

# Joint Healthcare Infection Society (HIS) and Infection Prevention Society (IPS) Guidelines for the Prevention and Control of Methicillin-Resistant *Staphylococcus aureus* (MRSA) in Healthcare Facilities

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# Declaration

- I have received research funding from Pfizer & Astellas in recent years. I have also provided professional advice or education to Pfizer.
- I am presenting on behalf of the HIS & IPS. I acknowledge the input & thank many colleagues for their input.

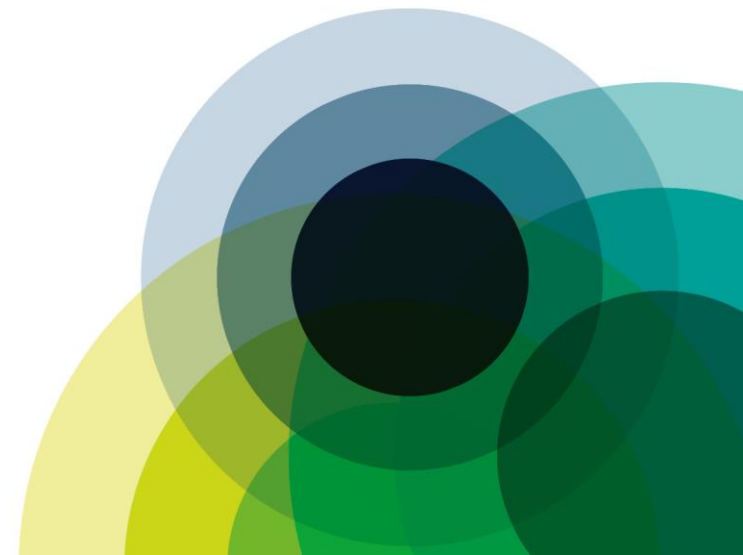
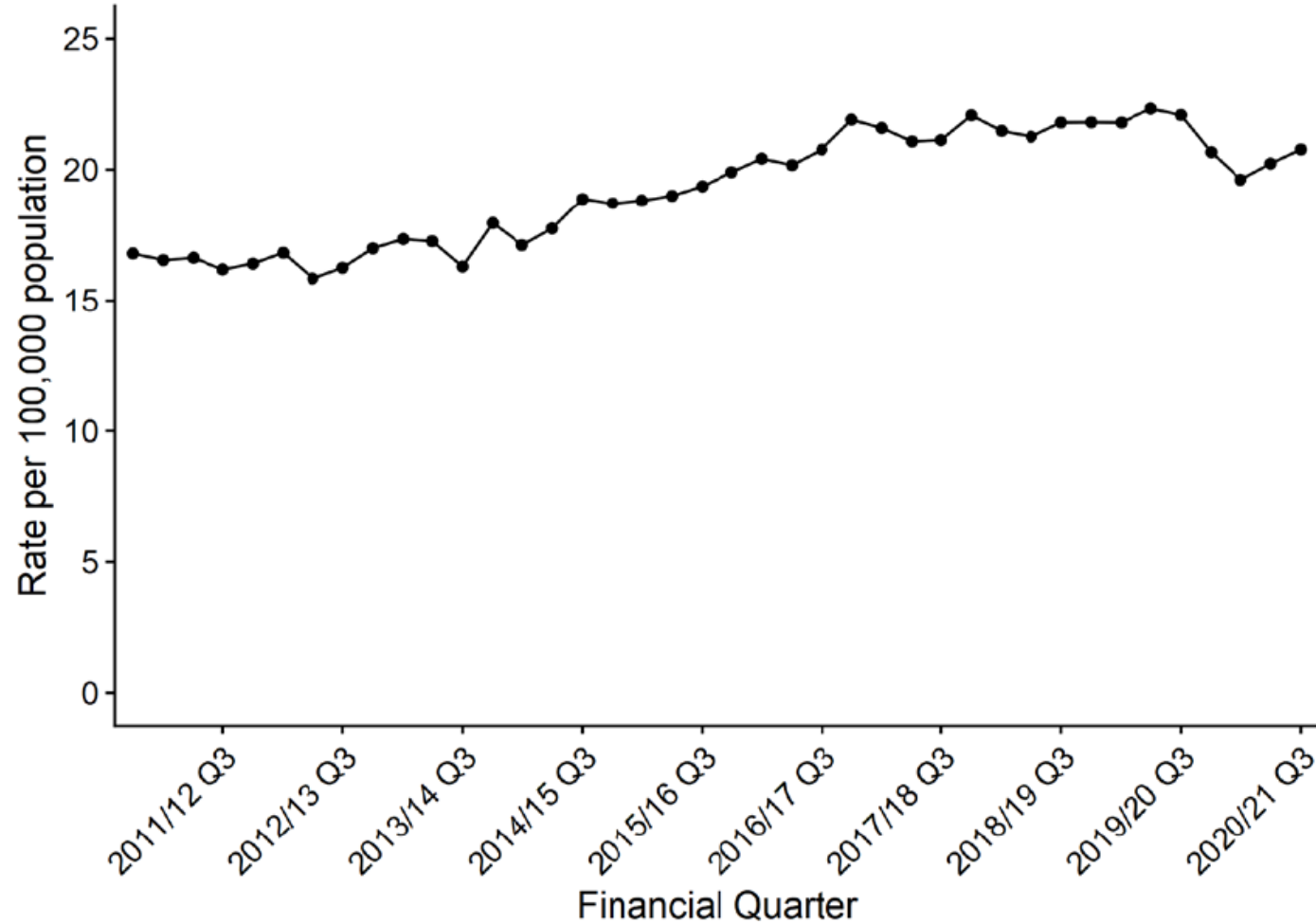


# Introduction & Methods

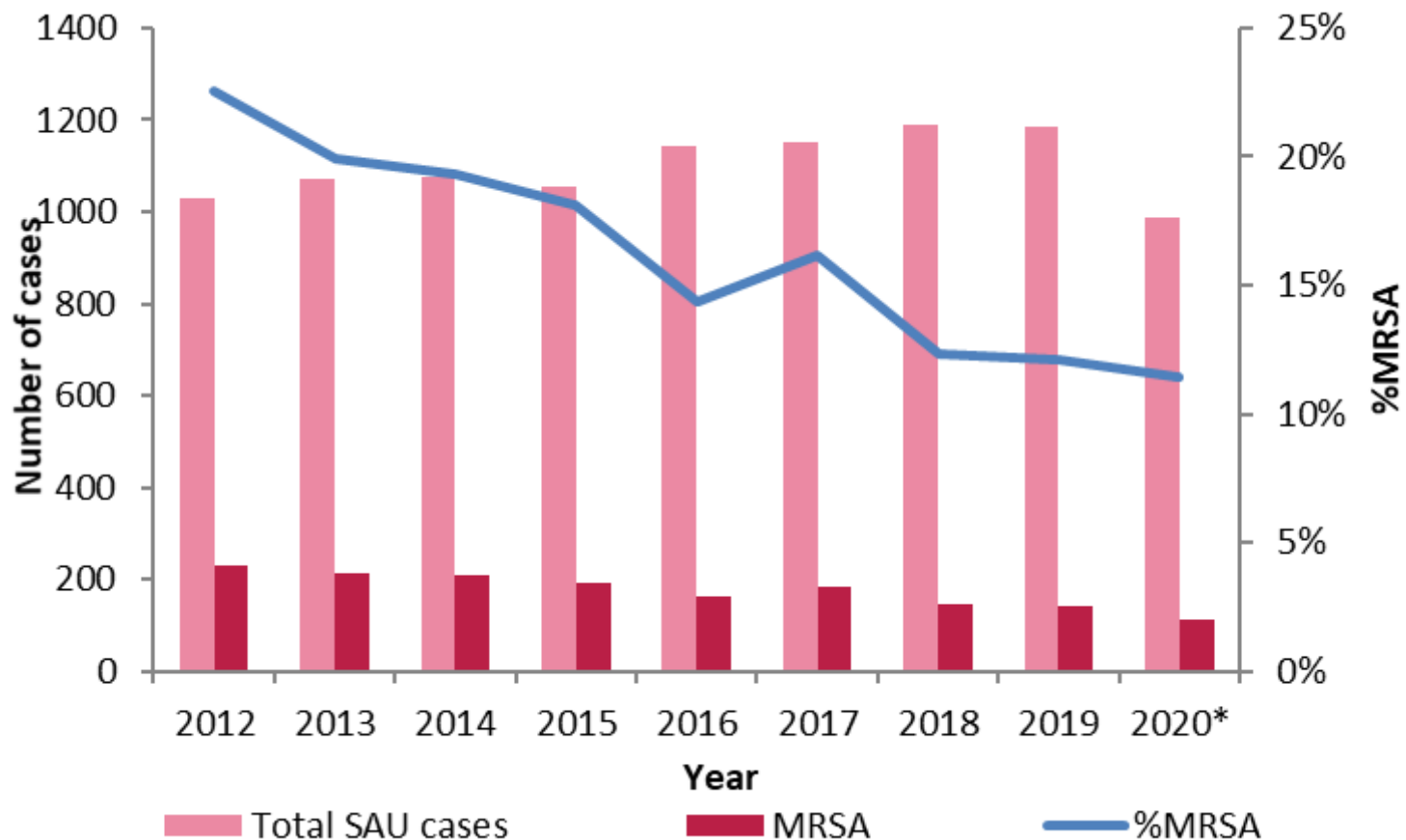
- **Methicillin-resistant *Staphylococcus aureus* was first described in 1961; methicillin introduced in 1959**
- **From 1976, increasing reports in USA, Ireland & Australia**
- **Importance of PBP2' as mediator described in 1985**
- **Emerged as a serious issue in the UK NHS in the 1980s**

**Cafferkey M & Keane CT, 1992**

# MRSA/MSSA BSI, Public Health England 2011-19

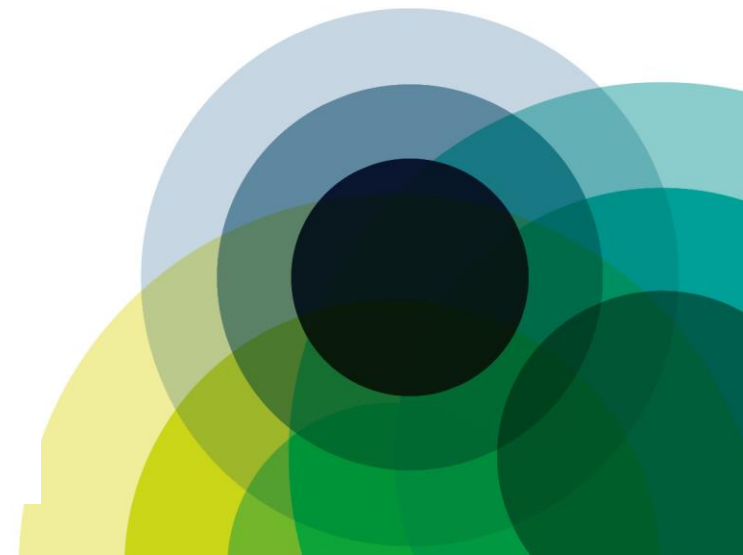
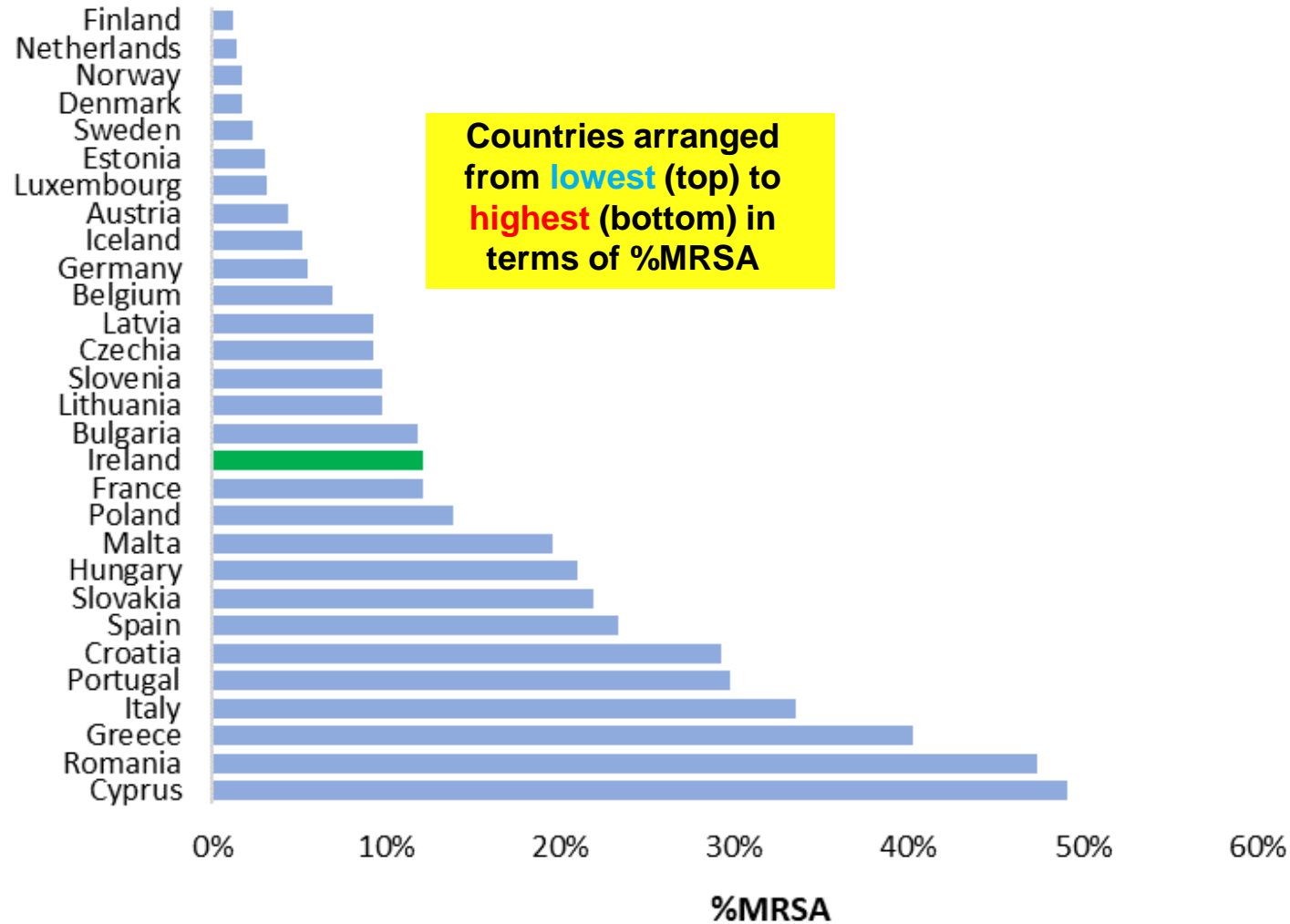


## S. aureus bloodstream Infections in Ireland



**In 2020, %MRSA decreased to 11.5% (or just over 1 in 10 cases), the lowest level to date**

# Distribution of MRSA in EARS-Net countries in 2020





ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

Journal of Hospital Infection

journal homepage: [www.elsevier.com/locate/jhin](http://www.elsevier.com/locate/jhin)



## Guidelines

# Joint Healthcare Infection Society (HIS) and Infection Prevention Society (IPS) guidelines for the prevention and control of meticillin-resistant *Staphylococcus aureus* (MRSA) in healthcare facilities☆☆☆☆

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# Is MRSA still important?

- Colonised individuals at increased risk of colonisation/infection spreading to others & at increased risk of developing infections themselves



- MRSA control remains important to:
  - Avoid/minimise MRSA infections
  - Reduce unnecessary costs to hospitals & healthcare generally
  - Contributes to antimicrobial stewardship to the control other multi-drug resistant bacteria (MDRB)

# Why was an update to the guideline needed?

- Last UK guideline in 2006, but practice has since changed & new products & technologies available since then:
  - Molecular-based methods available for detection of PCR
  - New agents for MRSA suppression/eradication
  - New technologies for environmental decontamination
  - Mandatory surveillance introduced in some countries
  - Increased focus on patient experience & avoiding negative outcomes
  - Improved process for guideline development

- **The guidelines were largely developed for acute hospitals**
- **Each section has an Introduction, Summary of Evidence or /Evidence Statements, Recommendation according to the evidence & Good Practice Points (GPP)**
- **PICO framework, i.e. Population, Intervention Comparison & Outcomes**
- **Medline, CINAHL/EMCare & Embase,**
- **July 2004-February 2021 – English language only**

# How was the update completed?

- National Institute for Health & Care Excellence (NICE)-accredited methodology
- Scoping consultation identified 22 questions
- Panel included infectious diseases/microbiology, clinicians, infection prevention & control (IPC) experts, systematic reviewers, & two lay representatives
- Systematic reviews & included a total of 252 studies
- Appraised the quality & quantity of the evidence using considered judgement
- Recommendations based on the level of evidence, clinical experience, practicality & the impact on patients, but less dogmatic



# Screening

# Benefits of screening

- **At admission, helps establish whether patient may be at risk of acquiring infection themselves or of spreading to others**
- **Opportunity to act – appropriate management of MRSA +ve patients**
- **Early identification of outbreaks & increasing prevalence**
- **Opportunity to inform patients to reduce stigma & promote self-care**

# Summary of the Evidence

**Q.** *What is the clinical & cost-effectiveness of universal versus targeted screening in minimising the transmission of MRSA?*

**A.** We found no evidence that universal screening is clinically valuable or cost-effective. Local circumstances will decide the extent of screening, e.g. the prevalence of MRSA in the community.



**Q.** *What is the clinical & cost-effectiveness of repeat screening after pre-admission/admission screening to prevent the transmission of MRSA?*

**A.** We found no studies which answered this question. We cannot recommend repeated screening.

# Summary of the Evidence

**Q.** *What is the clinical & cost-effectiveness of rapid molecular diagnosis versus culture to prevent the transmission of MRSA in hospital & non-acute care settings?*

**A.** Diagnostic accuracy for molecular & culture based methods are similar but results available earlier with molecular. Does not translate in to clinical & cost benefits.

**Q.** *What is the clinical cost-effectiveness of screening staff to prevent the transmission?*

**A.** No studies which answered this question. Don't recommend routine staff screening.

# Recommendations

- 1. Use a targeted approach; consider universal screening as appropriate depending on local facilities & prevalence.**
- 2. Do not perform repeat MRSA screening routinely.**
- 3. Use either PCR or culture methods for screening as you consider appropriate, depending on local laboratory facilities.**
- 4. Do not routinely screen staff for MRSA.**



# Management of MRSA Positive Individuals

# Isolation & Contact Precautions

**Q.** *Does the isolation or nurse cohorting of patients minimise the transmission of MRSA & what are the costs?*

**A.** No studies assessed the impact of isolation on clinical outcomes or cost effectiveness; some evidence that isolation has a negative effect on patient well-being.



**Q.** *Are contact precautions effective in minimising MRSA transmission?*

**A.** Inconsistent evidence for benefit from contact precautions on outcomes; no studies on cost-effectiveness of contact precautions



# Recommendations

- 1. Consider using contact precautions for MRSA patients when direct contact with the patient or their immediate environment**
  - Change gloves & aprons between procedures with hand hygiene after glove removal
- 2. Consider placing MRSA patients in a single room**
  - Risk assess patient's condition, extent of colonisation/infection & risk to others
  - Isolate patient for shortest time; minimises stigma, loneliness, & low mood
- 3. Provide clear information to patients about the use of protective equipment (PE) to reduce feelings of stigma**
- 4. Be consistent in the use of PE; patients will then have confidence in the decision to isolate**

# Suppression Therapy

- Q. What is the evidence that suppression is clinically & cost effective in minimising MRSA transmission?**
- Q. What are the most clinically & cost-effective methods of topical suppression?**
- Q. What is the evidence that topical suppression results in mupirocin/chlorhexidine resistance?**



## Proven effective

- CHG (skin, soap & wipes)
- Octenidine (skin)
- Mupirocin (nose)



## Not yet proven effective

- Triclosan (skin)
- Polyhexanide (skin)
- Hexachlorophene (skin)
- PVP (nose)
- Octenidine (nose)
- Honey (nose)
- Polysporin (nose)
- Polyhexanide (nose)

# Recommendations

- 1. Mupirocin for nasal decolonisation, selectively (i.e., known colonised) or universally (i.e., all high-risk patients)**
- 2. Chlorhexidine, selectively or universally, for body decolonisation**
- 3. Alternatives (e.g. octenidine) if mupirocin & chlorhexidine not feasible**
- 4. Monitor resistance to mupirocin & chlorhexidine, if used extensively**

# MRSA-Positive Staff

**Q.** *What approaches are most practical & effective for MRSA colonised healthcare staff?*

**A.** No studies which addressed this question



## Recommendations

- 1.** Consider excluding from work, reduce interaction with patients, or offer decolonisation therapy
- 2.** Consider investigating risk factors for carriage
- 3.** Investigate persistent carriage in a multi-disciplinary setting

# Summary

- 1. Decisions about patient management based on circumstances, extent/severity of colonisation or infection, & risk to others**
  - Choose isolation/cohorting, contact precautions & suppression as appropriate
- 2. Staff not recommended to be routinely screened**
- 3. If staff colonised/infected, manage appropriately**
  - Choose exclusion from work, re-deployment & suppression
  - therapy, as appropriate

# Other Issues

The Environment

Use of Surveillance

Information

# The Environment

**Q.** *What is the clinical & cost-effectiveness of environmental screening/sampling in minimising the transmission of MRSA?*

**A.** No evidence was found which met the inclusion criteria

**Q.** *What are the most effective cleaning agents/technologies?*

**A.** Inconclusive or sub-optimal evidence for the use of vaporised hydrogen peroxide (HPV) & ultra violet light (UVL)

## Recommendations

Do not screen/sample the environment routinely

Consider targeted sampling as part of outbreak investigation

Use current approved products

Consider HPV & UVL as an adjunct to routine cleaning



# Surveillance

***Q. What is the evidence that local surveillance & feedback minimises transmission?***

## Recommendations

**Undertake surveillance as part of infection prevention and control & comply with mandatory surveillance.**

***Q. Does local/national surveillance drive service/system improvement?***

## No recommendation

# Patient Information

***Q. What information do patients/relatives require & when being discharged from hospital?***


## Recommendations

**Inform patients about screening & the result**

**Explain 'colonisation', 'infection', 'contact precautions', etc.**

**Use patient leaflets**

**Provide instructions on decolonisation**



Better patient information,  
better patient outcomes

[kingsfund.org.uk/blog](http://kingsfund.org.uk/blog)

# Overview

# Main Changes Since 2006

- **Molecular or culture-based methods for screening** *New*
- **No need to re-screen patients** *New*
- **You can additionally use HPV & UVL** *New*
- **Continue the surveillance for MRSA bloodstream infection (BSI)** *New*
- **Standard or contact precautions by local policy & isolate patients based on risk assessment, for as short a time as possible** *New*
- **Information to patients about the need for screening & the management strategies** *New*
- **Detection of colonised/infected patients should be an indication for increased screening**  
*Removed recommendation*
- **Three screens need to determine patient did not acquire MRSA in hospital** *Removed recommendation*
- **If prevalence high, focus interventions on high-risk units first** *Removed recommendation*

## How should the guidelines be implemented?

- These guidelines should be used to:
  - Update local protocols
  - Develop new clinical audits
  - Drive quality improvement interventions
- Suggested audit measures:
  - Compliance with screening, decolonisation, isolation
  - Cleaning/disinfection standards
  - Compliance with IPC practices (e.g. hand hygiene)
  - Emergence of chlorhexidine (CHG) & mupirocin resistance



## Research Priority Areas

- i. Cost effectiveness of universal *versus* targeting screening & molecular testing**
- ii. Clinical relevance of turnaround times**
- iii. Staff carriage contributing to outbreaks**
- iv. Alternatives to mupirocin & chlorhexidine**
- v. Value of feedback on environmental sampling**
- vi. Effectiveness of antimicrobial surfaces & touch-free devices for decontamination**



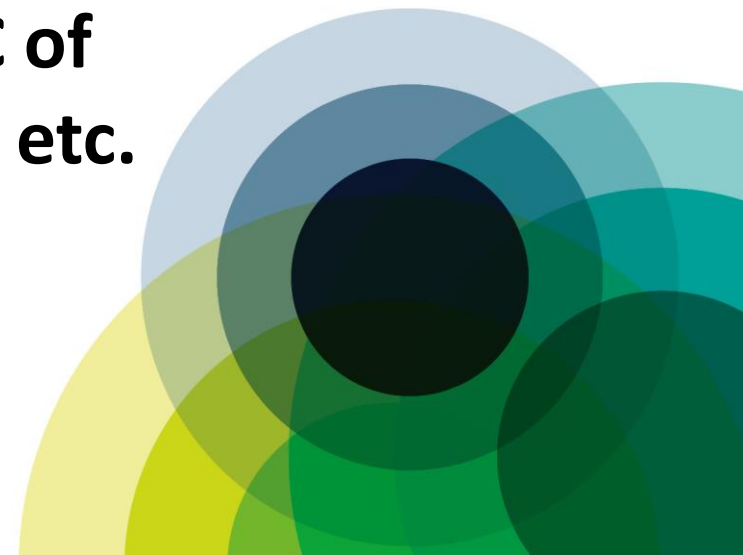
# Final Comments

**Guidelines are more evidence-based & less based on opinion**

**Decisions on implementation are more nuanced & less dogmatic**

**Should be seen in context, e.g. CPE & decline in MRSA**

**Guidelines remain important & contribute to the IPC of other MDRB, as the emphasis on surveillance, etc.**





**THANK YOU**

