CLINICAL SAFETY & EFFECTIVENESS
COHORT # 19

Implementing Electronic Preoperative Packets

Team:
Marc DeHart, MD
Braden Boyer, MD
Ryan Egbert, MD
Sarah Speicher, MS

Facilitator:
Sherry Martin

Sponsor:
John Toohey, MD
Professor,
Dept of Orthopaedics

Fall 2016

UT Health San Antonio

WHAT WE ARE TRYING TO ACCOMPLISH?

OUR AIM STATEMENT

The aim of this project is to decrease the number of joint service orthopaedic pre-surgery resident call-backs due to incomplete and/or missing pre-surgical paperwork by 50% by January 2017.

(Provide complete, legible, useable data from clinic to hospital = ↑ quality)
(Improve "DRG weighting" = correctly bill (↑$) for our sicker patients)

PROJECT TIMELINE

Task	Timeframe
Team Established	July 2016
AIM Statement Created/Finalized	August - September 2016
Process Map/Fishbone Diagram Created	September 2016
Baseline Data Collected	September 2016 - Current
Driver Diagram Created	October 2016
Intervention Implemented	December 2016
Data/ROI Analysis	December 2016
Presentation	January 2017

BACKGROUND

- Despite major investments in computers, paper preoperative forms (including History & Physical form, Form 92, and surgical consent) are still the major form of information transfer at the MARC Orthopaedics Clinic
- Paper forms that are faxed to University Hospital prior to a patient's surgery often results in incomplete items or missing paperwork
- Orthopaedics residents are called by the nursing staff at University Hospital when a patient's preoperative paperwork is incomplete or missing
- Lack of medical history can result in under billing by hospital

Scheduling Form
Form 92

University Health System

Orthopedic Surgery Elective Surgical Orders

Date of Surgery: 11/19/16 EDOS _____
Surgery location: ☑ UH ☐ MC-SC ☐ RBG
☐ Outpatient Surgery – Patient Reports to Pre-Op
☑ Surgery with Same Day Inpatient Admission – Patient Reports to Pre-Op

Alter MARC ORTHOPAEDICS-UT Med
Ref: Pogosian, Elena, MD 210-358-8820

Clinic Information

Clinic Contact Person: SUE ADAMS Clinic Phone Number: 210-450-9353
Clinic Contact Email: adamsjs@uthscsa.edu [redacted] 12/17/16
Clinic Address: 8300 Floyd Curl -3C San [redacted]
Insurance: Care Link. Groups: [redacted]

Primary Diagnosis: Right Knee OA Dx Code M17.11
Secondary Diagnosis: Dx Code

Anticipated Surgery or Procedure(s)

Procedure 1: Right TKA
Procedure 2: CPT Code 27447
Procedure 3: CPT Code
CPT Code

Allergies:
Latex Allergy: ☐ Yes ☐ No
Medication Allergies:

Laboratory Orders

☐ No Lab ☐ CBC ☐ BMP ☐ CMP ☐ PT/INR ☐ T&S
☐ UA ☐ HbA1c all DM ☐ CXR ☐ EKG ☐ Other:

Day of Surgery Orders:

☐ None
☐ POC glucose: all patients *call anesthesia if ≥200
☐ POC bHCG: females
☐ INR: Coumadin
☐ T&S recheck
☐ H/H
☐ Type and Cross _ units
☐ Other:

Admit Location: _____
Room Number: _____
Post-op bed request: _____
Isolation Status: _____

Orthopedic Surgery: Pre OP Medication Orders

Antibiotics: (To be given within one hour prior to incision)
☑ Cefazolin 2g (≤120kg) or 3g (>120kg) IV, or appropriate pcn dosing
If PCN allergic:
☐ Clindamycin 600 mg IV (>80kg = 900mg) or
☐ Vancomycin 1 g (<80kg) or 1.5 gm (>80kg)
(If Vancomycin used document indication in Patient chart)
*** For other allergies, please page the ID pharmacist at 205-0297.

Mechanical VTE prophylaxis (preop):

☐ Ted hose non-operative LE ☐ Bilat LE
☐ SCDs non-operative LE ☐ Bilat LE ☐ Other:

Special Equipment/Supplies/Instructions:
1. Stryker Total Knee
2.
3.
4.
5.

Positioning:
☐ Supine ☐ Prone ☐ Lateral decubitus ☐ Bean Bag
☐ Peg Board
☐ Beach-chair ☐ Semi-Beach-chair ☐ Other:

Table:
☐ Hana ☐ OSI flat-top ☐ Standard OR table
☐ Allegro/Surfboard (☐ Reverse) ☐ McConnell Headrest
☐ Other:

Pre OP Instructions

Diet:
☐ NPO after midnight
☐ Other:

Day of Surgery/Holding Orders:
IV Access
☐ Lidocaine 1% 0.5ml intradermal for IV start
☐ Start IV w/ Normocel-R at 20 ml/hr
☐ Start IV w/ 0.9% Sodium Chloride at 20 ml/hr

☐ **Chlorohexidine shower surgical site the night before procedure**
☐ **Chlorohexidine wipes to surgical site in holding area**
If Chlorhexidine allergy:
☐ **Comfort wipes**

Hair clipping to be performed by:
☐ MD
☐ Pre-op staff
☐ OR staff

Preop Consults:
☑ Anesthesia preop (APC) _____
☐ Primary Care Provider
☐ Cardiology:
☐ Crutch/Walker Training
☐ NONE
☐ Other:

Anesthesia Requirements

☑ Anesthesia required ☐ No Anesthesia required
☐ Local/MAC ☐ Spinal/Regional
☐ Procedural sedation ☑ General anesthesia
☐ Regional block for post-op pain
☐ Pediatric Anesthesia

OR Requirements

☐ Intra-Op Fluoro
☐ Frozen section ☐ NONE
☐ Other:

Case Order # 2 Est. time for procedure: 2

Ordering Physician's signature (Required) _____ ID# (Required) 33523 Date 11-9-16 Time 11:45

Attending Physician (Print) _____ ID# (Required) _____ Service Ortho

BCHD# 92-A General Surgery REV 3/15 Original – Medical Record Chart Order # D 315

H&P

Marc M. Dehart, MD
MARC ORTHOPAEDICS-UT Med
Ref: Pogosian, Elena, MD 210-358-8820

HISTORY & PHYSICAL

ACKNOWLEDGMENT OF H&P - CHOOSE ONE:
(IF ATTACHING H&P DONE WITHIN 30 DAYS PRIOR)

☐ The patient was examined and the H&P performed within 30 days was reviewed and there are no changes.
☐ The patient was examined and the H&P performed within 30 days was reviewed and updates are noted in progress notes/update below.
☐ The H&P was performed more than 30 days prior to surgery / hospitalization and a relevant new H&P has been performed.

MUST SIGN AT BOTTOM OF COLUMN

OR

COMPLETE THIS ON THE DAY OF SURGERY

Present History: Right knee OA
Pre-Procedure Diagnosis: R. gut knee OA
Medical History: HTN, gerd
Surgical History: R. knee scope
Present medications: ☐ per Medication Reconciliation
Allergies: Penicillin
Risks, benefits, alternatives explained: ☐ Yes

PHYSICAL EXAM DAY OF SURGERY (e.g. vitals/status, heart, lungs)	✓ Normal (unless noted)	Comments D = Deferred
* Mental Status	✓	
* Heart	✓	
* Lungs	✓	
General	✓	
HEENT	✓	
CNS		
GI		
GU		
Genitalia		
LNMP		
Musculoskeletal		R knee exam
Vital Signs: BP:	Pulse:	RR:

Provider Using Conscious Sedation for Anesthesia

ASA: ☐ I ☐ II ☐ III ☐ IV
☐ Re-assessed prior to procedure ☐ Airway Evaluated

Physician Signature: _____
Date: _____ Time: _____ ID# _____

University Health System
Surgery Center – Robert B. Green Campus
Surgery Center – Medical Center

History & Physical

POST OPERATIVE/PROCEDURE NOTE

* Post Procedure Diagnosis: ☐ Same

* Procedure(s) Performed:

Procedure Start: Procedure Stop:
* Attending Surgeon: ID#
* Surgeon: ID#
* Assistant: ID#
Anesthetic: ☐ Conscious Sed ☐ Local ☐ General ☐ Spinal/Regional ☐ Other:
Anesthesiologist: ID#
Condition during anesthesia: ☐ Stable ☐ Unstable
Post-operative condition: ☐ Stable ☐ Unstable
Operative note dictated ☐ Yes ☐ No
* Findings:

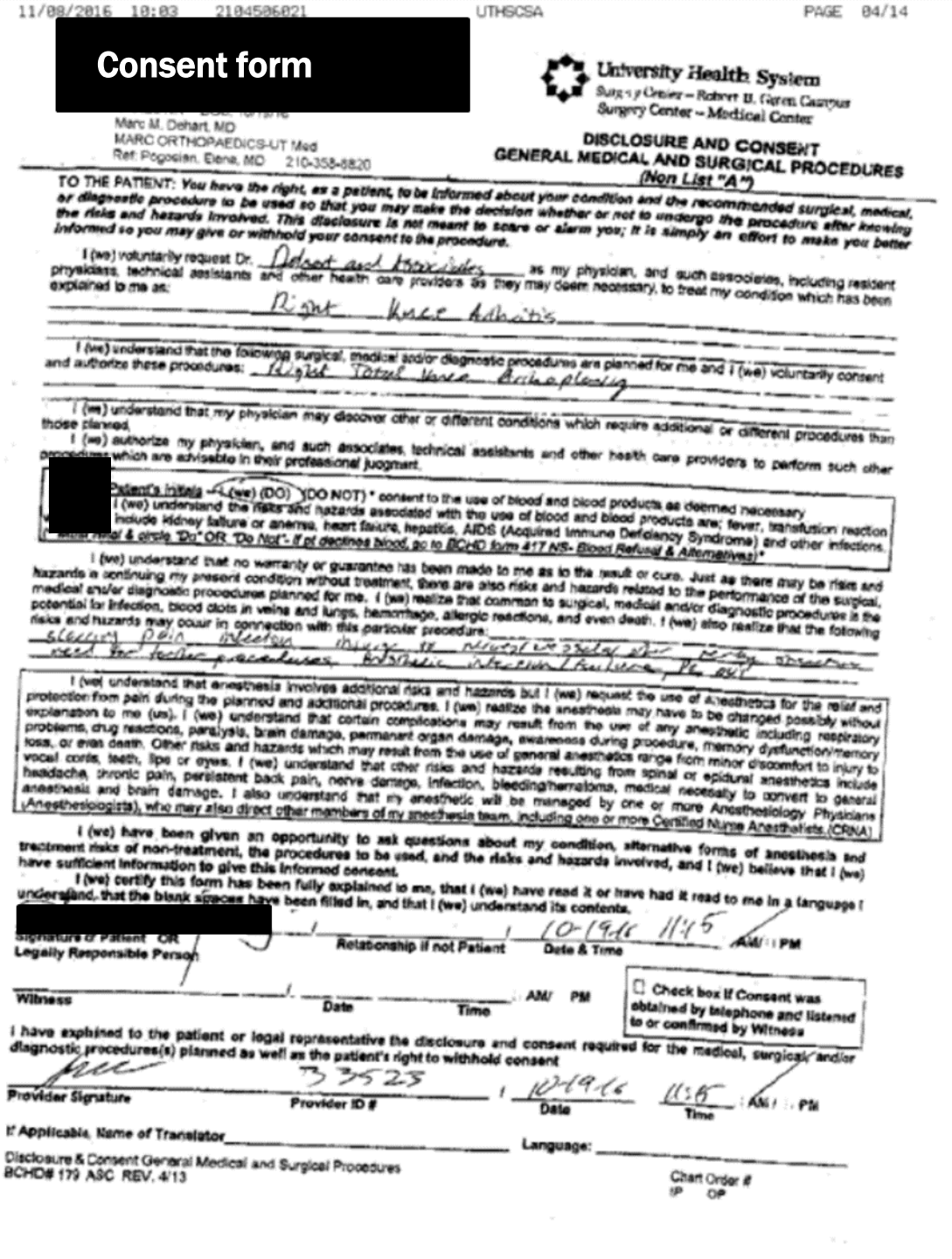
Complications: ☐ None OR _____
* Specimens removed: ☐ None OR _____
* Estimated Blood Loss: ☐ None OR _____

PHYSICIAN ORDERS

☐ Discontinue IV when tolerating P.O.
☐ May discharge home when discharge criteria met
☐ Rx Given
☐ Give home discharge instructions
☐ Follow up in ☐ ____ weeks OR ☐ ____ days

Physician Signature: _____
Date: _____ Time: _____ ID# _____

BCHD# 471 ASC 08/16 ASC History & Physical
* REQUIRED ELEMENTS FOR H&P AND POST OP NOTE



11/08/2016 10:03 2104506021 UTHSCSA PAGE 04/14

Consent form

University Health System
Surgery Center – Robert B. Green Campus
Surgery Center – Medical Center

Marc M. Dehart, MD
MARC ORTHOPAEDICS-UT Med
Ref: Pogosian, Elena, MD 210-358-8820

DISCLOSURE AND CONSENT
GENERAL MEDICAL AND SURGICAL PROCEDURES
(Non List "A")

TO THE PATIENT: *You have the right, as a patient, to be informed about your condition and the recommended surgical, medical, or diagnostic procedure to be used so that you may make the decision whether or not to undergo the procedure after knowing the risks and hazards involved. This disclosure is not meant to scare or alarm you; it is simply an effort to make you better informed so you may give or withhold your consent to the procedure.*

I (we) voluntarily request Dr. Dehart and Associates as my physician, and such associates, including resident physicians, technical assistants and other health care providers as they may deem necessary, to treat my condition which has been explained to me as: Right knee Arthritis

I (we) understand that the following surgical, medical and/or diagnostic procedures are planned for me and I (we) voluntarily consent and authorize these procedures: Right Total Knee Arthroplasty

I (we) understand that my physician may discover other or different conditions which require additional or different procedures than those planned.

I (we) authorize my physician, and such associates, technical assistants and other health care providers to perform such other procedures which are advisable in their professional judgment.

[redacted] Patient's initials (we) (DO) (DO NOT) * consent to the use of blood and blood products as deemed necessary.
I (we) understand the risks and hazards associated with the use of blood and blood products are; fever, transfusion reaction include kidney failure or anemia, heart failure, hepatitis, AIDS (Acquired Immune Deficiency Syndrome) and other infections.
Initial & circle "Do" OR "Do Not"- If pt declines blood, go to BCHD form 417 NS- Blood Refusal & Alternatives)

I (we) understand that no warranty or guarantee has been made to me as to the result or cure. Just as there may be risks and hazards in continuing my present condition without treatment, there are also risks and hazards related to the performance of the surgical, medical and/or diagnostic procedures planned for me. I (we) realize that common to surgical, medical and/or diagnostic procedures is the potential for infection, blood clots in veins and lungs, hemorrhage, allergic reactions, and even death. I (we) also realize that the following risks and hazards may occur in connection with this particular procedure: Bleeding, Pain, Weakness, Numbness, Need for further procedures, Arthritis, Infection, Failure, Pain, etc.

I (we) understand that anesthesia involves additional risks and hazards but I (we) request the use of Anesthetics for the relief and protection from pain during the planned and additional procedures. I (we) realize the anesthesia may have to be changed possibly without explanation to me (us). I (we) understand that certain complications may result from the use of any anesthetic including respiratory problems, drug reactions, paralysis, brain damage, permanent organ damage, awareness during procedure, memory dysfunction/memory loss, or even death. Other risks and hazards which may result from the use of general anesthetics range from minor discomfort to injury to vocal cords, teeth, lips or eyes. I (we) understand that other risks and hazards resulting from spinal or epidural anesthetics include headache, chronic pain, persistent back pain, nerve damage, infection, bleeding/hematoma, medical necessity to convert to general anesthesia and brain damage. I also understand that my anesthetic will be managed by one or more Anesthesiology Physicians (Anesthesiologists), who may also direct other members of my anesthesia team, including one or more Certified Nurse Anesthetists (CRNA).

I (we) have been given an opportunity to ask questions about my condition, alternative forms of anesthesia and treatment risks of non-treatment, the procedures to be used, and the risks and hazards involved, and I (we) believe that I (we) have sufficient information to give this informed consent.

I (we) certify this form has been fully explained to me, that I (we) have read it or have had it read to me in a language I understand, that the blank spaces have been filled in, and that I (we) understand its contents.

[redacted] / / 10/19/16 11:45 AM / PM
Signature of Patient OR Legally Responsible Person — Relationship if not Patient — Date & Time

/ / AM / PM
Witness — Date — Time

☐ Check box if Consent was obtained by telephone and listened to or confirmed by Witness

I have explained to the patient or legal representative the disclosure and consent required for the medical, surgical and/or diagnostic procedures(s) planned as well as the patient's right to withhold consent

3523 / 10/19/16 11:45 AM / PM
Provider Signature — Provider ID # — Date — Time

If Applicable, Name of Translator _____ Language: _____

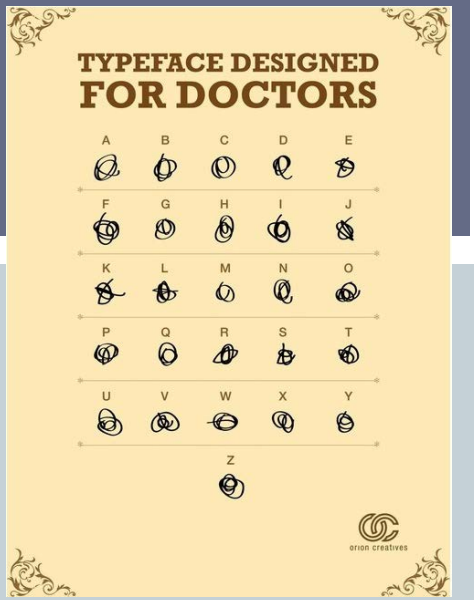
Disclosure & Consent General Medical and Surgical Procedures
BCHD# 179 ASC REV. 4/13

Chart Order #
IP OP

Current preoperative packet:

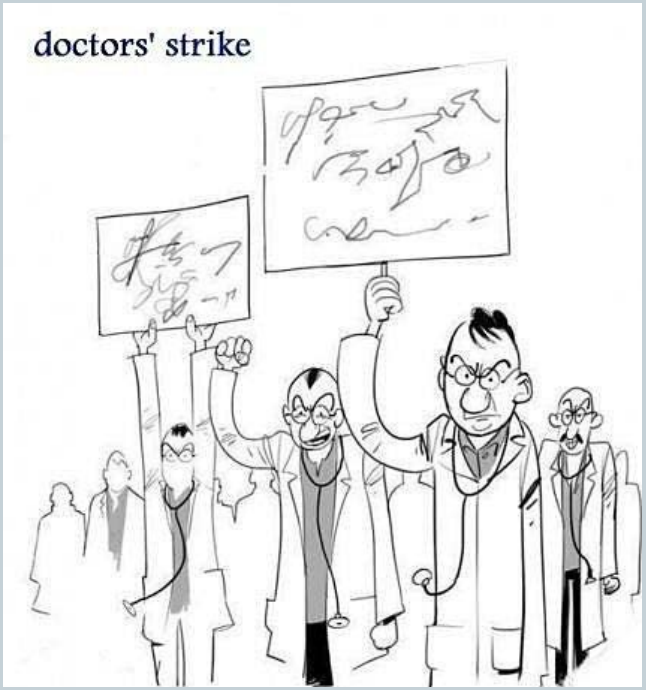
- Handwritten
- Faxed to hospital
- Carried by resident

PROBLEMS WITH PAPER



- Poor use of RN/MD time and decreased job satisfaction
- Delayed starts/RN/MD calls*
- Poor quantity/quality of medical information
  - Rumors of legibility problems
  - Medical errors ~ complications/readmissions
  - Incomplete hospital coding of medical issues
    - Less revenue due to “under-coding”*
    - Inaccurate “risk adjustments” for quality metrics*

(* Potential metrics for CSE course time frame)

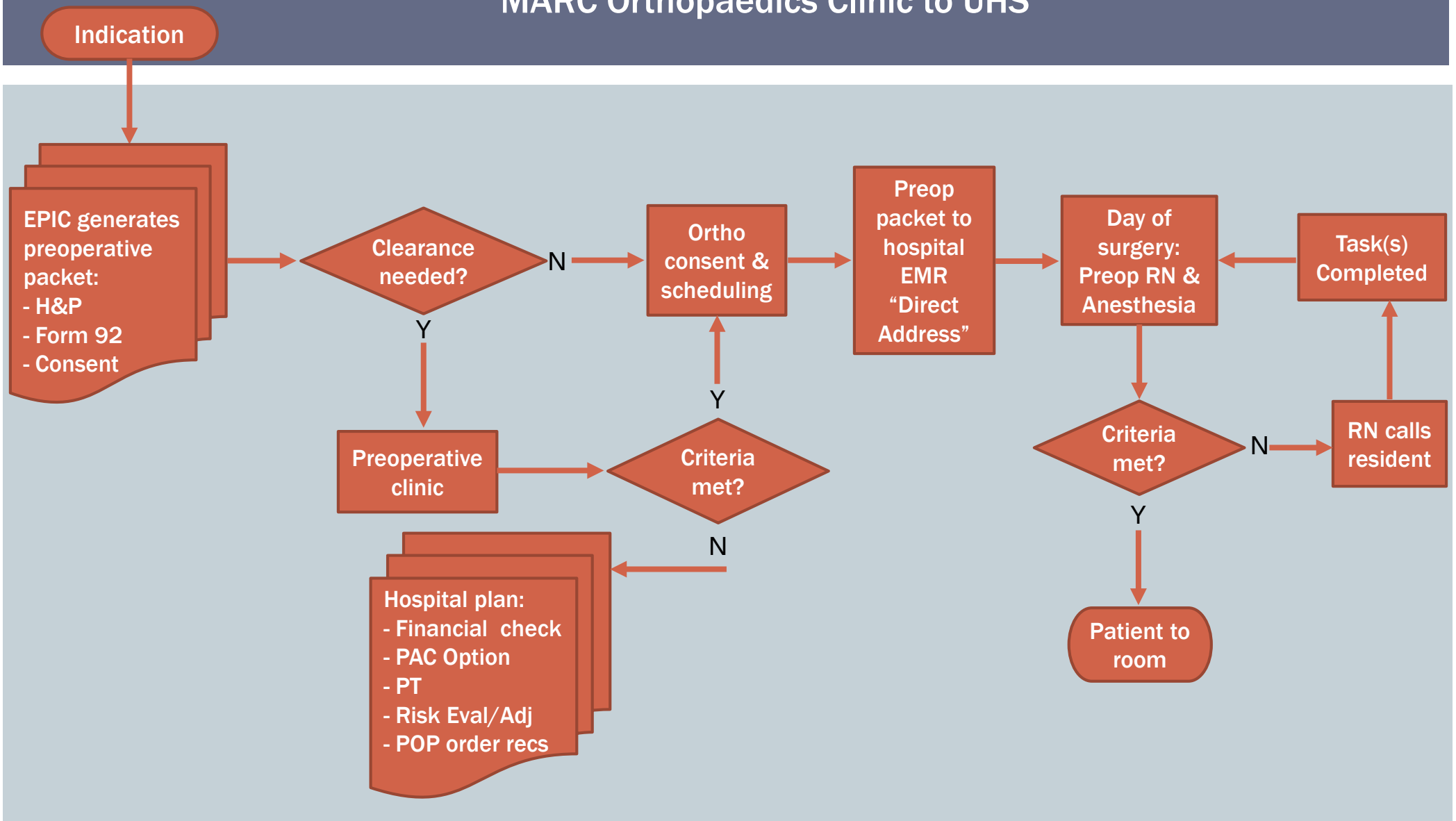


BACKGROUND

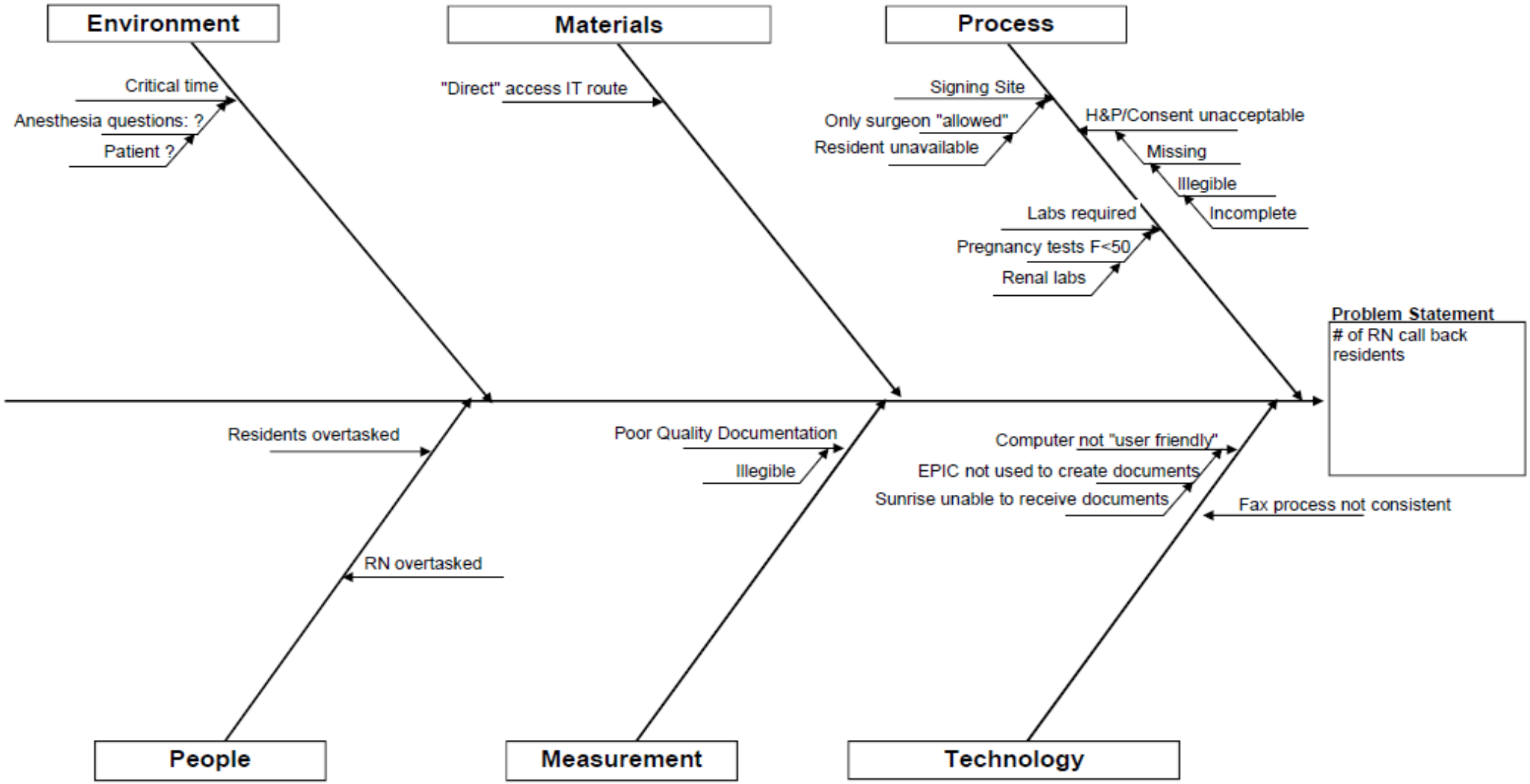
- Incomplete or missing paperwork and the resulting resident call-backs can be a source of surgical delays as well as dissatisfaction with the current system
- Issa et al., 2005
  - 27% of completed paper consent forms had unacceptable or undocumented procedures, purposes, and benefits
  - 49% of completed paper consent forms were missing alternative treatment options; remaining 51% were significantly deficient
  - 8.3% of completed paper consent forms were missing documentation of patient prognosis
  - Concluded that paper consent forms frequently contain incomplete, illegible and/or misleading information

PREOPERATIVE PAPERWORK PROCESS

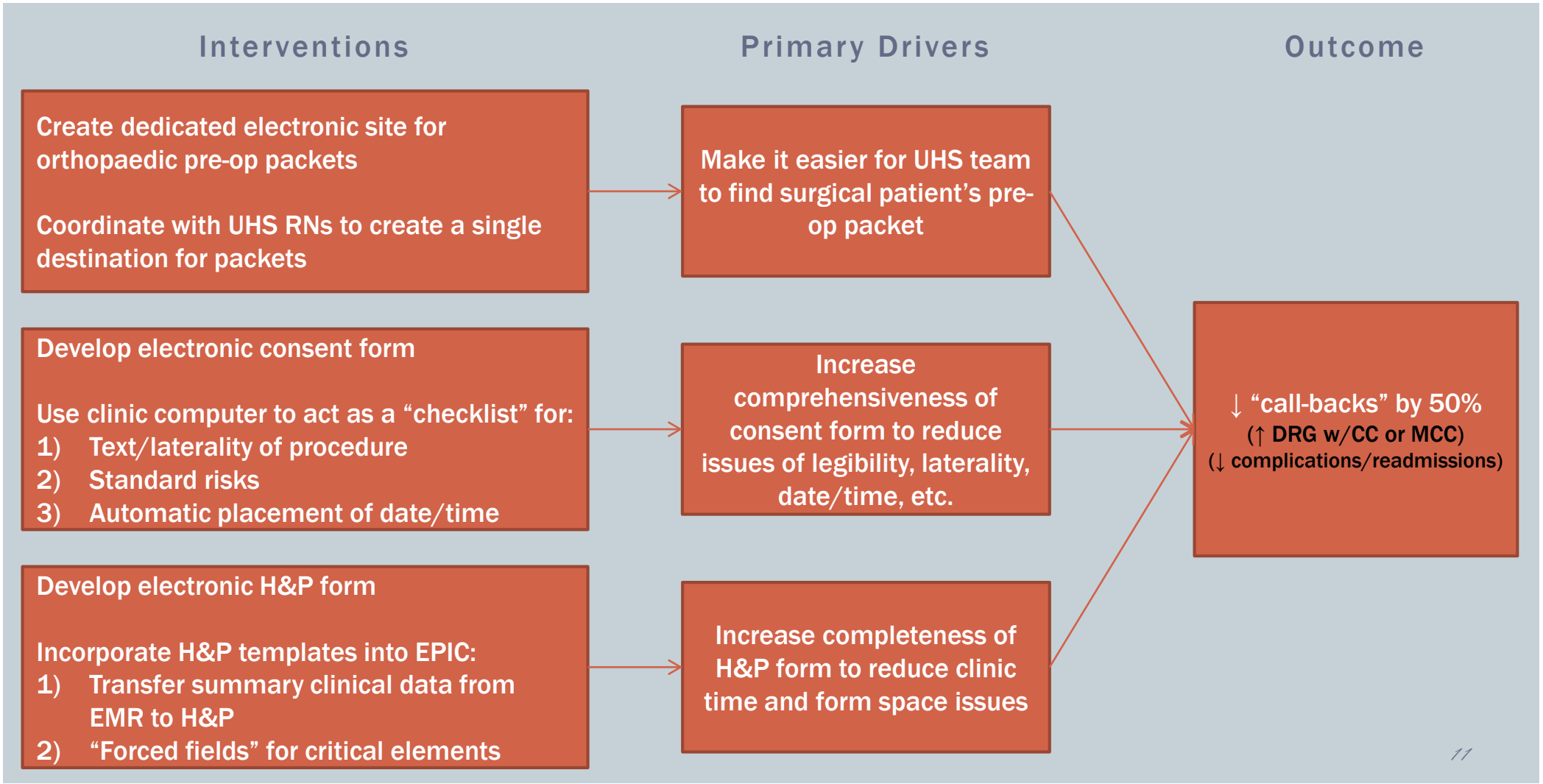
MARC Orthopaedics Clinic to UHS



FISHBONE ANALYSIS



DRIVER DIAGRAM

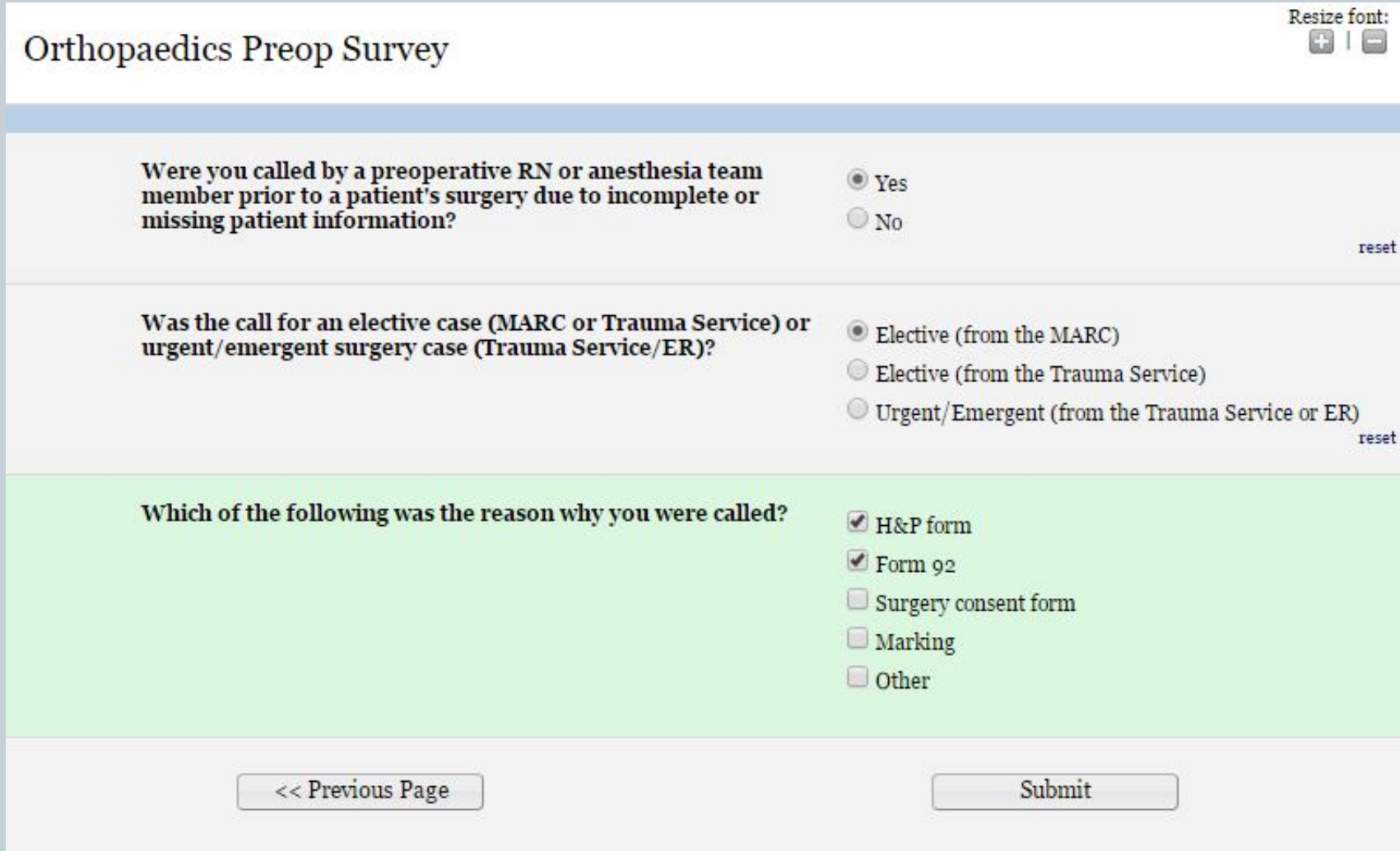


DATA COLLECTION

Nursing staff completed a brief electronic survey on REDCap or on paper every time that an orthopaedics resident had to be called due to missing or incomplete preoperative paperwork. Because resident calls occur relatively infrequently, the number of days between calls were calculated. The number of days between calls before the intervention is implemented will be compared to the number of days between calls after the intervention is implemented.

Additionally, short electronic REDCap surveys were sent to orthopaedics residents, nursing staff, and anesthesiologists at University Hospital. Using Likert-type scales to address questions on both style of forms (i.e., paper vs. electronic), respondents indicated their satisfaction, the form's legibility, and the completeness of the medical information on the form.

SURVEY EXAMPLE



Orthopaedics Preop Survey

Resize font:

Were you called by a preoperative RN or anesthesia team member prior to a patient's surgery due to incomplete or missing patient information?

- (•) Yes
- ( ) No

reset

Was the call for an elective case (MARC or Trauma Service) or urgent/emergent surgery case (Trauma Service/ER)?

- (•) Elective (from the MARC)
- ( ) Elective (from the Trauma Service)
- ( ) Urgent/Emergent (from the Trauma Service or ER)

reset

Which of the following was the reason why you were called?

- [x] H&P form
- [x] Form 92
- [ ] Surgery consent form
- [ ] Marking
- [ ] Other

<< Previous Page

Submit

SURVEY EXAMPLE

Rate your level of satisfaction with the completion process of the current version of the preoperative packet (i.e., H&P, Form 92, surgery consent).

- ○ Not at all satisfied
- ○ Slightly satisfied
- ○ Moderately satisfied
- ○ Very satisfied
- ○ Extremely satisfied

reset

Rate your assessment of the legibility of the current version of the preoperative packet.

- ○ Poor
- ○ Fair
- ○ Good
- ○ Very good
- ○ Excellent

reset

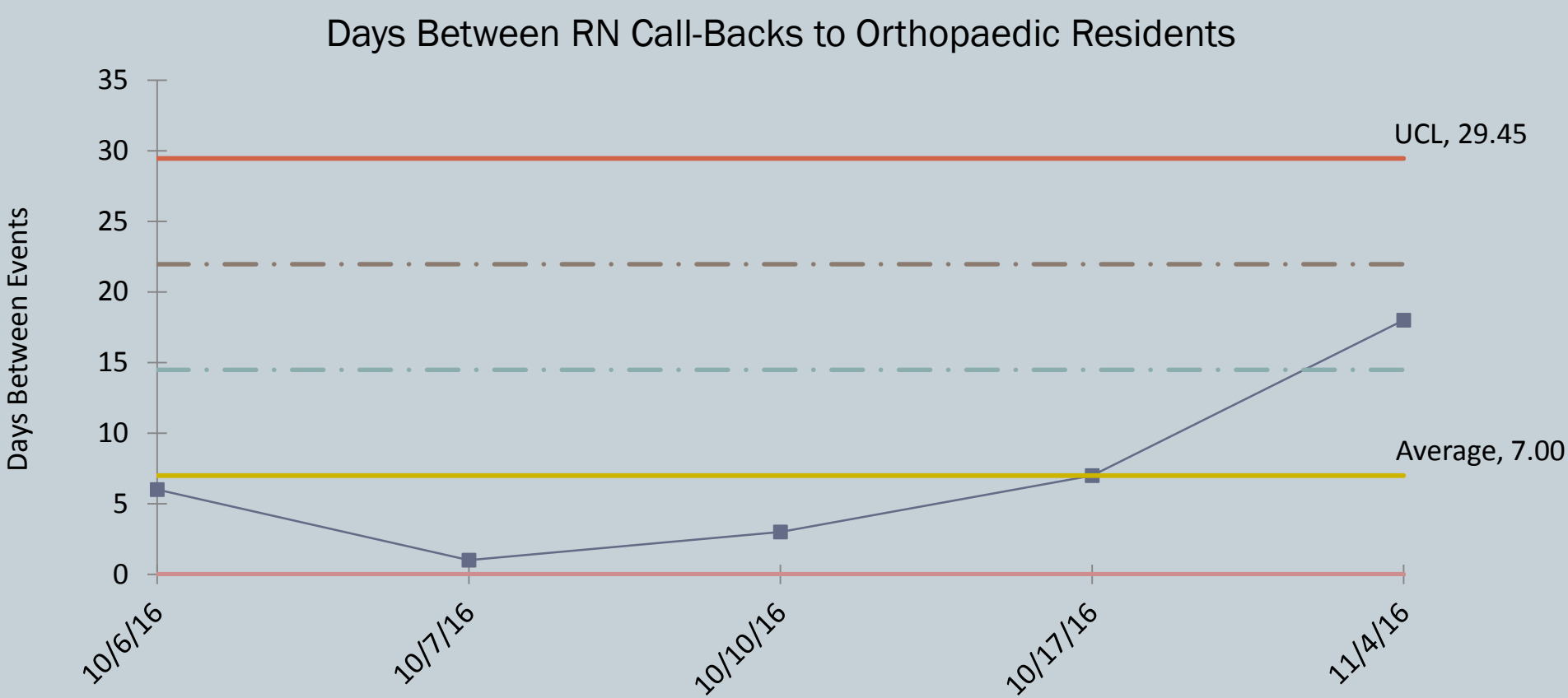
Rate your assessment of the completeness of the medical information provided in the current version of the preoperative packet.

- ○ Poor
- ○ Fair
- ○ Good
- ○ Very good
- ○ Excellent

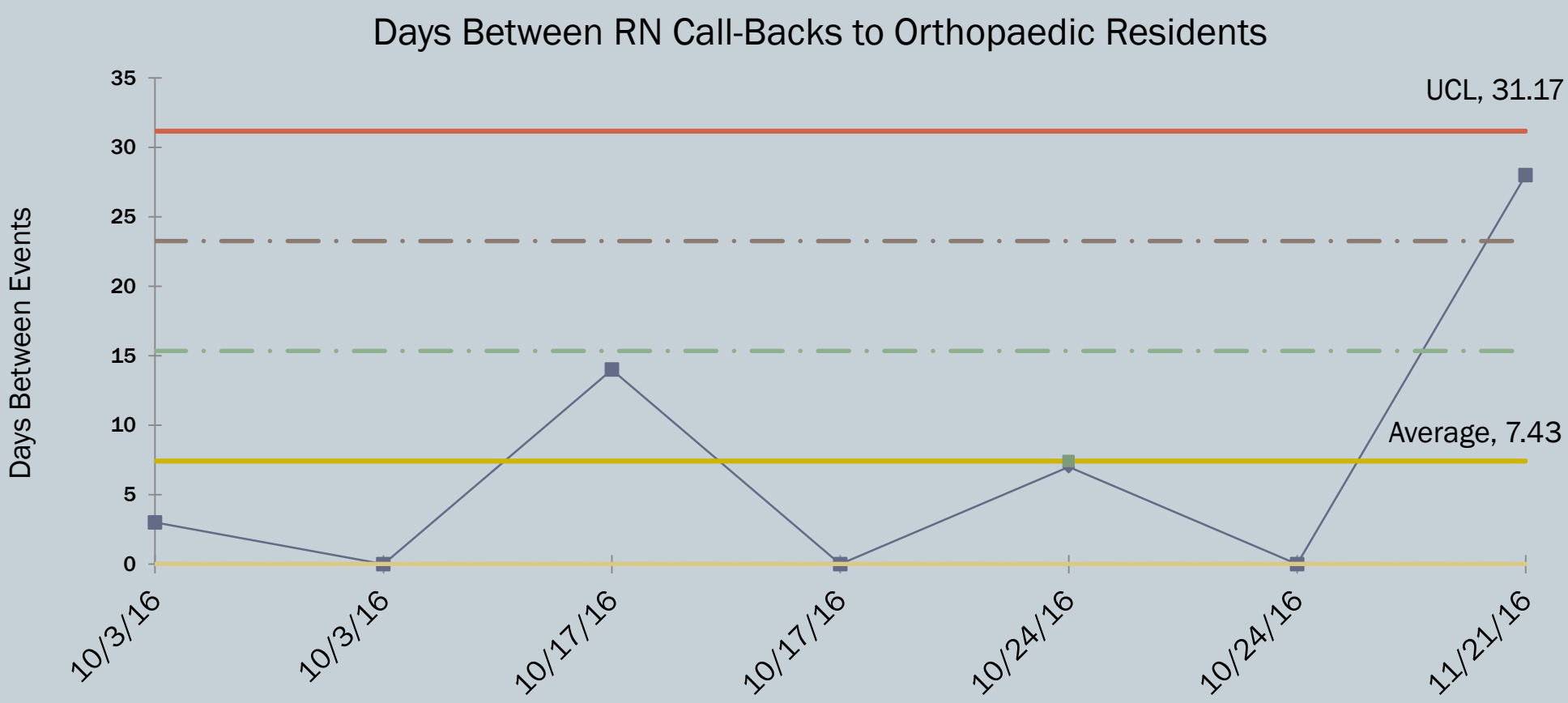
reset

<< Previous Page Submit

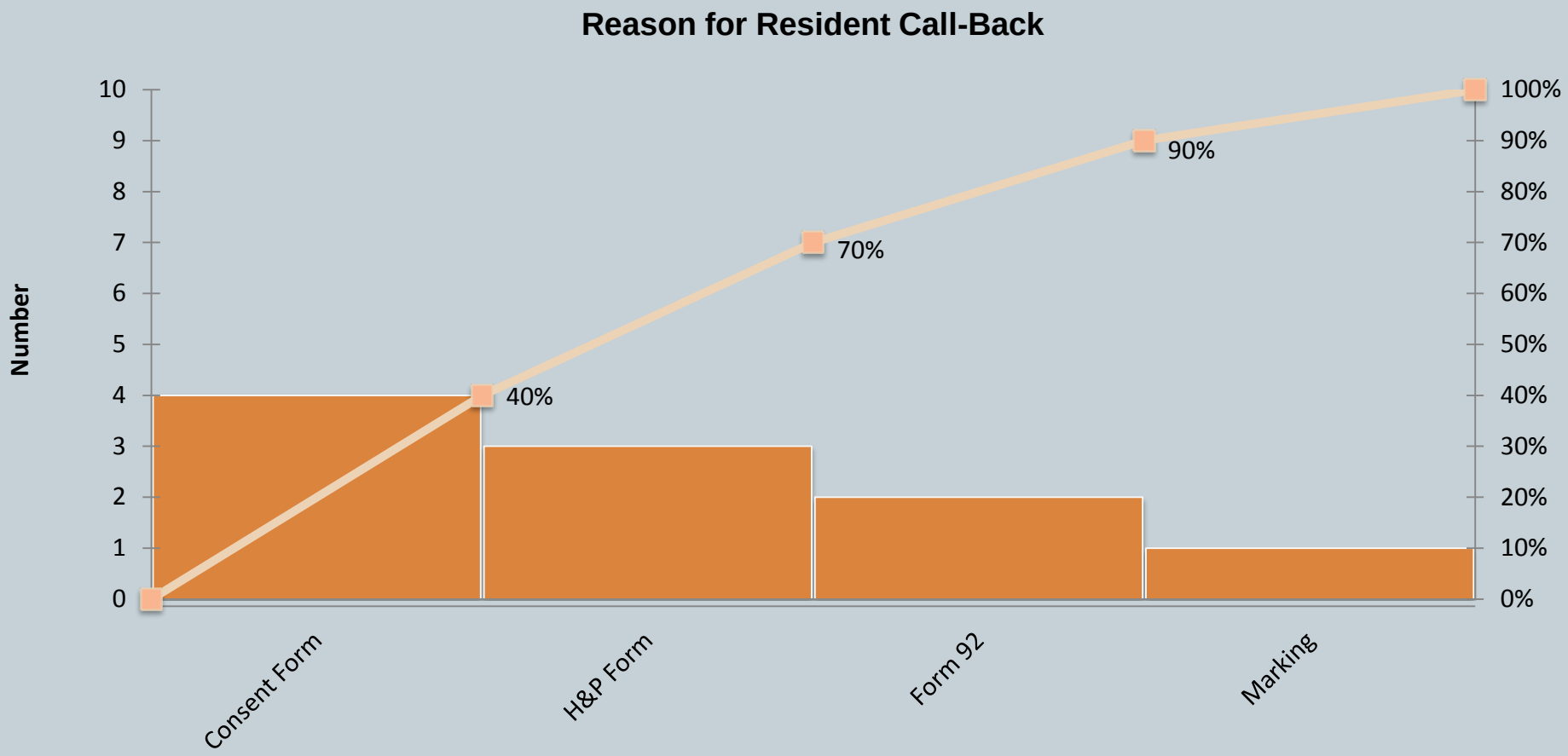
G-CHART OF BASELINE DATA (FROM REDCAP)



G-CHART OF BASELINE DATA (FROM PAPER FORMS)

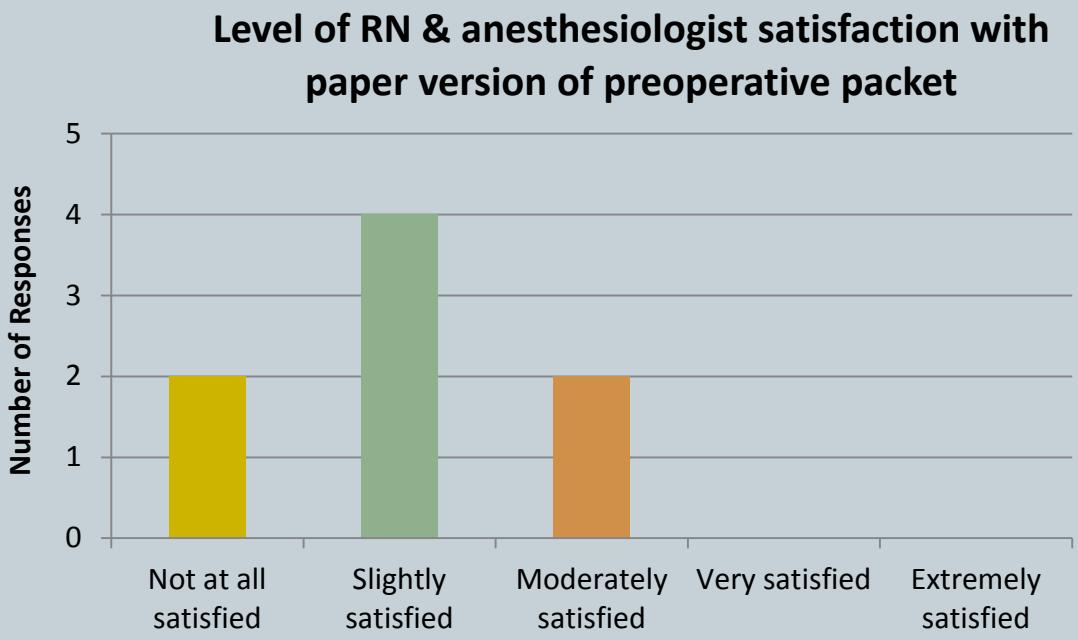


PARETO CHART OF BASELINE DATA



PARETO CHART OF BASELINE DATA

PRE-INTERVENTION DATA

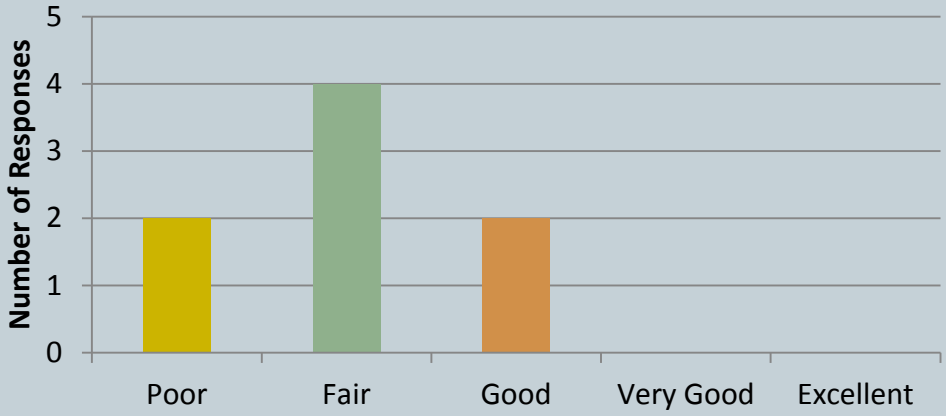


100% of RNs and anesthesiologists responded that they were either "slightly satisfied", "moderately satisfied", or "not at all satisfied" with the paper version of the preoperative packet

- No RNs or anesthesiologists were "very satisfied" or "extremely satisfied"

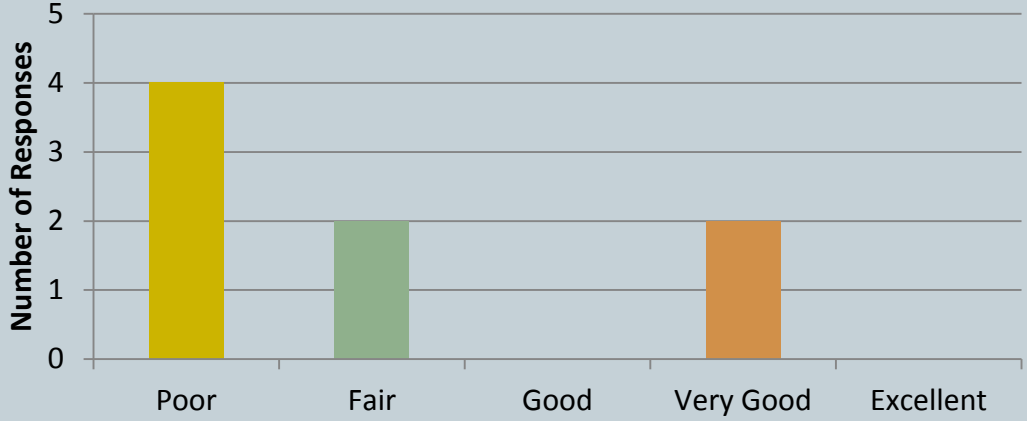
PRE-INTERVENTION DATA

RN & anesthesiologist assessment of legibility of paper version of preoperative packet



75% of RNs and anesthesiologists rated legibility of paper packet as “fair” or “poor”

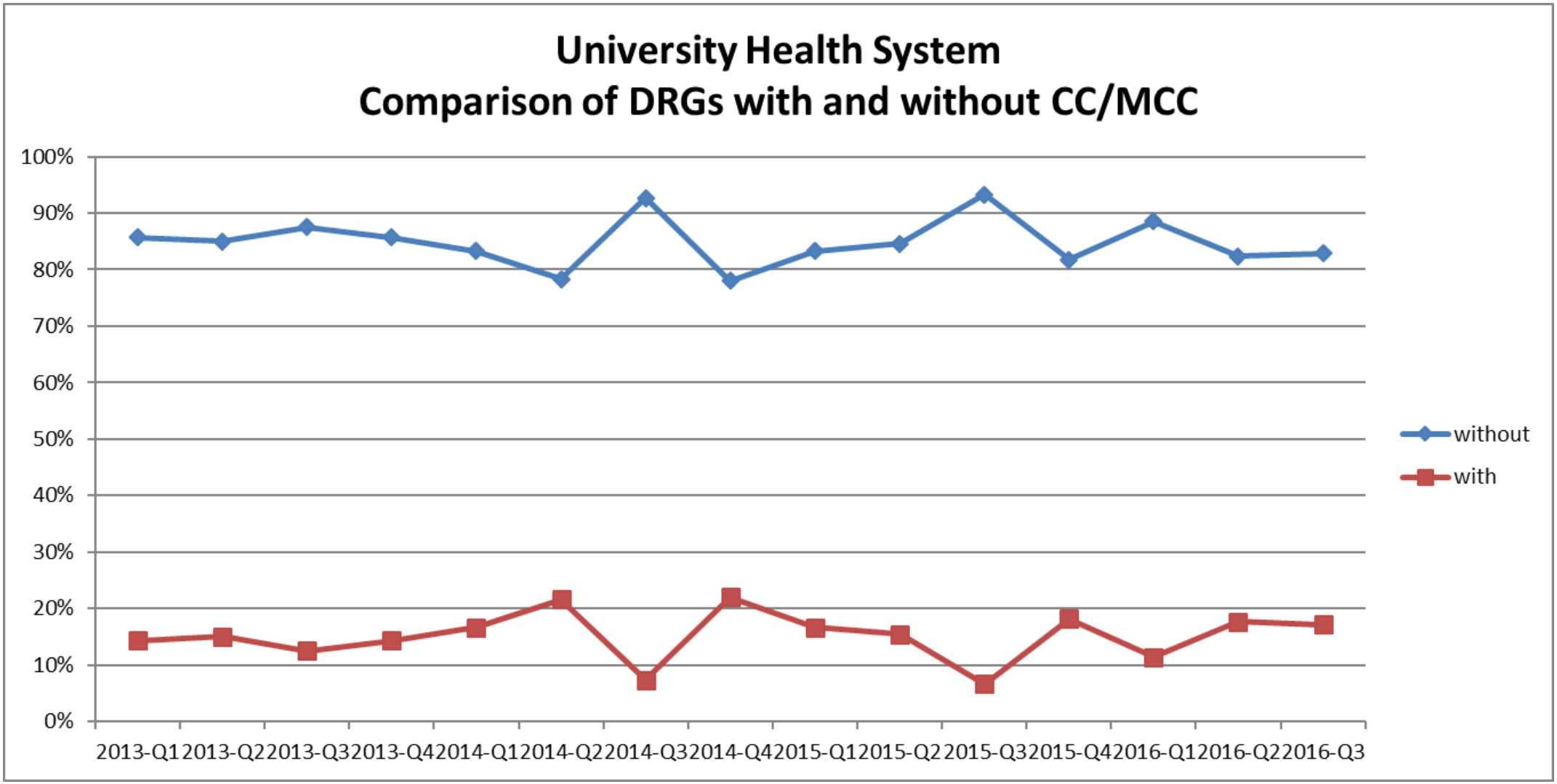
RN & anesthesiologist assessment of completeness of medical information in paper version of preoperative packet



75% of RNs and anesthesiologists rated completeness of medical information provided in the paper packet as “fair” or “poor”

% OF PATIENTS WITH CC/MCC

(RISK ADJUSTMENT FROM ADEQUATE CODING)



% OF PATIENTS WITH CC/MCC
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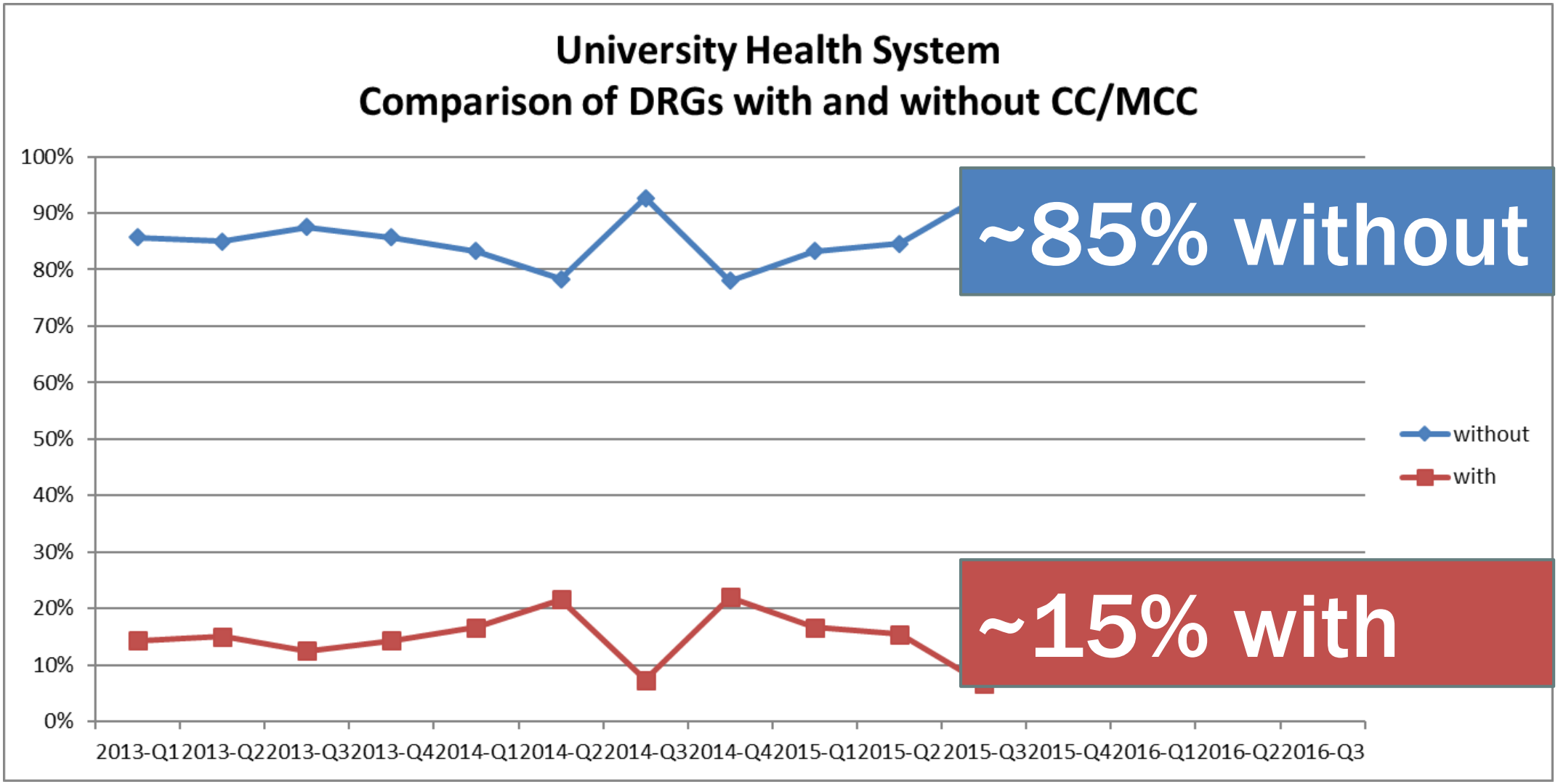

PLAN: INTERVENTION

Intervention: Convert paper forms to electronic forms

Work with EMR and IT infrastructure to:

- Build electronic preoperative packets into EPIC
- Use existing patient data in EPIC to populate electronic forms
- Electronically send data from EPIC to Sunrise/OnBase convenient to RNs/Anesthesia

DO: IMPLEMENTING THE CHANGE IMPLEMENTATION ISSUES

- Converting from paper to EMR challenged by:
  1. 2 EMR systems (that don't yet communicate well)
  2. Overtasked IT staff
     - Not directly dependent on clinical efficiency
     - Competing priorities
  3. EMR vendors' sense of proprietary needs
  4. HIPPA: challenges in "data sharing"

DO: IMPLEMENTING THE CHANGE KEY TIMELINE

- April 2016 - First contact EPIC and Sunrise IT teams
  - EPIC national: Options given
  - EPIC local: "Upgrading" to new version priority
- August 2016 - EPIC local commits to support project:
  - CMIO "I can give you up to 80 hours"
- August 2016 - UHS VP Clinical Services provides hospital IT contacts
- October 2016 – First EPIC analyst meeting
- November 8, 2016 - Meeting of Sunrise and EPIC IT leaders: "This can be done"
  - Option 1: OnBase (PDF bank) via fax
  - Option 2: "Meaningful Use"
    - CCD - Continuity of Care Document = "data document standard"
    - HL7 (leader in healthcare IT standards)
- December 19, 2016 – "Go live" Beta version of EPIC H&P
- December 20, 2016 – First electronic patient H&P created for use

DO: IMPLEMENTING THE CHANGE WORK PRODUCT

Office Visit

12/20/2016
MARC Orthopaedics

Marc M. Dehart, MD
Orthopaedic Surgery

Status post total left knee replacement +1 more
Dx

Follow Up; Referred by Swetha Pathi, MD
Reason for visit

Progress Notes

Marc M. Dehart, MD at 12/20/2016 8:30 AM

Status: Signed

Expand All Collapse All

Patient ID: [redacted] is a(n) 26 y.o. female.

HPI:

TKA by DeHart Sept 2016 did better for 3 months then progessive pain, fever and swelling in knee. Seen in Houston: ESR 50, CRP 152
aspiration: WBC 4940 Segs 95%
+Group A Beta Hemolytic Streptococcus (suseptible to PCN)

Conservative Treatments Tried in the Past: S/P Right and Left TKA at UHS
Prior Surgery on operative side: Sept 2016 L TKA

PMH:

Medical:

Past Medical History

Past Medical History

Diagnosis	Date
• Asthma	
• Rheumatoid arthritis(714.0)	

Surgical:

Past Surgical History

Past Surgical History

Procedure	Laterality	Date
• Hx knee replacment *total*	Right	06/28/2016
• Hx knee replacment	Left	09/19/2016

NEW	OLD

Office Visit

Marc M. Dehart, MD
Orthopaedic Surgery

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12/20/2016
MARC Orthopaedics
11/08/2016 10:03 2104506021 UTHSCSA PAGE 03/14

[redacted]

Marc M. Dehart, MD
MARC ORTHOPAEDICS-UT Med
Ref: Pogosian, Elena, MD 210-358-8820

University Health System
Surgery Center – Robert B. Green Campus
Surgery Center – Medical Center
History & Physical

HISTORY & PHYSICAL

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☐ The patient was examined and the H&P performed within 30 days was reviewed and there are no changes.
☐ The patient was examined and the H&P performed within 30 days was reviewed and updates are noted in progress notes/update below.
☐ The H&P was performed more than 30 days prior to surgery / hospitalization and a relevant new H&P has been performed.
MUST SIGN AT BOTTOM OF COLUMN

OR

COMPLETE THIS ON THE DAY OF SURGERY
Present History: [illegible]
Pre-Procedure Diagnosis: [illegible]
Medical History: [illegible]
Surgical History: [illegible]
Present medications: ☐ per Medication Reconciliation
Allergies: [illegible]
Risks, benefits, alternatives explained: ☐ Yes

PHYSICAL EXAM DAY OF SURGERY	✓ Normal	Comments D = Deferred
* Mental Status	✓	
* Heart	✓	
* Lungs	✓	
General	✓	
HEENT	✓	
CNS		
GI		
GU		
Genitalia		
LNMP		
Musculoskeletal		[illegible]

Vital Signs: BP: Pulse: RR:

Provider Using Conscious Sedation for Anesthesia
ASA: ☐ I ☐ II ☐ III ☐ IV
☐ Re-assessed prior to procedure ☐ Airway Evaluated

Physician Signature: ______
Date: ______ Time: ______ ID# ______

POST OPERATIVE/PROCEDURE NOTE
* Post Procedure Diagnosis: ☐ Same
* Procedure(s) Performed:
Procedure Start: Procedure Stop:
* Attending Surgeon: ID#
* Surgeon: ID#
* Assistant: ID#
Anesthetic: ☐ Conscious Sed ☐ Local ☐ General ☐ Spinal/Regional ☐ Other:
Anesthesiologist: ID#
Condition during anesthesia: ☐ Stable ☐ Unstable
Post-operative condition: ☐ Stable ☐ Unstable
Operative note dictated ☐ Yes ☐ No
* Findings:
Complications: ☐ None OR ______
* Specimens removed: ☐ None OR ______
* Estimated Blood Loss: ☐ None OR ______

PHYSICIAN ORDERS
☐ Discontinue IV when tolerating P.O.
☐ May discharge home when discharge criteria met
☐ Rx Given
☐ Give home discharge instructions
☐ Follow up in ☐____ weeks OR ☐____ days

Physician Signature: ______
Date: ______ Time: ______ ID# ______

BCHCW 471 ASC 08/16 ASC History & Physical
* REQUIRED ELEMENTS FOR H&P AND POST OP NOTE

NEW

HPI:
TKA by DeHart Sept 2016 did better for 3 months then progessive pain, fever a aspiration: WBC 4940 Segs 95%
+Group A Beta Hemolytic Streptococcus (suseptible to PCN)

Conservative Treatments Tried in the Past: S/P Right and Left TKA at UHS
Prior Surgery on operative side: Sept 2016 L TKA

PMH:

Medical:

- Past Medical History

Past Medical History

Diagnosis

- Asthma
- Rheumatoid arthritis(714.0)

Surgical:

- Past Surgical History

Past Surgical History

Procedure	Late
• Hx knee replacment *total*	Righ
• Hx knee replacment *total*	Left

Social History:
Social History

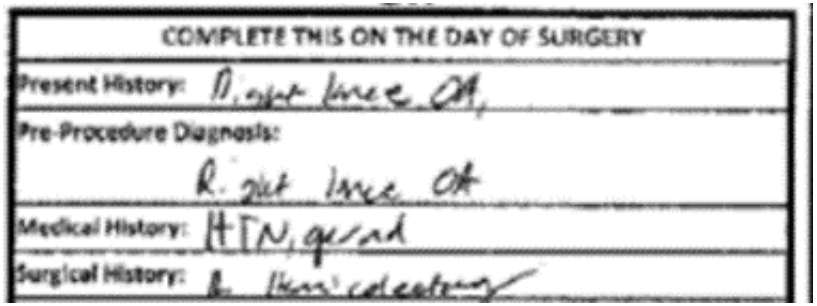
Occupational History

- Not on file.

Social History Main Topics

- Smoking status: Never Smoker
- Smokeless tobacco: Not on file
- Alcohol use: Yes
  Comment: occassionally
- Drug use: No

OLD


COMPLETE THIS ON THE DAY OF SURGERY

Present History: R. post knee OA,

Pre-Procedure Diagnosis:

R. post knee OA

Medical History: HTN, GERD

Surgical History: R. knee debridement

NEW

HPI:
TKA by DeHart Sept 2016 did better for 3 months then progessive pain, fever a aspiration: WBC 4940 Segs 95%
+Group A Beta Hemolytic Streptococcus (suseptible to PCN)

Conservative Treatments Tried in the Past: S/P Right and Left TKA at UHS
Prior Surgery on operative side: Sept 2016 L TKA

PMH:

Medical:
- Past Medical History
  - **Past Medical History**
  - Diagnosis
    - Asthma
    - Rheumatoid arthritis(714.0)

Surgical:
- Past Surgical History
  - **Past Surgical History**
  - Procedure
    - Hx knee replacment *total*
    - Hx knee replacment *total*

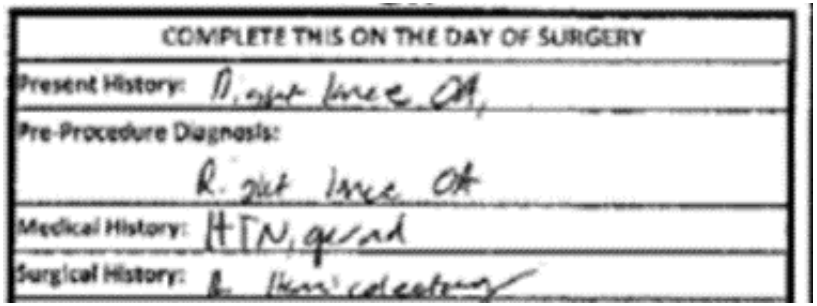
Social History:
Social History

Occupational History
- Not on file.

Social History Main Topics

• Smoking status:	Never Smoker
• Smokeless tobacco:	Not on file
• Alcohol use	Yes
Comment: occassionally	
• Drug use:	No

OLD


COMPLETE THIS ON THE DAY OF SURGERY

Present History: R. post knee OA,

Pre-Procedure Diagnosis:
R. post knee OA

Medical History: HTN, GERD

Surgical History: R. knee debridement

This is some of the info needed to correctly code the comorbidities for proper billing of DRG (important for ROI later…)

NEW

Current Medications:

Current Outpatient Prescriptions

Medication	Sig	Dispense
• hydrocodone-acetaminophen (NORCO) 10-325 MG Oral per tablet	take 1 Tab by mouth EVERY 6 HOURS AS NEEDED for Pain.	60 Tab
• gabapentin (NEURONTIN) 100 MG Oral capsule	take 100 mg by mouth 3 TIMES DAILY.	
• celecoxib (CELEBREX) 100 MG Oral capsule	take 100 mg by mouth 2 TIMES DAILY.	
• acetaminophen-codeine (TYLENOL #3) 300-30 MG Oral per tablet	take 1 Tab by mouth EVERY 4 HOURS AS NEEDED for Pain.	

No current facility-administered medications for this visit.

Allergies / Adverse Reactions: No Known Allergies
Non-Prescription Medications: No

Review of Systems:

Surgical Review of Systems:
Negative for anesthetic related issues
Negative for DVT/PE
Negative for Easy bleeding/bleeding disorders

Physical Examination:

Mental Status: Alert and Oriented
Heart: Regular Rate
Lung: Moving air freely, clear
HEENT: within normal limit
Abdomen: soft, benign, nontender
Genital/Urinary System: deferred

Musculoskeletal:
Gait: Normal Community Ambulator
Ambulatory aids: None
Skin: Dry and intact, Well healed surgical scar, anterior and Erythema

OLD

Present medications : ☐ per Medication Reconciliation

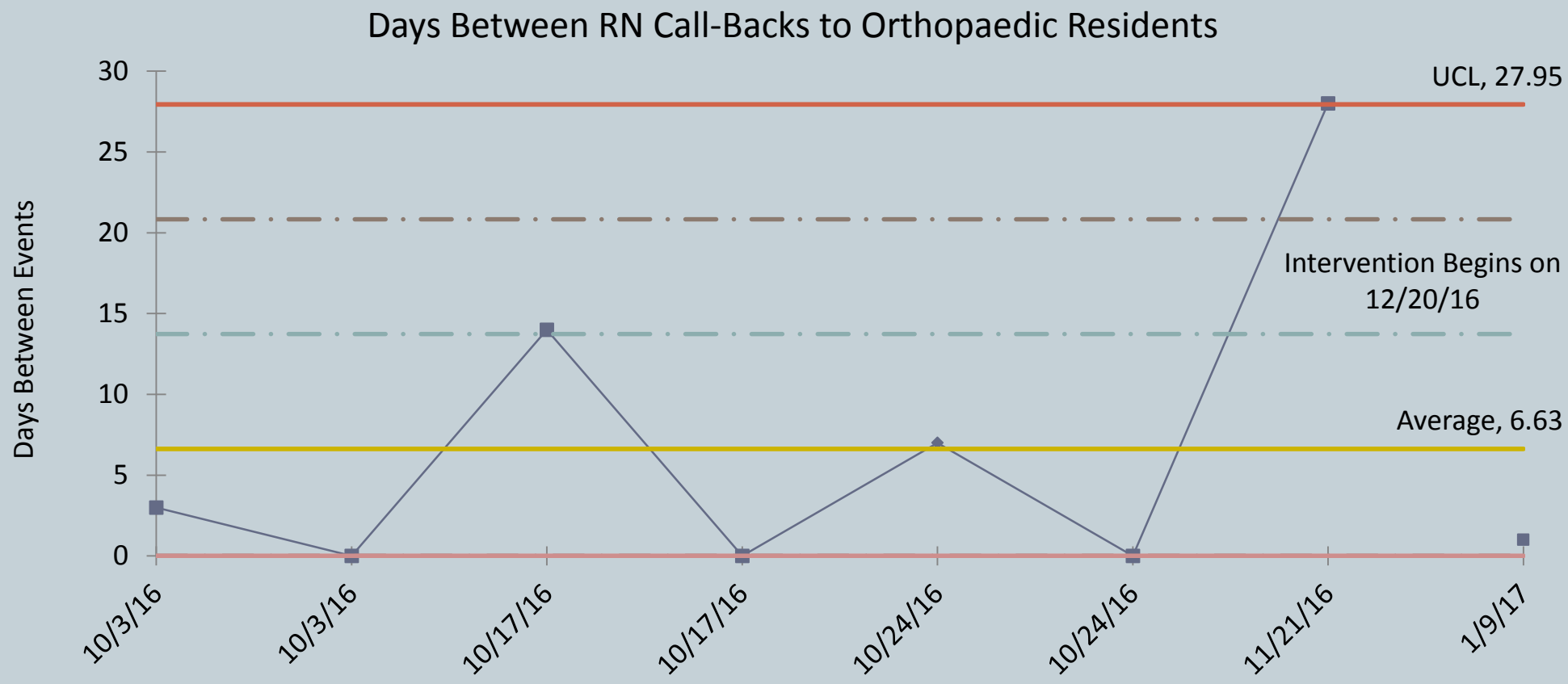
Allergies: ~~Penicillin~~ Plavix

Risks, benefits, alternatives explained: ☐ YES

PHYSICAL EXAM DAY OF SURGERY: Mental Status, Heart, Lungs	✓ Normal (unless circled)	Comments D = Deferred
* Mental Status	✓	
* Heart	✓	
* Lungs	✓	
General	✓	
HEENT	✓	
CNS		
GI		
GU		
Genitalia		
LNMP		
Musculoskeletal		R Knee Pain

Vital Signs: BP: Pulse: RR:

G-CHART OF POST-INTERVENTION DATA



C-CDA IG Purpose: Single Source for CDA Templates

Putting the I in HealthIT
www.HealthIT.gov

HL7 Implementation Guide for CDA R2: IHE Health Story Consolidation, DSTU Release 1.1 (US Realm) July 2012

Document Templates: 9

- Continuity of Care Document (CCD)
- Consultation Note
- Diagnostic Imaging Report (DIR)
- Discharge Summary
- History and Physical (H&P)
- Operative Note
- Procedure Note
- Progress Note
- Unstructured Document

Section Templates: 60

Entry Templates: 82

Document Template	Section Template(s)		
Continuity Of Care Document (CCD)	Allergies Medications Problem List Procedures Results Advance Directives Encounters	Family History Functional Status Immunizations Medical Equipment Payers Plan of Care	Section templates in GREEN demonstrate CDA's interoperability and reusability.
History & Physical (H&P)	Allergies Medications Problem List Procedures Results Family History Immunizations Assessments	Assessment and Plan Plan of Care Social History Vital Signs History of Present Illness History of Present Illness	Chief Complaint Reason for Visit Review of Systems Physical Exam General Status

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CCDA = the vehicle for transfer

CCDA = "EMR certified" = $

Advancing Care Information = $

(Used to be: "Meaningful Use")

($ allows an ROI for our CS&E project)

ROI: REVENUE

Average Differences in **PAYMENTS COLLECTED** (not charges) **per case** between primary total hip/knee with and without comorbidities:

($ for 469 with CC) – ($ for 470 without CC) = varies by payer

Medicare = $13,158

Medicaid = $1,306

HMO/PPO = $23,716

Carelink/UHS/self pay = $0

ROI: REVENUE

Bedwell payer mix:

- Safety net/public hospital
  Payer mix:
  - Medicare 20%
  - Medicaid 22%
  - Self Pay 40%
  - Commercial 17%
  - Other 1%

University Health System

Actual payer mix for primary joints during last ~2 years:

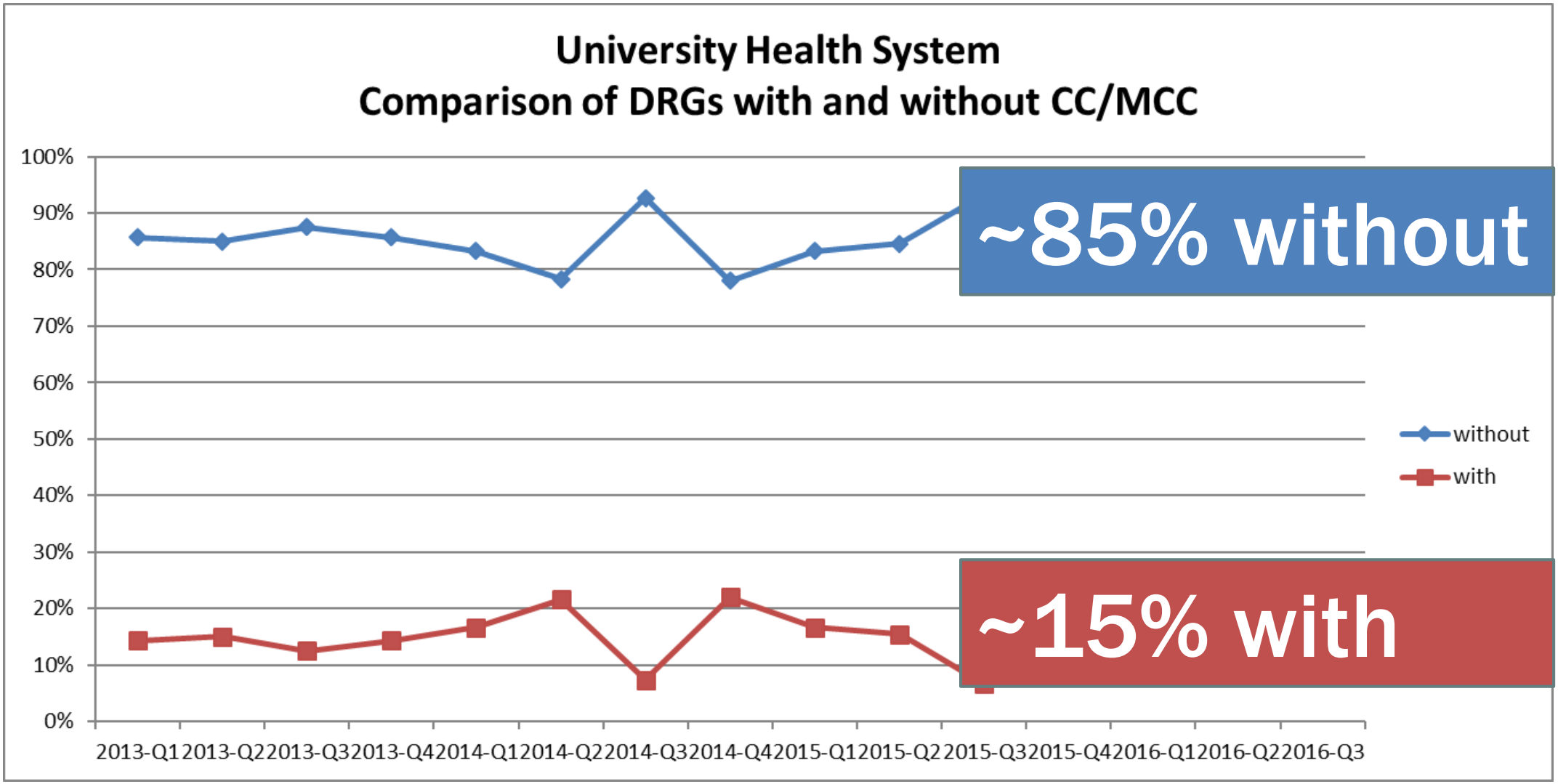
Medicare: 38%
Medicaid: 14%
HMO/PPO/BCBS: 11%
Carelink/UHS: 29%

		130 joints	Difference per joint	1%	3%
Medicare	38%	49.4	13158	6500.052	19500.16
Medicaid	14%	18.2	1306	237.692	713.076
HMO/PPO/BCBS	11%	14.3	23716	3391.388	10174.16
Carelink/UHS	29%	37.7	0	0	0
			Revenue increase:	10129.132	30387.4

Average # primary joints per year ~ 130

For every 1% increase in CC ~ $10K

% OF PATIENTS WITH CC/MCC
(RISK ADJUSTMENT FROM ADEQUATE CODING)



ROI: EXPENSES

Using only costs of programmers:

Epic Analyst = ~$70K per year

+30% benefits

46 weeks/year 5 days/week 8 hours /day

= ~ $3800 for 80 hours

RETURN ON INVESTMENT

$$\text{ROI} = \frac{\text{Marginal Revenues} - \text{Marginal Expenses}}{\text{Implementation Expenses}} \text{X } 100$$

Programmer costs only:

$$\text{ROI} = \frac{\$10\text{K} - \$3800}{\$3800} = 161\%$$

RETURN ON INVESTMENT

$$\text{ROI} = \frac{\text{Marginal Revenues} - \text{Marginal Expenses}}{\text{Implementation Expenses}} \text{ X } 100$$

Programmer costs only:

$$\text{ROI} = \frac{\$10\text{K} - \$3800}{\$3800} = 161\%$$

Total costs of CSE project:

programmer 80 hours + student participants x 9 days
(1 Staff + 2 Residents + 1 Research Assistant)

$$\text{ROI} = \frac{\$10\text{K} - (\$3800 + \$27800)}{(\$31600)} = -68\%$$

RETURN ON INVESTMENT

$$\text{ROI} = \frac{\text{Marginal Revenues} - \text{Marginal Expenses}}{\text{Implementation Expenses}} \text{ X } 100$$

Programmer costs only:

ROI = $\frac{\$10K - \$3800}{\$3800}$ = 161%

Total costs of CSE projec
programmer 80 hours
(1 Staff + 2 Res

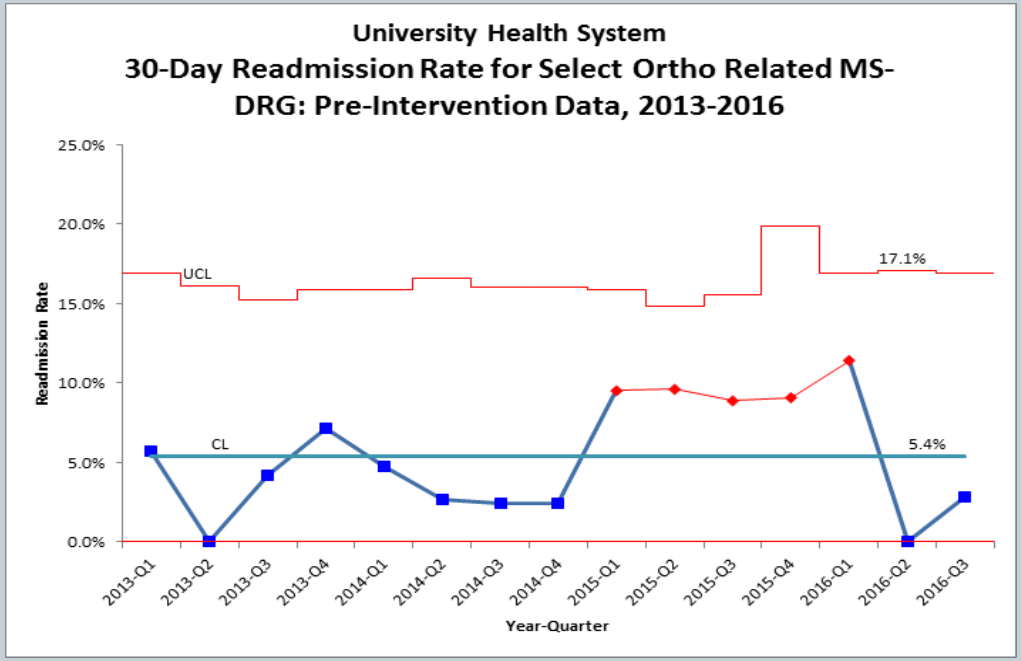
ROI= $\frac{\$10K - (\$3800}{(\$31600)}$ %

Need ↑4% CC or 4 years to get + ROI

RETURN ON INVESTMENT: THE INTANGIBLES: THINGS DIFFICULT TO MEASURE

Quality issues:

- Legibility for Anesthesia and Perioperative RN staff
- Will better information translate into less complications/readmissions?



RETURN ON INVESTMENT: THE INTANGIBLES: THINGS DIFFICULT TO MEASURE

Quality issues:

- Legibility for Anesthesia and Perioperative RN staff
- Will better information translate into less complications/readmissions?

Efficiency issues:

- Clinic orthopaedic residents/staff
- Computer use for creation
- Electronic document saved in set location
- Single site location for “electronic H&P” C-CDA (Awaiting SUNRISE/EPIC support)

LESSONS

1. Everything takes longer than anticipated
2. In large systems, nothing happens without high-level leadership support
   leadership = project "horsepower"
3. Select a metric that:
   - System is already collecting and matters
   - System is invested in collecting
   - All parties believe matters
4. Solutions that solve multiple problems can gather more system support
5. Rome wasn't built in a day
   - Simple, little projects are easier/faster
   - Effort/time increases exponentially with # of systems/departments involved

RESULTS/IMPACT

- Late implementation of intervention foils extensive post intervention measurement

ACT: SUSTAINING THE RESULTS AND FUTURE PLANS

- Plans to continue electronic H&P:
  - Measurement of CC vs no CC – routine hospital function
  - Measurement of readmissions ongoing
- If "Beta-version" useable:
  - Share pilot program with other units in department
  - Share pilot program with other EPIC using clinics
- Relationship with EPIC team enhanced and groundwork for outcomes collection established, pending admin approval/leadership support

TEAM

Braden Boyer

Ryan Egbert

Sarah Speicher

Marc DeHart, MD

John Toohey, MD

Thanks to some of the many folks who helped:

Sherry Martin: Consultant

Claudia Thames – Orthopaedic Clinical Operations MARC
Sue Adams – Ortho Benefits Coordinator

UTHSCSA Computer Gurus: Tim Barker MD CMIO
Diana Burnett – CIS Analysis
Heather Grosjean EpicCare Analyst

UHS OR RNs: Polly Smith, Preop RN lead
Joann Piliado, RN
Lenora Bartley, Preop Admin Assistant

UHS Number Crunchers: Heidy Colón-Lugo, PhD – Health Analytics
Bill Bedwell - Exec Dir Reimbursement Treasury

UHS Computer gurus:
Bill Phillips, Chief Information Officer
Paula Herring, On Base Directing Manager

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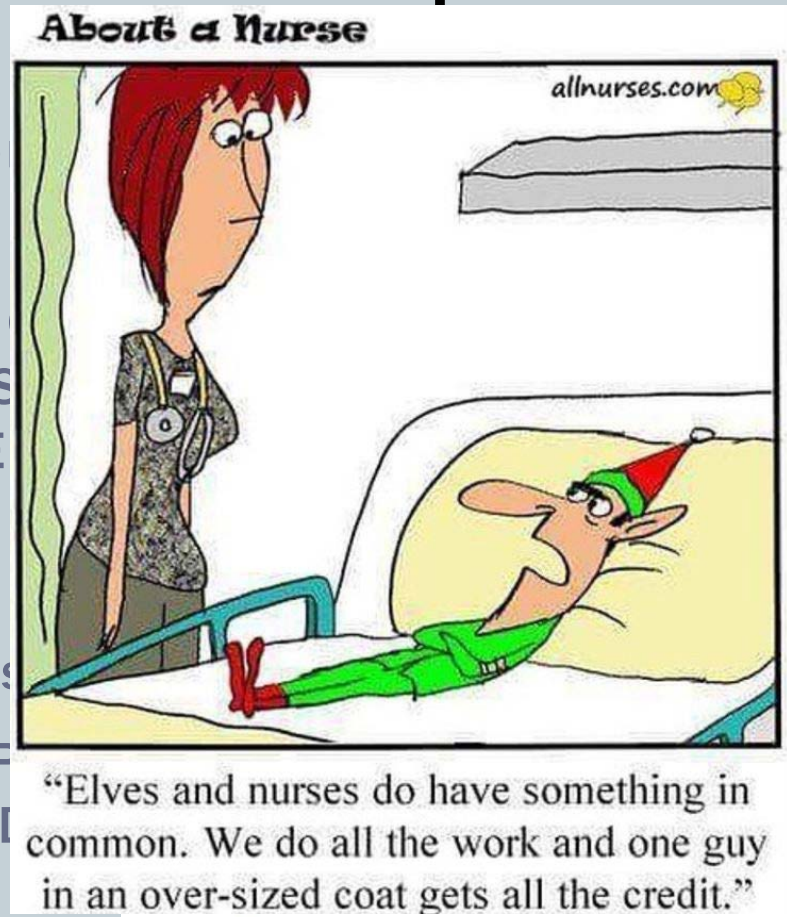

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