Panton-Valentine Leukocidin Methicillin Resistant *Staphylococcus aureus*. An outbreak case review

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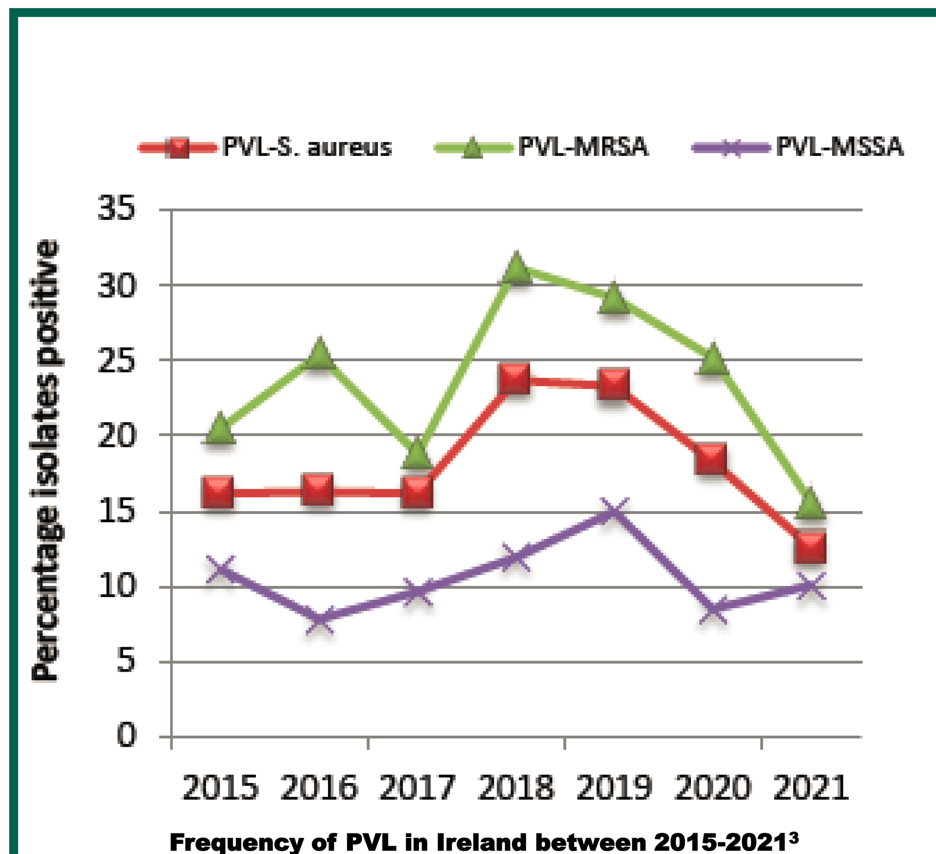
BACKGROUND

- PVL positive MRSA (PVL-MRSA) Is associated with increased virulence, transmissibility and higher morbidity and mortality. [1]
- Control of MRSA in the community is critical to minimize transmission of PVL-CA-MRSA from community into hospital settings because of its multiple resistance and virulence genes. [2,3]
- Community acquired PVL-MRSA is increasingly linked with hospital outbreaks. [3,4]
- In 2020 and 2021 PVL detection was the most frequently requested test in the National MRSA Reference Laboratory. [4]
- The National MRSA Reference Laboratory monitors the incidence of *PVL* carrying strains of *Staphylococcus aureus* associated with healthcare infections for Ireland.
- Since November 2022 Public Health Area D have been notified of three cases and one community outbreak of PVL-MRSA, all of which were notified by a GP and had an extensive list of contacts.
- Nationally two PVL-MRSA outbreaks have been notified to the Health Protection Surveillance Centre since 2017.
- Ireland has no formal surveillance system to monitor CA-MRSA.[3]

METHODOLOGY

- Conducted a review of laboratory results, case notes and outbreak summary file.
- The departmental database was accessed for decolonisation protocols, local and national guidance.
- An internet search was carried out for international guidance.

GRAPH



Frequency of PVL in Ireland between 2015-2021[3]

OUTBREAK SUMMARY

Total population at risk	12
Number of confirmed cases	7 linked cases notified from multiple family groups
Notification	General Practioners
Mode of transmission	Person to person
Typing	ST772-MRSA-V, (also known as the "Bengal Bay" clone)
Antimicrobial Resistance	B-lactams, Aminoglycosides, Macrolides, Quinolones and Trimethoprim.
Risk groups	Yes

RISK GROUPS DEFINITIONS[5]

CA-MRSA contact	People with frequent close skin-skin contact with an MRSA index case and /or share items that come in close contact with the skin of the index case.
Higher-risk (household) contacts	Persons who regularly live in the same household as the index case and therefore have frequent close skin contact or are likely to share items that come in close contact with the skin of the index case e.g. congregated settings, group homes.
Lower-risk contacts	Closely-associated cohorts outside a single household e.g. day-care centres or contact sports teams e.g. football, wrestling with potential for close contact or sharing of towels.

MANAGEMENT

- A public health risk assessment was carried out with input from Public Health (PH), Dermatology, Health Protection Surveillance Centre (HPSC), Clinical Microbiology, General Practioners (GP's) and Occupational Health (OH).
- Public health advice was provided to GP's of all cases and contacts.
- Lesions treated with antimicrobials by GP's based on presentation and reported resistance - As per Micro team.
- National [5] and NHS guidelines [6,7] were used to identify the appropriate decolonisation protocol in conjunction with the clinical microbiology team. *Octenisan wash lotion OD 5 days/Bactroban Nasal Ointment TDS 5 days*
- Infection Prevention and Control (IPC) advice was given to cases and contacts.
- Follow-up and ongoing PH support to cases and contacts.

OUTCOMES

- Public health risk assessment of two initial linked cases identified 5 further linked household cases with multiple recurrence of lesions.
- Recurrences led to repeated GP reviews, antimicrobial prescribing and required two decolonization protocols.
- Swab results indicated resistance to multiple antimicrobials.

CONCLUSION

CHALLENGES

- Lack of availability of a national patient information leaflet for families.
- Late presentation to GP led to delay in diagnosis of MRSA and subsequent PVL testing which increases potential for further spread among contacts.
- Lack of awareness by cases and contacts contributed to delay in decolonisation protocol leading to further transmission and avoidable antimicrobial prescribing.
- An outbreak control team (OCT) meeting in the earlier stages may have identified challenges and improved compliance with decolonisation protocol.

RECOMMENDATIONS

- Development of national PVL patient information leaflet to include information on decolonisation and IPC.
- Updated national guidance for health professionals.
- Increase public awareness of MRSA and presenting symptoms.
- Develop a local checklist to manage PVL-MRSA cases and outbreaks with convening of OCT if required.
- Early input from OH departments if healthcare contacts identified.
- A full review of all cases notified to the department within last 5 years to identify patterns in transmission, contacts, and antimicrobial resistance.

REFERENCES

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