An optimised team training programme for EVAR & TEVAR: how do you set it up and what is the evidence

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Multicentre observational study of surgical system failures in aortic procedures and their effect on patient outcomes.

Lear R1,2, Riga C3,4, Godfrey AD3, Falaschetti E5, Cheshire NJ3, Van Herzeel I6, Norton C4,7, Vincent C8, Darzi AW3,9, Bicknell CD3,9,4; LEAP Study Collaborators.

856 errors during 185 aortic procedures
4 errors/procedure
Median 1.2 errors/hour
LANDSCAPE OF ERRORS IN AORTIC PROCEDURES: LEAP

856 errors during 185 aortic procedures
4 errors/procedure
Median 1.2 errors/hour
MAJOR ERROR

14 errors directly caused or clearly contributed to harm in 12 patients

6.5% of cohort

50% due to team-related/communication failures
OPERATING THEATRE
TEAM TRAINING PRACTICE

Simulated Environment

MONITOR

REHEARSE

EVALUATE

Clinical processes, devices, techniques
ORCAMP Suite
IMMERSIVE SIMULATED ENDOVASCULAR TEAM TRAINING
Anatomage & Case Planning
TEAM TRAINING

- Generic/Patient/CT/Device specific
- Routine/Emergency scenarios
- Multidisciplinary
- Structured
- Mentored

OUTCOMES

- Reactive to System Failures
- Skills & Standards
- Procedure Rehearsal
- New Pathways of Care
TEVAR & SPINAL CORD PROTECTION
PRE-Procedure Rehearsal

Patient specific simulation

Real case
PRE-Procedure Rehearsal

A Multicentre Trial of Patient specific Rehearsal Prior to EVAR: Impact on Procedural Planning and Team Performance

L. Desender a, I. Van Herzeele a, M. Lachat b, J. Duchateau c, C. Bicknell d, J. Teijink e, J. Heyligers f, F. Vermassen a, on behalf of PAVLOV Study Group

Collaborators (30)


Patient-specific Rehearsal Before EVAR: Influence on Technical and Nontechnical Operative Performance. A Randomized Controlled Trial

Desender, Liesbeth M. MD; Van Herzeele, Isabelle MD, PhD; Lachat, Mario L. MD; Rancic, Zoran MD, PhD; Duchateau, Johan MD; Rudarakanchana, Nung MD, PhD; Bicknell, Colin D. MD; Heyligers, Jan M. M. MD, PhD; Teijink, Joep A. W. MD, PhD; Vermassen, Frank E. MD, PhD on behalf of the PAVLOV Study Group

Annals of Surgery: November 2016 - Volume 284 - Issue 5 - p 703-709

76% reduction in major errors; optimal angle selection & communication
IMPERIAL TEAM TRAINING
IMPERIAL TEAM TRAINING

Mentored
EVAR & TEVAR

Weekly team training programme
Stress Response

Elective Cases

TEVAR

Mean time (seconds) taken to achieve each step of the TEVAR procedure before the intervention

- Simulation 1
- Simulation 2

TECHNICAL INSTRUCTION
- Indications and principles of TEVAR
- Technical steps
- Technique

SIMULATION 1
- Simulated angiography suite team simulation with standard stressors

DEBRIEF
- Video playback
- Peer to peer feedback
- Standardised team/leadership training

SIMULATION 2
- Simulated angiography suite team simulation with standard stressors randomly selected

ASSESSMENT
- Off line video analysis 3 observers
Emergent Cases

rEVAR

Endovascular repair of ruptured abdominal aortic aneurysm: technical and team training in an immersive virtual reality environment.
Rudarakanchana N, Van Herzeele I, Bicknell CD, Riga CV, Rolls A, Cheshire NJ, Hamady MS.

Aortic Transection

Can we assess non-technical skills in emergency endovascular intervention for aortic trauma?
AE Sharrock1, C Pettengell, D Godfrey, D. Nafisee, R Lear, C Bicknell, C Riga.
Royal Society of Medicine 1st Prize

Response to 'The simulation aids in overall team performance and is useful for practice prior to a real case'

Strongly Agree
Agree
Disagree

11 teams
Non-technical skills

![Graph showing OTAS scores across different domains: Communication, Coordination, Cooperation, Leadership, and Team monitoring. The graph indicates significant differences (*** = p<0.001) between domains.](image)

Imperial College London
RADIATION awareness & safety behaviours

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
<th>Percentage difference</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoroscopy time</td>
<td>538.08</td>
<td>487.46</td>
<td>-9.4</td>
<td>0.381*</td>
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<tr>
<td>Checked Leads, glasses</td>
<td>2</td>
<td>6</td>
<td>+200.0</td>
<td>0.202**</td>
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<tr>
<td>% Runs team asked to step back</td>
<td>3.85</td>
<td>40.38</td>
<td>+948.8</td>
<td>0.002***</td>
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</tbody>
</table>

Godfrey AD, Lear R, Pettengel C, Bicknell C, Hamady M, Riga C
“Endovascular team training simulation for behaviour orientated radiation safety”, BSET 1st poster Prize 2016
Time for Training
TEAM TRAINING

Mandatory

clinical practice & effective institutional governance