The European Perfusion Registry

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Differences in practice


• Stephanie A. Snyder-Ramos et al, The ongoing variability in blood transfusion practices in cardiac surgery. Transfusion 2008; 48; 1248-1299
Improving the Perfusion data

- Standardized data
- One single registry
- Statistics and analysis
- Comparison
Comparing the Perfusion data

- Same data, same parameter
- Clearly defined
- High quality data
  - Accurate,
  - Consistent
  - Representative value
- Controllable
Perfusion conduct & Patient outcome
Randomized Controlled Trials RCT

- Compelling Evidence
  - level 1a
- Blinded
- Randomized
- Controlled
Limitations of RCT

- Underpowered
  - Failure to detect infrequent adverse event
    - Post-release controversy phenomenon
    - Aprotinin
- Denying standard care → unethical
  - RBC transfusion
- Blinding
- High cost
- Controlled environment ≠ daily practice
- Administrative and logistic nightmare
EACTS & EPR collaboration

One million patient records, 29 countries…

www.e-dendrite.com
EACTS QUality Improvement Program, QUIP

Professor Domenico Pagano, Nov 2011

“This will form the basis of improving the outcomes of patients throughout Europe”

www.e-dendrite.com
EPR Structure

Structure of European Perfusion Registry

Scientific Advisory Board

Board of Directors

Members Participants
EPR Structure

Structure of European Perfusion Registry

Who

- chair, secretary, treasurer
- founding members
- not restricted

Tasks

- daily management of Charity
- funding – financial management
- communication with participants and partners
EPR Structure

Structure of European Perfusion Registry

Who
- perfusionists, surgeons, anesthetists
- statistician
- epidemiologist
- ...

Tasks
- dataset
- quality control / error reporting
- statistical processing
- publishing of reports
Structure of European Perfusion Registry

**Who**
- countries
- centers
- individuals
- NOT restricted to Europe

**Tasks**
- comply to membership / bylaws
- bring in the (correct) data
- read reports
- change practice to best practice
- feedback
Results?

- Statistical processing of clinical practice
- Benchmarking of practice compared to the whole database (center/individual)
- Evaluation of clinical practice and evolution
- Evaluation of (new) techniques
- Define risk factors, identify patients at risk
- Define measures to take to improve care (in specific cases)
Risk Scores

ACEF score = \frac{\text{Age (years)}}{\text{EF (\%)} + 1}\quad \text{if serum creatinine} \geq 2\text{mg/dL}

Figure 2. Univariate association (logistic regression) between ACEF score and mortality risk.
Risk Scores

Table 5a TRACK score internal validation

<table>
<thead>
<tr>
<th>Factor</th>
<th>β coefficient</th>
<th>P-value</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACK score</td>
<td>0.132</td>
<td>0.001</td>
<td>1.141</td>
<td>1.132–1.151</td>
</tr>
<tr>
<td>Constant</td>
<td>−1.288</td>
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</tbody>
</table>

Hosmer–Lemeshow χ²: 6.81, P = 0.372.
Receiver operating characteristics analysis: area under the curve 0.73 (95% confidence interval 0.718–0.743).

Table 5b TRACK Score external validation

<table>
<thead>
<tr>
<th>Factor</th>
<th>β coefficient</th>
<th>P-value</th>
<th>Odds ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRACK score</td>
<td>0.123</td>
<td>0.001</td>
<td>1.131</td>
<td>1.114–1.148</td>
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<tr>
<td>Constant</td>
<td>−0.886</td>
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</table>

Hosmer–Lemeshow χ²: 9.82, P = 0.277.
Receiver operating characteristics analysis: area under the curve 0.71 (95% confidence interval 0.681–0.724).
AUC, area under the curve; CI, confidence interval; TRACK, Transfusion Risk And Clinical Knowledge.

Fig. 1 Transfusion rate according to the Transfusion Risk and Clinical Knowledge (TRACK) score in the development and the validation series.

models was poor, and no scoring system reached an AUC greater than 0.70 (Fig. 2b).
Conclusion

• Understanding and developing perfusion practice is mandatory goal for the perfusion community.

• The European Perfusion Registry may become an important tool in achieving this goal.