SCHOOL OF MEDICINE
Department of Radiology
UNIVERSITY OF COLORADO ANSCHUTZ MEDICAL CAMPUS

Adding Friction to the Electronic Health Record to Improve Adherence with Best Practices for Diagnostic Testing Across Multiple Hospital System Intensive Care Units

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uchealth

BACKGROUND

- Research has proven Daily CXR's in ICU have low value.

2010
- Meta analysis of 7078 patients shows daily CXR can be eliminated without increase in adverse outcomes[1]

2012
- ACR Appropriateness criteria state daily chest radiographs in ICU are not appropriate

2014
- ABIM Choosing Wisely Campaign and Critical Care Society collaborative recommend against ordering of daily chest radiograph

1. Oba, Zaza Abandoning daily routine chest radiography in the intensive care unit: meta-analysis. Radiology 2010; 255:386-95

BACKGROUND

- There is inherent risk of Patient Harm to patients when completing "Daily" Chest X-rays.

- Risk of tube/line dislodgement
- Patient sleep disturbance
- Microbial dissemination
- Skin injury from cassette positioning
- Cumulative radiation exposure

PROBLEM

- Despite the evidence - daily CXRs continue to be commonly ordered within ICUs throughout the country.

- At our institution, University of Colorado Hospital, ICU CXRs account for 44% of all ICU CXRs ordered.

	2021 SEP	OCT	NOV	Total /AVG	Daily Averages
XR CHEST SINGLE VIEW	2222	2577	2344	7143	78
STANDING ORDERS *	934	1232	963	3129	34
STANDING ORDER % **	42%	48%	41%	44%	44%

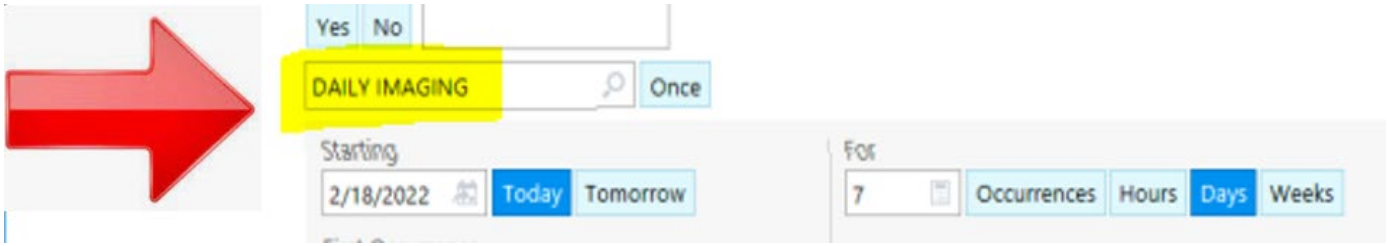
*Standing orders calculated as the number of orders placed at the same time for the same patient.
** Standing order % calculated as the number of standing orders/total orders.

PURPOSE

- To determine if making a change in ordering options in the electronic health record (EHR) could decrease standing orders for daily CXR in ICU from 44% to <5%.
- Secondary goal was to reduce radiology technologist job satisfaction/burnout.

METHODS

- We modified the electronic health record, wherein we added friction by eliminating "Daily" as a frequency option when ordering CXRs.



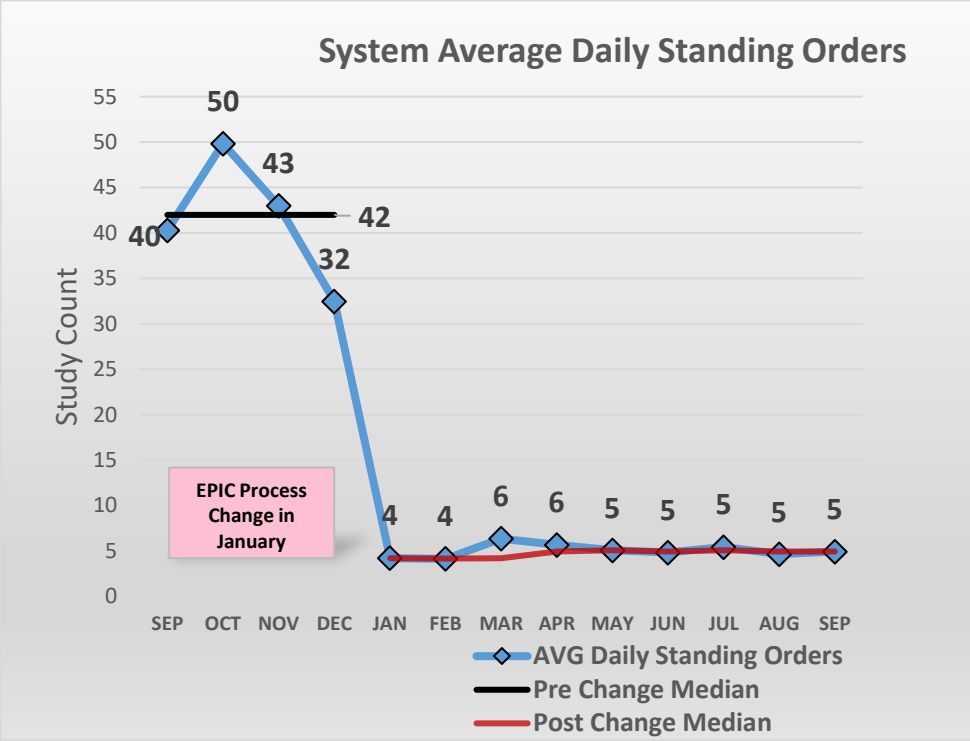
- We engaged hospital leadership and clinicians in advance of the electronic health record modification to gain support and understanding in advance of change.

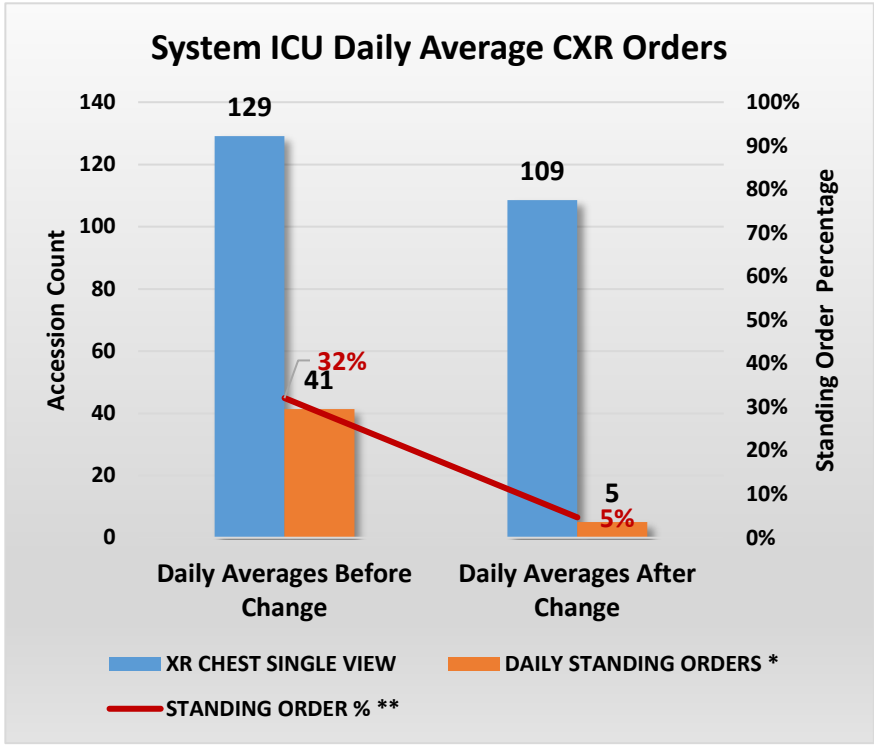
- We tracked the impact of this intervention by recording the number of repeat ICU CXRs that were ordered at the same sitting for three months before and after the intervention.

- We also surveyed radiology technologists' level of stress and burnout after the changes were made

RESULTS: UCHealth System Wide

- After the process change was made in January, the average ICU CXRs decreased from 42/day to 5/day. This represents an 87% decrease in CXRs completed using “daily” standing orders.





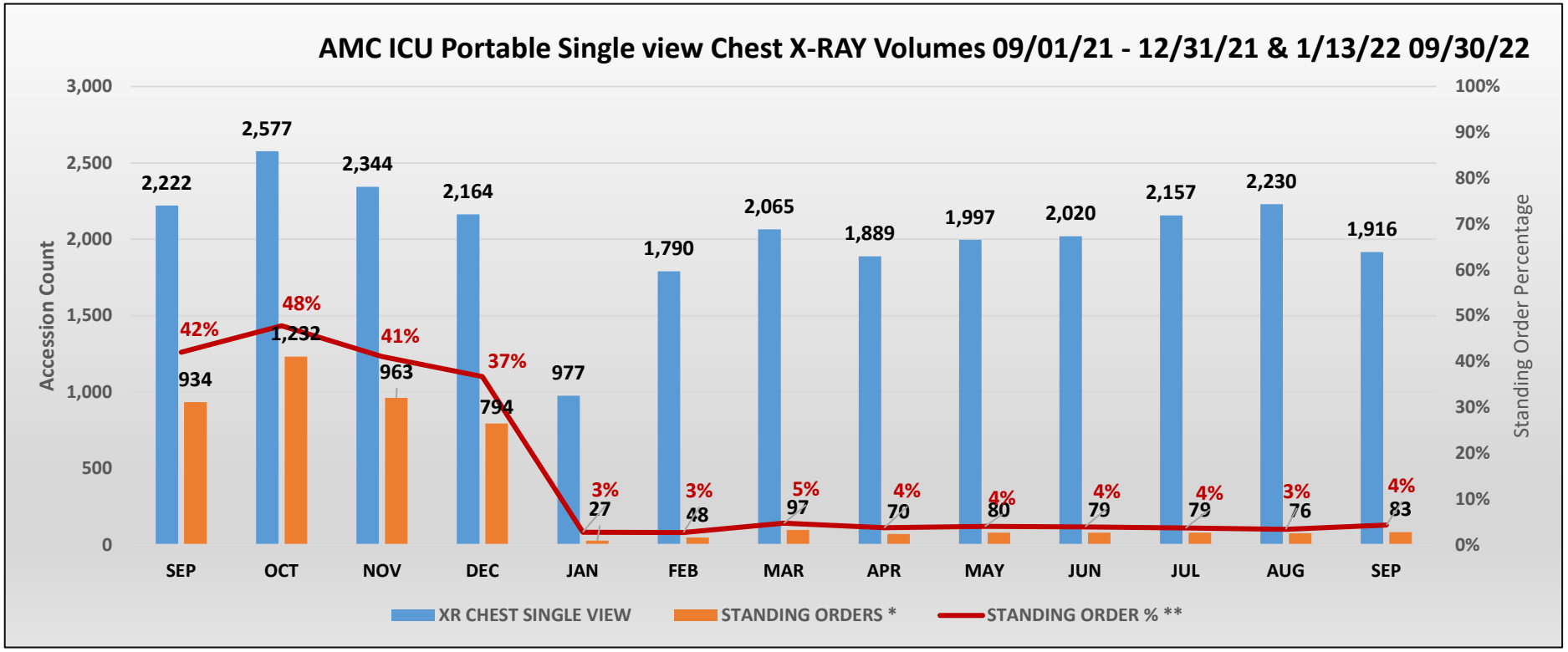
Common Question:

If the EMR option to order “Daily” CXRs was removed, then HOW did any “Daily” CXRs get ordered??

→ Physicians are sneaky, some continued to order 10 CXRs at a time, one a day for 10 days….

RESULTS: University of Colorado Hospital

- At UCH, there was an 18% reduction in overall CXRs and 92% reduction in Daily Standing Order ICU CXR's.



- The change was monitored for 9 months and still proves to be successful.

RESULTS

Improved Adherence with Best Practices	• 14,235 un-necessary CXRs were prevented in ONE Year
Improved Staffing	• Less morning portables = more staff to help in other areas
Saved Inpatient DRG costs	• If average reimbursement is ~$253/ CXR, and 14,235 CXRs were prevented….. ANNUAL SAVINGS could equal $3,601,455
Improved Quality (of Life) for Radiology Techs	• 80% staff reported less daily portable CXRs in the ICUs has contributed to less BURNOUT. • 72% staff reported improved Image Quality during morning portable routine.

- Overall, adding friction to the electronic health record by eliminating “Daily” as a frequency option when ordering CXRs effectively and significantly reduced low-value care, to the benefit of patients and healthcare professionals.

- Standing orders for daily CXRs in the ICU were decreased from <u>44% to 3.7%</u>

Thank You for your time.

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