Glycemic Outcomes of Diabetes Centre Attendees in Nova Scotia Across All Ages

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Background

- Achieving glycated hemoglobin (A1c) in the target is an important goal of diabetes (DM) care
- Many individuals do not achieve the target A1c
- Identifying groups that require extra support can help guide research and resource allocation
- Ontario (ON) researchers found that for all DM types younger age, longer DM duration and living in remote locations was associated with risk of not achieving targets[1]

Objectives

- Describe the glycemic outcomes of Diabetes Centre (DC) attendees in Nova Scotia (NS) with type 1 (T1) and type 2 (T2) DM separately
- Describe variations in A1c over time, age span, and disease duration.

Methods

- Used 85,241 visit records from the population-based Diabetes Care Program of NS Registry
  - Covers 100% of individuals with DM < 19yr and 60-65% of those 19yr and older
- Last A1c in the year was categorized based on Diabetes Canada guidelines as: in target, target to <8.0, 8.0 to <10, and over 10. Targets varied by DM type and age
  - T2 < 7.0% for all ages
  - T1 < 7.5% for under 18 years; < 7% adults
- A1c was compared for T1 and T2 DM by
  - Year (2015, 2019)
  - Age (≤ 9, 10-18, 19-24, 25-34, 35-49, 50-64, ≥ 65yr)
 - DM duration (< 1, 1-4, 5-9, 10-14, 15-19, ≥ 20yr)

Results

DC attendees with T1 (vs T2) averaged 1 more visit per year
- The annual # visits was higher in T1 across age groups and highest in those under age 19 in both types of DM

	Type 1		Type 2	
	2015	2019	2015	2019
# DC visits	6,242	6,627	37,713	34,659
# DC visits/attendee	3.6	3.2	2.4	2.3
# DC attendees	1,752	2,057	15,621	15,224
# (%) DC attendees w/A1C	1,408 (80%)	1,737 (84%)	13,344 (85%)	13,417 (88%)

T1 DM: A1c distribution of DC attendees by age & year
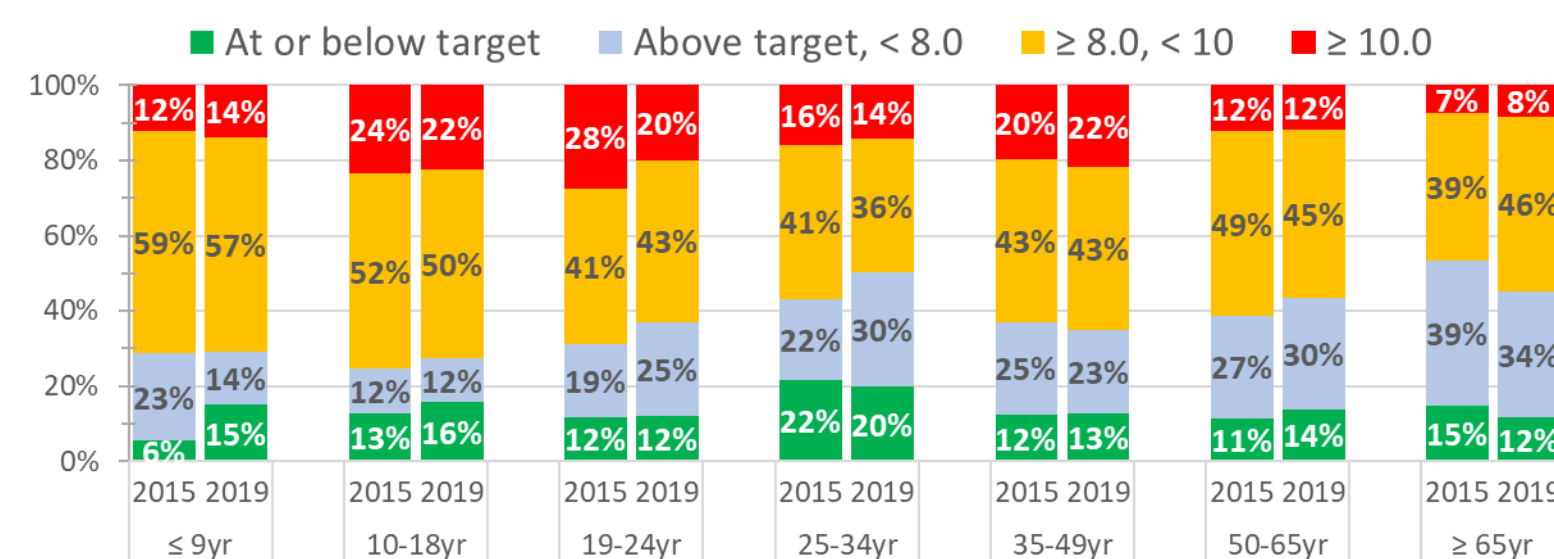
- In 2019, the % with A1c in target varied by age: 12% (>65yo) to 20% (25-34yo)
  - 25-34yo had the highest % of A1c in target for both years
- % of <10yo achieving target increased 2.5x while other age groups showed minimal change over time
- A1c >10% was highest in 19-24yo in 2015 (28%) and fell to 20% in 2019

T2 DM: A1c distribution of DC attendees by age & year
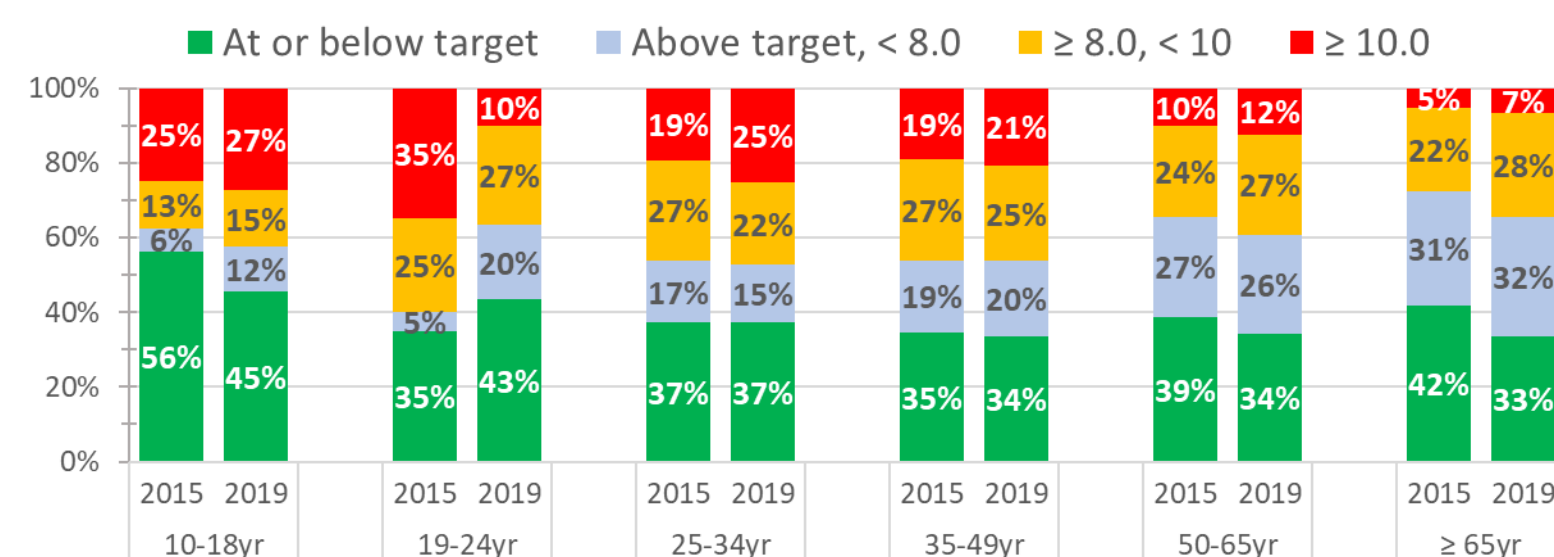
- In 2019, the % with A1c in target was highest for 10-18yo (45%)
  - But they also had the highest % of A1c >10% (27%)
- In 2019, the % both in target and above 10% was lowest in >65yo at 33% and 7% respectively.
- Changes from 2015 differed by age group.

Results

A1c distribution by DM type & duration, 2019
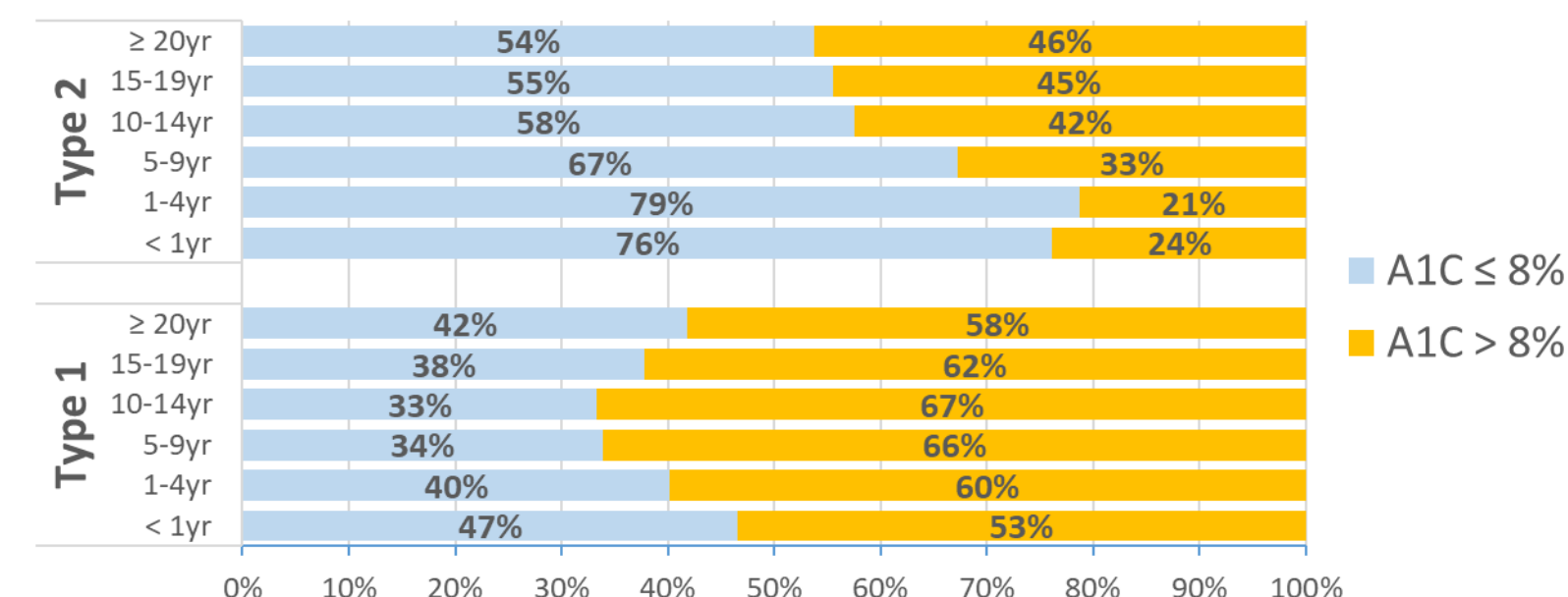
- For T2 DM, the % with A1c above 8% increased with duration after the first 4 years
- For T1 DM, the % with A1c above 8% increased for the first 15 years post diagnosis, then declined

Discussion

- We found fewer differences in A1c across age than reported in ON[1]
  - May reflect that NS DCs see all children with DM but adult DC referrals are increasingly those with more complex DM
    - Adults with less complex DM managed in primary care home
- In T1 DM, the proportion in target was low in all age groups. The proportion over 10% was highest in 10-24yo, but also high in 35-49yo
  - This could guide resource allocation and planning for DCs.
- Changes in the youngest and oldest age groups may reflect practice change with newer technology and guidelines
- Youth and young adults with T2 DM were most likely to have an A1c in target but also to have an A1c over 10%.
  - Suggests that factors associated with both high and in target A1c should be sought to guide appropriate care for this population.
- For T2 DM, the pattern of A1c over 8% by duration is similar, though a higher %, than observed in ON[1]
  - Possibly indicative of the complexity of DM cases seen by NS DCs
- The pattern of A1c over 8% by duration for T1 is very different from T2
  - Emphasizes the importance of differentiating between DM type – a cross-cutting principle of the Framework for Diabetes in Canada[2]

References

1. Shah BR, Lipscombe LL, Booth GL. Glycemic Control Among People With Diabetes in Ontario: A Population- Based Cross-Sectional Study. Can J Diabetes. 2021 Jun;45(4):313-318. doi: 10.1016/j.jcjd.2020.09.017. Epub 2020 Sep 25. PMID: 33221136.
2. Public Health Agency of Canada, Framework for Diabetes in Canada. Government of Canada, 2022. Available from URL https://www.canada.ca/content/dam/phac-aspc/documents/services/publications/diseases-conditions/framework-diabetes-canada/framework-diabetes-canada.pdf