

MEDCAC Meeting

May 21, 2024

Success of Automated Insulin Delivery in the Medicare and Medicaid Populations

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Disclosures

- Research Support: Medtronic, Dexcom, Abbott, Tandem, Insulet, Beta Bionics, Lilly, Sequel.
- Consulting, Speaking, Ad Board: Medtronic, Dexcom, Abbott, Tandem, Insulet, Beta Bionics, Lilly, Sequel.



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Medicare and Medicaid Coverage

- Medicare provides health coverage to older adults
- Medicaid provides health coverage to lower income individuals, many of whom are children.
- Both older adults and low-income individuals with diabetes typically have disproportionately low rates of technology use and disproportionately high HbA1c values.
- **We aimed to examine diabetes outcomes among Medicare and Medicaid beneficiaries using the Tandem Control-IQ Automated Insulin Delivery system.**



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Analysis Design

- Users who were aged 6 years and older, had at least 12 consecutive months of data available on CIQ, and had at least 30 days of >75% CGM data availability before and after CIQ initiation.
- Primary outcome of interest
 - Difference in TIR after starting CIQ use for at least 30 days after CIQ initiation, compared to baseline.
- Other outcomes of interest
 - Change in Glucose Management Indicator (GMI)
 - TBR 54–<70 mg/dL
 - TBR <54 mg/dL
 - TAR >180 mg/dL
 - TAR >250 mg/dL



Analysis Cohort

Real-World Evidence Supporting Tandem Control-IQ Hybrid Closed-Loop Success in the Medicare and Medicaid Type 1 and Type 2 Diabetes Populations

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Rodolfo J. Galindo, MD, FACE,³ Davida F. Kruger, MSN, APRN-BC, BC-ADM,⁴
Carol J. Levy, MD, CDCES,⁵ Janet B. McGill, MD, MA, FACE, FACP,⁶
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DIABETES TECHNOLOGY & THERAPEUTICS
Volume 24, Number 11, 2022
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DOI: 10.1089/dia.2022.0206

TABLE 1. COHORT BASELINE CHARACTERISTICS

	<i>All</i>	<i>Insurance cohorts</i>		<i>Type 2 diabetes (Medicare + Medicaid)</i>
		<i>Medicare</i>	<i>Medicaid</i>	
<i>n</i>	5575	4243	1332	500
Mean age (years)	56.7 ± 22.5	67.4 ± 10.9	22.3 ± 14.2	69.2 ± 10.5
Male (%)	47.3	48.3	44.1	55.2
Diabetes type (%)				
Type 1	91	89	98	0
Type 2	9	11	2	100
GMI (%)	7.4 (7.0–7.9)	7.3 (6.9–7.7)	7.9 (7.4–8.6)	7.3 (6.9–7.7)
Mean SG (mg/dL)	171.0	166.8	191.9	166.8
TIR 70–180 mg/dL (%)	60	64	46	64
TBR 54–69 mg/dL (%)	0.75	0.74	0.74	0.26
TBR <54 mg/dL (%)	0.12	0.13	0.15	0.04
TAR 181–250 mg/dL (%)	28	26	27	27
TAR >250 mg/dL (%)	9.9	8	21	7

GMI, glucose management indicator; SG, sensor glucose; TAR, time above range; TBR, time below range; TIR, time in target range.

Most baseline data is for users of Basal-IQ, a predictive low glucose suspend system predating CIQ.



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Improvement in Glucose Control with AID

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TABLE 2. GLUCOSE MANAGEMENT INDICATOR AND TIME IN RANGE USING TANDEM CONTROL-IQ BY COHORTS

	<i>Medicare</i>			<i>Medicaid</i>			<i>Type 2 diabetes</i>		
	<i>Pre-CIQ</i>	<i>Post-CIQ</i>	<i>P</i>	<i>Pre-CIQ</i>	<i>Post-CIQ</i>	<i>P</i>	<i>Pre-CIQ</i>	<i>Post-CIQ</i>	<i>P</i>
GMI (%)	7.3	7.0	<0.0001	7.9	7.5	<0.0001	7.3	7.1	<0.0001
Mean SG (mg/dL)	166.8	154.3	<0.0001	191.9	175.2	<0.0001	166.8	158.4	<0.0001
TIR 70–180 mg/dL (%)	64	74	<0.0001	46	60	<0.0001	64	72	<0.0001
TBR 54–69 mg/dL (%)	0.74	0.74	0.327	0.74	0.75	0.518	0.26	0.28	0.719
TRR <54 mg/dL (%)	0.11	0.13	<0.0001	0.15	0.18	<0.0001	0.04	0.06	<0.0001
TAR 181–250 mg/dL (%)	26	20	<0.0001	27	24	<0.0001	27	22	<0.0001
TAR >250 mg/dL (%)	8	5	<0.0001	21	13	<0.0001	7	5	<0.0001
Users meeting ADA goals (%)									
All guidelines	12.8	26.3	<0.0001	5.7	13.4	<0.0001	19.4	30.2	<0.0001
GMI <7%	30.6	50.9	<0.0001	10.3	18.1	<0.0001	28.8	40.8	<0.0001
TIR >70%	35.1	62.1	<0.0001	11.0	22.3	<0.0001	37.4	54.8	<0.0001
TBR <4%*	91	93	0.551	92	93	0.306	98	97	0.936
TBR <1%**	57	56	0.694	53	41	0.616	81	81	0.999

ADA, American Diabetes Association; CIQ, Control-IQ.

*TBR of <4% for those younger than the age of 65 years.

**TBR of <1% for those of age 65 years and older.



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	<i>Pre-CIQ</i>	<i>Post-CIQ</i>	<i>P</i>	<i>Pre-CIQ</i>	<i>Post-CIQ</i>	<i>P</i>	<i>Pre-CIQ</i>	<i>Post-CIQ</i>	<i>P</i>
Users meeting ADA goals (%)									
All guidelines	12.8	26.3	<0.0001	5.7	13.4	<0.0001	19.4	30.2	<0.0001
GMI <7%	30.6	50.9	<0.0001	10.3	18.1	<0.0001	28.8	40.8	<0.0001
TIR >70%	35.1	62.1	<0.0001	11.0	22.3	<0.0001	37.4	54.8	<0.0001
TBR <4%*	91	93	0.551	92	93	0.306	98	97	0.936
TBR <1%**	57	56	0.694	53	41	0.616	81	81	0.999

- CMS beneficiaries were already on a system minimizing hypoglycemia and saw no change in hypoglycemia metrics going to an AID system.
- **The percentage of beneficiaries meeting ADA goals for all guidelines more than doubled for both Medicare and Medicaid groups!**



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Summary

- Existing data on >5,500 Medicare and Medicaid beneficiaries demonstrates individual and group-level glycemic improvements with AID technology.
- Understanding baseline-comparison is important.
- TIR and TBR remain the main metrics of interest at an individual level.
- At a group level, the percentage meeting ADA goals is also of high interest to investigators and providers.



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