Impact of a Quality Improvement Project to Reduce Fluoroscopy Times

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Background

- Fluoroscopically-guided trans-bronchial biopsies are a key skill learned by fellows in the UCSF pulmonary training program
- Health risks of radiation exposure are thought to occur in a non-threshold, dose-dependent manner, i.e. there is no “safe” dose of radiation
- Patient (and operator) radiation exposure is directly proportional to fluoroscopy time. Total fluoroscopy time is an operator-dependent, easy-to-target variable for reducing radiation exposure

Research Questions

- Can an education-based intervention + changes to the procedure note template reduce fluoroscopy times to achieve a target of >80% of procedures performed with under 3 minutes of radiation exposure?
- Will a reduction in fluoroscopy time result in a corresponding reduction in radiation exposure without an increase in complication rates?

Methods

Study design:
- Prospective, pre vs. post intervention study

Sample:
- All fluoro-guided TBB procedures conducted at the Moffitt campus from June 2013-March 2014

Data Source:
- Tech-generated procedure logs and fellow-generated procedure notes

Intervention:
- Fluoroscopy skill session conduction during summer lecture series
- Change to procedure note template requiring logging of total fluor time and radiation dose

Outcome variables:
- % of procedures completed in <3 min fluor time
- Average radiation dose
- Major complications

Results

Figure 1: Average Radiation Dose

Figure 2: Average Fluoroscopy Time

Figure 3: % of Procedures with <200 microGy of Radiation Exposure

* p-value <0.05 compared to radiation dose during pilot period

Limitations

- Short pilot period with end-of-year fellows
- Frequent fellow turn-over
- Missing data (time and dose not recorded for 28 of 250 procedures)

Conclusions

- To date, our QI project has resulted in:
  - A greater awareness of issues surrounding radiation exposure and patient safety
  - A significant reduction in radiation dose per procedure
  - No significant change in average fluoroscopy times
  - No change in rates of major complications (data not shown)

- Future directions include:
  - Fluoroscopy safety checklist
  - Annual fluoroscopy skills workshop