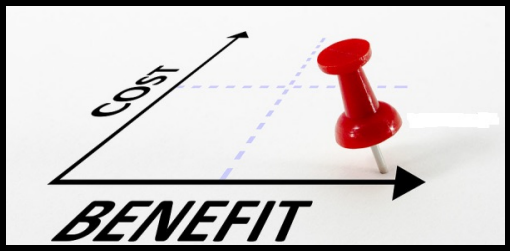
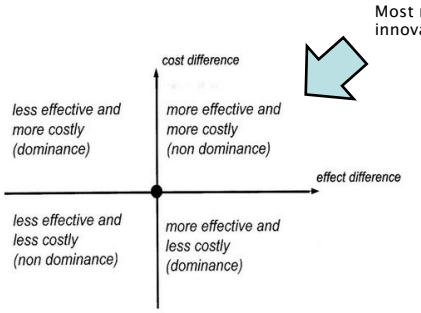
Impact économique du monitorage hémodynamique





Impact économique du **monitorage hémodynamique**

200
300

ICU

OR

Estimation

320M/yr (Weiser et al. Lancet 2015)

16.8% = 54M develop one or more complications (ISOS BJA 2016)

Global patient outcomes after elective surgery: prospective cohort study in 27 low-, middle- and high-income countries

The International Surgical Outcomes Study group†

*Corresponding author. E-mail: r.pearse@qmul.ac.uk
†Members of study group are listed in a supplementary file.

Economic impact of postop complications

Costs of post-op complications in studies with >1000 patients

Study	Population, n	Extra-cost/patient, $
Michard et al. 2015	204,680	11,824
Manecke et al. 2014	75,140	29,876
Eappen et al. 2013	34,256	22,398
Vonlanthen et al. 2011	1,200	34,446
Dimik et al. 2006	1,008	10,178

Weighted average: 17,338

A Systematic Review and Meta-Analysis on the Use of Preemptive Hemodynamic Intervention to Improve Postoperative Outcomes in Moderate and High-Risk Surgical Patients A&A 2011

Mark A. Hamilton, MRCP, FRCA, Maurizio Cecconi, MD, and Andrew Rhodes, FRCP, FRCA

– 57 %

British Journal of Anaesthesia Page 1 of 14
doi:10.1093/bja/aet155

2013 BJA

Perioperative increase in global blood flow to explicit defined goals and outcomes after surgery: a Cochrane Systematic Review†

M. P. W. Grocott[1], A. Dushianthan[1*], M. A. Hamilton[2], M. G. Mythen[3], D. Harrison[4], K. Rowan[4] and Optimisation Systematic Review Steering Group[5]

– 32 %

Original Investigation | CARING FOR THE CRITICALLY ILL PATIENT

Effect of a Perioperative, Cardiac Output-Guided Hemodynamic Therapy Algorithm on Outcomes Following Major Gastrointestinal Surgery
A Randomized Clinical Trial and Systematic Review

JAMA 2014

– 23 %

2015 CRITICAL CARE

RESEARCH Open Access

The effects of goal-directed fluid therapy based on dynamic parameters on post-surgical outcome: a meta-analysis of randomized controlled trials

Jan Benes[1*], Mariateresa Giglio[2], Nicola Brienza[2] and Frederic Michard[3]

– 49 %

Poor Adoption of Hemodynamic Optimization During Major Surgery: Are We Practicing Substandard Care?

Timothy E. Miller, MB ChB, FRCA, Anthony M. Roche, MB ChB, FRCA, MMed (Anaes), and Tong J. Gan, MD, MHS, FRCA

A&A 2011

GDFT has a cost

Savings

Old GDFT prospective studies

Boyd 1993 = £1259 savings per patient
Wilson 1999 = £3467 savings per patient

Limited number of patients
PAC
15-20 years ago
In the UK

Recent projections based on complication cost estimations

Cost-effectiveness Analysis of Goal-directed Hemodynamic Treatment of Elderly Hip Fracture Patients

Before *Clinical Research Starts*

Erzsebet Bartha, M.D., Ph.D.,* Thomas Davidson, Ph.D.,† Ami Hommel, R.N., Ph.D.,‡ Karl-Göran Thorngren, M.D., Ph.D.,§ Per Carlsson, Ph.D.,‖ Sigridur Kalman, M.D., Ph.D.#

€1882/patient

£2631/patient

A Cost-Effectiveness Analysis of Postoperative Goal-Directed Therapy for High-Risk Surgical Patients

Claudia Ebm, MD, MSc[1]; Maurizio Cecconi, MD, FRCA, FICM, MD (UK)[1,2]; Les Sutton, MBA, MSc[1]; Andrew Rhodes, MD, FRCP, FRCA, FICM[1,2]

Recent projections based on REAL COMPLICATION COSTS

Estimation of possible investment

M x ER x C = I 

M = Morbidity rate %
ER = Expected Reduction %
C = Cost of complications
I = Investment

MERCI for improving quality of surgical care at no cost
Michard F. World J Surg 2016

Manecke *et al. Critical Care* 2014, **18**:566
http://ccforum.com/content/18/5/566

CRITICAL CARE

RESEARCH Open Access

Tackling the economic burden of postsurgical complications: would perioperative goal-directed fluid therapy help?

Gerard R Manecke[1], Angela Asemota[2] and Frederic Michard[3*]

UHC database (admin.)
75,140 patients from 222 academic US hospitals
Major surgery (10 major procedures)

Estimating savings/possible investment
MERCI equation

11% x ER x 29,876 = I

M = 11%
ER = Expected Reduction
C = $29,876
I = Investment

MERCI for improving quality of surgical care at no cost
Michard F. World J Surg 2016

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JAMA 2014

Rupert M. Pearse, MD, David A. Harrison, PhD, Neil MacDonald, FRCA, Michael A. Gillies, FRCA, Mark Blunt, FRCA, Gareth Ackland, PhD, Michael P. W. Grocott, MD, Aoife Ahern, BSc, Kathryn Griggs, MSc, Rachael Scott, PhD, Charles Hinds, FRCA, Kathryn Rowan, PhD, for the OPTIMISE Study Group

– 23 %

2015 CRITICAL CARE

RESEARCH Open Access

The effects of goal-directed fluid therapy based on dynamic parameters on post-surgical outcome: a meta-analysis of randomized controlled trials

Jan Benes[1*], Mariateresa Giglio[2], Nicola Brienza[2] and Frederic Michard[3]

– 49 %

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– 23 %

Estimating savings/possible investment
MERCI equation

11% x 23% x 29,876 = $769

M = 11%
ER = 23%
C = $29,876

MERCI for improving quality of surgical care at no cost
Michard F. World J Surg 2016


Michard et al. Perioperative Medicine (2015) 4:11
DOI 10.1186/s13741-015-0021-0

aser AMERICAN SOCIETY FOR ENHANCED RECOVERY

Perioperative Medicine

RESEARCH Open Access

CrossMark

Potential return on investment for implementation of perioperative goal-directed fluid therapy in major surgery: a nationwide database study

Frederic Michard[1*], William K. Mountford[2,3], Michelle R. Krukas[2,4], Frank R. Ernst[2,5] and Sandy L. Fogel[6]

PREMIER database (clinical & eco.)
204,680 patients from 541 US hospitals
Major surgery (10 major procedures)

Estimating savings/possible investment
MERCI equation

37% x ER x 11,824 = I

M = 37%
ER = Expected Reduction
C = $11,824
I = Investment

MERCI for improving quality of surgical care at no cost
Michard F. World J Surg 2016

Estimating savings/possible investment
MERCI equation

37% x 23% x 11,824 = $1,006

M = 37%
ER = 23%
C = $11,824

MERCI for improving quality of surgical care at no cost
Michard F. World J Surg 2016


ELSEVIER

SFAR Société Française d'Anesthésie et de Réanimation

Original Article

Evaluation of financial burden following complications after major surgery in France: Potential return after perioperative goal-directed therapy

Alain Landais[a], Morgane Morel[b], Jacques Goldstein[c], Jerôme Loriau[d], Annie Fresnel[b], Corinne Chevalier[a], Gilles Rejasse[d], Pascal Alfonsi[d], Claude Ecoffey[b,*]

PMSI database
2,388 patients from 3 hospitals
Major surgery (10 major procedures)

Estimation du retour sur investissement avec l'équation MERCI

36% x 23% x 13,876 = €1,149

M = 36%
ER = 23%
C = € 13,876
I = Investissement

M x ER x C = I

Recent demonstrations

Economic evaluation of the Optimise RCT
368 GDFT vs 365 Usual care patients undergoing major GI surgery
Sadique et al. Periop Med 2015

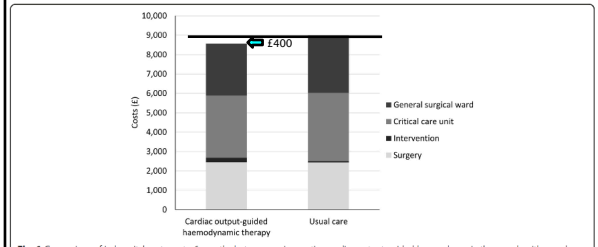

Fig. 1 Comparison of in-hospital costs up to 6 months between peri-operative cardiac output-guided haemodynamic therapy algorithm and usual care

Intraoperative goal-directed hemodynamic management in free tissue transfer for head and neck cancer

William R. Hand, MD,[1,*] William D. Stoll, MD,[1] Matthew D. McEvoy, MD,[2] Julie R. McSwain, MD,[1] Clark D. Sealy, BS,[3] Judith M. Skoner, MD,[4] Joshua D. Hornig, MD, FRCS(C),[4] Paul A. Tennant, MD,[5] Bethany Wolf, PhD,[6] Terry A. Day, MD[3]

[1]Department of Anesthesia and Perioperative Medicine, Medical University of South Carolina, Charleston, South Carolina, [2]Department of Anesthesiology, Vanderbilt University, Nashville, Tennessee, [3]Medical University of South Carolina, Charleston, South Carolina, [4]Department of Otolaryngology – Head and Neck Surgery, Medical University of South Carolina, Charleston, South Carolina, [5]Department of Otolaryngology–Head and Neck Surgery, University of Louisville, Louisville, Kentucky, [6]Department of Biostatistics, Medical University of South Carolina, Charleston, South Carolina.

TABLE 3. Postoperative patient characteristics and outcomes.

Variables	Control group ($n = 47$)	Treatment group ($n = 47$)	p value
ICU length of stay, h, intent-to-treat	58.3 (63.6)	33.7 (36.7)	.026
Hospital length of stay, h	276.0 (198.9)	216.9 (87.7)	.357
ICU length of stay, d	2.64 (2.49)	1.88 (2.01)	.104
Hospital length of stay, d	10.8 (7.65)	9.11 (5.76)	.221
Reoperation	8 (17.4)	4 (10.0)	.324
Flap failure	4 (9.30)	2 (5.88)	.681
Flap death	3 (6.82)	2 (5.00)	1.00
ICU ventilation	18 (52.9)	9 (31.0)	.125
Ventilator days	1.72 (1.82)	0.81 (1.30)	.006
Direct cost, $	30,047 (14,216)	26,509 (10,577)	.174

Abbreviation: ICU, intensive care unit.

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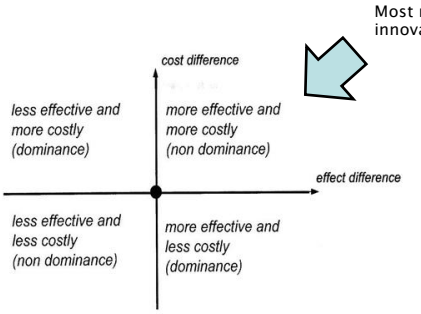
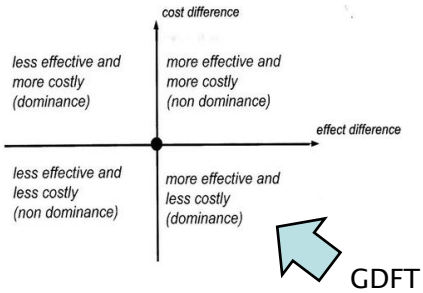
Savings/patient = $3538





GDFT

Savings vs Profits

When patients develop complications

- costs are higher
- but reimbursements are higher too

When patients develop complications

- costs are higher
- but reimbursements are higher too

- the impact on margin or profitability (reimbursement – costs) must be considered

Journal of the American College of Surgeons

Who pays for poor surgical quality ? Building a business case for quality improvement
Dimick et al. 2006

	WITHOUT COMPLIC.		WITH COMPLIC.
COST ($)	10,978	<	21,156
REIMB. ($)	14,266	<	21,911
PROFIT ($)	3,288	>	755
MARGIN (%)	23	>	3.4

Flynn et al. Perioperative Medicine 2014, 3:1
http://www.perioperativemedicinejournal.com/content/3/1/1

Perioperative Medicine

RESEARCH Open Access

The impact of complications following open colectomy on hospital finances: a retrospective cohort study

David N Flynn[1], Rebecca M Speck[1,2], Najjia N Mahmoud[3], Guy David[4,5] and Lee A Fleisher[1,2,5*]

	WITHOUT COMPLIC.	WITH COMPLIC.
COST ($)	23,101	48,180
REIMB. ($)	23,231	35,651
PROFIT ($)	131	**- 12,528**

GDFT = Savings

Assuming that GDFT decreases complications as indicated by meta-analyses, when implementing GDFT your hospital should be able to save more than it spends

GDFT is a way to improve quality of surgical care and to save money

GDFT = Additional revenues

Decreasing LOS will allow to increase surgical activity, ie revenues and profits for hospitals

GDFT is a way to improve quality of surgical care and to make money

Conclusion

A monitoring tool will never improve outcome by itself

Conclusion

A monitoring tool will never improve outcome by itself

What you do with it may improve outcome

BJA
British Journal of Anaesthesia
Volume 108, Number 3, March 2012

British Journal of Anaesthesia **108** (3): 369–71 (2012)
doi:10.1093/bja/aer511

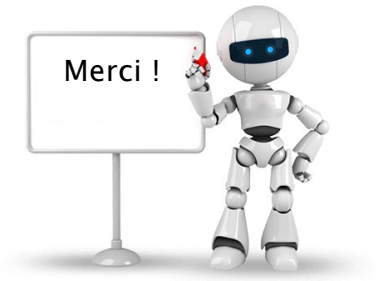
EDITORIAL I

Rational fluid management: dissecting facts from fiction

F. Michard[1]* and M. Biais[2]

Conclusion

- A monitoring tool will never improve outcome by itself
- What you do with it may improve outcome
- Once a clinical benefit exists, the financial return on investment is easy to estimate



michardconsulting.com