

Orthopaedic Fracture Coding

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Orthopaedic Data in the MTQIP Registry

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 @BonezNQuality

But it's easy, right?

- Data mining
- Simple papers

ORIGINAL ARTICLE

In-hospital mortality from femoral shaft fracture depends on the initial delay to fracture fixation and Injury Severity Score: A retrospective cohort study from the NTDB 2002–2006

Robert Victor Cantu, MD, MS, Sara Catherine Graves, MD, MS,
and Kevin F. Spratt, PhD, *Lebanon, New Hampshire*

Delayed Internal Fixation of Femoral Shaft Fracture Reduces Mortality Among Patients with Multisystem Trauma

By Saam Morshed, MD, MPH, Theodore Miclau III, MD, Oliver Bembom, PhD, Mitchell Cohen, MD, M. Margaret Knudson, MD, and John M. Colford Jr., MD, PhD

	MTQIP	
Fracture	% Specified	% Not Further Specified
Pelvic Ring		
Acetabulum		
All Femur		
Proximal Femur		
Femoral Shaft		
Distal Femur		
All Tibia		
Proximal Tibia		
Tibial Shaft		
Distal Tibia		
Talus		
Calcaneus		
Navicular		
Clavicle		
Scapula		
Proximal Humerus		
Humerus		
Radius		
Ulna		

	MTQIP		NTDB	
Fracture	% Specified	% Not Further Specified	% Specified	% Not Further Specified
Pelvic Ring	76.58	23.42	65.53	35.47
Acetabulum	61.07	38.93	46.32	53.68
All Femur	88.14	11.86	87.14	12.86
Proximal Femur	96.50	3.50	94.03	5.97
Femoral Shaft	65.72	34.28	97.18	2.82
Distal Femur	65.17	34.83	96.26	3.74
All Tibia	63.17	36.83	54.49	45.51
Proximal Tibia	78.92	21.08	72.40	27.60
Tibial Shaft	73.05	26.95	66.06	33.94
Distal Tibia	51.72	48.28	47.89	52.11
Talus	42.68	57.32	42.74	57.26
Calcaneus	42.42	57.58	42.40	57.60
Navicular	32.14	67.86	31.60	68.40
Clavicle	75.13	24.87	56.31	43.69
Scapula	54.01	45.99	49.04	50.96
Proximal Humerus	72.74	27.26	64.09	35.91
Humerus	93.12	6.88	89.46	10.54
Radius	97.58	2.42	93.96	6.04
Ulna	96.25	3.75	91.65	8.35

MTQIP vs. NTDB

	MTQIP	NTDB
All Fractures	70,918	1,269,278
All NFS Fractures	13,116	342,472
Overall percentage NFS	18.5%	27%

MTQIP

Level 1		Level 2	
Total Fractures	NFS Fractures	Total Fractures	NFS Fractures
29,122	6,187	41,796	6,929
21.2% NFS		16.6% NFS	

*p < 0.001

MTQIP

Simple		Complex	
Total Fractures	NFS Fractures	Total Fractures	NFS Fractures
45,529	4,350	25,389	8,766
9.6% NFS		34.5% NFS	

*p < 0.001

NTDB

Simple		Complex	
Total Fractures	NFS Fractures	Total Fractures	NFS Fractures
722,212	113,526	547,066	228,946
15.7% NFS		41.8% NFS	

*p < 0.001

Ranking of Sources of Injury Information

- Medical Examiner/Autopsy Reports
- Hospital/Medical Records
 - Autopsy Reports
 - Operative Reports → *Gobbledygook*
 - Radiology Reports
 - Nursing or ICU Notes
 - Physician Progress Notes
 - ED Record
 - Discharge Summary
 - Face Sheet
- “Field Records”
 - Ambulance Run Sheets
 - Police Reports
- Bystander
- Patient (esp. LOC)

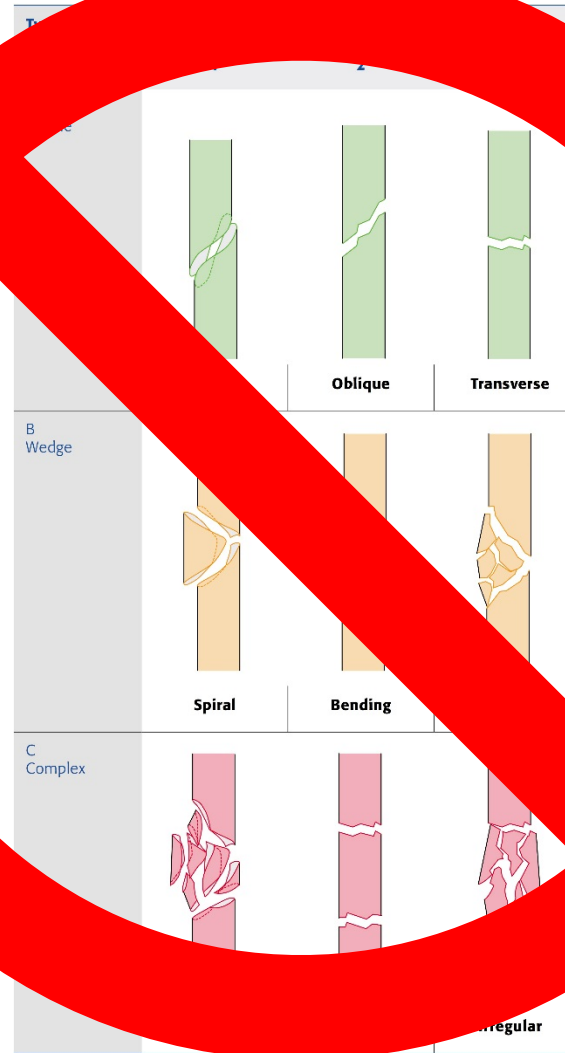
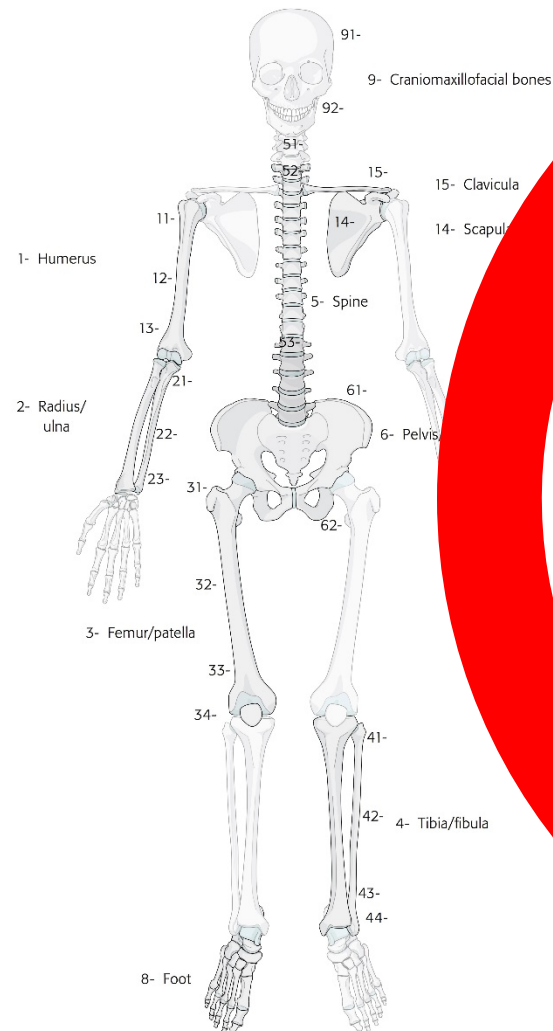


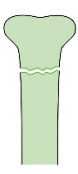
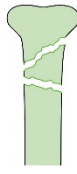
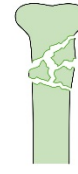
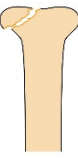
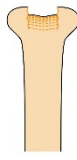
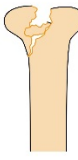
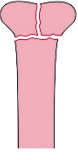
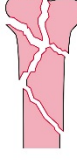
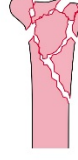
Highest

Level of General Reliability
Completeness of Detail

Lowest

Orthopaedic Classification Systems



Type	Group		
	1	2	3
A Extraarticular			
	Simple	Wedge	Complex
B Intraarticular			
	Split	Depression	Split-depression
C Complex			
	Simple articular, simple metaphyseal	Simple articular, complex metaphyseal	Complex articular, complex metaphyseal

ICD9

- 808 Fracture of Pelvis
 - 808.4 Closed fracture of other specified part of pelvis
 - 808.43 Multiple closed pelvic fractures with disruption of pelvic circle

ICD9

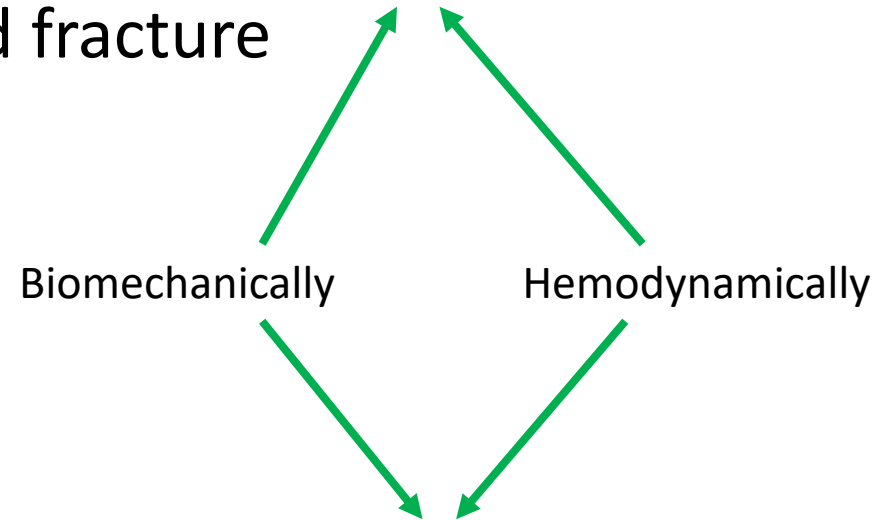
- 808 Fracture of Pelvis
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ICD10

- [S32.810A](#) Multiple fractures of pelvis with stable disruption of pelvic ring, initial encounter for closed fracture
- [S32.811A](#) Multiple fractures of pelvis with unstable disruption of pelvic ring, initial encounter for closed fracture

ICD10

- [S32.810A](#) Multiple fractures of pelvis with **stable** disruption of pelvic ring, initial encounter for closed fracture



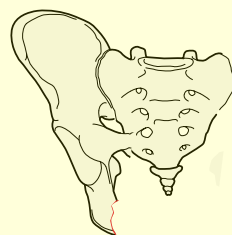
- [S32.811A](#) Multiple fractures of pelvis with **unstable** disruption of pelvic ring, initial encounter for closed fracture

AIS2005

Stable



Partially Stable



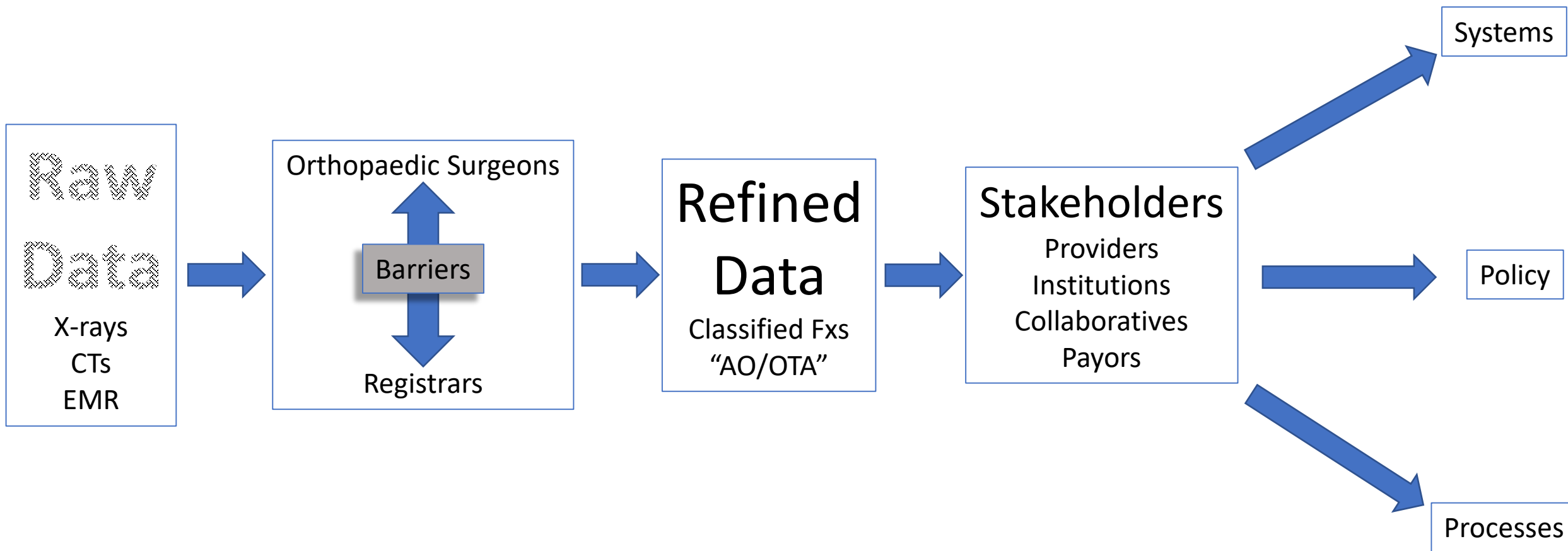
Unstable

LC1 (Non-operative)

APC2 (Operative)



Pelvic ring fracture (AIS2005):
Incomplete disruption of posterior arch



Where's the rest of the data?



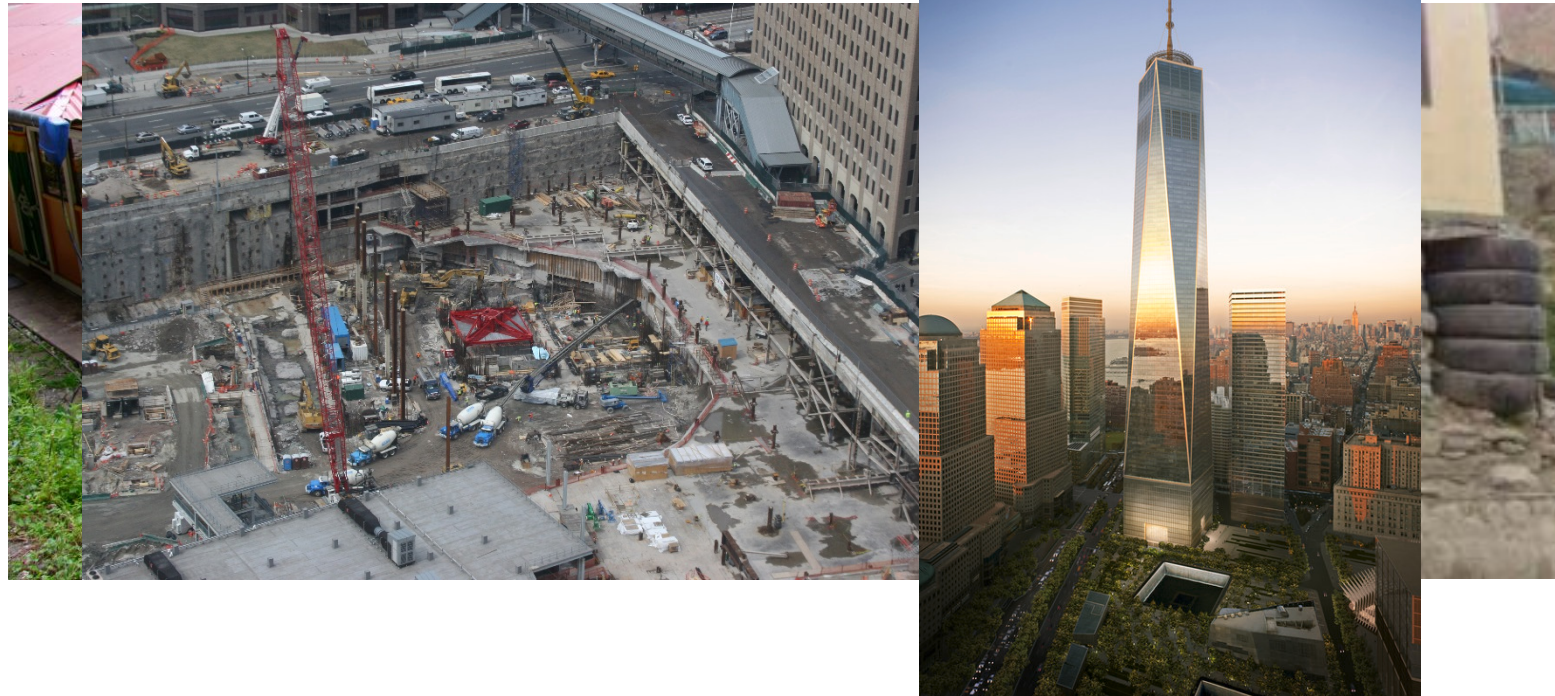
No Follow up

Where are the real orthopaedic outcomes?

- Planned Surgeries?
 - Infections?
 - Nonunions?
 - Malunions?
 - Post traumatic arthritis?
-
- They happen...but where's the data?

“You can't build a great building on a weak foundation.
You must have a solid foundation if you're going to
have a strong superstructure.”

- Gordon B. Hinckley



Where can we go from here?

Can we make a registry?

- Where are the details we need/want?
- Improve the data we collect
- Coordinate MI Centers

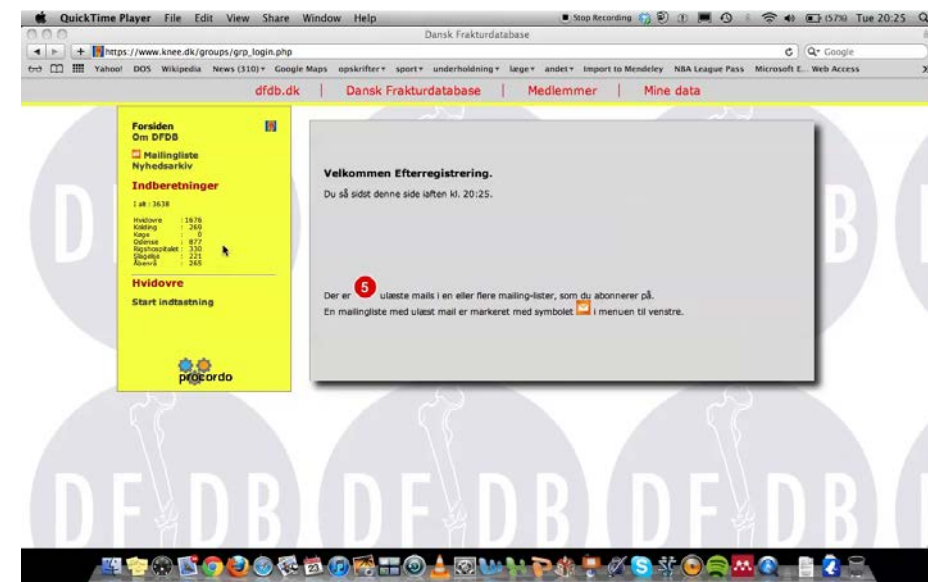




Danish Fracture DataBase

- 2 min per registration
- To be completed by the surgeon immediately after surgery
- Reoperations are linked to primary interventions
- Patient, trauma and surgery related factors are recorded
 - AO/OTA Fracture classification
 - Procedure(s) performed
 - Implant(s) used

Kirill Gromov, MD, PhD



Move Away From The Big Brother Mindset



Conclusions

- Be careful of simple answers to complex issues
- Risk adjustment is difficult for orthopaedic injuries
- If we want to have a great system, we (ortho) need to put in the effort
- We have the opportunity to make something spectacular

Thank you

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