Peut on améliorer la mortalité péri-opératoire?

H Rosay
DAR-CLB
Lyon

Centre Léon Bérard
LYON ET RHÔNE-ALPES

Pas de conflit d'intérêt

Centre Léon Bérard
LYON ET RHÔNE-ALPES

La mortalité associée à l'anesthésie

Anesthesiology 2009; 110:759–65

Epidemiology of Anesthesia-related Mortality in the United States, 1999–2005

Guohua Li, M.D., Dr.P.H., Margaret Warner, Ph.D.,† Barbara H. Lang, B.S.,‡ Lin Huang, M.S.,§ Lena S. Sun, M.D.‖*

Mortalité associée à la pratique anesthésique 0,00082%

- Principaux incidents et complications chez les patients en bonne santé en chirurgies programmées.
- Résultats sur 1,36 million de procédures anesthésiques

ASA I-II Dommages permanents associés à l'anesthésie ou décès 0,00073%

BJA advance Access published May 5, 2014

Mortality after surgery in Europe: a 7 day cohort study

*Rupert M Pearse, Rui P Moreno, Peter Bauer, Paolo Pelosi, Philipp Metnitz, Claudia Spies, Benoit Vallet, Jean-Louis Vincent, Andreas Hoeft, Andrew Rhodes, for the European Surgical Outcomes Study (EuSOS) group for the Trials groups of the European Society of Intensive Care Medicine and the European Society of Anaesthesiology**

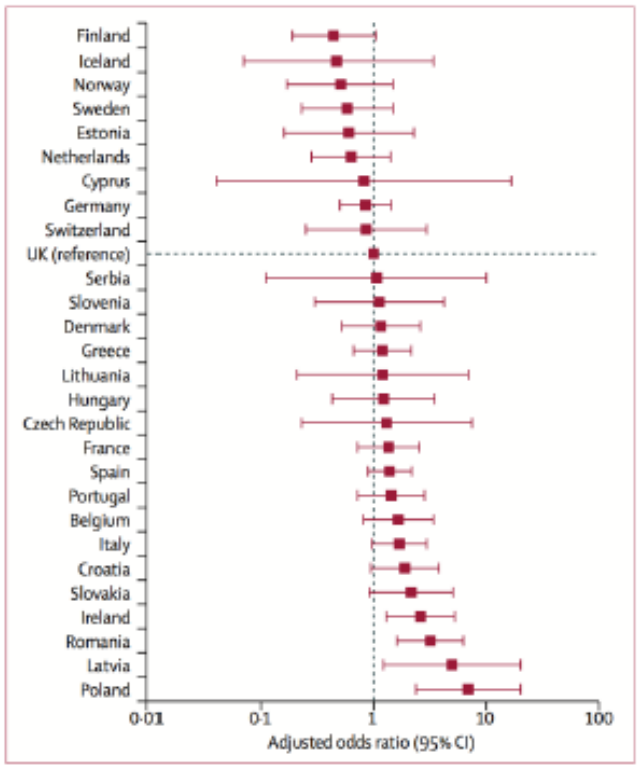


Figure 3: Adjusted odds ratio for death in hospital after surgery for each country

- Etude de cohorte prospective sur 7 jours
- 46.539 patients, 498 centres, 28 pays européens
- Pas de chirurgie cardiaque ou neurologique, pas d'obstétrique; 60 jours de suivi

4% mortalité

73% de patients « non-survivants » n'ont pas séjournés en service de Réanimation!

15% de décès en Réanimation!

La mortalité associée à l'anesthésie

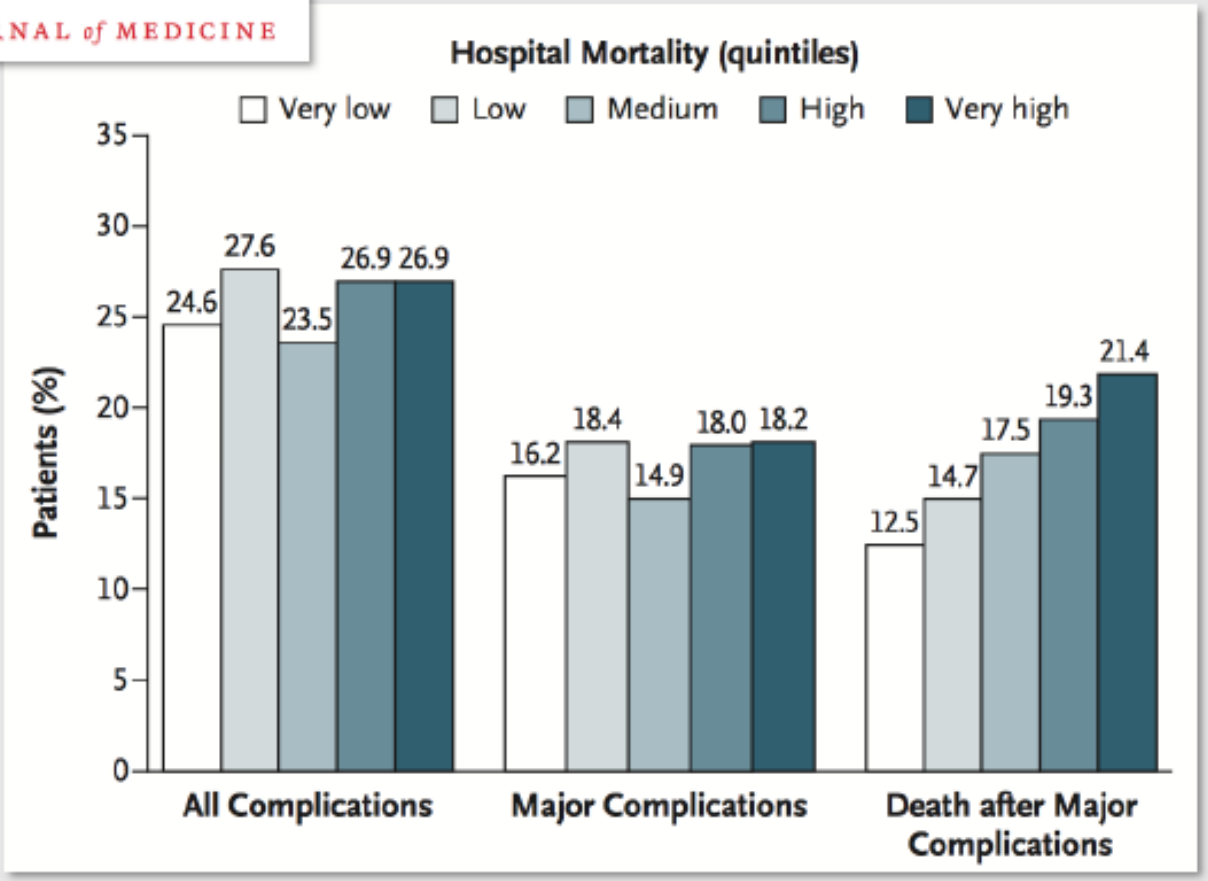
SPECIAL ARTICLE

Variation in Hospital Mortality Associated with Inpatient Surgery

Amir A. Ghaferi, M.D., John D. Birkmeyer, M.D., and Justin B. Dimick, M.D., M.P.H.

2009

The NEW ENGLAND JOURNAL of MEDICINE



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SPECIAL ARTICLE

Variation in Hospital Mortality Associated with Inpatient Surgery

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Variation in Hospital Mortality Associated with Inpatient Surgery

Amir A. Ghaferi, M.D., John D. Birkmeyer, M.D.,
and Justin B. Dimick, M.D., M.P.H.

Période 2005-2007,

363 897 patients

215 526 patients de chirurgie générale ou vasculaire

170 403 hospitalisés

84 730 patients avec procédures mortalité >1%

42 types d'intervention

23% des patients avec 68% des décès

Centre Régional
Léon-Bérard

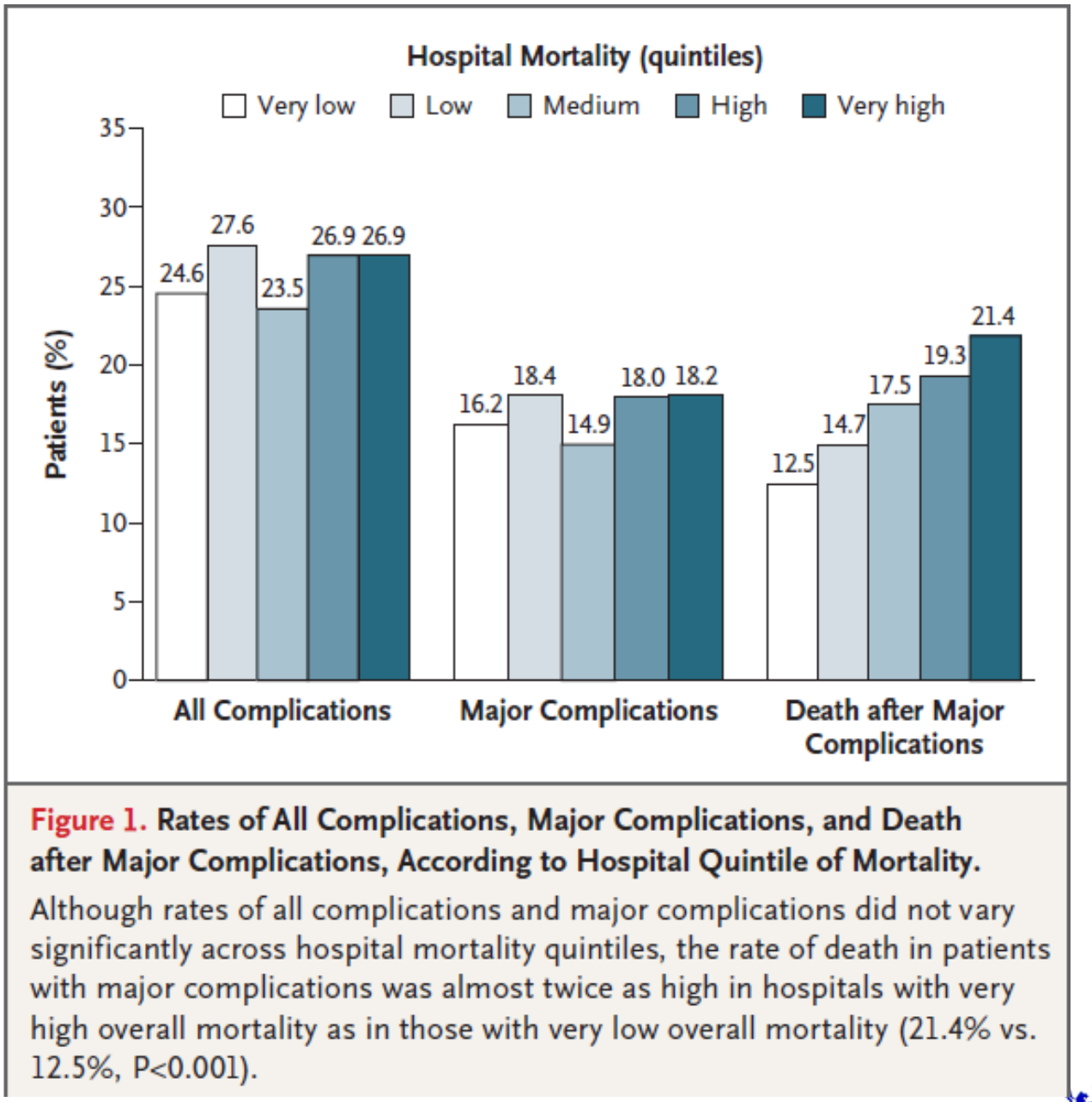

Figure 1. Rates of All Complications, Major Complications, and Death after Major Complications, According to Hospital Quintile of Mortality.

Although rates of all complications and major complications did not vary significantly across hospital mortality quintiles, the rate of death in patients with major complications was almost twice as high in hospitals with very high overall mortality as in those with very low overall mortality (21.4% vs. 12.5%, P<0.001).

(odds ratio, 2.04; 95% confidence interval [CI], 1.73 to 2.39).

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Table 1. Demographic and Clinical Characteristics of the Patients, According to Hospital Quintile of Mortality.*

Characteristic	Very Low Mortality (N=17,379)	Low Mortality (N=16,780)	Medium Mortality (N=17,923)	High Mortality (N=15,953)	Very High Mortality (N=16,695)
Median age (yr)	63.6	63.0	63.9	61.7	62.4
Male sex (%)	52.0	52.0	51.2	54.4	51.6
Nonwhite race (%)†	18.9	14.5	14.6	24.1	26.4
Smoking within past year (%)	22.2	23.2	23.8	26.6	27.4
Preoperative functional status (%)					
Totally independent	82.0	83.1	85.2	84.1	83.7
Partially dependent	11.8	11.2	10.1	10.4	10.9
Totally dependent	6.3	5.7	4.7	5.5	5.4
ASA class ≥4 (%)	15.7	14.3	14.3	16.7	15.9
Coexisting condition (%)					
Diabetes	20.2	19.4	19.3	21.3	21.7
Chronic obstructive pulmonary disease	8.4	8.6	7.9	9.2	9.1
Congestive heart failure	2.4	3.1	2.0	2.6	2.5
Myocardial infarction	1.5	1.8	1.3	1.8	1.8
Peripheral vascular disease	11.5	11.7	9.9	12.3	12.0
Transient ischemic attack	3.7	4.1	3.8	4.3	4.5
Bleeding disorder	11.8	12.1	9.4	10.6	11.2
Ascites	4.9	4.2	3.9	3.6	3.6
Long-term use of corticosteroids	5.5	6.2	5.6	7.2	5.4
Emergency operation	18.3	18.8	19.3	18.2	19.5
Acute renal failure	1.4	1.7	1.5	1.7	1.7
Dialysis	3.6	4.1	3.1	4.6	4.7
Albumin <3.5 g/dl	26.9	23.5	28.1	27.4	27.0
Do-not-resuscitate status	1.9	1.4	2.0	1.5	1.4
Hypertension	58.2	56.9	57.6	58.6	59.3
Preoperative transfusion of >4 units	1.2	1.1	0.9	1.2	1.1
Weight loss of >10% in past 6 mo	6.9	8.1	5.5	6.2	5.6
Expected mortality (%)‡	5.2	5.4	4.8	5.1	4.8
Risk-adjusted mortality (%)	3.5	4.6	4.8	5.8	6.9

* ASA = American Society of Anesthesiologists

Table 2. Incidence of Major Complications and Mortality after Complications, According to Hospital Quintile of Mortality.

Variable	Very Low Mortality	Low Mortality	Medium Mortality	High Mortality	Very High Mortality	Odds Ratio for Very High vs. Very Low Mortality (95% CI)
			percent of patients			
Incidence of complication						
Pneumonia	2.0	2.4	1.8	2.4	2.1	1.06 (0.70–1.60)
Mechanical ventilation >48 hr	6.6	7.1	6.3	7.0	8.1	1.24 (0.99–1.56)
Unplanned intubation	3.6	4.0	3.6	4.5	4.6	1.30 (1.04–1.63)
Acute renal failure	1.3	1.5	1.2	1.7	1.6	1.20 (0.90–1.60)
Myocardial infarction	0.5	0.4	0.5	0.4	0.5	1.06 (0.60–1.87)
Pulmonary embolism	0.7	0.6	0.7	0.7	0.7	1.00 (0.71–1.38)
Postoperative bleeding	1.2	1.6	1.1	1.6	1.4	1.15 (0.85–1.56)
Deep wound infection	2.1	1.7	1.7	2.1	1.9	0.92 (0.61–1.41)
Organ-space infection	3.3	3.8	2.9	3.2	3.3	1.00 (0.70–1.41)
Septic shock	1.6	2.5	1.4	2.3	2.5	1.55 (0.98–2.44)
Fascial dehiscence	1.9	1.7	1.4	1.7	1.9	1.01 (0.73–1.40)
Stroke	0.2	0.3	0.2	0.3	0.2	0.74 (0.42–1.29)
Mortality after major complication						
Pneumonia	16.5	15.9	20.6	17.0	25.5	1.73 (1.22–2.44)
Mechanical ventilation >48 hr	20.6	23.1	28.7	27.3	31.0	1.73 (1.36–2.20)
Unplanned intubation	24.8	27.2	26.8	32.4	38.4	1.89 (1.39–2.56)
Acute renal failure	35.9	43.3	47.7	43.1	48.3	1.67 (1.11–2.52)
Myocardial infarction	29.1	28.4	27.3	36.4	39.5	1.60 (0.86–2.96)
Pulmonary embolism	6.9	6.8	7.6	5.9	11.5	1.74 (0.77–3.96)
Postoperative bleeding	20.9	33.2	31.4	33.1	30.9	1.69 (1.08–2.66)
Deep wound infection	3.2	3.2	3.9	5.1	7.1	2.28 (1.11–4.71)
Organ-space infection	4.9	4.2	6.9	8.8	8.8	1.87 (1.06–3.30)
Septic shock	28.7	29.2	41.0	36.3	46.2	2.13 (1.35–3.35)
Fascial dehiscence	7.0	6.0	8.1	6.9	7.1	1.01 (0.56–1.81)
Stroke	22.5	30.4	35.0	41.3	46.4	2.99 (0.98–9.15)

Même types d'interventions:

- Colectomies, 36% vs 37%
- Gastrectomies, 2,1% vs 2,3 %
- Anévrysme de l'aorte 7,4% vs 6,9%

Intubation non plannifiée: 4.6% vs. 3.6%, P = 0.02

1 patient sur 6 présente une complication;
Dans 50% des cas, elle est grave.

Centre Régional
Léon-Bérard

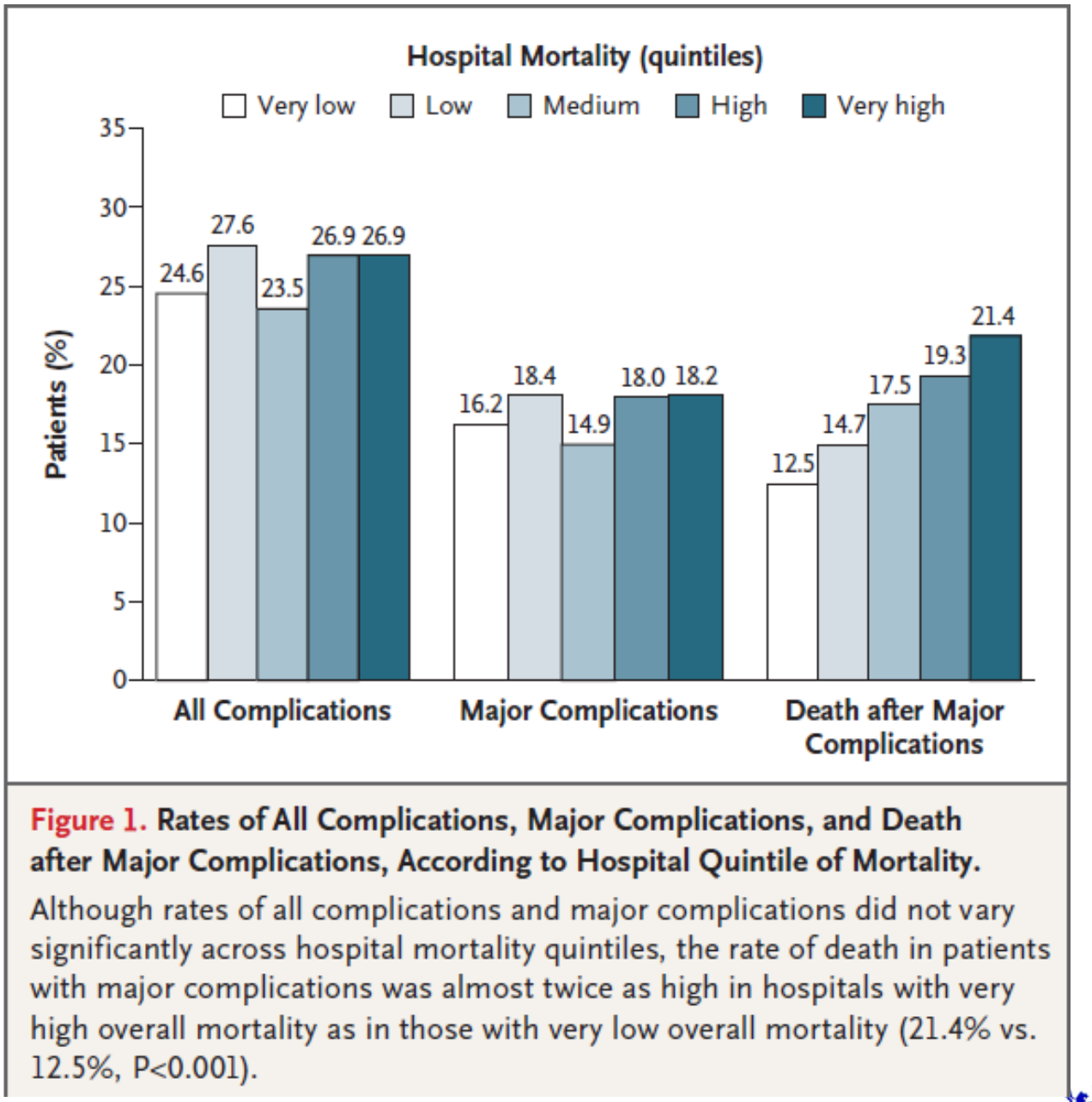
Causes de décès

Complications majeures	Incidence (%)	Mortalité Rel. (%)	Mortalité (%)
Infection :			
Pneumonie	2,1	19,1	0,40
Infection plaie profonde	1,9	4,5	0,09
Infection organe	3,3	6,7	0,22
Choc septique	2,1	36,3	0,76
Insuffisance rénale aiguë	1,5	43,7	0,66
			2,13
Ischémie :			
AVC	0,2	35,1	0,07
Infarctus du myocarde	0,5	32,1	0,16
			0,23
Coagulation :			
Embolie pulmonaire	0,7	7,7	0,05
Saignement post-op.	1,4	29,9	0,42
			0,47

N Engl J Med 2009

Table 3. Rates of Death, Major Complications, and Death after Major Complications for the Five Operations with the Largest Number of Deaths, According to Hospital Quintile of Mortality.

Type of Surgery	Very Low Mortality	Very High Mortality	Odds Ratio for Very High vs. Very Low Mortality (95% CI)
	percent of patients		
Colectomy			
Overall mortality	2.5	5.6	2.29 (1.76–2.98)
All complications	24.7	28.1	1.19 (0.95–1.50)
Major complications	15.4	17.6	1.17 (0.94–1.46)
Mortality after major complications	11.4	20.5	2.08 (1.54–2.82)
Abdominal-aortic-aneurysm repair			
Overall mortality	3.1	7.3	2.49 (1.63–3.81)
All complications	17.4	19.3	1.13 (0.87–1.46)
Major complications	13.6	15.5	1.26 (0.86–1.56)
Mortality after major complications	15.6	26.3	1.94 (1.04–3.62)
Above-knee amputation			
Overall mortality	10.0	15.0	1.59 (1.00–2.53)
All complications	25.7	26.6	1.05 (0.75–1.47)
Major complications	18.9	18.6	0.98 (0.67–1.43)
Mortality after major complications	20.8	35.2	2.08 (0.94–4.60)
Lower-extremity bypass			
Overall mortality	1.9	2.9	1.55 (0.92–2.60)
All complications	24.0	23.6	0.97 (0.81–1.17)
Major complications	11.5	11.1	0.95 (0.75–1.22)
Mortality after major complications	8.2	12.7	1.63 (0.76–3.53)
Below-knee amputation			
Overall mortality	4.2	8.4	2.07 (1.18–3.63)
All complications	23.7	25.4	1.09 (0.82–1.46)
Major complications	15.5	17.3	1.14 (0.81–1.60)
Mortality after major complications	14.5	29.7	2.49 (1.10–5.63)



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(odds ratio, 2.04; 95% confidence interval [CI], 1.73 to 2.39).

Centre Régional Léon-Bérard

DÉFAUT DE SECOURS - DEUX DOMAINES

Temps de réponse

(détection rapide de la complication)

Réponse adéquate

(prise en charge et traitement appropriés)

A Review of Current and Emerging Approaches to Address Failure-to-Rescue

Andreas H. Taenzer, M.D., M.S.,* Joshua B. Pyke, B.E.,† Susan P. McGrath, Ph.D.‡

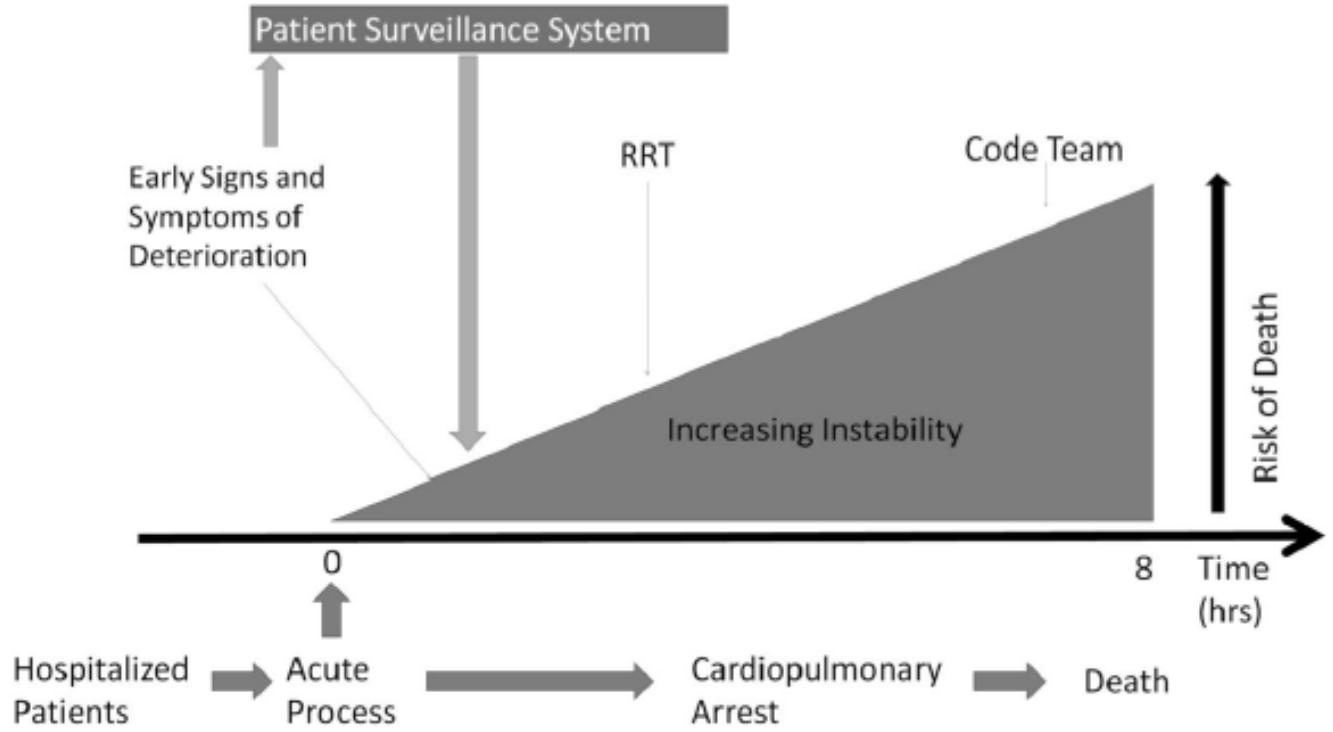

Fig. 1. Representation of physiologic state deterioration and opportunities for intervention. RRT = Rapid Response Team.

Anesthesiology, V 115 _No2_p421-August 2011

Peut-on prévoir l'évolution du patient?

✓ **Système de score**

- Risque cardiaque
- Score chirurgical d'*APGAR*
- Signes d'alerte précoces (« MEWS »)

✓ **Surveillance dans le service**

✓ **Résultats biologiques**

6 facteurs indépendants de complications cardiaques majeures Index révisé du risque cardiaque Score de LEE

Complications cardiaques majeures:

Infarctus du myocarde, OAP, fibrillation ventriculaire et arrêt cardiaque, BAV 3

Facteurs de risques:

Chirurgie à haut risque

ATCD de cardiopathie ischémique

ATCD d'insuffisance cardiaque

ATCD AVC

TTT préopératoire par insuline

Créatininémie préopératoire > 2.0 mg/dL

Circulation

American Heart Association

Derivation and Prospective Validation of a Simple Index for Prediction of Cardiac Risk of Major Noncardiac Surgery

Thomas H. Lee, Edward R. Marcantonio, Carol M. Mangione, Eric J. Thomas, Carisi A. Polanczyk, E. Francis Cook, David J. Sugarbaker, Magruder C. Donaldson, Robert Poss, Kalon K. L. Ho, Lynn E. Ludwig, Alex Pedan and Lee Goldman

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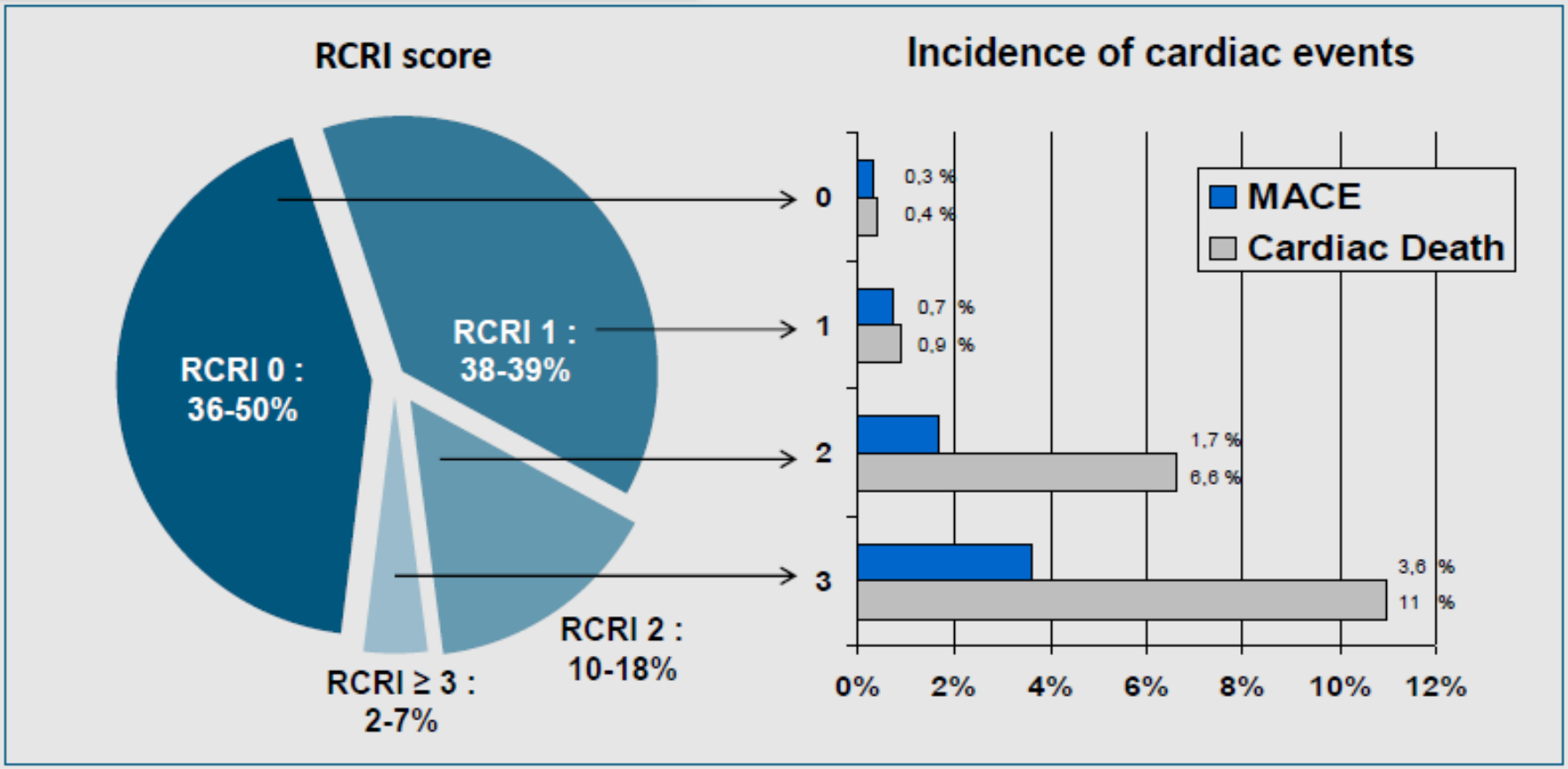


Wolfgang Buhre ESA 2014

Centre Régional Léon-Bérard

Expansion of the Surgical Apgar Score across All Surgical Subspecialties as a Means to Predict Postoperative Mortality

Anesthesiology 2011

Paul Q. Reynolds, M.D.,* Neal W. Sanders, Ph.D.,† Jonathan S. Schildcrout, Ph.D.,‡ Nathaniel D. Mercaldo, M.S.,§ Paul J. St. Jacques, M.D.‖

Validation of the Surgical Apgar Score in a Veteran Population Undergoing General Surgery

J Am Coll Surg 2014

Marcovalerio Melis, MD, FACS, Antonio Pinna, MD, Shunpei Okochi, MD, Antonio Masi, MD, Alan S Rosman, MD, FACP, Dena Neihaus, RN, John K Saunders, MD, FACS, Elliot Newman, MD, FACS, Thomas H Gouge, MD, FACS

Table 1. Computing the Surgical Apgar Score

Parameters	Number of Points				
	0	1	2	3	4
Estimated blood loss, ml	>1,000	601–1,000	101–600	1 ≤ 100	—
Lowest mean arterial pressure, mmHg	<40	40–54	55–70	≥70	—
Lowest heart rate/min	>85	76–85	66–75	56–65	≤55

The Surgical Apgar Score is calculated at the end of the operation from the estimated blood loss, lowest mean arterial pressure, and lowest heart rate entered in the anesthesia record during the operation. The score is the sum of the points from each category.

Wolfgang Buhre ESA 2014

Centre Régional Léon-Bérard

Score d'alerte précoce modifié (« MEWS »)

MEWS score	**3**	**2**	**1**	**0**	**1**	**2**	**3**
Heart rate		<40	40-50	51-100	101-110	111-130	>130
Systolic blood pressure	<70	70-80	81-100	101-200		>200	
Respiratory rate		<9		9-14	15-20	21-30	>30
Temperature		<35.1	35.1-36.5	36.6-37.5	>37.5		
AVPU score				A (**A**lert)	V (response to **V**oice)	P (reacting to **P**ain)	U (**U**nres-ponsive)
Worried about patient's condition: 1 point							
Urine production below 75 ml during previous 4 hours: 1 point							
Saturation below 90% despite adequate oxygen therapy: 3 points							

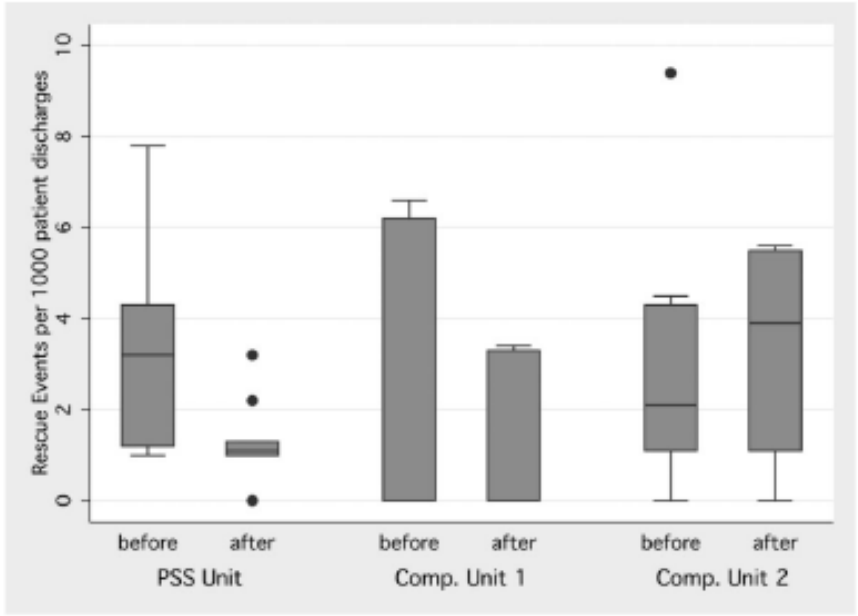
Upon reaching 3 or more points → call resident in charge

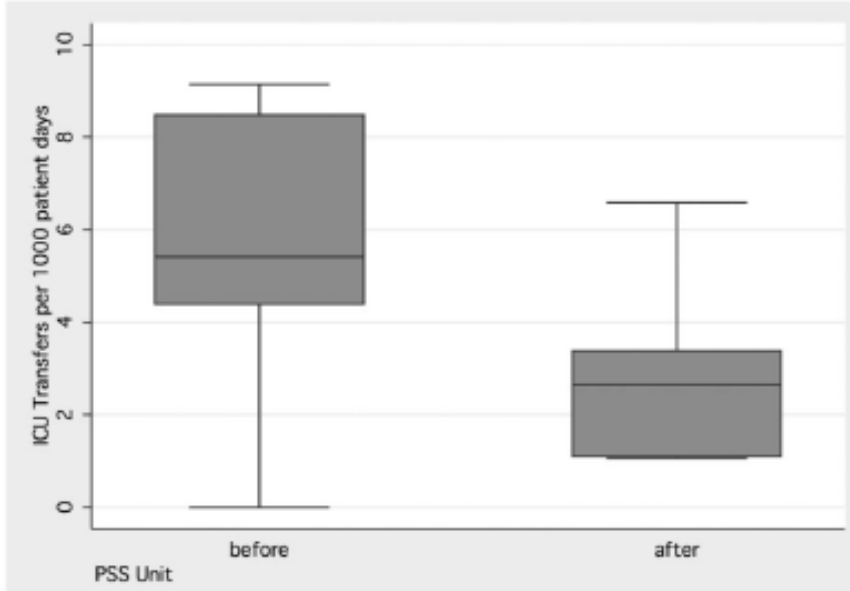
Impact of Pulse Oximetry Surveillance on Rescue Events and Intensive Care Unit Transfers

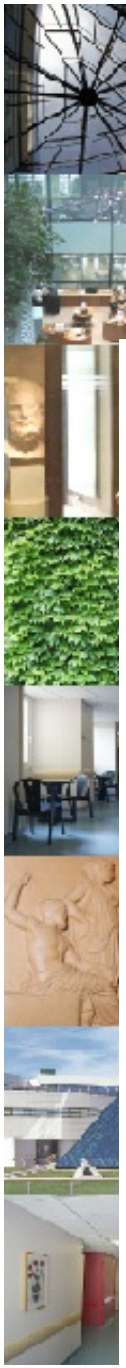
A Before-and-After Concurrence Study

Andreas H. Taenzer, M.D., F.A.A.P.,* Joshua B. Pyke, B.E.,† Susan P. McGrath, Ph.D.,‡
George T. Blike, M.D.§

Anesthesiology 2010; 112:282–7







Bilan à téléphoner CLB

Nom, prénom, Chambre, Service,

Intervention, J

Pouls (> 130 < 50),
Pression Artérielle systolique(<80mmHg)
Température > 39°< 35°
Diurèse < 50 ml/H
Saturation < 90% sous O2