Anesthesiology 2006; 105:1081–6

Trends in Anesthesia-related Death and Brain Damage

A Closed Claims Analysis

Frederick W. Cheney, M.D., Karen L. Posner, Ph.D.,† Lorri A. Lee, M.D.,‡ Robert A. Caplan, M.D.,§ Karen B. Domino, M.D., M.P.H.‖*

There were a total of 6,750 claims where the injury occurred from 1975 through 2000, of which 2,613 claims were for death or permanent brain damage (39%).

The proportion of total claims for death or brain damage was 56% in 1975 and decreased approximately 1% per year (OR, 0.95 per year) through the year 2000, when death or brain damage represented 27% of total claims .

Damaging Events Associated with Death and Permanent Brain Damage, 1986–2000 (n = 1,411)

Respiratory Damaging Events	n	% Total Respiratory Events
Difficult intubation	115	23
Inadequate ventilation/oxygenation	111	22
Esophageal intubation	66	13
Premature extubation	58	12
Aspiration	50	10
Airway obstruction	47	9
Other respiratory	56	11
Total	503	100

Cardiovascular Damaging Events	n	% Total Cardiovascular Events
Multifactorial/miscellaneous	154	35
Pulmonary embolism	70	16
Inadequate fluid therapy	63	14
Stroke	58	13
Hemorrhage	49	11
Myocardial infarction	48	11
Total	442	100

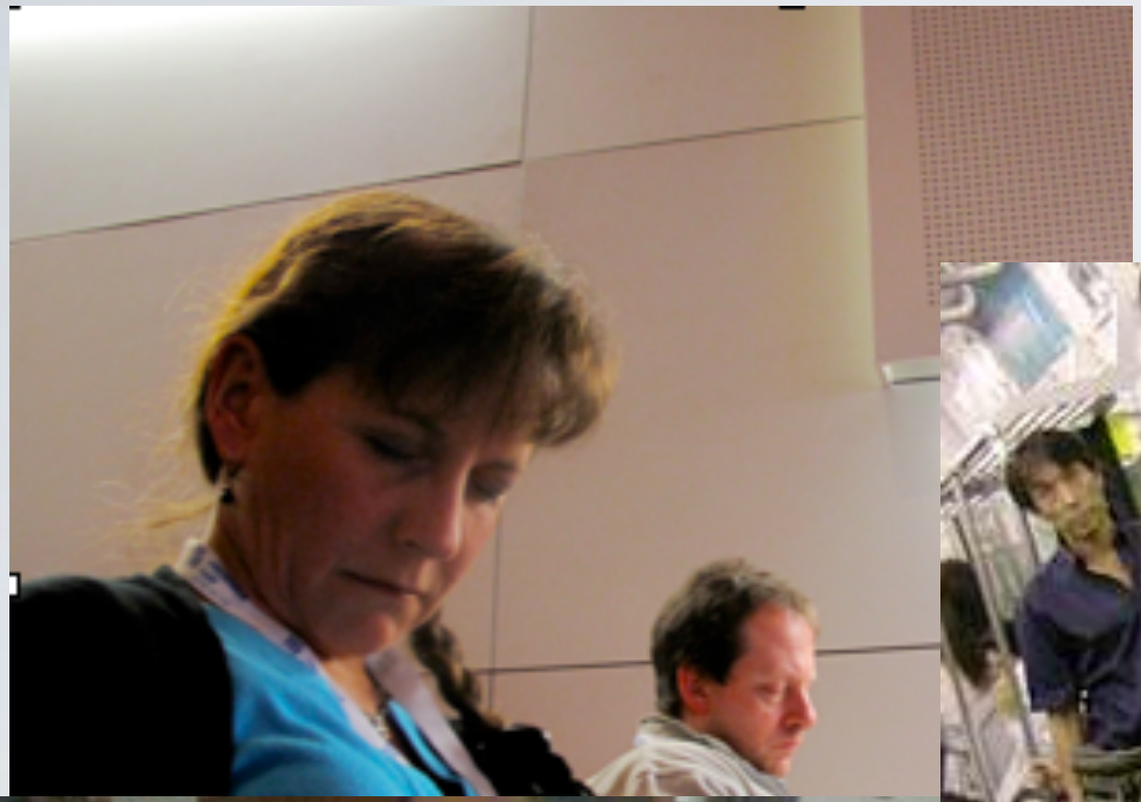
Medication-Related Damaging Events	n	% Total Medication-related Events
Wrong drug/dose	68	55
Allergic or adverse drug reaction	51	41
Malignant hyperthermia	5	4
Total	124	100

Equipment-Related Damaging Events	n	% Total Equipment-related Events
Central lines	54	60
Gas delivery	16	18
Miscellaneous/other	20	22
Total	90	100

Block-Related Damaging Events	n	% Total Block-related Events
Neuraxial cardiac arrest	47	53
High spinal/epidural	19	22
Intravenous injection/local absorption	9	10
Other	13	15
Total	88	100

Anesthesiology, V 105, No 6, Dec 2006

Anyone still awake?



WHY GOOD PRESENTATION MATTERS

Florence Nightingale
“Lady of the lamp”

WILLIAM FARR, COMPILER OF ABSTRACTS IN THE GENERAL REGISTRY OFFICE

Father of medical statistics

British Army's Average Strength and Mortality

Month	Average size of army	Deaths			Annual rate of mortality per 1000		
		Zymotic diseases	Wounds & injuries	All other causes	Zymotic diseases	Wounds & injuries	All other causes
Apr 1854	8571	1	0	5	1.4	0	7.0
May 1854	23333	12	0	9	6.2	0	4.6
Jun 1854	28333	11	0	6	4.7	0	2.5
Jul 1854	28722	359	0	23	150.0	0	9.6
Aug 1854	30246	828	1	30	328.5	0.4	11.9
Sep 1854	30290	788	81	70	312.2	32.1	27.7
Oct 1854	30643	503	132	128	197.0	51.7	50.1
Nov 1854	29736	844	287	106	340.6	115.8	42.8
Dec 1854	32779	1725	114	131	631.5	41.7	48.0
Jan 1855	32393	2761	83	324	1022.8	30.7	120.0
Feb 1855	30919	2120	42	361	822.8	16.3	140.1
Mar 1855	30107	1205	32	172	480.3	12.8	68.6
Apr 1855	32252	477	48	57	177.5	17.9	21.2
May 1855	35473	508	49	37	171.8	16.6	12.5
Jun 1855	38863	802	209	31	247.6	64.5	9.6

Month	Average size of army	Deaths			Annual rate of mortality per 1000		
		Zymotic diseases	Wounds & injuries	All other causes	Zymotic diseases	Wounds & injuries	All other causes
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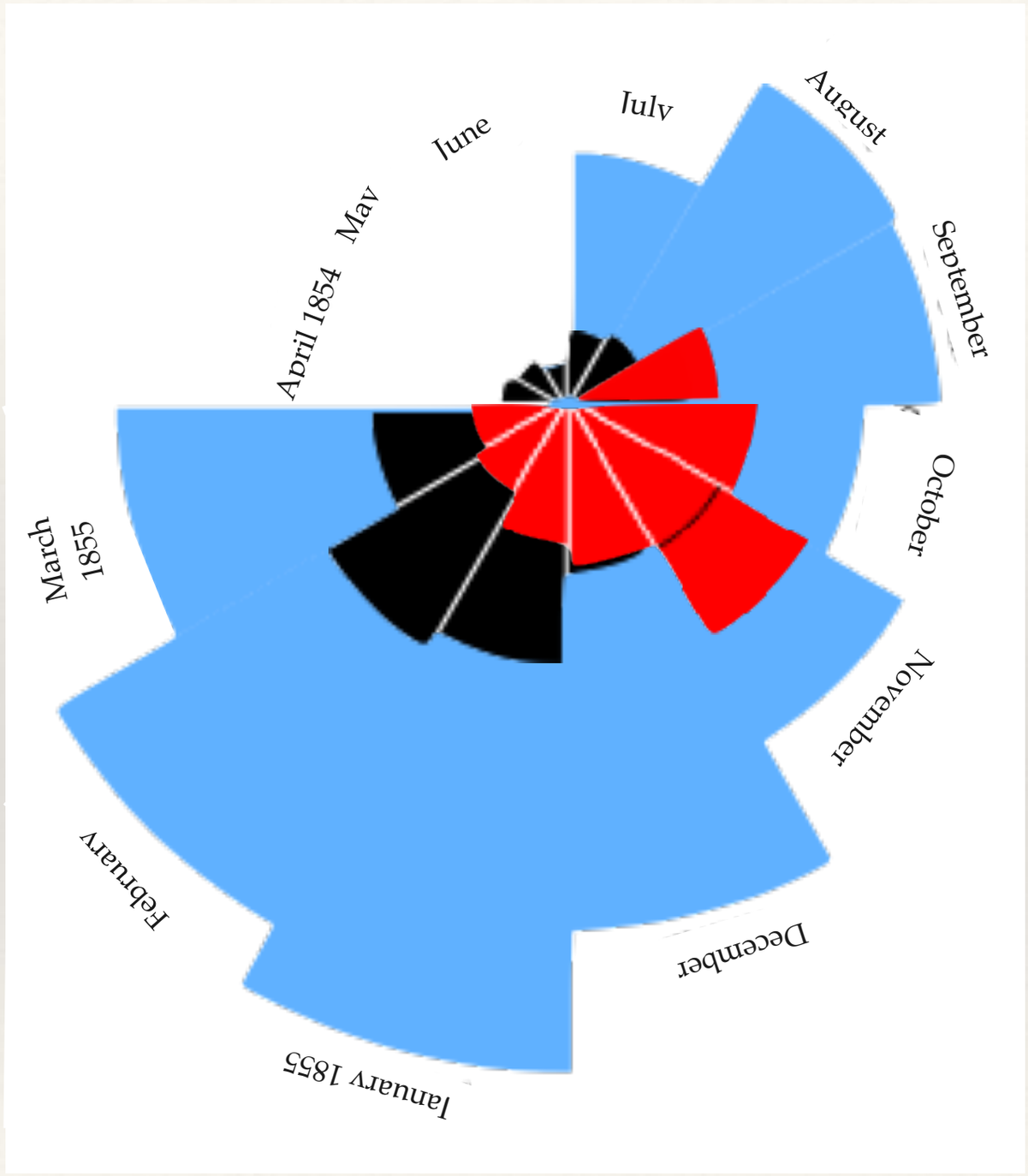
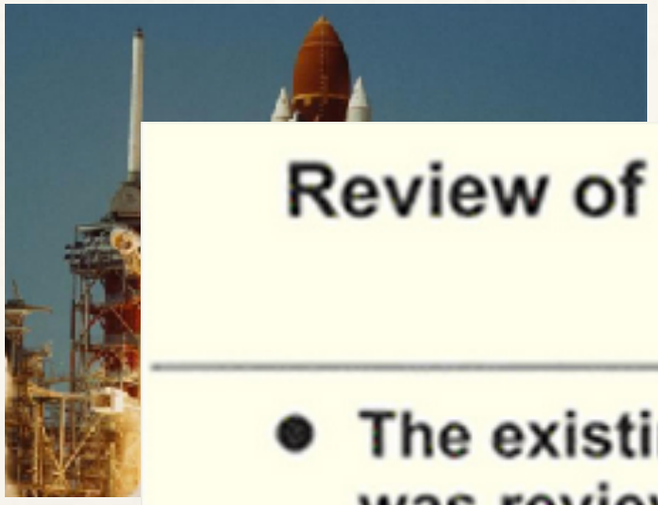
Diagram of the causes of Mortality in the Army of the East

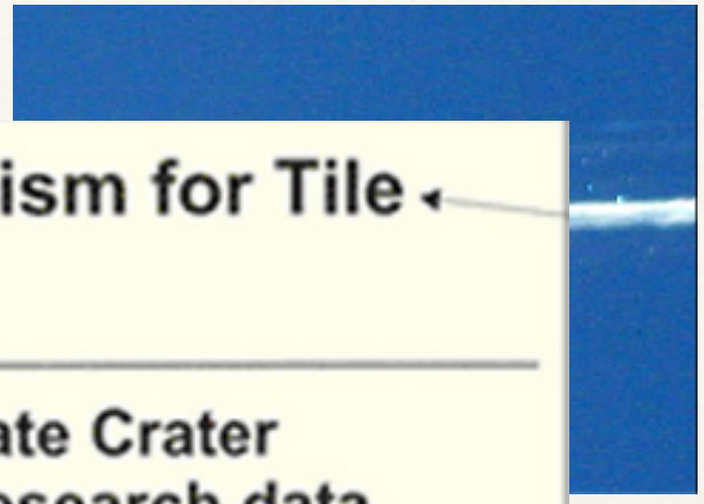


Preventable disease

Wounds

Other causes





Review of Test Data Indicates Conservatism for Tile Penetration

- The existing SOFI on tile test data used to create Crater was reviewed along with STS-87 Southwest Research data
  - Crater overpredicted penetration of tile coating significantly
    - Initial penetration to described by normal velocity
      - Varies with volume/mass of projectile (e.g., 200ft/sec for 3cu. In)
    - Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating
      - Test results do show that it is possible at sufficient mass and velocity
    - Conversely, once tile is penetrated SOFI can cause significant damage
      - Minor variations in total energy (above penetration level) can cause significant tile damage
  - Flight condition is significantly outside of test database
    - Volume of ramp is 1920cu in vs 3 cu in for test

BOEING

MAKING BETTER PRESENTATIONS

- General rules of cognition
- Presenting alphanumeric information
- Presenting numerical data

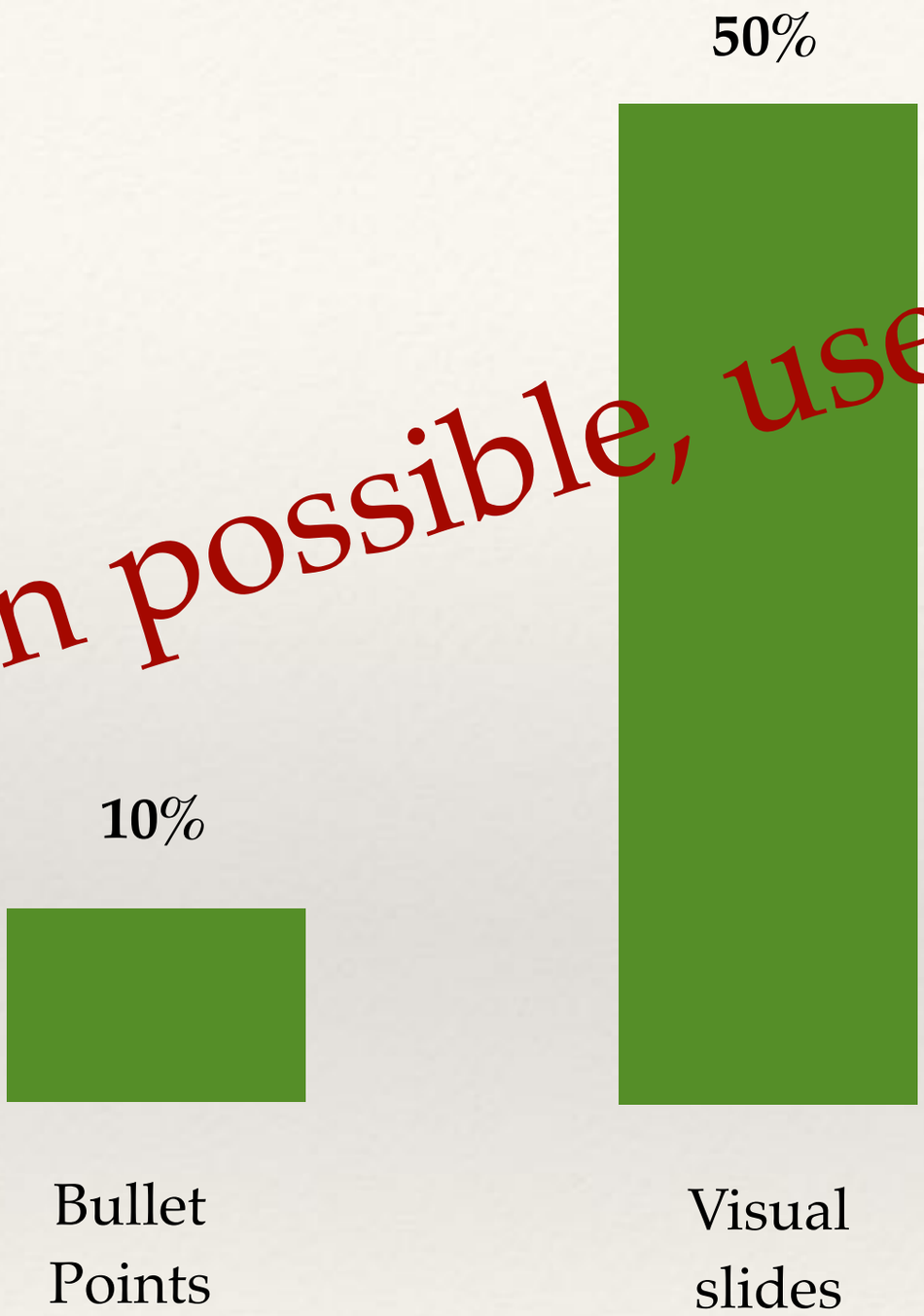
RULES OF COGNITION

- Humans can only accept 7 bits of information at once
- 8 bits, and we reject them all
- 3 is “holy”

“Less is More

We can all remember <u>3 points</u>

Message Retention after 3 Days



So, when possible, use Visuals

Use of Words

- Don't use too many words
  - One sentence of no more then 5-10 words
  - 7 X 7 rule
- We can listen or we can read……but not both!
- Build one point at a time
- Prevents audience from reading ahead
- Always prefer visual aids to words

Use of data

- It is easy to show most complex tables…….

  …….but it is almost never a wise move

- Tables are death to a presentation

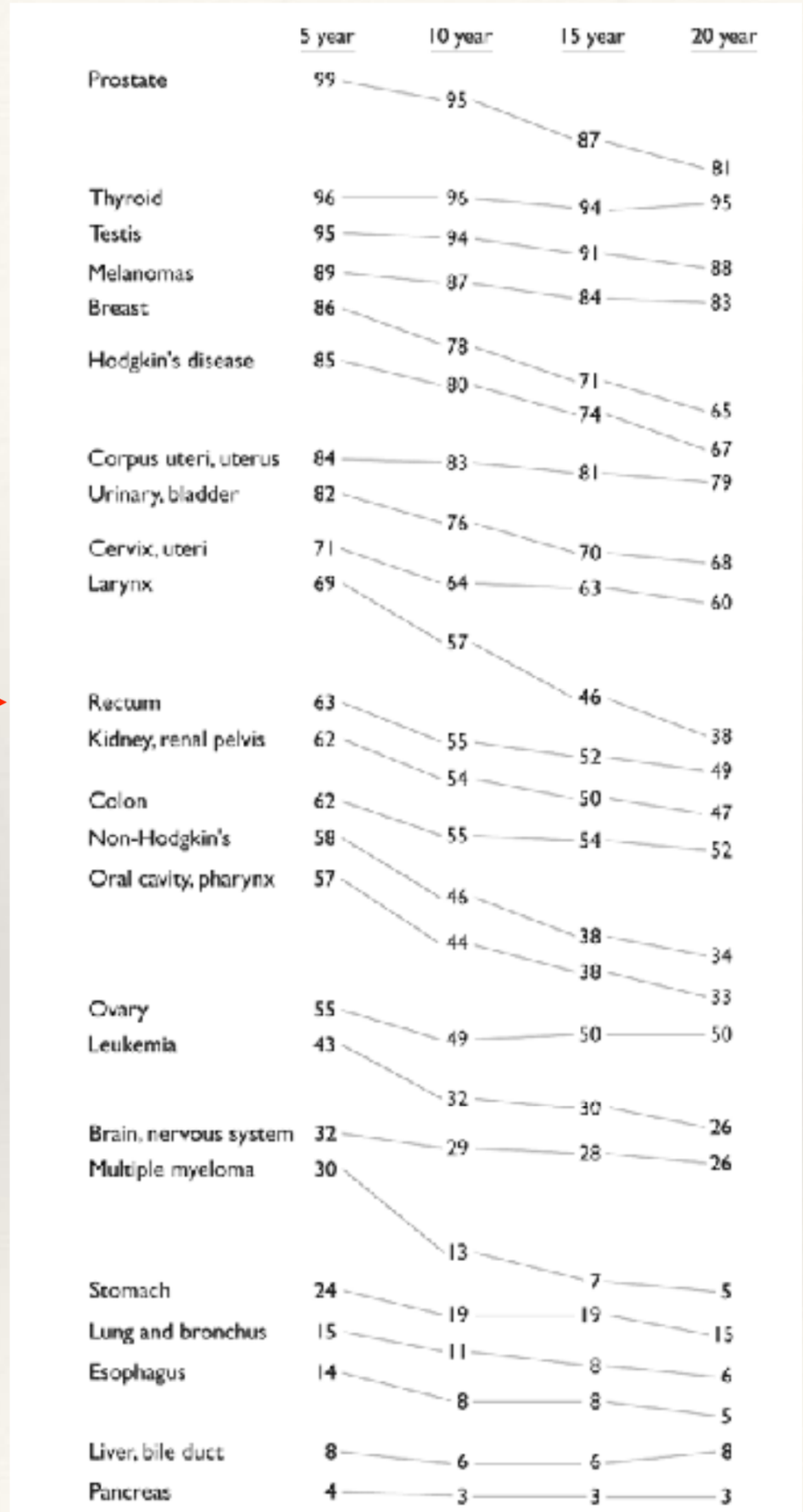
  Better to summarise the key points with graphics

"Long-term survival rates of cancer patients achieved by the end of the 20th century: a period analysis,"

	Relative survival rate, % (SE)			
	5 years	10 years	15 years	20 years
Cancer site				
Oral cavity and pharynx	56·7 (1·3)	44·2 (1·4)	37·5 (1·6)	33·0 (1·8)
Oesophagus	14·2 (1·4)	7·9 (1·3)	7·7 (1·6)	5·4 (2·0)
Stomach	23·8 (1·3)	19·4 (1·4)	19·0 (1·7)	14·9 (1·9)
Colon	61·7 (0·8)	55·4 (1·0)	53·9 (1·2)	52·3 (1·6)
Rectum	62·6 (1·2)	55·2 (1·4)	51·8 (1·8)	49·2 (2·3)
Liver and intrahepatic bile duct	7·5 (1·1)	5·8 (1·2)	6·3 (1·5)	7·6 (2·0)
Pancreas	4·0 (0·5)	3·0 (0·5)	2·7 (0·6)	2·7 (0·8)
Larynx	68·8 (2·1)	56·7 (2·5)	45·8 (2·8)	37·8 (3·1)
Lung and bronchus	15·0 (0·4)	10·6 (0·4)	8·1 (0·4)	6·5 (0·4)
Melanomas	89·0 (0·8)	86·7 (1·1)	83·5 (1·5)	82·8 (1·9)
Breast	86·4 (0·4)	78·3 (0·6)	71·3 (0·7)	65·0 (1·0)
Cervix uteri	70·5 (1·6)	64·1 (1·8)	62·8 (2·1)	60·0 (2·4)
Corpus uteri and uterus, NOS	84·3 (1·0)	83·2 (1·3)	80·8 (1·7)	79·2 (2·0)
Ovary	55·0 (1·3)	49·3 (1·6)	49·9 (1·9)	49·6 (2·4)
Prostate	98·8 (0·4)	95·2 (0·9)	87·1 (1·7)	81·1 (3·0)
Testis	94·7 (1·1)	94·0 (1·3)	91·1 (1·8)	88·2 (2·3)
Urinary bladder	82·1 (1·0)	76·2 (1·4)	70·3 (1·9)	67·9 (2·4)
Kidney and renal pelvis	61·8 (1·3)	54·4 (1·6)	49·8 (2·0)	47·3 (2·6)
Brain and other nervous system	32·0 (1·4)	29·2 (1·5)	27·6 (1·6)	26·1 (1·9)
Thyroid	96·0 (0·8)	95·8 (1·2)	94·0 (1·6)	95·4 (2·1)
Hodgkin's disease	85·1 (1·7)	79·8 (2·0)	73·8 (2·4)	67·1 (2·8)
Non-Hodgkin lymphomas	57·8 (1·0)	46·3 (1·2)	38·3 (1·4)	34·3 (1·7)
Multiple myeloma	29·5 (1·6)	12·7 (1·5)	7·0 (1·3)	4·8 (1·5)
Leukaemias	42·5 (1·2)	32·4 (1·3)	29·7 (1·5)	26·2 (1·7)

Rates derived from SEER 1973–98 database (both sexes, all ethnic groups).[12]
NOS=not otherwise specified.

Table 4: **Most recent period estimates of relative survival rates, by cancer site**



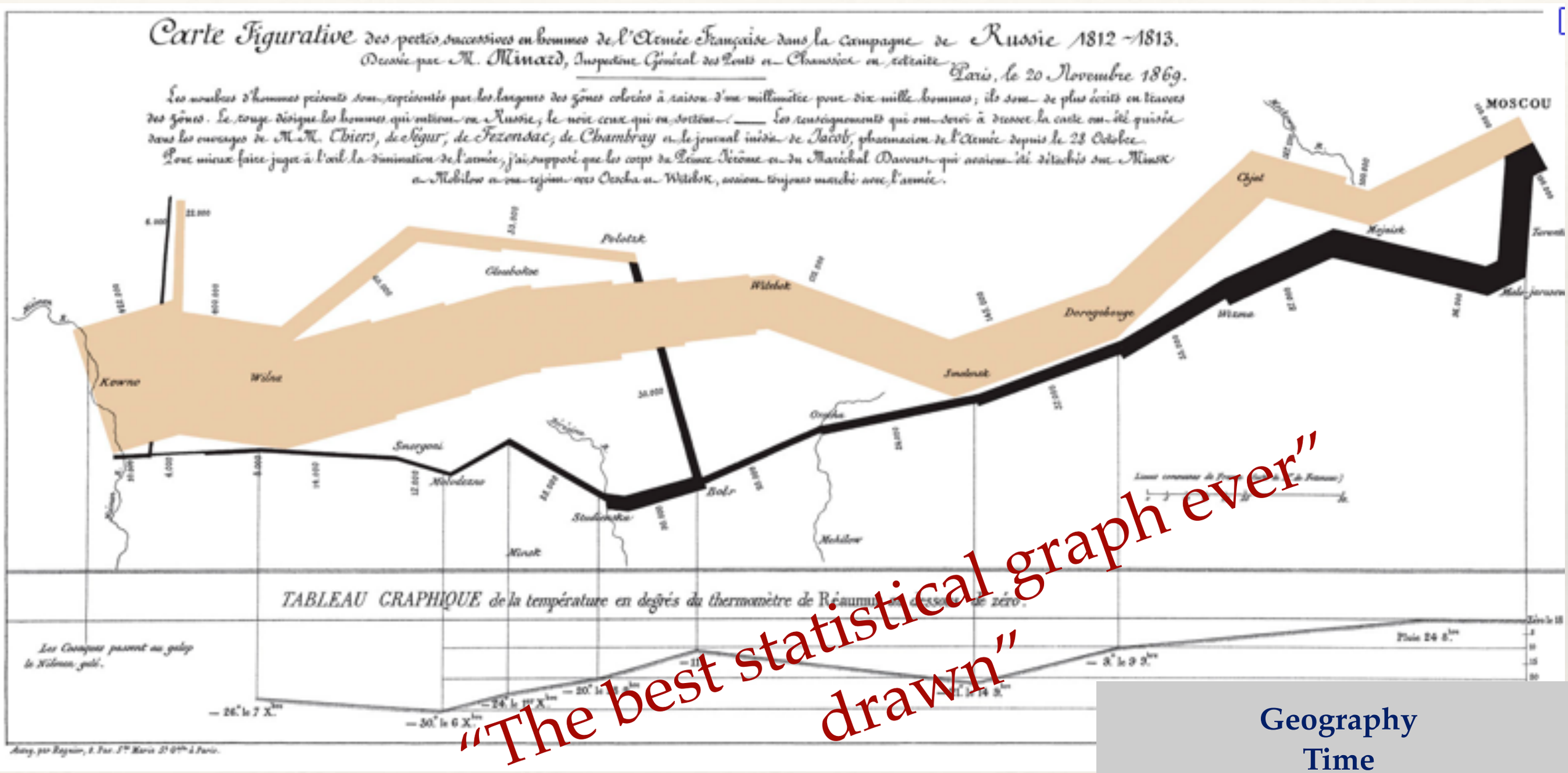
The Lancet, 360 (October 12, 2002), 1131-1135

Napoleon's Invasion of Russia

Places	Soldiers	Temperature	Date
Niemen River	422,000		18 June 1812
Wilna	400.000		
Smorgoni	350.000		
Moloderno	330.000		
Glouboke	240.000		
Polotzk	210.000		
Wilebsk	175.000		
Smolensk	145.000		
Dorogobouge	133.000		
Chjat	127.000		
Moskowa River	100.000		
Mojaisk	100.000		
Moscow	100.000	0	September 1812
Tarantino	100,000	0	24 October 1812
Malo-jarosewli	96.000	0	
Wizma	87.000	-5	
Dorogobouge	48.000	-9	9 November 1812
Smolensk	29.000	-21	14 November 1812
Orscha	24,000	--17	
Botr	50.000	-11	28 November 1812
Stuilienska	50,000	-20	
Berezina River	26,000	-20	
Minsk	22,000	-24	1 December 1812
Moloderno	12,000	-30	6 December 1812
Smorgoni	12,000	-26	
Wilna	8,000	-26	7 December 1812
Niemen River	10,000		1813

Losses of the French Army in the Russian Campaign 1812-1813

by Charles Minard (1869)



"The best statistical graph ever" drawn"

1 mm=10,000 men

Geography
Time
Temperature
Course and Direction of army's movement
Number of troops

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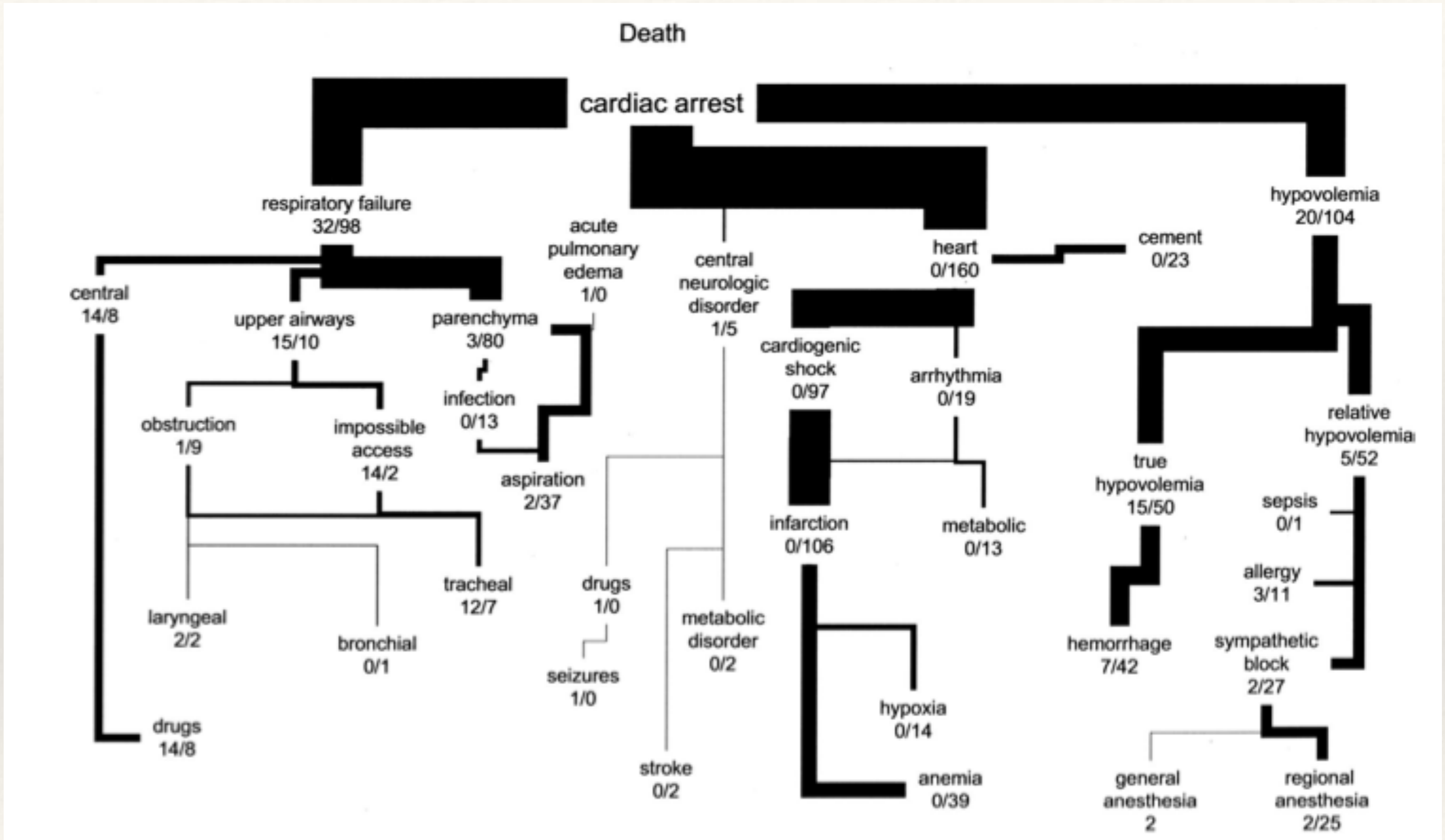
Damaging Events Associated with Death and Permanent Brain Damage, 1986–2000 (n = 1,411)



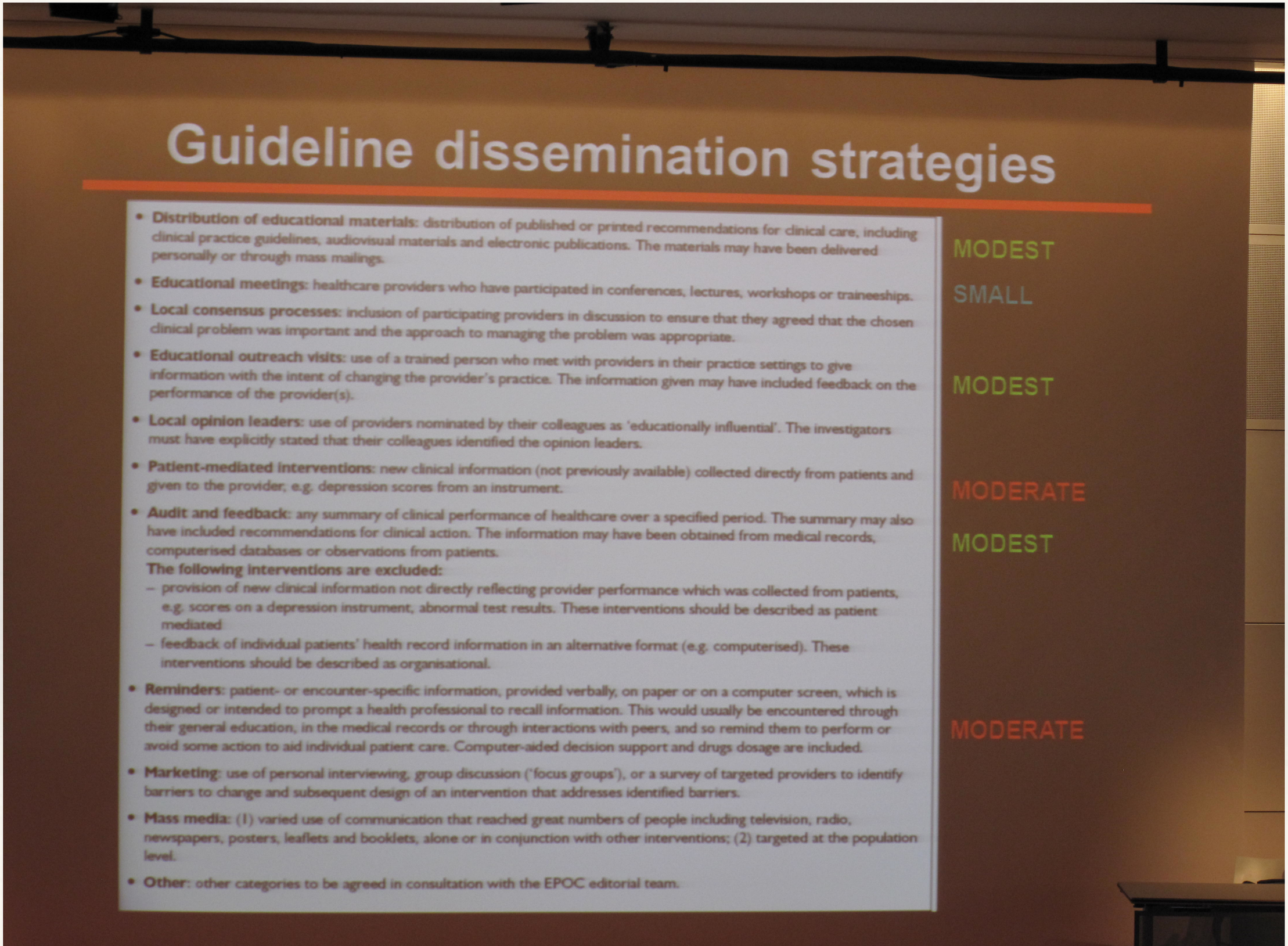
Anesthesiology, V 105, No 6, Dec 2006

USEFUL TIPS

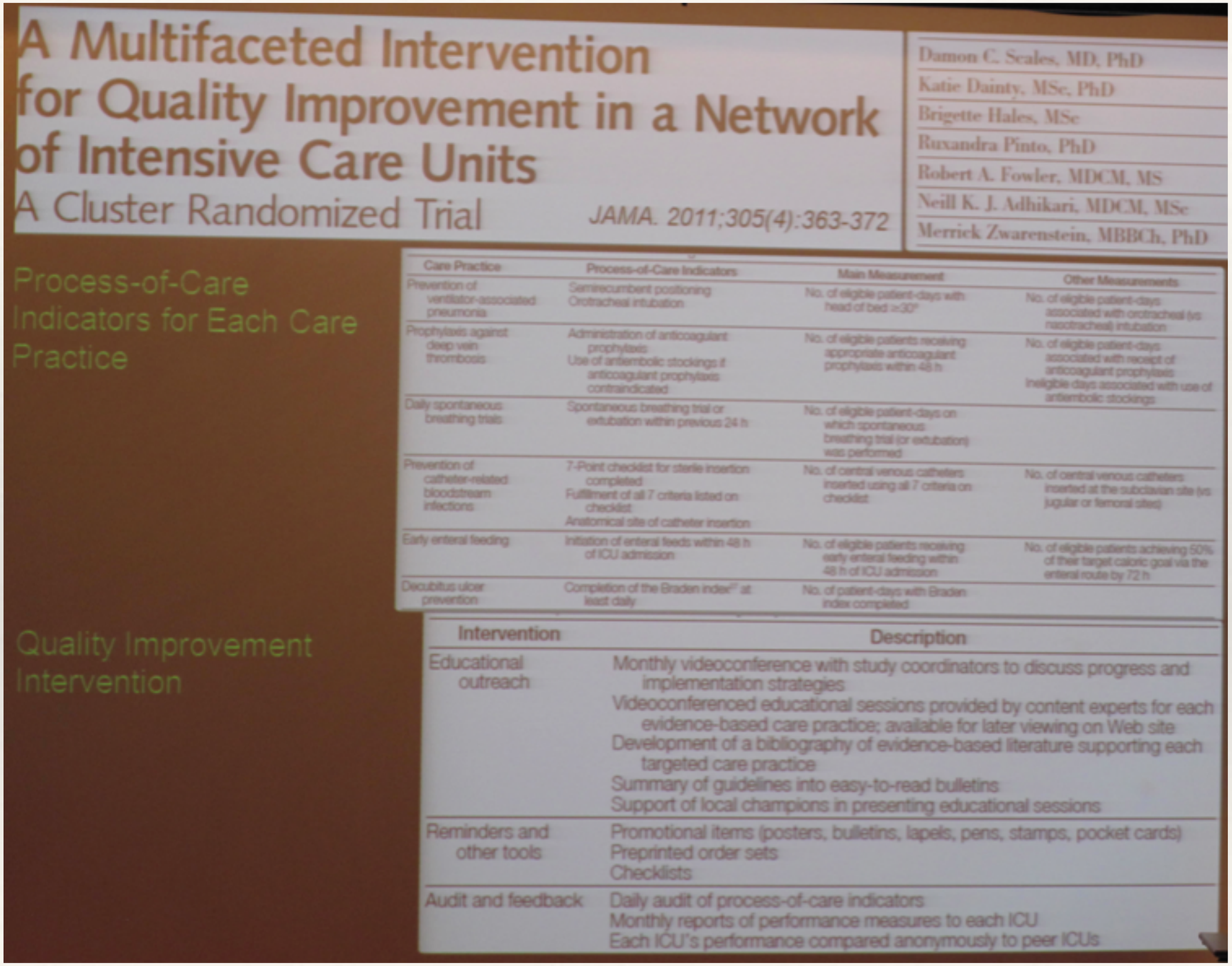
- 1-2 slides per minute
- Use 1 idea per slide
- Avoid clutter!
  - Logos, small print, multiple charts or graphs
- No unnecessary animation

How not to present……

AWFUL SLIDE


Guideline dissemination strategies
• Distribution of educational materials: distribution of published or printed recommendations for clinical care, including clinical practice guidelines, audiovisual materials and electronic publications. The materials may have been delivered personally or through mass mailings.
• Educational meetings: healthcare providers who have participated in conferences, lectures, workshops or traineeships.
• Local consensus processes: inclusion of participating providers in discussion to ensure that they agreed that the chosen clinical problem was important and the approach to managing the problem was appropriate.
• Educational outreach visits: use of a trained person who met with providers in their practice settings to give information with the intent of changing the provider's practice. The information given may have included feedback on the performance of the provider(s).
• Local opinion leaders: use of providers nominated by their colleagues as 'educationally influential'. The investigators must have explicitly stated that their colleagues identified the opinion leaders.
• Patient-mediated interventions: new clinical information (not previously available) collected directly from patients and given to the provider, e.g. depression scores from an instrument.
• Audit and feedback: any summary of clinical performance of healthcare over a specified period. The summary may also have included recommendations for clinical action. The information may have been obtained from medical records, computerised databases or observations from patients.
The following interventions are excluded:
– provision of new clinical information not directly reflecting provider performance which was collected from patients, e.g. scores on a depression instrument, abnormal test results. These interventions should be described as patient mediated
– feedback of individual patients' health record information in an alternative format (e.g. computerised). These interventions should be described as organisational.
• Reminders: patient- or encounter-specific information, provided verbally, on paper or on a computer screen, which is designed or intended to prompt a health professional to recall information. This would usually be encountered through their general education, in the medical records or through interactions with peers, and so remind them to perform or avoid some action to aid individual patient care. Computer-aided decision support and drugs dosage are included.
• Marketing: use of personal interviewing, group discussion ('focus groups'), or a survey of targeted providers to identify barriers to change and subsequent design of an intervention that addresses identified barriers.
• Mass media: (1) varied use of communication that reached great numbers of people including television, radio, newspapers, posters, leaflets and booklets, alone or in conjunction with other interventions; (2) targeted at the population level.
• Other: other categories to be agreed in consultation with the EPOC editorial team.
MODEST
SMALL
MODEST
MODERATE
MODEST
MODERATE

AWFUL SLIDE



A Multifaceted Intervention for Quality Improvement in a Network of Intensive Care Units

A Cluster Randomized Trial

JAMA. 2011;305(4):363-372

Damon C. Scales, MD, PhD
Katie Dainty, MSc, PhD
Brigette Hales, MSc
Ruxandra Pinto, PhD
Robert A. Fowler, MDCM, MS
Neill K. J. Adhikari, MDCM, MSc
Merrick Zwarenstein, MBBCh, PhD

Process-of-Care Indicators for Each Care Practice

Care Practice	Process-of-Care Indicators	Main Measurement	Other Measurements
Prevention of ventilator-associated pneumonia	Semirecumbent positioning Orotracheal intubation	No. of eligible patient-days with head of bed ≥30°	No. of eligible patient-days associated with orotracheal (vs nasotracheal) intubation
Prophylaxis against deep vein thrombosis	Administration of anticoagulant prophylaxis Use of antiembolic stockings if anticoagulant prophylaxis contraindicated	No. of eligible patients receiving appropriate anticoagulant prophylaxis within 48 h	No. of eligible patient-days associated with receipt of anticoagulant prophylaxis Ineligible days associated with use of antiembolic stockings
Daily spontaneous breathing trials	Spontaneous breathing trial or extubation within previous 24 h	No. of eligible patient-days on which spontaneous breathing trial (or extubation) was performed	
Prevention of catheter-related bloodstream infections	7-Point checklist for sterile insertion completed Fulfillment of all 7 criteria listed on checklist Anatomical site of catheter insertion	No. of central venous catheters inserted using all 7 criteria on checklist	No. of central venous catheters inserted at the subclavian site (vs jugular or femoral sites)
Early enteral feeding	Initiation of enteral feeds within 48 h of ICU admission	No. of eligible patients receiving early enteral feeding within 48 h of ICU admission	No. of eligible patients achieving 50% of their target caloric goal via the enteral route by 72 h
Decubitus ulcer prevention	Completion of the Braden index[27] at least daily	No. of patient-days with Braden index completed	

Quality Improvement Intervention

Intervention	Description
Educational outreach	Monthly videoconference with study coordinators to discuss progress and implementation strategies Videoconferenced educational sessions provided by content experts for each evidence-based care practice; available for later viewing on Web site Development of a bibliography of evidence-based literature supporting each targeted care practice Summary of guidelines into easy-to-read bulletins Support of local champions in presenting educational sessions
Reminders and other tools	Promotional items (posters, bulletins, lapels, pens, stamps, pocket cards) Preprinted order sets Checklists
Audit and feedback	Daily audit of process-of-care indicators Monthly reports of performance measures to each ICU Each ICU's performance compared anonymously to peer ICUs

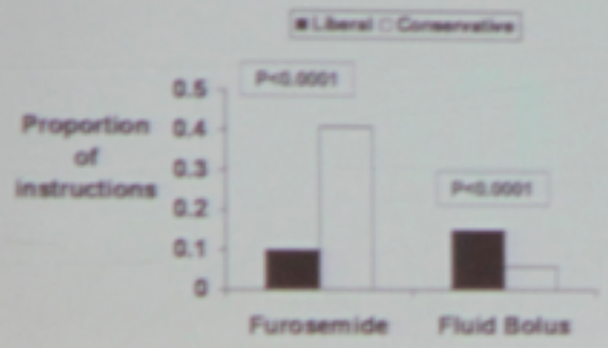
AWFUL SLIDE

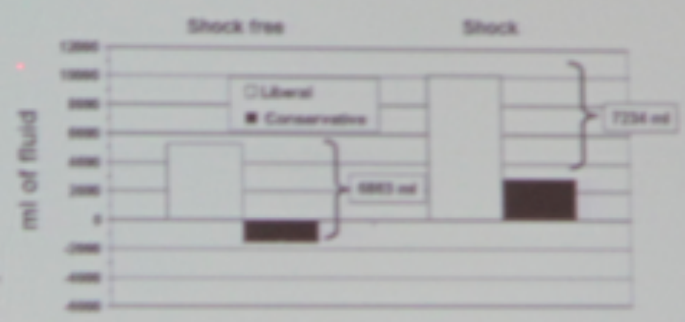
1. Fluid Accumulation is associated with adverse outcomes

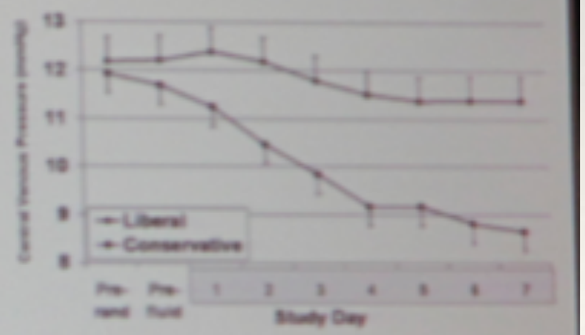
Fluid Balance, Diuretic Use, and Mortality in Acute Kidney Injury data from the Fluid and Catheter Treatment Trial. *Clin J Am Soc Nephrol 6: ●●●–●●●, 2011.* (FACTT),

Table 3. Relative odds of death by FACTT study day 60 associated with average daily fluid balance and furosemide dose following AKI

	Fluid Balance (Post-AKI, in Mean L/Day)		Furosemide Dose (Post-AKI, in Mean 100 mg/Day)	
Adjustment	OR (95% CI)	*P*	OR (95% CI)	*P*
None (univariate)	1.73 (1.47 to 2.03)	<0.001	0.38 (0.23 to 0.63)	<0.001
Full model[a]	1.61 (1.29 to 2.00)	<0.001	0.54 (0.31 to 0.94)	0.028
+Post-AKI fluid balance			0.73 (0.42 to 1.26)	0.255
+Post-AKI furosemide dose	1.56 (1.25 to 1.95)	<0.001		
Final model[b]	1.61 (1.32 to 1.96)	<0.001	0.48 (0.28 to 0.81)	0.007







Schrier R : *Clin J Am Soc Nephrol 5: 733–739, 2010.*

UC San Diego
School of Medicine

AWFUL SLIDE

Risk Factors for AKI in the ICU

Risk factor	Definition
Chronic kidney disease (CKD)	Creatinine >2.0 mg/dL in men, or >1.8 mg/dL in women
Advanced age	>70 years
Atherosclerotic cardiovascular disease (ASCVD)	History of angina pectoris, CAD, myocardial infarction, or peripheral vascular disease
Diabetes mellitus (DM)	History of diabetes mellitus
Congestive heart failure (CHF)	New York Heart Association Grade III or IV heart failure
History of hypertension (HTN)	History of hypertension or patients receiving chronic hypertensive medications
Hyperbilirubinemia	Serum total bilirubin >2.0 mg/dL
Morbid obesity	BMI >30.0 kg/m^2
Cancer	Active cancer (patients not in remission and without surgical cure)
HIV infection	History of testing positive for HIV antibodies
History of cerebrovascular accident (CVA)	History of any type of CVA
SIRS/Sepsis	SIRS: 2 of these findings: respiratory rate >20/min, pulse >90/min, temperature >38° C or <36° C, white blood cell count >12,000/mL or <4000/mL; or sepsis: SIRS with suspected or proven microbial origin
Hypotension	MAP <70 mm Hg or any vasopressor except dopamine dosed at less than 5.0 μg/kg/minute
Volume depletion	Central venous pressure (CVP) <6 cm of H_2O or pulmonary capillary wedge pressure (PCWP) <8 cm of H_2O
High-risk surgery	Cardiac surgery (valvular or coronary artery bypass grafting), aortic surgery, hepatobiliary surgery (excluding cholecystectomy)
Nephrotoxin exposure	Amphotericin B, aminoglycosides, nonsteroidal anti-inflammatory drugs (NSAIDs), excluding aspirin, radiocontrast given within 24 hours

Chawla, LS et al. Kidney Int 2005; 68: 2274–2280

MAKE IT FUN, NOT PAINFUL

"We can give you enough medication to alleviate the pain but not enough to make it fun."

Conclusion

- Presentations ≠ deep sedation
- Use words sparingly
  - Build, Build, Build

"Less is More"

- The media should **enhance** the presentation, **not be** the presentation
- Don't read - most of us are literate
- Graphic representation of data
- Keep it clean and simple

???

Download :

http://www.jvsmedicscorner.com

(Mallory/Everest2013)

Thanks for listening