

# **Opioid Use Disorder and Diabetes:** The Effect of Participation in Buprenorphine- Naloxone Substitution Programs on Glycemic Control in Type 2 Diabetes

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# Conflict Disclosure Information

**Presenter** — Devon Tilbrook

**Title of Presentation** — Opioid Use Disorder and Diabetes: The Effect of Participation in Buprenorphine-Naloxone Substitution Programs on Glycemic Control in Type 2 Diabetes

**I have no financial or personal relationships to disclose.**

# Up to date care in remote communities



- 31 communities, 80% fly in



Ontario



**MAP LEGEND**

- Sioux Lookout First Nations Health Authority
- Serviced Communities
- Regional Communities
- Treaty Boundary

Communities Serviced by SLFNHA

- Fort Severn
- Sachigo Lake
- Bearskin Lake
- Wapekeka
- Kitchenuhmaykoosib Inninuwig
- Muskrat Dam
- Kasabonika Lake
- Wawakapewin
- Sandy Lake
- Koocheching
- Deer Lake
- Keewaywin
- Weagamow Lake
- North Spirit Lake
- Nibinamik
- Webequie
- Kingfisher Lake
- Wunnumin Lake
- McDowell Lake
- Neskantaga
- Cat Lake
- Slate Falls
- Pickle Lake
- Marten Falls
- Mishkeegogamang
- Eabamatoong
- Red Lake
- Wabauskang
- Saugeen
- Savant Lake
- Lac Seul
- Sioux Lookout
- Kenora
- Eagle Lake
- Aroland
- Dryden
- Wabigoon Lake
- Ignace
- Fort Frances
- Thunder Bay

Treaty 5

Treaty 9

Treaty 3

Robinson-Superior

# Two public health crises

- diabetes in Indigenous Canadians 2.7-19%
- diabetes highest risk for First Nations on reserve, with prevalence 15.3% for >18 years old
  - compared to 6% for non-Aboriginal populations
- 2008-2010 6.8% of FN on reserve used opioids without a Rx
- PDA prevalence 35-50% in several Nishnawbe Aski Nation communities
- between 2009 and 2014, FN seeking tx for PDA tripled in Ontario
- In 2009, northwestern Ontario FN Chiefs declared state of emergency regarding PDA
- DM and PDA coexist in many FN people living on reserve

# Two public health crises

- both chronic medical illnesses
- non-compliance due to psychosocial factors common in both illnesses
- opiate exposure — consistently associated with poorer glycemic control, increased A1C, worse with longer history of opioid use
- MMT participation — inc. sugar intake, inc. BMI, inc. risk of DM dx compared to BUP
- BUP and opioid antagonists — acute administration in animals reduces sugar consumption, effect disappears with chronic administration
- No previous research on BMT participation's effect on DM

# Community Relapse Prevention Programs

- 22 of the 31 remote First Nations Communities have initiated a bup/nlx substitution program
- community run programs with support from HCPs, each program has been developed individually to meet the needs and resources of each community
- combination of BMT with culturally appropriate counselling, which may involve trauma/grief counseling, addictions counseling, land based activity, traditional spirituality, church based activities
- 1,399/25,000 people in SLFNHA's catchment are enrolled in the substitution program as of July 2015

# Evaluation of 6 communities

TOTAL Population Profile 6 First Nations Communities	
	Total
Total Population of 6 communities	4388
Total Suboxone pts.	526
Females on Suboxone, N (%)	291 (55.3)
Males on Suboxone, N (%)	235 (44.7)
Community Population, age 20-50	1774
Suboxone pts, age 20-50	497
Adult age-adjusted (20-50) rate of Suboxone use (%)	28.0% (range 15%-40%)



# Evaluation of 6 communities

- 20-50 year olds in the communities constitute 94.5% of patients on bup/nlx
- Retention rates in these programs are high when compared to those found in the literature definition of 'success' (at 50%)
- High negative urines drugs screens attest to the effectiveness of therapy in limiting narcotic abuse
- Program service and effectiveness suffers from inconsistent program funding
- Highly successful opioid use disorder community-based intervention!

# Bup/Nx and DM2

- examined glycemic control in these 6 communities over a two year period in patients treated with Suboxone
- Control group were T2DM pts not on bup/nx

# 6 community T2DM/OST study

- Total population: 4,388;
- Total on bup/nlx: 526
- Total T2DM: 573
- T2DM and bup/nlx: 62

# Findings

Group	n	Male (%) Female (%)	Age, average	Average initial A1c	Average end A1c	Δ in A1c
T2DM	511	218 (43%) 293 (57%)	51.8	8.90	8.91	+0.0233
T2DM + Bup/nx	62	20 (32%) 42 (68%)	38.5	9.76	8.57	-1.1950 (p=0.01 1)

Difference of A1c of 1.22%; improvement of glycemic control in a two year period of addiction treatment with bup/nlx

# Results

- Decrease of 1.2%, clinically significant, compares favourably to oral anti diabetic medications
  - alpha glucosidase inhibitors 1%, metformin 1%, DPP-4 inhibitors 0.75%, sulfonylureas 1.25%, TZDs 1.25%
- significant finding in Sioux Lookout region due to prevalence of both disorders and issues of funding for PDA treatment
- study group — higher baseline A1C despite younger average age, reflecting burden of PDA on DM as shown by previous research
- end of this study — relationship was reversed, study group having lower A1C
- The positive effect likely results from improved lifestyle management, as there is limited pharmacological associating bup/nlx and ↓glycemia
- Effect also may be due to increased contact with HCPs while in BMT

# Limitations

- difference in age and sex distribution between subjects and controls, reflecting difference in prevalence of PDA and DM
- control group includes pts with DM and no PDA, as well as DM with untreated PDA
  - does not change conclusion that participation in BMT improves DM, A1Cs compared to pts own baseline
- retrospective study, could not control for initiation of DM meds
  - does not change conclusion that BMT improves DM since improvement could come from better adherence to lifestyle and medications rather than new Rx

# Conclusions

- participation in community based BMT program improves glycemic control in diabetics with opioid use disorder
- treatment of substance use disorder can be beneficial to other areas of individual and public health, creating extra incentive for governments to provide consistent and adequate funding for such programs

## References

1. Public Health Agency of Canada. *Diabetes in Canada: Facts and Figures from a Public Health Perspective*. Ottawa, ON: Public Health Agency of Canada; 2011.
2. First Nations Information Governance Centre. *First Nations Regional Health Survey (RHS) 2008/10*. Ottawa, ON: First Nations Information Governance Centre; 2011.
3. Chiefs of Ontario. *Prescription drug abuse strategy: take a stand*. Toronto, ON: Chiefs of Ontario; 2011.
4. Calverson R. Prescription opioid-related issues in northern Ontario: “from benefit to harm to crisis.” *Journal of the American Medical Association*. 2011;306(12):1583-1584.
5. Kanate D, Folk D, Cirone S, et al. Community-wide measures of wellness in a remote First Nation. *Journal of Community Health*. 2011;36(5):403-411.



## References

6. McLellan A, Lewis D, O'Brien C, et al. Drug dependence, a chronic medical illness: implications for
7. Asgary S, Sarrafzadegan N, Naderi G, et al. Effect of opium addiction on new and traditional cardiac
8. Mysels D, Sullivan M. The relationship between opioid and sugar intake: review of evidence and clinical
9. Fareed A, Byrd-Sellers J, Vayalapalli S, et al. Predictors of diabetes mellitus and abnormal blood glucose
10. Sherifali D, Nerenberg K, Pullenayegum E, Cheng JE, Gerstein HC. The effect of oral antidiabetic