BRIDGEPORT HOSPITAL
YALE NEW HAVEN HEALTH

100th Scientific Assembly & Annual Meeting
RSNA

CLINICAL AUDIT OF PRE-PROCEDURE DOCUMENTATION FOR IMAGE-GUIDED PROCEDURES:

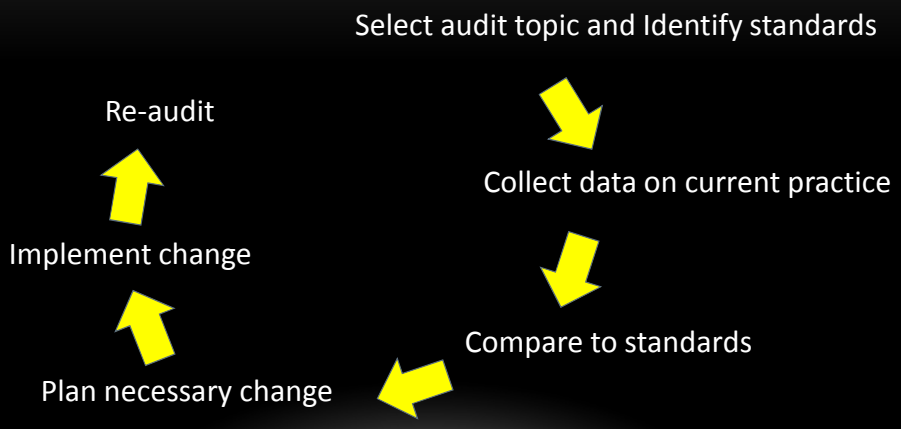
Implementation of a new tool for improving efficiency and patient safety

Daichi Hayashi MBBS PhD, Francisco Valles MD, Melkamu Adeb MD,
Nisarg Parikh MD, Terence Hughes MD, Noel Velasco MD

Department of Radiology, Bridgeport Hospital,
Yale New Haven Health, Bridgeport, CT

CONTENTS

CLINICAL AUDIT



INTRODUCTION

- American College of Radiology and Society of Interventional Radiologists published practice guidelines in 2009
  - Detailed recommendation for pre-procedure documentation in regard to image-guided procedures (e.g. biopsy, paracentesis, abscess drainage) by radiologists

ACR/SIR PRACTICE GUIDELINES

- The plan for each procedure to be performed
- Indication for procedure and brief history
- Findings of targeted physical examination
- Relevant laboratory and other diagnostic findings
- Risk stratification, such as the American Society of Anesthesiologists Physical Status Classification
- Documentation of informed consent

RESULTS OF 1ST AUDIT

- Audit of pre-procedure documentation of 29 ultrasound-guided procedures performed within the Department of Radiology during a 4-week period in August 2013
  - ➢ Poor quality of documentation, with overall adherence rate to the ACR/SIR guidelines of 8%

8/16/13 9:00 am

The patient is admitted to MedEase for ultrasound-guided liver biopsy for evaluation of a liver mass. PLT 298, INR 1.03 on 8/14/13. Patient not on any anti-coag medications. Informed consent obtained.

Resident Name and signature

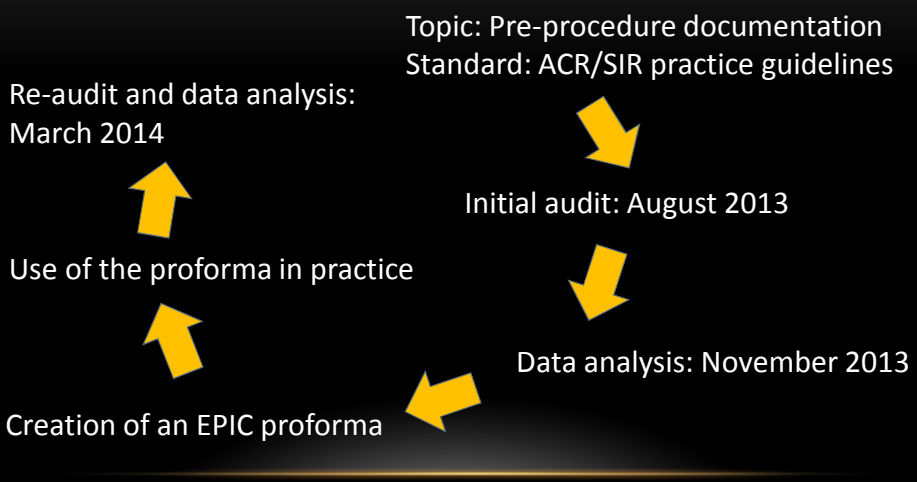
REASONS FOR POOR RESULTS

- Residents could not afford to spend much time on pre-procedure documentation during a busy ultrasound rotation
- Residents were not fully aware of ACR/SIR guidelines

OBJECTIVES

- To improve the quality of pre-procedure documentation by two means
  1. By improving the efficiency of the work flow for residents
  2. By creating a proforma (in which most clinical information is auto-fed) within the EPIC (our electronic medical record system) for the pre-procedure documentation that collects all necessary items listed in the guidelines

METHODS



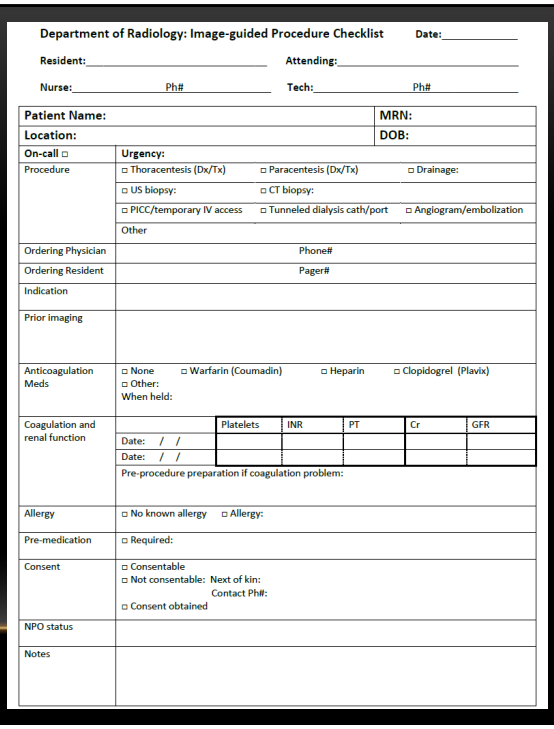
METHODS

- Using 10 randomly selected procedures as 'simulated requests', we measured time taken to complete pre-procedure documentation, without and with the use of proforma:
  - Three radiology residents performed 'simulated clinical information collection' and 'simulated pre-procedure documentation', both without and with using the new proforma
    - Inter-observer variability assessment
      - To prevent residents entering information by memory, the first session (without proforma) and the second session (with proforma) were held with 4 weeks time interval

METHODS

- One resident repeated the whole process, with 12 weeks time interval between sessions:
  - Intra-observer variability assessment

- Without proforma:
  - Open the patient's medical record in EPIC (Electronic Medical Record)
  - Manually search the necessary information
  - Manually fill out paper 'pre-procedure checklist'
  - Discuss the action with the attending
  - Type pre-procedure notes in free form in EPIC



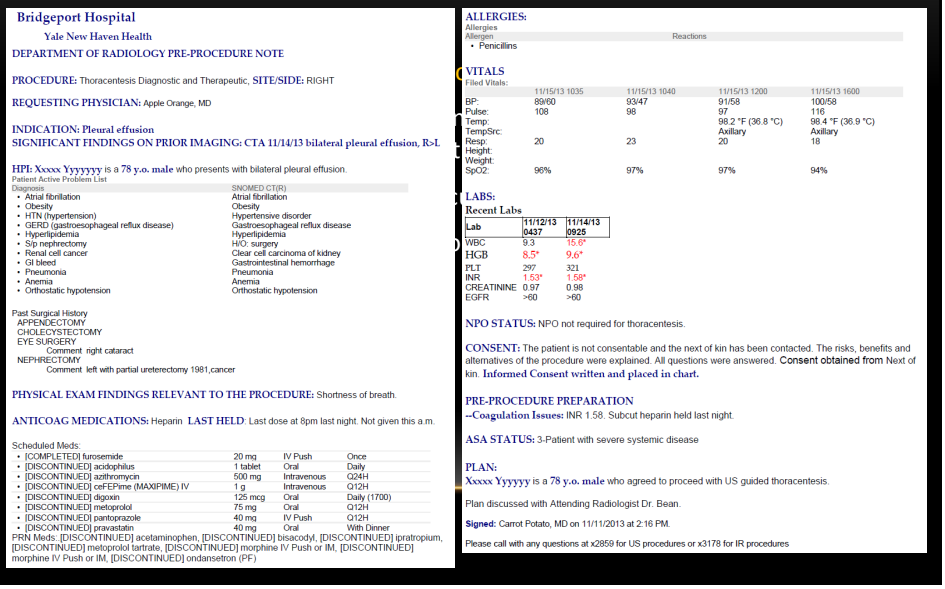
Department of Radiology: Image-guided Procedure Checklist **Date:**_____

Resident:_____ **Attending:**_____

Nurse:_____ Ph#_____ **Tech:**_____ Ph#_____

Patient Name:					**MRN:**	
Location:					**DOB:**	
On-call ☐	**Urgency:**					
Procedure	☐ Thoracentesis (Dx/Tx)	☐ Paracentesis (Dx/Tx)	☐ Drainage:			
	☐ US biopsy:	☐ CT biopsy:				
	☐ PICC/temporary IV access	☐ Tunneled dialysis cath/port	☐ Angiogram/embolization			
	Other					
Ordering Physician	Phone#					
Ordering Resident	Pager#					
Indication						
Prior imaging						
Anticoagulation Meds	☐ None ☐ Warfarin (Coumadin) ☐ Heparin ☐ Clopidogrel (Plavix) ☐ Other: When held:					
Coagulation and renal function		Platelets	INR	PT	Cr	GFR
	Date: / /					
	Date: / /					
	Pre-procedure preparation if coagulation problem:					
Allergy	☐ No known allergy ☐ Allergy:					
Pre-medication	☐ Required:					
Consent	☐ Consentable ☐ Not consentable: Next of kin: Contact Ph#: ☐ Consent obtained					
NPO status						
Notes						

- With proforma:
  - Open the patient's medical record in EPIC



Bridgeport Hospital
Yale New Haven Health
DEPARTMENT OF RADIOLOGY PRE-PROCEDURE NOTE

PROCEDURE: Thoracentesis Diagnostic and Therapeutic, **SITE/SIDE:** RIGHT

REQUESTING PHYSICIAN: Apple Orange, MD

INDICATION: Pleural effusion
SIGNIFICANT FINDINGS ON PRIOR IMAGING: CTA 11/14/13 bilateral pleural effusion, R>L

HPI: Xxxxx Yyyyyyy is a **78 y.o. male** who presents with bilateral pleural effusion.

Patient Active Problem List

Diagnosis	SNOMED CT(R)
• Atrial fibrillation	Atrial fibrillation
• Obesity	Obesity
• HTN (hypertension)	Hypertensive disorder
• GERD (gastroesophageal reflux disease)	Gastroesophageal reflux disease
• Hyperlipidemia	Hyperlipidemia
• S/p nephrectomy	H/O: surgery
• Renal cell cancer	Clear cell carcinoma of kidney
• GI bleed	Gastrointestinal hemorrhage
• Pneumonia	Pneumonia
• Anemia	Anemia
• Orthostatic hypotension	Orthostatic hypotension

Past Surgical History
APPENDECTOMY
CHOLECYSTECTOMY
EYE SURGERY
Comment: right cataract
NEPHRECTOMY
Comment: left with partial ureterectomy 1981,cancer

PHYSICAL EXAM FINDINGS RELEVANT TO THE PROCEDURE: Shortness of breath.

ANTICOAG MEDICATIONS: Heparin **LAST HELD**: Last dose at 8pm last night. Not given this a.m.

Scheduled Meds:

• [COMPLETED] furosemide	20 mg	IV Push	Once
• [DISCONTINUED] acidophilus	1 tablet	Oral	Daily
• [DISCONTINUED] azithromycin	500 mg	Intravenous	Q24H
• [DISCONTINUED] ceFEPime (MAXIPIME) IV	1 g	Intravenous	Q12H
• [DISCONTINUED] digoxin	125 mcg	Oral	Daily (1700)
• [DISCONTINUED] metoprolol	75 mg	Oral	Q12H
• [DISCONTINUED] pantoprazole	40 mg	IV Push	Q12H
• [DISCONTINUED] pravastatin	40 mg	Oral	With Dinner

PRN Meds: [DISCONTINUED] acetaminophen, [DISCONTINUED] bisacodyl, [DISCONTINUED] ipratropium, [DISCONTINUED] metoprolol tartrate, [DISCONTINUED] morphine IV Push or IM, [DISCONTINUED] morphine IV Push or IM, [DISCONTINUED] ondansetron (PF)

ALLERGIES:
Allergies

Allergen	Reactions
• Penicillins	

VITALS
Filed Vitals:

	11/15/13 1035	11/15/13 1040	11/15/13 1200	11/15/13 1600
BP:	89/60	93/47	91/58	100/58
Pulse:	108	98	97	116
Temp:			98.2 °F (36.8 °C)	98.4 °F (36.9 °C)
TempSrc:			Axillary	Axillary
Resp:	20	23	20	18
Height:				
Weight:				
SpO2:	96%	97%	97%	94%

LABS:
Recent Labs

Lab	11/12/13 0437	11/14/13 0925
WBC	9.3	15.6*
HGB	8.5*	9.6*
PLT	297	321
INR	1.53*	1.58*
CREATININE	0.97	0.98
EGFR	>60	>60

NPO STATUS: NPO not required for thoracentesis.

CONSENT: The patient is not consentable and the next of kin has been contacted. The risks, benefits and alternatives of the procedure were explained. All questions were answered. Consent obtained from Next of kin. **Informed Consent written and placed in chart.**

PRE-PROCEDURE PREPARATION
--Coagulation Issues: INR 1.58. Subcut heparin held last night.

ASA STATUS: 3-Patient with severe systemic disease

PLAN:
Xxxxx Yyyyyy is a **78 y.o. male** who agreed to proceed with US guided thoracentesis.

Plan discussed with Attending Radiologist Dr. Bean.

Signed: Carrot Potato, MD on 11/11/2013 at 2:16 PM.

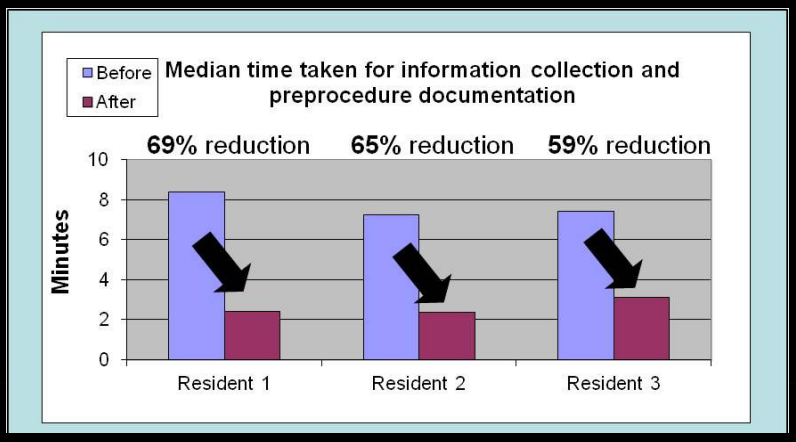
Please call with any questions at x2859 for US procedures or x3178 for IR procedures

METHODS

- Re-audit:
  - Pre-procedure documentation of 33 ultrasound-guided procedures in a 4-week period in March 2014
  - Pre-procedure documentation entered using the proforma
  - Re-assessment of the adherence rate to the ACR/SIR guidelines

RESULTS

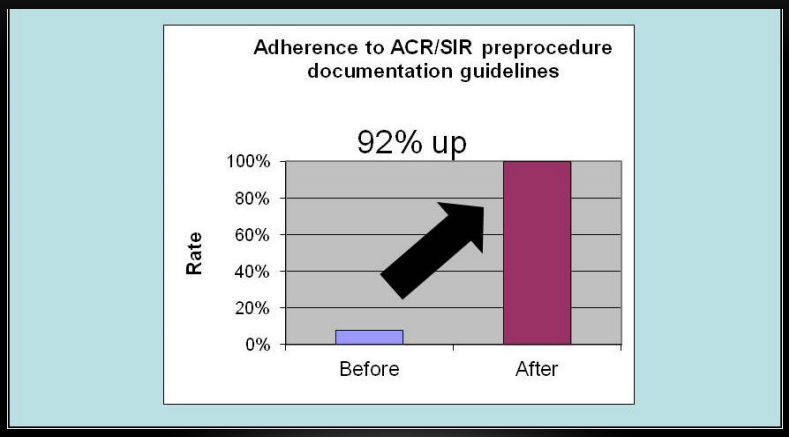
- Inter-observer variability



RESULTS

- Intra-observer variability
  - 1st session: 69% reduction
    - (8 min 38 sec to 2 min 40 sec)
  - 2nd session: 68% reduction
    - (8 min 1 sec to 2 min 35 sec)
  - No notable difference between two measurements

RESULTS OF 2ND AUDIT



ADVERSE EVENTS

- Without proforma:
  - Delayed discharge due to post-liver biopsy pain (1 case)
  - Delayed discharge due to continued leak of ascitic fluid post-paracentesis (1 case)
- With proforma:
  - Due to miscommunication among staff, one case was about to be performed without the patient signing the written informed consent
    - ✓ Thanks to the proforma, a resident realized a lack of it and prevented an incident
  - None post-procedure

DISCUSSION

- Use of the new proforma improved both efficiency of work flow and quality of preprocedure documentation
- Improvements are a result of a completion of an audit process
- EPIC has been time consuming for physicians due to extensive need for documentation, but this type of tool might streamline workflow, leaving more time for bedside patient care

DISCUSSION

- Adverse events that occurred before the use of proforma could not have been prevented even if the proforma was available
- The proforma did prevent one potential incident

CONCLUSION

- Effective use of EPIC smartphrase can significantly improve the efficiency of workflow and quality of documentation of medical record in line with the available guidelines
- Patient safety may or may not be improved
  - *Due to very low rate of adverse events, a larger sample is needed for further evaluation regarding patient safety*

REFERENCES

- ACR–SIR practice guideline for the reporting and archiving of interventional radiology procedures (revised 2009)
  - Available at http://www.acr.org/guidelines