

Free the T3: Use of Best Practice Advisory to Choose Wisely when ordering T3 in a Safety-net System



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AIM

To reduce inappropriate triiodothyronine (T3) testing for both hypothyroidism and hyperthyroidism in inpatient and outpatient settings in a large safety net system

PROBLEM

Thyroid function tests are a commonly overused test and amount to \$1.6 billion annually in the United States.^{1,2} Although national guidelines recommend a thyroid-stimulating hormone (TSH) centered approach, clinicians often inappropriately order T3 and T4.² This may be due to lack of knowledge or ease of ordering all three tests at once in case if the TSH is later abnormal.³ Additionally, clinicians often order free T3 rather than total T3, despite the American Thyroid Association's recommendations to avoid free T3 due to its high rate of variability.⁴

SETTING

This quality improvement initiative was developed under the High Value Care Council at NYC Health + Hospitals, the largest public health system in the US, with 11 hospitals and over 70 ambulatory centers.

The intervention was led and designed by the System High Value Care Council at NYC Health + Hospitals with input from select members from internal medicine, endocrinology, and laboratory.

INTERVENTION

Best practice advisories (BPA) were created for total T3 and free T3 orders (Fig 1).

- The BPA triggered upon order entry, and defaulted for the clinician to remove the test.
- Informational nudge was positioned at the top of the BPA, providing guidance from NYC H+H High Value Care Council.
 - As free T3 is an unreliable test, its messaging was different from total T3 and encouraged clinicians not to order.
 - Messaging for total T3 focused on not ordering for hypothyroidism, and ordering for hyperthyroidism only when TSH and free T4 levels did not correspond with clinical picture.
- The BPAs were implemented on all hospitals and ambulatory centers for physicians and advanced practice providers.

RESULTS

BPA Action Rates

Defined as actioning to remove the free T3 order directly from the BPA alert

- For free T3, the BPA accept rate was 23.0% (982 of 4269). The number of free T3 orders subsequently reordered within 24 hours was 243 (5.7%). The inpatient and outpatient accept rates were 21.6% and 23.8%, respectively.
- For total T3, the BPA accept rate was 21.0% (1083 of 5173), with providers reordering total T3 in 273 (5.3%) within 24 hours. The inpatient and outpatient accept rate were 23.4% and 19.4%, respectively.

Overall Test Utilization Pattern

Both free T3 and total T3 orders significantly decreased in inpatient and outpatient settings (Fig 2)

- Inpatient free T3 and total T3 orders were reduced by 55% (1.53 to 0.69 per 1000 patient days) and 58% (1.68 to 0.70 per 1000 patient days)
- Outpatient free T3 and total T3 orders were reduced by 54% (1.64 to 0.76 per 1000 patient encounters) and 40% (1.58 to 0.95 per 1000 patient encounters)

Figure 1

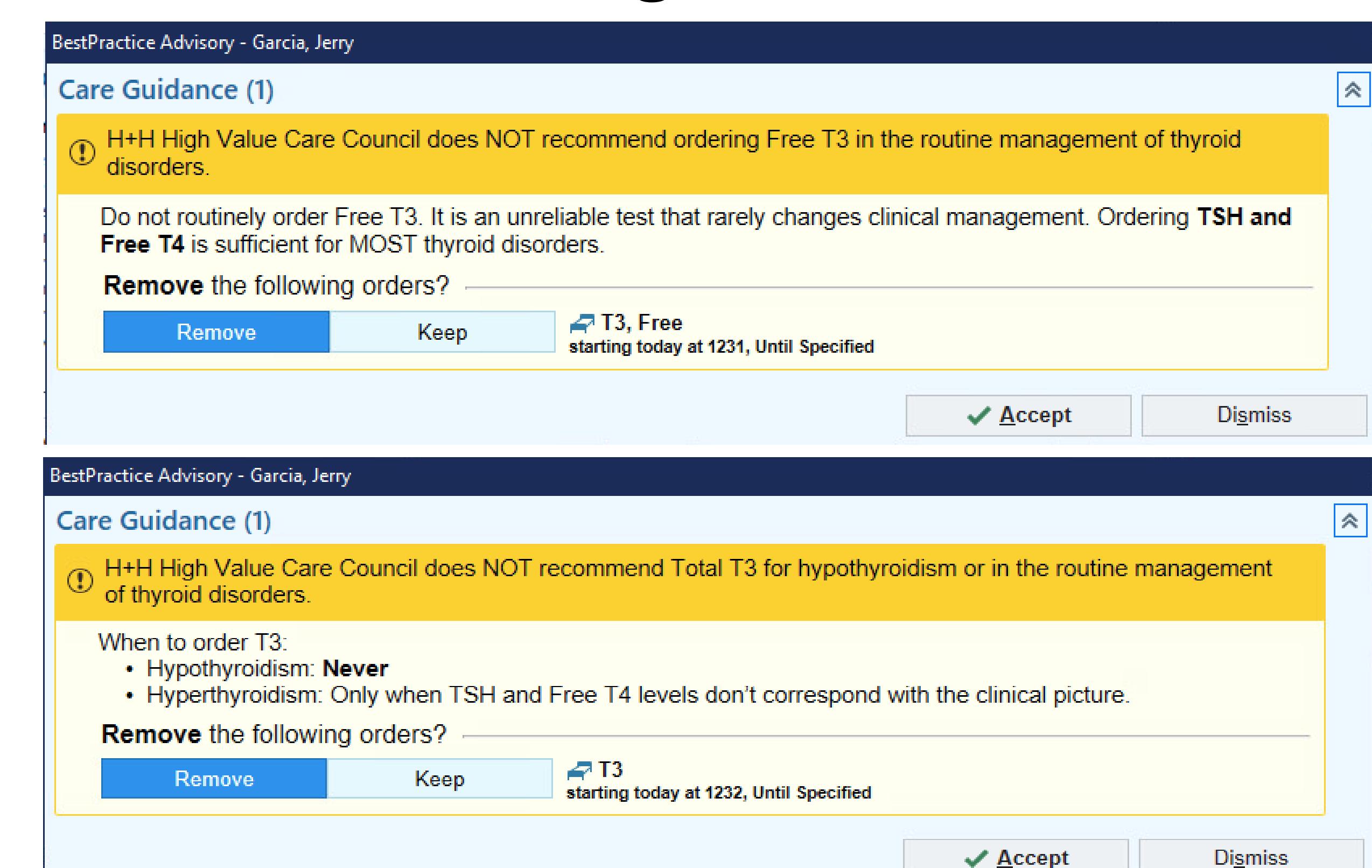
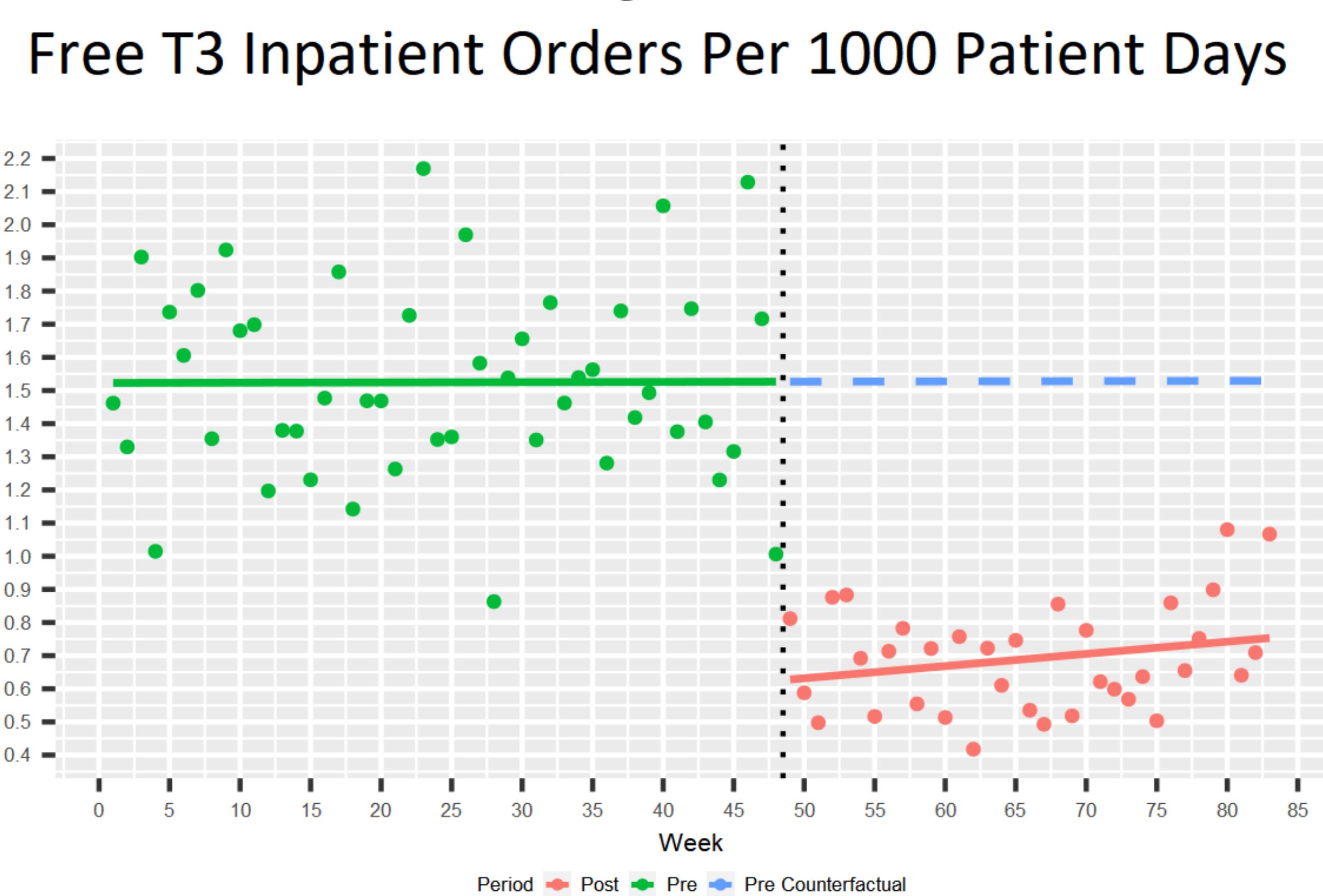


Figure 2



CONCLUSION

Targeted best practice advisories were successful in decreasing inappropriate total T3 and free T3 orders testing in a large urban safety net system