

# De Rol van de Algemeen Internist in de preoperatieve consultatie bij de gecompliceerde multimorbide patiënt

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# ROL VAN DE ALGEMEEN INTERNIST - HOLISTISCH



Postoperative mortality remains unsatisfyingly high ranging from 0.4 to 4%.



Perioperative risk is mainly determined by the surgical procedure and preexisting patient-related risk factors.



FTR (Failure to Rescue proportion of patients, who die after major complications divided by all patients with major complications) is a reliable quality indicator for perioperative quality of care.



Strategies to improve perioperative patient safety should inter alia include a risk-score-based preoperative risk stratification as well as postoperative re-assessment of the patient's situation allowing for prevention, early detection and effective treatment of postoperative complications.

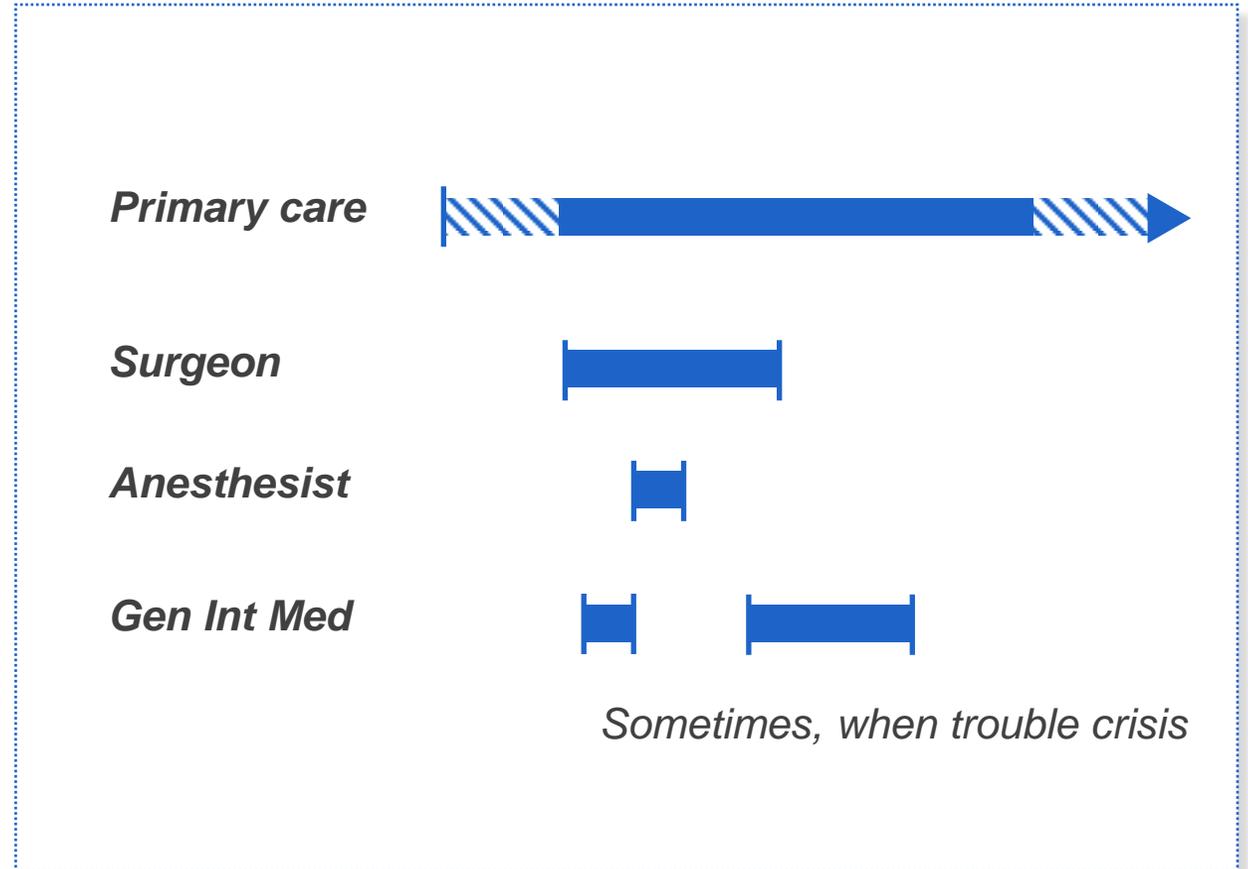
## **Marc Brosens: 'Dialogo tussen specialisten aanwakkeren'**



"Onze kernactiviteit is erkenning en normering in de verschillende vakgebieden en een correcte verdeling van prestaties in de nomenclatuur. Niet de renumratie ervan. En als overkoepelende organisatie willen we de dialoog tussen specialisten aanwakkeren." Zegt Marc Brosens, gedoodverfd opvolger van Marc Moens als secretaris-generaal bij het VBS.

# INVOLVEMENT OF THE SPECIALIST

- **Primary care:** lifelong
- **Surgeon:** a couple of weeks preoperative to a couple of weeks postoperative
- **Anesthetist:** a couple of hours at time of surgery
- **General Internal Medicine specialist:** sometimes a couple of days preoperative and posted when problems arise



# INCIDENCE AND MORTALITY OF MAJOR POSTOPERATIVE COMPLICATION

*Table 1. Incidence and mortality of major postoperative complication*

<b>Major complications</b>	<b>Incidence (%)</b>	<b>Mortality of complication (%)</b>	<b>Mortality x incidence = contribution to total mortality (%)</b>
<b><i>Infection-associated:</i></b>			
Pneumonia	2.1	19.1	0.40
Deep wound infection	1.9	4.5	0.09
Organ-space infection	3.3	6.7	0.22
Septic shock	2.1	36.3	0.76
Acute renal failure	1.5	43.7	0.66
<b><i>Ischemia-associated:</i></b>			
Stroke	0.2	33.1	0.07
Myocardial infarction	0.5	32.1	0.16
<b><i>Coagulation-associated:</i></b>			
Pulmonary embolism	0.7	7.7	0.05
Postoperative bleeding	1.4	29.9	0.42

Infectious complications are much more prevalent than ischemic postoperative complications and are the main cause of postoperative mortality (data modified from Ghaferi et al. [4])

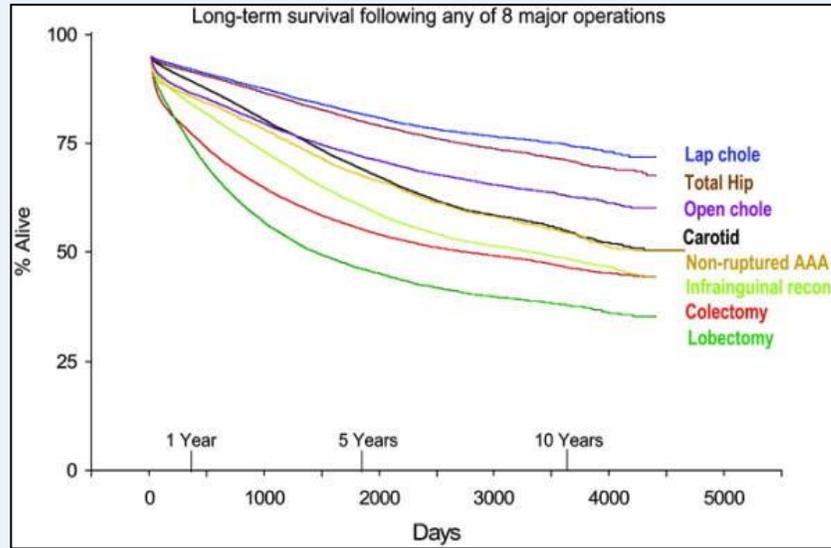
*Ref Boehm O, Baumgarten G, Hoefft A. Epidemiology of the high-risk population: Perioperative risk and mortality after surgery. Curr Opin Crit Care 2015; 21: 322–7.*

# EXTENDED CLAVIEN-DINDO CLASSIFICATION OF SURGICAL COMPLICATIONS: EXAMPLE TABLE

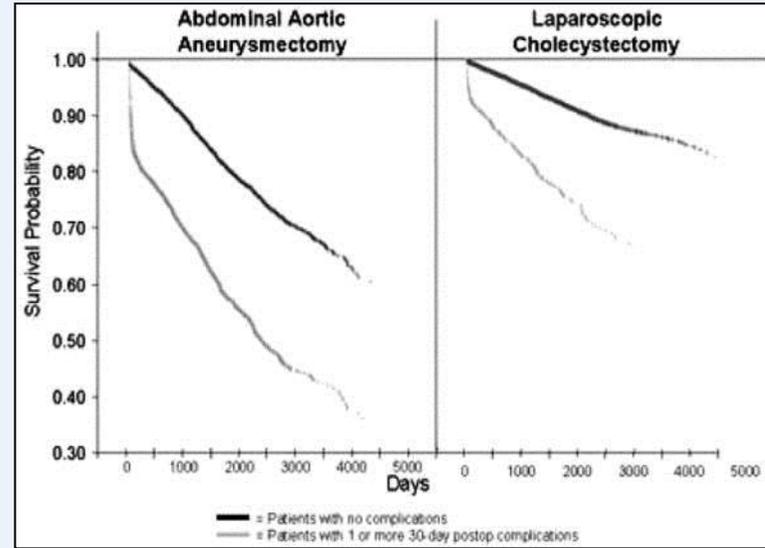
Principle of grading								
	I	II	IIa	IIIb	IVa	IVb	V	Supplemental explanation of suffix "d"
<b>Ischemic heart disease</b>	Clinical observation or diagnostic evaluation only; intervention not indicated	Medical management indicated (e.g., anticoagulant therapy)	Cardiac catheterization indicated	Intervention under general anesthesia indicated (coronary artery bypass)	Heart failure associated with low cardiac output syndrome; IC/ ICU management indicated	Heart failure associated with low cardiac output syndrome and renal failure; IC/ ICU management Indicated	Death	Persistent heart failure following myocardial infarction
<b>Pericardial effusion</b>	Clinical observation or diagnostic evaluation only; intervention not indicated (drainage only through existing drain age tube)	Medical management indicated	Image-guided drain placement/paracentesis including drain replacement indicated	Intervention under general anesthesia indicated (fenestration)	Cardiac tamponade; IC/ICU management indicated	Cardiac tamponade and renal failure; IC/ ICU management indicated	Death	–
<b>Bradycardia</b>	Clinical observation or diagnostic evaluation only; intervention not indicated	Medical management indicated (e.g., atropine, $\beta$ agonists)	Medical intervention under local anesthesia indicated (e.g., pacemaker implantation)	–	Heart failure associated with low cardiac output syndrome; IC/ICU management indicated	Heart failure associated with low cardiac output syndrome and renal failure; IC/ ICU management indicated	Death	–
<b>Supraventricular arrhythmia</b>	Clinical observation or diagnostic evaluation only; intervention not indicated	Medical management indicated (e.g., antiarrhythmic drugs)	Medical intervention under local anesthesia indicated (e.g., catheter ablation, synchronized cardioversion)	–	Heart failure associated with low cardiac output syndrome; IC/ ICU management indicated	Heart failure associated with low cardiac output syndrome and renal failure; IC/ ICU management indicated	Death	–

Ref 1 Katayama H, Kurokawa Y, Nakamura K, et al. Extended Clavien-Dindo classification of surgical complications: Japan Clinical Oncology Group postoperative complications criteria. *Surg Today* 2016; 46: 668–85.

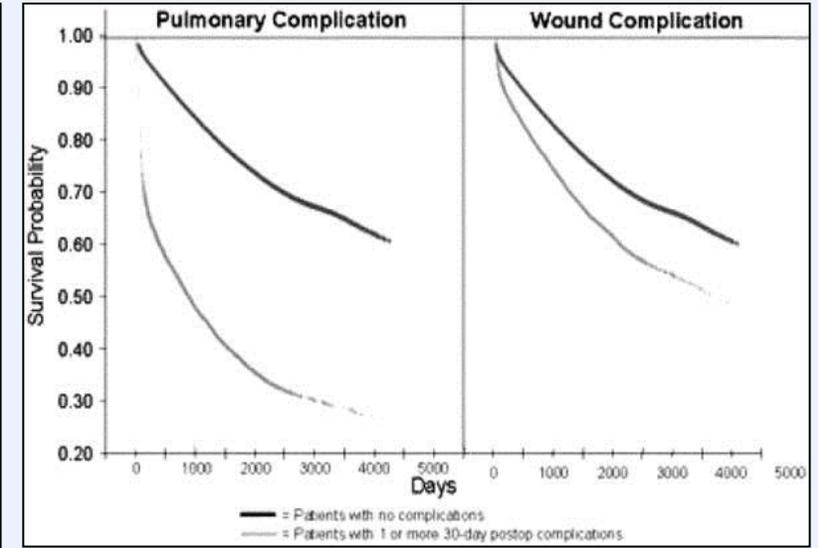
# ROLE OF POSTOPERATIVE COMPLICATIONS ON SURVIVAL



**FIGURE 1.** Kaplan-Meier survival curves of patients undergoing major surgery in the Veterans Affairs between 1991 and 2003, calculated for each type of operation included in the study.



**FIGURE 3.** Cox survival curves of study patients undergoing abdominal aortic aneurysmectomy (A) and laparoscopic cholecystectomy (B) stratified as to whether or not patients had sustained a complication within the first 30 postoperative days. The difference in survival between the 2 groups in each panel reflects the independent effect of the occurrence of a postoperative complication on postoperative survival, ie, corrected for other confounding variables captured in the National Surgical Quality Improvement Program.



**FIGURE 4.** Cox survival curves of all study patients stratified as to whether or not the patients had sustained a pulmonary complication (A) or a wound complication (B) within the first 30 postoperative days. The difference in survival between the 2 groups in each panel reflects the independent effect of the occurrence of the respective complication on postoperative survival, ie, corrected for other confounding variables captured in the National Surgical Quality Improvement Program. Pulmonary complications include one or more of the following: pneumonia, prolonged intubation, and failure to wean. Wound complications include superficial wound infection, deep wound infection, and wound dehiscence.

Ref Khuri SF, Henderson WG, DePalma RG, et al. Determinants of long-term survival after major surgery and the adverse effect of postoperative complications. *Ann Surg* 2005; 242: 326-43.

# ROLE OF POSTOPERATIVE COMPLICATIONS ON SURVIVAL (CONT'D)

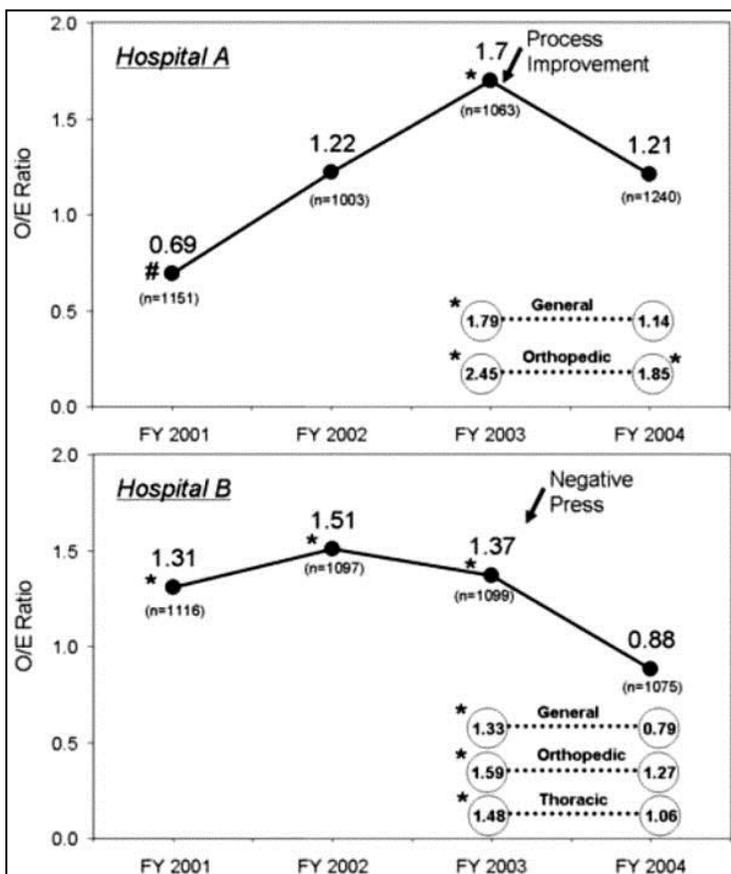
**TABLE 6. Median Survival of Patients With or Without Any Postoperative Complication**

Operation Type	Median Survival (Years) of Patients With/Without Complication		Percent Reduction in Median Survival From Complication*
	With	Without	
Nonruptured AAA	6.2	13.4	54
Infrainguinal vascular reconstruction reconstruction	6.2	11.6	47
Carotid endarterectomy	8.2	13.7	48
Colectomy	3.4	13.7	75
Open cholecystectomy	10.3	21.9	53
Laparoscopic cholecystectomy	—	—	—
Lobectomy/pneumonectomy	1.5	6.6	77
Total hip replacement	—	—	—
Type of postoperative complication in all operation types			
Cardiac (arrest, MI)	0.14	16.2	99
Neurologic (CVA, coma, neurodeficits)	2.5	16.2	85
Pulmonary (pneumonia, unplanned intubation, failure to wean)	2.2	17.3	87
Renal (progressive renal insufficiency, acute renal failure, UTI)	3.8	17.1	78
Thromboembolic (DVT/thromboembolism, PE)	9.9	17	42
Wound complications (superficial and deep wound infection, dehiscence)	10	17.1	42

\* $P < 0.001$ .

AAA, abdominal aortic aneurysmectomy; MI, myocardial infarction; CVA, cerebral vascular accident; UTI, urinary tract infection; DVT, deep vein thrombosis; PE, pulmonary embolism.

# SURVIVAL IMPROVEMENT



## Key points



An association between postoperative complications and poor long-term survival continues to be reported



Limitations in preoperative risk modelling and insufficient separation of early and late deaths are important considerations.



Early basic science research has identified potentially relevant mechanisms, such as immune incompetence, inflammation, and apoptosis.



Perioperative care should focus on improving informed consent, the prevention of complications and risk-reduction after hospital discharge.

Ref 1 Toner A, Hamilton M. The long-term effects of postoperative complications. *Curr Opin Crit Care* 2013; 19: 364–8.

**FIGURE 6.** Time course of the observed to expected (O/E) 30-day morbidity ratio in the all-operations model over 4 fiscal years in 2 separate Veterans Affairs medical centers. A statistically significant high outlier at the 99% confidence level is indicated by the asterisk (\*) and a statistically significant low outlier is indicated by the pound sign (#). (A; hospital A) This hospital was a low outlier in FY 01; the morbidity rate increased over the next 2 years, mostly in general surgery and orthopedics, causing it to become a high outlier in FY 03. Process improvement reversed the overall O/E ratio, but although it ceased to be an outlier in the all operations model and general surgery, it continued to be a high outlier in orthopedics, indicating that additional process improvement needed to be directed toward orthopedic surgery at that hospital. (B; hospital B) This hospital was a high outlier in morbidity for 3 consecutive years. Negative press about the quality of care at that hospital prompted process improvement that resulted in a marked decrease in morbidity rate from 17.5% to 10.8%. These 2 case studies exemplify the fact that surgical morbidity rates can be reduced effectively through local process improvement.

Ref Khuri SF, Henderson WG, DePalma RG, et al. Determinants of long-term survival after major surgery and the adverse effect of postoperative complications. *Ann Surg* 2005; 242: 326–43.

# IMPLICATIONS FOR PERIOPERATIVE MEDICINE



The emergence of the long-term consequences of postoperative complications, in addition to their established short-term impact, intensifies the importance of perioperative medicine.



In the preoperative setting, more informed discussions about the risk-benefit balance of surgery should take place with patients likely to develop postoperative morbidity and have a prolonged duration of intensive care.



During anaesthesia and early recovery periods strategies proven to minimize complications should be rigorously applied, for example, enhanced recovery bundles and cardiovascular optimization.



Post-operatively, patients who do develop complications identify themselves at a higher risk of death after hospital discharge. An opportunity exists for improved follow-up, rehabilitation programs, and fine-tuning of medical management.



Traditionally, mortality, length of stay, and cost have been used as measures of patient outcomes. Other patient-centered measures, which may be equally important, are now being considered including discharge disposition, quality of life, and functional status.

*Ref Toner A, Hamilton M. The long-term effects of postoperative complications. Curr Opin Crit Care 2013; 19: 364–8.*

*Ref 1 Tevis SE, Kennedy GD. Postoperative complications and implications on patient-centered outcomes. J Surg Res 2013; 181: 106–13.*



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