



Processing NDNQI Data for XML Submission

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Who Are We?

- Academic Medical Center
 - 708 Staffed Beds
 - 1105 Licensed Beds
- Report on 32 Units
 - 5 Adult ICU's
 - 1 PICU
 - 6 Step-down Units
 - 5 NICU's
 - 3 Surgical Units
 - 7 Medical Units
 - 5 Psychiatric Units





2009

What BJ Told Me!

- At least 64 hours were required for data entry
- 5-6 staff members were involved in data entry and they differed each quarter
 - Nurses who collected data were not entering the data
- Data management was a Nightmare
 - Data collection forms
 - Few electronic entries available in the appropriate format



The Beginning



- What data are needed?
- Where are the data located?
- How can we make this easier and more efficient?
- What transformations of the data are required?
- Where will we store the data for access?
- How can we validate the data?

What data are needed?

- Read the XML Specifications
- **Read the XML Specifications**
- **Yes read all of the specifications!**



Where are the data located?

Data Sources

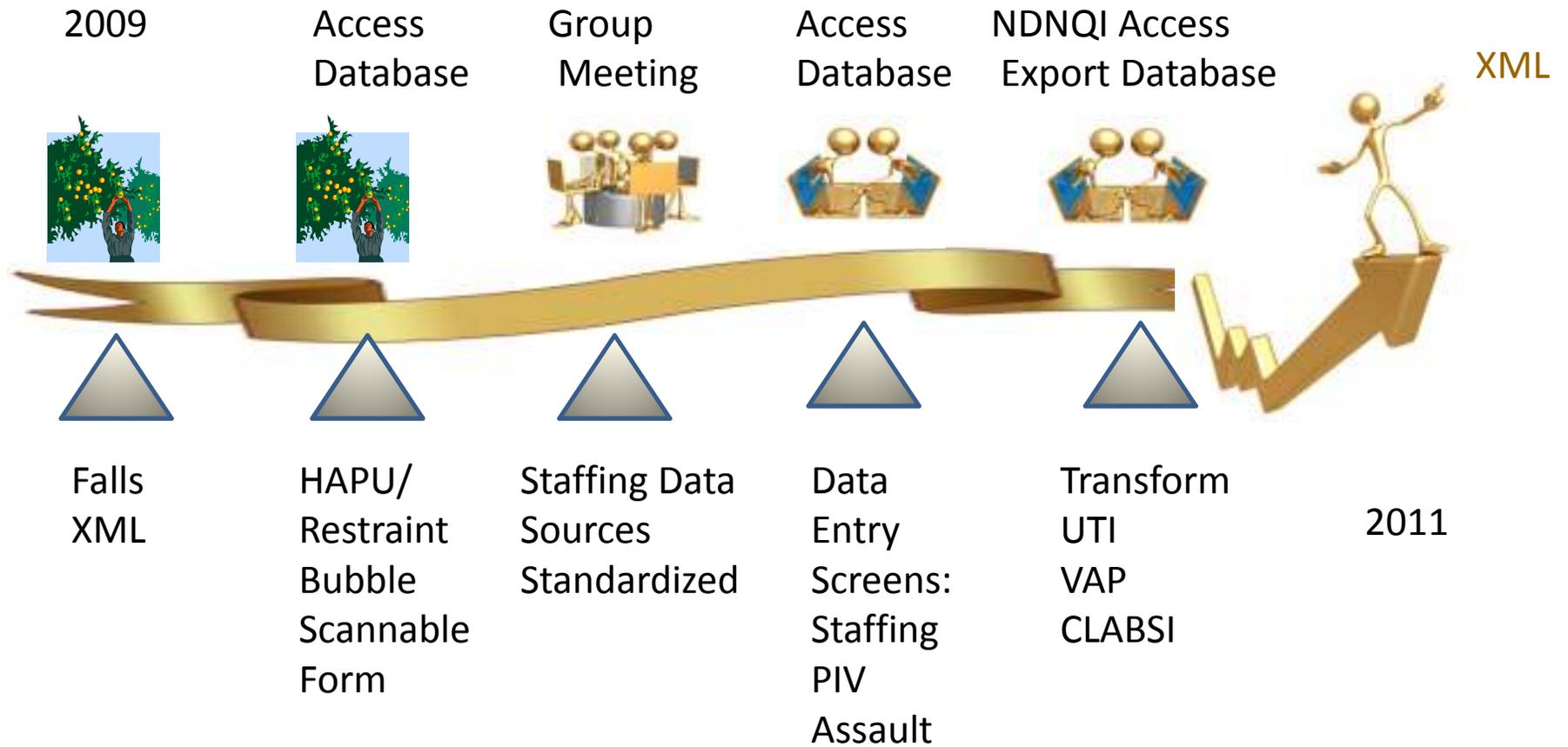
- What data are available electronically?
 - Format (text file, Excel, Access, etc.)
 - Data elements
 - Transformation for Importing
 - Ownership
 - Frequency of updates
- Manual
 - Handwritten
 - Who completes and who enters
 - When completed



Data Sources

Data Needed	Source	Owner	Actions
Fall	PSN Access Database	CQSPI	Transform to be consistent with NDNQI XML Specifications
Assault	Write in Form	Psych Nursing	Create Access Database with Data Entry Screen using NDNQI XML Specifications
BSI VAP UTI	Infection Access Database	Infection Prevention	Transform to be consistent with NDNQI XML Specifications
PIV	Write in Form	Pediatric Nursing	Create Access Database Data Entry Screen using NDNQI XML Specifications
Restraint Patient Ulcer Patient	Write in Form	Nursing	Create a form to scan using NDNQI XML Specifications and create Access Database
Staffing	Write in Form	Nursing	Create Access Database Data Entry Screen using NDNQI XML Specifications
Staff Education	Excel Spreadsheet	Hospital Human Resources	Transform to be consistent with NDNQI XML Specifications

Our Progression



HAPU/Restraint Data Collection Process

- Created custom scannable form with bubbles
 - Nurses can carry them to bedside
- SurveyTracker Plus software
 - Available from Training Technologies, Inc. (TTI)
www.surveytracker.com
 - Cost \$7605
 - 1 desktop license and software
 - one year of support then \$785/year
 - Uses special paper with tracking on the side (\$21/ream of 500 sheets + shipping)
 - Also use software for other projects

Scan Data Collection Process (cont.)

- Scantron Corporation's "iNSIGHT 20" imaging scanner (www.scantron.com)
- Cost \$3122; Maintenance \$235/year
- Dual cameras read front/back simultaneously
- Scans about 30 sheets/minute
 - 400+ scanned per quarter (8H vs. 24H)
- Export the data from SurveyTracker into Microsoft Access 2010
 - Validation
 - Corrections
 - Queries to transform data to XML specifications



Front and Back of Scannable Pressure Ulcer/Restraint collection form

Please do not turn above this line

NDNH Pressure Ulcer Data Collection ADULT Form
 Complete one form for each adult patient (whether patient has pressure ulcer or not). Please use #2 pencil to fill in the circles.

Patient ID Label Here

1. Gender M F

2. Restraint is used? (circle all that apply) Yes No

3. Restraint Type (check all that apply)
 Loin (including waist or chest)
 Vest
 Girdle

4. Restraint category No restraints applied
 Behavioral health care restraint
 Other
 Unintentional

5. Justification for restraint (check all that apply)
 Preventing falling out of bed without assistance
 Preventing removal of essential medical devices
 Reduce falls to self
 Reduce falls to others
 Other
 Unknown clinical justification (if not be documented)

6. Skin assessment documented within 24 hours of admission? Yes No Pending

7. Pressure ulcer risk assessment documented within 24 hours of admission? (If "No", also circle "Pending", also to #8) Yes No Pending

8. Admission risk assessment scale and score? (Other = assessed risk using another scale or other pt. restraints score)
 Admission score: 1000

0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
<input type="radio"/>									

9. How long ago was the last pressure ulcer risk assessment performed? (Include the assessment at time of admission) (If "Never assessed for risk", skip to #8)
 Last score: 1000

10. Last risk assessment scale and score? (If scale not assessed at time of survey) (Other = assessed risk using another scale or other pt. restraints score)
 Last score: 1000

11. Based on last assessment, is patient "at risk" for pressure ulcer? (If "No", skip to #8) Yes No Pending

12. Pressure ulcer prevention in use within past 24 hrs for "at risk" patient? (If "No" or "Pending", skip to #8) Yes No Doubtful or Ineffective

13. Skin assessment documented "Timing" Admitted within the last 24 hours Conducted on Bed

Types of prevention interventions in use within past 24 hours for "at risk" patient:

	Yes	No	Documented on admission	Documented in chart	Not documented
14. Pressure redistribution surface use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Routine repositioning as prescribed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Nutritional support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Moisture management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Directions: For each pressure ulcer, please list the location (choosing from the Code Table below), the number of ulcers, stage of each ulcer, if present on admission, and if present on arrival to unit. Continue on the back if you need more space. Use the back to explain "other" location of ulcer. Then be sure to fill in the counts at the bottom.

Location (see Code Table)

Location	Code	User #1	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Stage VII	Stage VIII	Present on Admission (Yes/No)	Present on Arrival to Unit (Yes/No)
Ankle	ANK	---	<input type="radio"/>	<input type="radio"/>								
Ant Thorax	ANT	User #2	<input type="radio"/>	<input type="radio"/>								
Arm	ARM	User #3	<input type="radio"/>	<input type="radio"/>								
Back	BUT	User #4	<input type="radio"/>	<input type="radio"/>								
Chest	CHE	User #5	<input type="radio"/>	<input type="radio"/>								
Chin	CHI	---	<input type="radio"/>	<input type="radio"/>								
Distal	DEV	User #6	<input type="radio"/>	<input type="radio"/>								
Ear	EAR	User #7	<input type="radio"/>	<input type="radio"/>								
Elbow	ELB	---	<input type="radio"/>	<input type="radio"/>								
Foot	FOO	User #8	<input type="radio"/>	<input type="radio"/>								
Hand	HAN	---	<input type="radio"/>	<input type="radio"/>								
Head	HSE	User #9	<input type="radio"/>	<input type="radio"/>								
Heel	HSC	---	<input type="radio"/>	<input type="radio"/>								
Knee	KNE	User #10	<input type="radio"/>	<input type="radio"/>								
Lower Leg	LCG	---	<input type="radio"/>	<input type="radio"/>								
Nose	NOS	User #11	<input type="radio"/>	<input type="radio"/>								
Occiput	OCC	---	<input type="radio"/>	<input type="radio"/>								
Post Thorax	POS	User #12	<input type="radio"/>	<input type="radio"/>								
Scapula/Co	SAC	---	<input type="radio"/>	<input type="radio"/>								
Scapula	SCA	User #13	<input type="radio"/>	<input type="radio"/>								
Shoulder	SHO	---	<input type="radio"/>	<input type="radio"/>								
Spine	SPI	User #14	<input type="radio"/>	<input type="radio"/>								
Thigh	THI	---	<input type="radio"/>	<input type="radio"/>								
Toes	TCE	User #15	<input type="radio"/>	<input type="radio"/>								
Trochanter	TRO	---	<input type="radio"/>	<input type="radio"/>								
Other	OTH	---	<input type="radio"/>	<input type="radio"/>								

From the ulcers listed above, calculate the number of pressure ulcers for this patient.

19. Number of ulcers acquired (ulcers at each stage)

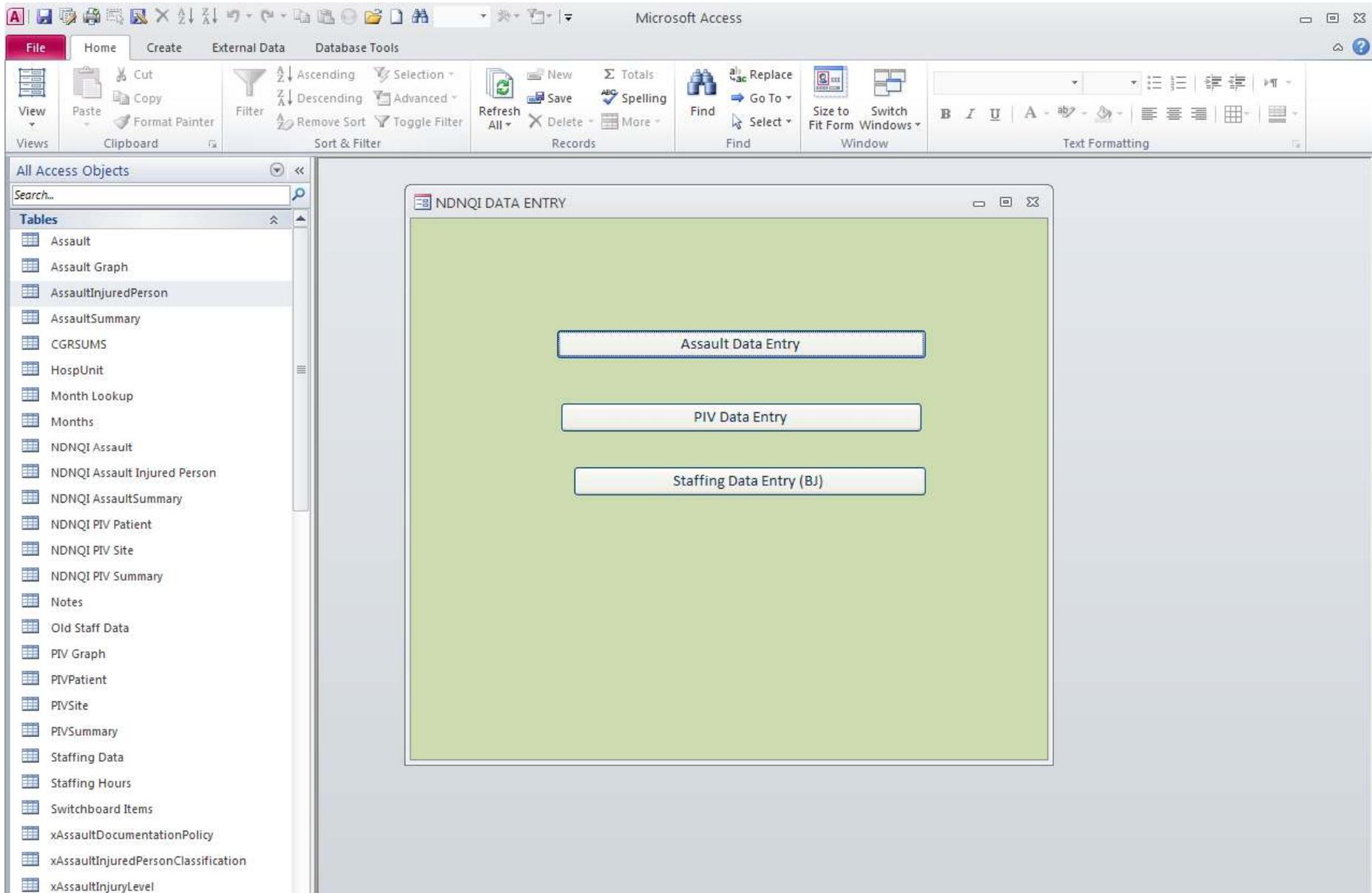
Stage I	Stage II	Stage III	Stage IV	DTI
Unstageable(s)	Inflammable			

20. Number of ulcers acquired (ulcers at each stage)

Stage I	Stage II	Stage III	Stage IV	DTI
Unstageable(s)	Inflammable			

Please return survey to team leader.

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Assault

Assault

ID: 406

UnitName: 3BT2

Date: 1/1/2011 *Enter mm/1/yyyy*

Month: 1

Encounter Number: 10

Patient Age: 46

Gender: Male

Admission Status:

Time Since Admission:

Time Since Admission Measure: Null

Assault Type:

Repeat Assault This Month: Yes

Assault ID: 10 First Assault ID: 9

Number of Injured Persons: 1

For the next four questions answer for the most severely injured Non Nurse or Nurse as applicable

NonNurse Assault Injury Level: 2 - Moderate

Nurse Assault Injury Level:

Nurse Total Years Experience (Only if RN Injured): 5

Nurse Attended Assault Management Training: Yes

Encounter Number: 10

Date: 1/1/2011

Intervention None Necessary: 0

Intervention Help Unavailable: 0

Intervention None Other Reason: 0

Intervention Calmy Talked: 1

Intervention Verbal Instruct to Leave: 0

Intervention Physical: 0

Intervention Observation: 1

Intervention Security: 0

Intervention Restraints: 0

Intervention Seclusion: 1

Intervention Other: 0

Intervention No Documentation: 0

Restraints Held with force: 0

Restraints Held with Devices: 0

Restraints Pharmacological: 0

Restraints No Documentation: 0

Restraint Total Time:

Restraint Unit of Measure:

Seclusion Total Time: 23

Seclusion Unit of Measurement: Hours

0=No
1=Yes

If none, help unavailable or none selected all other interventions must be 0

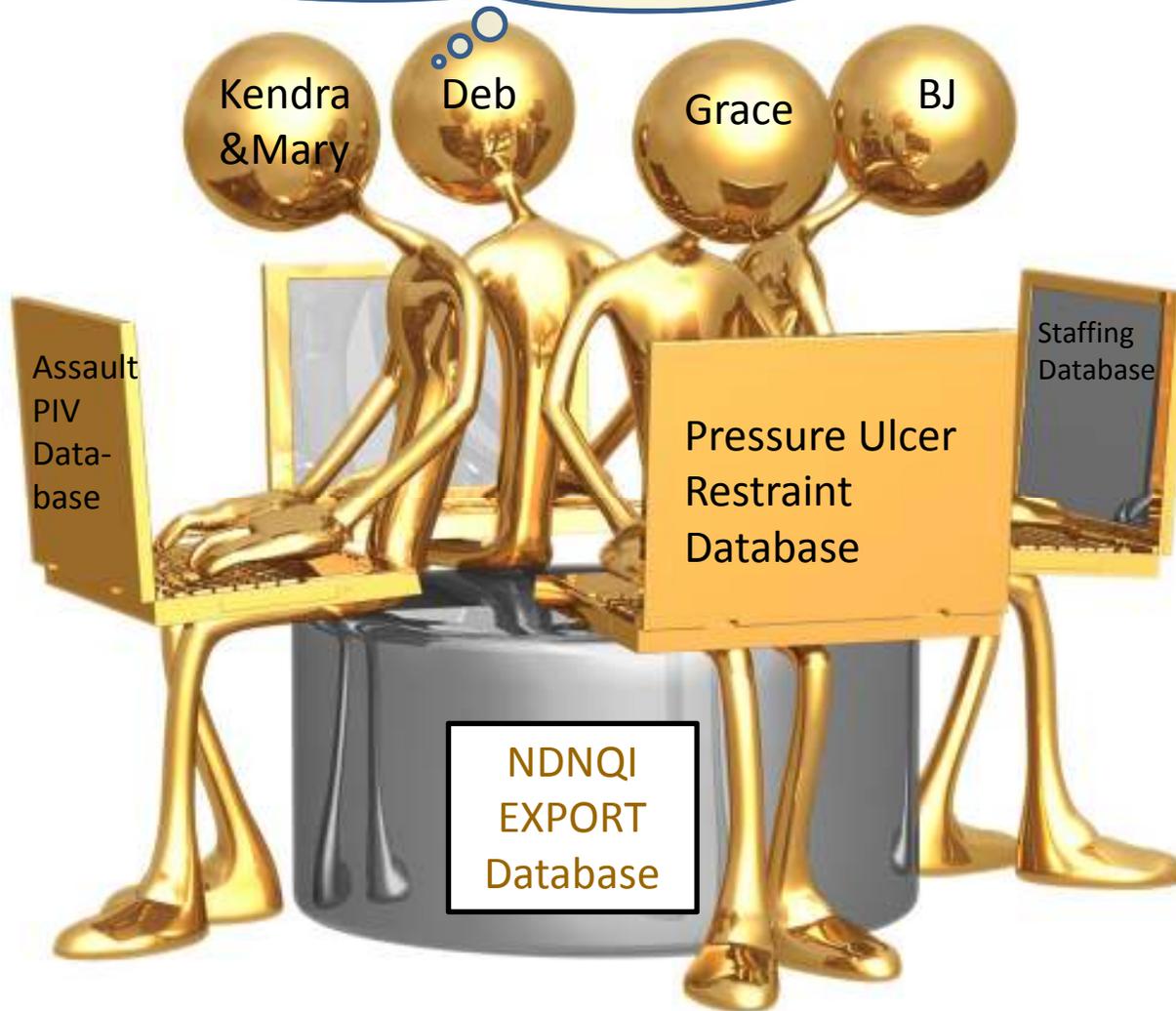
Time Must Be Entered As:
0-59 Minutes
1-23 Hours
1-6 Days
1-4 Weeks
1-11 Months

If restraint held or seclusion is used then times must be entered for seclusion or restraint

Enter up to three

Navigation Pane

Infection and Falls Databases
Then I put them all together



Data Validation



Validations are completed in each database before importing into the NDNQI Export Database

Outliers

- Range

Missing Data

XML Specifications

- Required Data

- Injury Level:
IIf(IsNull([xInjuryLevelFID]),"Fail","Pass")

- Must Add Up

- SumUCNonBW: [NDNQI BSI Sum Submission]![BsiNonUcDaysForBirthWeight Lt751]+[NDNQI BSI Sum Submission]![BsiNonUcDaysForBirthWeight 751to1000]+[NDNQI BSI Sum Submission]![BsiNonUcDaysForBirthWeight 1001to1500]+[NDNQI BSI Sum Submission]![BsiNonUcDaysForBirthWeight 1501to2500]+[NDNQI BSI Sum Submission]![BsiNonUcDaysForBirthWeight Gt2500]

- Meet Criteria

- Grams Validation: IIf([NDNQI PIV Patient]![WeightGm]>1000,"Error","Pass")

Building the XML File

- Hospital Programmer
 - Business Objects Data Integrator
 - NDNQI
 - XML Schema
 - Validation file
 - Sample database
 - Database linkage
 - Team effort
 - Modify fields in Microsoft Access
 - Correct validation Errors

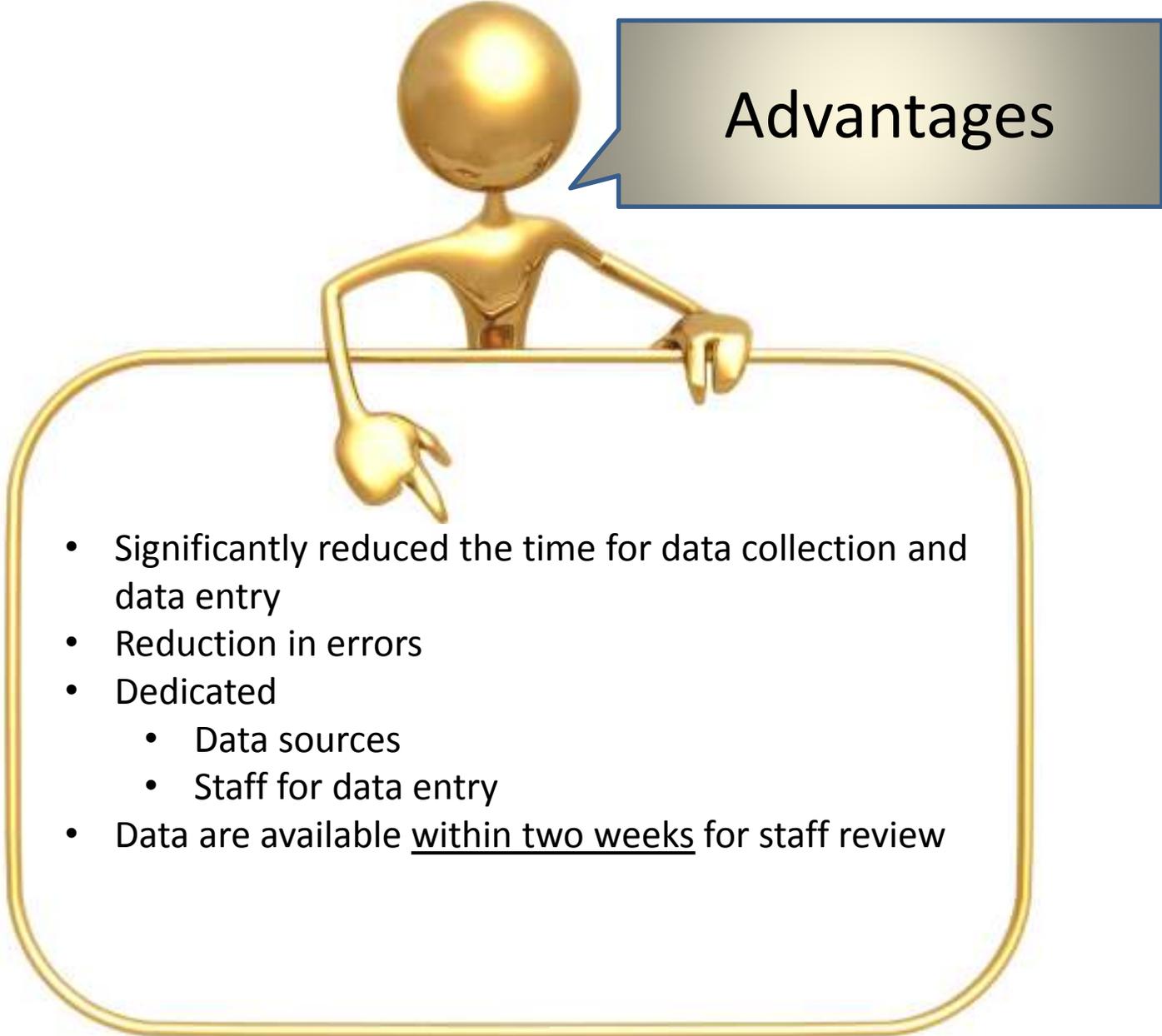


XML Validation Errors

```
CY2011Q3_NDNQI_REPLACED - Validation Errors.txt - Notepad
File Edit Format View Help
The following errors were found when validating "J:\NDNQI\CY2011Q3_NDNQI_REPLACED.xml"
against the database and business rules:
-----
UnitYearQtr (1JPW Eating/Mood Disorder/PPH/ECT/CD); UnitMonth (7); Assault Summary (4);
Assault (5)Non-Nurse Assault Injury Level must be entered.
-----
UnitYearQtr (1JPW Eating/Mood Disorder/PPH/ECT/CD); UnitMonth (7); Assault Summary (4);
Assault (5)If injured person classification is a Non-Nurse, then Non-Nurse Injury
Level can't be blank.
-----
UnitYearQtr (2JCP Pediatric Med/Surg); UnitUlcer (4) - xUlcerRiskAssmntFIDLastScale is
required if xRecencyHours is not "Never assessed for risk" or
xPressureUlcerRiskAssessmentOnAdmission is not "Pending" .
-----
UnitYearQtr (2JPW Neuropsych); UnitMonth (9); Assault Summary (12); Assault
(22)Nurse Assault Injury Level must be entered.
-----
UnitYearQtr (2JPW Neuropsych); UnitMonth (9); Assault Summary (12); Assault (22)
If injured person classification is a Nurse, then Nurse Injury Level can't be blank.
-----
UnitYearQtr (2JPW Neuropsych); UnitMonth (9); Assault Summary (12); Assault (22)
Nurse Injury Level must be greater than Non-Nurse Injury level.
-----
UnitYearQtr (Surgical ICU Bay 2)UlcerStudyDayPatientCount must equal UnitCensusCount.
-----
UnitYearQtr (Surgical ICU Bay 2)PatientAssessedCount must equal RestraintPatientCount.
-----
UnitYearQtr (Surgical ICU Bay 2); Restraint (8) - Number of Restraint Patients
Occurrences (8) must be equal to RestraintPatientCount (16).
```

Use the validation errors to modify the databases and to construct additional validation queries so that these errors are not repeated





Advantages

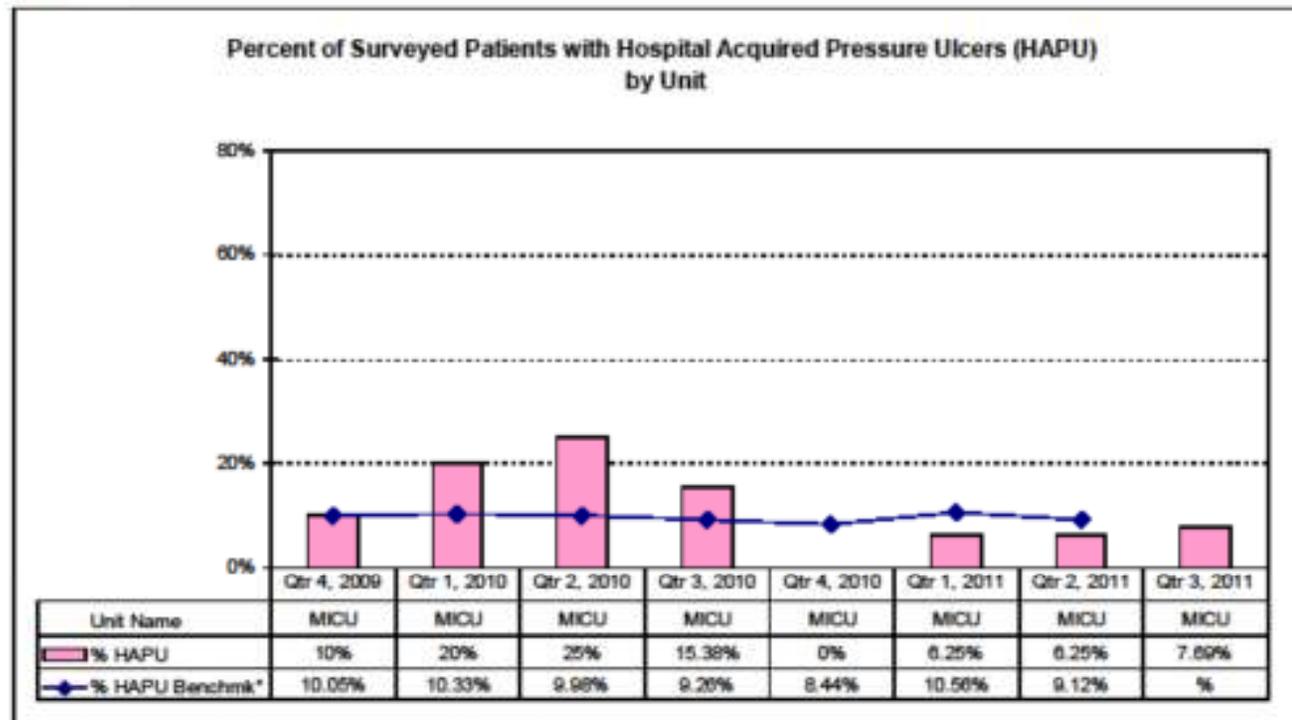
- Significantly reduced the time for data collection and data entry
- Reduction in errors
- Dedicated
 - Data sources
 - Staff for data entry
- Data are available within two weeks for staff review

Feedback to Units Within Two Weeks

University of Iowa Hospitals and Clinics
Center for Nursing Quality, Professional Development, Research and Informatics

Pressure Ulcer Quarterly Audits - Adult

Unit: MICU



*Benchmark data: NDNQI Mean of Academic Medical Centers of similar units (data for latest qtr not yet available)

Confidential: This material has been prepared for use by a University Hospitals' Staff Committee investigating ways to reduce morbidity and mortality.

Data Source: Nursing Dept quarterly skin audit
9/28/2011 gr



- Follow XML requirements to the “T”
- Develop data entry screens
- Scannable forms for data entry
- Correct databases using XML validation errors
- Discuss errors with staff and have them complete the validations
- Ask owners of imported data to modify their data to meet specifications

Lesson Learned: Never expect the data to be perfect no matter what you do!

BJ Unstressed

