WHICH HOSPITAL COMPLICATIONS SHOULD BE USED TO EVALUATE THE QUALITY OF ADULT TRAUMA CARE? AN EXPERT CONSENSUS STUDY

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Background

- 37% of patients hospitalized for injury
- Increased mortality, morbidity and resource use
- Influence functional capacity, quality of life, and patient satisfaction
- Associated with poor quality of care (WHO)
- No consensus on the complications that should be used to evaluate the quality of trauma care

Moore L, Stelfox HT, Turgeon AF. Complication rates as a trauma care performance indicator: a systematic review. Critical Care. 2012 Oct 16

METHODS

Study design and population

- Three-round web-based Delphi survey
- 19 experts with clinical and geographical diversity
- Identified through key international trauma associations

Working definition

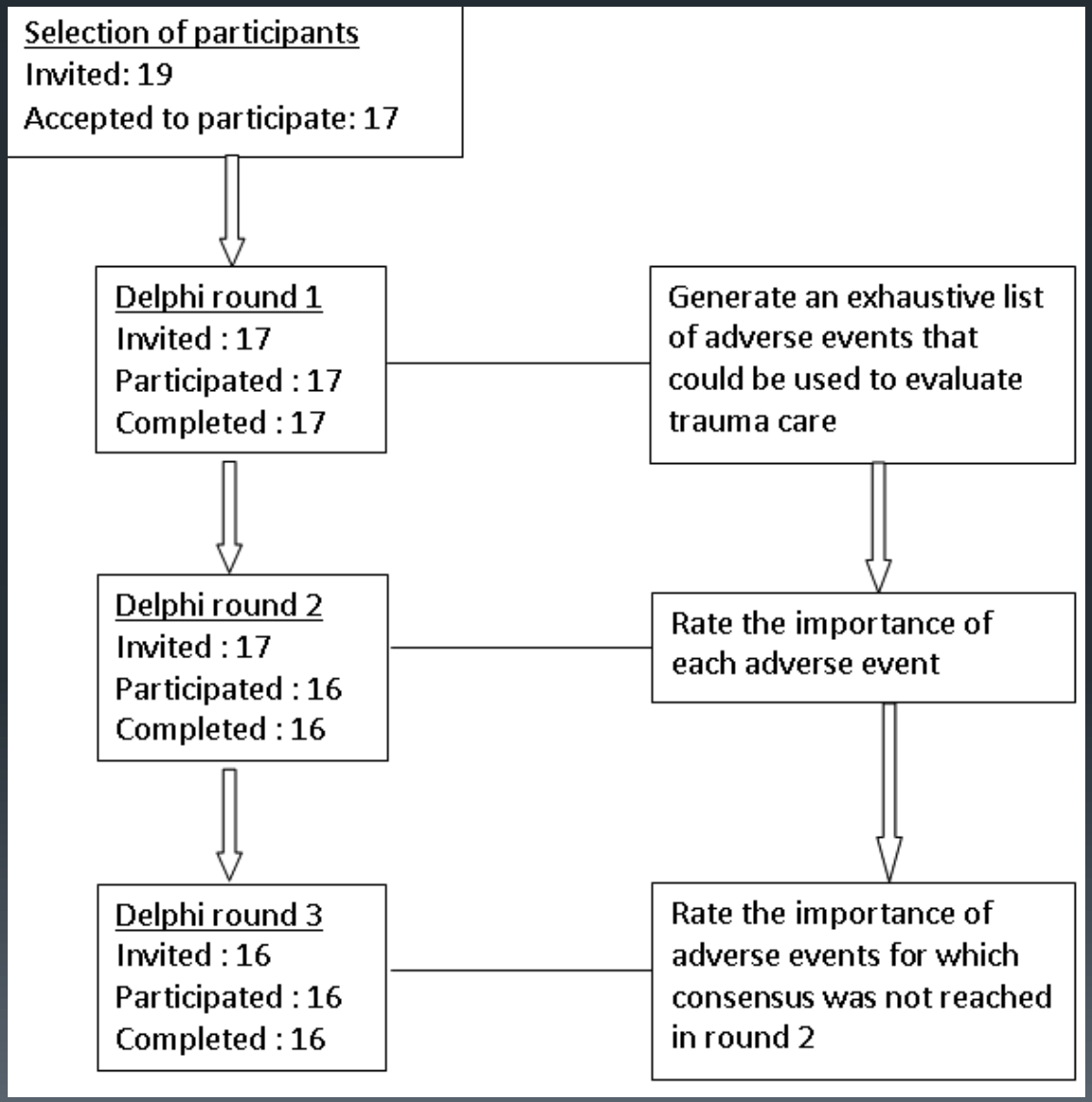
- *a condition, disease, or injury that occurs during the acute care hospital stay which potentially has some negative impact on patient outcome (mortality, disability, prolonged hospitalisation) and results or may result from the healthcare process (actions or inactions)*

WHO guidelines for adverse event reporting and learning systems. 2005. Available at: http://www.who.int/patientsafety/events/05/Reporting_Guidelines.pdf.

Adverse events in Canadian hospitals. CIHI 2012. Available at: http://www.cihi.ca/CIHI-ext-portal/internet/en/document/health+system+performance/quality+of+care+and+outcomes/patient+safety/adevents_methodology.

Walshe K. Adverse events in health care: issues in measurement. *Quality in health care : QHC* 2000;9:47-52.

Delphi process



Analysis of ratings

- Complication selected if median score was ≥4 and no disagreement
- Disagreement: ≥5/17 ratings in both extremities of the 5-point scale (1,2 or 4,5)
- Sensitivity analyses on medical specialty

RESULTS

Participant demographics

Characteristic		N(%)
Medical specialty	Surgery	9 (53)
	Critical care	8(47)
	Orthopedic surgery	1 (6)
	Emergency medicine	4 (24)
	Internal medicine	2 (12)
	Nursing	2 (12)
Years in practice	< 6	0 (0)
	6-10	3 (18)
	11-20	4 (24)
	>20	10 (59)
Geographic location	Canada	14(82)
	USA	2(12)
	Australia	1(6)

Selection of complications

COMPLICATION	Round 1 Suggested by n (%) participants	Round 2 Median score* (min-max)	Round 3 Median score* (min-max)	Verdict
PULMONARY				
Acute respiratory distress syndrome (ARDS)	3 (18)	4 (1-5)	-	Retained
Aspiration pneumonia	1 (6)	4 (1-5)	4 (2-5)	Retained
Acute respiratory failure/distress	0	4 (1-5)	-	Retained
Atelectasis	1 (6)	2 (1-5)	-	Rejected
Empyema	0	3 (2-4)	4 (1-5)	Disagree
Fat embolism	0	3 (1-5)	3 (1-5)	Uncertain
Hemothorax/pneumothorax	7 (41)	3 (1-4)	3 (1-5)	Uncertain
Hospital-acquired pneumonia	8 (47)	4 (3-5)	-	Retained
Pleural effusion	0	2 (1-3)	-	Rejected
Pulmonary abscess	0	2 (1-5)	-	Rejected
Pulmonary embolism	11 (65)	4 (2-5)	-	Retained

List of 25 complications

Complication	Perceived data quality in patient files high/very high; n(%)	ICD-10 codes
Pulmonary		
Acute respiratory distress syndrome	10 (67)	J80
Aspiration pneumonia	3 (19)	J69.0
Acute respiratory failure/distress	5 (33)	J96.0, J69.9
Hospital-acquired pneumonia	9 (60)	J13-J18, J95.8
Pulmonary embolism	11 (69)	I26, T79.0, T79.1
Cardiac		
Cardiac arrest	13 (87)	I46
Post-operative hemorrhagic shock	9 (60)	R57.1, T81.0
Myocardial infarction	10 (67)	I21, I22
Gastro-intestinal		
Abdominal compartment syndrome	5 (33)	T79.6
Anastomotic leak	9 (56)	K91.8, K91.9
Clostridium difficile colitis	12 (75)	A04.7
Evisceration / dehiscence	11 (73)	T81.3

List of 25 complications

Complication	Perceived data quality in patient files high/very high; n(%)	ICD-10 codes
Hematologic		
Coagulopathy	10 (67)	D68.8, D68.9
Infection		
Central venous catheter-related infection	8 (53)	T82.7
Sepsis / severe sepsis / shock	5 (33)	A22.7, A40-A40, A41, B37.6, R57.2, R65.0, R65.1
Wound infection	9 (60)	T81.4, T84.5-T84.7
Genito-urinary / Renal		
Acute renal failure	13 (87)	N17, N99.0
Musculoskeletal / Integument		
Decubitus ulcers	12 (80)	L89
Extremity compartment syndrome	12 (80)	T79.6
Non-union fracture	10 (62)	M84.0-M84.2
Osteomyelitis	7 (44)	M86
Neurologic		
Stroke	11 (73)	I63-I64

List of 25 complications

Complication	Perceived data quality in patient files high/very high; n(%)	ICD-10 codes
Neurologic		
Stroke	11 (73)	I63-I64
Vascular		
Deep vein thrombosis	8 (57)	I80
Psychiatric		
Delirium	7 (44)	F05
Other		
Death	12 (80)	-

Strengths and limits

- High participation rate
- Good representation of clinical and geographical diversity
- Limits of Delphi technique
- No neurosurgeon
- Data quality: 19 (76%) complications were perceived to have high or very high quality information in patient files by more than 50% of panel members

Conclusions

- List of complications that can be used to evaluate the quality of trauma care using routinely collected data
- Robust consensus process that provides evidence of face and content validity; acceptability; feasibility
- Can be used to develop a QI to benchmark complication rates
- Need to evaluate the predictive validity of complications

Moore L, Lauzier F, Stelfox HT, Turgeon AF, Nathens AB, Emond M, Bourgeois G, Lapointe J, Shemilt M. Complications to evaluate trauma care: an expert consensus study. Jtrauma. In press.

Delphi survey

ASPIRATION PNEUMONIA

Previous results[b]
Systematic review: 18%
Delphi round 1: 6%
Frequency per 10,000: 99

Importance[a]	Quality of information in patient files[a]	Comments
Very high	Very high	
High	High	
Moderate	Moderate	
Low	Low	
Very low	Very low	

ASPIRATION PNEUMONIA

Round 2 results[d]
Median: 3
Verdict: UNDECIDED
Comments: Often missed at admission. More important if it occurs due to neglect.

Previous results[b]
Round 1: 6%
Systematic review: 18%
Frequency per 10,000: 99

Importance[a]: (round 2 vote results)[c]	Quality of information in patient files[a] (round 2 vote results)[c]	Comments (optional)
Very high: (3)	Very high: (1)	
High: (6)	High: (3)	
Moderate*: (2)	Moderate: (6)	
Low: (4)	Low*: (4)	
Very low: (1)	Very low: (1)	