

The Impact of COVID-19 on Blood Tests Ordered by Family Physicians in Eastern Health (2020)

Objectives

1. To determine the extent and duration of reduction of blood testing by family physicians (FPs) during the COVID-19 pandemic for tests used for acute illness and chronic disease (hemoglobin and serum creatinine), assessment of anticoagulation (INR), endocrine disease (TSH), and diabetic control (HbA1c).
2. To assess whether better selection of patients for testing had improved during the rationing enforced by COVID-19. Per cent abnormal results is a marker for appropriate ordering.

Practice Points

1. During the first 12 weeks of the pandemic, hemoglobin (Hb) and serum creatinine reduction was substantial and sustained, but weekly INR reduction was never greater than 30%, and by week ten reduction was 10%.
2. Reduction in TSH and in HbA1c was over 90% for the first four weeks of the pandemic and remained well over 50% for the first 12 weeks.
3. Guidelines for Medical Laboratory testing are provided on p. 62.

Methods

1. Average weekly number of tests ordered (Hb, eGFR, INR, TSH, HbA1c) by FPs were obtained from Eastern Health from 6 Jan – 15 Mar 2020 (ten weeks pre-COVID-19) and compared to those ordered from 16 Mar – 1 Dec 2020 (35 weeks during COVID-19).
2. Weekly per cent reduction was calculated using the average weekly number of tests for the ten weeks pre-COVID.

Results

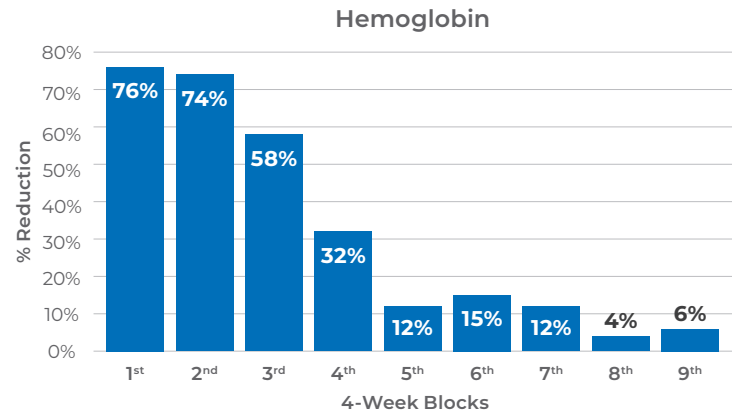


Figure 1. Per Cent Reduction in Number of Hemoglobin Tests Done in Four-Week Blocks Following the Start of COVID-19

- At weeks 13–16 of the pandemic, the reduction in Hemoglobin testing was 32% but by weeks 33–36 the reduction was 6%.

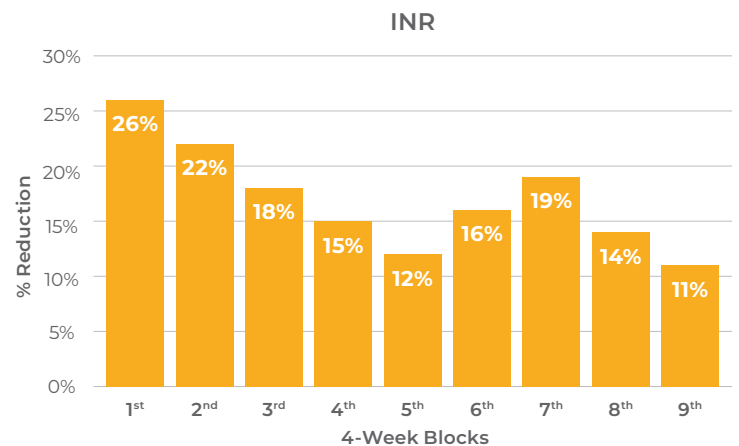


Figure 2. Per Cent Reduction in INR Tests Done in Four-Week Blocks Following the Start of COVID-19

- The reduction in INR testing during the first 12 weeks of the pandemic was substantially less than for the other tests. At weeks 13–16 the reduction was 15% and this reduction persisted until weeks 33–36 (11% reduction compared to pre-COVID-19 era).

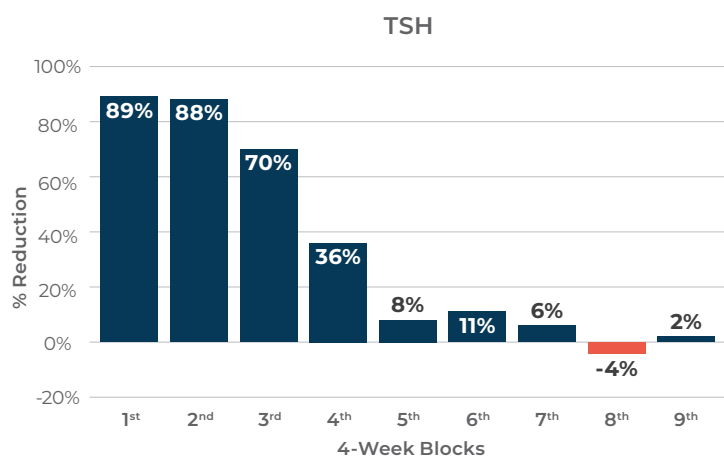


Figure 3. Per Cent Reduction in TSH Tests Done in Four-Week Blocks Following the Start of COVID-19

- Although there was substantial reduction in TSH testing for the first 16 weeks of the pandemic, by weeks 29–32 the rate of testing was back to pre-COVID-19 rates.

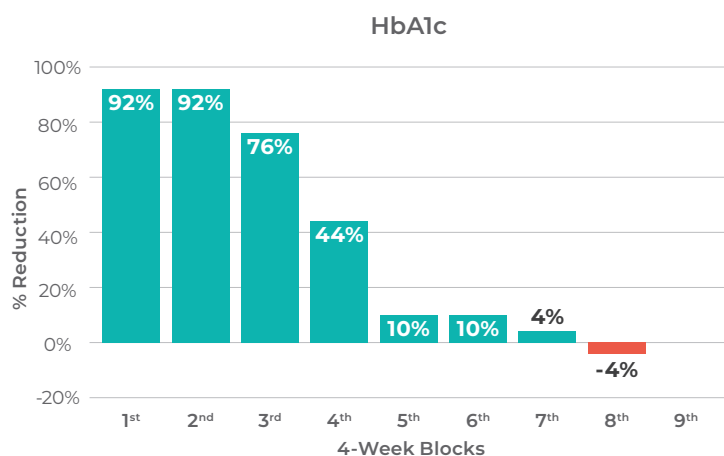


Figure 4. Per Cent Reduction in HbA1c Done in Four-Week Blocks Following the Start of COVID-19

- Although there was substantial reduction in HbA1c testing for the first 16 weeks of the pandemic, by weeks 29–32 the rate of testing was back to the pre-COVID-19 rate.

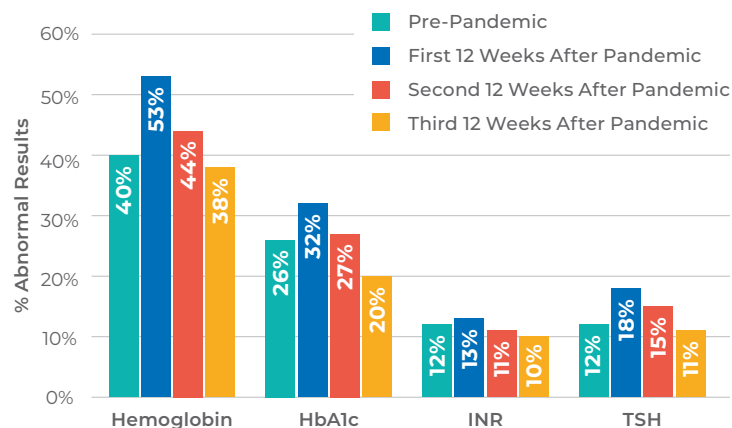


Figure 5. Per Cent Abnormal Results Pre-COVID-19 Compared to Those During COVID-19, Analyzed in 12 Four-Week Blocks for Hb, HbA1c, INR and TSH

- For Hb, TSH and HbA1c during the first 12 weeks of the pandemic, the substantial reduction in testing was associated with an increase in the per cent results abnormal. However, during weeks 25–36 of the pandemic when the volume of testing was nearly back to pre-COVID-19 levels, the per cent abnormal returned to pre-COVID-19 levels.
- The less substantial but more sustained reduction in INR testing was not associated with much change in per cent of tests that were abnormal.

Conclusions

1. Hemoglobin testing at weeks 33–36 of the pandemic was reduced by 6% compared to pre-COVID-19 volumes. The volumes of TSH and HbA1c were back to pre-COVID-19 levels, but a reduction in INR testing was sustained at 11%.
2. The very large reductions in volumes of Hb, TSH and HbA1c at weeks 1–12 were not associated with any increase in abnormal test results at weeks 25–36, suggesting that the enforced rationing did not result in deterioration of chronic disease control. The recommendations to reduce the frequency of testing in stable patients with chronic disease could be observed.
3. Sustained reduction in INR testing during the 36 weeks of the pandemic without any increase in abnormal results suggests that the frequency of INR tests in stable patients on warfarin may be reduced.