

# Vancomycin Powder Lowers Infection Rate in Early Onset Scoliosis Surgery: A Preliminary Report



R. Justin Mistovich MD, Connie Poe-Kochert CNP,  
Jochen Son-Hing MD, Christina K. Hardesty MD,  
George H. Thompson MD



University Hospitals



Rainbow Babies  
& Children's Hospital

# Disclosures

R. Justin Mistovich MD, Connie Poe-Kochert CNP, Jochen Son-Hing MD,  
Christina K. Hardesty MD

Nothing to Disclose

George H. Thompson, MD

Royalties / stock options

*OrthoPediatrics*

Non-paid consultant

*SpineForm*

Co-Editor-in-Chief, J Ped Orthop

Chair, Shriner's Med Adv Bd

President / CEO SICOT Foundation

President-Elect IFPOS

# How Can We Improve Outcomes?

- Surgical Site Infections
  - Nationally recognized indicator of healthcare quality
  - Potentially modifiable
  - Add substantial burden to care

*Economic costs*

*Patient morbidity*

*Effect on family*



# Intrawound Application of Vancomycin for Prophylaxis in Instrumented Thoracolumbar Fusions

*Efficacy, Drug Levels, and Patient Outcomes*

Fred A. Sweet, MD, Michael Roh, MD, and Christopher Sliva, MD

**Reduced infection rate from 2.6% to 0.2%**

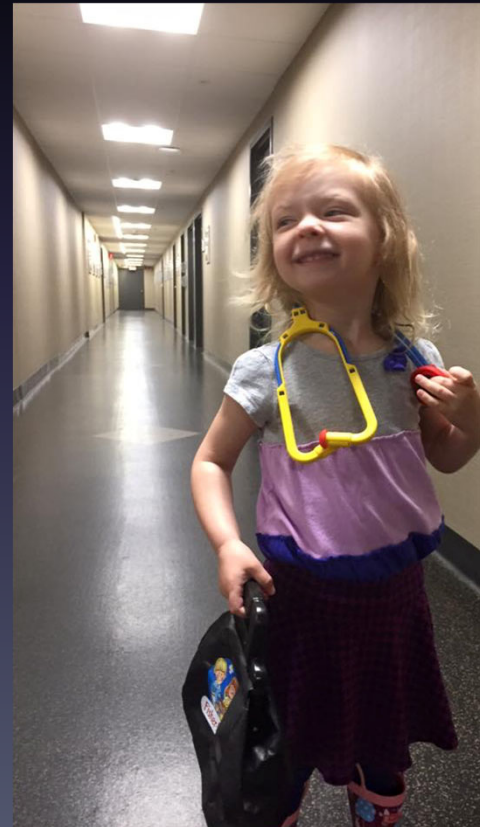


# Implications for Kids?

## We don't know!



Findings applicable?



# What's the Evidence in Kids?



## Infection Control in Pediatric Spinal Deformity Surgery: A Systematic and Critical Analysis Review

Mistovich et al, JBJS Reviews, 2016 (*In press*)

**“Grade I (*insufficient*):** There are insufficient data that intrawound antibiotics (vancomycin or gentamicin) reduces infection rate in pediatric spine surgery.”

# Unique Opportunity

- In 2010, our institution standardized EOS protocol
- Only later modification: Vancomycin Powder

# Methods

- Retrospective cohort study of EOS program  
2010-2016

**Control Group:** Cases without Vanco

**Experimental Group:** +Vanco



# Inclusion Criteria

- Initial insertions, revisions, lengthenings, final fusions
- 90 day minimum follow up
  - All acute SSI captured, some late SSI

# Exclusion Criteria



- Patients with SSI prior to 2010
  - But patients with prior surgery and no SSI were included for subsequent procedures

# Results

**36 Patients**

**191 Procedures**



# Infections



- 14/36 patients had SSI (39%)
  - 12 Patients with Acute Infxn, 2 Patients with Late
  - 2 patients with multiple acute infections
    - Not on consecutive surgeries

## Control Group

- 85 Procedures
- 12 Infections

14% per procedure

## Vancomycin Group

- 106 Procedures
- 5 Infections

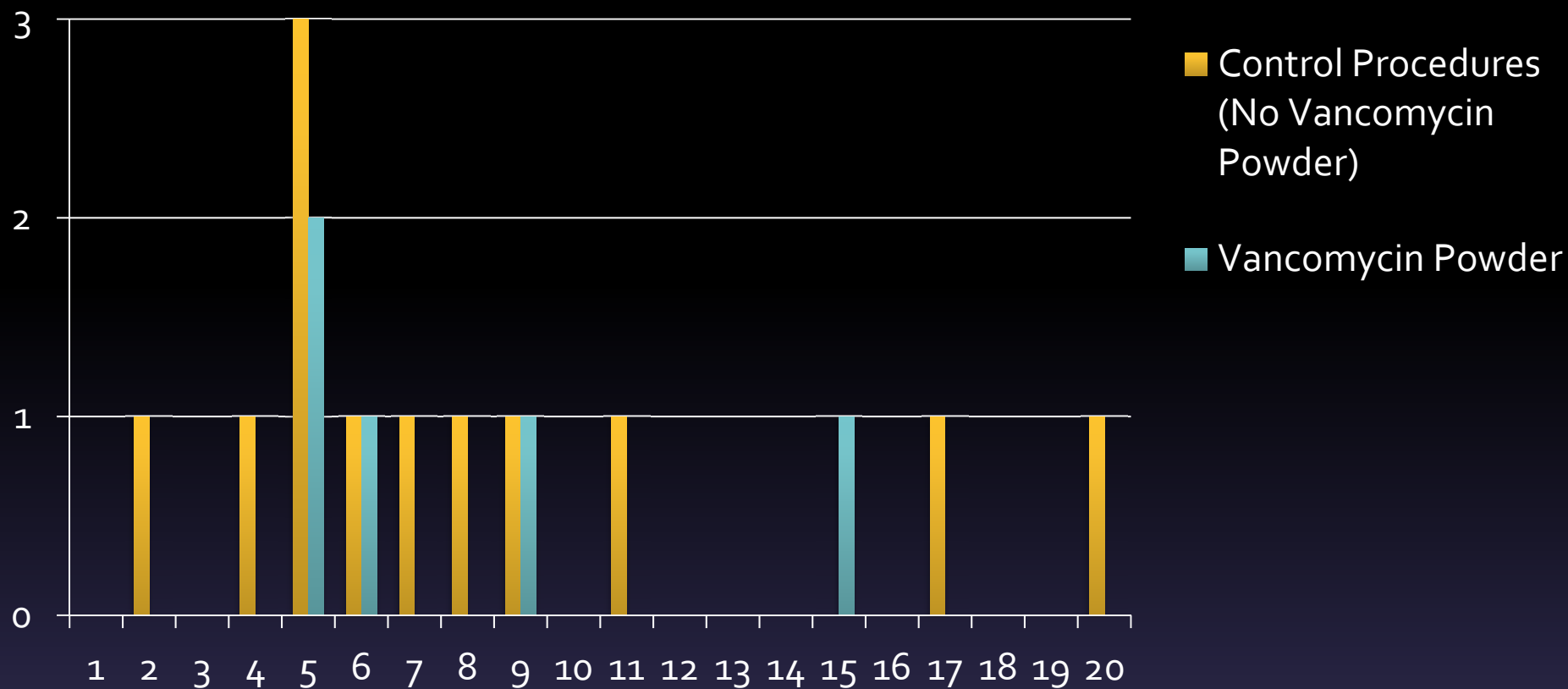
4.7% per procedure



# No Vanco for Earlier Surgeries?

- *No problem!*
- Within vanco group:
  - 40 Procedures: **Vanco for EVERY procedure**  
*2 Infections (5% per procedure)*
  - 66 Procedures: History of **early procedures without vanco**  
*3 Infections (4.5% per procedure)*





Procedure number is on the x axis. Number of infections that occurred at this procedure number is on the y axis.

Control group (no vancomycin powder) infections are dark grey while vancomycin powder infections are light grey.

Infections are clustered around later procedures. However, there are significantly less infections in later procedures with vancomycin powder.

# Significance

- Decrease in SSI per procedure was statistically significant ( $p=0.038$ ), 95% confidence level
- Number Needed to Treat with Vanco to prevent an SSI: 11



# Significance

- Vanco Cost per Patient: \$12



- Mean hospital charge of infected pediatric spine: \$154,000

# Conclusion

- Vancomycin Powder is Safe in EOS
- Vancomycin Powder is Effective at decreasing SSI in EOS
- Vancomycin Powder is cost effective

# Thank You

