

My relational database is smarter than your spreadsheet

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Disclaimer

- I know just enough to be dangerous, but am not an expert
- These are ideas from other (smarter) people applied to EHDI data.
- A database may or may not be the best fit for your program...but worth consideration.

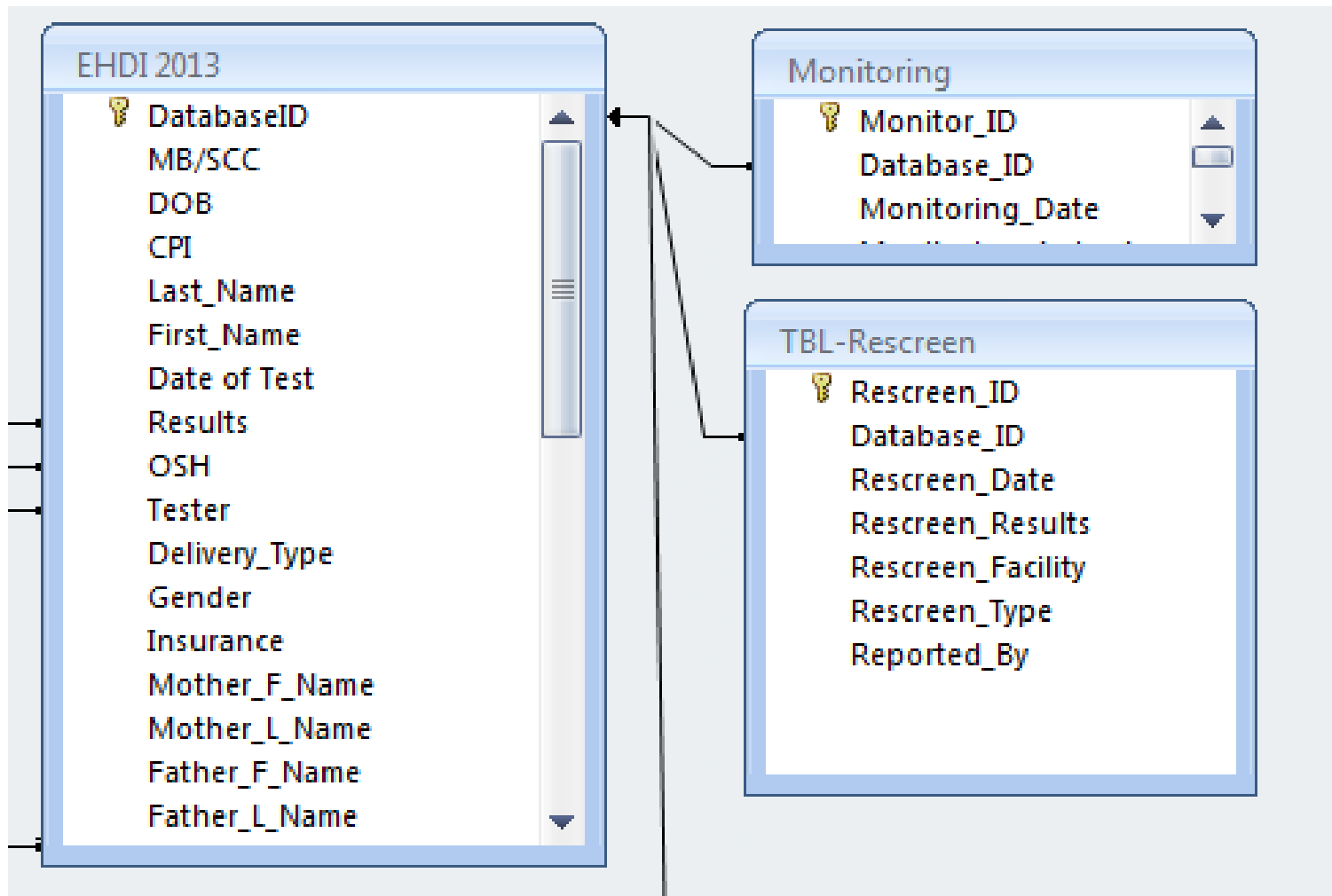
The Basics - Spreadsheet

	First Name	Last Name	DOB	Gender
1	Fred	Flintstone		
2	Pebbles	Flintstone		
3	Betty	Rubble		
4	Bam Bam	Rubble		

The Basics - Relational Database

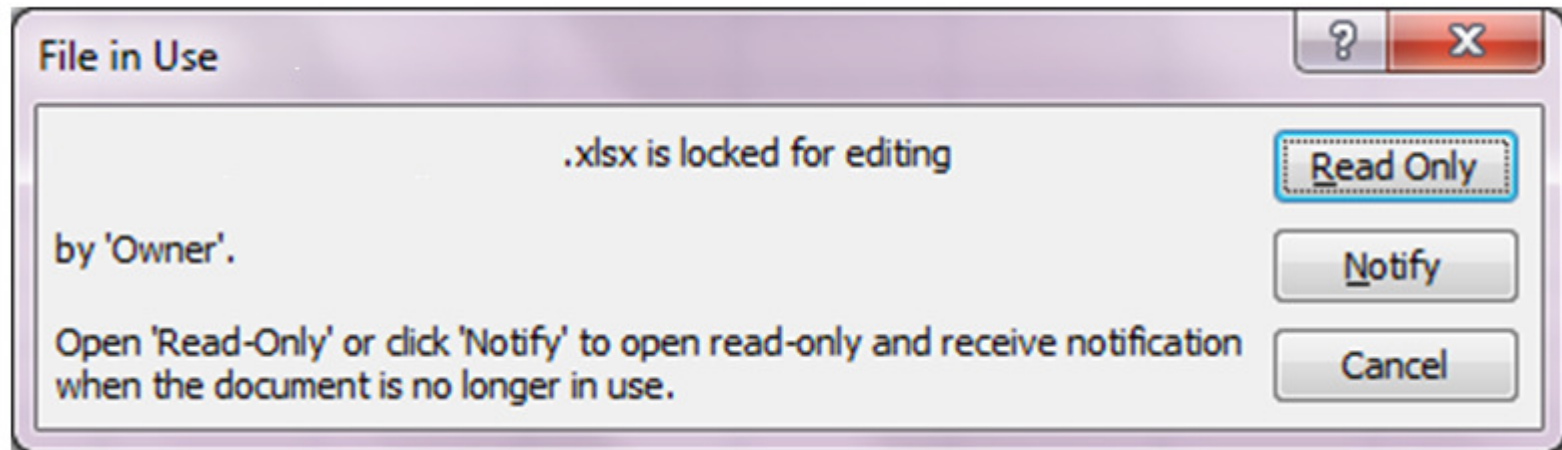
abaseID	MB/SCC	Birthdate	CPI	Last Name	Fir
24231	Mother Baby		0	Boerst	Ang
23878	Mother Baby	5/6/2007	25213385	boerst	ang
(New)			0		

The Basics - Relational Database



It's time to switch to a database if...

- More than one person accesses the data
 - Excel allows only one user to make changes to spreadsheet at a time.



It's time to switch to a database if...

- More than one person enters data
- Excel does not limit how data can be entered
- What is the “right” way to enter screening results?
 - Pass Right, Refer Left
 - Refer Left, Pass Right
 - Pass Right, Fail Left

Improving Data Entry

Screen Results Rescreen Appt

Date of Test Tester: ▼

Results:

<input type="checkbox"/> Pass Bilaterally	<input type="checkbox"/> Refer RIGHT, Pass Left
<input type="checkbox"/> Refer Bilaterally	<input type="checkbox"/> Refer LEFT, Pass Right

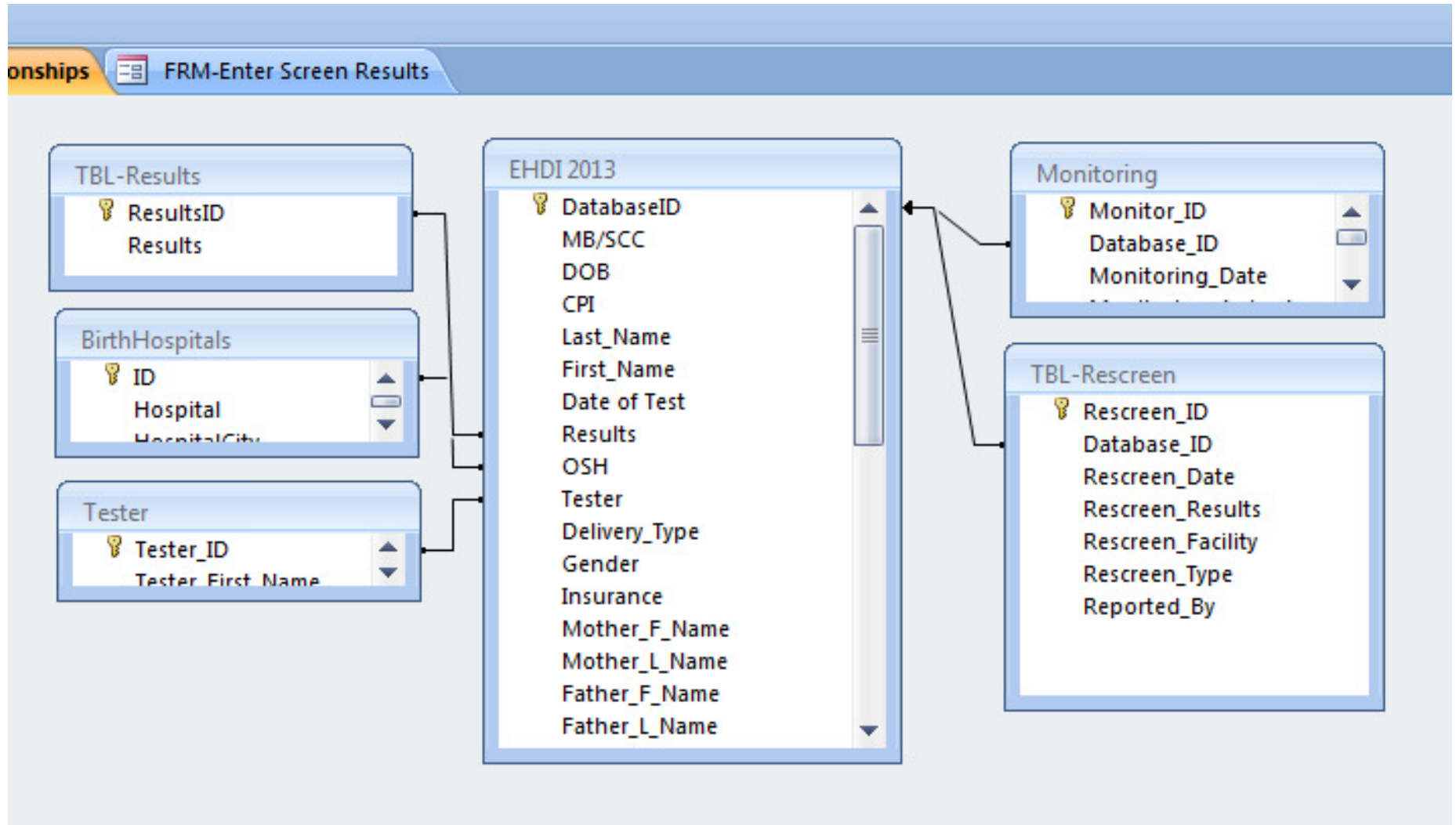
DNT:

<input type="checkbox"/> Pass at OSH	<input type="checkbox"/> Hospice Care
<input type="checkbox"/> Refer at OSH	<input type="checkbox"/> Parent Refusal
<input type="checkbox"/> Transfer Back to BH	<input type="checkbox"/> Missed Baby
<input type="checkbox"/> Expired	

Improving Data Entry

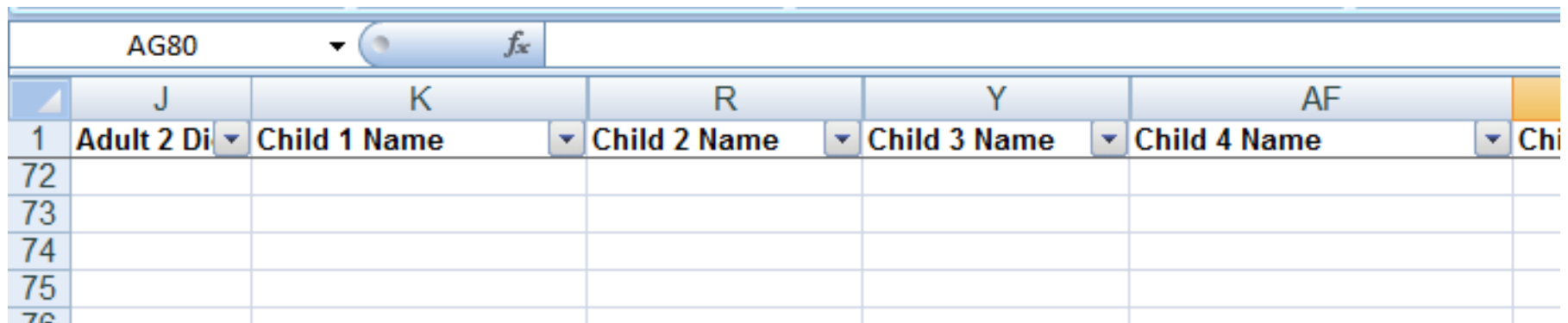
CPI	<input type="text" value="0"/>	Birth Hospital	<input type="text" value="Tawas St. Joseph"/>	Mom's First Name	<input type="text"/>
Baby's Last Name	<input type="text" value="Boerst"/>	MB/SCC	<input type="text" value="St. Joseph Mercy"/>	<input type="text" value="Pontiac"/>	<input type="text" value="ame"/>
Baby's First Name	<input type="text" value="Angelique"/>	Delivery Type	<input type="text" value="St. Mary"/>	<input type="text" value="Livonia"/>	<input type="text" value="ame"/>
Birthdate	<input type="text"/>	Insurance:	<input type="text" value="St. Marys"/>	<input type="text" value="Grand Rapids"/>	<input type="text" value="me"/>
Gender	<input type="text"/>	Baby Leaving H	<input type="text" value="St. Vincents"/>	<input type="text" value="Toledo,OH"/>	<input type="text"/>
			<input type="text" value="Sturgis"/>	<input type="text" value="Sturgis"/>	<input type="text"/>
<input type="button" value="Screen Results"/>	<input type="button" value="Rescreen Appt"/>		<input type="text" value="Tawas St. Joseph"/>	<input type="text" value="Tawas City"/>	<input type="text" value="sche"/>
			<input type="text" value="Three Rivers Area"/>	<input type="text" value="Three Rivers"/>	
Date of Test	<input type="text" value="1/17/2014"/>	Tester:	<input type="text" value="Toledo Childrens"/>	<input type="text" value="Toledo, OH"/>	
			<input type="text" value="United Memorial"/>	<input type="text" value="Greenville"/>	
Results:			<input type="text" value="University of Michigan"/>	<input type="text" value="Ann Arbor"/>	
<input checked="" type="checkbox"/> Pass Bilaterally		<input checked="" type="checkbox"/> Refer RIGHT, Pass Left	<input type="text" value="Unknown"/>	<input type="text" value="Sault Ste. Ma"/>	
<input checked="" type="checkbox"/> Refer Bilaterally		<input checked="" type="checkbox"/> Refer LEFT, Pass Right	<input type="text" value="War Memorial"/>	<input type="text" value="Manistee"/>	
DNT:			<input type="text" value="West Shore"/>	<input type="text" value="Royal Oak"/>	
<input checked="" type="checkbox"/> Pass at OSH		<input checked="" type="checkbox"/> Hospice Care	<input type="text" value="Wm. Beaumont"/>	<input type="text" value="Troy"/>	
<input checked="" type="checkbox"/> Refer at OSH		<input checked="" type="checkbox"/> Parent Refusal	<input type="text" value="Zeeland Community"/>	<input type="text" value="Zeeland"/>	
<input checked="" type="checkbox"/> Transfer Back to BH		<input checked="" type="checkbox"/> Missed Baby			
<input checked="" type="checkbox"/> Expired					
				Specify Syndrome:	<input type="text"/>
				Family Member with HL	<input type="text"/>
				Other Notes:	<input type="text"/>

Tables aren't just for patient info



It's time to switch to a database if...

- You have column headings such as “screen1”, “screen2”
- You are collecting multiple data points describing the same thing
 - Rescreen results
 - Risk Indicators



The image shows a screenshot of an Excel spreadsheet. The spreadsheet has a header row with columns labeled J, K, R, Y, and AF. Below the header, there are several rows of data. The first row of data has columns labeled 'Adult 2 Di', 'Child 1 Name', 'Child 2 Name', 'Child 3 Name', and 'Child 4 Name'. The rows are numbered 1, 72, 73, 74, 75, and 76. The spreadsheet is titled 'AG80' and has a formula bar with 'fx'.

	J	K	R	Y	AF
1	Adult 2 Di	Child 1 Name	Child 2 Name	Child 3 Name	Child 4 Name
72					
73					
74					
75					
76					

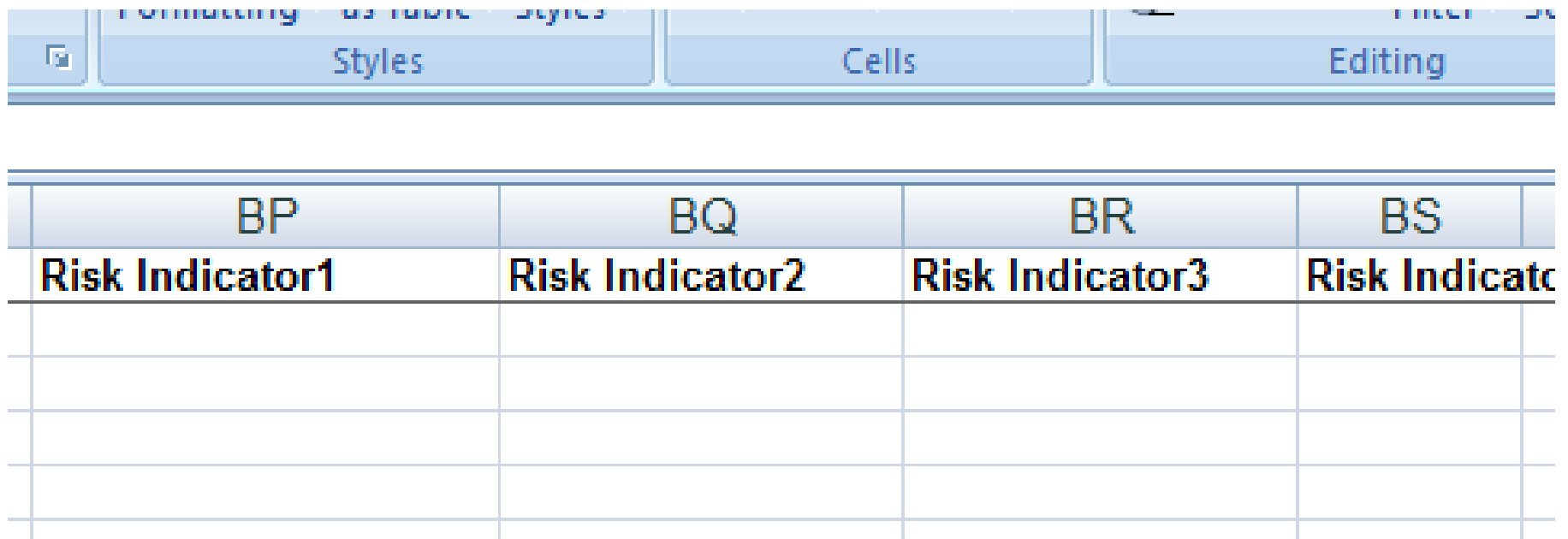
Tracking Multiple Data Points

Screen Results	Rescreen Appt		
Rescreen Date	4/11/2014	Test Used	ABR
Facility	University of Michigan Medical Cente		
Results	Screen: Bilateral Pass		
Rescreen Date	4/4/2014	Test Used	A-ABR
Facility	Allegiance Hearing Center		
Results	Screen: Bilateral Refer		
Rescreen Date	3/30/2014	Test Used	OAE

Record: 3 of 3 No Filter Search

It's time to switch to a database if...

- Your column headings require two letters
- Your “tab” and “→” keys are worn out



The image shows a screenshot of a spreadsheet application. At the top, there is a menu bar with options like 'Formating', 'as table', 'Styles', 'Cells', and 'Editing'. Below the menu bar, there is a table with four columns and four rows. The columns are labeled 'BP', 'BQ', 'BR', and 'BS'. The rows are labeled 'Risk Indicator1', 'Risk Indicator2', 'Risk Indicator3', and 'Risk Indicator4'. The table is empty of data.

BP	BQ	BR	BS
Risk Indicator1	Risk Indicator2	Risk Indicator3	Risk Indicator4

Entering/Reviewing Patient Data

Navigation Pane

Main Menu Relationships FRM-Enter Screen Results

CPI: 0 Birth Hospital: Tawas St. Joseph Mom's First Name: New Record

Baby's Last Name: Boerst MB/SCC: Mother Baby Mom's Last Name: Finished

Baby's First Name: Angelique Delivery Type: CS Dad's First Name:

Birthdate: Insurance: Dad's Last Name:

Gender: Baby Leaving Hospital with: Bio Parents Pt is Deceased, Date of Death:

Screen Results Rescreen Appt

Date of Test: 1/17/2014 Tester:

Results:

- Pass Bilaterally
- Refer Bilaterally
- Refer RIGHT, Pass Left
- Refer LEFT, Pass Right

DNT:

- Pass at OSH
- Refer at OSH
- Transfer Back to BH
- Expired
- Hospice Care
- Parent Refusal
- Missed Baby

Risk Indicators Monitoring Schedule Confirmed HL Discharged

Specify Syndrome: Add Unlisted Syndrome

Family Member with HL:

Other Notes:

Record: 1 of 1 Filtered Search

Form View



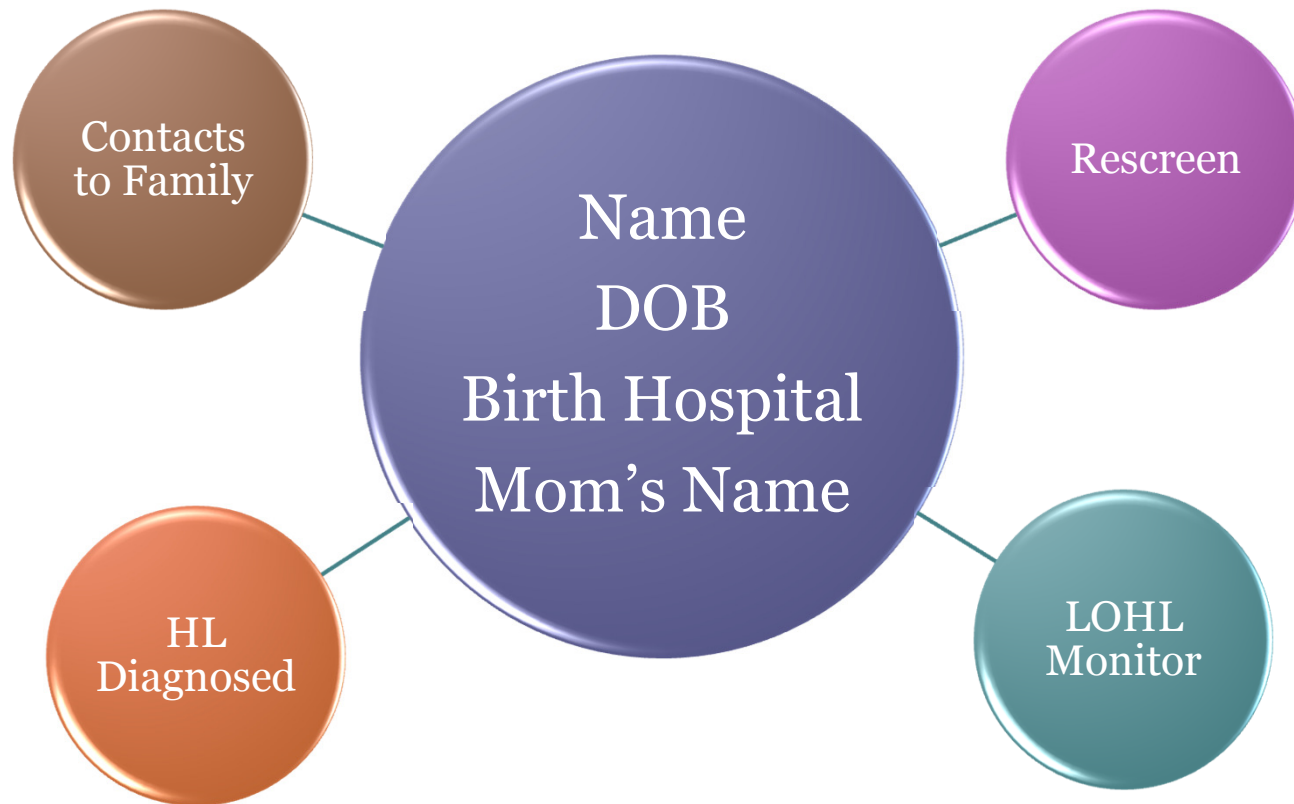
It's time to switch to a database if...

- You routinely search for a subset of data.
 - Babies needing rescreen
 - Babies lost to follow up
 - Babies at risk for LOHL
- You have had difficulty extracting a subset of your data.

Queries & Reports

- Query allows you to search for records based on a specific set of parameters.
 - Data can be pulled from multiple tables
 - Frequently used queries can be saved and integrated into reports or forms
- Reports allow you to display data in a consistent, pretty format

Getting Started



A few terms before starting...



- Primary Key: Number that is assigned to each record which will connect records across tables.
 - This number should be completely independent from any other identifier (not a hospital registration number, social security #, insurance #)
 - Easiest to let the program make the assignment (Autonumber) in increments (1,2,3...) or random.

Index

- Specify “no duplicates”
- Prevents entering same infant more than once
- Need to identify a unique datapoint.
 - Hospital registration number
- Datapoints which can be shared by more than one record, such as DOB can be duplicated.

Data Types

- **Text**
 - For smaller amounts of text (limit is 255 characters).
 - Can limit to less text as needed
- **Memo**
 - Allows for longer text storage (use for open text fields)

Data Types

- Number
 - Can specify format (%,\$)
 - Can be a numeric calculation
- Date/Time
 - “Input Mask” allows you to choose the format.
- Yes/No
 - True/False
 - Parents Declined, Lost to FU, Deceased

Look Up Wizard

- Uses power of relational database
- Save a set of values in one table (ie, screening results or list of diagnostic centers)
- Connect field to existing table to select desired value
- Actual data point is a number.
- Changed your mind? No problem, change the text in one place, automatically updates across all entries.

Results:

Pass Bilaterally

Refer Bilaterally

Right Pass, Left Refer

Right Refer, Left Pass

Results:

Pass Bilaterally

Refer Bilaterally

Refer RIGHT, Pass Left

Refer LEFT, Pass Right

Starting a Table

Home **Create** External Data Database Tools Design

Table Table Templates SharePoint Lists Table Design

Form Split Form Multiple Items PivotChart Blank Form More Forms

Labels Blank Report Report Wizard Reports Query Query Macro

EHDI 2013

Field Name	Data Type	Description
DatabaseID	AutoNumber	
MB/SCC	Text	
DOB	Date/Time	
CPI	Number	
Last_Name	Text	
First_Name	Text	
Date of Test	Date/Time	
Results	Number	
OSH	Number	
Tester	Number	
Delivery_Type	Text	
Gender	Text	

Field Properties

General	
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	No
Smart Tags	
Text Align	General

Design view. F6 = Switch panes. F1 = Help.

Table Tools New EHDl Database

Home Create External Data Database Tools Datasheet

Calibri 11

Font Rich Text

Refresh All New Save Delete More Totals Spelling

Sort & Filter Selection Advanced Toggle Filter

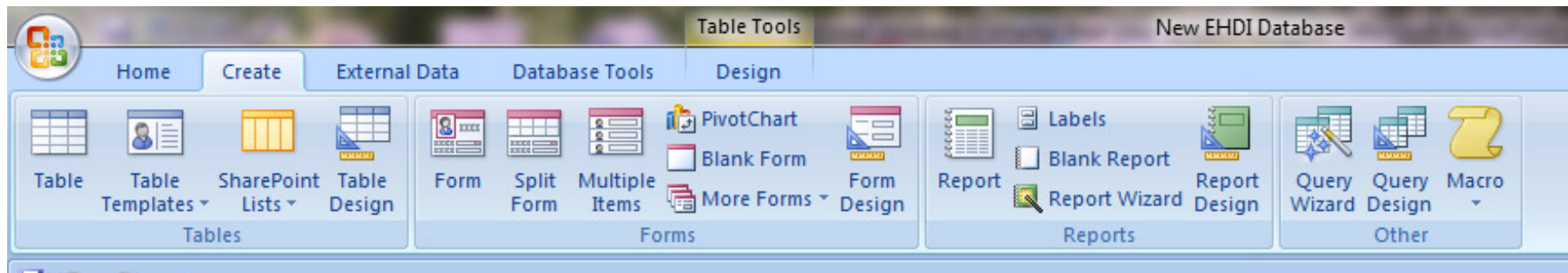
Datasheet View PivotTable View PivotChart View Design View

	MB/SCC	Birthdate	CPI	Last Name	First Name	Date of Test	Results
1	Mother Baby		0	Boerst	Angelique	1/17/2014	1
+	23878	Mother Baby	5/6/2007	25213385 boerst	angelique		
*	(New)		0				

Navigation Pane

Record: 1 of 2 Filtered Search

Adding Forms and Queries



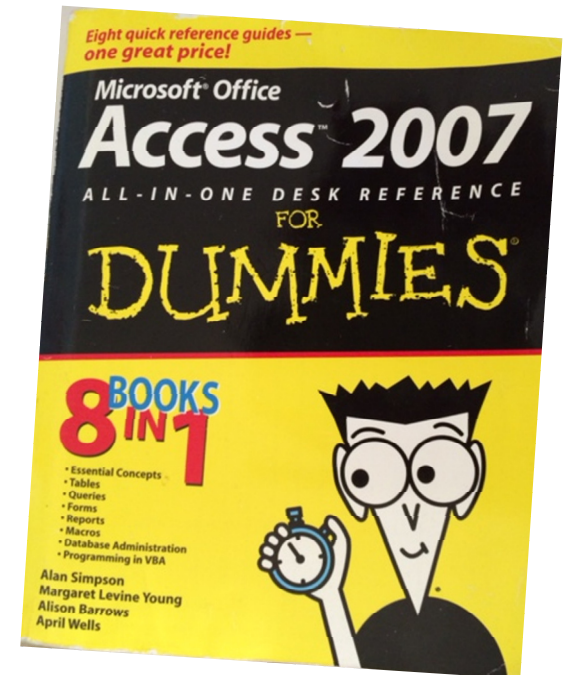
- Many options when creating forms or queries
- Wizards make this easier.

Moving Existing Data Into New Format

- Need to standardize existing data before moving into database.
 - If using related tables to “look up” choices, need to use number instead of text.
 - These changes are easiest to make in a spreadsheet.
- Make sure column headings exactly the same.
- Use wizard to import

Final Thoughts...

- Like any software program, a little experience makes work easier.
- Use resources available to you
 - Take a class
 - Buy a book
 - Use the help function and tutorials



Resources which might be helpful...

- <http://schoolofdata.org/2013/11/07/sql-databases-vs-excel/>
- <http://arstechnica.com/civis/viewtopic.php?t=501890>
- <http://www.slideshare.net/stefanchauveau/>