Appendix 13 – Mandatory NHSScotland Alert organism/Condition list

Tables 1 to 5 outlines a nationally agreed minimum (non-exhaustive) list of alert organisms/conditions. This list has been generated in response to outbreaks in Scotland and findings from ARHAI Scotland literature reviews.

The purpose of this list is to alert NHS Board Infection Prevention and Control Teams (IPCT) and Health Protection Teams (HPTs (if out-with the healthcare environment)) of the occurrence of these organisms/conditions. This is to enable:

- Timely and adequate alert response and investigation,
- Implementation and ongoing need for interventions and control measures to minimise their ongoing risk of transmission, and
- Early recognition and identification of a healthcare infection incident, outbreak or data exceedance in accordance with chapter 3 of the NIPCM.

Specialist units e.g. those managing patients with Cystic Fibrosis will also be guided by local policy regarding other alert organisms not included within these lists.

The responsibilities for managing and investigating these organisms/conditions are outlined in Chapter 3 of the NIPCM for health and care settings and within The Management of Public Health Incidents (MPHI) Guidance for all other settings. Further information on patient placement considerations and use of fluid resistant surgical facemasks (FRSMs)/respiratory protective equipment (RPE) is available in Appendix 11 of the NIPCM. Pathogen specific information and links to available guidance can be found in the A-Z of Pathogens.

In addition, Table 6 outlines resistant bacteria, the identification of which should act as an alert to Microbiology Teams, IPCTs and Antimicrobial Management Teams (AMT).

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Table 1: Bacteria

Bacteria	Locations/Patient cohorts
Bacillus anthracis	All care settings/patient cohorts
Burkholderia spp.	All care settings/patient cohorts
Bordetella pertussis	All care settings/patient cohorts
Clostridioides difficile	All care settings/patient cohorts
Corynebacterium diphtheria/ulcerans	All care settings/patient cohorts
Legionella spp.	All care settings/patient cohorts
Mycobacterium tuberculosis complex	All care settings/patient cohorts
Neisseria meningitidis	All care settings/patient cohorts
Staphylococcus aureus	All care settings/patient cohorts: Boards should implement local surveillance to allow appropriate intervention where a data exceedance is recognised for common circulating strains and where 2 or more cases with the same resistant strain are identified. This might include contact with the ward or development of SPC charts to ensure clusters would be detected and investigated appropriately. *NB: S.aureus bacteraemia* must be investigated in all wards/departments as per National surveillance protocol.
Staphylococcus aureus – PVL	All care settings/patient cohorts
Staphylococcus capitis	NICU settings
Streptococcus pyogenes	All care settings/patient cohorts
GI bacteria: *Campylobacter* spp., *Escherichia coli* (toxin producing strains e.g. *E. coli* O157) *Salmonella* spp., *Shigella* spp.	All care settings/patient cohorts
Environmental bacteria: *Pseudomonas aeruginosa,* *Acinetobacter* spp., *Stenotrophomonas maltophilia,* *Serratia marcescens* List is not exhaustive. Consider clinical likelihood of infection due to these opportunistic pathogens, particularly in patients at high risk of infection. Refer to the prevention and management of healthcare-associated infection incidents/outbreaks information sheet for a	High risk units e.g. ICU/PICU/NICU, High risk patient cohorts e.g. Oncology/haematology patient cohorts regardless of location

Bacteria	Locations/Patient cohorts
list of infectious agents associated with healthcare water incidents and outbreaks.	
Resistant bacteria Extended-spectrum beta-lactamase (ESBL) producers	NICU settings
Meticillin-resistant *Staphylococcus aureus* (MRSA) and borderline oxacillin-resistant *S. aureus (*BORSA)	All clinical/care settings/patient cohorts
Vancomycin-resistant enterococci (VRE)	High risk units e.g. ICU/PICU/NICU, High risk patient cohorts e.g. Oncology/haematology patient cohorts regardless of location
Carbapenem-resistant organisms (CRO)	All clinical/care settings/patient cohorts
Multi-drug resistant (MDR) or extensively drug resistant (XDR) *M. tuberculosis* complex	All clinical/care settings/patient cohorts

Table 2: Viruses

Virus	Locations
BBV (HBV, HCV and HIV)	All clinical/care settings/patient cohorts
Hepatitis A	All clinical/care settings/patient cohorts
GI viruses: Adenovirus Norovirus, Rotavirus,	All clinical/care settings/patient cohorts
Respiratory viruses: Adenovirus Parainfluenza, RSV	High risk units e.g. ICU/PICU/NICU, High risk patient cohorts e.g. Oncology/haematology patient cohorts regardless of location
Respiratory viruses cont. Influenza Novel coronavirus (MERS/SARS) SARS-CoV-2	All clinical/care settings/patient cohorts
Varicella zoster virus (chickenpox)	All clinical/care settings/patient cohorts
Parvovirus B19	All clinical/care settings/patient cohorts
Measles, Mumps, Rubella	All clinical/care settings/patient cohorts

Table 3: Fungi

Fungi	Locations
Aspergillus spp.	High risk units e.g. ICU/PICU/NICU, High risk patient cohorts e.g. Oncology/haematology patient cohorts & transplant patients regardless of location
Pneumocystis jirovecii	High risk units e.g. ICU/PICU/NICU, High risk patient cohorts e.g. Oncology/haematology patient cohorts & transplant patients regardless of location
Candida auris Single isolate from any patient sample	All clinical/care settings/patient cohorts
Cryptococcus spp.	All clinical/care settings/patient cohorts

Table 4: Parasites

Parasite	Locations
GI parasites: *Cryptosporidium* spp. *Giardia lamblia*	All clinical/care settings/patient cohorts

Table 5: Alert conditions

Condition	Locations
Acute flaccid myelitis or paralysis with infectious aetiology e.g. EVD68	All clinical/care settings/patient cohorts
Potentially infectious diarrhoea/vomiting	All clinical/care settings/patient cohorts
Necrotising fasciitis	All clinical/care settings/patient cohorts
Necrotising pneumonia (suggesting possible PVL *S. aureus* infection)	All clinical/care settings/patient cohorts
Scabies	In-patient/care and day care settings
Shingles	All clinical/care settings/patient cohorts
Transmissible Spongiform Encephalopathy (TSE) e.g. CJD	All clinical/care settings/patient cohorts
Viral Haemorrhagic Fever (VHF)	All clinical/care settings/patient cohorts
Scalded skin syndrome	All clinical/care settings/patient cohorts
Adenoviral conjunctivitis	In-patient neonatal care settings

Table 6: Resistant organisms (unusual phenotypes) - (amended version based on 'EUCAST Expert rules and intrinsic resistance, 2021', taking into account the epidemiology of Scottish isolates)

This list has been produced in conjunction with the Scottish Microbiology and Virology Network (SMVN). Not all 'drug-bug' combinations are routinely tested. Any exceptional drug/bug combinations, where reported, should be checked first to ensure accuracy by the submitting laboratory. See Information on isolates for reference laboratory referral.

The ARHAI Scotland Scottish One Health and Antimicrobial Use and Antimicrobial Resistance (SONAAR) team monitor the exceptional drug/bug combinations within this list on a twice weekly basis and communicate with submitting laboratories if an isolate with exceptional resistance is reported into the Electronic Communication of Surveillance in Scotland (ECOSS) system.

A single isolate from a healthcare associated case would constitute an 'alert'.

If microbiologically confirmed (and not already communicated), local IPCT, HPT and AMT, as appropriate, need to be made aware to ensure appropriate actions are put in place.

Organisms[1]	Unusual resistance phenotypes	Transmission based precautions (TBPs)[2] Please read Footnote 2 when considering TBPs for the unusual resistance phenotypes listed in this table
Unusual resistance phenotypes of Gram-negative bacteria		
Any *Enterobacterales*	Resistant to colistin (except *Proteus* spp., *Providencia* spp., *Morganella* spp. and *Serratia marcescens*)	Contact
	Resistant to meropenem or is a carbapenemase producer	Contact
	Resistant to ceftazidime-avibactam	Contact
Salmonella Typhi	Resistant to fluoroquinolones, carbapenems or azithromycin	Contact
Pseudomonas aeruginosa	Resistant to colistin	Contact
	Resistant to ceftolozane-tazobactam	Contact
		Contact

Organisms[1]	Unusual resistance phenotypes	Transmission based precautions (TBPs)[2] Please read Footnote 2 when considering TBPs for the unusual resistance phenotypes listed in this table
	Resistant to a meropenem/imipenem AND ceftazidime AND piperacillin-tazobactam	
Acinetobacter spp.	Resistant to colistin Resistant to meropenem or imipenem	Contact Contact
Haemophilus influenzae	Resistant to any 3rd/4th/5th generation cephalosporins or carbapenems	Contact
Moraxella catarrhalis	Resistant to any 3rd/4th/5th generation cephalosporins, carbapenems or fluoroquinolones	Contact
Neisseria meningitidis	Resistant to meropenem, any 3rd generation cephalosporins, fluoroquinolones or rifampicin	Droplet
Neisseria gonorrhoeae	Resistant to spectinomycin or 3rd generation cephalosporins	Droplet
Unusual resistance phenotypes of Gram-positive bacteria		
Staphylococcus aureus	Resistant to vancomycin, teicoplanin, daptomycin (Minimum inhibitory concentration (MIC) >4 mg/L[3]), linezolid, tedizolid, quinupristin-dalfopristin, tigecycline, dalbavancin	Contact
Coagulase-negative staphylococci	Resistant to vancomycin, daptomycin (MIC > 4 mg/L[3]), linezolid, tedizolid, quinupristin-dalfopristin, tigecycline, dalbavancin	Contact
Corynebacterium spp.	Resistant to vancomycin, teicoplanin, linezolid, dalbavancin, daptomycin, tigecycline or quinupristin-dalfopristin.	SICPs unless *C. diphtheria/ulcerans* in which case refer to Appendix 11.
Streptococcus pneumoniae	Resistant to carbapenems, vancomycin, teicoplanin, linezolid or rifampicin. Also isolates with high level penicillin resistance (MIC > 2 mg/L[3]) and those intermediate or resistant to 3rd generation cephalosporins (MIC > 0.5 mg/L[3])	Contact

Organisms[1]	Unusual resistance phenotypes	Transmission based precautions (TBPs)[2] Please read Footnote 2 when considering TBPs for the unusual resistance phenotypes listed in this table
Group A, B, C and G β-haemolytic streptococci and *Streptococcus anginosus* group	Resistant to penicillin, cephalosporins, vancomycin, teicoplanin, dalbavancin, oritavancin, daptomycin, linezolid, tedizolid or tigecycline	Contact
Enterococcus spp.	***E. faecalis*:** Resistant to ampicillin/amoxicillin or daptomycin (MIC > 2 mg/L[3])	Risk assessment of symptoms and care location for contact precautions otherwise SICPs
	E. faecium: Resistant to daptomycin (MIC > 4 mg/L[3])	
All enterococci*:* Resistant to tigecycline or linezolid		Contact
Unusual resistance phenotypes of anaerobes		
Bacteroides spp.	Resistant to metronidazole	SICPs
Clostridioides difficile	Resistant to metronidazole, vancomycin	Contact
Unusual resistance phenotypes of Candida species		
Candida spp.	Resistant to amphotericin B or any echinocandin	SICPs unless *C. auris* in which case refer to Appendix 11.
Candida albicans	Resistant to any azole (invasive isolates)	SICPs
Aspergillus fumigatus	Resistant to amphotericin B, echinocandins or azoles (excluding fluconazole)	SICPs

Footnote 1

IPCTs should include all of these organisms in their surveillance systems as a prompt to ensure correct placement has been considered and as a monitoring tool to ensure early detection of outbreaks with these organisms. Detection of greater than one isolate of these unusual phenotypes would warrant further investigation into a possible outbreak.

Footnote 2

Resistance in the 'drug-bug' combinations detailed in Table 6 are highly unusual. In all cases where this phenotype has been confirmed locally this should prompt discussion with the local IPCT/HPT as to the appropriate precautions required and this will depend on the body site/clinical condition as well as the type of clinical area the patient is located.

There is limited evidence on the transmissibility and therefore the TBPs required for all of these organisms. These recommendations are a pragmatic suggestion based on the likelihood of this drug/bug combination occurring and the public health implications if it were to arise. Appendix 11 details the patient placement considerations and FRSM/RPE type (where applicable) required for different organisms. Information regarding transmission modes, notifiable status and available UK/international guidance for pathogens can be found in the A-Z of Pathogens. Not all the organisms in Table 6 are referred to in Appendix 11 and A-Z of pathogens.

Written patient information resources are not available for the majority of these conditions so a plan for communication with patients should form part of patient placement discussions. Many of these 'drug-bug' combinations may have had TBPs already recommended on the basis of the organism or background resistance pattern and nothing additional will be required on the basis of this particular resistance pattern.

Footnote 3

MIC values relate to the Reference Laboratory threshold for referral.