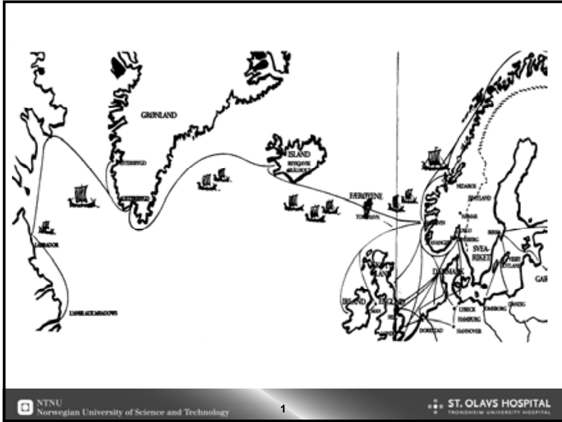
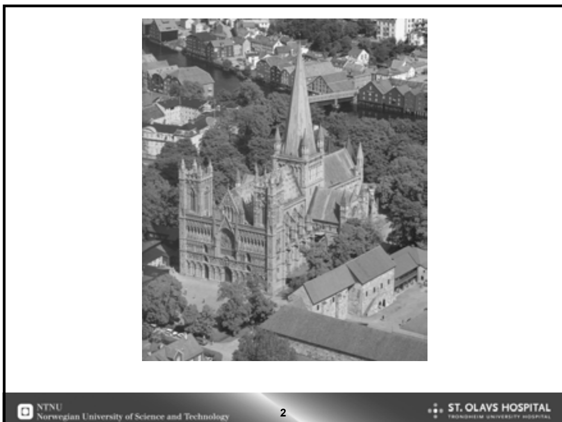




HOW TO LEARN FROM EXPERIENCE IN A BETTER AND MORE SYSTEMATIC WAY

ROUTINE BASED RECORDING OF ADVERSE EVENTS DURING ANESTHESIA

Application in quality improvement and safety

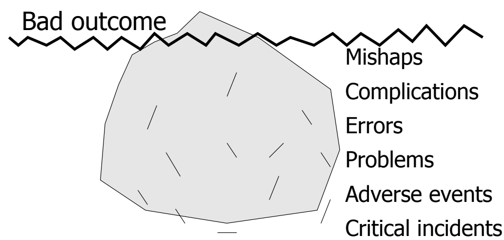
SE Gisvold
Trondheim, Norway

Fasting S, Gisvold SE:

Data recording of problems during anaesthesia: presentation of a well functioning and simple system.

Acta Anaesthesiol Scand 1996;40:1173-83

What leads to a bad outcome ?



LOOK FOR THE NEAR MISS AND THE NON-FATAL PROBLEMS

Surrogate outcomes

vs

”real” outcomes

THERE IS AN ASSOCIATION
Between intra-op. adverse events and post operative problems

Bothner V et al. Anesth Analg 1999; 89: 506

Niskauen MM et al. Anaesthesia 2002; 57: 1052

Fasting S. Can J Anesth 2002; 49: 545

HOW TO DO IT ?

The system must be :

- simple enough to be practicable
- detailed enough to be informative

Checkbox for problem recording

FORLØP/PROBLEMER

A		Uten anmerkninger
B		Larynxspasme
C		Bronkospasme
D		Aspirasjon
E		Hypertensjon > 30 %
F		Hypotensjon > 30 %
G		Arrytmi/EKG forandr.
H	X	Intub.vansker
I		Duraperforasjon
J		Kramper
K		Tannskade
L		Allergisk reaksjon
M		Temperatur < 35,5° C
N		Temperatur > 39,0 C
O		Blødn. > 20 %
P		Vansk. oppvåkning
Q		Inadekvat analgesi/anestesi
R		Utstyrstekn. problem
S		Stans/CPR/MORS
T		Oksygeneringsprobl./hypoksemi
U		Hypercapni
V		Feilmedisinering
W		Annet

Alvorlighetsgrad (1-4) 2

- Always marked
  - Checkbox for 'Uneventful'
  - Checkbox for the 22 most common problems

Indicate

- The type of problem
- The severity of problem graded from 1 – 4

Write a short description on the chart

Recorded problems

- No Problem/uneventful
- Laryngospasm
- Bronchospasm
- Aspiration
- Hypertension 30%
- Hypotension 30%
- Arrhythmia/ECG change
- Intubation problems
- Dura perforation
- Tooth injury
- Allergic reaction
- Hypothermia
- Hyperthermia
- Bleeding > 20%
- Difficult awakening
- Inadequate anes./analg.
- Equipment problem
- Arrest/CPR
- Hypoxemia
- Hypercapnia
- Wrong drug / swap

Degree of severity

Routine based recording

- Data from all anaesthetics are recorded, not only from 'critical incident' cases.

- Compulsory to fill in the data fields
  - Improves recording completeness
  - Reduces underreporting

CREATING A DEPARTMENT CULTURE

Openness
Confidence
Enthusiasm

Learn and prevent vs Blame and hide

"PROBLEMS HAPPEN TO GOOD PEOPLE"

Continuous improvement as an ideal in health care.

Berwick DM
New Engl J Med 1989, Jan 5

FOREMAN I

«I can see you all. I have the means to measure your work, and I will do so. I will see if you are deficient!

There are other workers available and you can be replaced.»

FOREMAN II

«We are in this together. You and I have a common interest in a job well done.

Things can go wrong. My job is to notice opportunities for improvement.»

TERMINOLOGY

Error
Mishap
Adverse event
Critical Incident
Complication
Problem

Problem meetings

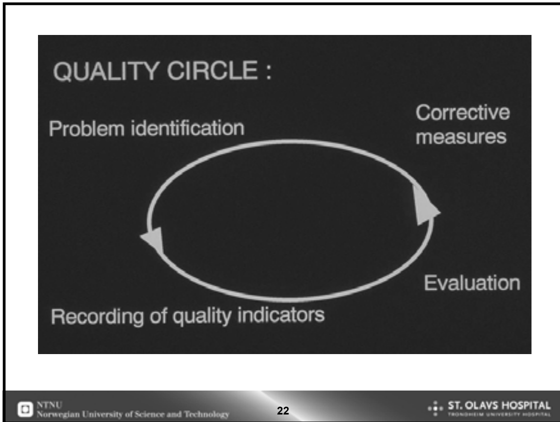
- Discussion of problem cases
- Similar cases retrieved from chart archives – included in analysis
- Good learning potential
- Basis for preventive measures

Anaesthesia Problems - Severity

	1993	1995	1997	1999	2003	2004
Grade 1	1727	1991	2068	1990	2288	2592
Grade 2	670	672	689	686	973	942
Grade 3	125	88	76	96	72	73
Grade 4	31	23	19	16	23	24

Problems during anesthesia

	1993	1995	1997	1999	2003	2004
Laryngospasm	125	96	123	120	137	117
Bronshospasm	47	38	41	36	42	40
Intub. Problems	222	223	262	247	248	267
Aspiration	11	16	20	15	17	22
Allergic reactions	36	40	36	30	23	23
Cardiac arrest	28	30	23	17	28	33
Medic. errors		21	30	15	28	21



What is a good quality indicator?

- Occur with some frequency
- Reflect an important aspect of quality
- Easy to define
- Easy to analyse

Mortality – Morbidity - Incidents

Not just another database paper?

Learn from past experience.
Why did it happen?

Once identified –
Problems require “continued attention”
Changes made in the system must be monitored.

Davies JM (editorial)
Acta Anaesthesiol Scand 1996;40:1169

STATISTICAL PROCESS CONTROL METHODS ALLOW THE ANALYSIS AND IMPROVEMENT OF ANESTHESIA CARE

Assumption:

"non fatal adverse events are useful indicators of quality of the anesthetic process"

Fasting S, Gisvold SE Can J Anest 2003; 50: 767

Difficult emergence from general anesthesia

Percent difficult emergence

UCL

LCL

Bimonthly periods

1997 1998 1999 2000 2001

Difficult emergence from general anesthesia

Percent difficult emergence

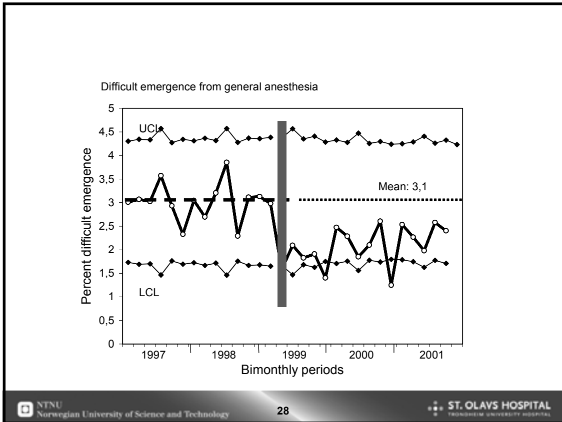
UCL

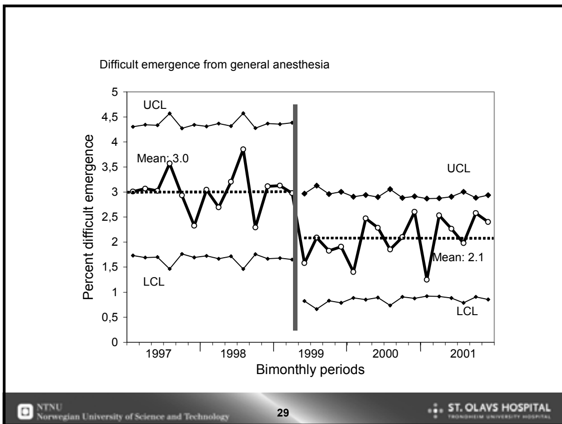
Mean: 3,1

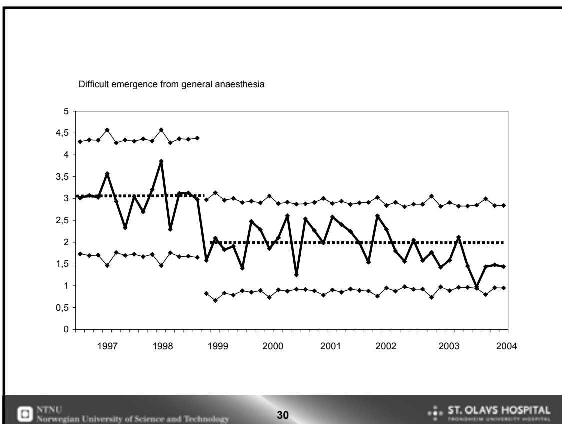
LCL

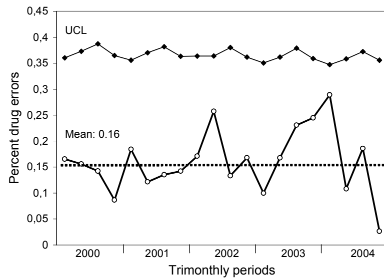
Bimonthly periods

1997 1998 1999 2000 2001


Difficult emergence from general anesthesia
UCL
Mean: 3,1
LCL
Percent difficult emergence
Bimonthly periods
NTNU
Norwegian University of Science and Technology
28
ST. OLAVS HOSPITAL


Difficult emergence from general anesthesia
UCL
Mean: 3.0
UCL
Mean: 2.1
LCL
LCL
Percent difficult emergence
Bimonthly periods
NTNU
Norwegian University of Science and Technology
29
ST. OLAVS HOSPITAL


Difficult emergence from general anaesthesia
NTNU
Norwegian University of Science and Technology
30
ST. OLAVS HOSPITAL



Allergic reactions during general anaesthesia

	2002	2003	2004	Jun 2005
Cases	13520	14309	14487	7751
Severity 1	15	11	8	8
Severity 2	10	8	8	2
Severity 3	2	2	1	0
Severity 4	0	0	1	0

Airway problems + hypoxemia during general anesthesia

	2001	2002	2003	2004
Children < 10 years	15 / 2109 0,7 %	13 / 2152 0,6 %	25 / 2223 1,1 %	16/2188 0,7%
Adults > 10 years	29 / 11270 0,3 %	26 / 11425 0,2 %	51 / 12055 0,4 %	23/12664 0,2%

WHO SHOULD HAVE ACCESS TO THE DATA?

Be careful –
your quality policy
may ensure only silence.

OBJECTIVE

1. To measure & compare quality
   (External inspection)
2. To learn and To prevent
   A non-punitive, learning objective

KEY ELEMENTS OF THE SYSTEM

- Simplicity
- Openness and confidence
- Leadership support and enthusiasm

What do we need the registers for?

- To identify problem areas
- Opportunities for improvement
- To monitor/measure quality?
- To inspect/identify bad apples?