Australian Commission on **Safety and Quality** in Health Care

Risk assessment – Use of alcohol-based hand rub in healthcare facilities

Introduction

Hand hygiene is the single most effective intervention to reduce the risk of healthcare-associated infections (HAIs). To encourage healthcare workers, visitors, patients and carers to perform hand hygiene, the National Hand Hygiene Initiative (NHHI) supports the placement of alcohol-based hand rub (ABHR) at the point of care, including (but not limited to) at patient bedsides, the entrance to wards, patient rooms and treatment areas. There are risks associated with the use of ABHR, particularly in clinical areas where there are patients with alcohol use disorders and patients at risk of deliberate self-harm. A risk assessment and management plan should be implemented and reviewed regularly to reduce these risks.

This risk assessment tool is a generic guide to the common issues related to ABHR use in healthcare facilities. Use of this tool will support your organisation in ensuring appropriate, safe placement and use of ABHRs at the point-of-care.

Risk assessment - Use of alcohol-based hand rub (ABHR) in healthcare facilities

Risk assessment completed by:

Date assessed:

Potential hazards	Likelihood	Consequences	Risk rating	Risk treatment
Splash/spillage	**Possible**	**Minor** – Irritation of eyes, potential for slip hazard **Minor/moderate** – Environmental spillage **Moderate** – Corneal damage **<u>Comments:</u>** If a splash occurs to the eyes, do not rub. Immediately flush the eyes with water and seek medical care as soon as possible if indicated	**Medium**	**Elimination:** • prompt cleaning with chemical spill kit **Substitution:** • consider replacing liquid ABHR with gel-based formulations **Isolation**: N/A **Engineering:** • design dispensers to have a drip tray underneath and metered dosing • consider installing non-slip flooring in locations where mounted ABHR dispensers are placed • mount on walls out of the reach of children, and in supervised locations • avoid placing at eye level • do not place on head of bed • undertake regular maintenance checks to ensure dispensers are not leaking • align product placement with AusHFG, local work health and safety requirements, policies, relevant fire codes and the NHHI implementation guide **Administrative**: • educate staff on safe use and handling of ABHR • do not decant bottles of ABHR **PPE:** • consider gloves, gown, eye protection and mask for cleaning depending on level of spillage

Potential hazards	Likelihood	Consequences	Risk rating	Risk treatment
Ingestion *Unintentional misuse* Areas where patient may not understand what ABHR is used for and can unintentionally ingest e.g. paediatrics, older people units, brain injury units *Intentional misuse* Areas where intentional misuse is likely e.g. dry communities, mental health facilities, detox centres, or individual patient at high risk of substance use	**Possible** – With unintentional misuse **Likely** – With intentional misuse	**Major** – When ingested Note: Ethanol and isopropyl alcohol can both cause severe adverse events when ingested. However, Isopropyl alcohol is more potent than ethanol when ingested, and can cause adverse events at lower doses than ethanol[1] Alcohol toxicity may cause behavioural changes, impaired judgement and coordination, confusion, central nervous system depression, respiratory depression, coma and death. [2] For a full list of clinical symptoms see stages of alcohol influence and clinical signs and symptoms in relation to blood alcohol concentration[2]	**Very high** – When ingested	**Elimination:** • remove ABHR **Substitution:** • use soap and water • use portable ABHR that is always kept on staff **Isolation:** • remove ABHR from the end of the patient's bed • remove non-fixed bottles of ABHR from the environment e.g. on counters or staff stations accessible to patients and the public • ensure HCW still have access, such as via personal bottles **Engineering:** • mount ABHR dispensers in staff only areas based on risk assessment • consider lockable dispenser in clinical environment • consider metered dose dispensers • align product placement with AusHFG, local work health and safety requirements, policies, relevant fire codes and the NHHI implementation guide, when mounted on walls and placed throughout facility to ensure ABHR is out of reach of children **Administrative**: • educate staff on correct use/handling of ABHR • add a warning label against consumption • ensure ABHR dispensers are appropriately labelled • undertake regular risk assessment of ABHR dispensers in high-risk areas • audit product volume/usage and respond to unexpected changes in usage • provide written patient information/education on use of ABHR and use of ABHR in infection prevention in different languages • undertake a risk assessment after high-risk patients are discharged and return ABHR to the end of the beds and environment if appropriate **PPE:** N/A

Potential hazards	Likelihood	Consequences	Risk rating	Risk treatment
Fire – Including for normal use, storage and disposal	**Unlikely**	**Moderate** Burns to person and damage to property. Incidents involving fire and ABHR in healthcare settings have been reported, however the incidence is extremely low[3,4]	**Medium**	**Elimination:** • remove ABHR from areas where there is a high fire/ignition risk **Substitution:** • use soap and water or portable ABHR that is always kept on staff **Isolation:** • secure in staff only areas where there is a low fire/ignition risk • store outside of direct light and away from heat **Engineering:** • ensure appropriate safety (firefighting) equipment is in use (i.e. smoke alarms, sprinkler systems, extinguishers) in proximity to ABHR locations • rinse used containers thoroughly with copious amounts of cold water to reduce fire risk, as they may contain residual chemicals and flammable vapours; after rinsing, recycle the containers where possible or dispose of them in general waste — do not reuse • align product placement with AusHFG, local work health and safety requirements, policies, relevant fire codes, the NHHI implementation guide, and ensure ABHR is out of reach of children **Administrative**: • ensure safety data sheets are accessible and appropriate emergency procedures are in place and communicated to all staff • educate staff on correct use/handling ABHR – to rub hands together until alcohol has evaporated and hands are dry before moving on to another activity (i.e. not to be exposed to ignition sources immediately after using ABHR) • ensure ABHR products are stored in accordance with manufacturer requirements and relevant Safe Work Australia guidance • avoid over purchasing product to reduce risk of fire in storage • educate staff on correct procedures for disposal of ABHR bottles • take precautions in the community setting to ensure ABHR is not stored in vehicles. ABHR should be stored in kits that are removed from the vehicle, or personal dispensers should be used that are kept in staff pockets **PPE:** N/A

Potential hazards	Likelihood	Consequences	Risk rating	Risk treatment
Alcohol absorption Concern of skin absorption for religious or other reasons	**Unlikely**	**Negligible** Studies have demonstrated minimal dermal and pulmonary absorption of ethanol from alcohol-based hand rub, with absorbed quantities not considered clinically significant.[4,5]	**Low**	**Elimination:** N/A **Substitution:** • soap and water **Isolation:** N/A **Engineering:** N/A **Administrative:** • education from cultural leaders • education on benefits of ABHR including that gloves are not a substitute for hand hygiene **PPE:** N/A
Skin irritation	**Rare**	**Minor**	**Low**	**Elimination:** N/A **Substitution:** • use alternative hand hygiene products with emollient **Isolation:** N/A **Engineering:** • place moisturiser at hand hygiene stations **Administrative**: • ensure hand hygiene education includes advice on moisturising • ensure there is a procedure for staff to report skin irritations for assessment and treatment e.g. to staff health • for healthcare worker information on hand health refer to guide for healthcare workers to maintain hand health and NHHI hand dermatitis eLearning module • review procurement to assess products that have a lower risk of skin irritation and are in line with TGA guidance **PPE:** N/A

Potential hazards	Likelihood	Consequences	Risk rating	Risk treatment
Tolerance and resistance to chlorhexidine [6,7] See appropriate and safe use of chlorhexidine in healthcare settings	**Unlikely**	**Moderate**	**Medium**	**Elimination:** N/A **Substitution:** N/A **Isolation:** N/A **Engineering:** N/A **Administrative:** • audit and assess procurement and use of chlorhexidine-containing products [7] • keep an up-to-date registry of chlorhexidine-containing products used in the organisation and regularly review the ongoing need for these products [7] • follow the manufacturer's instructions for use and use products in accordance with local and/or state/territory policies and procedures and the Australian Guidelines for the Prevention and Control of Infection in Healthcare • check for chlorhexidine allergy among patients and the workforce • consider using alternative products in line with the NHHI Implementation Guide and the Therapeutic Goods Administration's guidance **PPE:** N/A
Infection – From poor hand hygiene compliance	**Likely –** If hand hygiene is not adhered to and products are not readily available [8]	**Major –** Low hand hygiene compliance is associated with higher healthcare-associated infections [8]	**Very high**	**Elimination:** N/A **Substitution:** N/A **Isolation:** N/A **Engineering:** • ensure ABHR is available at the point of care including (but not limited to) at patient bedsides, the entrance to wards, patient rooms and treatment areas **Administrative:** • implement hand hygiene program, including auditing and education with regular review of audit results to identify areas for improvement • ensure procurement of TGA listed products only that include assessment against common infectious agents in hospitals e.g. viruses, bacteria, fungi • regular review of staff health incidents associated with ABHR **PPE:** appropriate use of ABHR when using PPE

Important links and resources

- Australian Guidelines for the Prevention and Control of Infection in Healthcare
- NSQHS Standards including NSQHS Standards Risk management approach
- Safe Work Australia guidance
- Patient risk screening and assessment.
- Infection prevention and control risk assessment - Integrating the hierarchy of controls
- NHHI Implementation Guide

References

1. Austin Health. *Isopropyl alcohol (Isopropanol).* Austin Clinical Toxicology Service Guideline. Melbourne: Austin Health; 2025.
2. Jones AW. Dubowski's stages of alcohol influence and clinical signs and symptoms in relation to blood alcohol concentration (BAC). *J Anal Toxicol*. 2024;48(3):131-140.
3. Kramer A, Kampf G. Hand rub-associated fire incidents during 25,038 hospital years in Germany. *Infect Control Hosp Epidemiol*. 2007;28(6):745-746.
4. Boyce JM, Pearson ML. Low frequency of fires from alcohol hand rub dispensers in health care facilities. *Infect Control Hosp Epidemiol*. 2003;24(8):618-619.
5. Ahmed Lecheheb D, de Roode E, van der Steen M, et al. Dermal and pulmonary absorption of ethanol from alcohol-based hand rub. *J Hosp Infect*. 2012;81(1):31-35.
6. Buxser S. Has resistance to chlorhexidine increased among clinically relevant bacteria? A systematic review of time course and subpopulation data. *PLoS One*. 2021;16(8):e0256336.
7. Australian Commission on Safety and Quality in Health Care. *Guidance for Health Service Organisations: Appropriate and Safe Use of Chlorhexidine in Health Care Settings*. Sydney: ACSQHC; 2023.
8. Australian Commission on Safety and Quality in Health Care. *National Hand Hygiene Initiative Implementation Guide*. Sydney: ACSQHC; 2024.

For more information

Please visit: Australian Commission on Safety and Quality in Healthcare, Infection Prevention and Control

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