Appropriate Low Back Diagnostic Imaging in Northern Communities

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Goal
Stanton Territorial Hospital in Yellowknife, Northwest Territories (NWT) provides approximately 40 patients per month with lumbar or thoracic X-rays/CTs. In the northern context, "Choosing Wisely" is not only relevant to determining the appropriateness of medical tests, but also the associated the travel. The low back imaging initiative aims to provide safe, efficient, and quality care by reducing unnecessary low back imaging and associated medical travel.

Activities
The hard-coded intervention implemented was a new requisition uploaded to the NWT's single electronic medical records (EMR) system. The form required an appropriate red flag to prompt lumbar or thoracic X-ray/CT. Educational interventions included the development of new resources for ongoing reference, tools, and exercise/alternative treatments.

Impact
Compared to 2017 data, in the first year of implementation, inappropriate imaging requests were reduced by 40% and improperly explained requests were reduced by 53%. However, there was not a significant reduction in overall requests for diagnostic imaging. Most of the imaging requests were for cancer or inflammation, reflecting the high rates of chronic disease in the NWT.

Challenges
MediPatient was used to track imaging data. Lumbar and thoracic imaging data was manually extracted and categorized by red flag. Vague terms such as "chronic" or "worsening" which were used to describe therapeutic indications were assumed to implicate persistent pain for 3 months as required.
There is also a degree of non-compliance in some regions where old forms are being used and not rejected by the nearest accepting facility.

Lessons learned
An attachment to the requisition with patient information about risks of radiation from X-rays/CT and the use of contrast would help inform patients of the potential harms of unnecessary imaging and encourage dialogue with providers about appropriate care.

Improving Lab Utilization in Northern Canada

Goal

In 2017, the Northwest Territories (NWT) Lab Information System (LIS) tallied a total of 1137 erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) tests which were ordered at the same time. As a result of suspected overutilization, in order to improve efficiency, effectiveness, and safety of health services, Choosing Wisely NWT (CWNT) set a goal towards reducing unnecessary lab testing to improve appropriateness of care and lessen the burden on the lab.

Activities

The hard-coded intervention was implemented blocking redundant ESR and CRP testing, unless there was an appropriate exception. If both tests are ordered, only CRP will be completed. Exceptions are warranted if the diagnosis is temporal arteritis or as otherwise approved by a rheumatologist or orthopedic surgeon. ESR can still be ordered; but needs to be requested distinctively from CRP.

Impact

The coordinated communication plan and the implementation of an ordering restriction by the lab to enforce the new directive led to a significant reduction (80%) of redundant ESR and CRP ordering practices within 6 months of implementation.

Challenges

There are 4 labs throughout the NWT, each of which offers analysis for different tests. If a test is not available locally, duplicate/unnecessary testing on separate order form is still an issue. Additionally, outdated nursing clinical practice guidelines continue to be a source of over testing.

Lessons learned

Robust communications informing all practitioner staff of upcoming changes increases support for interventions. Additionally, this allows for feedback and mitigation of issues prior to launching the directive.

Drop the Pre-op: Evaluating the impact of a new medical directive and assessing the barriers to implementation in Newfoundland and Labrador

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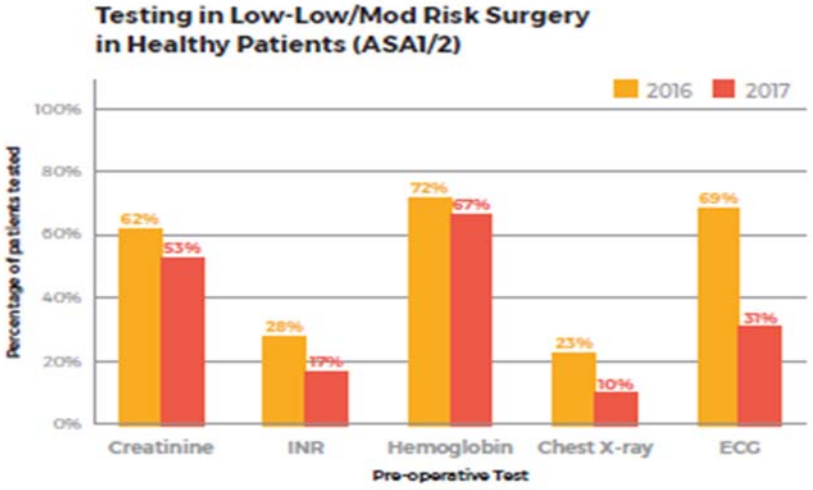
Project: In 2016, Choosing Wisely NL identified pre-op testing in patients undergoing low-risk surgeries as an area of low-value care.

Goal: Choosing Wisely NL partnered with the local health authority, Eastern Health, to implement and evaluate Choosing Wisely Canada's "Drop the Pre-op" toolkit with the aim of reducing unnecessary pre-op testing, thereby improving guideline adherence.

Activities: A medical-directive outlining the adoption of the CWC toolkit was rolled out in January 2017 in two hospitals.

Method: An uncontrolled before-after study design was used to evaluate the effect of the medical-directive on the number of pre-operative tests (chest X-rays, ECGs, creatinine, INR and hemoglobin). Data on tests orders for patients (categorised as ASA 1 or 2) undergoing low risk surgeries (as defined by local consensus) was obtained for the year previous and the year post medical directive.

Results: Data were collected for 3997 low-risk procedures pre-intervention and 4039 post-intervention. After the introduction of the medical directive, test ordering saw an absolute reduction of 13% for chest X-rays, 38% for ECGs, 9% for creatinine, 11% for INR and 5% for hemoglobin.



Testing in Low to Low-Moderate Risk Surgery (SCMH + HSC)

	Patients	Creatinine $8	INR $12	Hemoglobin $11	Chest X-ray $68	ECG $50
2016	3997	4235	1573	4756	1135	2787
2017	4039	4027	1223	4621	607	1711
Reduction		208	350	135	528	1076
Cost Avoidance		$1,664	$4,200	$1,485	$35,904	$53,800
Total Cost Avoidance in 2017 = $97,053						
Potential Additional Cost Avoidance/Year = $106,568						

Impact: Implementing the CWC recommendations in two hospitals resulted in over 500 patients avoiding unnecessary exposure to radiation from chest X-rays and has the potential for cost savings of $97,000.

Lessons Learned: While the toolkit was helpful in reducing tests, there is still room to improve. Choosing Wisely NL is now participating in a multi-province CIHR-funded project with Ontario and Alberta to assess current barriers to adopting the "Drop the pre-op" guidelines and to design and evaluate a targeted intervention.

Quality of Care NL

Reduction in Potentially Unnecessary Biochemical Testing by General Practitioners in Eastern Health

Practice Points

1. Blood urea is not a necessary test to measure kidney function in stable patients.
2. Serum ferritin is likely not useful as a screening test for iron status in patients with normal hemoglobin and MCV/MCH, except maybe in females of reproductive age where oral iron may be prescribed.
3. Creatine kinase is no longer recommended for monitoring asymptomatic patients on statins.
4. Bilirubin and ALT are reasonable tests to evaluate liver function and AST is usually unnecessary.
5. Other than on occasions in the management of gout and cell breakdown disorders, uric acid is not usually clinically helpful.
6. LDH is generally indicated only in growth disorders and hemolytic anemia.

Methods

1. Tests ordered by General Practitioners (GPs) in Eastern Health were compared for last six months of both 2015 and 2017, and analyzed by GP. In August 2016, Eastern Health provided a new requisition form which omitted blood urea, AST and LDH. In 2017, Quality of Care NL provided academic detailing on blood urea, ferritin, creatine kinase and LDH.
2. High volume ordering was arbitrarily defined as 200 tests or more in six months.
3. GPs with less than 10 tests have been excluded.

Conclusion

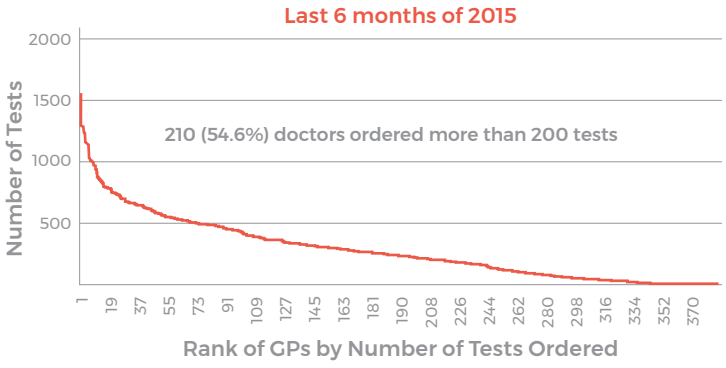
1. The proportion and number of GPs who order high volumes of potentially unnecessary tests have decreased substantially comparing 2017 to 2015.

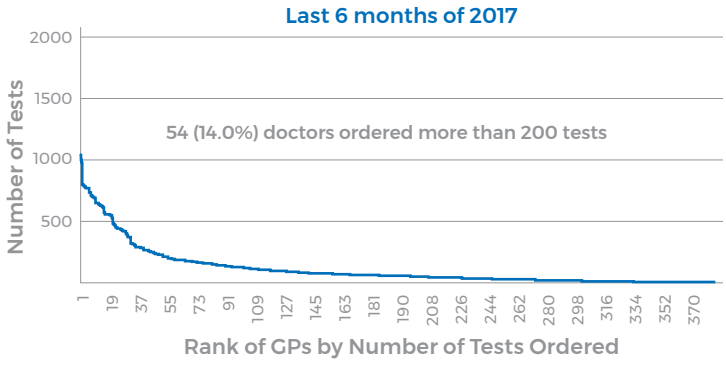
Number of Tests by GPs (2015 versus 2017)

Last six months of 2015 Last six months of 2017

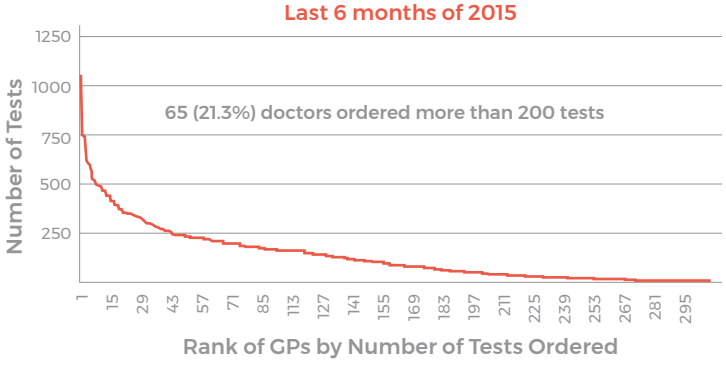
GPs with less than 10 tests have been excluded

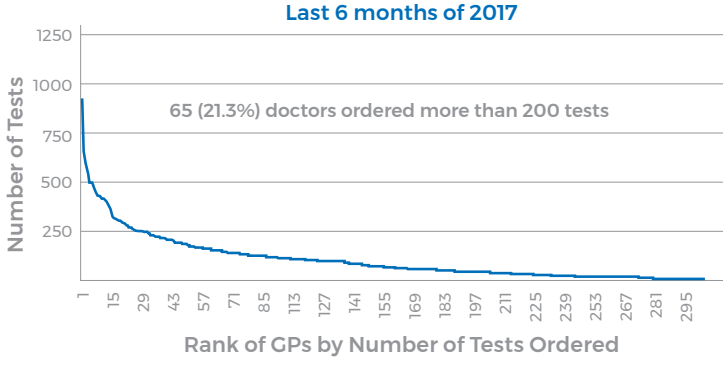
Blood Urea Tests





Ferritin Tests



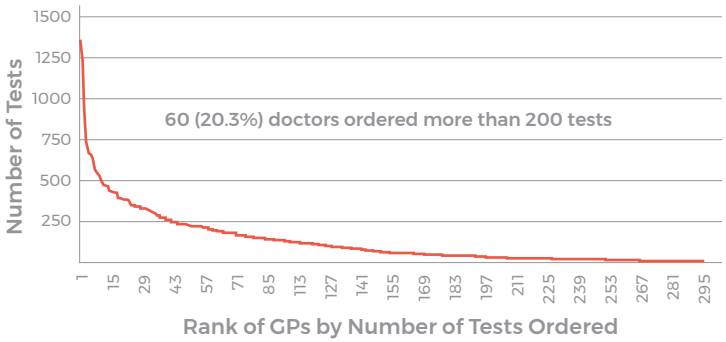


Quality of Care NL

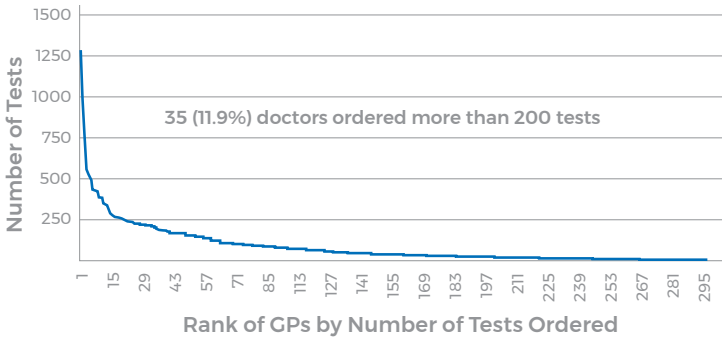
Reduction in Potentially Unnecessary Biochemical Testing by General Practitioners in Eastern Health

Creatine Kinase Tests

Last 6 months of 2015

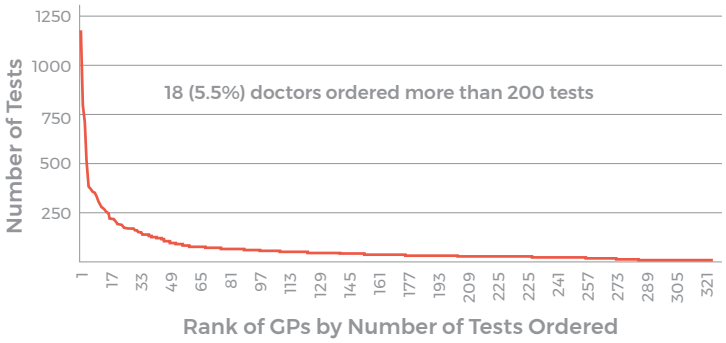


Last 6 months of 2017

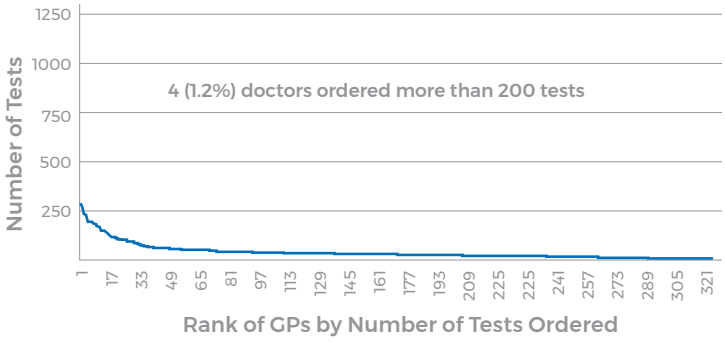


AST Tests

Last 6 months of 2015

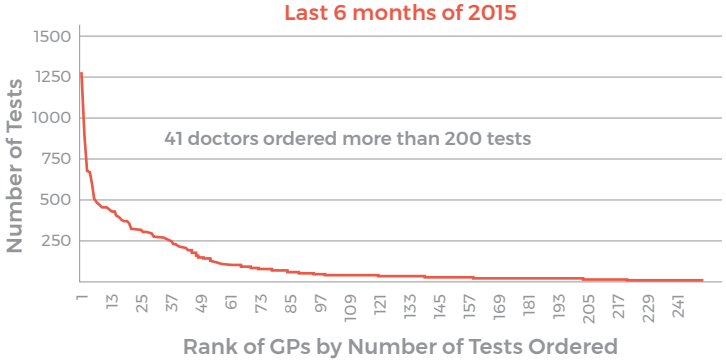


Last 6 months of 2017

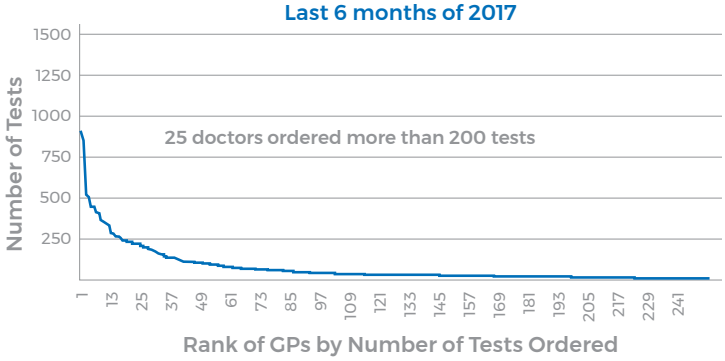


Uric Acid Tests

Last 6 months of 2015

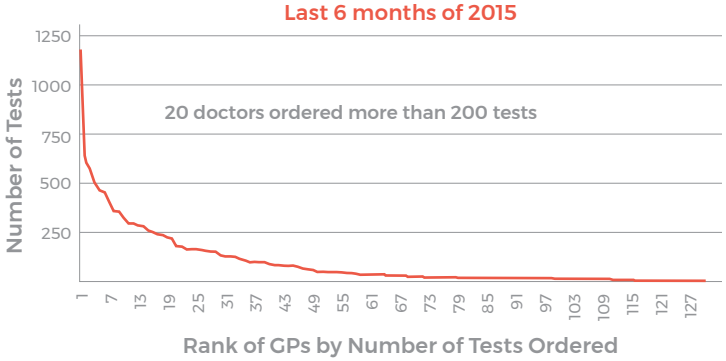


Last 6 months of 2017



LDH Tests

Last 6 months of 2015



Last 6 months of 2017