May 20th, 3:00 PM - 4:30 PM

Data, Data Everywhere: But Not a Drop to Analyze

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Data, Data Everywhere… ..

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UMassMemorial HEALTH CARE

DISCLOSURE

I have no actual or potential conflict of interest in relation to this program or presentation.

Abundance of clinical data

Diligent data entry

- Quality improvement
- State/national mandate
- Billing/coding

Patients and data yield research ideas

"We are charting clinical data anyway so why not put it in a database?"

"The data exists so why not analyze it?"

As the saying goes....

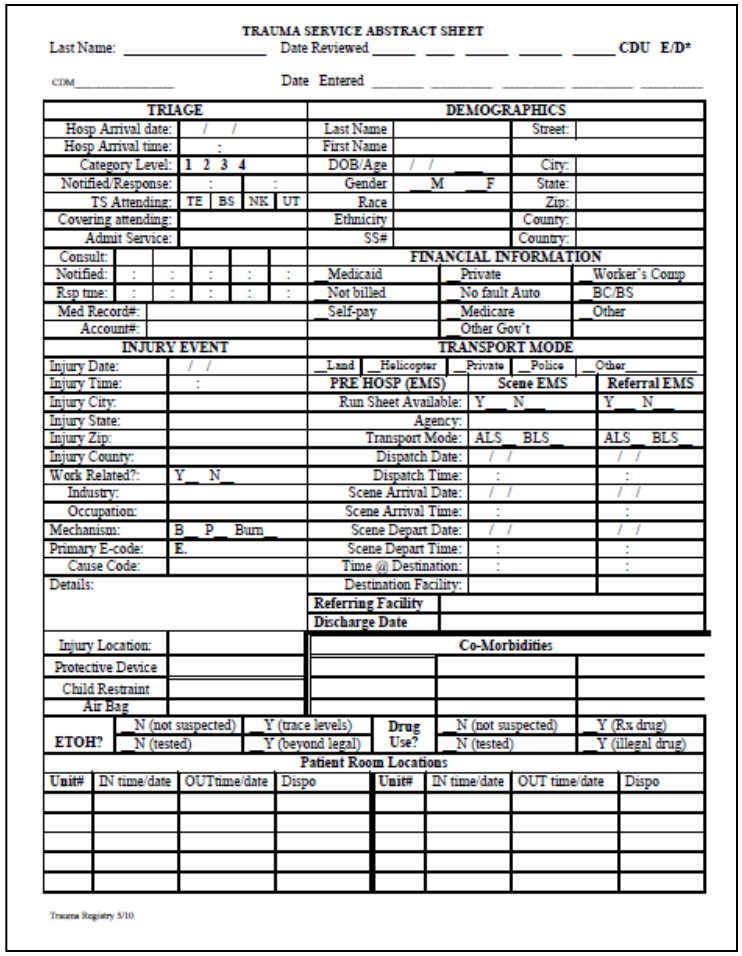
Data, entry, & analysis don't always flow

Not everything is as easy as it seems

UMass Trauma Registry

- 20+ years
- Prospective data collection
- Demographic, clinical, and outcome variables
- >40K records
- Ready for analysis and publication
- Not utilized previously for lack of time

UMass Trauma Registry



TRAUMA SERVICE ABSTRACT SHEET

Last Name: _____ Date Reviewed _____ ___ _____ _____ _____ CDU E/D*

CDM_____ Date Entered _____ _____ _____ _____ _____

TRIAGE		DEMOGRAPHICS			
Hosp Arrival date:	/ /	Last Name		Street:	
Hosp Arrival time:	:	First Name			
Category Level:	1 2 3 4	DOB/Age	/ / ____	City:	
Notified/Response:	: :	Gender	M F	State:	
TS Attending:	TE BS NK UT	Race		Zip:	
Covering attending:		Ethnicity		County:	
Admit Service:		SS#		Country:	

Consult:						FINANCIAL INFORMATION		
Notified:	:	:	:	:	:	Medicaid	Private	Worker's Comp
Rsp tme:	:	:	:	:	:	Not billed	No fault Auto	BC/BS
Med Record#:						Self-pay	Medicare	Other
Account#:							Other Gov't	

INJURY EVENT		TRANSPORT MODE			
Injury Date:	/ /	Land	Helicopter	Private	Police	Other
Injury Time:	:	PRE HOSP (EMS)	Scene EMS	Referral EMS
Injury City:		Run Sheet Available:	Y N	Y N
Injury State:		Agency:		
Injury Zip:		Transport Mode:	ALS BLS	ALS BLS
Injury County:		Dispatch Date:	/ /	/ /
Work Related?:	Y N	Dispatch Time:	:	:
Industry:		Scene Arrival Date:	/ /	/ /
Occupation:		Scene Arrival Time:	:	:
Mechanism:	B P Burn	Scene Depart Date:	/ /	/ /
Primary E-code:	E.	Scene Depart Time:	:	:
Cause Code:		Time @ Destination:	:	:
Details:		Destination Facility:		
		Referring Facility		
		Discharge Date		

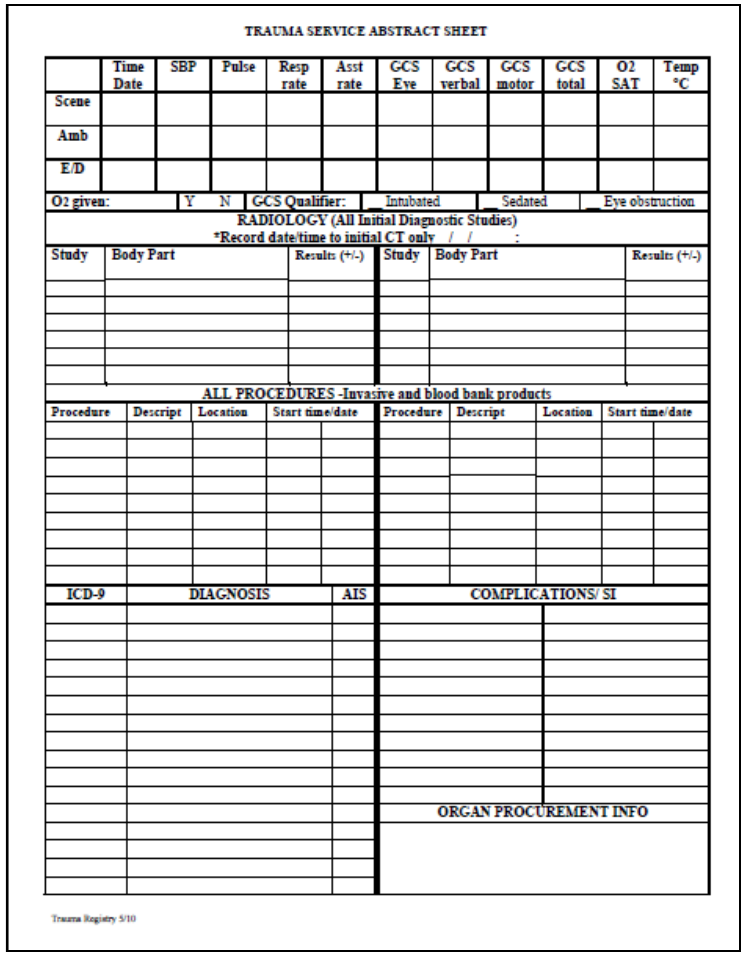
Injury Location:		Co-Morbidities		
Protective Device				
Child Restraint				
Air Bag				

ETOH?	N (not suspected)	Y (trace levels)	Drug Use?	N (not suspected)	Y (Rx drug)
	N (tested)	Y (beyond legal)		N (tested)	Y (illegal drug)

Patient Room Locations

Unit#	IN time/date	OUTtime/date	Dispo	Unit#	IN time/date	OUT time/date	Dispo

Trauma Registry 5/10



TRAUMA SERVICE ABSTRACT SHEET

	Time Date	SBP	Pulse	Resp rate	Asst rate	GCS Eye	GCS verbal	GCS motor	GCS total	O2 SAT	Temp °C
Scene											
Amb											
E/D											

O2 given:	Y N	GCS Qualifier:	Intubated	Sedated	Eye obstruction

RADIOLOGY (All Initial Diagnostic Studies)

*Record date/time to initial CT only / / :

Study	Body Part	Results (+/-)	Study	Body Part	Results (+/-)

ALL PROCEDURES -Invasive and blood bank products

Procedure	Descript	Location	Start time/date	Procedure	Descript	Location	Start time/date

ICD-9	DIAGNOSIS	AIS	COMPLICATIONS/ SI	
			ORGAN PROCUREMENT INFO	

Trauma Registry 5/10

CLINICALDATA® MANAGEMENT

Patient Quality and Outcomes Research Tools

A New Paradigm in Trauma Registry

Introducing TraumaBase 7.0

A revolutionary revision in Trauma Registry Software.
Making the most of technology
while remaining true to the day-to-day rigors
of the Trauma Registry professional.

Often imitated but never surpassed!

Once again, TraumaBase with Version 7.0
raises the bar to which all other registries can only hope to

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Early research plans

- Three study questions
- Three abstracts/manuscripts by end of year
- Facilitate research by colleagues using same data

Some examples of what I found

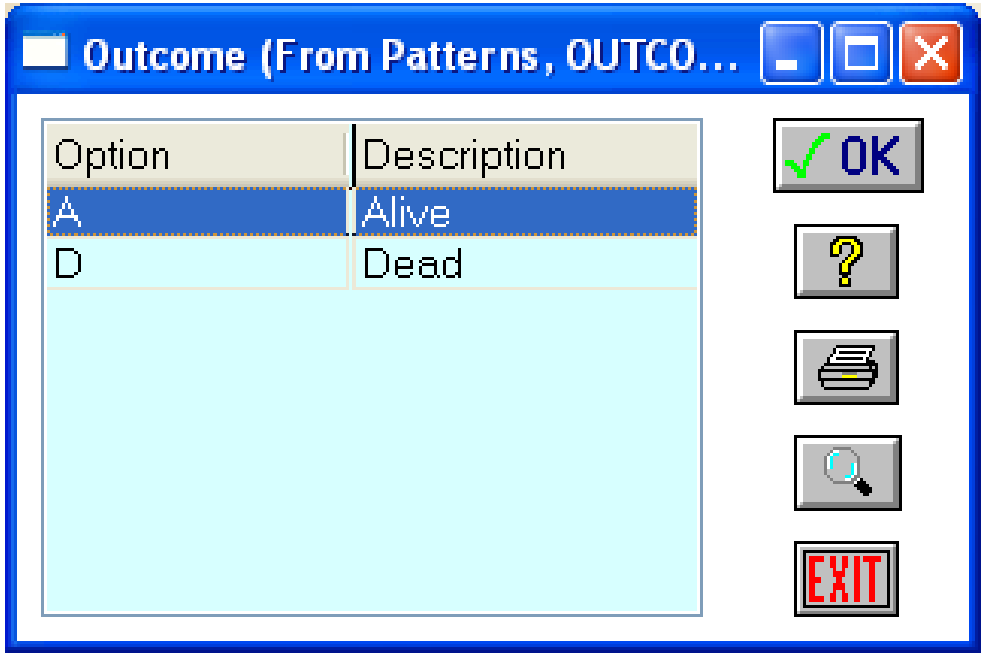
Data, data everywhere….

- Examine mortality patterns

....Not a drop can be analyzed

- Mortality variable?

Trauma Registry Outcomes Screen




```
Generate new variable = Died
Died = 1 if outcome = D
Died = 0 if outcome = A
```

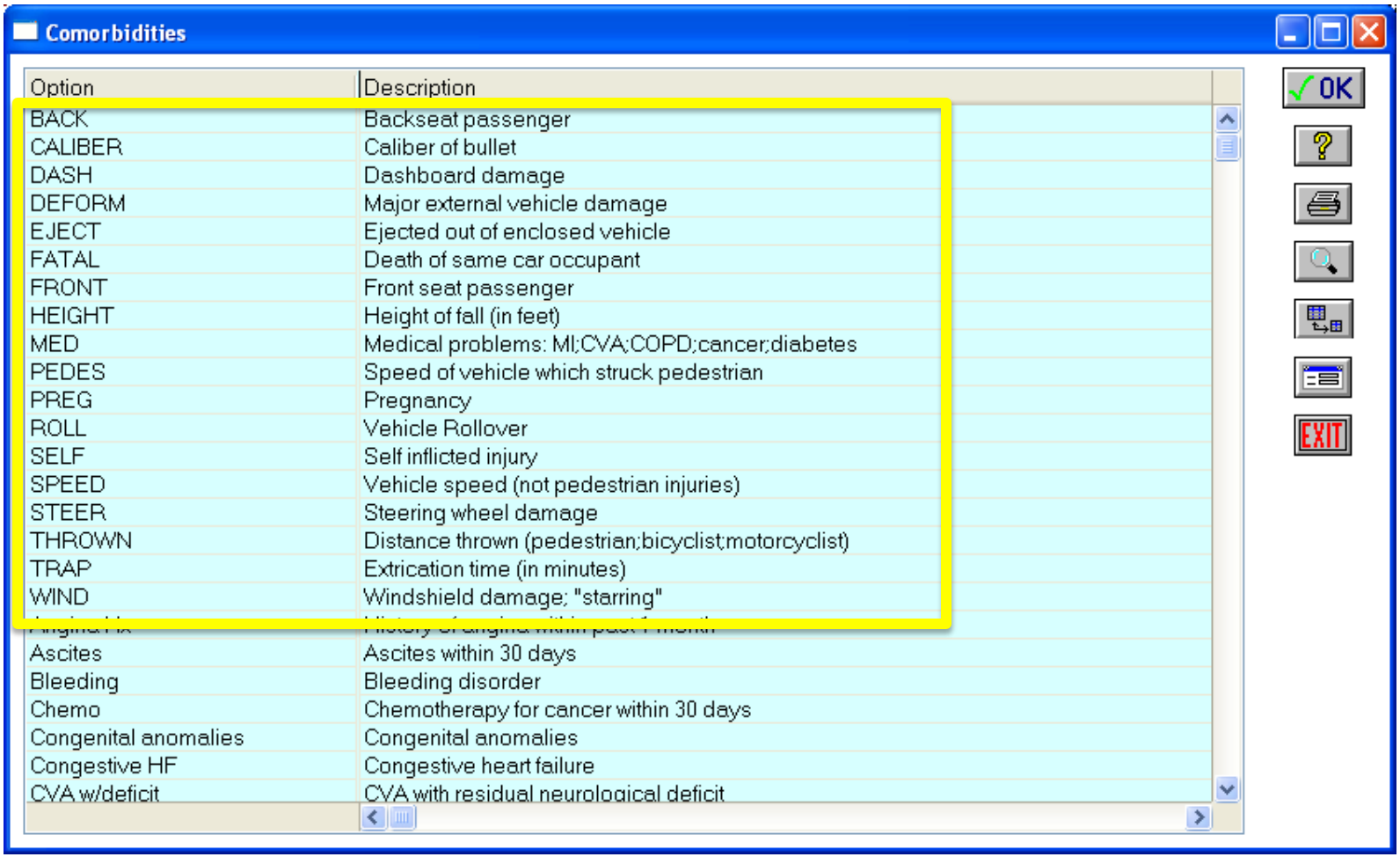
Data, data everywhere….

- Adjust for co-morbidities

....Not a drop can be analyzed

- Co-morbidity variable

Trauma Registry Co-morbidities Screen



Data, data everywhere….

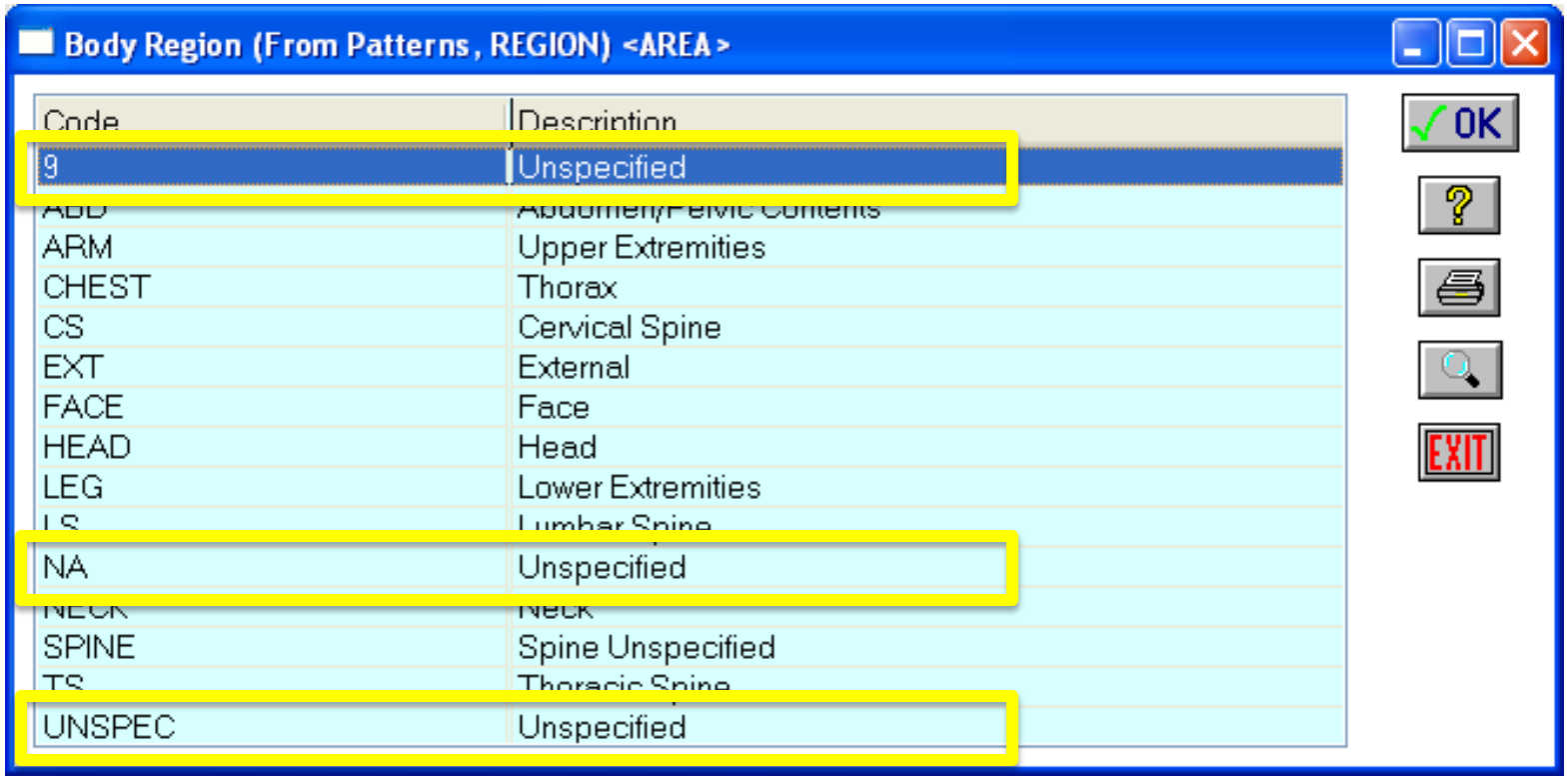
- Abbreviated Injury Scale (AIS)
  - Standardized injury terminology
  - Facilitate comparisons of injury studies
  - Rank injuries by severity
  - Describe injuries anatomically

....Not a drop can be analyzed

AIS Region	
Head/Neck	Includes C-spine
Face	Facial skeleton, nose, mouth, eyes, ears
Chest	Included T-spine and diaphragm
Abdomen	Includes pelvic contents and L-spine
Extremities	Includes pelvic skeleton
External	Abrasions, contusions, superficial injuries

AIS Code	Injury
0	Not Injured
1	Minor
2	Moderate
3	Serious
4	Severe
5	Critical
6	Fatal
9	Not further specified

Trauma Registry AIS Body Region Screen



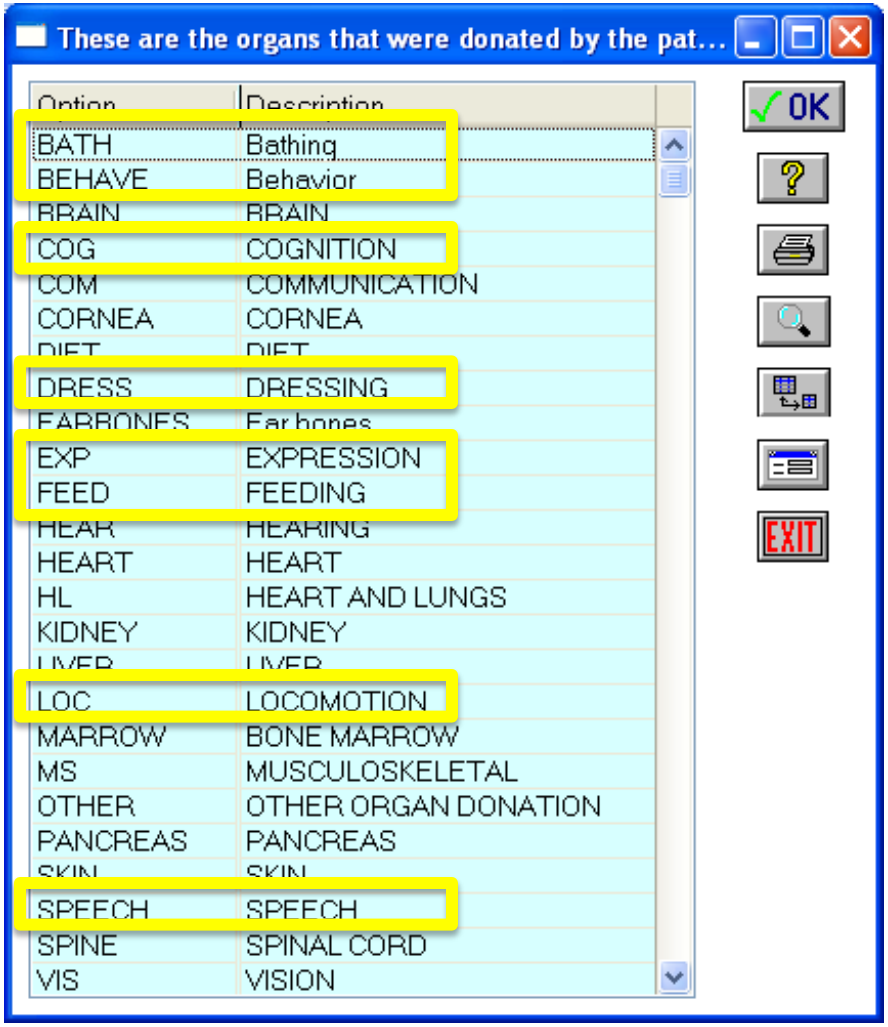
Data, data everywhere….

- Transplant procurement

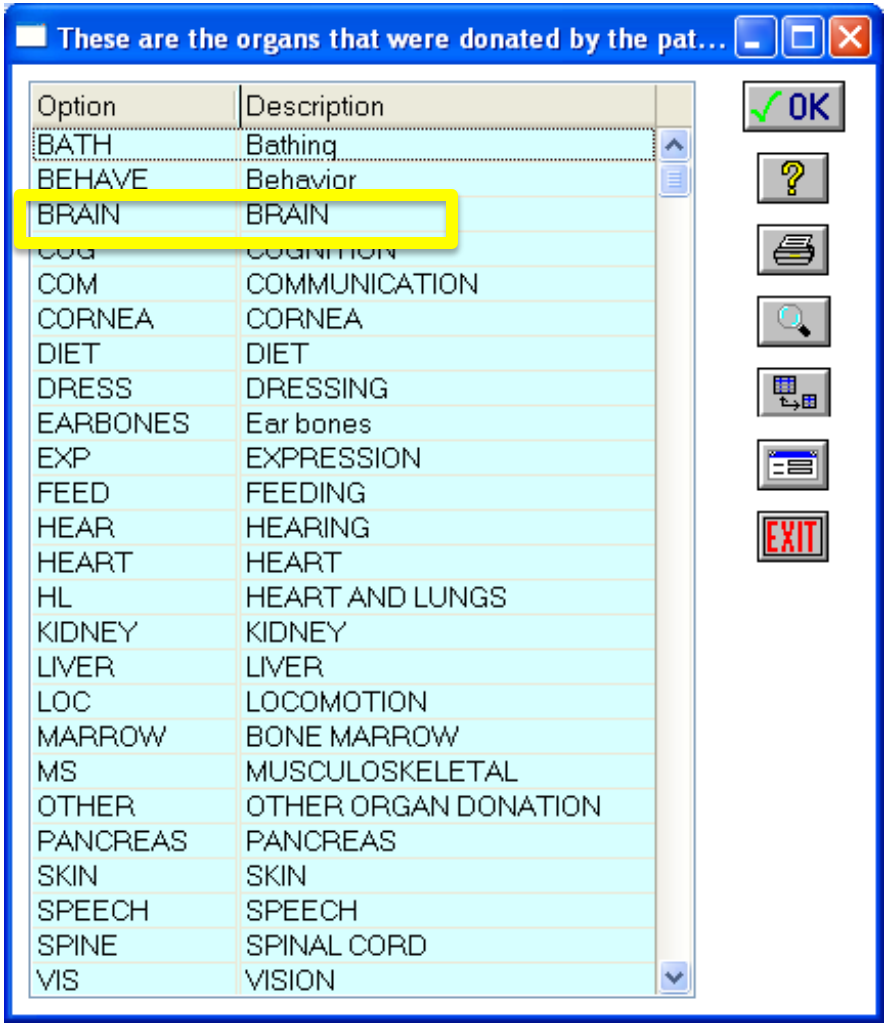
....Not a drop can be analyzed

- Organs donated variable

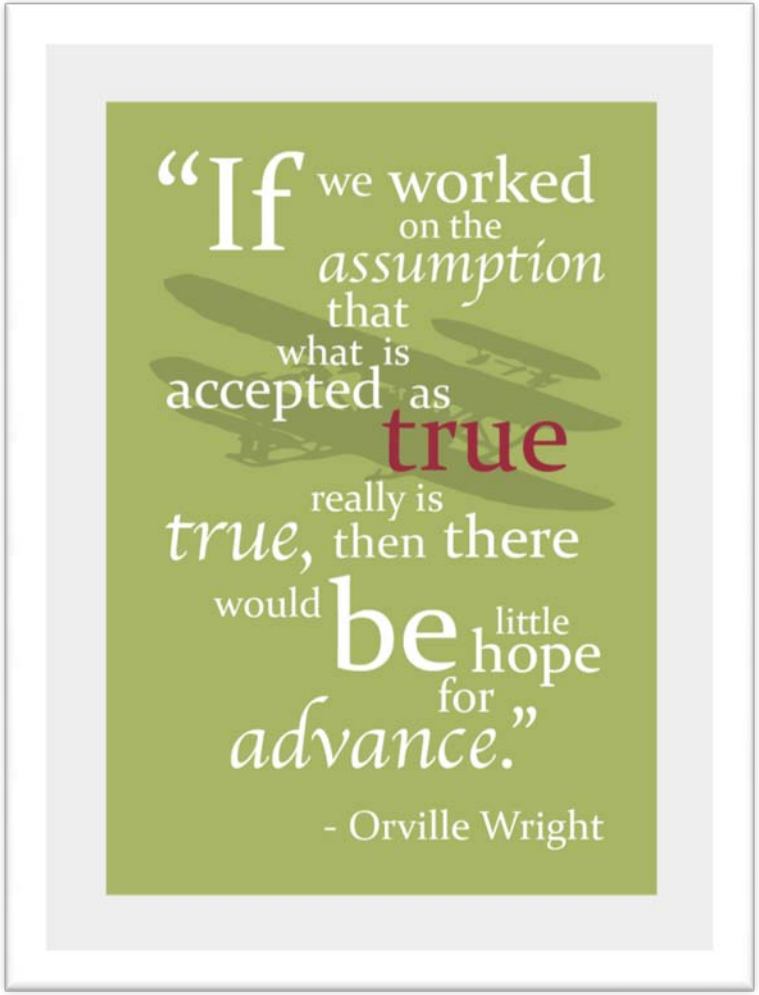
Trauma Registry Organs Donated Screen



Trauma Registry Organs Donated Screen



Research with clinical data



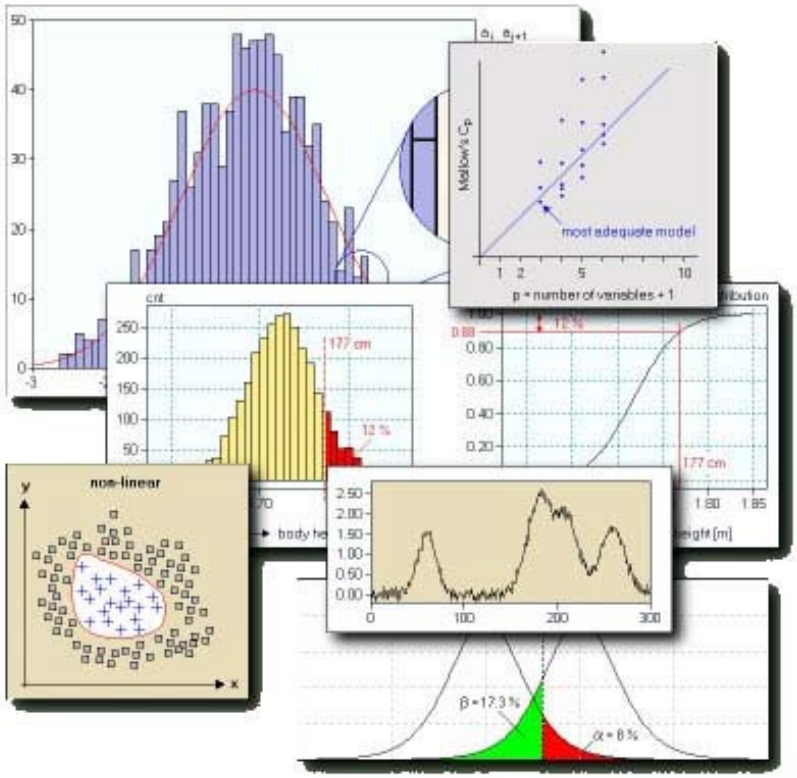
"Do not assume that recorded data is suitable for research."

Issues

- Variables
  - Unclear names
  - Applicable to more than one true measure
  - Unnecessary data
- Values
  - Too much free text
  - Inconsistent coding across variables
  - Unclear
    - Missing vs. unknown
    - Not applicable vs. missing
  - Non-numeric coding

A variable's future

"How will each variable and associated values be represented in a pie chart, bar graph, or statistical model in the future?"



Recommendations

- Variables
  - Define narrowly
  - Avoid overlap (collinearity)
  - Use dummy variables (1/0)
- Data dictionary
  - Variable/Value
  - Creation date
- Values
  - Numeric
  - Used consistently across database
  - Rarely free text
    - “other” value
  - Specify codes for missing vs. unknown vs. not-applicable

Road to successful research

Thank you