



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa

Université d'Ottawa | University of Ottawa

Getting to Zero:

A Quality Assessment of Multiple Interventions Aimed to Reduce Cancellation Rates in an Ultrasound-Guided Biopsy Program



Stephanie A. Kenny, BSc, MD
Ania Z. Kielar, MD, FRCPC



uOttawa

www.uOttawa.ca



Conflicts of Interest

- No disclosures



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



Background

- In an era of fiscal restraint, the need for cost-effective care delivery has never been greater
- At our large academic hospital, we recognized high rates of same-day biopsy cancellations resulting in wasted resources and inefficient workflow



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



Purpose

- We designed a quality assessment project aimed to **reduce** ultrasound-guided biopsy **cancellation** rates





Audit Target

- Aim for **ZERO** same-day biopsy cancellations

Literature:

- No published reference for cancellation rates of ultrasound-guided abdominal biopsies¹
- In breast literature, biopsy cancellation rates range from 13-16%^{2,3}



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



Methods

- Prospective database of every biopsy performed in department from November 2012 – November 2015, including reasons for cancellation
- Cancellation = loss of a biopsy slot, where a biopsy either could not be attempted or was aborted by the radiologist prior to obtaining a sample



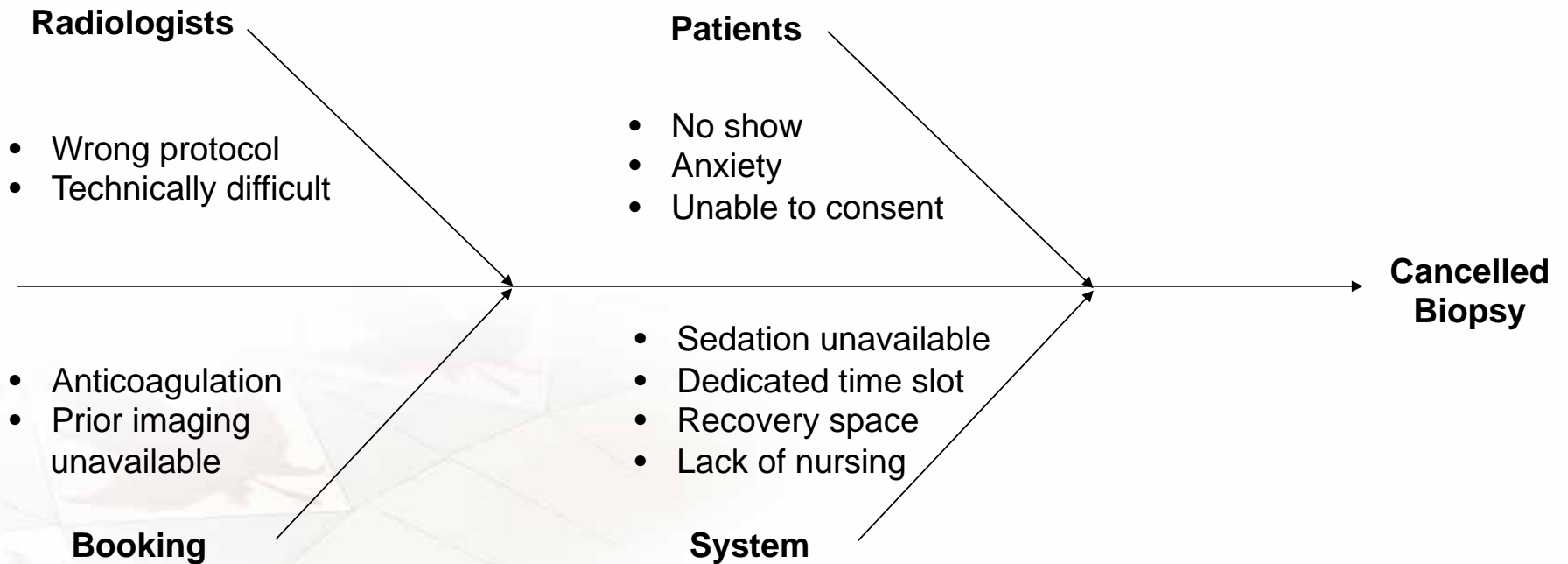
uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



Methods





Methods

Radiologists

Patients

- Wrong protocol

Cancelled Biopsy

- Anticoagulation

- Dedicated time slot
- Recovery space

Booking

System



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



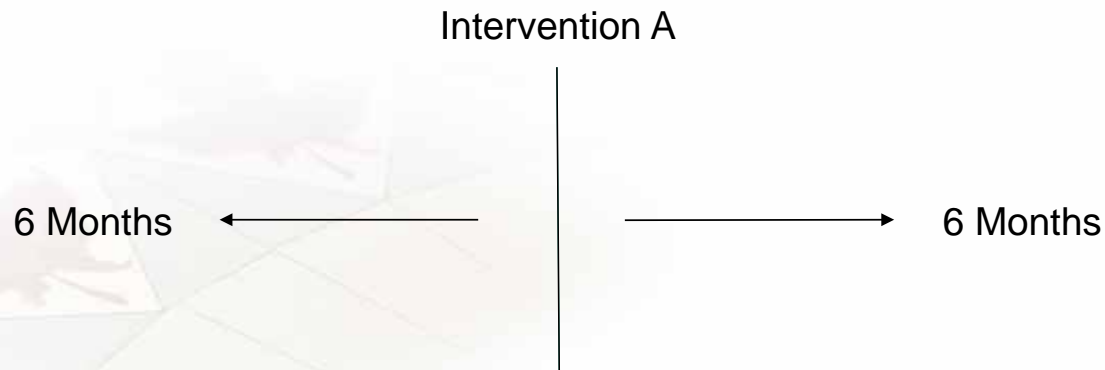
Methods

- Multiple quality interventions at successive time points
 1. **Wrong protocol** → protocol decision support email group to discuss challenging cases
 2. **Anticoagulation** → formalized pre-booking anticoagulation guidelines with training for technologists and clerks
 3. **Time slot/recovery space** → dedicated paracentesis program including dedicated nursing, location and recovery space



Methods

- Cancellation rates both 6 months pre- and post-intervention were calculated retrospectively and tested for statistical significance using Fisher's exact test





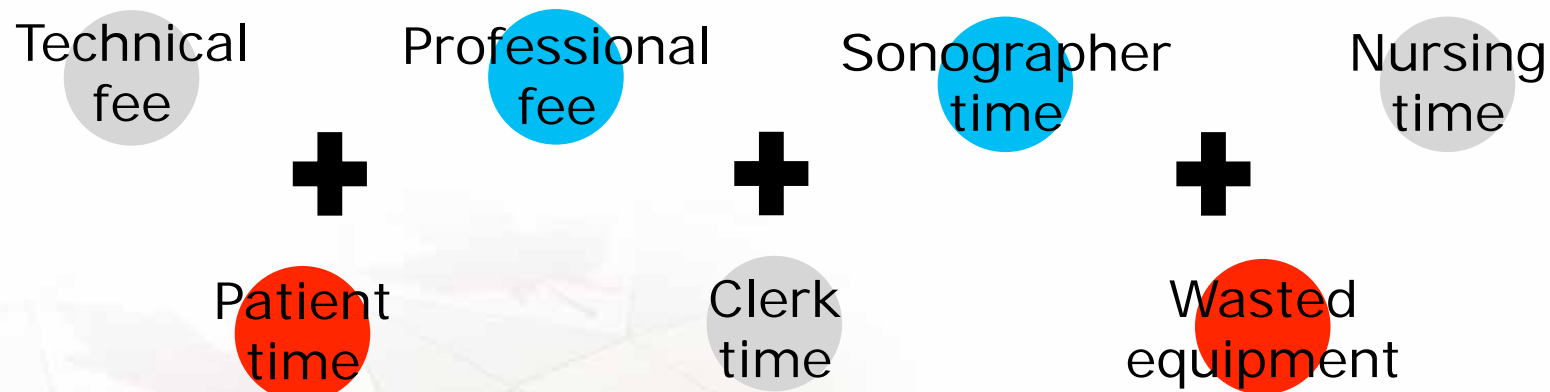
Results

- Total biopsies (Nov 2012 - Nov 2015) = 4954
- Total cancelled biopsies = 287 (5.8%)
- Biopsy types
 - Paracentesis
 - Liver
 - Kidney
 - Thyroid
 - Lymph node
 - Spleen
 - Etc.



Results

Rough estimated cost of cancellations =



= **>\$100,000 (~\$350/cancelled biopsy)**



Results

1. Protocol decision support → Cancellation rate did not significantly change pre vs post intervention (28/749 = 3.7% to 32/707 = 4.5%)

Intervention	Time Frame	Cancellation Rate (%)	Difference	P-value (*significant)
Protocol Decision-Support	Pre	3.7	-0.8	0.510
	Post	4.5		



Results

2. **Anticoagulation** → Cancellation rate slightly decreased from $79/909 = 8.7\%$ to $71/976 = 7.3\%$, however not statistically significant

Intervention	Time Frame	Cancellation Rate (%)	Difference	P-value (*significant)
Anticoagulation Guidelines	Pre	8.7	1.4	0.269
	Post	7.3		



Results

3. Paracentesis program → Cancellation rate significantly decreased from $78/962 = 8.1\%$ to $51/916 = 5.6\%$

Intervention	Time Frame	Cancellation Rate (%)	Difference	P-value (*significant)
Dedicated Paracentesis Program	Pre	8.1	2.5	0.035*
	Post	5.6		



Summary

- Dedicated paracentesis program at the Civic campus was successful at significantly decreasing the cancellation rate for ultrasound-guided biopsies at the General campus
- Other interventions including protocol decision-support and anticoagulation guidelines were less effective



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



Discussion

- Many challenges to large-scale quality improvement
- Findings confounded by overall growth in number and complexity of cases over the studied period
- Other potential quality initiatives implemented at an administrative level but not communicated to radiologists



Next Steps

- Grant to support further QA work
 - 1) Nursing follow-up of post-biopsy complications
 - 2) Survey of pain scores with vs without sedation





THANK YOU

Questions?



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



References

1. Percutaneous Image-Guided Biopsy of the Spleen: Systematic Review and Meta-Analysis of the Complication Rate and Diagnostic Accuracy. MD McInnes, AZ Kielar, DB Macdonald. Radiology 2011, Volume 260, Issue 3, 699-708.
2. Cancellation of MRI Guided Breast Biopsies for Suspicious Breast Lesions Identified at 3.0 T MRI. KS Johnson et al. Academic Radiology 2014, Volume 20, Issue 5, 569 – 575.
3. Canceled Stereotactic Core-Needle Biopsy of the Breast: Analysis of 89 Cases. LE Philpotts, CH Lee, LJ Horvath, and I Tocino. Radiology 1997, Volume 205, Issue 2, 423 – 428.



uOttawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa