

# SURGICAL SITE INFECTION PREVENTION

## Key facts on decolonization of nasal carriers of *Staphylococcus aureus*



### THINGS YOU SHOULD KNOW

#### What does the World Health Organization (WHO) recommend?

The 2016 WHO Global guidelines for the prevention of surgical site infections recommend that patients with known nasal carriage of *Staphylococcus aureus* undergoing:

**cardiothoracic and orthopaedic surgery** should be decolonized using intranasal applications of mupirocin 2% ointment with or without a combination of chlorhexidine gluconate (CHG) body wash (strong recommendation);

**other types of surgery** – treatment with intranasal applications of mupirocin 2% ointment with or without a combination of CHG body wash may be considered (conditional recommendation).

This recommendation applies to facilities where screening for *S. aureus* is feasible and may not apply to settings with a high prevalence of mupirocin resistance.

Based on the lack of evidence, this recommendation is **not** applicable to paediatric patients.



### WHAT should be done?

- > **Involve patients** and ask for their collaboration and compliance with this recommendation as part of their care delivery by providing instructions.
  - Outpatients: provide clear instructions on how to correctly administer intranasal applications of mupirocin 2% ointment and, if advised locally, to perform a CHG body wash before the operation (for more detailed information, see below “When should the recommendation be applied?”). If used, CHG 2-4% soap body wash should be applied in combination with clean, running water.
  - Inpatients: the same instructions for patients apply as above or procedures can be supported by clinical staff.
- > **Support access** to necessary products
  - provision to patients may be required or desirable in some countries:
  - nasal mupirocin 2% ointment
  - CHG 2-4% soap body wash.
- > **Monitor mupirocin resistance**, if mupirocin is used. Decolonization with mupirocin ointment should be performed on known *S. aureus* carriers only in order to avoid unnecessary treatment and the spread of resistance.
- > **Record information** on mupirocin applications in surveillance forms and patient records.
- > **For other types of surgery**, undertake a **careful local evaluation** about whether and how to apply this recommendation. In particular, regarding feasibility of carrier identification in a broader surgical patient population, priority of this intervention over other preventive measures should be considered, as well as cost effectiveness.
- > Ensure that potential **allergic reactions** to mupirocin and CHG are **investigated and recorded**.
- > **Support colleagues** to adhere to this recommendation and be an advocate for it.
- > **Support the local screening policy** of patients to detect *S. aureus* carriage– consider the local rates of *S. aureus* and methicillin-resistant *S. aureus* (MRSA) and patient-related factors.
  - Specifically look for previous *S. aureus* infections, known carrier status of community-acquired MRSA, and colonization by *S. aureus* in body sites other than the nose.
- > Ensure that **patient communications** regarding the treatment are clearly explained.



## WHEN should the recommendations be applied?

- > This recommendation is applicable in the **preoperative period**.
- > Nasal application of mupirocin 2% ointment: **two times daily for five days before the operation + once in the immediate preoperative period** on the day of surgery.
- > A CHG 2-4%t soap body wash: **once a day for five days before the operation + once in the immediate preoperative period** on the day of surgery.



## WHO should support these recommendations to ensure successful implementation?

- > **Patient education and engagement** are critical in achieving this recommendation.
- > Depending on where the facility/surgical services stand with regards to this recommendation, the following staff should be involved in putting it in place or updating local policies/standards or improving compliance with the recommendation:

**1 surgical teams** including outpatient clinic staff involved in preoperative patient information and preparation, and surgical ward staff;

**2 infection prevention and quality improvement** teams to facilitate uptake/update of standard procedures and best practices related to the recommendation and to support monitoring of compliance;

**3 pharmacists and procurement services** to obtain nasal mupirocin 2% ointment and CHG 2-4% soap body wash (if used);

**4 senior administrators** (including finance managers) should be involved in the decision-making on implementing the recommendation and to ensure that an adequate budget is available for continuous product provision, thus motivating staff to comply with the recommendation in the context of an institutional safety climate and culture.



## KEY FACTS

### WHY are these recommendations important?

> *S. aureus* is a leading health care-associated pathogen worldwide.

> *S. aureus* infections impose a **high burden on the patient and the health system** and are a known cause of postoperative wound infections, which can be very serious.

> **Nasal carriage** of *S. aureus* is a **risk factor for subsequent infection** in a patient. It has been shown repeatedly that a large proportion of health care-associated infections due to *S. aureus* originate from the patients' own flora.

> The scientific evidence shows that the **use of mupirocin 2% ointment with or without a combination of CHG body wash** in surgical patients with *S. aureus* nasal carriage has **significant benefit** when compared to placebo/no treatment **in reducing the *S. aureus* surgical site infection rates**, as well as the **overall *S. aureus* health care-associated infection rates**. This is most clear for the cardiothoracic and orthopaedic patient population. For other types of surgery, there is a need for careful local evaluation about whether and how to apply this recommendation.

> **Local capacity for screening** of patients for *S. aureus* **varies** between and within countries and is dependent on several factors, including cost-effectiveness and local epidemiology.

> **Antimicrobial resistance** is an important possible harm associated with the use of mupirocin. Treating all patients, regardless of their carriage status, instead of carriers only increases the likelihood of resistance to mupirocin.

> The summaries of the systematic reviews of the evidence supporting these recommendations can be found within the WHO Global guidelines for the prevention of surgical site infection (<http://www.who.int/infection-prevention/publications/ssi-guidelines/en/>) and their Appendices (<http://www.who.int/infection-prevention/publications/ssi-web-appendices/en/>).

> WHO provides further **implementation support** in the form of tools <http://www.who.int/infection-prevention/tools/surgical/en/>.