

Impact of EHR Driven Force Function on Pregnancy Screening Compliance Rates in Fluoroscopy

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Introduction

- Work environment and human factors can impact staff compliance rates on ensuring proper screening for pregnancy before relevant Radiologic exams.
- Failure to screen and subsequent radiation exposure to a fetus may be viewed as a serious safety event.
- **Purpose:** To expand an Electronic Health Record (EHR)-driven workflow that originated in CT to increase pregnancy screening compliance for relevant fluoroscopic exams.

Methods

- **Team**
 - Quality Improvement specialists, subspecialty Radiologists, X-Ray Technologists, IT Analysts
- **Reviewed staff interviews to identify causes of noncompliance**
 - Based on what was implemented in CT, top contributors given were: lack of reminder to check for pregnancy status, display of information, confusion/knowledge gaps of pregnancy policy, no consistent place to document signed waivers or hCG values
- **QI Methodology used to narrow focused interventions**
 - A3 Methodology, process mapping, survey/feedback of frontline staff, Pareto principle
- **Compliance rates measured by randomized manual chart audit**

PDSA Cycles: Quick Reference Guide

- Created Pregnancy Policy Quick Reference Guide
 - Addresses knowledge gaps
 - Stop Light visual aid for understanding which patients require pregnancy testing, which are eligible to sign a waiver and which can bypass testing completely

<u>Test OR Waiver</u>	<u>Scenario</u>
Test Required	<ul style="list-style-type: none"> ●All patients anatomically capable of bearing a child (between ages 10-17 or under age 10 if started menses) require a pregnancy test for any Fluoroscopy exam that includes the pelvic region. Patient/parent/guardian CANNOT sign a waiver for the patient. ●Any patients 18-55 who are not able to sign their own consent forms, requires a test. The guardian/proxy/Power of Attorney CANNOT sign a waiver.
Test or Waiver	<ul style="list-style-type: none"> ●All patients anatomically capable of bearing a child with decision-making capacity ages 18-55 (including patients born female but who identify as male yet still have anatomy making pregnancy possible), require a test OR signed waiver. ● Any patient ages 18-55 who think they are menopausal still require a test OR signed waiver. ●Other contraceptive measures such as tubal ligation, IUD, and birth control DO NOT fully prevent pregnancy and still require a test or signed waiver.
No test or waiver needed, exempt	<ul style="list-style-type: none"> ●Hysterectomy ●Bilateral ovarian removal ●Postpartum (or recent miscarriage, D&C etc.) within two weeks ●Medically emergent exams that involve Fluoroscopy of the pelvic region ●Negative pregnancy test on file from current hospitalization, or within 24 hours for urine testing and 72 hours for serum testing.

Improved EHR Display of Information

- If clinician answers “Yes” to order question, “Is the patient pregnant?”, question moves to top of Tech navigator exam information and is highlighted yellow.
- If clinician answers “No” to order question, “Is the patient pregnant?”, this field is not displayed at top of Tech navigator.

Ordering Clinician indicated patient is pregnant

Is the patient pregnant? Yes

FL Lumbar Puncture

Base Procedure Name: FL LUMBAR PUNCTURE(GH YH BH LM)

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Reason For Exam

Workup for meningitis and encephalitis

Improved display of information to decrease risk of critical information being overlooked on a busy screen.

Technologist Reminder

- **Logical** reminder embedded into EHR when Techs Begin Exam
 - Only fires for relevant Fluoroscopic exams that radiate the pelvic area (example – barium enema, small bowel follow through, LPs)
 - Only fires for anatomically female patients of child-bearing age (10-55)
 - Will NOT fire if patient has a resulted negative hCG value documented in EHR within 72 hours
 - Reduces click fatigue



Technologist Reminder

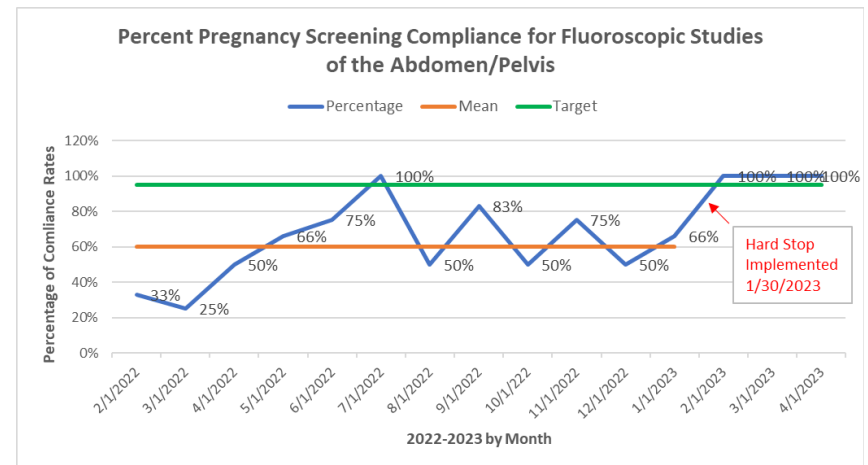
- Hard Stop
- Techs must select most relevant pregnancy status from pre-determined button options
 - Button options embed educational reminder of policy
- High Reliability Intervention
 - EHR based Force Function

IMAGING BEGIN FLUORO

	Answer	Comment
This patient needs pregnancy status verification. Please select pregnancy status	Medical Emergency (example trauma code)	Negative HCG
	Positive Pregnancy Test - Rad Written Consent	
	Not Needed - Hysterectomy or Bilateral Oophorectomy or postpartum within 2 weeks	Signed Waiver
	<input type="text"/>	<input type="text"/>

Results

- **Baseline:** Randomized cohort of 40 anatomically female inpatients and outpatients between ages of 10-55 revealed 60% compliance in documenting pregnancy status (February 1, 2022-January 29, 2023).
- **EHR-driven workflow implemented January 30, 2023**
- **Post-intervention:** Similar randomized cohort revealed 100% screening documentation compliance.



Discussion

- While institutional radiation safety and pregnancy testing policies are designed to optimize patient safety and avoid unintended fetal radiation, compliance in following the policy by front line staff is variable.
- Confusion on which patients need pregnancy screening, what exams require screening, how to document screening results and lack of standardization all contribute to noncompliance.
- Highlighted need for technology-based interventions

Discussion

- This project originated from a safety event in CT where a pregnant patient received a CT Abdomen Pelvis w IV contrast without Technologist knowledge of pregnancy.
- Expanded the successfully implemented EHR-based workflow to our Fluoroscopy department to prevent relevant patients from undergoing a Fluoro exam of the pelvic region without ensuring pregnancy status had been addressed
- Good system design should account for anticipated human error