

Coverage Limits on Blood Glucose Test Strip Reimbursement for Diabetics in Canada:

Utilization Impact for Diabetic Patients in the Ontario Public Drug Program (OPDP)

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In August 2013 the Ontario Public Drug Program implemented annual limits on diabetes test strip use targeted at patients not treated with insulin

Self-monitoring of blood glucose is performed by diabetic patients to collect detailed information about glucose levels

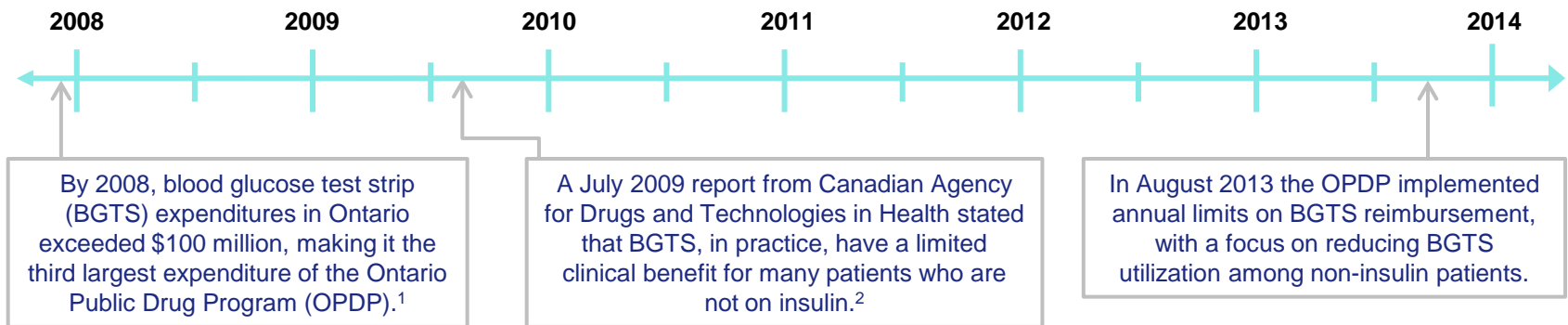


Table 1: OPDP Coverage Limits

Diabetes Treatment Category	Number of BGTS allowed within a 365-day period	Therapy Cohort
Patients managing diabetes with insulin	3,000	'Insulin' & 'Insulin + OAD'
Patients managing diabetes with anti-diabetes medication with high risk of causing hypoglycemia*	400	'OAD'
Patients managing diabetes using anti-diabetes medication with low risk of causing hypoglycemia	200	
Patients managing diabetes through diet/lifestyle therapy only (no insulin or anti-diabetes medications)	200	'Neither'

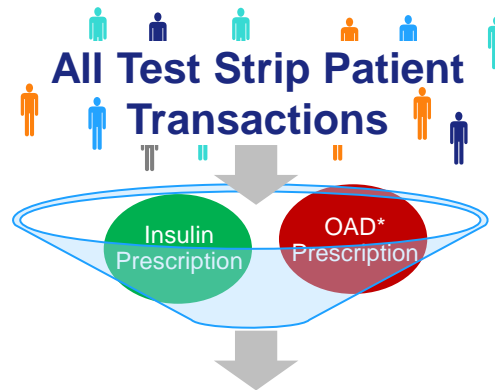
Objective: To quantify the impact of this new BGTS utilization policy in Ontario across diabetes patients based on their diabetes treatment.

*Including but not limited to glyburide, gliclazide, chlorpropamide, tolbutamide, repaglinide, nateglinide, glimepiride

Sources: (1) Gomes T, Juurlink DN, Shah BR, Paterson JM, Mamdani MM. Blood glucose test strips: options to reduce usage. *Can Med Assoc J.* 2010 Jan 12;182(1):35–8. (2) COMPUS. Systematic Review of Use of Blood Glucose Test Strips for the Management of Diabetes Mellitus [Internet]. COMPUS; Report No.: Vol 3, Issue 2.

This analysis considered the impact of the OPDP policy change on both total market volume and utilization patterns in patient groups of interest

Selected all patients who received BGTS coverage from the OPDP during July 2012 – September 2014



Data Source

- OPDP database (100% capture)
- Database characteristics:
 - ✓ Anonymized patient ID
 - ✓ Patient age and gender
 - ✓ Claim information such as drug identification number (DIN), quantity dispensed and days supply
 - ✓ Primarily patients >65 years old or unemployed

Annual BGTS Volume

Insulin Only

Insulin + Oral Anti-diabetic (OAD)

Oral Anti-diabetic (OAD)

Neither



Annual patient utilization analysis focused on patients with:

- **Consistent diabetes treatment** category during the study period
- **BGTS claims activity** in both Pre and Post study periods
- **Actively enrolled in the OPDP database** throughout the entire study period

Annual Patient Utilization

Insulin Only

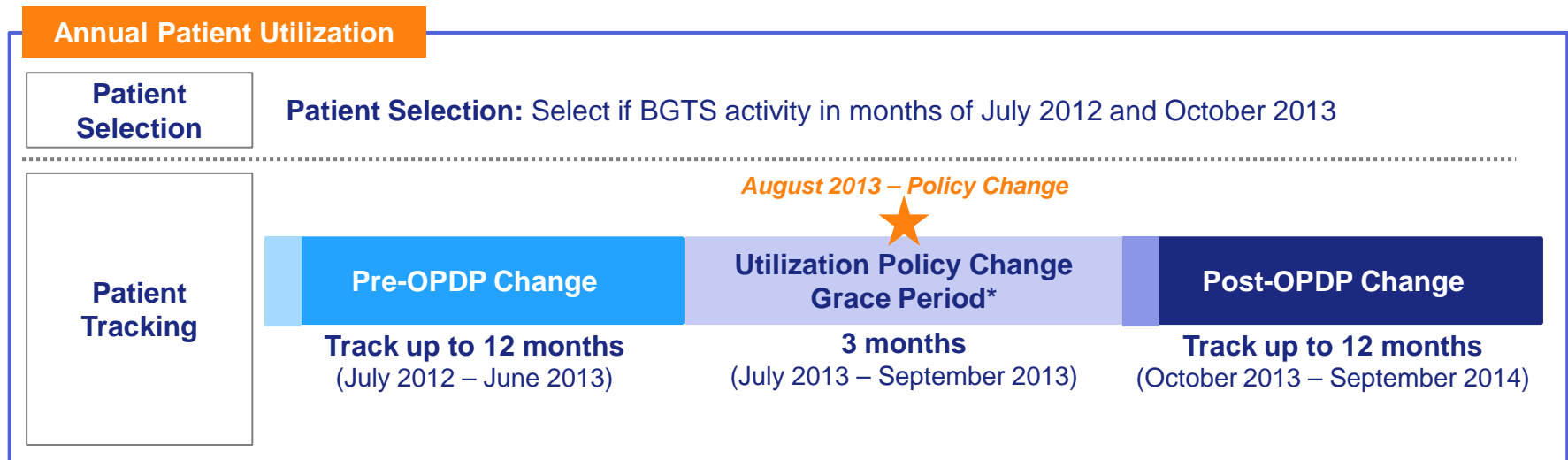
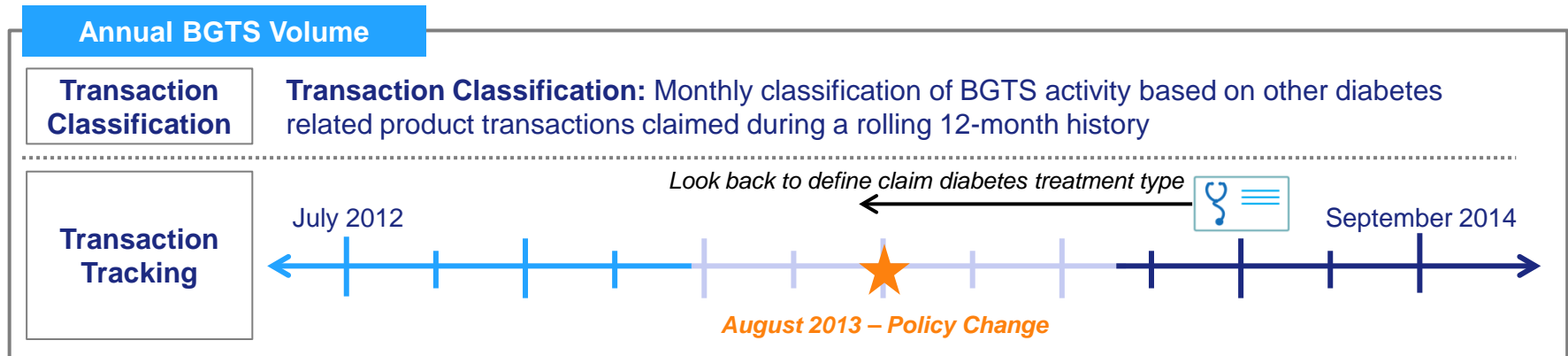
Insulin + Oral Anti-diabetic (OAD)

Oral Anti-diabetic (OAD)

Neither

Data Source: IMS Health Brogan Ontario Public Drug Program database (July 2012 – September 2014)

BGTS utilization was studied for 12 month periods pre- and post-OPDP policy change to evaluate changes in annual BGTS consumption

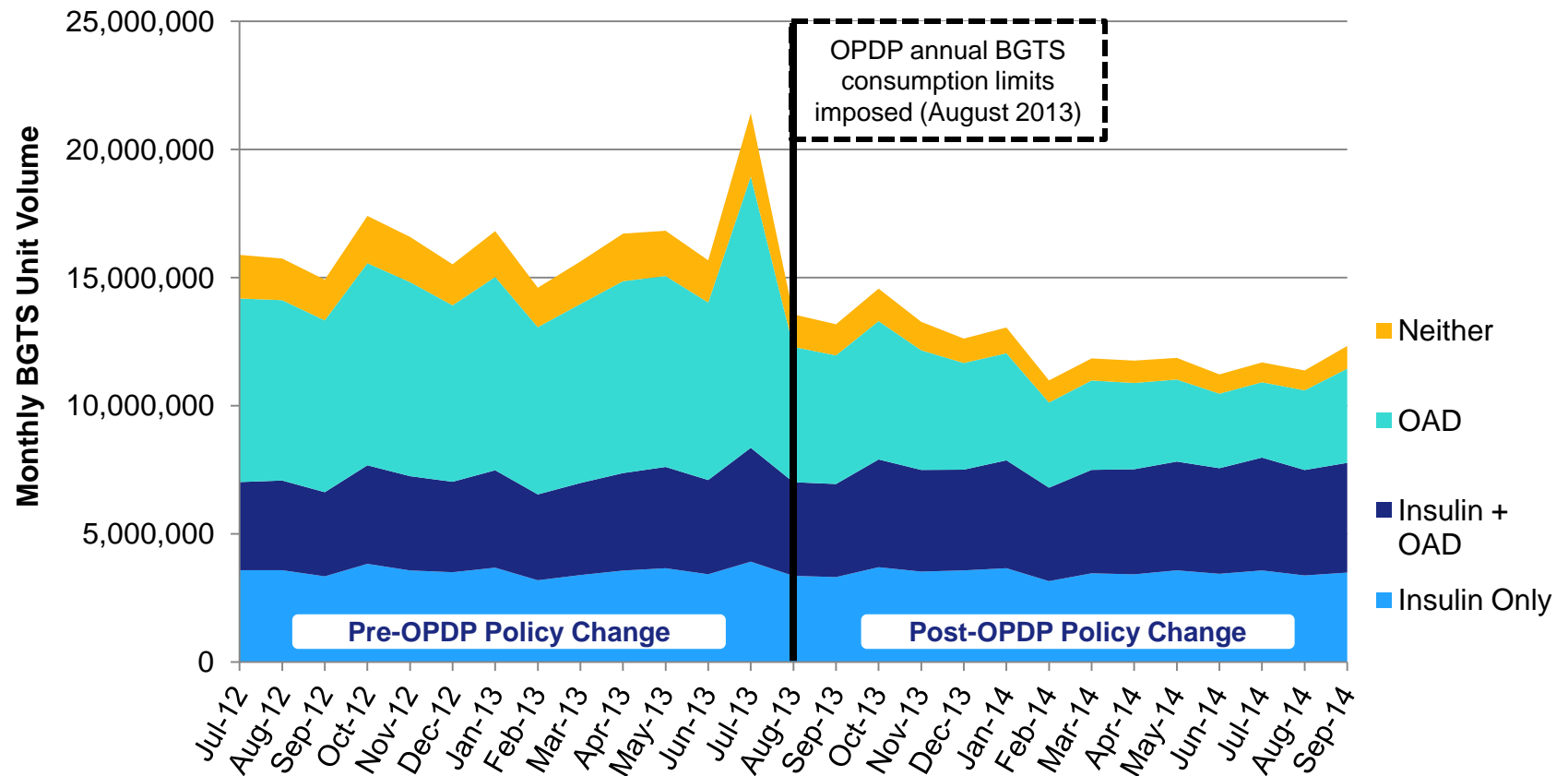


*The grace period was implemented to alleviate the impact of BGTS stock piling before the policy change in Aug. 2013

Following the OPDP policy change there was a downwards trend in BGTS use amongst non-insulin patients, which appears to have leveled-off

Figure 1: Trending Analysis of OPDP BGTS Unit Volume (July 2012 – September 2014)

Annual BGTS Volume



Data Source: IMS Health Brogan Ontario Public Drug Program database (July 2012 – September 2014)

Overall, total BGTS volume declined from 192M to 147M strips (-24%), with the decline concentrated in non-insulin groups: 'OAD' & 'Neither'

Figure 2: Annual BGTS Unit Utilization Pre- and Post-OPDP Policy Change

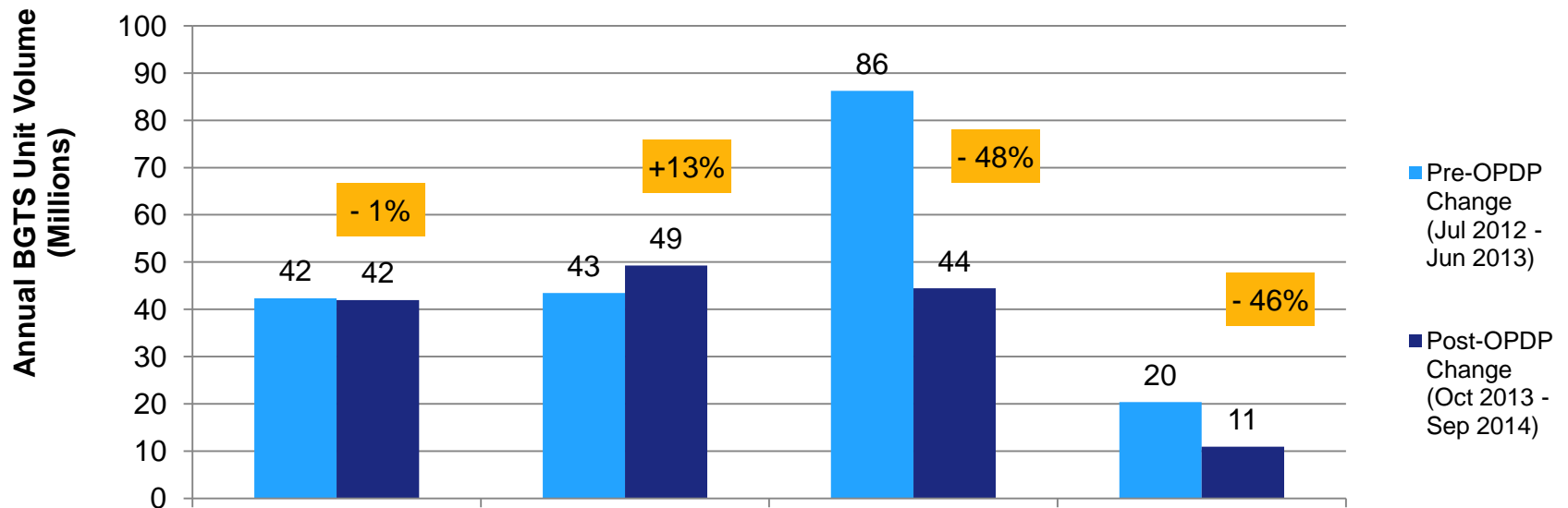


Table 2: Overall BGTS Unit Volume by Therapy Cohort

Therapy Cohort	Insulin Only	Insulin + OAD	OAD	Neither	Total
Pre-OPDP Change	42,315,701	43,452,852	86,198,694	20,375,437	192,342,684
Post-OPDP Change	41,944,752	49,255,176	44,424,075	10,930,264	146,554,267
Change (%)	-0.9%	13.4%	-48.5%	-46.2%	-23.8%

Data Source: IMS Health Brogan Ontario Public Drug Program database (July 2012 – September 2014)

Patients managing their diabetes with insulin had similar utilization following the OPDP policy change

Figure 4: Annual BGTS per Patient Unit Utilization Pre- and Post-OPDP Policy Change

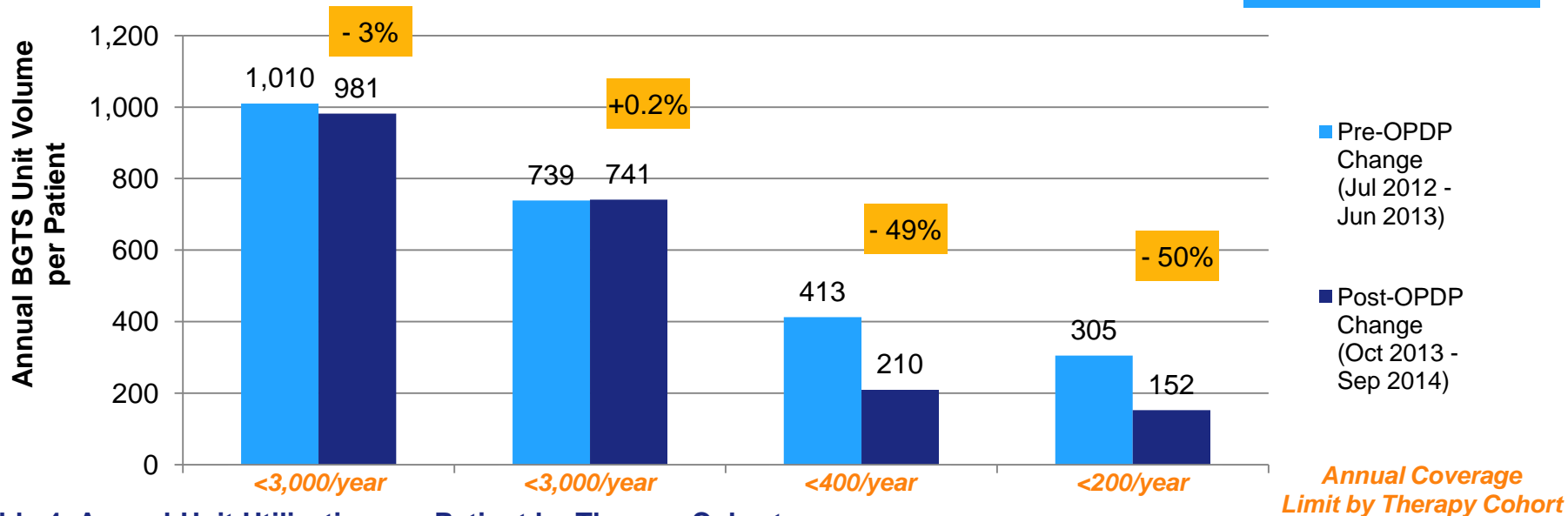


Table 4: Annual Unit Utilization per Patient by Therapy Cohort

Therapy Cohort	Insulin Only	Insulin + OAD	OAD	Neither
Pre-OPDP Change	1,010	739	413	305
Post-OPDP Change	981	741	210	152
Change (%)	-2.8%	0.2%	-49.2%	-50.1%
p value (mean) [^]	<0.0001 X	0.49 X	<0.0001 ✓	<0.0001 ✓

Data Source: IMS Health Brogan Ontario Public Drug Program database (July 2012 – September 2014)

[^]IMS Health Brogan complimented its Statistical Testing with 'Re-Sampling' given the number of patients. This was to ensure that results would be tested for both statistical significance and clinically meaningful difference (✓ = yes, X = no)

In all cohorts, the proportion of High Frequency Users* decreased following the OPDP policy change

Figure 5: Proportion of High Frequency Users Pre- and Post-OPDP Policy Change

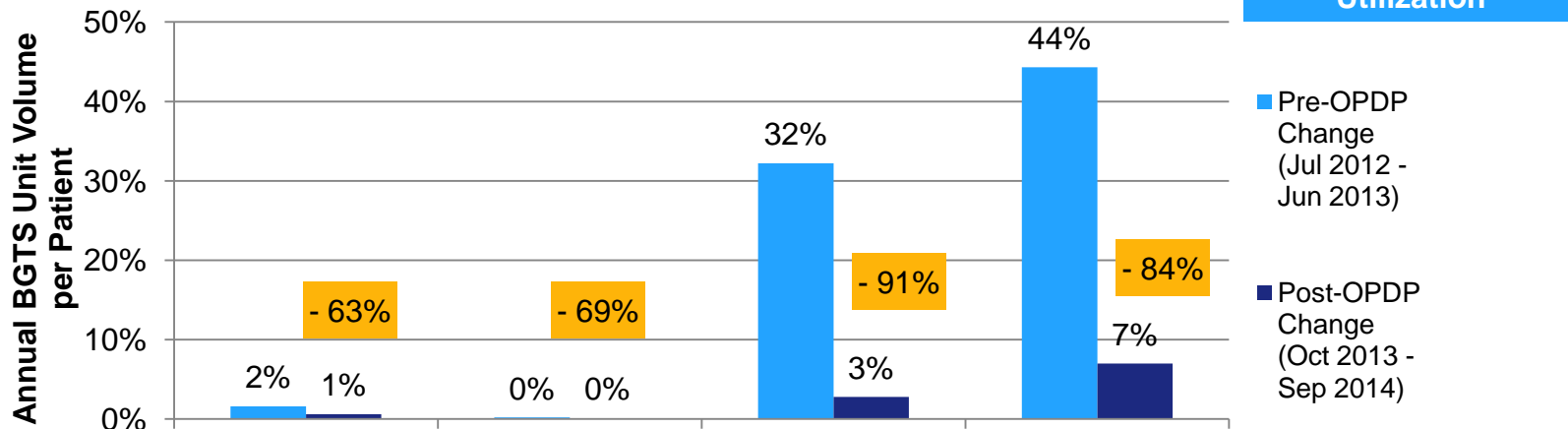


Table 5: High Frequency User Prevalence by Therapy Cohort

Therapy Cohort	Insulin Only	Insulin + OAD	OAD	Neither	Total
Total Patients	26,395	33,576	136,339	28,138	224,448
Pre-OPDP Change (N)	427	81	43,905	12,476	56,889
Post-OPDP Change (N)	160	25	3,876	1,962	6,023
% Change	62.5%	50.0%	91.3%	84.2%	89.3%
p-value (mean) [^]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Data Source: IMS Health Brogan Ontario Public Drug Program database (July 2012 – September 2014). *High Frequency Users were classified as patients using more BGTS than the annual coverage limit (threshold dependent on therapy cohort). **Results are only directional in nature due to small sample population (n=10) [^]IMS Health Brogan used the McNemar Asymptotic Test to test for significance

Conclusions

- BGTS utilization markedly **decreased in diabetes patients not managed with insulin** while utilization impact for patients using insulin was marginal
- Overall, **BGTS utilization in OPDP declined by 24%** following the implementation of annual limits on BGTS reimbursement.
- The policy seems to have effectively **impacted the desired target groups**, with declines in BGTS utilization limited to patient groups managing their diabetes without insulin.
- In general, **BGTS utilization per patient fell below the desired thresholds** set out for each treatment group in the 'post-OPDP policy change' period.
- Following the utilization policy change, the proportion of patients classified as **High Frequency Users decreased across all cohorts**.

Limitations

- Patient outcomes data is not available within the OPDP database and therefore the impact of the BGTS limits on patient outcomes was not investigated.
- Patient activity is limited to OPDP claims, thus may not capture full patient history due to patients switching plans.
- OPDP predominantly covers patients who are greater than 65 years old or unemployed and therefore may not be representative of the Ontario population.
- Patients were classified exclusively based on diabetic medication history as diagnosis information is not available within the OPDP database.

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Questions?



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For the patient cohort, the population is predominantly elderly given that the provincial public drug plan covers patients over 65

Narrow cohort to patients consistent on their diabetes therapy regimen to study per/patient utilization

Annual Patient Utilization

Figure 3: Patient Age Distribution by Consistent Diabetic Treatment Cohort

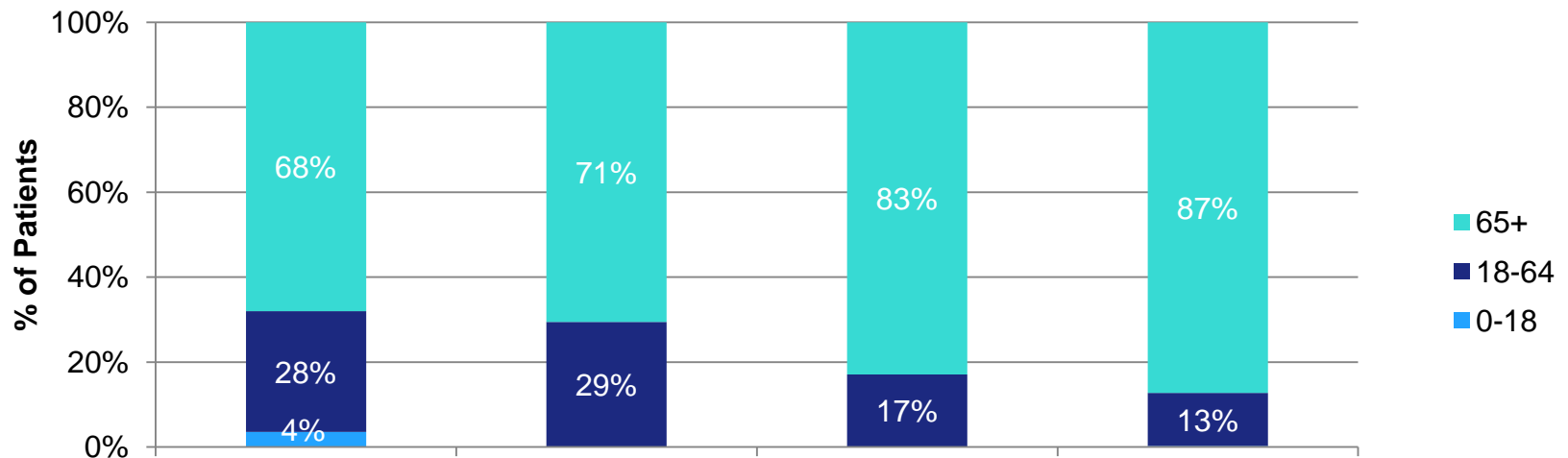


Table 3: Patient Counts by Age Group and Therapy Cohort

Therapy Cohort by Age	Insulin Only	Insulin + OAD	OAD	Neither	Total
0-18	930	14	30	59	1,033
18-64	7,506	9,864	23,247	3,518	44,135
65+	17,959	23,698	113,062	24,561	179,280
Total	26,395	33,576	136,339	28,138	224,448

Data Source: IMS Health Brogan Ontario Public Drug Program database (July 2012 – September 2014)