

A Multidisciplinary Team working toward Zero Orthopedic Infection Rate

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Introduction

A multidisciplinary team was formed to address an increase in the infection rate in FY03 and implement control measures at New England Baptist Hospital.

Objective

- Administration established intent for zero tolerance for surgical site infections.
- The formation of a multidisciplinary task force was established to identify problems and implement corrective action plans and infection prevention measures.

Materials and Methods

The team included representatives from OR nursing, orthopedic surgeons, anesthesia and managers from infection control, health care quality, central supply, facilities and environmental services. The team evaluated operating room procedures, practices and facility design and prioritized action plans to institute infection control measures. In addition, throughout the five year period, reinforcement of hand hygiene was done with creative and highly visible marketing campaigns for staff and visitors.

Infection Control Interventions and Areas of Focus

FY2003

- Traffic control
- Surgical attire
- Operating room cleaning
- Processing of instruments
- Air handling system and laminar flow
- Surgical hand scrub



FY2004

- Surgical infection prevention (SIP)
- Surgical prophylaxis
- Warming patient
- Increased Inspired oxygen
- Hair clipping
- Silver postoperative dressings for Spine Service



FY2005

Evaluation of antibacterial sutures



FY2006

MRSA/MSSA Eradication Program



FY2007

Chlorhexidine preop, intraop, postop



FY2009

Post-op antimicrobial dressings – done by nurses



Results

During fiscal years FY05 and FY06 an increase in secondary bacteremia following surgical site infections occurred:

Fiscal Year	#Orth SSIs	#Secondary Bacteremias	%Bacteremic	#Operations
2003	65	3	5%	8837
2004	60	1	2%	9669
2005	49	8	16%	9216
2006	46	5	11%	8986

After the implementation of the MRSA and Staph aureus eradication program and the discontinuation of the local administration of depomedrol in 2007, the rate of secondary bacteremias decreased.

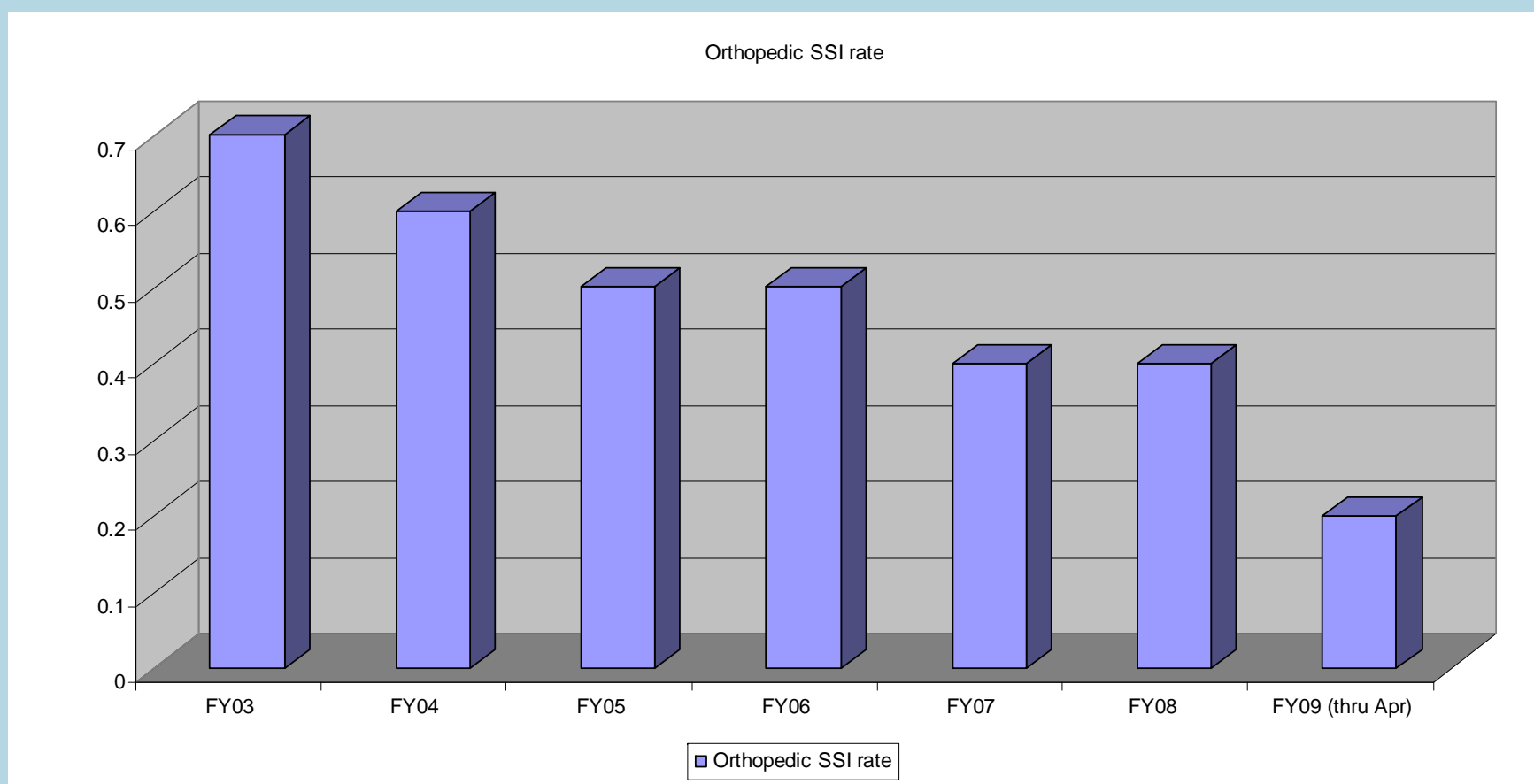
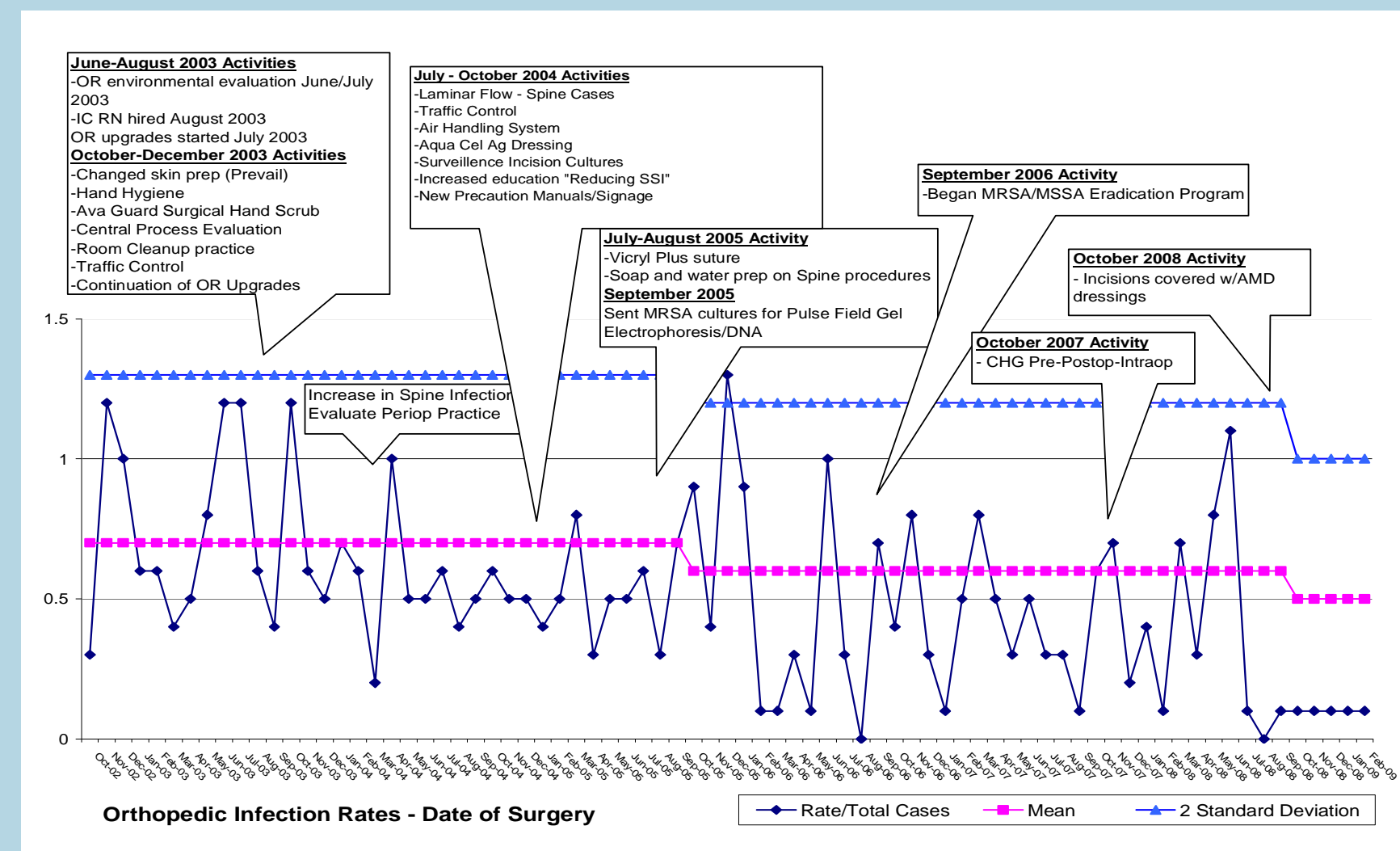
Fiscal Year	#Orth SSIs	#Secondary Bacteremias	%Bacteremic	#Operations
2007	39	1	2%	9027
2008	37	0	0%	8884

Standardized infection ratios were calculated each year by risk index and benchmarked against CDC/NNIS data. These guided the team in risk analysis of the orthopedic population.

MRSA and Staph aureus Eradication Program

•From July 17, 2006 through April 30, 2009

- 17,053 patients screened
- 4082 (24%) positive for *Staph aureus*
- 734 (4.4%) positive for MRSA
- Repeat nasal screens on MRSA patients revealed 78% eradication



Time Period	Inpatient surgeries	Surgical Infections	Infec. Rate
FY06	5293*	24	0.46%
FY07	7019**	13	0.18%
FY08	6323**	7	0.11%
FY09	4817**	4	0.08%

*historical controls
**screened inpatient surgeries

Conclusions

The importance of a team approach to infection control in the operating room is key to a successful infection control and prevention program. Utilizing the infection control specialist and integrating infection control into surgical services is an effective way to foster communication, collaborative work and achieve low infection rates. A systematic approach that implemented prevention measures on a yearly basis allowed for analysis of the effect on infection rates.

References

- Fletcher N, Sofianos D, Berkes M, Obrensky W. Prevention of Perioperative Infection. J Bone Joint Surg A. 2007;89:1605-18
- Emori TG, Culver DH, Horan TC, Jarvis WR, White JW, Olson DR, (NNIS): Description of surveillance methods. Am J Infect Control 1991;19:13-35
- Bratzler DW, Houck PM, Richards C, Steele L, Dellinger EP, Fry DE, Wright C, Ma A, Carr K, Red L. Use of antimicrobial prophylaxis for major surgery: baseline results from the National Surgical Infection Prevention Project. Archives of Surgery. 140(2):174-82, 2005 Feb
- Leaper D. Effects of local and systemic warming on postoperative infections. Surgical Infections. 7 Suppl 2:S101-3, 2006
- Greif R, Akca O, Horn EP, Kurz A, Sessler DI. Supplemental perioperative oxygen to reduce the incidence of surgical-wound infection. Outcomes Research Group. New England Journal of Medicine. 342(3):161-7, 2000 Jan 20
- Latham R, Lancaster AD, Covington JF, Pirollo JS, Thomas CS. The association of diabetes and glucose control with surgical-site infections among cardiothoracic surgery patients. Infection Control & Hospital Epidemiology. 22(10):607-12, 2001 Oct
- Edmiston CE, Seabrook GR, Goheen MP, Krepel CJ, Johnson CP, Lewis BD, Brown KR, Towne JB. Bacterial adherence to surgical sutures: can antibacterial-coated sutures reduce the risk of microbial contamination?. Journal of the American College of Surgeons. 203(4):481-9, 2006 Oct
- Davis KA, Stewart JJ, Crouch HK, Florez CE, Hopenhath DR. Methicillin-resistant Staphylococcus aureus (MRSA) nares colonization at hospital admission and its effect on subsequent MRSA infection. Clin Infect Dis 2004; 39:77682
- Jernigan JA, Arnold K, Heilpern K, Kainer M, Woods C, Hughes JM (2006-05-12). Methicillin-resistant Staphylococcus aureus as community pathogen. Symposium on Community-acquired Methicillin-resistant Staphylococcus aureus (Atlanta, Georgia, USA). Cited in Emerg Infect Dis, Centers for Disease Control and Prevention.