VANCOMYCIN RESISTANT ENTEROCOCCUS (VRE)

POLICY©

DOCUMENT SUMMARY/KEY POINTS

- Enterococci are bacteria normally found in the bowel and the female genitourinary tract.
- Certain patients are at increased risk for VRE infection or colonisation. These include the critically ill; immune suppressed; those who have had intra-abdominal surgical procedures; dialysis patients; patients with multiple medical conditions and prolonged hospital stays, and those who have received broad spectrum antimicrobial therapy
- Transmission of VRE between patients can occur rapidly.
- The Infection Control Team should be contacted to advise and assist with the implementation of the Infection Control precautions.
- **Standard and Contact infection control precautions must be enforced**.
- Patients with VRE (colonised or infected) MUST be nursed in a single room or cohorted with other children with the same phenotype of VRE in a dedicated room with en-suite toilet and bathroom facilities. They should remain in the ward most appropriate to their medical condition and appropriate isolation precautions can be maintained.
- VRE carriers may be nursed in a positive pressure environment. Transfer to an isolation ward such as Variety ward is not required
- All personnel entering the room must wear PPE including long sleeved single use isolation gown and non-sterile gloves
- Parents / carers must wear long sleeved cloth gown
- Patient care equipment must be dedicated for the sole purpose of the patient.
- VRE can extensively contaminate the environment therefore cleaning must be of the highest standard.
- No guidelines currently exist for determining if a patient is clear of VRE.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1st November 2016	**Review Period**: 1 year
Team Leader:	Clinical Nurse Consultant	**Area/Dept**: Infection Control

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CHANGE SUMMARY

- MoH are reviewing their guidelines. No changes in this version but will be reviewed when MoH guidelines are released. 1 year review only

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READ ACKNOWLEDGEMENT

- Read Acknowledge Only – Nursing and Medical staff

Glossary

- **Virulent:** The ability of the organism to cause disease. Some organisms are able to carry this out more effectively than others and are described as being virulent. Other virulence factors include the organism's ability to produce enzymes and toxins that damage the host cell[8].
- **Colonisation:** The presence of an organism in the body without symptoms or clinical manifestations of illness or infection[8].
- **Infection:** Is characterised by a condition in which organisms capable of causing disease enter the body and elicit a response from the host's immune defences[8].

TABLE OF CONTENTS

1 Introduction

- Enterococci are bacteria normally found in the bowel and the female genitourinary tract.
- Enterococci have emerged as significant healthcare associated pathogens with increasing resistance to antibiotics[1].
- When exposed to antibiotics, resistant strains of enterococci may survive and multiply resulting in an overgrowth of antibiotic resistant bacteria in the bowel.

Transmission of VRE between patients can occur rapidly. Limited therapeutic options make VRE difficult to treat and it can contribute to patient mortality.

Clinical Manifestations

- Enterococci may be cultured from blood, bowel, urine, surgical wounds, liver and intra-abdominal abscesses. Patients can be either colonised or infected with VRE.
- VRE readily colonises the bowel without causing symptoms of infection. If VRE is cultured from a faecal specimen without the patient having any signs of systemic infection, the patient is considered to be colonised. VRE does not cause diarrhoea.

1.1 Risk Factors

- Certain patients are at increased risk for VRE infection or colonisation. These include: the critically ill; immune suppressed; those who have had intra-abdominal surgical procedures; dialysis patients; patients with multiple medical conditions and prolonged hospital stays, and those who have received broad spectrum antimicrobial therapy. Antimicrobials which are particularly prone to promoting VRE selection and transmission are quinolones, carbapenems, broad spectrum cephalosporins, and anti-anaerobic agents[9]

2 Command and Control

- Responsibility for implementation of this policy is the direct responsibility of appropriate clinical line managers caring for affected patients.
- The clinical line managers will take advice and direction from infection control staff and the microbiologists.
- Issues of dispute between clinical line managers and infection control / microbiology will be referred to the Director of Clinical Operations who in turn will refer any issues to the Chief Executive, if required, for resolution based on best evidence and expert advice.
- If there is no policy on a particular issue or the policy needs updating then there needs to be further discussion between clinical line managers, infection control, microbiology and the Director of Clinical Operations to develop a consensus agreement based on best evidence. If a dispute arises about policy it is to be referred to the Chief Executive for resolution.

- Vancomycin resistant enterococcus (VRE) infection or colonisation is not mandated as a reportable infection to Public Health Units.
- A Reportable Incident Brief (RIB) will be sent to NSW Ministry of Health on any potential media interests or problems. This is currently the responsibility of the team managing the child with the help of the clinical Governance Team. The report is submitted by the governance Team.
- Isolations of VRE identified by the clinical manager or microbiologist must be reported to infection control who will determine the type and level of response and provide advice on implementation of this policy.
- Microbiologist or Infection Control Practitioner will notify the Director of Clinical Operations of identification of any isolates of VRE outside of the known clusters. The Director of Clinical Operations will in turn notify the Chief Executive.
- A report on management of any new VRE cluster will be made to the next Infection Control Committee meeting and the relevant Executive member.

3 Mode of Transmission

- The most likely modes of transmission from patient to patient are either by direct contact through transient carriage of VRE on the hands of health care personnel or indirectly by contaminated environmental surfaces and patient care equipment
- To minimise the transmission of VRE strict Infection Control measures are required. This can be achieved through compliance by health care personnel with Infection Control measures and the careful use of broad spectrum antibiotics. These strategies are the most effective in preventing the spread of this organism[2].

4 Notification of VRE

- Infection Control or the Department of Microbiology will notify wards when a patient is diagnosed as having VRE. Infection Control will initiate the 'Infectious Risk flag' which manifests as a 'V' in the Isolation Alert of the Patient Management System.
- Following notification Staff is required to implement strict Contact and Additional Precautions. The VRE positive result will be documented in the patient's medical record and the child's consultant will inform the family and the child. The VRE Factsheet can be printed from the intranet http://chw.schn.health.nsw.gov.au/ou/infection_control/resources/factsheets/parents/vancomycin_resistant_enterococcus.pdf

5 Infection Control Precautions

The Infection Control Team should be contacted to advise and assist with the implementation of the Infection Control precautions.

- Standard Precautions must be maintained at all times, whether or not the patient is known to be carrying VRE. Laboratory screening for VRE carriage is slow and never 100% sensitive. All VRE carriers in a ward or unit may not have been identified. Adherence to standard precautions, (along with good environmental hygiene and prudent antimicrobial use) is our best defence against the transmission of VRE and other multiple-resistant micro-organisms.
- Standard precautions are the following:
  - Wash hands before patient contact,
  - Hand washing with 2% Chlorhexidine solution after patient contact, or
  - Use of alcohol 'hand rub' after patient contact. Allow alcohol to dry.

In addition to standard precautions, Contact and Additional Precautions must be commenced immediately following the notification of a probable or confirmed VRE. These precautions apply to all persons entering the room. (Medical staff, Nurses, Physiotherapists, Pathology collectors, patient relatives and visitors etc)

5.1 Contact and Additional Precautions

Contact and Additional Precautions are designed to reduce the risk of transmission of VRE by direct contact with the patient (skin-to-skin contact) or by indirect contact with environmental surfaces or patient care items in the environment. Contact and additional Precautions are used in addition to Standard Precautions. (Refer to Flowchart at end of this policy). Contact and additional precautions are the following:

- Wash hands before patient contact, with 2% Chlorhexidine solution
- Wear long sleeved isolation gowns during contact with patient and/or their environment,
- Wear non-sterile gloves during contact with patient and/or their environment,
- Wear protective eyewear for contact with the patient, where there is a likelihood of splash and /or when cleaning the environment.
- Hand washing with 2% Chlorhexidine solution after patient contact,
- Use of alcohol 'hand rub' after patient contact. Allow gel to dry.

5.2 Room Placement

Patients with VRE (colonised or infected) should remain in the ward most appropriate to their medical condition where they can be best cared for. VRE carriers may be nursed in a positive pressure environment. Transfer to an isolation ward such as Variety ward is not required unless they also have another condition which requires use of those isolation facilities. Patients MUST be nursed in a single room or cohorted with other children with the same phenotype of VRE in a dedicated room with en-suite toilet and bathroom facilities. The door of the room must have a 'Contact and Additional Precautions' isolation sign on the door.

Patients with VRE must not share a room or bathroom with patients who do not have VRE .The patient's room must have a staff hand wash basin. Adequate supplies of gowns, gloves and alcohol 'hand rub' are required outside the room.

5.3 Personal Protective Equipment (PPE)[3]

VRE can extensively contaminate the patient's environment.

- All personnel (staff, visitors and relatives) entering the room must wear PPE
- Single use long sleeved isolation gown and non-sterile gloves must be worn at all times when entering the patient's room or the patient's environment. The gown and gloves must only be worn once and then discarded.

5.3.1 Exception for Parents and Carers,

- Single use long sleeved cloth gown must be worn be worn at all times when in the patient's room. Gloves are not required. The gown must only be worn once and then discarded. Cloth gowns can be worn be parents and carers as they spend lengthy periods in the patients room
- Parents and Carers must not visit other children in the hospital.

- After leaving the room the parents and carers have no other restrictions.

5.3.2 The steps in PPE removal are:

1. Remove gloves by rolling back from the wrist. Do not touch the skin
2. Remove gown and fold carefully with contaminated side in and place in clinical; waste bin.
3. Wash hands with antiseptic hand wash and water for 30 seconds
4. Leave the room
5. Use alcohol hand rub process for 15 seconds

Alcohol hand rub must be located inside and outside the patient room for decontamination of hands between different procedures on patient.

5.4 Patient Care Equipment

- Must be dedicated for the sole purpose of the patient.
- The patient should have his / her own equipment such as stethoscopes, sphygmomanometers, thermometers, tourniquets and pans.
- This equipment should remain in the patient's room for the duration of the patients stay.
- Once the patient has left the room, all dedicated equipment must be discarded or wiped over with Viraclean or Virex prior to use on another patient.

5.5 Room Management

- Minimal items should be kept in the room.

- Only essential items, including sterile consumables, should be taken into or stored in the room. Unused stock is to be discarded when the patient has been discharged from the room.
- NOTE: Sterile equipment normally processed in the Central Sterilising Service Department (CSSD) should be placed in the Ward CSSD container for return to CSSD.
- Patient medical record, old notes and x-rays must be kept outside the child's room.

5.6 Transfer of a Patient with VRE from Shared Room

- Screen other patients in the room for VRE. Also toilet trained children that have used the shared toilet.
- Infectious cleaning of the room and bathroom is required as per Section 11 of this policy, with attention to the bed locker, all surfaces and fixtures. Bed screen and shower curtains are to be changed.
- No new patients are to be admitted to the room until all original (exposed) patients have been discharged from the room, and the room has been "Infectious Cleaned" and inspected.
- Additional screening may be required as directed by Infection Control.

6 Screening Patients for VRE

- All screening will be directed by Infection Control.
- A stool culture is the preferred specimen for detecting VRE. If you are unable to collect a stool specimen, a rectal swab can be collected.
- Patients sharing a room, and toilet-trained children sharing a toilet, for more than 24 hours with a child newly colonised with VRE, will need to have either a stool culture or rectal swab collected, regardless of whether they have been screened in the past.
- Awareness of all patients colonised with VRE assists the prevention of transmission to at-risk patients.

7 Outpatient Clinic

In outpatient clinics where vulnerable children are regularly seen (eg OTC, Renal and Liver Clinics), all patients who are positive for VRE will be seen as in a designated area. Infection Control precautions must be followed as outlined throughout this policy.

In general outpatient clinics (eg fracture clinic) careful standard precautions are adequate.

8 Bear Cottage

It is impractical to implement contact precautions in this setting. Meticulous adherence to standard precautions (particularly hand hygiene) is advised, as well as careful room cleaning daily and after discharge.

9 Day Stay

Patients who are positive for VRE will be seen as in a designated area. Infection Control precautions must be followed as outlined throughout this policy.

10. Neonatal Emergency Transport Service (NETS)".

- Contact and additional precautions apply wear long-sleeved isolation gown and non-sterile gloves.
- Infection Control or/or receiving institution must be notified of a child with VRE admission or transfer.
- The receiving ED or unit should be advised of the child's VRE status as soon as possible – ideally prior to arrival – to enable appropriate placement
- Equipment should be cleaned with Viraclean or Virex prior to use on another patient.
- Following transfer, the area(s) occupied by the patient, must be "cleaned as per 'Special Purpose Cleaning Work Procedure 5.12'

11. Long Stay Units

Children with VRE should not be accommodated in the long stay units

12. Other Departments for Diagnostic Tests

- The receiving department must be notified in advance of the patient's positive VRE status.
- Porters must wear single use long sleeved isolation gown and gloves when transporting patients. Parents or Career's accompanying the child must wear a clean single use long sleeved isolation gown. These must be removed and discarded when the patient contact has finished.

- Wash hands following removal of gown and gloves.
- All surfaces such as the chair and x-ray table used by the patient must be cleaned as per section 8 of this policy following completion of the test. The cleaning must be attended before the equipment is use for another patient.

13. Operating Theatres

- The operating theatre suite must be notified in advance of the patient's VRE status.
- Porters must wear single use long sleeved isolation gown and gloves when transporting patients. Parents or Carer's accompanying the child must wear a clean single use long sleeved isolation gown. These must be removed and discarded when the patient contact has finished.
- Wash hands following removal of gown and gloves.
- All surfaces such as the bed and theatre table used by the patient must be cleaned as per section 6 of the Infection Control: Standard and Transmission Based Precautions for Operating Suite policy. The cleaning must be attended before the equipment is use for another patient.

14. Patient Activity Outside Room

- The child can use the outside areas in the hospital grounds.
- The child cannot visit the common food outlet areas.
- The child cannot visit the Starlight Room.
- The child cannot attend the schoolroom.
- The child cannot visit other inpatients.
- Activities and school can be organised in the room.
- All other activities must be negotiated with Infection Control.

15. Room Cleaning Requirements

- Daily cleaning as per the Cleaning Services policy.
- VRE can extensively contaminate the environment therefore cleaning must be of the highest standard.
- It is advisable to clean the patient room last to accommodate efficient work practice.

- Clean with detergent and water; disinfect by wiping over surfaces with Viraclean or Virex
- Cleaning must include all surfaces that the patient comes in contact with, paying particular attention to the bed, commodes, chairs, hoists, toilets, hand basins, door handles, bed rails, taps, telephones, and call bells.
- Dedicated cleaning equipment is required. Cleaning cloths and mop heads should not be used elsewhere and after use are subject to normal laundry procedure.

16. Linen and Waste

- Used linen and waste should be managed as per Standard Precautions. Linen and waste bags should be removed from the room and taken directly to the collection area.

17. Pathology Specimens

- Pathology personnel must comply with Standard and Contact and additional Precautions when entering and leaving the room.
- Seal specimen receptacles correctly and label accurately.
- Place specimen and pathology form into a plastic biohazard specimen bag for transport.
- Tourniquet is to be cleaned before use on any other patient (may be left in room for the duration of patient stay and then cleaned or discarded).

18. Food Services

- The combination of hot water and detergent in a dishwasher is sufficient to decontaminate eating utensils.
- Used eating utensils should be sent directly to the Food Services department.

19. Occupational Therapy

Occupational therapists and play therapists are required to wear long sleeve isolation gowns when in the child's room. All equipment used for the session with the child must be cleaned with Virex or wiped over with Alcohol wipes before the equipment is used for other sessions.

20. Clearing a Patient of VRE[3]

- It is not routine practice to document "clearance" of VRE carriage, since VRE colonisation can persist indefinitely.
- In certain circumstances, in consultation with Infection Control, the usual precautions may be relaxed to allow past VRE carriers to attend outpatient social events and parties. The following criteria should ALL apply before outpatient precautions are relaxed in this way:
  - At least 6 months since last positive VRE culture
  - At least 3 months since last inpatient admission
  - No longer undergoing any active medical treatment (chemotherapy, antibiotics, etc)
  - 3 negative VRE stool/rectal screening specimens at least one week apart
- Patients who are "cleared" in this way will nonetheless require reassessment and contact and additional precautions if they are readmitted to hospital and put on antibiotics or antimetabolites. For this reason these patients will retain an "Infection Risk Flag" in the hospital Patient Management system.

21. Patient and Family Education

Education and support for the patient and relatives is fundamental to the compliance and understanding of the management of VRE. (Refer to Patient / Relative Information Sheet).

22. Staff Precautions

- Contact and additional Precautions must be implemented at all times.
- Staff can look after other children if required.

23. Cleaning of Room and Bathroom After Discharge

- Cleaning procedures are as per Cleaning Services Infectious Cleaning.
- Discard all pre sterile consumable items, on discharge only.
- Equipment normally processed in CSSD should be placed in the Ward CSSD container for return to CSSD.
- Items for personal hygiene used by the patient are to be discarded.

- All surfaces, patient equipment, doorknobs, tap handles, curtains and electronic devices etc must be included in the cleaning of the room / environment.
- Bed curtains and shower curtains must be changed and toilet brush should be discarded.
- The room, bathroom and all patient care equipment inside the room must be quarantined until the area is cleaned.
- Following cleaning an inspection of the room will be undertaken by Infection Control Staff.

24. Discharge of Patient from Hospital

Discussion should take place before discharge to ensure the patient and family is fully informed about VRE. The patient should be requested to alert staff of VRE status if admitted to a health care facility.

25. Emergency Department

25.1 Identifying a patient with VRE

An 'Infection Risk Flag' is in place on patients identified with a multi-resistant organism (MRO). This manifests as a 'V' in the Infection Alert on Health-e-Care with the following message;

This child has "Vancomycin Resistant Enterococcus".

This child must be placed in one of the single rooms Contact and additional precautions apply wear long-sleeved isolation gown and non-sterile gloves Infection Control must be notified if child is admitted.

Contact and additional Precautions are to be instigated immediately following identification of a patient with VRE.

25.2 Patient placement

- Require a dedicated room ensure the child has a dedicated pan and or bottle.
- Contact and additional Precautions are to be implemented immediately.
- Depending on the patient's clinical status, the most senior doctor on duty is to negotiate with the admitting team for the patient to be transferred directly to ward for admission or assessed / admitted in ED.
- Advise Bed Management / AHNM of bed requirements as soon as known.
- Priority for appropriate bed placement is to be given to the patient with VRE.

- Remove all non-essential equipment and sterile consumables and equipment from the room.
- Equipment must be dedicated for the sole purpose of the patient.
- Equipment should be left in the room for the duration of the patients stay.
- Equipment should be cleaned with Viraclean or Virex prior to use on another patient.
- Following discharge from the Emergency Department the room occupied by the patient, including the Resuscitation room / treatment room must be "cleaned as per 'Special Purpose Cleaning Work Procedure 5.12'

25.3 Patients who require immediate attention

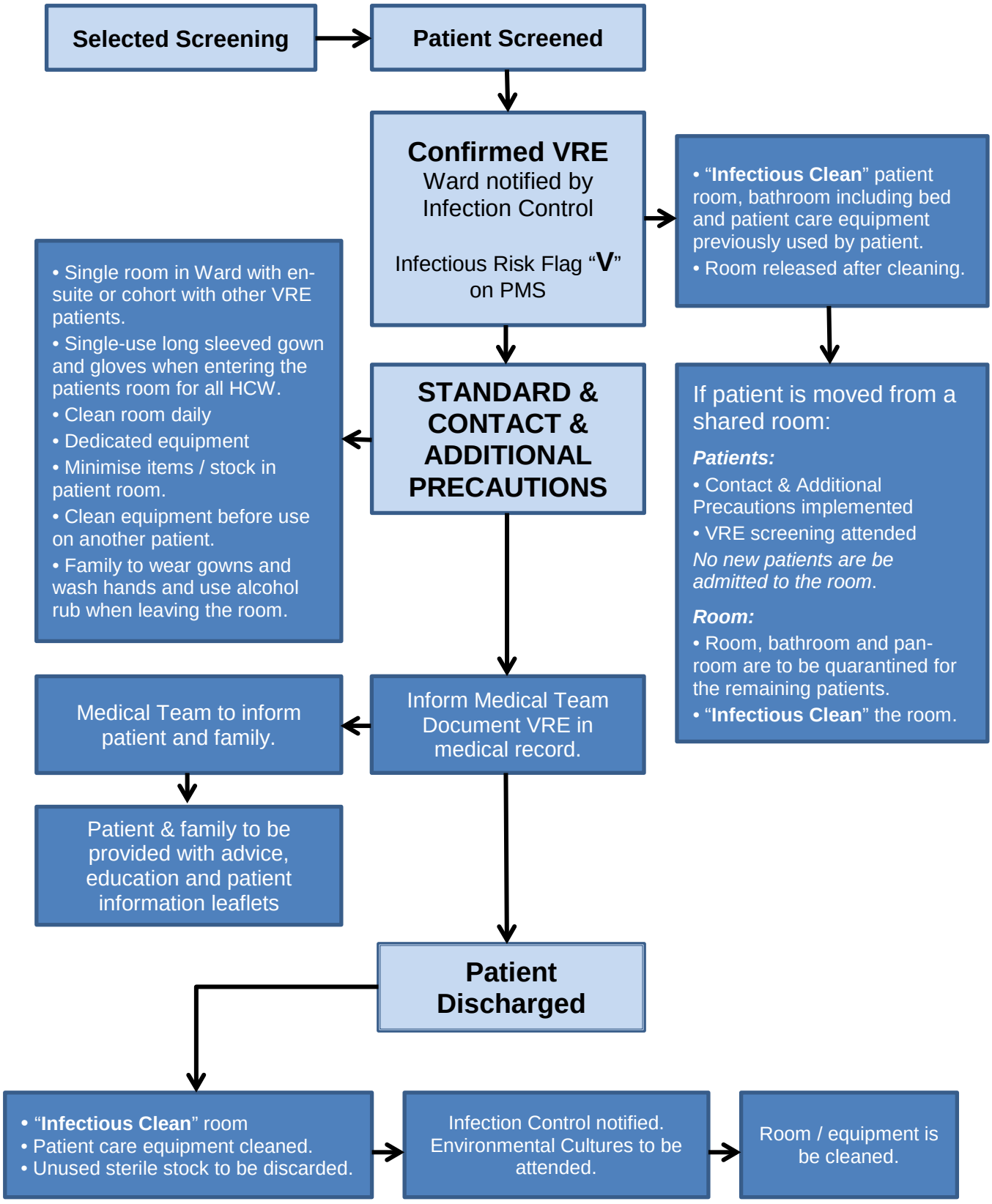
(For example: resuscitation / cardiac monitoring / joint reduction)

- Are to be managed in the most appropriate area of ED to allow for their appropriate care. However, the implementation of Contact and additional Precautions must occur.
- Following stabilization, the patient must be admitted to the ward as a priority or transferred to a single room within the ED with dedicated bathroom and cared for as above.
- Advise Bed Management / AHNM of bed requirements as soon as known.

10 References

1. Noskin, A.J., Stosor, V., Cooper, I., Peterson, L.R. (1995). Recovery of Vancomycin resistant Enterococcus on fingertips & environmental surfaces. Infection Control & Hospital Epidemiology, 16(10), 577-581
2. Khurshid, M.A., Chou, T., Carey, R., Larsen, R., Conover, C. & Bornstein, S.L. (2000) Staphylococcus aureus With Reduced Susceptibility to Vancomycin – Illinois, 1999. Journal of the American Medical Association. 283(5), 597-598
3. NHMRC (2012) Australian Government Department of Health & Aging. (2004). Australian Guidelines for the Prevention and Control of Infection in Healthcare. Commonwealth Australia.2

Appendix 1: Ward Management of VRE



Appendix 2: Emergency Department Management of VRE