

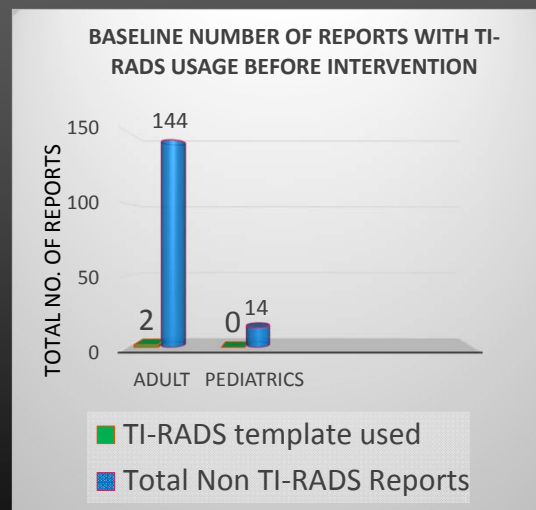
IMPLEMENTATION OF TIRADS ULTRASOUND REPORTING IN A PEDIATRIC AND ADULT PRACTICE GROUP: WHAT WE LEARNED

Kavya Sudanagunta, M.D.
Kimberly E. Applegate, M.D,M.S.
Adrian Dawkins, M.D.
Leslie Anaskevich, MHS
Xin Wang, Ph.D.



AIM

- AIM 1: Utilization of TI-RADS for the Ultrasound evaluation of thyroid nodules with a goal of using TI-RADS template in 90% of pediatric and 75% of adult reports
- AIM 2: Decrease the frequency of inappropriate biopsies by 20% and decreasing the frequency of inappropriate follow-up examinations by 30%



MATERIALS AND METHODS

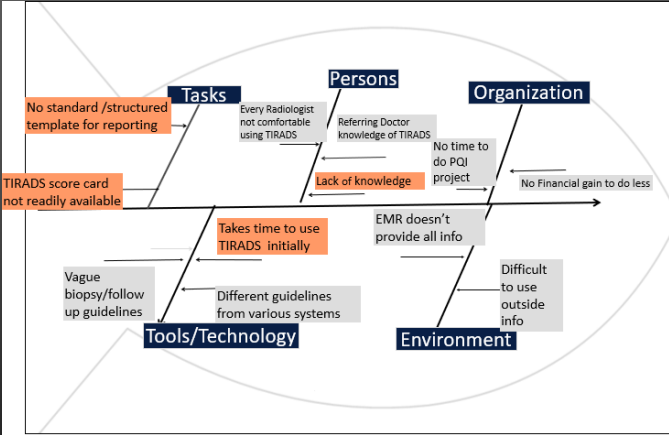
- **Age:**
 - Both adults and children
- **Data Source:**
 - PACS, retrospective data
 - Excluded US with thyroiditis, thyroid cancer, normal thyroid
- **Statistical Analysis:**
 - Descriptive analysis
- **Differences in implementation of TI-RADS(Intervention):**
 - Pediatric division- adopting earlier, mandatory use
 - Abdominal division using a more gradual, optional approach
- **Before Intervention:** January 2017-June 2017
 - 146 adult ultrasounds and 14 pediatric ultrasounds performed for thyroid nodules
- **After Intervention:** July 2017 - December 2017
 - 121 adult ultrasounds, 13 pediatric ultrasounds performed for thyroid nodules

	Adult (n=265)	Pediatrics (n=27)
Female, n (%)	219 (82.6%)	20 (74.1%)
Male, n (%)	46 (17.4%)	7 (25.9%)
Mean Age (sd)	53.07 (15.81)	13.52 (2.46)

MATERIALS AND METHODS

- US reports issued by the interpreting radiologists were retrospectively reviewed before and after the implementation of TI-RADS
 - Nodule description
 - Presence/clarity of follow-up recommendations
- Nodules were scored based on the TIRADS lexicon (TR1-TR5)
- The frequency with which clear recommendations were given by the radiologist before and after intervention was recorded

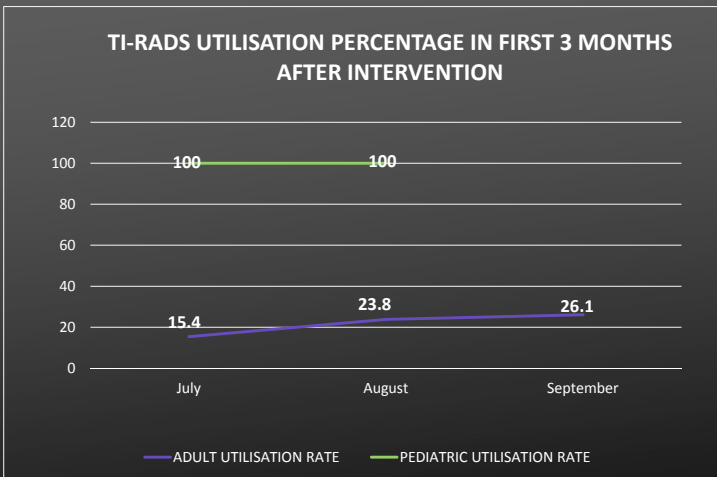
ROOT CAUSE ANALYSIS



SELECTED IMPROVEMENT

#	ROOT CAUSE	CHANGE IDEA(S)
1	No guidelines for follow up of thyroid nodules	Use TI-RADS
2	No standard template for reporting	Development of Standard TI-RADS reporting template
3	TI-RADS takes time to use/adapt, lack of awareness about TIRADS	Provide TI-RADS scorecards to radiologists

DO THE IMPROVEMENT

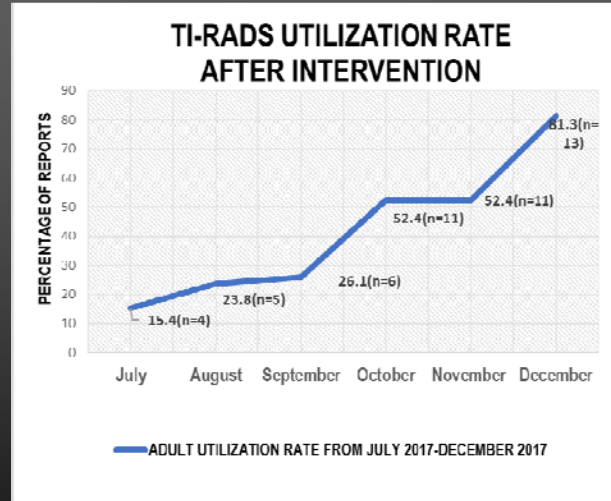


Next Steps

- Adjustment or modification of template
- Creating awareness about TI-RADS, involving more House staff in project
- Continue to collect and analyze data

RESULTS

- Utilization of TIRADS lexicon or template reached up to 81% towards the last month for adult patient reports
- Overall pediatric radiologists utilized TIRADS 50% of the time after implementation, but the numbers were small



RESULTS

- Inappropriate biopsies were reduced to 14%(n=6), previously at 28%(n=13). So the reduction is by 50%
- Inappropriate follow ups were reduced to 8%(n=2), previously at 50%(n=7). So the reduction rate is by 84%.
- Pediatric numbers were small ,hence not presented.

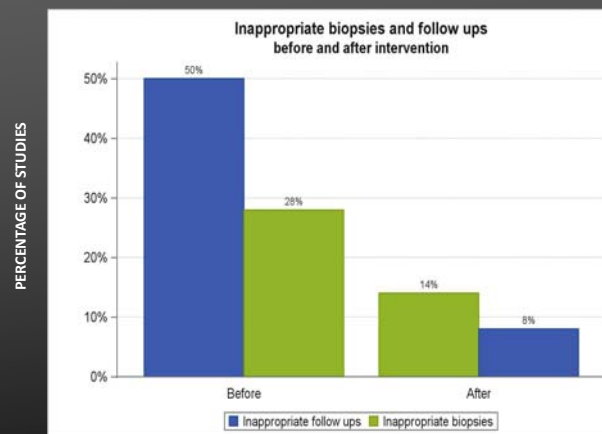


TABLE 4: FREQUENCY TABLE FOR TI-RADS GRADE & ACTUAL PATHOLOGY RESULTS FOR ADULTS, 2017

TIRADS Grade	Actual pathology			OR 95%CI	p value
	Benign n (%)	Malignancy or suspicious Malignancy n (%)	Total n (%)		
2	16 (100.0%)	0 (0%)	16 (17.98%)	Reference	Reference
3	41 (97.62%)	1 (2.38%)	42 (47.19%)	1.19 (0.04, 33.52)	0.022
4	18 (64.29%)	10 (35.71%)	28 (31.46%)	18.73 (0.93, 376.48)	0.242
5	0	3 (100%)	3 (3.37%)	231.06 (2.60, 20500.05)	0.017
Total	75 (84.27%)	14 (15.73%)	89 (100%)		

*Excluded TI-RADS1

AFTER INTERVENTION

RESULTS-PEDIATRICS

The frequency with which pediatric radiologists provided "No or Unclear Recommendations" reduced from **21.43%** to **15.38%**, post-intervention

RESULTS-ADULTS

The frequency with which adult radiologists provided "No or Unclear Recommendations" reduced from **19.44%** to **14.05%**, post-intervention

#

Future Steps for Sustainability

- 1 Increase awareness of TI-RADS among radiologists and sonographers
- 2 Continue to analyze data to determine change, effectiveness
- 3 Conduct and review referring providers satisfaction surveys