STEPS FOR DECREASING FLUOROSCOPY TIME FOR PICC LINE PLACEMENT

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PURPOSE

A study was performed to determine the fluoroscopy time utilized for peripherally inserted central catheter (PICC) placement. Following the initial study, changes were implemented to decrease the fluoroscopy time. Following these changes, a follow-up study was performed to evaluate the impact of the changes.

METHODS

Fluoroscopy time was recorded for the placement of fifty consecutive PICC lines placed by a single operator. PICC lines were placed in both the right and left upper arms with ultrasound access, followed by fluoroscopy guidance for placement. Analysis of data was performed including average fluoroscopy time, range of times and outliers. Following this data analysis, three changes were made to the PICC line placement procedure.

METHODS

- 1. Fluoroscopy was performed using foot pedal control by the radiologist rather than verbal commands for the technologist.
- 2. Venogram was performed immediately for any placement difficulties.
- 3. Fluoroscopy was limited to the chest for wire measurement and catheter tip position confirmation.

METHODS

Fifty follow-up procedures were similarly analyzed.

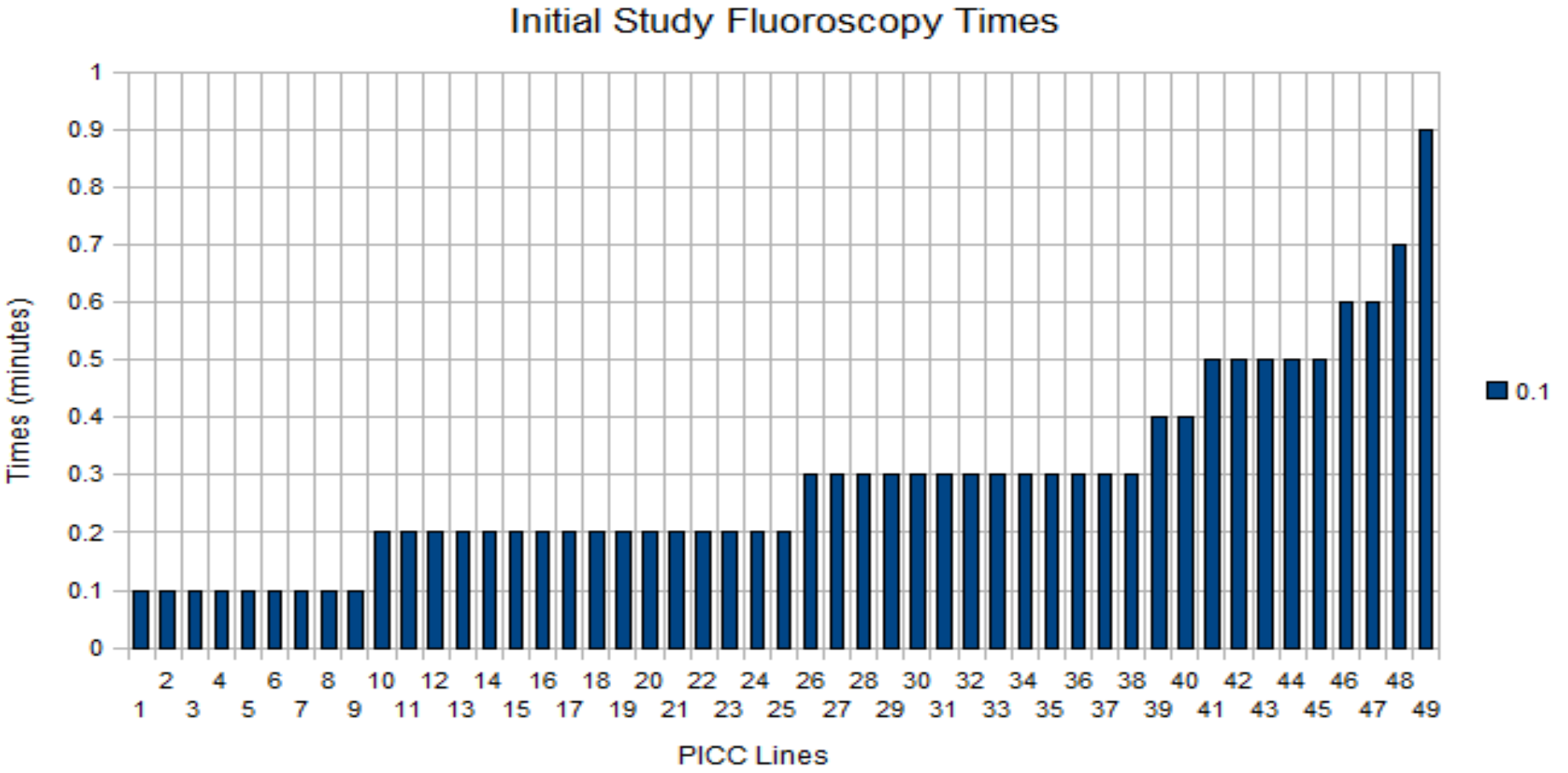
RESULTS

Initial average fluoroscopy time was 0.28 minutes with a range of 0.1 to 0.9 minutes. Outliers in the initial study ranged from 0.6-0.9 minutes. The outliers included two cases with extended fluoroscopy time due to difficulty passing the wire and or the catheter into the superior vena cava. Both cases eventually had venograms which demonstrated either high grade venous stenoses or occlusion necessitating use of the contralateral arm. 78% of cases had a time less than .3 minutes with 20% less than .1 minutes.

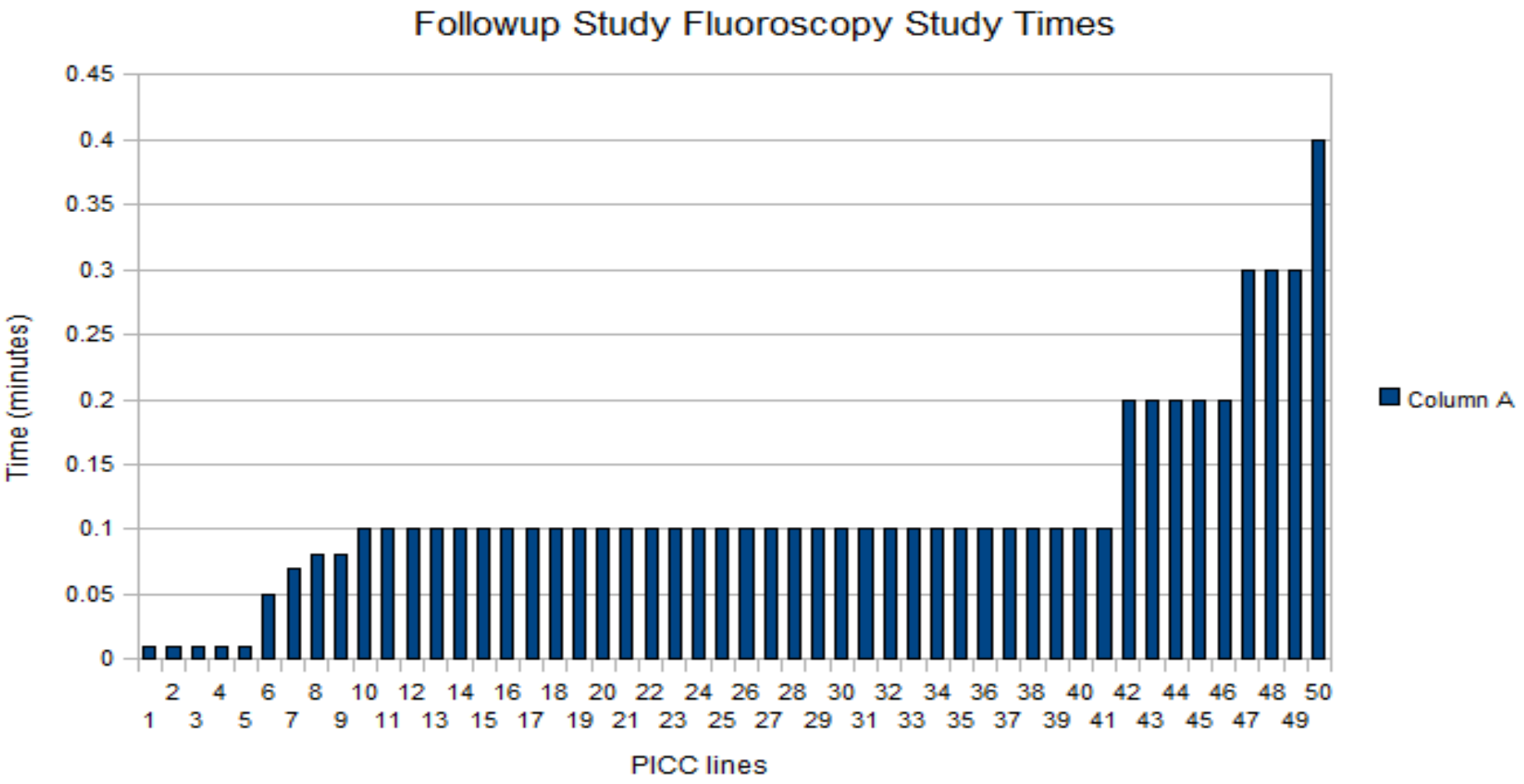
RESULTS

The study performed after the institution of the above mention changes had an average fluoroscopy time of 0.12 minutes ($p<.001$) with a range of 0.01-0.4 minutes. 82% had a fluoroscopy time of ≤0.1 minute. There were no outliers compared to the prior study. Two cases had wire/catheter passage difficulty. Venogram was immediately performed with findings of venous occlusion/stenosis necessitating contralateral placement. Less exposure time was utilized due to earlier use of venography.

RESULTS


Initial Study Fluoroscopy Times
Times (minutes)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
PICC Lines
0.1

RESULTS


Followup Study Fluoroscopy Study Times
Time (minutes)
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50
PICC lines
Column A

CONCLUSION

Simple procedures can be instituted which can significantly decrease fluoroscopy time for PICC line placement.