

# Improving Diabetes Management in Long-Term Care Residents

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## BACKGROUND INFORMATION

### Study Overview

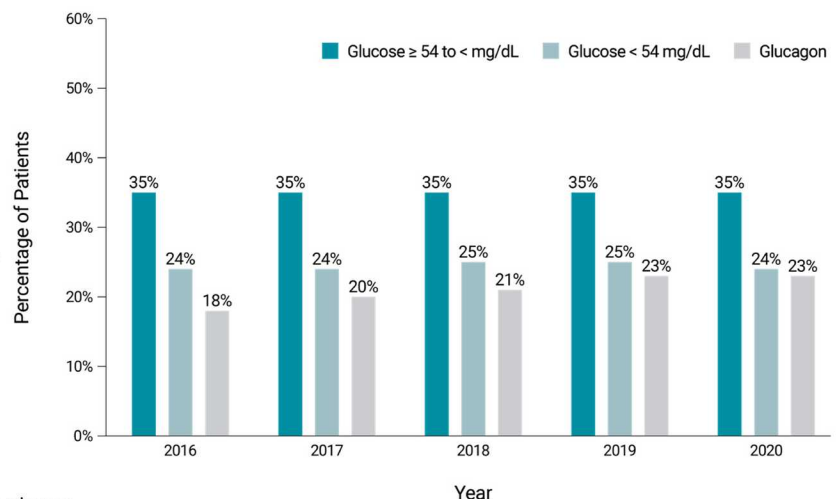
Diabetes is common among older individuals, including residents in long-term care (LTC) facilities. With a growing population of adults older than 65 years of age with diabetes (24%), caring for LTC residents with diabetes is associated with many challenges, including the need to also manage multimorbidity, polypharmacy, physical frailty, cognitive impairment, dementia, and physical limitations. Leveraging the PointClickCare Life Sciences' deidentified real-world database comprising electronic health records from LTC facilities, researchers were able to identify a series of opportunities for improving diabetes management in LTC residents with type 2 diabetes mellitus (T2DM).

### Objectives:

- Characterize the prescribing patterns for glucose-lowering medication annually, both overall and by resident characteristics for LTC residents with T2DM for more than 71,000 to 120,000 residents per year, 2016-2020.
- Quantify the annual frequency of hypoglycemia and emergency department transfers for hypoglycemia among LTC residents with T2DM prescribed glucose-lowering medication, overall and stratified by predefined medication types.

### Results:

- Among **71,200 to 120,861** LTC residents with T2DM included each year from **2016 to 2020**
- **68% to 73%** (depending on the year) were prescribed **≥1 glucose-lowering medications**
- Among them oral agents for **59% to 62%** and injectable agents for **70% to 71%**
- **Metformin** was the most commonly prescribed oral agent, followed by **sulfonylureas** and **dipeptidyl peptidase 4 inhibitors**
- **Basal plus prandial insulin** was the most commonly prescribed injectable regimen



- Prescribing patterns remained relatively consistent from **2016 to 2020**, both overall and by patient subgroup
- During each study year, **35%** of LTC residents with T2DM experienced **level 1 hypoglycemia** (glucose  $\geq 54$  to  $< 70$  mg/dL)
- **10% to 12%** of those prescribed only oral agents and  **$\geq 44\%$**  of those prescribed injectable agents
- Overall, **24% to 25%** experienced **level 2 hypoglycemia** (glucose concentration  $< 54$  mg/dL)

			2016	2017	2018	2019	2020
No. of LTC facilities in database			7371	8113	8536	8845	8848
Total no. of residents with diabetes			73,458	91,331	108,852	123,524	116,535
Residents with T2DM, n (%)			71,200 (96.9)	88,598 (97.0)	106,082 (97.5)	120,861 (97.8)	114,398 (98.2)
Characteristics of those with T2DM	Sex, n (%)	Female	45,916 (64.5)	56,022 (63.2)	65,575 (61.8)	73,133 (60.5)	68,051 (59.5)
		Male	25,282 (35.5)	32,573 (36.8)	40,505 (38.2)	47,723 (39.5)	46,345 (40.5)
	Age, n (%)	65-74 y	18,746 (26.3)	23,729 (26.8)	29,524 (27.8)	35,063 (29.0)	34,731 (30.4)
		75-84 y	25,140 (35.3)	31,168 (35.2)	37,847 (35.7)	43,107 (35.7)	40,401 (35.3)
		$\geq 85$ y	27,314 (38.4)	33,701 (38.0)	38,711 (36.5)	42,691 (35.3)	39,266 (34.3)
	Region, n (%)	South	25,714 (36.1)	31,894 (36.0)	38,247 (36.1)	44,089 (36.5)	42,173 (36.9)
		Midwest	21,826 (30.7)	26,948 (30.4)	31,799 (30.0)	35,361 (29.3)	32,974 (28.8)
		West	12,220 (17.2)	14,897 (16.8)	18,106 (17.1)	20,684 (17.1)	19,239 (16.8)
		Northeast	11,440 (16.1)	14,859 (16.8)	17,930 (16.9)	20,727 (17.1)	20,011 (17.5)
	Comorbidities, n (%)*	Hypertension	60,380 (84.8)	74,808 (84.4)	89,250 (84.1)	100,122 (82.8)	91,528 (80.0)
		Dyslipidemia	45,901 (64.5)	58,460 (66.0)	71,676 (67.6)	83,927 (69.4)	81,460 (71.2)
		Dementia	29,065 (40.8)	36,476 (41.2)	44,277 (41.7)	51,162 (42.3)	48,772 (42.6)
		Heart failure	21,411 (30.1)	27,504 (31.0)	33,868 (31.9)	40,713 (33.7)	40,297 (35.2)
		Renal disease	18,639 (26.2)	24,886 (28.1)	31,547 (29.7)	39,194 (32.4)	40,679 (35.6)
		Coronary artery disease	19,027 (26.7)	24,720 (27.9)	30,575 (28.8)	36,330 (30.1)	35,444 (31.0)
		Obesity†	12,060 (16.9)	15,611 (17.6)	19,813 (18.7)	23,706 (19.6)	20,652 (18.1)
		Stroke	6,421 (9.0)	9,334 (10.5)	12,513 (11.8)	15,230 (12.6)	14,724 (12.9)
		Hepatic disease	708 (1.0)	982 (1.1)	1,345 (1.3)	1,849 (1.5)	2,180 (1.9)
		Glucose-lowering medication, n (%)‡	48,355 (67.9)	61,889 (69.9)	75,930 (71.6)	87,894 (72.7)	82,942 (72.5)
Oral medication‡		28,522 (59.0)	37,516 (60.6)	46,560 (61.3)	54,699 (62.2)	51,559 (62.2)	
Injectable medication‡		33,966 (70.2)	43,277 (69.9)	53,112 (69.9)	61,902 (70.4)	58,997 (71.1)	
Oral and injectable	14,133 (29.2)	18,904 (30.5)	23,742 (31.3)	28,707 (32.7)	27,614 (33.3)		

T1DM/T2DM, type 1/2 diabetes mellitus.

\* Comorbidities as recorded on admission to LTC facility.

† Obesity was defined as body mass index (BMI)  $\geq 30$  and was identified by (1) ICD coding for obesity and/or (2) by generating BMI using height and weight data.

‡ Not all LTC residents with T2DM were prescribed glucose-lowering medication. The percentages prescribed oral and/or injectable glucose-lowering medications represent the percentage of those prescribed any glucose-lowering medication.

## PCC Life Sciences Data Sets Used:

Deidentified, real-world data administered by PointClickCare Life Sciences comprising electronic health records (EHRs) from LTC facilities. Patient-level demographics, including sex, age, and BMI

- Comorbidities, including coronary artery disease, heart failure, stroke, hypertension, dyslipidemia, renal disease, dementia, hepatic disease, and obesity
- Clinical, laboratory and health record data
- Drug orders captured as part of the regular operation of the LTC facility
- 5 study years from a total of 9,738 LTC facilities in the U.S.

