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

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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

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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

<table>
<thead>
<tr>
<th>#</th>
<th>ROOT CAUSE</th>
<th>CHANGE IDEA(S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No guidelines for follow up of thyroid nodules</td>
<td>Use TI-RADS</td>
</tr>
<tr>
<td>2</td>
<td>No standard template for reporting</td>
<td>Development of Standard TI-RADS reporting template</td>
</tr>
<tr>
<td>3</td>
<td>TI-RADS takes time to use/adapt, lack of awareness about TI-RADS</td>
<td>Provide TI-RADS scorecards to radiologists</td>
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DO THE IMPROVEMENT

TI-RADS UTILISATION PERCENTAGE IN FIRST 3 MONTHS AFTER INTERVENTION

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

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

*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