



Adoption of a Tertiary Hospital MRSA Outbreak Management Algorithm for Effective Containment of an EMRSA 15 (ST22-IV) Cluster in a Rehabilitation Ward

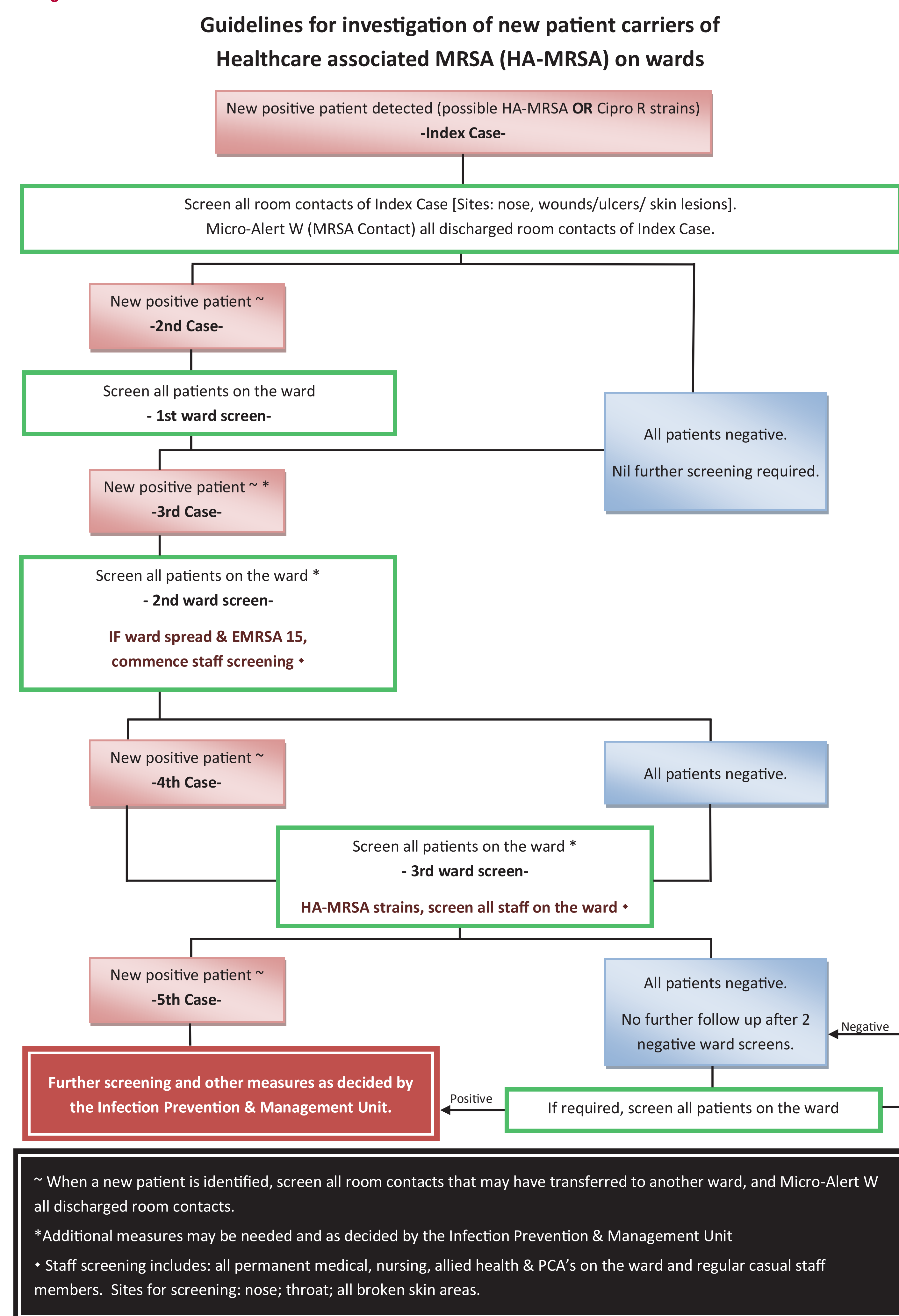
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Introduction

In WA, for 2015-2016, Healthcare-associated Methicillin Resistant *Staphylococcus aureus* (HA-MRSA) accounted for 23% of MRSA healthcare-associated infections (HAI). Of these 92% were EMRSA-15 (ST22-IV), a significant strain in the hospital settings. At Royal Perth Hospital (RPH), an inner city tertiary hospital, extensive experience managing MRSA outbreaks in both tertiary and rehabilitation settings led, in 2009, to the development of MRSA screening requirements in an MRSA Outbreak Management Algorithm to achieve swift eradication of EMRSA-15 outbreaks (Figure 1). Bentley Hospital (BH), a 100 bed public specialist hospital was aligned with RPH in July 2016 to form the Royal Perth Bentley and consequently the Infection Prevention & Management Units of both hospitals were merged.

Figure 1.



Methods

In February 2017, a case of EMRSA-15 bacteraemia was detected 17 days after admission in a patient in the aged care rehabilitation ward at BH. Within 2 weeks, a second case of EMRSA-15 colonisation was detected in an inpatient of the same ward screened whilst attending an outpatient appointment at another facility. An initial investigation determined that this 2nd case had been admitted into a bed space previously vacated only minutes earlier by the index case. The detection of this second EMRSA-15 case, and the possibility of epidemiological link, led to the implementation of the MRSA screening requirements outlined in the RPH MRSA Outbreak Management Algorithm. In addition to these screening requirements other routine outbreak management strategies including isolation of EMRSA-15 colonised/infected patients under contact precautions and increased environmental cleaning were utilised.

The algorithm stipulated repeated weekly MRSA screening (nose & wounds) of ward patient contacts until screening detected no further cases, and early MRSA screening (nose, throat & wounds) of all Healthcare Workers (HCW) with subsequent MRSA topical decolonisation of any positive cases.

The first ward contact patient MRSA screen identified an additional patient with EMRSA-15 infection of a skin tear. Under the algorithm this 3rd case indicated the requirement for a second MRSA ward contact screen, and commencement of HCW screening.

Although the second patient contact ward MRSA screen resulted in no further patient cases being identified, the screen of 105 HCW detected EMRSA-15 in 3 Assistants in Nursing (AIN), two of whom were employed by an agency, but had regular shifts at BH. All colonised HCW received topical MRSA decolonisation treatment.

Results

Genotyping of the 6 EMRSA-15 isolates (3 patients and 3 HCW) was performed by pulsed-field gel electrophoresis (PFGE)2 at the Gram-positive Typing Laboratory, PathWest Laboratory Medicine WA, Fiona Stanley Hospital (Figure 2).

Four isolates (Type B) were indistinguishable by PFGE: those of the index case, the patient identified in the first ward patient MRSA screen, and two AINs (Figure 3)

Two unrelated strains of EMRSA-15 were also detected in a patient (Type C) and a HCW (Type A) (Figure 4).

Figure 2.

Dice (Opt 0.5%) (Tol 1.3%-1.3%) (H>0.0% S>0.0%) [0.0%-100%]

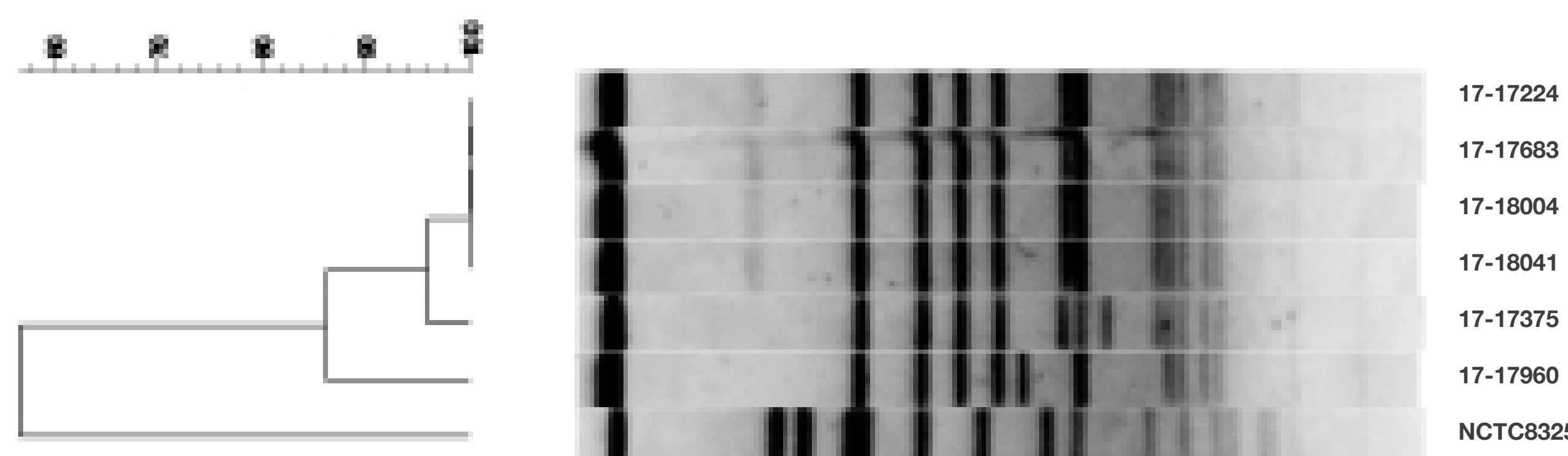


Figure 3.

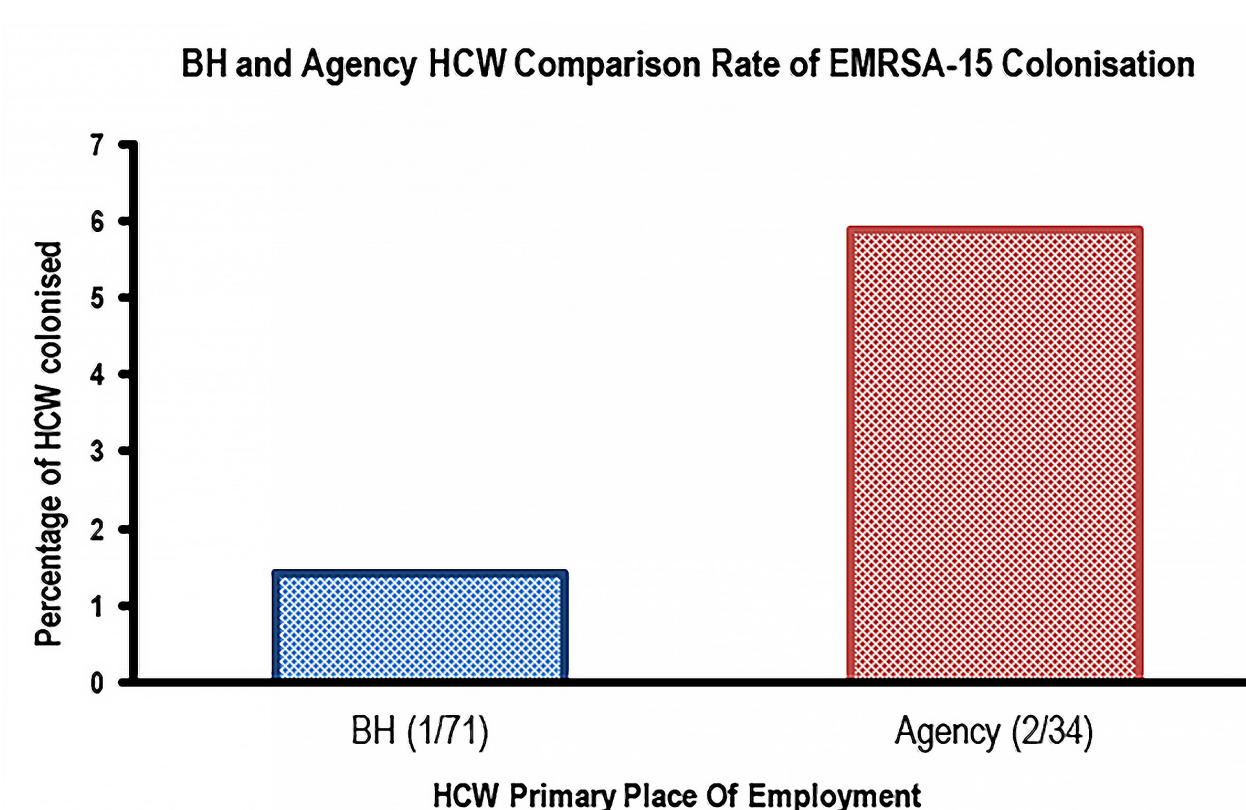
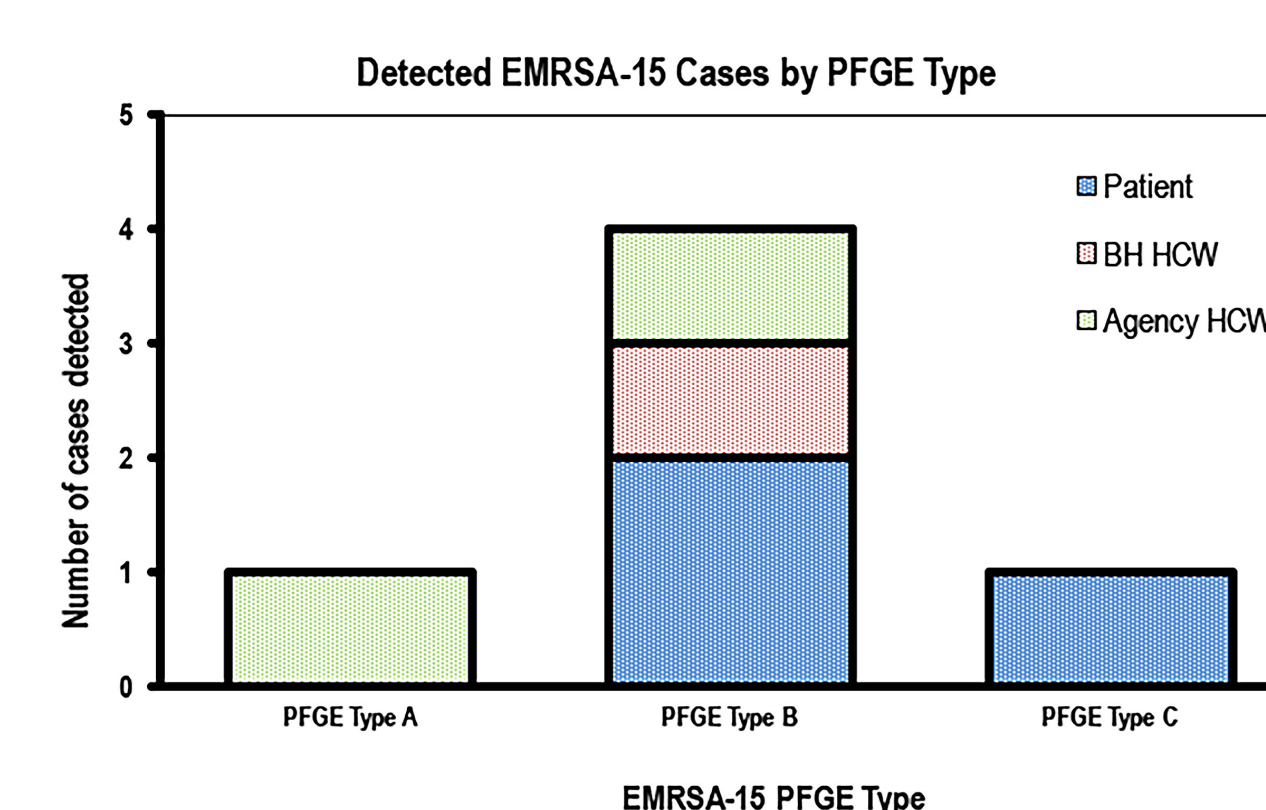


Figure 4.



Conclusions

- > In non-tertiary settings cases of clinical infection with EMRSA-15 should be investigated and strategies employed to curb transmission.
- > The adoption of the patient/HCW screening for MRSA requirements as recommended in the RPH MRSA Outbreak Management Algorithm together with other outbreak strategies such as decolonisation of positive MRSA carriers, use of transmission based precautions and enhanced environmental cleaning resulted in the containment of the EMRSA-15 cluster.
- > The inclusion of Agency staff in screening may play a role in preventing transmission of EMRSA-15 between wards and healthcare facilities.
- > The use of molecular technology to confirm the outbreak is recommended.

References

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