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Incorporation of color Doppler parameters in thyroid ultrasound reports significantly reduces ambiguity in reporting of thyroiditis.

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Purpose

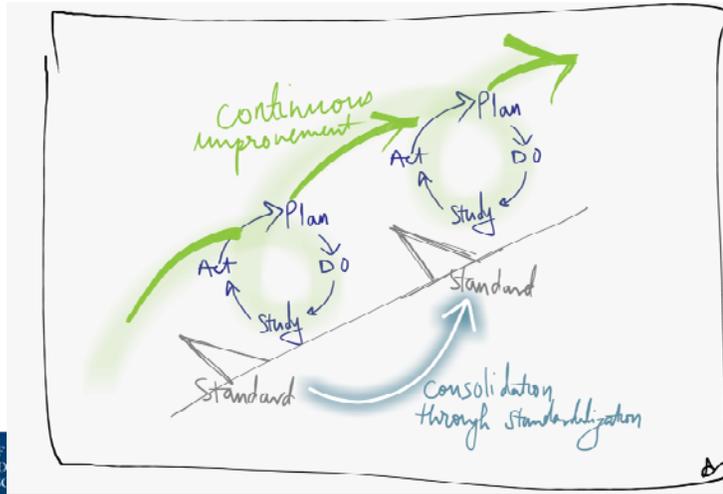
- In our tertiary care referral center for thyroid, the trend was to give report just based on subjective evaluation of gray scale and color Doppler images. This caused many reports to be given ambiguously as “**diffuse thyroid disease.**”
- Upon doing the literature search, we found that it is possible to differentiate the Graves’ disease from Hashimoto thyroiditis with help of color Doppler parameters.
- Thus decreasing the ambiguity in reporting of thyroiditis by including the color Doppler parameters became our objective.

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Methods

PDSA quality improvement cycle was utilized.

- Plan
- Do
- Study
- Act



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Methods

OBSERVATION

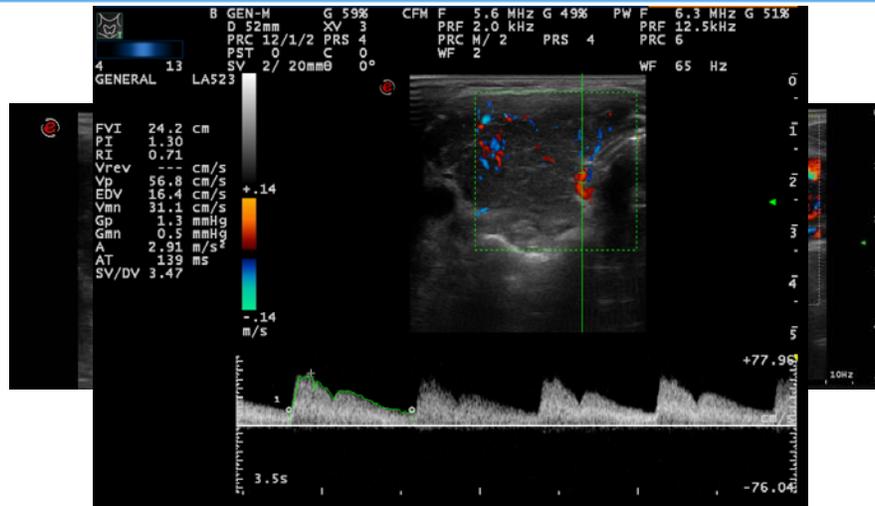
- We retrospectively reviewed reports of all thyroid ultrasound scans from **October 2016 to November 2016** prior to implementation of CDF module.
- The reports were classified into an **ambiguous** (ones with the diagnosis of diffuse thyroid disease) and one's which clearly stated **Graves' disease** or **Hashimoto thyroiditis**.

PLAN

- **Establishing the objective:** To reduce the ambiguity in the reporting of thyroiditis
- **Establishing the process:** The CDF module was designed based on the literature review.
- **PSV more than 40 cm/sec was considered as a cut off** to differentiate in between Graves' disease (higher PSV), and Hashimoto disease (lower PSV). We called it **Color Doppler Flow (CDF) module** of reporting.

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Graves' disease



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Hashimoto thyroiditis



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Methods

- **DO:** The CDF module was implemented for the period of 3 months spanning **December 2016 to Feb 2017**.
- **STUDY:** Study results were analyzed in **March 2017**.
- The proportion of these reports were compared using **Chi-square test** between pre and post CDF module implementation period.
- **ACT: March 2017 to present**, after implementation of the CDF module, it's ongoing utilization has been monitored by periodic review.



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Results

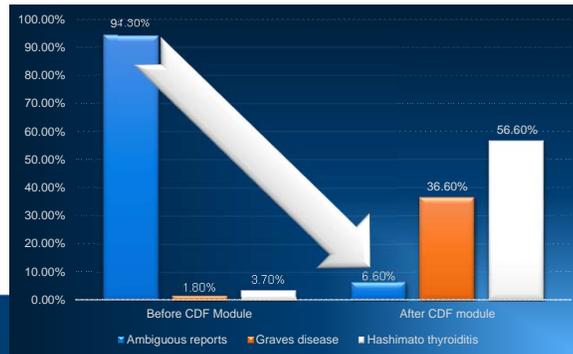
- **Pre-CDF module:** A total 147 reports in the pre-CDF period were reviewed, out of them 53 had thyroiditis. Ambiguous for Graves' and Hashimoto, Graves', Hashimoto reports were numbered 94.3%(50/53), 1.8%(1/53), 3.7%(2/53) respectively.
- **Post-CDF module:** A total 134 reports were reviewed, out of them, 30 had thyroiditis. In post CDF period, ambiguous for Graves' and Hashimoto, Graves', Hashimoto reports were numbered 6.6%(2/30), 36.6%(11/30), 56.6%(17/30) respectively.
- Comparing the pre and post CDF periods, the **proportion of ambiguous reports in thyroiditis has decreased from 94.3% to 6.6%. (p<0.001)**

	Ambiguous reports	Graves' disease	Hashimoto thyroiditis
Before CDF Module	94.3%	1.8%	3.7%
After CDF module	6.6%	36.6%	56.6%

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CONCLUSION

- The implementation of Color Doppler Flow (CDF) module, which takes into account the objective parameters of Color Doppler e.g. PSV of thyroid artery has **significantly decreased the rate of ambiguous reports of thyroiditis** in clinical practice from 94.3% to 6.6%.
- This proves if implemented correctly CDF module can dramatically decrease the ambiguity in thyroiditis reporting in day to day clinical practice.



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