MSTCVS CQI:
Michigan Society of Thoracic & CardioVascular Surgeons

Michigan Data Group – Traverse City: August 2012

BCBSM CQI - 2006

Outline Overview

- Who am I ?
- What is MSTCVS ?
- What do We Do ?
- Why am I Here ?
  - Judy's Visit to MSTCVS Meeting
- MSTCVS Data Audit Process

MSTCVS Coordinating Center

- Jaelene Williams, RN, MS
  - Nurse Practitioner CV/Thoracic Surgery
  - STS Data Manager 25+ years
    - St. Joseph Mercy Hospital, Ann Arbor
- MSTCVS Data Manager Coordinator - 2000
- September, 2012
  - MSTCVS Coordinating Center
  - Data Manager Education/Audit Coordinator

Organization Goals Are Alike

M·TQIP

MICHIGAN TRAUMA QUALITY IMPROVEMENT PROGRAM

- HOME
- About M·TQIP
- Calendar
- Contact Us
- Meetings
- Membership
- Publications
- Registry
- New Reports
- Legacy Reports
- Resources
- Members Only

Measuring trauma center outcomes with:

- data standardization
- complete and accurate data collection
- data validation
- risk-adjusted benchmarking

and correlation with processes of care.

That's M·TQIP

Michigan Trauma Quality Improvement Program

Program Overview

Similar CQI Groups

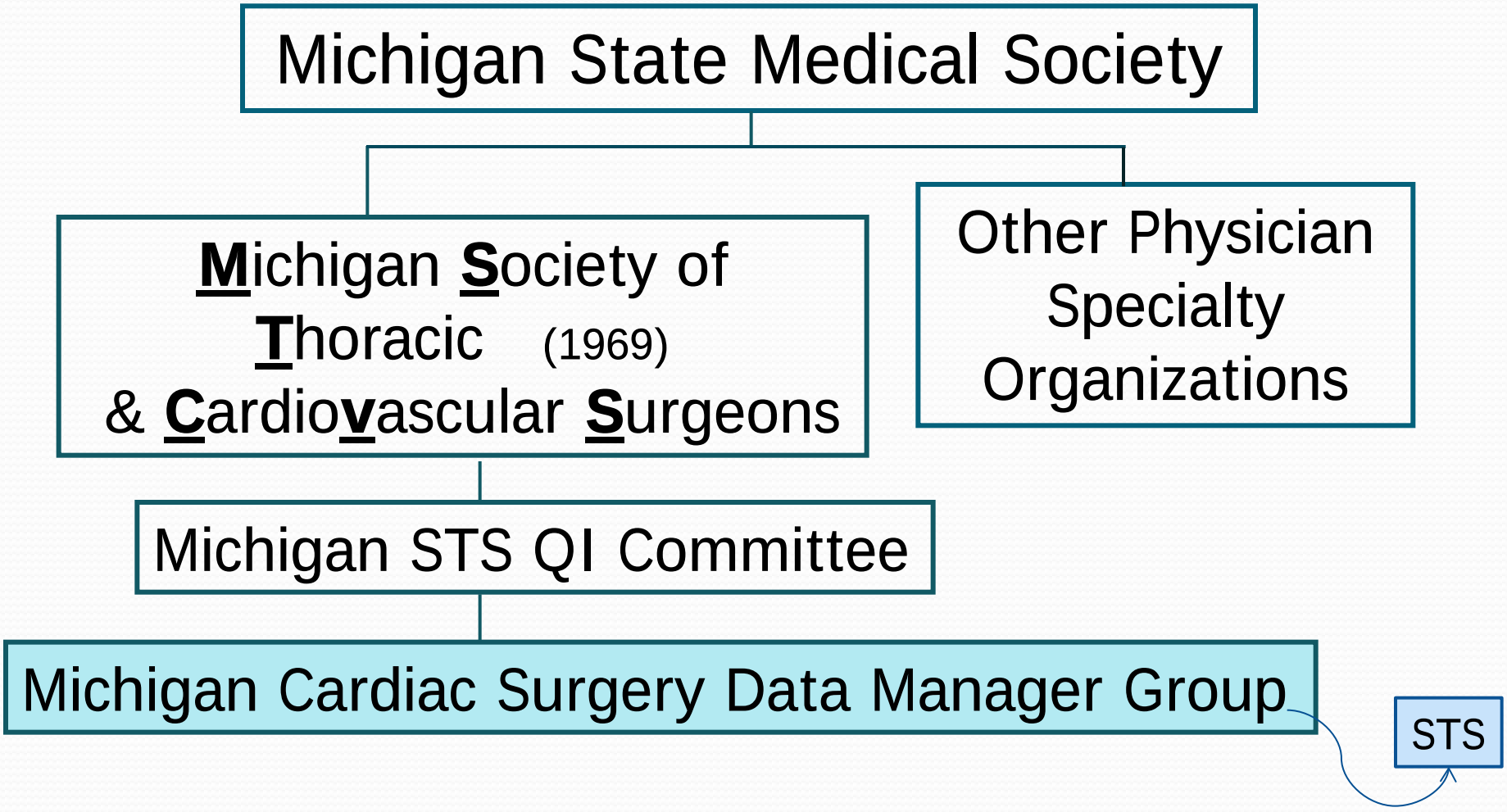
MTQIP

- 25 Michigan Trauma Centers
- 1-2 Registrars per Site
- Data Documentation Challenging
- Examine Data Variances
- Improve Patient Outcomes

MSTCVS

- 33 Michigan Hospital Cardiac Surgery Sites
- 1-3 Data Managers per Site
  - Some 2-3 Registries
- Data Documentation Challenging
- Examine Data Variances
- Improve Patient Outcomes

Michigan Cardiac Surgery Data Managers



- STS = **S**ociety of **T**horacic **S**urgeons
- National Thoracic (Chest) Surgeon's Professional Society
  - 50th Year (1963 -2013)
- Surgeon Members: Perform Cardiac, Lung & Esophageal Operations
- Associate Members – RN's, Data Managers, PA's, Perfusionists (CPB Machine) in Thoracic Areas

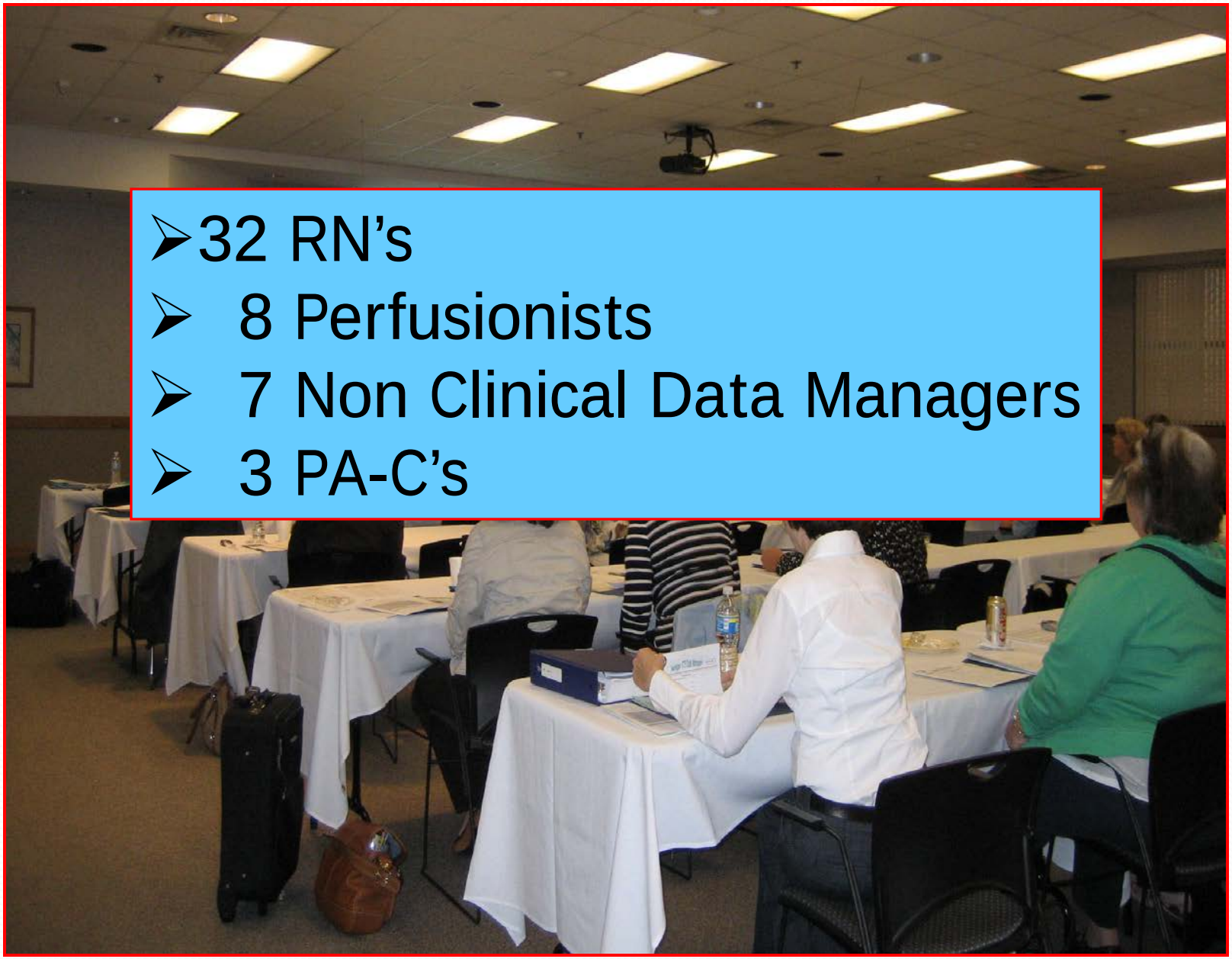
- STS National Database/Registry since 1989
  - Voluntary Contribution of Data Outcomes
    - >5 Million Patients 2013
- STS Guidelines govern Data Submission
- Certified STS Software Vendors
- Public Reporting Data Outcomes ~ 3 years
  - STS Website & Consumer Reports Magazine
  - Voluntary Submission of Outcomes
    - By Hospital, By Physician Practice

- 3 National STS Databases
  - Adult Cardiac Surgery – Oldest & Largest
    - ~1060 Participant Sites
  - General Thoracic Surgery
    - ~225 Participant Sites
  - Congenital Cardiac Surgery
    - 110 Participant Sites
- Hospitals or Physician Practices =Site
- ~ 95% of all places performing Thoracic Surgery

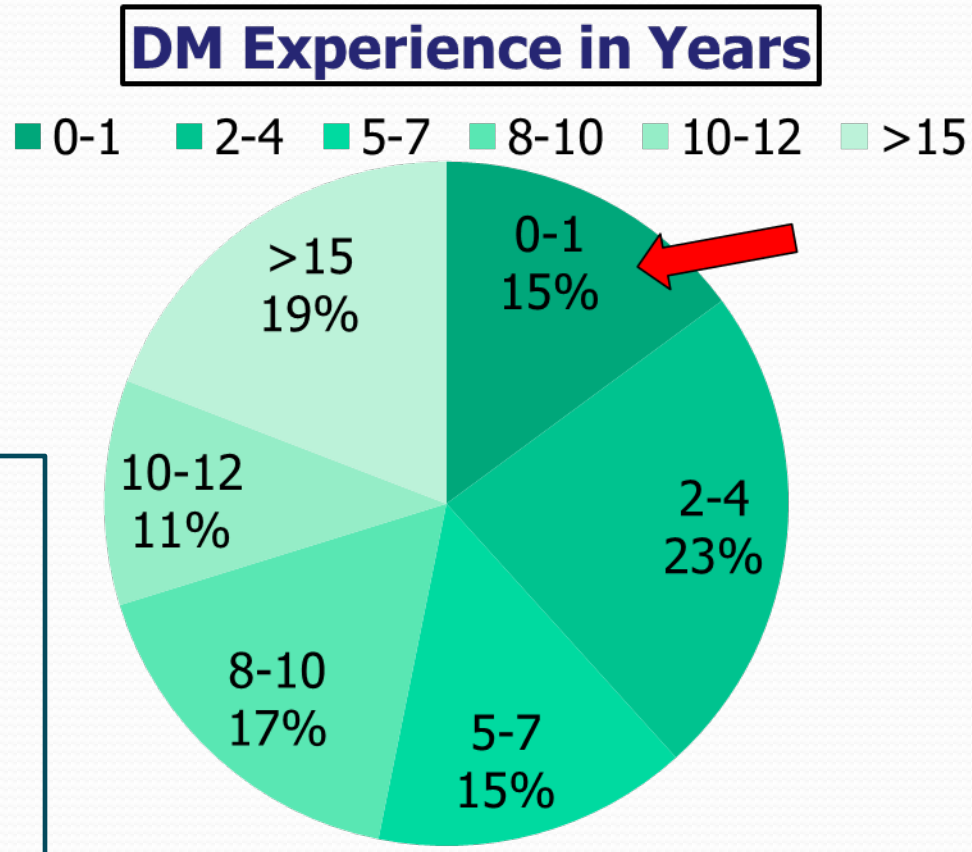
Data Abstraction Takes:

Like You !

Michigan Cardiac Surgery Data Managers - ~ 50 Active Members



Michigan STS Data Managers



 # Data Managers

0-1 Yrs = 7
2-4 Yrs = 11
5-7 Yrs = 7
8-10 Yrs = 8
10–12 Yrs = 6
- **15 Yrs = 9**

~ 70 on Email Roster

1997 STS Data Collection Form 5 pages

THE SOCIETY OF THORACIC SURGEONS
NATIONAL CARDIAC SURGERY DATABASE
DATA COLLECTION FORM

Demographics

Patient Name (Last,First,M.): _____

Member Number: ☐☐☐☐☐ *(5 Digit Number)*

Address: _____

City: _____ State: _____ Zip: _____

Telephone: (___) _____ - _____ Social Security Number: _____ - _____ - _____

Hospital: _____

Insurer: ☐ Medicare ☐ Medicaid ☐ Private/Corporate ☐ CHAMPUS ☐ Uninsured

Patient Transferred Directly From Another Hospital/Facility: ☐ Yes ☐ No

Other Hospital Performs Cardiac Surgery: ☐ Yes ☐ No

Dates: Admission: ___ - ___ - ___ Surgery: ___ - ___ - ___

Discharge: ___ - ___ - ___ Same Day Elective Admission: ☐ Yes ☐ No

Date of Birth: ___ - ___ - ___ Age: _____ Sex: ☐ Male ☐ Female

Race: ☐ Caucasian ☐ Black ☐ Hispanic ☐ Asian ☐ Native American ☐ Other

Referring Cardiologist: _____ City: _____ Telephone: (___) ___ - _____

Referring Physician: _____ City: _____ Telephone: (___) ___ - _____

Surgeon: _____ Assistant Surgeon: _____ Resident: _____

Responsible for Procedure: ☐ Surgeon ☐ Assistant Surgeon ☐ Resident

Patient History

Weight: _____ kg Height: _____ cm

Risk Factors: ☐ Yes ☐ No

- ☐ Smoking History:
  - ☐ Current Pk/Yrs: _____
- ☐ Family History of CAD
- ☐ Diabetes:
  - Control: ☐ None ☐ Oral ☐ Diet ☐ Insulin
- ☐ Morbid Obesity
- ☐ Hypercholesterolemia
  - Serum Cholesterol Level; Highest: _____
- ☐ Renal Failure:
  - Highest Serum Creatinine Level: _____
  - ☐ Dialysis
- ☐ Hypertension
- ☐ Pulmonary Hypertension
- ☐ Cerebrovascular Accident
  - ☐ Recent (< 2 wks) ☐ Remote (> 2 wks)
- ☐ Infectious Endocarditis: ☐ Active ☐ Treated
- ☐ Cardiomegaly
- ☐ COPD
- ☐ Immunosuppressive Rx
- ☐ Peripheral Vascular Disease
- ☐ Cerebrovascular Disease

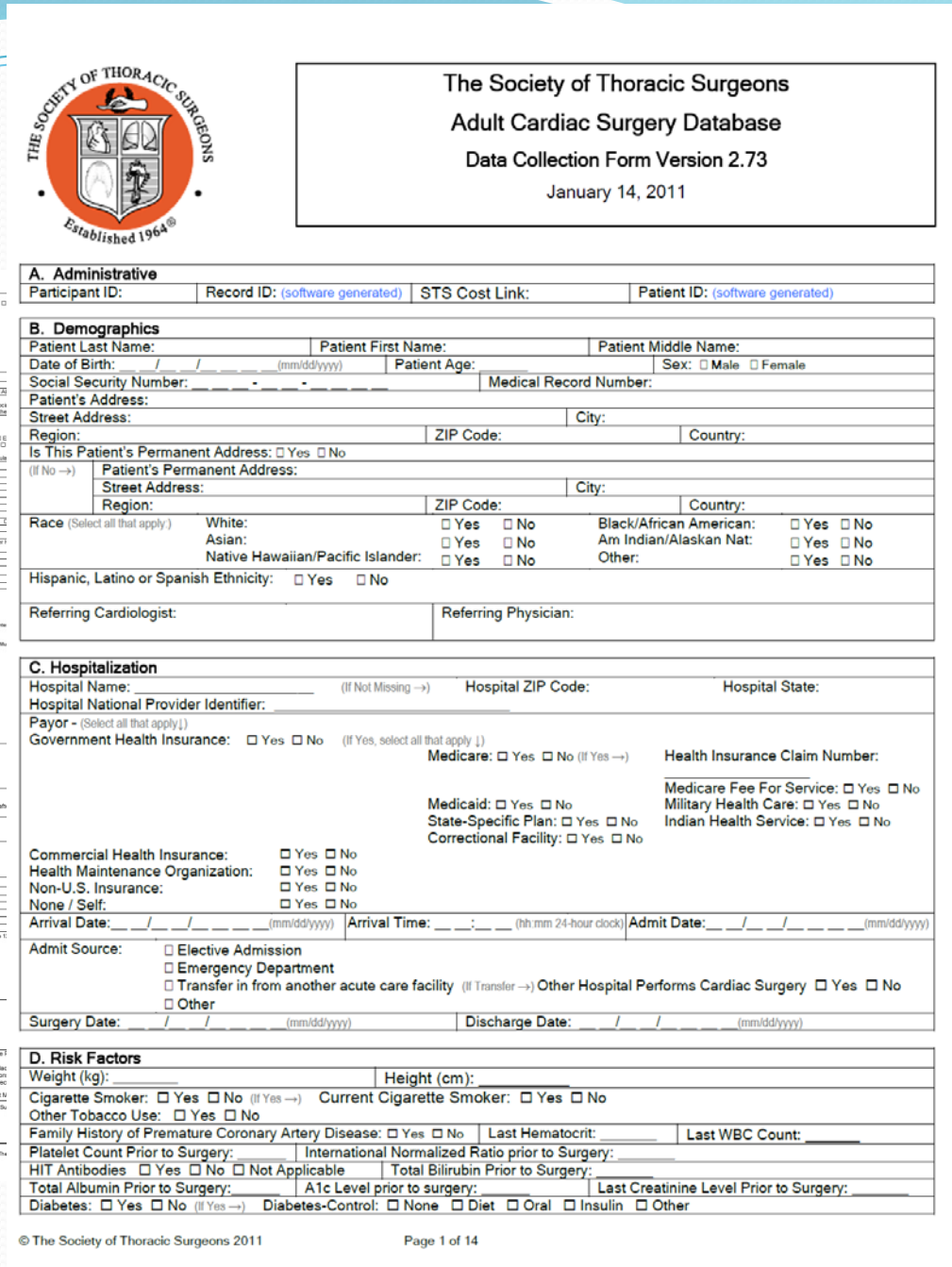
Previous CV Intervention: ☐ Yes ☐ No

Most Recent: ___ - ___ - ___

Number of Prior Cardiac Operations Requiring Cardiopulmonary Bypass: _____

- ☐ CAB
- ☐ Valve: (Check all that apply)
  - ☐ Replace: ☐ A ☐ M ☐ T ☐ P
  - ☐ Repair: ☐ A ☐ M ☐ T ☐ P
- ☐ Minimally Invasive CABG
- ☐ Minimally Invasive Valve: (Check All That Apply)
  - ☐ A ☐ M ☐ T ☐ P
- ☐ Other Cardiac: (Check All That Apply)
  - ☐ LVA ☐ VSD ☐ ASD
  - ☐ Congenital ☐ Cardiac Trauma
  - ☐ Batista ☐ Cardiac TX
  - ☐ Pacemaker ☐ AICD ☐ Other
- ☐ Other Non-Cardiac: (Check All That Apply)
  - ☐ Ao Aneurysm: ☐ Asc ☐ Arch ☐ Desc ☐ Thor/Abd ☐ Abd
  - ☐ Carotid Endart
  - ☐ Other Vascular
  - ☐ Other Thoracic
- ☐ Non-Surgical: (Check All That Apply)
  - ☐ PTCA ☐ Atherectomy/Laser ☐ Stent
  - ☐ Thrombolysis
  - ☐ Balloon Valvuloplasty: (Check All That Apply)
    - ☐ A ☐ M ☐ T ☐ P

Current DCF
16 Pages



The Society of Thoracic Surgeons

Adult Cardiac Surgery Database

Data Collection Form Version 2.73

January 14, 2011

A. Administrative

Participant ID:	Record ID: (software generated)	STS Cost Link:	Patient ID: (software generated)

B. Demographics

Patient Last Name: | Patient First Name: | Patient Middle Name:

Date of Birth: __/__/____ (mm/dd/yyyy) | Patient Age: | Sex: ☐ Male ☐ Female

Social Security Number: ___-___-____ | Medical Record Number:

Patient's Address:

Street Address: | City:

Region: | ZIP Code: | Country:

Is This Patient's Permanent Address: ☐ Yes ☐ No

(If No →) Patient's Permanent Address:

Street Address: | City:

Region: | ZIP Code: | Country:

Race (Select all that apply.)

White:	☐ Yes	☐ No	Black/African American:	☐ Yes	☐ No
Asian:	☐ Yes	☐ No	Am Indian/Alaskan Nat:	☐ Yes	☐ No
Native Hawaiian/Pacific Islander:	☐ Yes	☐ No	Other:	☐ Yes	☐ No

Hispanic, Latino or Spanish Ethnicity: ☐ Yes ☐ No

Referring Cardiologist: | Referring Physician:

C. Hospitalization

Hospital Name: _____ (If Not Missing →) Hospital ZIP Code: Hospital State:

Hospital National Provider Identifier: _____

Payor - (Select all that apply↓)

Government Health Insurance: ☐ Yes ☐ No (If Yes, select all that apply ↓)

Medicare: ☐ Yes ☐ No (If Yes →) Health Insurance Claim Number:

Medicare Fee For Service: ☐ Yes ☐ No

Medicaid: ☐ Yes ☐ No Military Health Care: ☐ Yes ☐ No

State-Specific Plan: ☐ Yes ☐ No Indian Health Service: ☐ Yes ☐ No

Correctional Facility: ☐ Yes ☐ No

Commercial Health Insurance: ☐ Yes ☐ No

Health Maintenance Organization: ☐ Yes ☐ No

Non-U.S. Insurance: ☐ Yes ☐ No

None / Self: ☐ Yes ☐ No

Arrival Date: __/__/____ (mm/dd/yyyy) | Arrival Time: __:__ (hh:mm 24-hour clock) | Admit Date: __/__/____ (mm/dd/yyyy)

Admit Source:

☐ Elective Admission

☐ Emergency Department

☐ Transfer in from another acute care facility (If Transfer →) Other Hospital Performs Cardiac Surgery ☐ Yes ☐ No

☐ Other

Surgery Date: __/__/____ (mm/dd/yyyy) | Discharge Date: __/__/____ (mm/dd/yyyy)

D. Risk Factors

Weight (kg): _____ | Height (cm): _____

Cigarette Smoker: ☐ Yes ☐ No (If Yes →) Current Cigarette Smoker: ☐ Yes ☐ No

Other Tobacco Use: ☐ Yes ☐ No

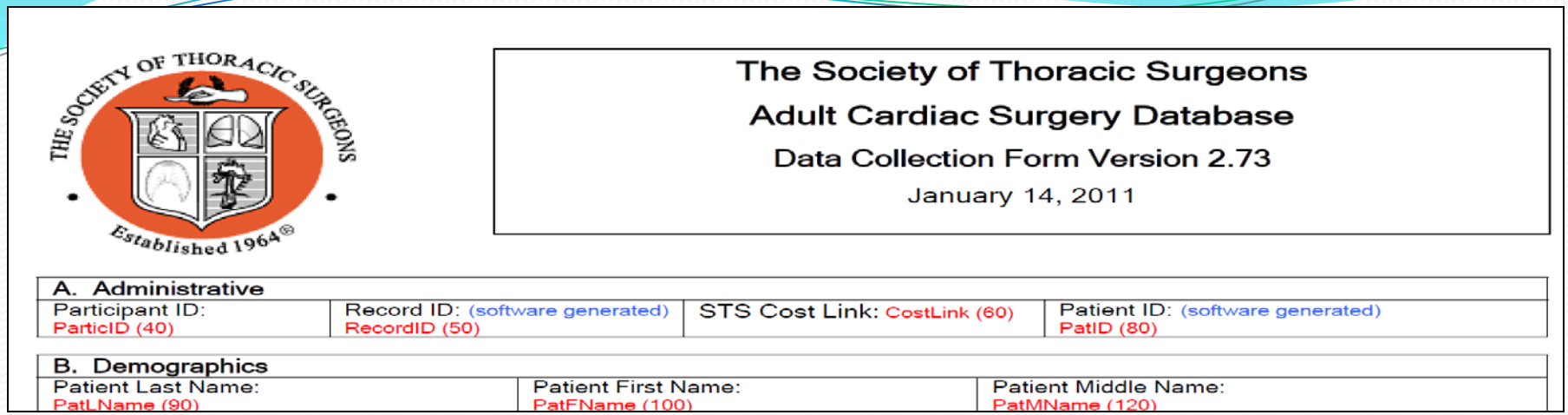
Family History of Premature Coronary Artery Disease: ☐ Yes ☐ No | Last Hematocrit: _____ | Last WBC Count: _____

Platelet Count Prior to Surgery: _____ | International Normalized Ratio prior to Surgery: _____

HIT Antibodies ☐ Yes ☐ No ☐ Not Applicable | Total Bilirubin Prior to Surgery: _____

Total Albumin Prior to Surgery: _____ | A1c Level prior to surgery: _____ | Last Creatinine Level Prior to Surgery: _____

Diabetes: ☐ Yes ☐ No (If Yes →) Diabetes-Control: ☐ None ☐ Diet ☐ Oral ☐ Insulin ☐ Other



The Society of Thoracic Surgeons

Adult Cardiac Surgery Database

Data Collection Form Version 2.73

January 14, 2011

A. Administrative

Participant ID: ParticID (40)	Record ID: (software generated) RecordID (50)	STS Cost Link: CostLink (60)	Patient ID: (software generated) PatID (80)

B. Demographics

Patient Last Name: PatLName (90)	Patient First Name: PatFName (100)	Patient Middle Name: PatMName (120)

- STS Version Change Every 3 years – 2011 “2.73”
- Largest STS Upgrade in 25 years
- STS Data Collection Form 9 Pages ->16 Pages
- Core Data Elements 342 –> 717
- Data Specifications Manual (Definitions & FAQ’s)
  - 168 –> 695 Pages

Many Data Elements !

- Demographics
  - Race, Address, Ethnicity
- Hospitalization
  - Insurance, Admit Source & Type, Dates
- Risk Factors: Comorbidities
  - HTN, DM, COPD, Labs, CV Disease, ETOHUse
- Previous Cardiac Interventions
  - Operation Type, Reop Reason, ?PCI, Stent

2.73 Data Elements Categories

- Preop Cardiac Status
  - Prior MI When, Anginal Class, CHF Class, Arrhythmias & When
- Preop Medications
  - BB, ASA, ACE/ARB, Anticoagulants, Steroids, ADP Meds: When Given
- Hemodynamics & Heart Catheterization Info
  - Cath Results, Echo Results, Valve Etiology, EF%, & How Obtained, Systolic Dimensions

2.73 Data Elements Categories

- Operative Information
  - Case Status (Elective, Urgent, Emergent)
- Operation & Specific Procedure Info
  - CAB, Valve, LVAD, Aorta OR, Arrhythmia OR
  - Intraop Testing, Blood Use, Anesthesia Info
- Postoperative Course Info
  - Blood Use, Extubation Time, Highest Creatinine

2.73 Data Elements Categories

- Postoperative Complications
  - Operative, Neuro, Renal, Vacular, Infection, Pulmonary, Other (Afib, GI, Cardiac Arrest)
- Discharge
  - Location, Medications Prescribed
- Mortality
  - When, Where, How, Why
- Readmission within 30 days of Procedure & Discharge

2.73 Effects

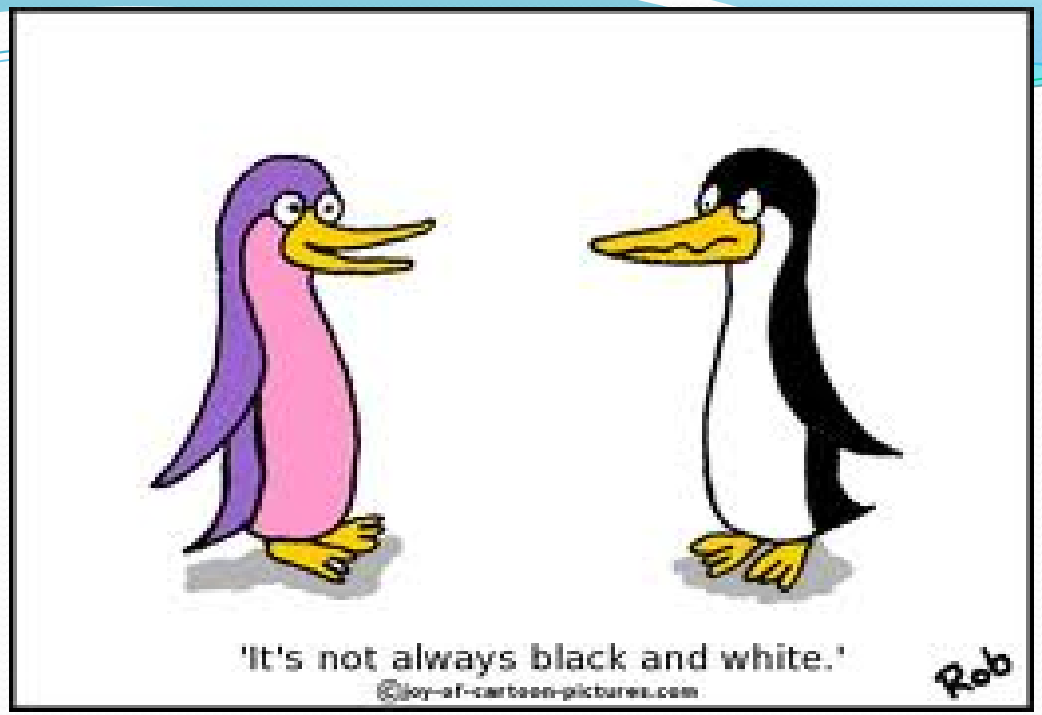
Many Challenges !

Not Easy Answers

Confusing

Headaches

Data Abstraction is
<u>Not</u>
Black & White !



If It Were – <u>You</u> Might Not be Needed….. and Any Chimpanzee could Abstract Your Data!

Remember: Job Security!

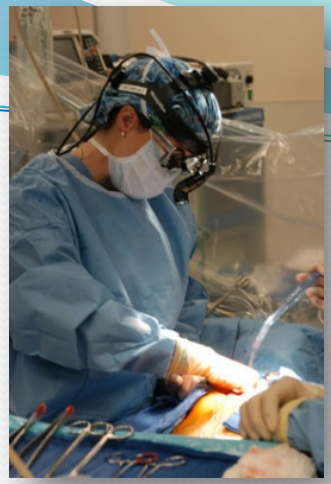
Googleimages/room162c.edublogs.org

You are Not Alone!

Helping Each Other Important

STS Data Abstraction = A Team Sport for Survival !

RN's ICU & Stepdown



Surgeon

OR Team Personnel

Perfusionist

The Society of Thoracic Surgeons
Adult Cardiac Surgery Database
Data Collection Form Version 2.73
January 14, 2011

A. Administrative
Participant ID: | Record ID: (software generated) | STS Cost Link: | Patient ID: (software generated)

B. Demographics
Patient Last Name: | Patient First Name: | Patient Middle Name:
Date of Birth: __/__/____ (mm/dd/yyyy) | Patient Age: _____ | Sex: ☐ Male ☐ Female
Social Security Number: ___-___-____ | Medical Record Number:
Patient's Address:
Street Address: | City:
Region: | ZIP Code: | Country:
Is This Patient's Permanent Address: ☐ Yes ☐ No
(If No →) Patient's Permanent Address:
Street Address: | City:
Region: | ZIP Code: | Country:
Race (Select all that apply) White: ☐ Yes ☐ No | Black/African American: ☐ Yes ☐ No
Asian: ☐ Yes ☐ No | Am Indian/Alaskan Nat: ☐ Yes ☐ No
Native Hawaiian/Pacific Islander: ☐ Yes ☐ No | Other: ☐ Yes ☐ No
Hispanic, Latino or Spanish Ethnicity: ☐ Yes ☐ No
Referring Cardiologist: | Referring Physician:

C. Hospitalization
Hospital Name: _____ (If Not Missing →) Hospital ZIP Code: | Hospital State:
Hospital National Provider Identifier: _____
Payor - (Select all that apply.)
Government Health Insurance: ☐ Yes ☐ No (If Yes, select all that apply.)
Medicare: ☐ Yes ☐ No (If Yes →) Health Insurance Claim Number:
Medicare Fee For Service: ☐ Yes ☐ No
Medicaid: ☐ Yes ☐ No | Military Health Care: ☐ Yes ☐ No
State-Specific Plan: ☐ Yes ☐ No | Indian Health Service: ☐ Yes ☐ No
Correctional Facility: ☐ Yes ☐ No
Commercial Health Insurance: ☐ Yes ☐ No
Health Maintenance Organization: ☐ Yes ☐ No
Non-U.S. Insurance: ☐ Yes ☐ No
None / Self: ☐ Yes ☐ No
Arrival Date: __/__/____ (mm/dd/yyyy) | Arrival Time: __:__ (hh:mm 24-hour clock) | Admit Date: __/__/____ (mm/dd/yyyy)
Admit Source: ☐ Elective Admission
☐ Emergency Department
☐ Transfer in from another acute care facility (If Transfer →) Other Hospital Performs Cardiac Surgery ☐ Yes ☐ No
☐ Other
Surgery Date: __/__/____ (mm/dd/yyyy) | Discharge Date: __/__/____ (mm/dd/yyyy)

D. Risk Factors
Weight (kg): _____ | Height (cm): _____
Cigarette Smoker: ☐ Yes ☐ No (If Yes →) Current Cigarette Smoker: ☐ Yes ☐ No
Other Tobacco Use: ☐ Yes ☐ No
Family History of Premature Coronary Artery Disease: ☐ Yes ☐ No | Last Hematocrit: _____ | Last WBC Count: _____
Platelet Count Prior to Surgery: _____ | International Normalized Ratio prior to Surgery: _____
HIT Antibodies ☐ Yes ☐ No ☐ Not Applicable | Total Bilirubin Prior to Surgery: _____
Total Albumin Prior to Surgery: _____ | A1c Level prior to surgery: _____ | Last Creatinine Level Prior to Surgery: _____
Diabetes: ☐ Yes ☐ No (If Yes →) Diabetes-Control: ☐ None ☐ Diet ☐ Oral ☐ Insulin ☐ Other

Data Manager

Michigan Data Managers

- Educational Meetings since 2001
  - Quarterly since 2005
- Goals:
  - Data Consensus in STS Abstraction
  - Improve Michigan Data Integrity
  - Improve Patient Outcomes

Michigan Data Managers

- Getting Together is Beneficial
  - Education
  - Networking
  - Collaboration
- Help Each Other
  - Share Joys & Divide Grief !

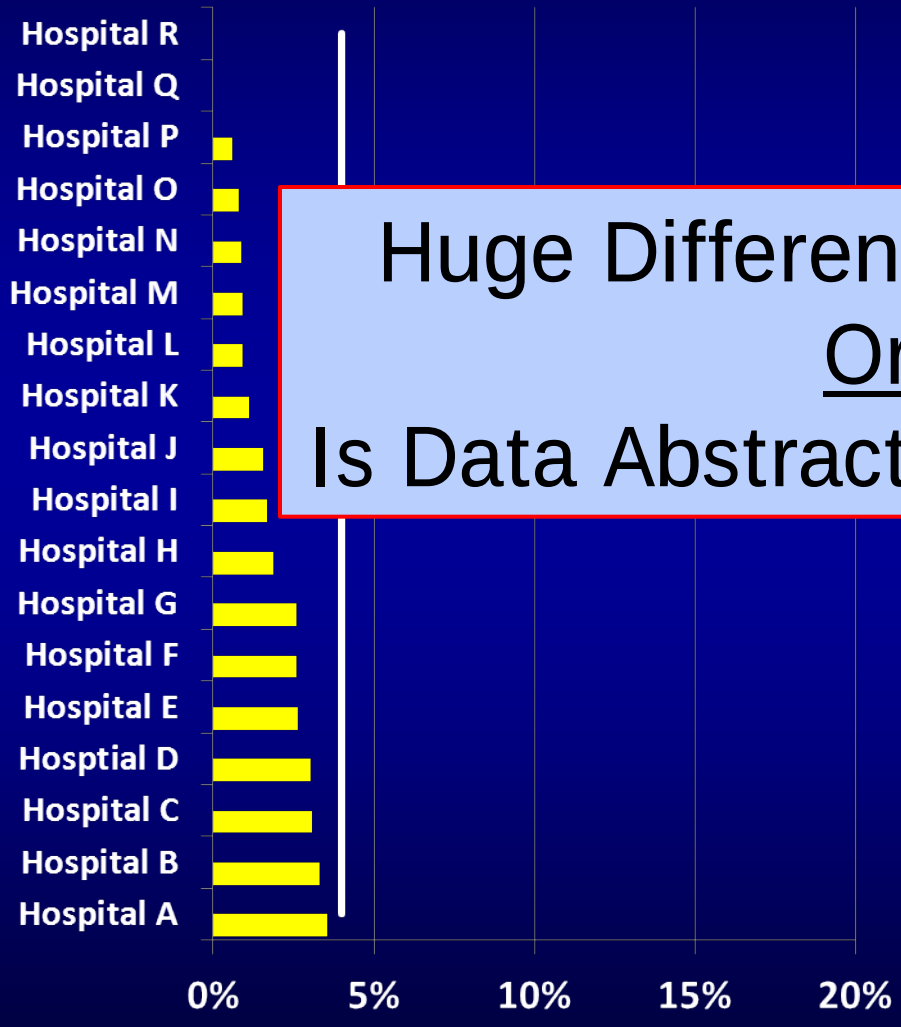
Helping Colleagues and …..

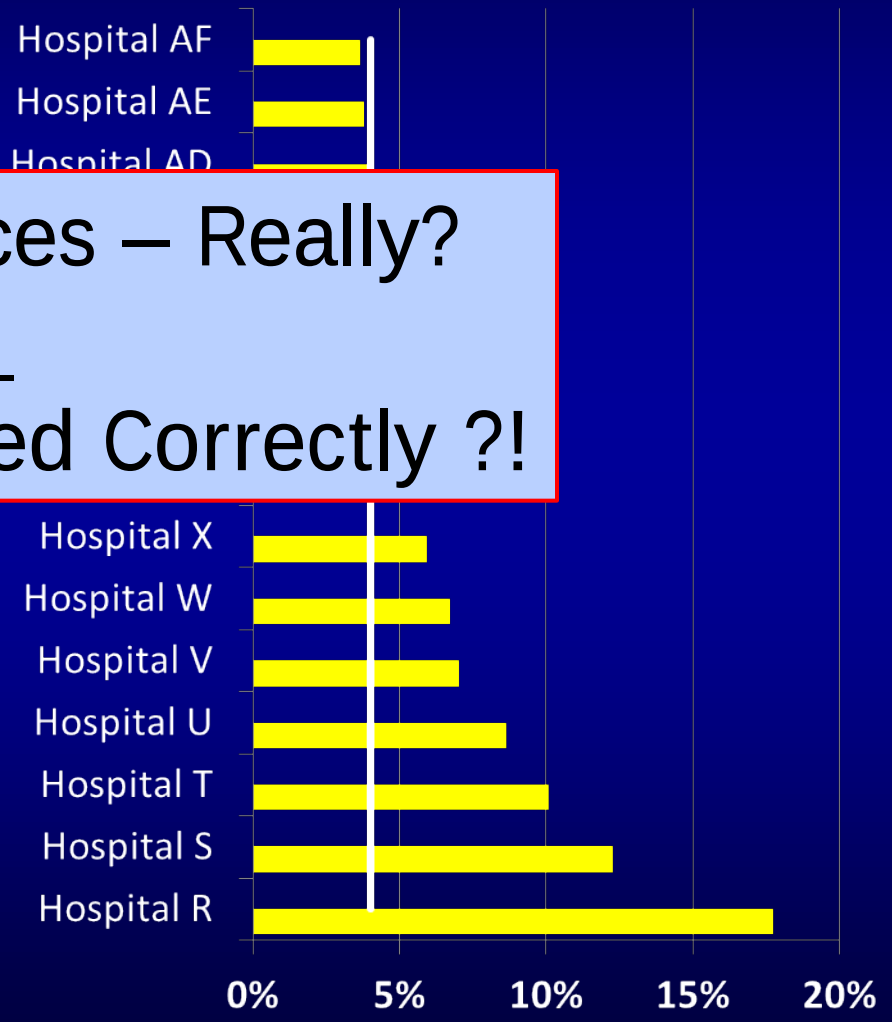
Teamwork are Essential !

Michigan Data Managers

- Data Accuracy & Integrity Improves Through:
- Data Manager Meetings
  - Networking, Collaboration & Education
- Audits
  - MSTCVS Site Audits
  - National STS Audits

Isolated CAB
Pleural Effusion requiring drainage
July 2011 – June 2012





Huge Differences – Really?

Or

Is Data Abstracted Correctly ?!

Audits are Like Baby Monitoring

Well Baby Check-Ups Needed for a Healthy Database !

MSTCVS Site Audits

- Mutual Education Process
- Audit Score =% CQI Performance Measures
- Not Punitive
- Goal: Increase Outcomes Accuracy for MSTCVS

MSTCVS Audit Process

- 2 Audit Types:
- On Site – 2 of Us Travel to Hospital Site
  - 2 RN Colleagues
  - MSTCVS Coordinating Center – Ann Arbor
- 2 Days to Complete Chart Reviews
  - Re-Abstract Selected Data Variables
    - Includes Risk Model Variables
  - Risk Models from National STS Harvests
    - Predicted Risk of Mortality, Renal Failure, etc.

MSTCVS Audit Process

- Remote/Desk Audit
  - Jaelene Alone
  - ~ 2 weeks to Complete
    - Regular Job Continues
- Electronic Access to Site EMR
  - Decreased Winter Travel!
    - Port Huron & St. John Detroit
      - December & January

MSTCVS Audit Process

- 20 Charts per Site
  - 10 CAB
  - 4 AVR
  - 2 MV Repair
  - 2 MVR
  - 2 Other Cases
  - Elective, Urgent, Emergent Case Types
- 2 Mortality Charts
- 30 Day F/U Process Check
- Consecutive Cases Log for 2 Months
  - May & June Cases for 2012
  - Will change with Quarterly Data Harvested

Audit Variables

- + Weighted Audit Variables
  - Missed Mortality vs Missed Height
- Any Risk Model Variable is Possible
  - Not Every Element Audited
  - Currently Auditing 80 Variables
- Selected Some New 2.73 Variables
  - Monitor Upgrade Process
  - Many Challenges -> Barometer Check

Site Receives Preliminary Audit Summary for All Charts Reviewed

1. ***MR #921926 – CAB Mortality***

   Postop Events: Missed PO Atrial Fibrillation.

2. ***MR #72684974 – Emergent CAB***

   Operative: Chart states Intraop TEE was performed, no abstraction completed of data.

Site Data Manager Reviews for Mistakes from MSTCVS Auditors After Agreement – Finalized and Scored for Star Rating

   Operative: Intraop Blood: One bag of Platelets abstracted as 5 units. Should be 1 unit only.

4. ***MR #1181951 – Other Mortality – CAB, MVR, TVR, CEA***

   Preop Cardiac Status: Prior MI missed.

   Postop Events: PO Atrial Fibrillation missed.

5. ***MR #1095554 – CAB***

   Preop Cardiac Status: Cardiac Presentation on Admission: Abstracted as Stable, documented in chart to meet criteria for Unstable.

   Operative: Status of Procedure abstracted as Elective should be Urgent.

Audit Process

- + Education for Non Audited Variables
  - Family Hx – “Strong” per Cardiology
  - No Documented Ages
    - Must meet STS Age Criteria to Qualify
- Information as an FYI – Audit Summary
  - No Point Deductions
- Track “FYI”s -> Future DM Meetings
  - Education Needs

Audit Summary

- Letter with Star Rating Score
- Suggestions for Process Improvement PRN
  - ? Areas of Frequent Error

Portion of MSTCVS Overall Performance Score per Year – Tied to CQI $$
4 or 5 star= 10pts, 3 star=5 pts, 2 star=0 pts

STS National Audits 2012

- 54 total audits
  - On site Audits — 15 audits
  - Desk Audits — 39 audits
    - Remote Access — 11 sites
    - CD — 14 sites
    - Paper — 14 sites

National STS Audits

- Michigan National Audits - 2013
  - Sparrow Hospital – Lansing
  - Covenant Hospital – Saginaw
  - Lakeland Regional – Saint Joseph
- Past National Audits:
  - Beaumont, Borgess, Henry Ford Macomb, & Oakwood

Audit Lessons ?

Some Perspective.....

- 1st Audit of 2.73 Version
- Started in September 2012
  - Year Long Process – All 33 Sites
- Core Data Elements - Doubled
- STS Data Collection Form –> 16 Pages
- Remind Surgeons – Part of the Team Help !

8 Site Audits: Sept. - April

- 5 On-Site Audits Completed:
  - Spectrum
  - McLaren MaComb
  - Sinai-Grace
  - McLaren Flint
  - Henry Ford Detroit
- 3 Remote Audits
  - Port Huron
  - St. John Detroit
  - University of Michigan

Audit Lessons Learned

- Preop Phase = Most Errors All Sites
- STS 2.73: Increased Preop Variables
  - Patient Risk Profiles & Risk Models
    - MELD Score, Home $O^{2,}$ Sleep Apnea, Cancer 5 Yrs, ETOH levels, Illicit Drug Use, Frailty Index, Recent or Remote Pneumonia, CHF, Angina Classification….
- Quandary: Cardiac Surgery: ? Preop Involved
  - Dependent on Cardiology/Medicine Documents
- Difficult STS Data Capture Preop Phase

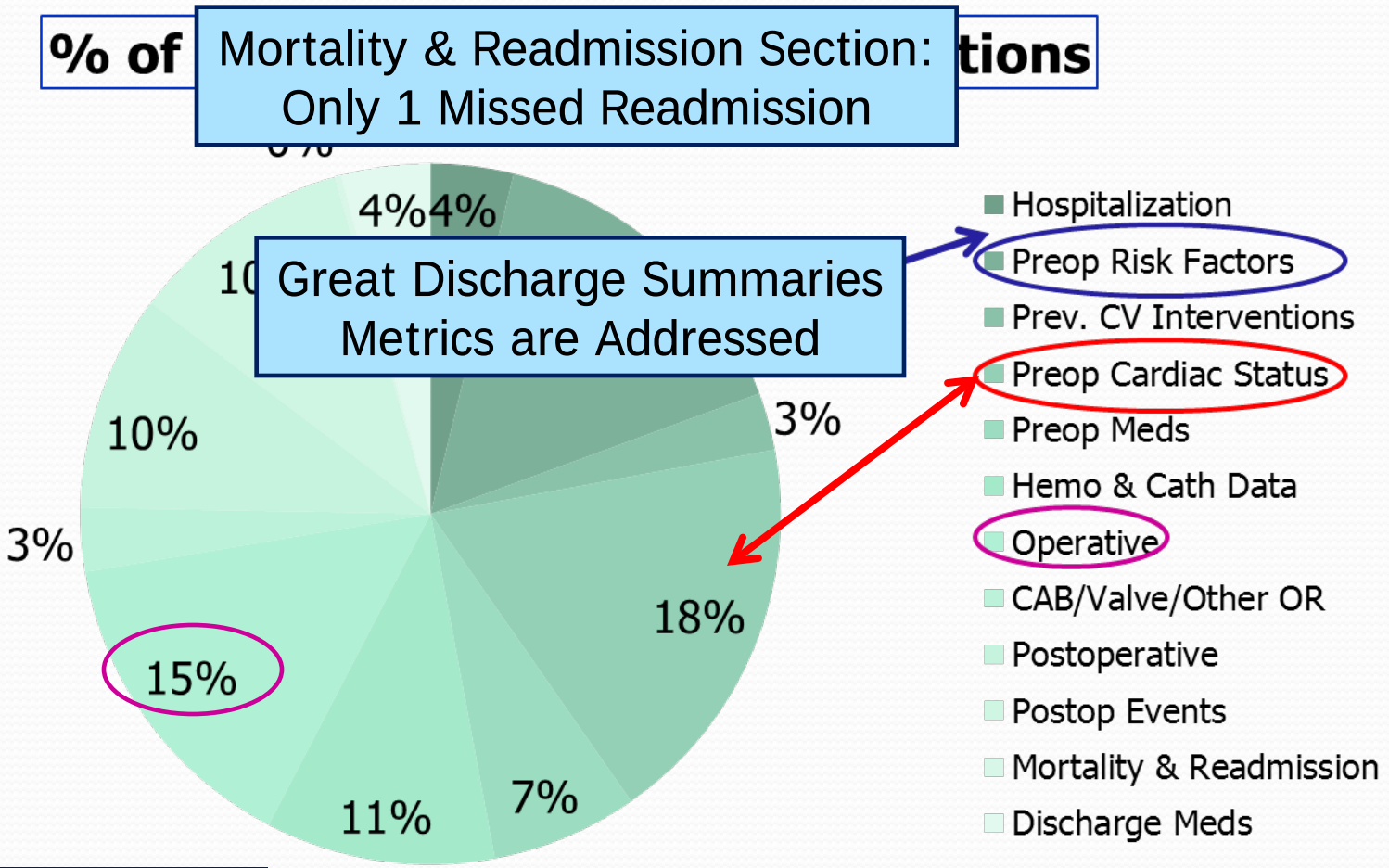
Googleimages: 123rf.com

Audit Lessons Learned

- 2nd Area=STS "Operative" Area
  - Not OR Cases
- STS 2.73 Increased O.R. Variables
  - Canceled Case, Type, Reason
  - Unplanned Procedure Type & Reasons
  - Appropriate ABX & Timing, Intraop TEE Results
  - Echo Assessment of Aorta/Arch
  - Intraop Blood Product Capture
- OR Team & Surgeon Help

Googleimages: dh.org

Data Abstraction Errors



8 Sites Combined # of Errors

Improvement Opportunities

- Sites: Increase Focus on Preop Elements
  - Describe CHF & Angina Symptoms
  - Detailed H & P, ? Mid Level Education
- Surgeon Op Note Very Important!
  - What transpired that led to the OR?
  - Detailed, Dictated Op Notes
- Surgeon Story is the Best Summary!
  - Dictate Preop and Intraop !

Data Integrity is the Foundation:

- ✓ Practice Guidelines/Benchmarks
- ✓ Paper & Data Presentations
- ✓ Improved Patient Outcomes

Otherwise, Things are Broken!

Accurate Data is Everyone's Responsibility !

Googleimages: swass.net & 1000lonelyplaces.com

If It Was Not Documented – It Was Not Done!

STS Data Abstraction is a Team Sport!

Surgeons: Help Make Data a Team Responsibility!

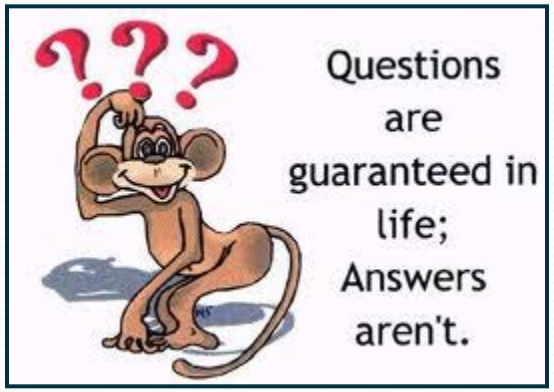
Googleimages: cybernation.com

MSTCVS Audit Goals

- Guide/Re-evaluate Data Manager Training Ongoing
  - Quarterly DM Education Meetings
  - DM Workshop Training -> Yearly
    - May 10th : 10 am – 4 pm
- Help Develop Best Practices for Data Abstraction 2.73 & beyond….
  - January 2014 New STS Upgrade Begins

MSTCVS Audit Goals

- Ongoing Review of Audit Scoring Methodology for Updating PRN
  - Discussions with MSTCVS Quality Committee Surgeons
- Sites Need to Review Audit
  - Please Provide Us Feedback
  - Continued Improvement


Questions are guaranteed in life; Answers aren't.