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Methicillin-susceptible *Staphylococcus aureus*: Utilization of decolonization protocol and incidence of surgical site infections in orthopedic and cardiac bypass surgical patients

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OBJECTIVE

Evaluate the utilization of a decolonization protocol in methicillin-susceptible *Staphylococcus aureus* (MSSA) colonized patients following pre-admission testing at Parkview Health and the incidence of methicillin-resistant *Staphylococcus aureus* (MRSA) and MSSA in orthopedic, spinal, and cardiac surgical site infections (SSIs).

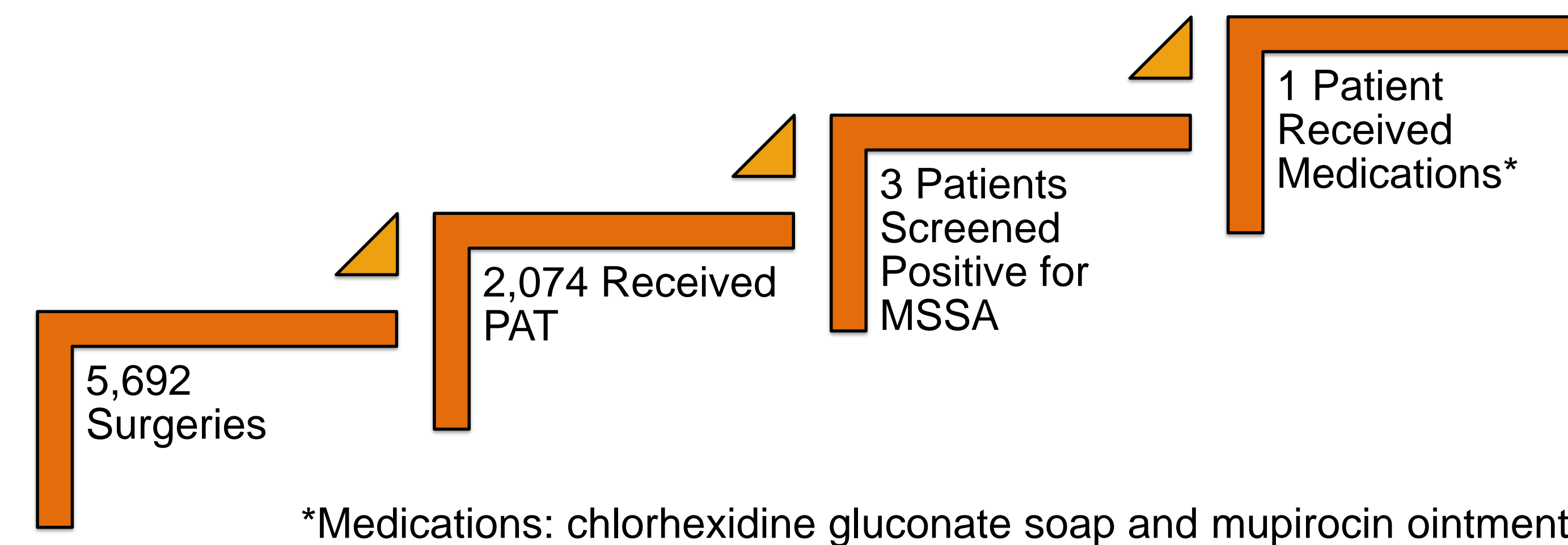
BACKGROUND

- Bundles including the following medications have been shown to decrease SSIs and decrease costs¹⁻⁵
 - Intranasal mupirocin topical
 - Chlorhexidine gluconate soap
 - Perioperative prophylaxis
 - No colonization or MSSA: cefazolin or cefuroxime
 - MRSA: vancomycin and cefazolin or cefuroxime
- Parkview Health updated MRSA/MSSA Decolonization Protocol in 2016
 - Chlorhexidine gluconate soap
 - Mupirocin topical ointment
 - Chlorhexidine gluconate mouthwash
- Parkview Health perioperative antibiotics:
 - No colonization or MSSA: cefazolin
 - MRSA or beta-lactam allergy: vancomycin
- Potential risk factors for surgical site infection: obesity, smoking, and diabetes^{3,4}
- Pre-admission testing (PAT) screening is done in all elective total knee arthroplasty (TKA), total hip arthroplasty (THA), spinal fusion, and cardiac bypass surgeries (CABG). The decolonization protocol is ordered in 100% of patients that screen positive for MRSA at PAT.
- This success is achieved though diligent infection prevention intervention.

METHODS

- Retrospective chart review from March 2016 to September 2017
- Inclusion criteria:
 - Elective spinal fusion, cardiac bypass, TKA, or THA surgery at a Parkview Health Allen County hospital
 - ICD-10 procedure code
- Exclusion criteria:
 - Less than 18 years old
 - SSI due to an organism other than MSSA or MRSA
 - Double replacement surgery
 - Revision surgery
 - Emergency surgery
- Endpoints:
 - Utilization of the decolonization protocol in patients colonized with MSSA
 - Incidence of MSSA SSI versus MRSA SSI

RESULTS

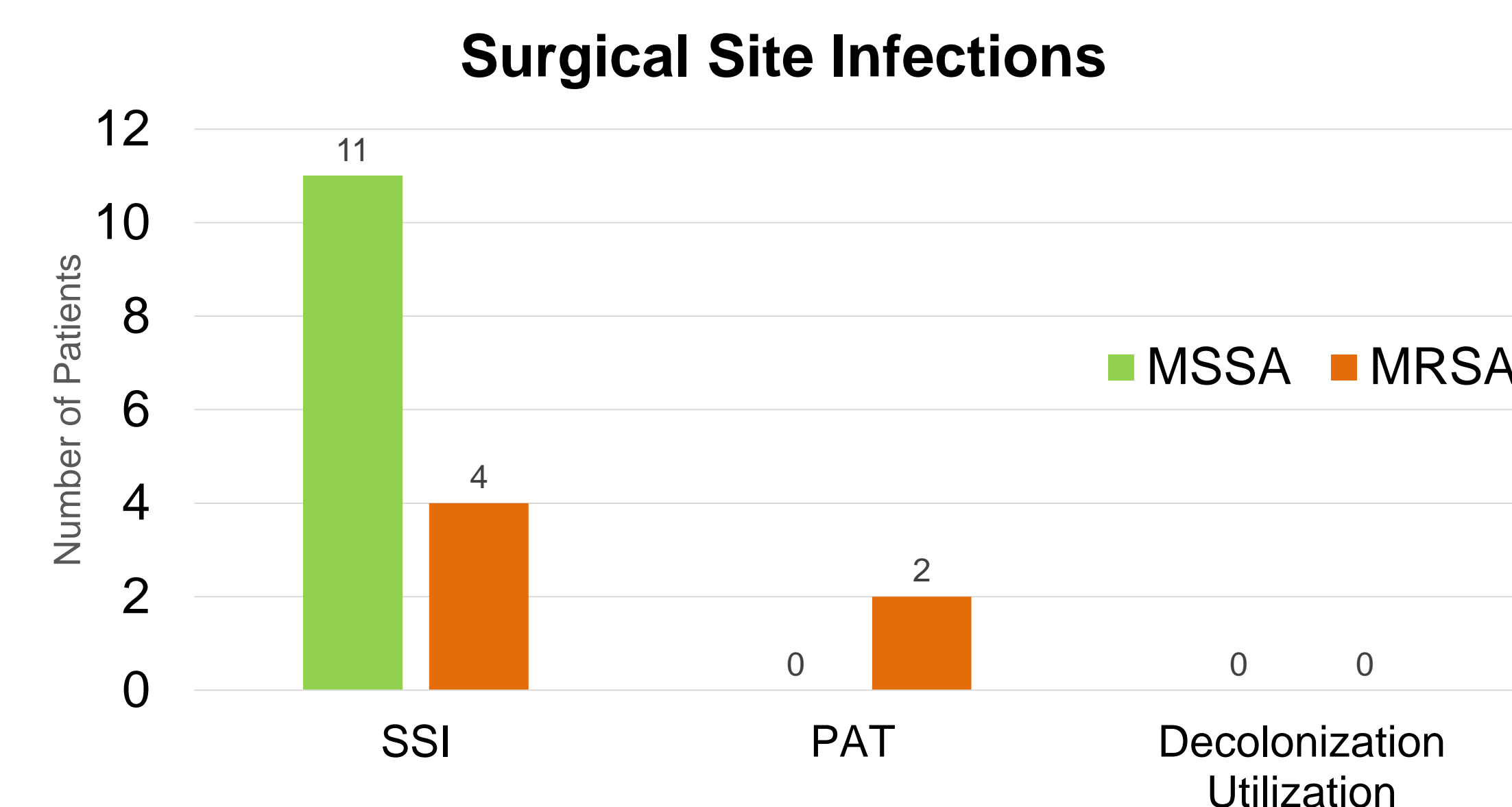


Patients Receiving MSSA Screening at PAT

	Positive for MSSA (n=3)	All Patients n = 20
Age, years (± SD)	54 (10.2)	67 (13)
Males (%)	0%	60%
TKA	0	3
THA	0	8
Spinal Fusion	3	8
CABG	0	1

Surgical Site Infections

	MSSA SSI n = 11	MRSA SSI n = 4
Age, years (± SD)	57 (14.6)	69 (6.5)
Males (%)	36%	50%
TKA	5	2
THA	0	0
Spinal Fusion	5	2
CABG	1	0
Smokers	3	0
BMI ≥ 30 kg/m ²	9	4
Diabetes Mellitus	3	2



RESULTS

- MSSA Screening
 - PAT MSSA screening was completed in all of the surgery subgroups
 - The only patient to receive decolonization protocol did not receive all 3 components of the protocol.
- Surgical Site Infections
 - There were no SSIs in THA surgical patients during this time period

DISCUSSION & CONCLUSIONS

- Conclusions:**
 - The decolonization protocol is not consistently utilized in any of the surgical populations for MSSA.
 - MSSA screening is not routinely conducted in THA, TKA, spinal fusion and CABG patients.
 - The lack of routinely screening patients leads to a limited opportunity to implement the decolonization protocol.
 - The inability to implement the decolonization protocol increases the risk of SSIs.
- Future Implications:**
 - Encourages the conduction of studies that evaluate patient adherence to decolonization protocol and incidence of SSI.
 - Routine screening and decolonization of MSSA may increase costs initially, but avoiding the high cost of SSI treatment could mean significant savings.
- Limitations**
 - There was an inability to capture all procedures due to the software reporting on ICD-10 codes rather than CPT codes.
 - This study did not evaluate the adherence of patients to the decolonization protocol.
 - The patient's smoking status was based upon the last patient encounter, not the surgical encounter.
 - Paper prescriptions or over-the-counter medications were not accounted for in this study.
- Impact on Practice**
 - This study has lead to an increased awareness of the potential need to screen patients for MSSA.
 - This provides an opportunity for discussion regarding the utilization of PAT screening for MSSA and potential decolonization of surgical patients.

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Disclosure

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