

# A1C TESTING PATTERNS AMONG CALGARY ZONE FAMILY PHYSICIANS: Q3 MONTHS OR BUST!

McDonald T<sup>1</sup>, Naugler C<sup>1</sup>, Lethebe BC<sup>3</sup>, Szostakiwskyj JH<sup>3</sup>, Yueng RO<sup>4</sup>, Lau D<sup>4</sup>, Mathe N<sup>4</sup>, Green LA<sup>2</sup>.



<sup>1</sup>University of Calgary Department of Family Medicine; <sup>2</sup>University of Alberta Department of Family Medicine; <sup>3</sup>University of Calgary, Clinical Research Unit, Cumming School of Medicine; <sup>4</sup>University of Alberta Physician Learning Program

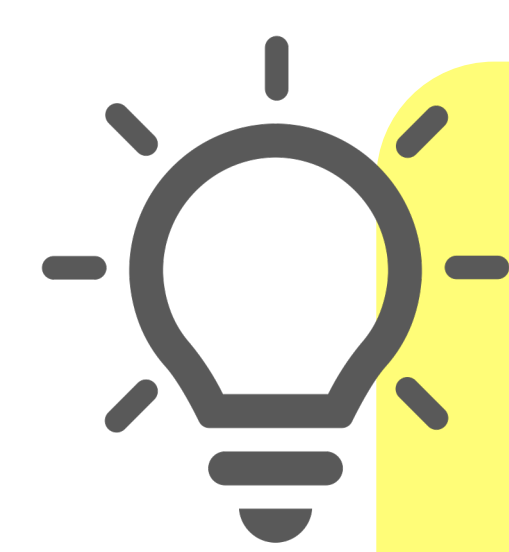


## BACKGROUND

## METHODS

Hemoglobin A1C is one of the most commonly ordered laboratory (lab) tests in primary care. The test is used to screen for diabetes and monitor blood glucose control among diabetic patients. Testing intervals are often based on guidelines from Diabetes Canada (1). In 2015 a new policy was implemented in Calgary and Edmonton that aligned with these guidelines; physicians were limited to ordering no more than one A1C test in a 90-day period, exceptions included pregnant patients and later, patients followed by Endocrinology (2).

A descriptive observational study with linked lab and claims data for all family physicians (FPs) and their patients in Calgary zone in 2016. A1C tests ordered were stratified by patient's age, diabetes status, sex, level of complexity, and level of continuity (usual provider of care [UPC]). FPs were grouped by sex, UPC, and rural/urban status. Regression models were completed at the provider level for the outcomes number of tests in the fiscal year (i.e., Poisson) and over-testing (i.e., logistic).



### OBJECTIVE

To explore patient and provider characteristics associated with A1C over-testing.

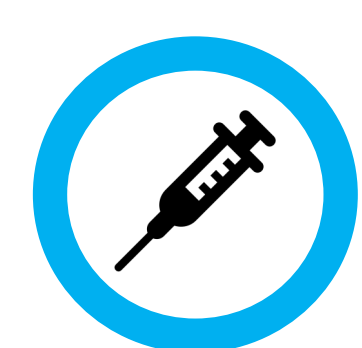
### LET'S DEFINE...

Over-testing (binary)	A single provider ordering multiple tests for a single patient within 90 days (no/yes), OR A patient tested multiple times in 90 days, ordered from different providers (no/yes).
Diabetes status (categorical)	Not diabetic, diabetic, diabetes query (i.e., tested within 30 days of initial diabetes diagnosis, likely incident cases).
Level of complexity (i.e., Clinical Risk Group [CRG]) (3) (categorical)	A 1-9 scale classifying patients from least to most complex. Categorized as: 1-2 (healthy or history of acute disease), 3-4 (single minor chronic disease in 1 or multiple organ systems), and 5-9 (moderate chronic disease to catastrophic conditions).

## PRELIMINARY RESULTS

A total of 310,366 A1C tests were completed, 76% (n=235,836 tests) for non-diabetic, 21% (n=66,430 tests) for diabetic and 3% (n=8,100 tests) for query diabetic patients. 98.5% (n=305,775 tests) of the tests ordered by the **same provider** did not meet criteria for over-testing.

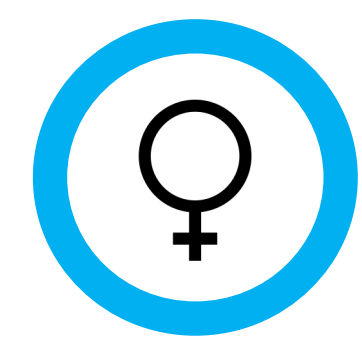
From the regression models, we found the following groups were more likely to be over-tested:



Patients living with diabetes.



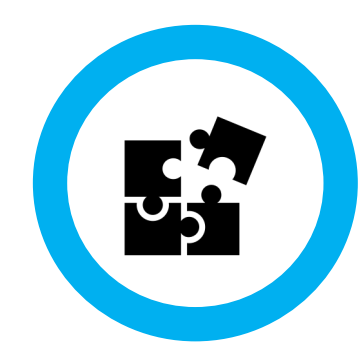
Older patients.



Female patients.



Patients with higher levels of provider continuity.



We also found higher CRG (more complex) patients received more testing.

For patients with diabetes, **79% (n=3,625 tests)**, of the A1C tests represented over-testing from the **same provider**, compared to **52% (n=549 tests)** ordered by **different providers**.

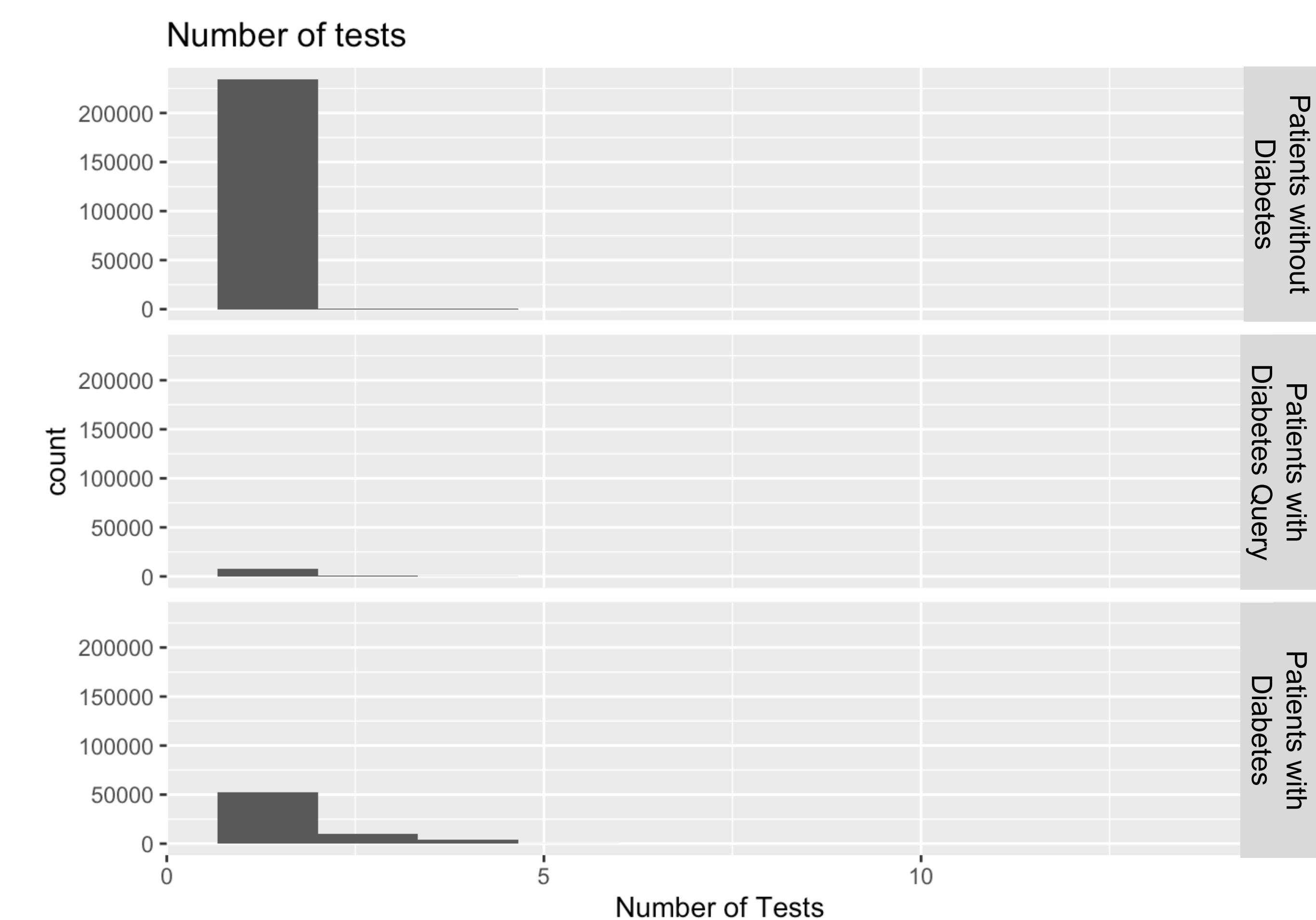


FIGURE 1: NUMBER OF A1C TESTS BY DIABETIC STATUS

## FUNDING & CONTACT INFO

## CONCLUSION



This study was funded by the MSI Foundation and Physician Learning Program, University of Alberta. The authors have no conflicts of interest to declare.

Contact: Terrence McDonald, [terrence.mcdonald@ucalgary.ca](mailto:terrence.mcdonald@ucalgary.ca)

A1C over-testing continues to occur among specific patient groups, particularly for those with diabetes. It remains unclear if higher provider continuity offers protection from over-testing. Further investigation is required to understand how to promote more rationale use of A1C testing.

### References

1. Canadian Diabetes Association Clinical Practice Guidelines Expert Committee. Canadian Diabetes Association 2013 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Can J Diabetes 2013;37(Suppl 1):S1-S212

2. Alberta Health Services Laboratory Services. New hemoglobin a1c test utilization criteria. 2015. Available from: [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.albertahealthservices.ca/assets/wf/lab/wf-lab-cls-memo-new-hemoglobin-a1c-test-utilization-criteria-ahs-dynalife-cls.pdf](https://www.albertahealthservices.ca/assets/wf/lab/wf-lab-cls-memo-new-hemoglobin-a1c-test-utilization-criteria-ahs-dynalife-cls.pdf)

3. Hughes JS, Averill RF, Eisenhandler J, Goldfield NJ, Muldoon J, Neff JM, et al. Clinical Risk Groups (CRGs): a classification system for risk-adjusted capitation-based payment and health care management. Medical care. 2004;42(1):81-90.