Preoperative Use of Registries
The Grading System of the Future
Eric Tesdahl, PhD
Medical Department
SpecialtyCare

Disclosure: I am a full-time employee of SpecialtyCare
Overview

Cardiac Risk Models and Patient-Customized Perfusion

Current and Recent Practice
• Show of Hands
• Trends in Perfusion Practice from SCOPE

Challenges and Open Questions: A Biostatistician’s Perspective

Cardiac Surgery Risk Scores

STS Risk Scores
• Currently 7 distinct risk models by surgery type
• Calculates risk of mortality plus 7 additional morbidities
• Latest statistical techniques for risk adjustment and model calibration
• Millions of surgical cases to inform risk models
• Updated periodically to recalibrate according to shifts in the practice of surgery (higher overall risk in the population of patients)

EuroSCORE and EuroSCORE II
• Mortality only
• Original model informed by approximately 20k surgical cases
• Not under as frequent development as STS

Major uses: inform the surgeon’s planning and counseling patients
Literature on Perfusion Risks and Customized Practice

- Holcomb et al. (2000): MAPS
- Jegger et al. (2007): PerfSCORE
- Rubino et al. (2014): QualyP

Show of Hands

In the past 12 months, have you sought out specific risk score information based on individualized patient data pre-operatively?

If yes, how commonly?
- Have done this one or several times
- For more than a handful, but fewer than half of cases
- For a majority of cases
- For every case
State of Customization in the Field:
For each perfusionist, what was the Net Prime Volume for your median patient?

State of Customization in the Field:
For each perfusionist, did your most anemic patient also experience the smallest drift?
Challenges
What we know vs.
What we need to know

Assessment of STS score, logistic EuroSCORE, and EuroSCORE II model calibration for predicting in-hospital mortality


Challenges
What we know vs.
What we need to know

Perfusion-specific models are likely to struggle here for the foreseeable future…
Challenges

How we use what we know

Assume technical challenges overcome and 100% implementation:

- Optimizing treatment with respect to multiple competing risks: who decides which risks take precedence?

- Validation
  
  precise risk information
  + individualized care
  consistently better outcome

Conclusion

- Large repositories of registry data
- Powerful risk models
- Increasing customization in perfusion practice by patient status

“…is it soup yet?”
Preoperative Use of Registries
The Grading System of the Future

Thank You

Eric A. Tesdahl, PhD
Senior Biostatistician
eric.tesdahl@specialtycare.net