

Setting up a trauma registry at your hospital: requirements, expenses, benefits



3rd Swiss Trauma and Resuscitation Day, 28th February 2014

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Goals

- Everyone understands the **advantages and pitfalls** of a registry
- You get informed about the **Swiss Trauma Registry**
- You get an additional **benefit for your own clinic**



Do we need a trauma registry?



What is a registry?

- Standardised way to collect patient data
- Data pool from several hospitals
- Benchmark for the evaluation of single or multiple center results

There are registries for different specialities, e.g. cancer registries, heart disease registries or intensive care registries...



What are pros and cons?

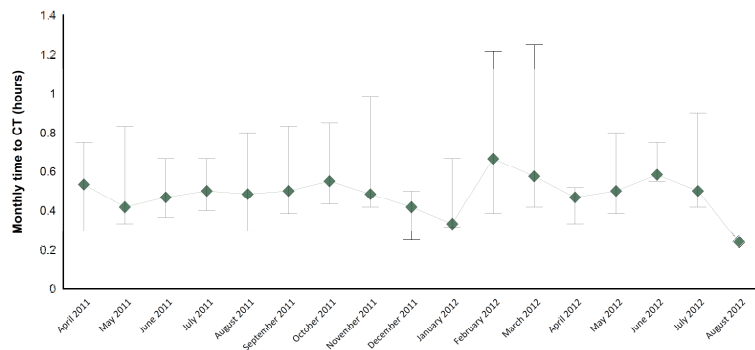
Experiences with implementing the UK trauma registry TARN at Inselspital Bern



Comparison with standardised variables (e.g. injury severity or time to CT)



University Hospital BERN
Median time to CT scanning per month- all patients
Direct admissions with arrival dates between 31 April 2011 and 31 March 2012 (excluding patients taken immediately to theatre)
Vertical bars represent the interquartile range & are capped at 24 hours.



Time to CT for head injury patients: Bern vs TARN

Category	n	n with CT recorded (%)	n with CT date and time recorded (%)	Median Time to CT (hours)	Interquartile Range (hours)	CTed within 2 hours of arrival
Isolated AIS 3+ Head Injury	42	41 (97.6%) 96.1%	41 (100%) 95.4%	0.5 1.0	0.3 - 0.8 0.9 - 1.7	1
Non-Isolated AIS 3+ Head Injury	115	108 (93.9%) 51.2%	107 (98.1%) 94.5%	0.5 1.0	0.4 - 0.7 0.3 - 1.0	2
Severe Head Injury	77	72 (93.5%) 91.7%	72 (100%) 95.8%	0.5 0.8	0.4 - 0.7 0.3 - 1.4	3
NICE Head Injury Guidelines	145	139 (95.9%) 85.2%	138 (99.3%) 95.3%	0.5 1.1	0.4 - 0.7 0.5 - 2	3

■ University Hospital BERN
■ TARN

Follow-up of steps in trauma care and identification of weaknesses



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Case 1

28 (male)
winter sports injury

Probability of Survival AIS Injury Descriptions

GCS:	3	Cerebrum diffuse axonal injury, involving corpus callosum
ISS:	54	Cerebrum haematoma, subdural, NFS
Age:	28	Thoracic vertebra NFS fracture
Sex:	Male	Thoracic vertebra NFS fracture
Submission PS:	15.7%	Cervical vertebra body fracture NFS
Case PS:	15.7%	Pelvic/Acetabulum fracture NFS
		Scapula fracture
		Scapula fracture
		Fracture two ribs
		Tension pneumothorax
		Lung contusion, bilateral
		Kidney contusion (haematoma), NFS
		Heart (myocardium) contusion (haematoma), NFS

Patient Details	Incident	On Admission	Outcome
Submission No: 80110000073	Mechanism: Fall more than 2m	Admission Date: 23/1/2009 Admission Time: 16:30	Status: Dead Case:
Case No: 80110000073	Intent: Sport	Trauma Team: Yes	Transferred: No (Transfer)
Date: 23/01/2009	Time:	Length of Stay: 5 days	
		Operation/Procedure: Yes	

Suggested case for review

Scientific publications



The association between admission systolic blood pressure and mortality in significant traumatic brain injury: A multi-centre cohort study

Gordon Fuller^{a,1,*}, Rebecca M. Hasler^{b,1}, Nicole Mealing^c, Thomas Lawrence^d, Maralyn Woodford^e, Peter Juni^f, Fiona Lecky^g

^a Trauma Audit and Research Network, Health Sciences Research Group, Manchester, Old Road, Salford M6 8HD, UK
^b Department of Emergency Medicine, University Hospital Bern, Freyburgg, 3010
^c Institute of Social and Preventive Medicine (ISPM), University of Bern, Finkenhubel
^d School of Health and Related Research, University of Sheffield, Regent Court, 30

Epidemiology and predictors of cervical spine injury in adult major trauma patients: A multicenter cohort study

Rebecca M. Hasler, MD, Aristomenis K. Exadaktylos, MD, Omar Bouamra, MSc, PhD, Lorin M. Benneker, MD, Mike Clancy, MD, Robert Sieber, MD, Heinz Zimmermann, MD, and Fiona Lecky, MD, PhD, Salford, United Kingdom

Systolic blood pressure below 110 mmHg is associated with increased mortality in penetrating major trauma patients: Multicentre

Rebecca M. Hasler^{a,d,e,*}, Eveline Nüesch^{b,c,e}, Peter Juni^{b,c}, Omar Bouamra^f, Aristomenis K. Exadaktylos^g, Fiona Lecky^h

^a Trauma Audit and Research Network (TARN), Health Sciences Research Group, School of Community Based Medicine, Manchester, Salford Royal Hospital, Street Lane, Salford M6 8HD, UK
^b Institute of Social and Preventive Medicine (ISPM), University of Bern, Finkenhubelweg 11, 3012 Bern, Switzerland
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^d Department of Emergency Medicine, University Hospital Bern, Freyburgg, 3010 Bern, Switzerland

First results from a Swiss level I trauma centre participating in the UK Trauma Audit and Research Network (TARN): prospective cohort study

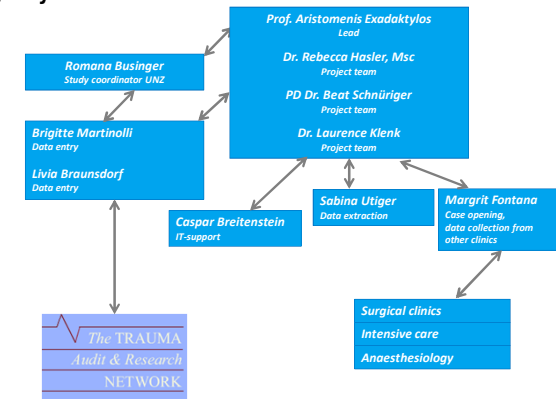
Rebecca Maria Hasler^a, David Srivastava^b, Emin Aghaviv^c, Martin Johann Keel^d, Aristomenis Konstantinos Exadaktylos^e, Beat Schnüriger^f

^a Department of Emergency Medicine, Inselspital, Bern University Hospital, Switzerland
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^c Department of Orthopaedic Surgery, Inselspital, Bern University Hospital, Switzerland
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Setting up a trauma registry team



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Costs for data collection and annual registry retention fees



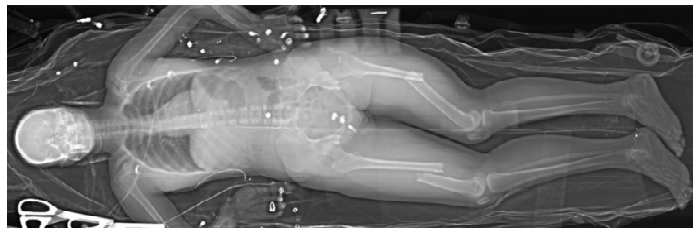
Around 70'000 Swiss francs per year



Consider inclusion criteria



How much trauma do we need?



2. Standards of practice

2.1 INCLUSION CRITERIA: REVISED JUNE 2009


The decision to include a patient should be based on the following points:

- A. ALL TRAUMA PATIENTS IRRESPECTIVE OF AGE
- B. WHO FULFILL THE FOLLOWING LENGTH OF STAY CRITERIA

Direct admissions	Patients transferred to
Trauma admissions whose length of stay is 72 hours or more OR Trauma patients admitted to a high dependency area regardless of length of stay OR Deaths of trauma patients occurring in the hospital including the Emergency Department (even if the cause of death is unclear) OR Trauma patients transferred to other hospital for specialist care or for an ICU/HDU bed.	Trauma patients transferred into your hospital for specialist care whose combined hospital stay at both sites is 72 hours or more OR Trauma admissions to a ICU/HDU area regardless of length of stay OR Trauma patients who die from their injuries (even if the cause of death is unclear) OR Patients transferred in for rehabilitation only do not need to be submitted to TABN.


C. AND WHOSE ISOLATED INJURIES MEET THE FOLLOWING CRITERIA
(Just 0/9 injuries are highlighted in red)

Body Region OR SPECIFIC INJURY	INCLUDED in tabulation (EXCEPT WHERE SPECIFIED)	EXCLUDED in tabulation (EXCEPT WHERE SPECIFIED)
HEAD	All brain or skull injuries	LOC unless accompanied by brain injury or skull/face fracture
THORAX	All Patients	None
ABDOMEN	All Patients	None
SPINE	Cord injury, fracture, dislocation or nerve root injury.	Spinal strain or sprain.
FACE	Fractures documented as Significant displacement, open, compound or comminuted. All LeFort fractures. All panfacial fractures.	Fractures documented as simple or stable.
FEMORAL FRACTURE	All Orbital Blowout fractures All (Open or Closed) up to 64 years old	Neck of femur, Intertrochanteric, Subtrochanteric or Greater Trochanteric Femur fractures > 65 years.
FOOT OR HAND, JOINT OR NONE	Crush or amputation only.	Any fractures &/or dislocations, even if Open &/or multiple.



INSELSPITAL
UNIVERSITÄTSSPITAL BERN
HOPITAL UNIVERSITAIRE DE BERNE
BERN UNIVERSITY HOSPITAL

Universitäres Notfallzentrum
Direktor und Chefarzt
Prof. Dr. med. Aristomenis Exadaktylos

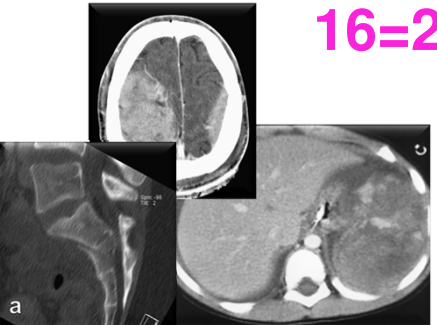


Schockraumprotokoll


Status / Interventionen Präklinik (bei Erstbeurteilung durch RD = *)					
Unfalldatum	..._20...	Unfalluhrzeit	...: ... Uhr	Entreffen RD im Schockraum	...: ... Uhr
Airway	Friet*	Obstruiert*	Intubation	Larynxmaske	Cricoi-/Tracheotomie
Breathing	SO ₂ ... %	O ₂ -Gabe	AF ... min	Dyspnoe*	Apnoe*
	Ventilation	CPAP	Thoraxdrainage	links	rechts
	Thorax	BD* /	HP* ... min	Volumengabe	mit Krist. ... ml Koll.
Circulation	Vasopressoren		Weitere Medikamente		
	Abdomen*			Becken*	
	Beckengurt	Extremitätenspirite	CPR		
Disability	GCS* (vor Intub.)	Punkte	Pupillen		
	Schädel			Spineboard	Vakuummatratze
	Log Roll			Opiate	BZ
	Andere			Straße	Öffentlicher Ort
Environment	Zuhause	Industrie	Büro		
	Wasser	Auß dem Land			
	Traumaart	stumpf penetrierend	Einklemmung	Ja	Temp. ...
			Nein		

Status / Interventionen Notfallzentrum										
Airway	frei	obstruiert	intubiert	Larynxmaske	cricoi-/tracheotomiert					
	Intubation im UNZ	Cricoi-/Tracheotomie im UNZ		Exubation						
	HWS		Halskragen	Entfernung Halskragen						
Breathing	SO ₂ %	O ₂ -Gabe	AF ... min	Dyspnoe	Apnoe					
	Ventilation	CPAP	Thoraxdrainage	links	rechts					
	Thorax	BU ...	HP ... min	Volumengabe	mit Krist. ... ml Koll.					
					Blut ... EK					
	Vasaktiva		Weitere Medikamente							
Circulation	Antikoagulation									
	Abdomen			Becken						
	Beckengurt	Extremitätenspirite	CPR	Wundversorgung	Tetanus Antitoxine					
Disability	GCS ...	A ... V ... M ...	Pupillen							
	Schädelverl.			Andere						
	Log Roll									
	Hämoglobine	... Uhr	Blz	... Uhr	Temp.					
	FAST	... Uhr	LCDOX	... Uhr						
	CT	... Uhr	Kontrastmittel							
Extras:	Schädel	Geburt	FWS	BWS	Extremität	LWS				
	Thorax	Abdomen	Becken							
	Weitere Blutgebung									

Calculation of the ISS



16=25???




Bias

If you study the wrong people...

or get the wrong data from them...

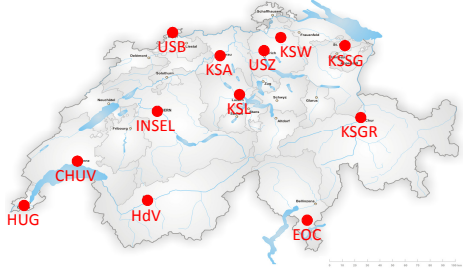
no amount of analysis will turn it right



Swiss Trauma Registry

Conference of Cantonal Health Directors:

- Severe trauma is part of highly specialized medicine (HSM)
- 12 clinics in Switzerland



Project Steps

Consensus conference

↓

Definition of parameters / Selection of benchmark registry for international benchmarking

↓

Detailed project specification

↓

Selection of industry partner

↓

Construction

↓

Testing

↓

Instruction

↓

Application

↓

Maintenance


↓

Development

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Key factors

- Respect the resources of participating hospitals!



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Key factors

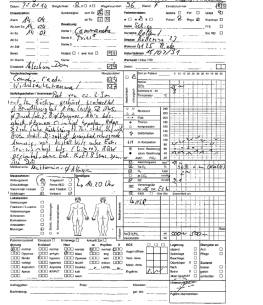
- Include all your patients!



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Key factors

- Look after the documentation!



Mussermann Bernd, * 25.04.1963, am Röthenberg 12, 79610 Rheinfelden

Sehr geehrter Herr Kollege

Vor sachlich Ihnen über den oben genannten Patienten, welcher am 14.11.2011 bis 26.11.2011 bei uns auf der Copaxan Intensivabteilung hospitalisiert war.

Diagnosen:

Polyptrauma am 14.11.11

- Schweres Schädelhirntrauma mittel:
 - isolierter demontierter Schädelknochen rechts
 - Blut in der Interpeduncular-, Zölerne- und im linken Ventrikel
 - isolierter Frontoparietalläsion mit Fraktur des rechten und lateralen Wand des Sinus maxillaris links, Fraktur des Sinus ethmoidalis, dislocierter Innenohrfraktur, Fraktur des Crista galli rechts, Fraktur der Meissner-Gebirgsrinne rechts, Empyem-Cistern, multiple Fraktur Corpora mastoidea paramedian und dislocierte Fraktur Colliculi medianus links.
- Wirbelstraumtrauma mittel:
 - Unvollständiger Fraktur-Abschopfung rechts
 - Taxistop-Fraktur des Dens
 - Lendenwirbelsäule: IV/5, 6/7
- Fraktur-Prothesen:
 - Proth. Hüfte links: 5/10, 6/6
 - Proth. Hüfte rechts: 5/10, 6/6
 - Proth. Knie links: 5/10, 6/6
 - Proth. Knie rechts: 5/10, 6/6
- Thoraxtrauma mittel:
 - Thoraxtrauma rechts: III-IV-11-12 rechts
 - Herzstrahlungszone rechts
 - Expansionsfraktur Costae I-III und IX links
- Extremitätstrauma mittel:
 - dislocierter mehrfragmentärer distaler Femurfraktur links

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Key factors

- Trained personnel only!



2-Day AIS 2005 – Update 2008 DICTIONARY EXERCISE

EXTERNAL AND OTHER TRAUMA

1. Multiple abrasions	910200.1
2. Full thickness frostbite bilateral toes	915006.3
3. 25 % TBSA 1 st , 2 nd and 3 rd degree burns – age 25 yrs	912018.3
4. 3 year old with 40% first degree, 15% second degree and 10% third degree burns	912002.1 912020.4
5. Suffocation with cardiac arrest	020006.5
6. Near drowning with neurological deficit	060004.4
7. Hypothermia (30 degrees C/86 degrees F)	010006.3

Key factors

- Apply your information technology!

Bezeichnung	Wert	Einheit
ACT	arteriell	
NTEM	Temperatur	37.0 °C
F	FiO2 Fraktion	0.21
pH	pH	7.141
HCO3 akt	Bicarbonat	10.7 mmol/l
BE	Base Excess	-17.9 mmol/l
CO2	PCO2	4.17 kPa
O2	PO2	17.40 kPa
THB	Hb	89 g/l
VNA	Natrium	133 mmol/l
K	Kalium	5.7 mmol/l
CL	Chlorid	111 mmol/l
VALU	Anionenlücke	19.8 mmol/l
G	Glucose	5.7 mmol/l
VL	Laktat	17.0 mmol/l

Bei unklaren Werten den Original-Kumulativbefund
= Range unterzeichnen

Take home messages

- Trauma registry needs time, money, knowledge and dedicated people
- Trauma registry gives new insights and helps to improve trauma care
- Trauma registry is never finished



Discussion

