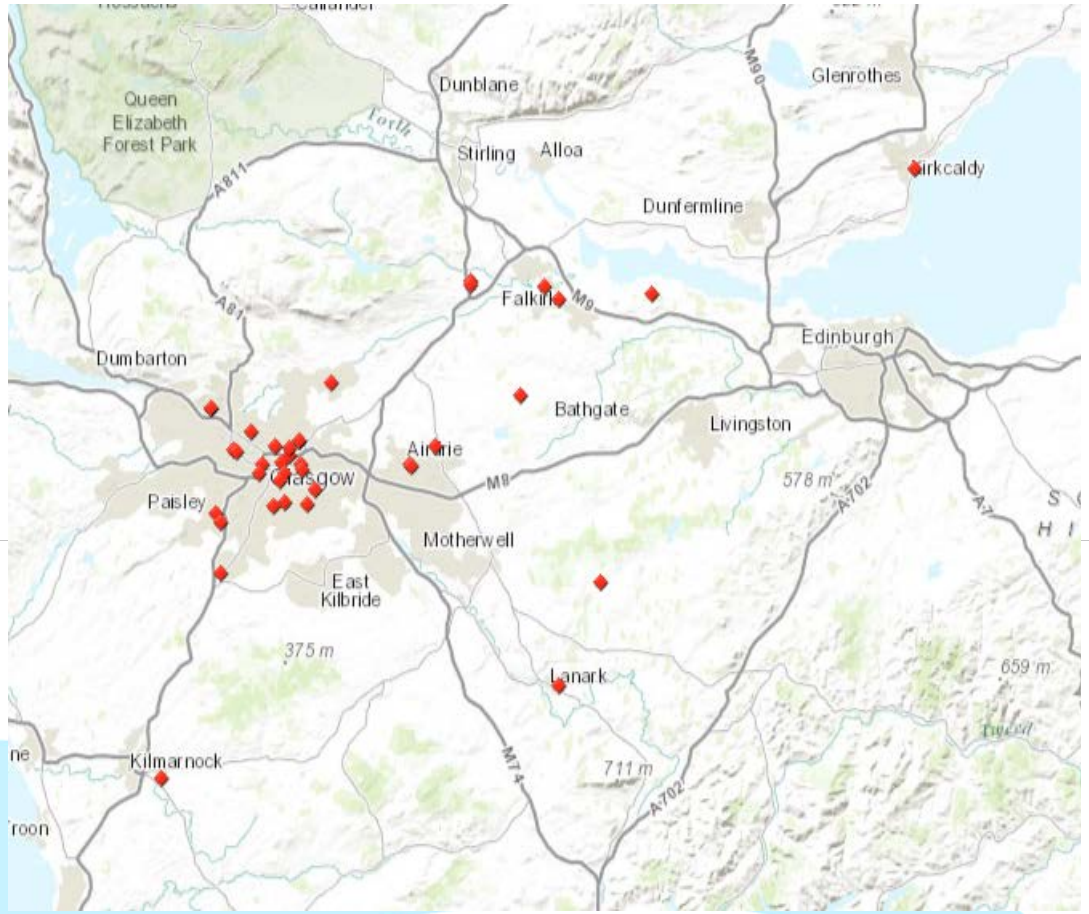
Outbreak results

- From end Dec 2014 to June 2015
- 40 in Scotland (GGC, Lanarkshire, A&A, FV, Fife)
  - 17 confirmed, 23 probable (2/3 were male)
- 25 of the total Glasgow residents
  - 9 confirmed, 16 probable
  - Age range 24 – 56 yrs (mean 41 yrs)
  - 18 males and 7 females
- Majority well known to drug services
- All presented with typical symptoms – but not all were recognised and diagnosed immediately
- All received antitoxin and antibiotics (+/- surgery)
- 4 deaths (botulism contributing to 2)

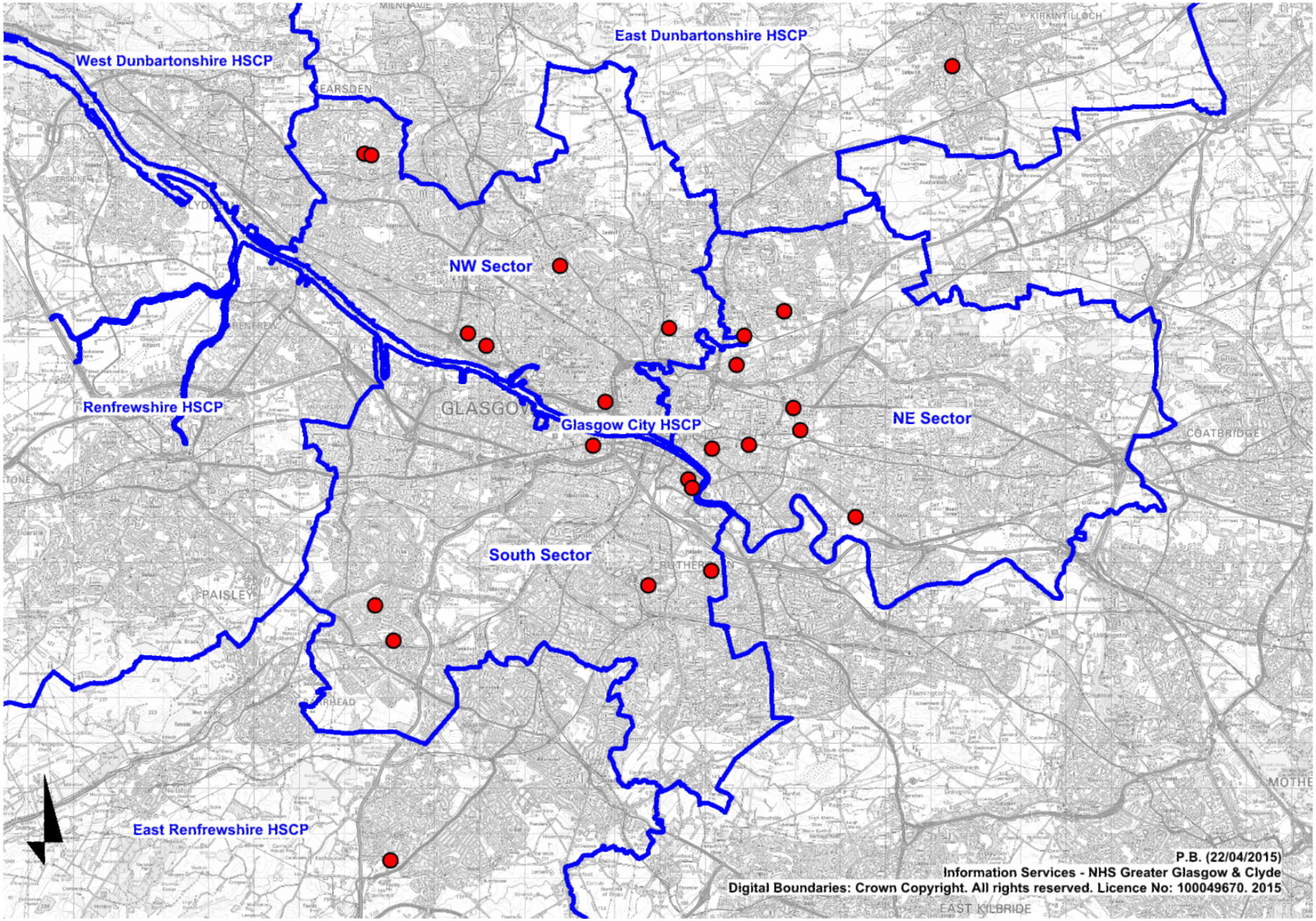
Cases of wound botulism in Scotland December 2014 to June 2015



Geographical distribution



All report using heroin obtained either in, or soured, via Glasgow


West Dunbartonshire HSCP
East Dunbartonshire HSCP
NW Sector
Renfrewshire HSCP
Glasgow City HSCP
NE Sector
South Sector
East Renfrewshire HSCP
P.B. (22/04/2015)
Information Services - NHS Greater Glasgow & Clyde
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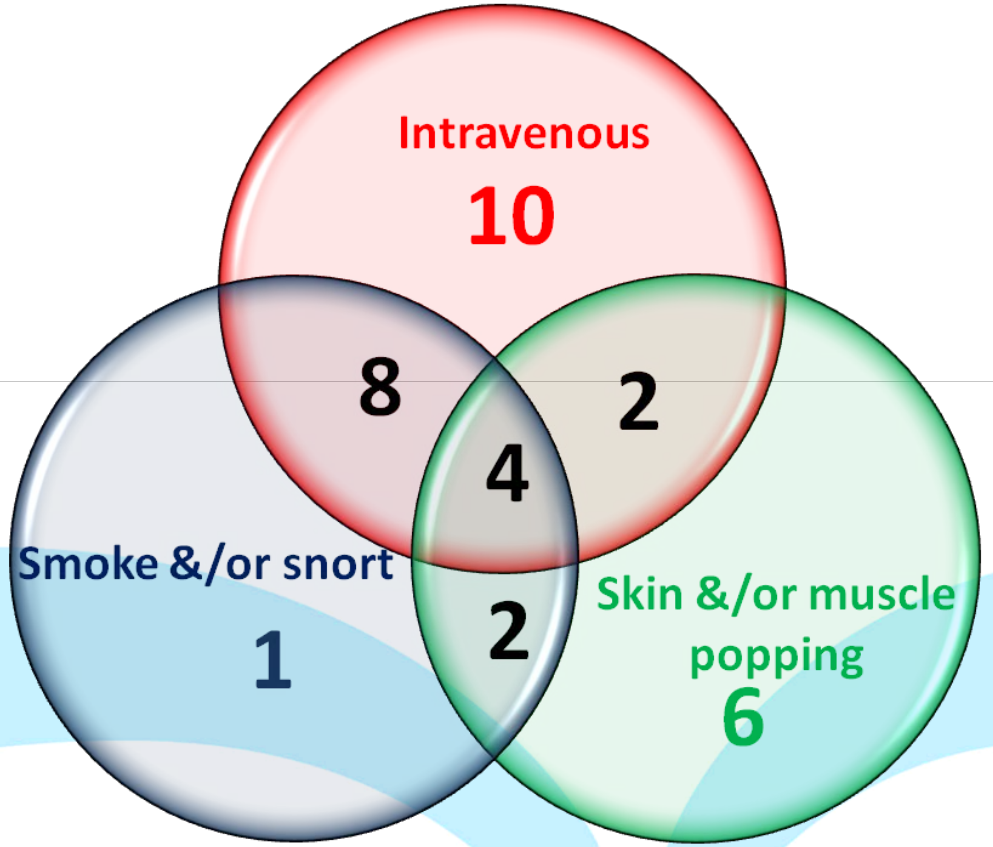
Drug use history

Drugs used (n=35)

- All used heroin
- 13 (34%) also took methadone
- 6 (16%) also used other illegal drugs

Route of drug use (n=32)



Risk Management

Control options are limited

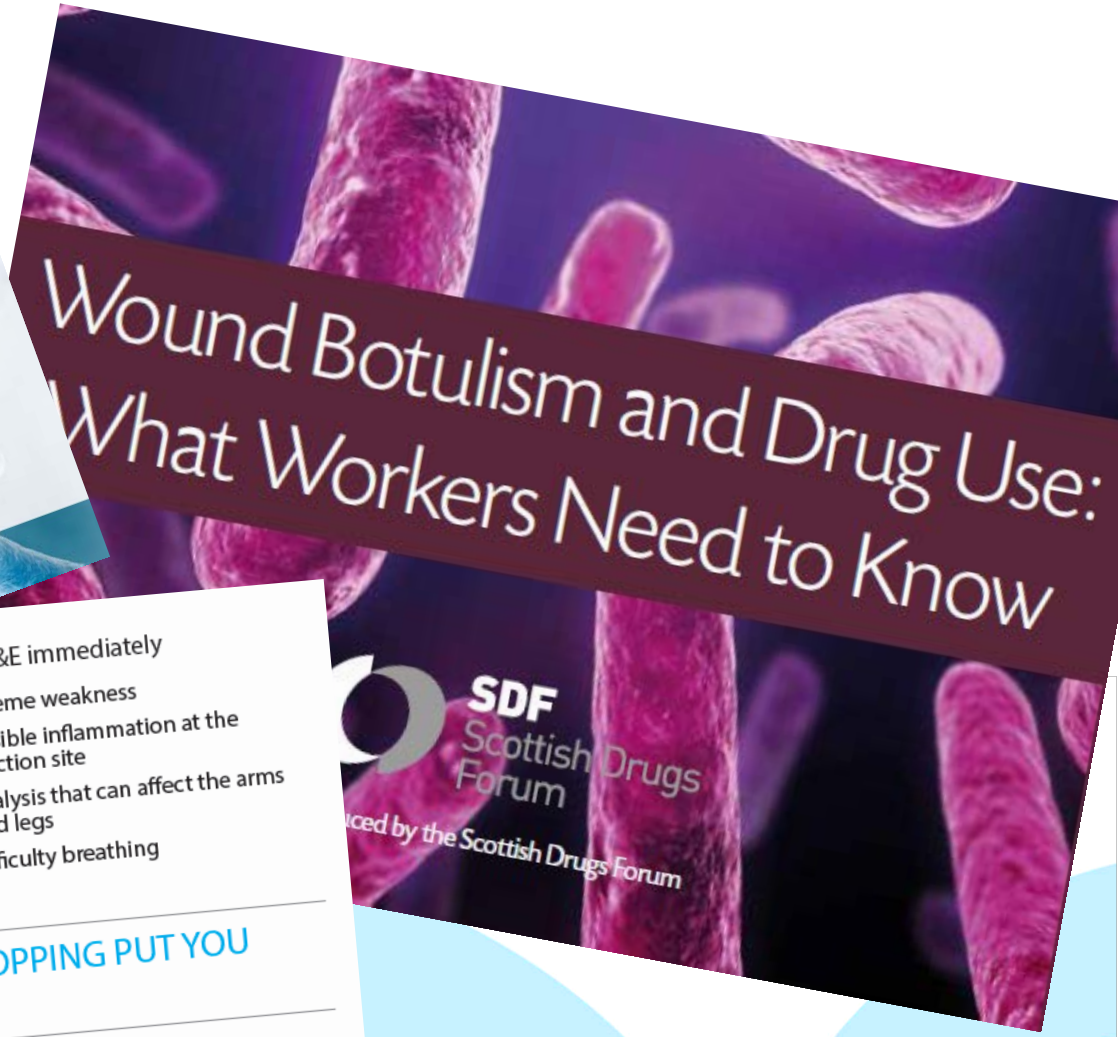
- Preventing exposure - “high risk” heroin indistinguishable from “normal” heroin
  - Pragmatic risk reduction approach

- Eliminate “contaminated” heroin - interruption of heroin supplies

Harm reduction advice

- Avoid muscle-popping or other injecting outside the vein
- Stop using altogether – and get support
- Smoke drugs as an alternative (foil available from needle exchange)
- Seek medical attention if serious inflammation at an injecting site

Risk Communication



If you experience any of these symptoms go to A&E immediately

- Blurred or double vision
- Slurred speech, difficulty speaking
- Difficulty swallowing
- Difficulty with tongue and lip movements
- Drooping or falling of the upper or lower eyelid
- Extreme weakness
- Possible inflammation at the injection site
- Paralysis that can affect the arms and legs
- Difficulty breathing

MISSED HITS, MUSCLE OR SKIN POPPING PUT YOU MOST AT RISK

Reduce your risk by:

Stopping heroin use altogether

Smoking heroin

Making sure you hit a vein

For local drug services see:
www.scottishdrugservices.com

Digger
www.the-digger.com
Thursday February 19, 2015

HUMANS 1ST JUNKIES 2ND

**A drug de
who is on
run said
hand himse
if cops retu
6-year-old
to
grandmoth**

Stuart Hunter
The Digger fr
bolt hole
Motherwell
cops from an
Major Investig
Team want to
him over
attempted mu
in Airdrie
weeks ago.

Hunter, 35,
The Digger
didn't try to
Peter Rodger,
Craigneuk in
early hours
Sunday mornir
February 8.

"I've called
cops four time
said I'll hand m
in but they
listen", he tolc
Digger.

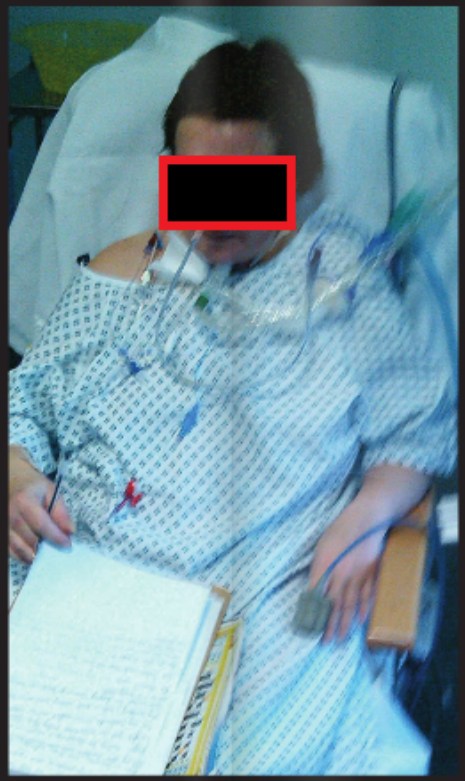
BOTULISM BUNGLE

How medics failed to spot the signs

[redacted] 40, from Montraive Street in Rutherglen has been taking heroin for a long time since losing her job. Recently she'd been told by a neighbour to try a new heroin dealer as their stuff is 'brilliant' and they deliver to where you are.

Funny, in the junkie world nobody ever says their stuff is bad - even if it kills you. Which is what this story is about.

The neighbour gave [redacted] the number. She told me this in the canteen in the Royal Infirmary last week. Her memory, she said, was not good. The hole in her neck where staff cut open a pathway for a tube so she could breathe stared at me as I drank my tea. She was wearing her pj's as we walked along the maze of corridors. The first hospital she went to was on the Friday 23 January last month. I say the first as she passed through three accident and emergency doors before medics could diagnose her condition. She told me first there are humans then there are junkies. Humans first junkies second. The new dealer



was called Nico and he is black. Both [redacted] and her partner [redacted] think he is African. A sort of caramel colour she said but added it was dark when she met them in the car. There were three maybe four in the car when she went out with [redacted] to score two £10 bags and some crack cocaine. That was the previous week and the first time with the new dealer. The next week it was a Tuesday night and [redacted] went himself. He even got a lift in the car home on Barnflat Street. This Nico was very dark. But not Arabic. Kinky hair. He was driving a smart car perhaps a black golf. [redacted] thinks the gang hire cars.

The first time she took heroin it hit her vein. But the second time, on the Tuesday, she missed the vein and it went into the muscle. She didn't know then that the meter was now on. Her life began, slowly and silently, ticking away. On Wednesday morning after a rough sleep she had a slight sore head. Her throat was also dry. And if you, reader, take heroin, pay attention. She doesn't have long to live.

Conclusions and questions

- Largest outbreak of botulism among PWID to date – potential for more cases to arise
- Postcards have increased awareness of signs and symptoms. Impact on risk reduction to be evaluated.
- Source remains unconfirmed though likely associated with contaminated heroin, or cutting agent
- Why just Scotland?
- Cases in Norway around the same time – coincidence?

Thank you
Any questions?

Karen Dunleavy
University of The West of Scotland

Norah Palmateer
Health Protection Scotland

Guidelines for the public health management of tetanus, botulism or anthrax among people who use drugs

Norah Palmateer and Karen Dunleavy

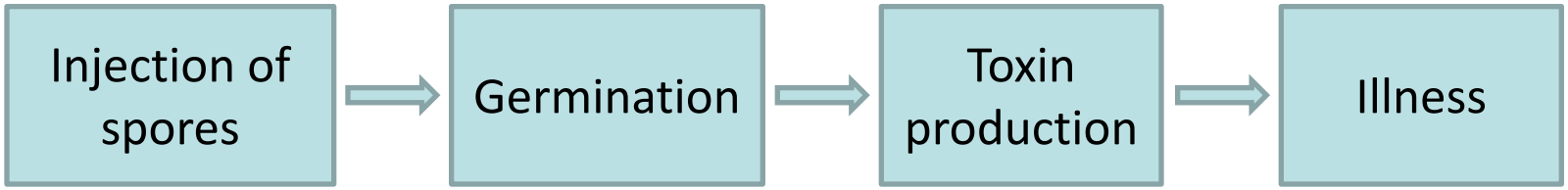
26th April 2016

Presentation overview

- Background
- Rationale, TOR and intended users
- Guideline development process
- The Guidelines (draft)
  - Initial response
  - Epidemiological investigation
  - Microbiological investigation
  - Recommended public health interventions

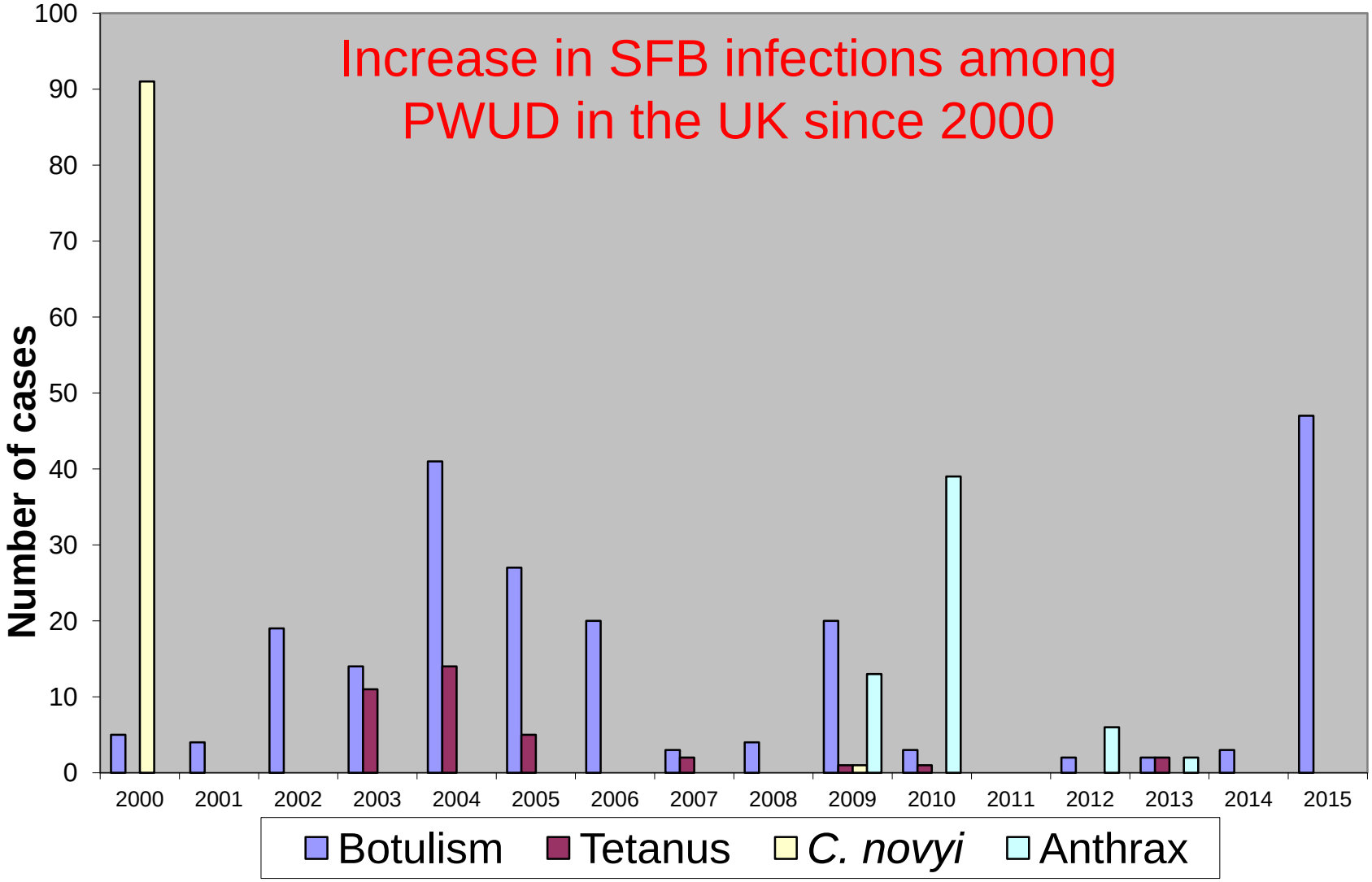
Background

- Tetanus, botulism and anthrax
  - Caused by **spore-forming bacteria (SFB)**
- Spores are widely found in the environment



- Likely sources of spores
  - Drugs
  - Cutting agents

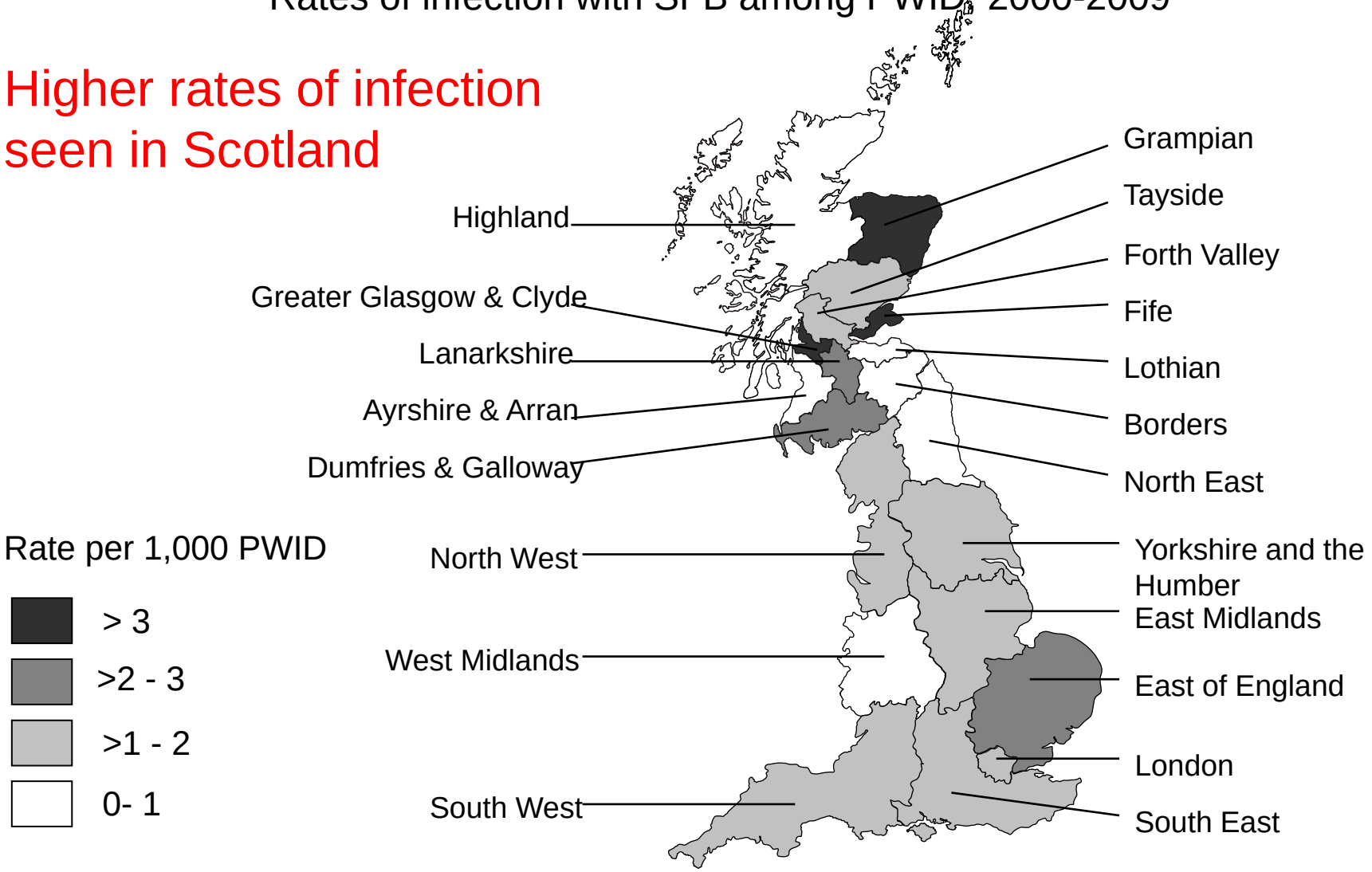
Background


Increase in SFB infections among PWUD in the UK since 2000
Number of cases
100
90
80
70
60
50
40
30
20
10
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Botulism
Tetanus
C. novyi
Anthrax

Background

Rates of infection with SFB among PWID, 2000-2009

Higher rates of infection seen in Scotland



Source: Palmateer et al., *Emerging Infectious Diseases*, 2013

Rationale for the Guidelines

- Due to the widespread occurrence of these spores, contamination is considered to be ongoing
  - Potential for further outbreaks of SFB among people who use drugs (PWUD)*
- From previous outbreaks in Scotland, much experiential learning has been gained

[*Note: the majority of SFB infections have been among people who *inject* drugs (PWID); however, anthrax can potentially be acquired via smoking/snorting drugs, therefore Guidelines refer to PWUD]

Guidelines Development Group Terms of Reference

Remit

To develop guidance for the public health management of incidents/outbreaks involving the contamination of illegal drugs with SFB (*Clostridium tetani, Clostridium botulinum* and *Bacillus anthracis**), taking onboard the lessons learned and recommendations from previous outbreaks

In scope

- Operational aspects for managing incidents
- Public health interventions to prevent or limit the impact on health from infection with spore forming bacteria

Out of Scope

- The clinical management of cases

*although the principles can be applied to incidents/outbreaks associated with other SFB, such as *C.sordellii, C.novyi*, etc.

Target audience/users

Those involved in the management of incidents involving the contamination of illegal drugs with SFB including:

- Front-line hospital staff, addiction staff, IEP staff
- Primary Care staff
- Consultants in Public Health Medicine
- Consultants in Microbiology
- Consultants in Health Protection Scotland
- Police Scotland
- Criminal Justice Service
- Specialist Drug Services
- Third sector agencies providing services for PWUD

HPN/HPS Guidance Development Framework

- Stage 1 – Topic Selection and Scope
- Stage 2 – Formation of the Guideline Development Group (GDG)
- Stage 3 - Identification and Evaluation of Evidence
- Stage 4 – Formulation of Recommendations
- Stage 5 – Editing, Publishing and Implementing

Stage 3 – Key Questions

- Operational
  - Initial Response
  - Responsibility for Leading Investigations
  - Formation of IMT
  - Epidemiological Investigation
  - Microbiological Investigation
  - Communications
- Scientific
  - Public Health Interventions

Stage 3 – Overall Search Strategy

- Publications from key agencies
  - HPN, Scottish Government, PHE, NICE etc
    - Guidelines/Operational Documentation

- Scientific literature search - primary research
  - Search strategy

Scientific Literature – Search Strategy

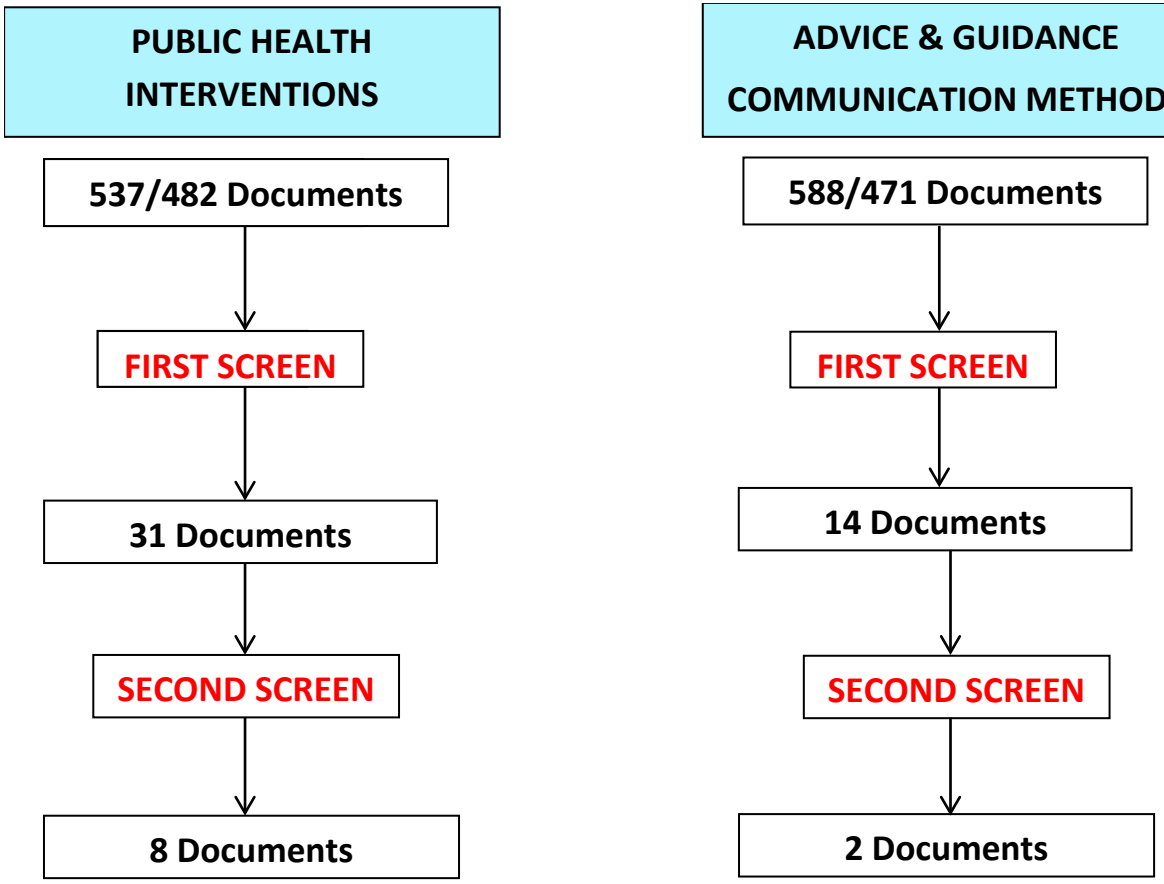
- How to search? PICO
  - **P**opulation/(Problem)
  - **I**nterventions
  - **C**omparisons
  - **O**utcomes

⇒Search Terms

Scientific Literature - Search Strategy

- Where to search?
  - Bibliographic databases
    - MEDLINE, EmBase, Cinahl, PsychInfo
  - Reference Checking/Citation checking
  - GDG members suggestions
  - Grey literature
- When searched?
  - Oct to Nov 2013, Catch up
- What to include?
  - Inclusion/Exclusion Criteria

Scientific Literature- Screening



Scientific Literature - Appraisal

- Quality Assessment (Methodology)
  - Scientific literature: SIGN/NICE checklists – 2 GDG reviewers
  - Guideline: AGREE II - 4 GDG reviewers

- Considered Judgement
  - Quantity, quality, consistency of evidence
  - Applicability to NHS Scotland
  - Generalisability to SFB/Outbreaks
  - etc

Conclusion
Scientific Literature

- Insufficient evidence on preventive PH interventions
  - specific to SFB among PWUD
  - specific to outbreaks/incidents among PWUD

- Recommendations re PH interventions
  - Routine (standard practice)
  - Enhanced (specific to SFB/outbreaks)
    - EXPERT OPINION/BEST PRACTICE/EXPERIENCE

The Guidelines (draft)....

Initial response

- Statutory notification
  - Suspected cases should be notified to local health protection team (HPT), who in turn notify Health Protection Scotland (HPS)
- Initial diagnosis is clinical
- HPTs should ensure that:
  - Appropriate specimens are obtained
  - Enhanced surveillance forms completed
  - Local awareness-raising with clinicians/frontline workers on signs/symptoms to ensure prompt detetection of further cases

Responsibility for leading investigation

	Management	Resources	Briefing
Sporadic case (a single case which is more than six weeks since the last case in the same geographical area and no increase in cases or a cluster in neighbouring countries)			
Tetanus or Botulism	NHS Board-led PAG. Investigation managed locally	Local HP team	HPS
Anthrax	NHS Board-led PAG. Investigation managed locally	Local HP team	HPS re Scottish alert DPH in NHS Board SGHD according to protocol HPA re UK and Euro alert
Two sporadic cases (two cases in more than one NHS Board area which occur within six weeks of each other)			
Tetanus, Botulism or Anthrax	NHS-led IMT with links to other NHS Boards as required. Investigation managed locally	Local HP team Support from HPS and other agencies as required	HPS re Scottish alert DPH in NHS board SGHD according to protocol Consider briefing Police Service of Scotland HPA re UK and Euro alert
Cluster of two cases (in one NHS Board) or three or more cases (in more than one NHS Board area) which occur within six weeks of each other			
Tetanus, Botulism, Anthrax [1]	NHS-led IMT with links to other NHS Boards as required (Across several boards agree IMT lead - HPS or NHS Board). Investigation of cases managed locally	Local HP team Support from HPS and other agencies as required	HPS re Scottish alert DPH in NHS board SGHD according to protocol Consider briefing Police Service of Scotland HPA re UK and Euro alert

Formation of an Incident Management Team (IMT)

Investigation of two or more cases best managed by activating an IMT, normally including:

- The Chair – usually the NHS board CPHM (for local investigations). Investigations involving several NHS Boards may be HPS-led;
- Leads from other NHS boards (if required);
- NHS board(s) Addiction/IEP service leads;
- Communications lead (NHS board and/or HPS);
- Local microbiology lead;
- HPS lead and epidemiologist;
- Representatives from Scottish Drugs Forum and Police Scotland;
- COPFS representative (if required).

IMT Roles & Responsibilities

Scottish Drugs Forum

- Provide expertise on drugs and patterns of drug use
- Represent service users
- Utilise communication networks to disseminate public health alerts
- Develop training/resources for frontline staff
- Develop awareness-raising materials for those at risk

Injecting Equipment Providers

- Cascade information to frontline staff
- Disseminate awareness-raising materials to/facilitate discussions with those at risk
- Create referral pathways from IEP to medical care

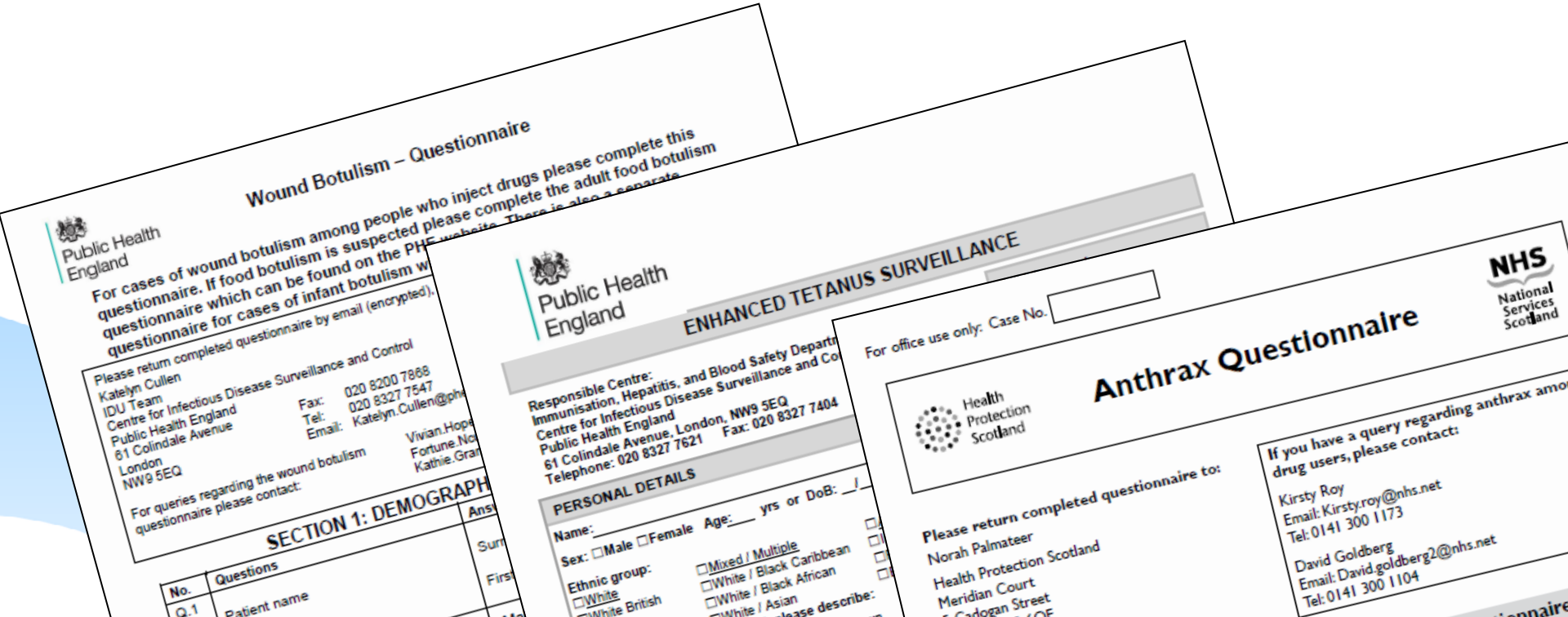
Epidemiological investigation

- Case definitions (adapted from ECDC):

Criteria	Probable	Confirmed
Clinical evidence compatible with infection	✓	✓
Epidemiological Use of illicit drugs by any route within the 2 weeks prior to onset of symptom	✓	✓
Microbiological Usually isolation of organism and/or detection of toxin		✓

Epidemiological investigation

- Enhanced surveillance questionnaires should be completed and returned to HPS
- Interview/questionnaire should be completed by frontline drug/addictions staff



Microbiological investigation

- Signposting to other existing resources (PHE, HPS)
- Timeliness of collection of clinical samples is important
  - i.e. before administration of antitoxin or antibiotics (but do not delay treatment to wait for laboratory result)

Recommended public health interventions

- Categorised as ‘routine’ or ‘enhanced’
- Routine interventions are those that should be standard practice
- Enhanced interventions are those that are specifcally recommended for an incident/outbreak of SFB
  - Usually based on GDG expert opinion

Recommended public health interventions - hierarchy

- Encourage PWUD to reduce/eliminate drug use;
- Encourage PWUD to switch to a safer route of drug use (where appropriate);
- Reduce the harm among those who continue to inject drugs
  - Pre-exposure prophylaxis (tetanus only)
  - Post-exposure prophylaxis (tetanus only)
  - Provision of injecting equipment
  - Advice on safer injecting behaviour;
- Education and awareness-raising of the signs and symptoms of illness

Recommended public health interventions

- Encourage PWUD to reduce/eliminate drug use

Recommended intervention	Routine or enhanced
Services providing OST should be reviewed and enhanced (where necessary) in order to maximise coverage	Enhanced

Rationale: It may be possible to reduce or remove waiting lists and/or review eligibility criteria for receiving or remaining on OST to ensure that OST is maximised during an incident/outbreak period

Recommended public health interventions

- Encourage PWUD to switch to a safer route of drug use (where appropriate)

Recommended intervention	Routine or enhanced
Advice and information encouraging people to switch to a non-injecting route of drug consumption should be considered (where there is no intelligence to suggest that drugs are co-contaminated with anthrax spores)	Enhanced

Rationale: Smoking (or other non-injecting routes of consumption) poses a lower risk of infection (except in the case of anthrax) than injecting, since injecting: (i) introduces infectious agents directly into the bloodstream, and (ii) skin/soft tissue damage as a consequence of injecting provides an appropriate environment for the germination of anaerobic SFB

Recommended public health interventions

- Reduce the harm among those who continue to inject drugs

Recommended intervention	Routine or enhanced
Within the context of an outbreak of tetanus, low-threshold services should be enhanced and every opportunity should be taken to ensure that those with no or incomplete immunisation status are identified and vaccinated	Enhanced

Rationale: Acknowledging that the provision of the vaccine through a five dose schedule will not achieve effective immunity during the timeframe of an outbreak, a pragmatic approach is nevertheless to offer a booster dose to all those whose vaccination status is unknown or incomplete

Recommended public health interventions

- Reduce the harm among those who continue to inject drugs

Recommended intervention	Routine or enhanced
PWUD should be encouraged to minimise the use of acidifier for mixing with drugs	Routine
PWUD should be encouraged to wash their hands before preparing drugs	Routine
PWUD should be discouraged from injecting intramuscularly or subcutaneously (whether intentional or accidental)	Routine

Rationale: Too much acidifier or injecting into the skin/muscle can cause local tissue damage, which can result in the creation of anaerobic conditions that promote spore germination. Good injecting hygiene may help to minimise the level of the more common staphylococcal skin and soft tissue infections that may confuse the early diagnosis of illness caused by SFB

Recommended public health interventions

- Education and awareness-raising of the signs and symptoms of illness – **among PWUD**

Recommended intervention	Routine or enhanced
Information on the signs and symptoms of illness, and guidance on when and where to seek medical care, should be communicated to users	Enhanced

Rationale: Users should be informed of the nature of the hazard they face; prompt treatment may improve outcomes.

Recommended public health interventions

- Education and awareness-raising of the signs and symptoms of illness – **among professionals**

Recommended intervention	Routine or enhanced	Rationale
IEP and addictions staff should receive training on the clinical presentation of botulism, tetanus and anthrax	Routine	PWUD regularly come into contact with IEP and addictions workers, who may be key to recognising infected individuals and facilitating medical care
During an incident/outbreak, interventions to heighten and maintain awareness of the clinical presentation of botulism, tetanus and anthrax should be undertaken with IEP and addictions staff	Enhanced	Practical experience of infected individuals is limited due to these infections being rare, thus it is important to refresh training during incidents/outbreaks
Healthcare professionals should be made aware of the appropriate diagnostic procedures, including the samples to be obtained prior to treatment commencing (although treatment should never be delayed)	Routine	The appropriate sample, collected at the correct time, and/or transported correctly to the laboratory can improve the chances of a microbiological diagnosis confirming infection

Next steps

- Final sign off by the GDG
- Extended consultation through the Health Protection Network Guideline Development Programme
- Editing & publishing

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Acknowledgements - GDG

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