



# High Volume Rapid Adequacy Assessment Of Fine Needle Aspirations And Touch Preparations Using Telecytology: A Major Cancer Center Experience.

**Dorota Rudomina M.B.A., CT(ASCP), Rusmir Feratovic M.H.A., CT(ASCP), Joseph Sirintrapun M.D.,  
Allix Mazzella M.P.H., Oscar Lin M.D, PhD**

**Memorial Sloan-Kettering Cancer Center, New York, New York., USA**

## Introduction

Rapid adequacy assessment is critical during the performance of minimally invasive biopsy procedures as it ensures proper sampling and triage of material for ancillary studies. These biopsies can be performed under computerized tomography or ultrasound guidance in different environments (radiology, operating room and endoscopy suites).

To address the increasing demand for adequacy assessments, a streaming telecytology (TC) solution was implemented. The system is based on a Linux server that broadcasts live images to remote locations. High definition cameras are connected to routing devices that stream these images to HD monitors located away from the site where the procedure is being performed. Pathology faculty members can view the images at their office or remotely using tablets connected to the institution virtual private network. The system has enabled one attending physician to support different sites simultaneously (Figure 1). This study analyzed the accuracy of the procedures performed over a period of 13 months.

## Materials and Methods

We performed a retrospective analysis of the workflow for ROSE performed in a single institution through TC using a single cytopathologist and on-site cytotechnologists (CT(s)) during a period of 14 months. In this high volume setting, TC were used to provide ROSE in 6 different sites. Remote access to the on-site camera was made through a dedicated telecytology system provided by Remote Medical Technologies (RMT)®. (Figure 2) The CT prepared slides on-site and selected the appropriate region of interest (ROI).

The preliminary adequacy assessment was compared to the final diagnosis. Concordance was obtained if the preliminary adequacy assessment matches the final cytopathologist-rendered diagnosis. An adequacy upgrade occurred when the preliminary adequacy assessment is considered inadequate but the final cytopathologist-rendered diagnosis is determined to be adequate. An adequacy downgrade occurred when preliminary adequacy assessment is deemed adequate but the final diagnosis is considered to be inadequate.

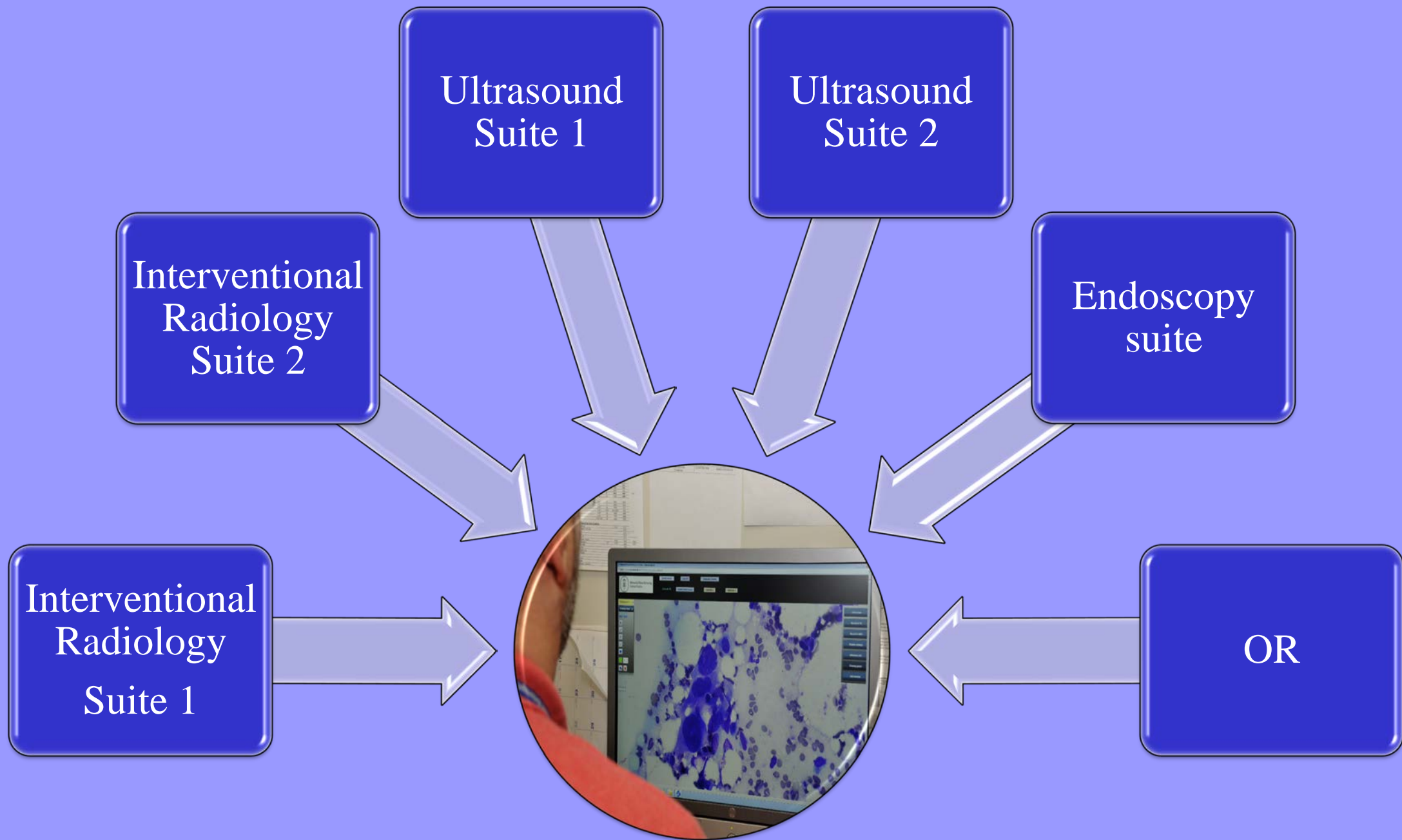


Figure 1: Multiple sites staffed by cytotechnologists sending images to pathologist



Figure 2 RMT system. A) fixed location B) Mobile cart

## Results

Telecytology was used to evaluate specimen adequacy of 6643 specimens procured at 6 different locations. Table 1 shows an adequacy comparison between the telecytology adequacy assessment performed by the cytotechnologist and the final diagnosis. The telecytology adequacy evaluation was in agreement with the final sign-out diagnosis in 93.0% (6175/6643) of the cases. In 6.7% (447/6643) of the cases, the specimen was considered non-diagnostic during initial telecytology diagnosis but the permanent specimen showed the presence of diagnostic material. In 0.3% (21/6643) of cases, the specimen was initially considered diagnostic but it was considered non-diagnostic in the final report..

Table 1. Comparison of streaming telecytology (RMT Medical Technologies) adequacy with the final adequacy assessment			
Telecytology (RMT Medical Technologies) assisted adequacies	Final Adequacy Assessment		Total
	Adequate	Inadequate	
Adequate	5523	21	5544
Inadequate	447	652	1099
Total	5970	673	6643

## CONCLUSIONS

Our study shows that telecytology-assisted preliminary adequacy assessment is an efficient and accurate method to render adequacy evaluation.

RMT designed telecytology allows one faculty to provide adequacy assessment to multiple sites where the procedure are being performed simultaneously