



CIBOSURG


20 year's recording of pAEs What did we learn?

Prof. Dieter Hahnloser



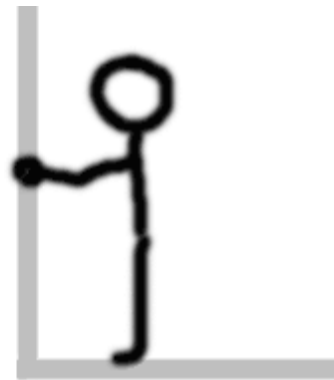
iAEs

Lack of clarity

A blurred cityscape at sunset or sunrise, with a prominent skyscraper in the center. The text 'Lack of clarity' is overlaid on the image.

pAEs

Postoperative Complications



What is Quality ?



What is Quality in Medicine?



Structure

Process

Outcome



What is Quality in Medicine?

Structure

„...includes the human, physical and financial **resources** that are needed to provide care.“

Process

Outcome

What is Quality in Medicine?

Structure

Process

Outcome

„...denotes **what is actually done** in giving care. It includes...the activities in **making a diagnosis or implementing treatment.**“

What is Quality in Medicine?

Structure

Process

Outcome

„...a **change** in a patient's current and future **health status** that can be attributed to antecedent health care.“

What is Quality in Surgery ?



Lack of negative outcomes
(complications or AE's)



Quality in Surgery



- Standardized and reproducible outcome data needed
- **Complications as quality parameter in surgery**



Classification of Surgical Complications

A New Proposal With Evaluation in a Cohort of 6336 Patients and Results of a Survey

Daniel Dindo, MD, Nicolas Demartines, MD, and Pierre-Alain Clavien, MD, PhD. Ann Surg 2004

→ Clavien-Dindo Classification (CDC)

Grade	Description
1	No need for pharmacological treatment or intervention
2	Pharmacological treatment
3	Surgical, endoscopic or radiological intervention
3a	<i>Regional or local anesthesia</i>
3b	<i>General anesthesia</i>
4	Life-threatening complication requiring ICU management
4a	<i>Single-organ dysfunction</i>
4b	<i>Multi-organ dysfunction</i>
5	Death

**Invasiveness
of therapy**



Clavien-Dindo Classification (CDC)

- Simple, intuitive, and reproducible
- Standardized approach to rank complications by severity
- Most cited surgical article
- **Limitation:**
Difficult to compare outcomes with multiple complications

Limitation of the CDC



**Which patient
had the "worse"
postoperative
course?**

Patient A	
Wound infect	1
Abscess	3a
Gastric ulcer	3a

Patient B	
Urinary infect	2
Severe pain	2
Bleeding	3b



A Novel Continuous Scale to Measure Surgical Morbidity

Ksenija Slankamenac, MD, Rolf Graf, PhD,* Jeffrey Barkun, MD,† Milo A. Puhan, MD, PhD,‡
and Pierre-Alain Clavien, MD, PhD**

Ann Surg 2013

→ **Comprehensive Complication Index (CCI®)**

- Combination of **all complications** and their **relative severities** in one single number
- Based on Clavien-Dindo grading system
- Weighting of CD grades by patients and physicians



CDC versus CCI[®]

cci-calculator.com
free available

Comprehensive
Complication Index

0

Grade I	-	0	+
Grade II	-	0	+
Grade IIIa	-	0	+
Grade IIIb	-	0	+
Grade IVa	-	0	+
Grade IVb	-	0	+
Grade V	-	0	+

CCI[®]

↻ Delete entries



Patient A

38



Patient B

45

Comprehensive
Complication Index

44.9

Grade I	-	0	+
Grade II	-	2	+
Grade IIIa	-	0	+
Grade IIIb	-	1	+
Grade IVa	-	0	+
Grade IVb	-	0	+
Grade V	-	0	+

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Systematic literature search

→ To assess use CDC and CCI[®] in RCTs



- Cited by **29'874 articles** until July 2023
- **1'327 RCTs** using the CDC and/or CCI[®] as a trial endpoint
- Over **200 new RCTs/year**, steadily increasing
- **30%** with **complete and correct** complication reporting



Comprehensive Questionnaire



→ To gain evidence for development of guidance

- **20 complex** clinical cases and **12 specific** complications
- **55% response rate** (89/163 international surgeons)
- **100% usage rate for CDC** among survey participants
- Median of **32 minutes** (IQR: 24-55 minutes) to complete questionnaire



Recommendation 3

→ Morbidity resulting from iAE

- Obvious postoperative complication:

Bile duct injury → Biliary leak → Endoscopic stenting

CD grade 3a



Recommendation 3

→ Morbidity resulting from iAE

- **Obvious postoperative complication:**

Bile duct injury → Biliary leak → Endoscopic stenting

- **Additional, unexpected treatment:**



CD grade 3a



Recommendation 3

→ Morbidity resulting from iAE

- **Obvious postoperative complication:**

Bile duct injury → Biliary leak → Endoscopic stenting

- **Additional, unexpected treatment:**

Spleen injury → Splenectomy → Vaccination

Bowel injury → Colostomy → Stoma reversal



CD grade 3a

Recommendation 3

→ Morbidity resulting from

- Obv
- Bile c
- Addit
- Splen
- Bowel



ting

CD grade 3a

CD grade 2

CD grade 3b



Consensus recommendations on how to assess the quality of surgical interventions

Received: 24 October 2022

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Published online: 17 April 2023

Anja Domenghino^{1,2}, Carmen Walbert³, Dominique Lisa Birrer¹,
Milo A. Puhan², Pierre-Alain Clavien¹ & The Outcome4Medicine
consensus group*

nature medicine

- The CDC and CCI[®] are suggested as **standards for surgical complication reporting** by jury-based consensus recommendations
- Improved guidance will lead to more **consistent and standardized complication reporting**
- CCI-Calculator online available (**cci-calculator.com**)



20 year's recording of pAEs What did we learn?

- CDC classification accepted world wide
- Allows standardization of outcome reporting after surgery
 - Makes surgery comparable
 - Analysis of structure and process (incl. surgery) to improve patient outcome



Let's do it for iAE!

