UMass Center for Clinical and Translational Science Research Retreat   2011 UMass Center for Clinical and Translational Science Research Retreat

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Data, Data Everywhere: But Not a Drop to Analyze

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Data, Data Everywhere…..

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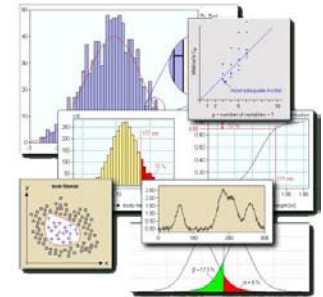
"We are charting clinical data anyway so why not put it in a database?"

"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

University of Massachusetts Medical School

UMassMemorial HEALTH CARE

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

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

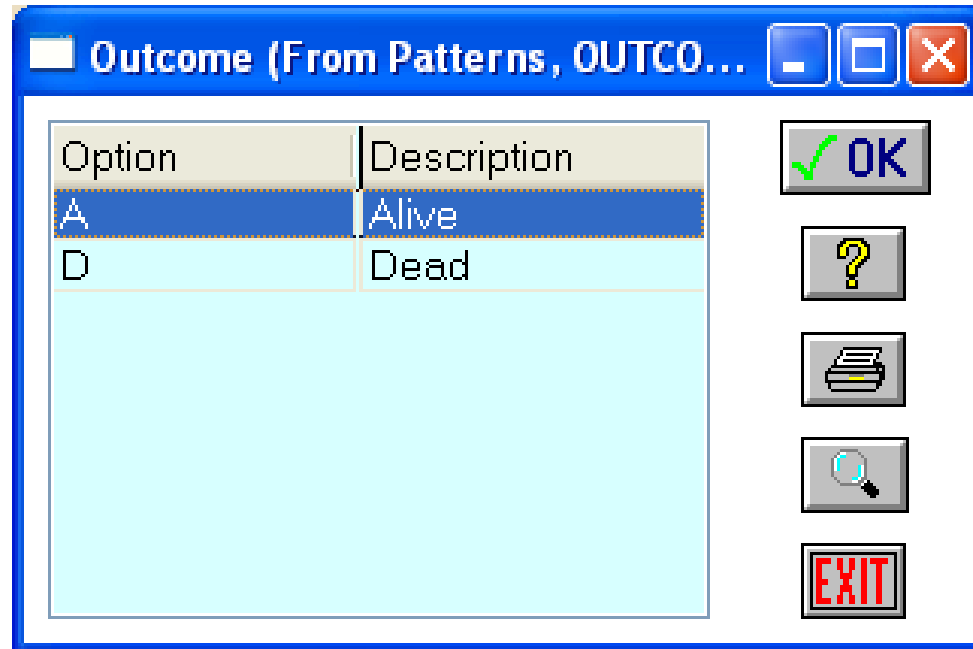# *Data, data everywhere....*

◆Examine mortality patterns

◆ 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

Comorbidities

Option	Description
BACK	Backseat passenger
CALIBER	Caliber of bullet
DASH	Dashboard damage
DEFORM	Major external vehicle damage
EJECT	Ejected out of enclosed vehicle
FATAL	Death of same car occupant
FRONT	Front seat passenger
HEIGHT	Height of fall (in feet)
MED	Medical problems: MI;CVA;COPD;cancer;diabetes
PEDES	Speed of vehicle which struck pedestrian
PREG	Pregnancy
ROLL	Vehicle Rollover
SELF	Self inflicted injury
SPEED	Vehicle speed (not pedestrian injuries)
STEER	Steering wheel damage
THROWN	Distance thrown (pedestrian;bicyclist;motorcyclist)
TRAP	Extrication time (in minutes)
WIND	Windshield damage; "starring"
Angina Hx	History of angina within past 1 month
Ascites	Ascites within 30 days
Bleeding	Bleeding disorder
Chemo	Chemotherapy for cancer within 30 days
Congenital anomalies	Congenital anomalies
Congestive HF	Congestive heart failure
CVA w/deficit	CVA with residual neurological deficit

OK

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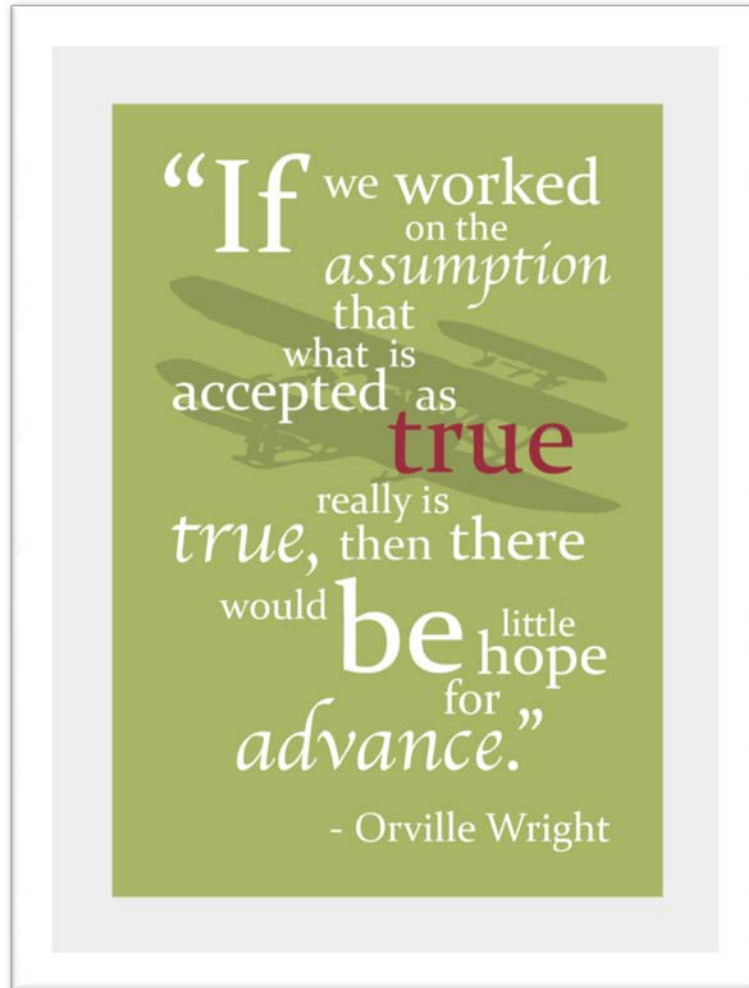
"Do not assume that recorded data is suitable for research."

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