

SUPPLEMENTARY MATERIALS

Cost-effectiveness of the tubeless automated insulin delivery system vs standard of care in the management of type 1 diabetes in the United States

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Supplementary Table 1. Baseline characteristics (base-case population)

Characteristics	Children (6-17.9 years)		Adults (18-70 years)		Units/Range
	Mean	SE/SD	Mean	SE/SD	
N	125		115		
PATIENT DEMOGRAPHICS					
<i>Start Age</i>	<i>10.90</i>	<i>2.70</i>	<i>39.30</i>	<i>12.70</i>	Years
<i>Duration of Diabetes</i>	<i>5.10</i>	<i>3.00</i>	<i>19.00</i>	<i>11.70</i>	Years
<i>Proportion of males</i>	<i>47.20</i>		<i>37.40</i>		%
BASELINE RISK FACTORS					
<i>HbA1c</i>	<i>7.65</i>	<i>0.94</i>	<i>7.13</i>	<i>0.86</i>	%-points
<i>SBP</i>	<i>109.00</i>	<i>10.00</i>	<i>123.00</i>	<i>14.00</i>	mmHg
<i>DBP</i>	<i>65.00</i>	<i>8.00</i>	<i>76.00</i>	<i>9.00</i>	mmHg
<i>T-CHOL</i>	<i>180.10</i>	<i>36.43</i>	<i>180.10</i>	<i>36.43</i>	mg/dL
<i>HDL</i>	<i>61.60</i>	<i>14.60</i>	<i>61.60</i>	<i>14.60</i>	mg/dL
<i>LDL</i>	<i>100.00</i>	<i>32.50</i>	<i>100.00</i>	<i>32.50</i>	mg/dL
<i>TRIG</i>	<i>93.30</i>	<i>45.70</i>	<i>93.30</i>	<i>45.70</i>	mg/dL
<i>BMI</i>	<i>19.01</i>	<i>3.42</i>	<i>27.01</i>	<i>4.67</i>	kg/m ²
<i>eGFR</i>	<i>97.80</i>	<i>19.30</i>	<i>97.80</i>	<i>19.30</i>	ml/min/ 1.73m ²
<i>HAEM</i>	<i>14.20</i>	<i>1.35</i>	<i>14.20</i>	<i>1.35</i>	gr/dL
<i>WBC</i>	<i>6.80</i>	<i>0.00</i>	<i>6.80</i>	<i>0.00</i>	10 ⁶ /ml
<i>Heart rate</i>	<i>75.10</i>	<i>10.40</i>	<i>75.10</i>	<i>10.40</i>	bpm
<i>WHR</i>	<i>0.90</i>	<i>0.00</i>	<i>0.90</i>	<i>0.00</i>	(1 unit)
<i>uACR</i>	<i>5.62</i>	<i>1.54</i>	<i>5.62</i>	<i>1.54</i>	mg/mmol
<i>Serum creatinine</i>	<i>0.86</i>	<i>0.02</i>	<i>0.86</i>	<i>0.02</i>	mg/dL
<i>Serum albumin</i>	<i>3.90</i>	<i>0.00</i>	<i>3.90</i>	<i>0.00</i>	g/dL
<i>Smoker*</i>	<i>0.00</i>		<i>0.10</i>		%
<i>Cigarettes/day*</i>	<i>0.00</i>		<i>11.00</i>		

Alcohol consumption*	0.00		9.00		Oz/week
RACIAL CHARACTERISTICS					
White	84.8		86.43		%
Black	4.46		3.91		%
Hispanic	7.14		7.81		%
Asian/Pacific Islander	3.57		1.85		%
BASELINE CVD COMPLICATIONS					
MI	0.00		3.70		%
Angina	0.00		3.70		%
PVD	0.00		2.50		%
Stroke	0.00		2.50		%
BASELINE RENAL COMPLICATIONS					
Microalbuminuria	0.00		11.60		%
Gross proteinuria	0.00		2.90		%
ESRD	0.00		0.40		%
BASELINE RETINOPATHY COMPLICATIONS					
BDR	0.00		32		%
BASELINE MACULAR EDEMA					
ME	0.00		0.4		%
BASELINE CATARACT					
Cataract	0.00		4.3		%
BASELINE FOOT ULCER COMPLICATIONS					
History of ulcer	0.00		3.7		%
BASELINE NEUROPATHY					
Neuropathy	0.00		22.8		%

Values in italics are data on file.

Rest comes from EASE 3².

*Assumptions.

Abbreviations: BDR, background diabetic retinopathy; BMI, body mass index; CDM, Core Diabetes Model; Creat, creatinine; DBP, diastolic blood pressure; eGFR, estimated glomerular filtration rate; ESRD, end-stage renal disease; HAEM, hemoglobin; HbA1c, glycated hemoglobin; HDL, high-density lipoprotein; LDL, low-density lipoprotein; ME, macular edema; MI, myocardial infraction; NICE: National Institute for Health and Care Excellence; PVD, peripheral vascular disease; SBP, systolic blood pressure; SD, standard deviation; SE, standard error; T-Chol, total cholesterol; TRIG, triglycerides; uACR, urine albumin-to-creatinine ratio; WBC, white blood count; WHR, waist-to-hip ratio.

Microalbuminuria: between 30 and 300mg/24h; Gross proteinuria: > 300 mg/24h

Supplementary Table 2. Baseline characteristics (TBR \geq 4%)

Characteristics	Children (6-17.9 years)		Adults (18-70 years)		Units/Range
	Mean	SE/SD	Mean	SE/SD	
N	21		31		
PATIENT DEMOGRAPHICS					
Start age	10.70	3.00	39.4	13.7	years
Duration of Diabetes	4.90	2.50	21.9	11.4	years
Male	33.30		48.4		%
BASELINE RISK FACTORS					
HbA1c	7.14	0.7	7.0	0.8	%-points
SBP	107.00	9	126	14	mmHg
DBP	64.00	5	74	9	mmHg
BMI	18.26	3.0	27.4	4.4	kg/m ²

Note: data on file. For cohort (TBR>4%), only data different from those provided in Supplementary Table 1 were reported.

Abbreviations: BMI, body mass index; DBP, diastolic blood pressure; HbA1c, glycated hemoglobin; SBP, systolic blood pressure; SD, standard deviation; SE, standard error; TBR, time below range.

Supplementary Table 3. Baseline characteristics (HbA1c ≥ 8%)

Characteristics	Children (6-17.9 years)		Adults (18.0-70 years)		Units/Range
	Mean	SE/SD	Mean	SE/SD	
N	44		18		
PATIENT DEMOGRAPHICS					
Start age	11.5	2.8	32.7	13.0	years
Duration of Diabetes	5.5	2.9	14.2	10.9	years
Males	40.9		22.2		%
BASELINE RISK FACTORS					
HbA1c	8.7	0.6	8.6	0.4	%-points
SBP	110	11	118	12	mmHg
DBP	65	9	75	9	mmHg
BMI	19.9	4.4	28.1	6.5	kg/m ²

Note: data on file. For cohort (HbA1c>8%), only data different from those provided in Supplementary Table 1 were reported.

Abbreviations: BMI, body mass index; DBP, diastolic blood pressure; HbA1c, glycated hemoglobin; SBP, systolic blood pressure; SD, standard deviation; SE, standard error.

Supplementary Table 4. For comparison: Treatment effects reported in Brown et al (2021)¹ study

Parameter (units)	Children (6-13.9 years)		Adolescents and Adults (14-70 years)	
	SoC	Tubeless AID	SoC	Tubeless AID
	Mean (SD)			
<i>Base-case</i>				
Change in baseline HbA1c (%)	0.00	-0.71 (0.63)	0.00	-0.38 (0.54)
NSHE < 70 mg/dl (/100 patient-years) event rate	27,540	27,357	29,658	18,189
NSHE < 54 mg/dl (/100 patient-years) event rate	5,150	5,296	6,867	3,470
SHE 1 (requiring non-medical assistance) (/100 patient-years) event rate	15.60	3.60	26.34	6.00
Diabetic keto-acidosis event rate (/100 patient-years) event rate	25.2	4.8	10.8	1.2

Abbreviations: HbA1c, glycated hemoglobin; NSHE, non-severe hypoglycemia event rate; SD, standard deviation; SHE, severe hypoglycemic event; SoC; standard of care. AID automated insulin delivery.

Supplementary Table 5. Insulin use (units/day) in children and adults

	Children (6-17.9 years)				Adults (18-70 years)			
	SoC		Tubeless AID		SoC		Tubeless AID	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Base-case</i>								
Basal	16.00	9.00	20.00	10.50	23.80	10.90	22.90	10.20
Bolus	20.90	11.70	19.30	10.10	23.10	13.70	22.10	9.80
<i>TBR ≥ 4%</i>								
Basal	14.00	6.70	14.40	6.50	24.50	10.10	22.30	9.50
Bolus	17.00	7.90	17.20	7.90	26.00	13.30	25.10	10.40
<i>HbA1c ≥ 8%</i>								
Basal	16.70	9.90	24.10	11.20	30.80	17.60	32.00	12.20
Bolus	23.30	11.30	21.60	11.40	28.40	21.10	24.30	14.60

Abbreviations: HbA1c, glycated hemoglobin; SD, standard deviation; SoC, standard of care;

AID automated insulin delivery; TBR, time below range.

Supplementary Table 6. Economic input parameters used in IQVIA CDM (USD)

Variable	Description	Value (USD-\$)	References/Notes
Discounting			
Costs discount rate	The annual discount rate applied to economic outcomes	3.0%	Sanders <i>et al</i> 2016 ³
Clinical outcomes discount rate	The annual discount rate applied to life expectancy and QALE outcomes	3.0%	Sanders <i>et al</i> 2016 ³
Management costs			
Annual statins treatment	Annual cost for statin treatment (applied if patient is on 1 ^o or 2 ^o prevention)	41.31	Simvastatin 40 mg assumed using MIDAS data to determine the most commonly prescribed statin ⁴
Annual aspirin treatment	Annual cost for aspirin treatment (applied if patient is on 1 ^o or 2 ^o prevention)	0.00	Aspirin is not covered by payers
Annual ACE inhibitor treatment	Annual cost for ACE inhibitor treatment (applied if patient is on 1 ^o or 2 ^o prevention)	16.55	Lisinopril 10 mg assumed using MIDAS data to determine the most commonly prescribed ACE inhibitor. Price based on cheapest per pill price ($\$0.0453 \times 365.25$) ⁴

Annual screening for MA	Annual cost for MA screening (applied if patient is screened)	87.49	MA screening includes: MA quantitative (CPT 82043) (\$6.42) and assay of urine creatinine (CPT 82570) (\$5.75) + a GP visit (\$75.32) ⁵
Annual screening for GRP	Annual cost for MA (applied if patient is screened)	87.49	Proteinuria screening includes: assay of urine albumin (CPT 82043) and assay of urine creatinine (CPT 82570) + a GP visit (\$75.32) ⁵
ACE inhibitor treatment discontinuation due to AEs	One off-event cost for stopping treatment with ACE inhibitors or ARB due to AEs	75.32	Assumes the cost of one physician visit (CPT 99213 ~15 minute visit) ⁶
Screening for retinopathy	Cost for an ophthalmologist visit for eye screening in diabetes-related diseases (assumed annual)	141.28	Eye screening involves: Fundus photography (CPT code 92250) and Physician visit (CPT code 92012) ⁶
Direct cost of complications			
MI (1 st year)	Annual costs applied in the year MI occurs	68,138.65	Ward <i>et al</i> 2014 ⁷
MI (2 nd year)	Annual costs applied in the years after MI occurs	2,298.45	Ward <i>et al</i> 2014 ⁷

Unstable Angina (1 st year)	Annual costs applied in the year unstable angina occurs	25,840.66	Ward <i>et al</i> 2014 ⁷
c-angina (2 nd + year)	Annual costs applied in the years after angina occurs	2,298.45	Ward <i>et al</i> 2014 ⁷
CHF (1 st year)	Annual costs applied in the year CHF occurs	28,679.92	Ward <i>et al</i> 2014 ⁷
CHF (2 nd year)	Annual costs applied in the years after CHF occurs	2,298.45	Ward <i>et al</i> 2014 ⁷
Stroke (1 st year)	Annual costs applied in the year stroke occurs	50,844.75	Ward <i>et al</i> 2014 ⁷
Stroke (2 nd year)	Annual costs applied in the years after stroke occurs	18,759.41	Ward <i>et al</i> 2014 ⁷
Stroke death within 30 days	Annual costs applied in the year stroke occurs and subject dies within 30 days	22,737.03	Ward <i>et al</i> 2014 ⁷

PVD (1 st year)	Annual costs applied in the year PVD occurs	5,832.29	Yeaw <i>et al</i> 2014 ⁸
PVD (2 nd year)	Annual costs applied in the years after PVD occurs	2,258.91	Yeaw <i>et al</i> 2014 ⁸
Hemodialysis (1 st year)	Annual costs applied in the year ESRD occurs and is treated by hemodialysis	97,737.30	US Renal Data System ⁹
Hemodialysis (2 nd year)	Annual costs applied in the year after ESRD occurs and is treated by hemodialysis	97,737.30	US Renal Data System ⁹
Peritoneal Dialysis (1 st year)	Annual costs applied in the year ESRD occurs and is treated by peritoneal dialysis	81,842.94	US Renal Data System ⁹
Peritoneal Dialysis (2 nd year)	Annual costs applied in the year after ESRD occurs and is treated by	81,842.94	US Renal Data System ⁹

	peritoneal dialysis		
Renal transplant (1 st year)	Annual costs applied in the year ESRD occurs and is treated by renal transplant	99,745.45	Matas <i>et al</i> 2015 ¹⁰
Renal transplant (2 nd year)	Annual costs applied in the year after ESRD occurs and is treated by renal transplant	30,598.37	Matas <i>et al</i> 2015 ¹⁰
Non-severe hypoglycemia	Cost for a non-severe hypoglycemic event (not requiring external assistance)	13.28	Foos <i>et al</i> 2015 ¹¹
Severe hypoglycemia Type 1	Cost for a type 1 severe hypoglycemic event (not requiring medical assistance. e.g. from friends or family members)	79.67	Foos <i>et al</i> 2015 ¹¹

Severe hypoglycemia type 2	Costs for a type 2 severe hypoglycemic event (requiring medical assistance e.g. health care practitioners, hospitalization)	1,401.52	Foos <i>et al</i> 2015 ¹¹
Diabetic ketoacidosis		19,543	HCUP ¹²
Retinopathy laser treatment	Cost for laser treatment/retinal photocoagulation	684.03	Includes cost for the treatment (CPT 67210) and the physician visit (CPT 92004) ⁶
Cataract surgical treatment (1 st year)	Cost for first or second cataract surgery in the first year	808.00	Includes cost for the surgery (assumed outpatient or ambulatory) (CPT 66984) and the physician visit (CPT 92004) ⁶
Cataract surgical treatment (2 nd year)	Cost for subsequent years after cataract surgery	164.31	Yeaw <i>et al</i> 2014 ⁸
Blindness (1 st year)	Annual cost applied in the year blindness occurs	3,454.92	Ward <i>et al</i> 2014 ⁷
Blindness (2 nd year)	Annual cost applied in the year after blindness occurs	3,454.92	Ward <i>et al</i> 2014 ⁷

Neuropathy (1 st year)	Annual cost applied in the year neuropathy occurs	2,230.07	Yeaw <i>et al</i> 2014 ⁸
Neuropathy (2 nd year)	Annual cost applied in the year after neuropathy occurs	286.87	Includes symptomatic neuropathy and Office/outpatient visit cost (HCPCS code-95861 + 99214) ⁶
Active ulcer		6,711.52	Yeaw <i>et al</i> 2014 ⁸
Amputation	Cost of amputation event (all medical costs except prosthesis)	9,041.00	Ward <i>et al</i> 2014 ⁷
Post amputation	Annual cost applied in the year after ulcer is healed and treated with amputation	2,919.46	The average cost of a prosthesis and ten visits for physical/occupational therapy (CPT 97761) (\$41.81*10) were included. Cost of prosthesis was \$1,935 (2010), which was inflated to 2019 cost ^{13,14}

Abbreviations: ACE, Angiotensin-converting enzyme; AE, adverse event; ARB, Angiotensin receptor blockers; CHF, Congestive heart failure; ESRD, End-stage renal disease; GP, General practitioner; GRP, Gross renal proteinuria; MA, Microalbuminuria; MI, Myocardial infarction; PVD, Peripheral vascular disease; QALE, Quality-adjusted life expectancy; USD-\$, United States Dollar.

Supplementary Table 7. Utility Inputs for cost-effectiveness analysis in the IQVIA CDM

Quality-of-Life Utilities	Values	SE	Reference
QoL T1 no complications	0.839	0.0048	Peasgood <i>et al</i> 2016 ¹⁵
DisU MI event	-0.05500	0.0080	Beaudet A <i>et al</i> 2011 ¹⁶
U post MI	0.7840	0.0530	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U angina	0.7490	0.0043	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U CHF	0.7430	0.0042	Currie <i>et al</i> 2006 ¹⁷
DisU stroke event	-0.16400	0.0480	Beaudet A <i>et al</i> 2011 ¹⁶
U post Stroke	0.6750	0.0039	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U PVD	0.7780	0.0044	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U MA	0.8185	0.0047	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U GRP	0.7910	0.0045	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U HD	0.6350	0.0036	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U PD	0.6350	0.0036	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U RT	0.8293	0.0047	Peasgood <i>et al</i> 2016 ¹⁵
U BDR	0.8102	0.0046	Peasgood <i>et al</i> 2016 ¹⁵
U BDR wrongly treated	0.8102	0.0046	Peasgood <i>et al</i> 2016 ¹⁵
U PDR laser treated	0.7690	0.0044	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U PDR no Laser	0.7690	0.0044	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶

U ME	0.7990	0.0040	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U SVL	0.7798	0.0045	Peasgood <i>et al</i> 2016 ¹⁵
U cataract	0.8230	0.0047	Peasgood <i>et al</i> 2016 ¹⁵ , Beaudet A <i>et al</i> 2011 ¹⁶
U neuropathy	0.6029	0.0035	Peasgood <i>et al</i> 2016 ¹⁵
DisU active ulcer	-0.12450	0.0041	Peasgood <i>et al</i> 2016 ¹⁵
DisU amp event	-0.11720	0.052	Peasgood <i>et al</i> 2016 ¹⁵
U post amputation	0.7218	0.1987	Peasgood <i>et al</i> 2016 ¹⁵
Diminishing NSHE disutility	yes		Lauridsen <i>et al</i> 2014 ¹⁸
DisU for SHE 1	-0.01370	0.0010	Foos <i>et al</i> 2018 ¹⁹
DisU for SHE 2	-0.05780	0.0010	Foos <i>et al</i> 2018 ¹⁹
DisU keto event	-0.0091	0.010	Peasgood <i>et al</i> 2016 ¹⁵
DisU BMI above 25 kg/m ²	-0.0028	0.0000	Peasgood <i>et al</i> 2016 ¹⁵

Abbreviations: Amp, amputation; BDR, background retinopathy; BMI, body mass index; CDM, core diabetes model; CHF, congestive heart failure, DisU, disutility of an event; GRP, gross renal proteinuria; HD, hemodialysis; U, health state utility; MA, Microalbuminuria; ME, macular edema; MI, myocardial infarction; NSHE, non-severe hypoglycemia; PD, peritoneal dialysis; PDR, proliferative diabetic retinopathy; PVD, peripheral vascular disease; QoL, quality-of-life; RT, renal transplant; PD, peritoneal dialysis; SVL, severe vision loss; SHE, severe hypoglycemia; T1, Type 1 diabetes.

Supplementary Table 8. Number of events per 1,000 patient-years (base-case) – Children and adolescents

Type of event	Tubeless AID	SoC
<i>Renal disease</i>		
Microalbuminuria	12.36	14.28
Gross proteinuria	6.67	8.21
End-stage renal disease	2.23	2.87
<i>Cardiovascular disease</i>		
Peripheral vascular disease	2.60	2.65
Heart failure	2.31	2.14
Angina	9.11	9.08
Stroke	2.26	2.11
MI	10.29	10.01
<i>Eye disease</i>		
Background diabetic retinopathy	17.58	19.00
Proliferative diabetic retinopathy	11.64	13.72
Macular edema	12.05	13.73
Severe vision loss	9.78	11.41
Cataract	6.07	6.13
<i>Ulcer/amputation/neuropathy</i>		
Ulcer	0.20	0.20
Recurrent ulcer	0.17	0.17
1 st amputation	0.13	0.13
2 nd amputation	0.08	0.08
Neuropathy	14.27	15.59
<i>Hypoglycemia (events/patient)</i>		

Non-severe hypoglycemia (NSHE <70)	9,407	13,416
Non-severe hypoglycemia (NSHE <54)	1,725	2,972
Severe hypoglycemia 1 (requiring non-medical assistance)	3.65	13.10
Severe hypoglycemia 2 (requiring medical assistance)	0.00	0.00
Ketoacidosis	0.25	4.98
Other	0.00	0.00

Abbreviations: NSHE, Non-severe hypoglycemia event; SoC, standard of care; AID automated insulin delivery.

Supplementary Table 9. Number of events per 1,000 patient-years (base-case) - Adults

Type of event	Tubeless AID	SoC
<i>Renal disease</i>		
Microalbuminuria	10.01	12.14
Gross proteinuria	6.60	7.85
End-stage renal disease	3.12	3.55
<i>Cardiovascular disease</i>		
Peripheral vascular disease	4.83	4.99
Heart failure	3.71	3.85
Angina	8.56	8.75
Stroke	3.58	3.67
MI	12.73	12.92
<i>Eye disease</i>		
Background diabetic retinopathy	18.17	20.45
Proliferative diabetic retinopathy	6.47	8.34
Macular edema	9.84	11.97
Severe vision loss	8.23	9.59
Cataract	6.92	6.95
<i>Ulcer/amputation/neuropathy</i>		
Ulcer	0.37	0.39
Recurrent ulcer	1.36	1.43
1st amputation	0.69	0.71
2nd amputation	0.47	0.48
Neuropathy	14.56	16.46
<i>Hypoglycemia (events/patient)</i>		
Non-severe hypoglycemia (NSHE <70)	6,215	9,677

Non-severe hypoglycemia (NSHE <54)	1,115	2,181
Severe hypoglycemia 1 (requiring non-medical assistance)	2.77	9.96
Severe hypoglycemia 2 (requiring medical assistance)	0.00	0.00
Ketoacidosis	0	3.43
Other	0.00	0.00

Abbreviations: NSHE, Non-severe hypoglycemia event; SoC, standard of care; AID automated insulin delivery.

Supplementary Table 10. Cost-effectiveness scenario analyses in children and adolescents (base-case population)

Scenarios	NSHE < 54 mg/dL	NSHE < 70 mg/dL
	Tubeless AID vs. SoC	Tubeless AID vs. SoC
Base-case		
Incremental LY (years)	1.375	1.375
Incremental QALY (years)	1.521	1.519
Incremental costs (\$)	15,099	-2,483
ICER (\$/QALY gained)	9,927	Dominant
NMB	137,001	154,383
EDIC		
Incremental LY (years)	1.564	1.564
Incremental QALY (years)	1.692	1.686
Incremental costs (\$)	14,259	-3,992
ICER (\$/QALY gained)	8,427	Dominant
NMB	154,941	172,592
SweNDR		
Incremental LY (years)	1.237	1.237
Incremental QALY (years)	1.152	1.155
Incremental costs (\$)	22,971	5,030
ICER (\$/QALY gained)	19,940	4,355
NMB	92,229	110,470
5 years		
Incremental LY (years)	0.034	-
Incremental QALY (years)	0.050	-
Incremental costs (\$)	1,985	-

ICER (\$/QALY gained)	39,704	-
NMB	3,015	-
10 years		
Incremental LY (years)	0.116	-
Incremental QALY (years)	0.190	-
Incremental costs (\$)	2,820	-
ICER (\$/QALY gained)	14,844	-
NMB	16,180	-
20 years		
Incremental LY (years)	0.369	-
Incremental QALY (years)	0.560	-
Incremental costs (\$)	3,876	-
ICER (\$/QALY gained)	6,922	-
NMB	52,124	-
40 years		
Incremental LY (years)	0.957	-
Incremental QALY (years)	1.198	-
Incremental costs (\$)	8,188	-
ICER (\$/QALY gained)	6,834	-
NMB	111,612	-
80 years		
Incremental LY (years)	1.556	-
Incremental QALY (years)	1.646	-
Incremental costs (\$)	19,656	-
ICER (\$/QALY gained)	11,942	-
NMB	144,944	-

Assuming all severe hypoglycemic events need medical attention		
Incremental LY (years)	1.375	1.375
Incremental QALY (years)	1.730	1.729
Incremental costs (\$)	8,842	-8,740
ICER (\$/QALY gained)	5,111	Dominant
NMB	164,158	181,640
No cost for DKA		
Incremental LY (years)	1.375	1.375
Incremental QALY (years)	1.521	1.519
Incremental costs (\$)	62,138	44,556
ICER (\$/QALY gained)	40,853	29,332
NMB	89,962	107,344
Impact on HbA1c reduced with 50% (-0.690% to -0.345%)		
Incremental LY (years)	1.337	
Incremental QALY (years)	1.358	
Incremental costs (\$)	19,408	
ICER (\$/QALY gained)	14,292	
NMB	116,392	
Impact on NSHE removed during childhood and reduced with 50% above age 18		
Incremental LY (years)	1.375	
Incremental QALY (years)	1.389	
Incremental costs (\$)	19,229	
ICER (\$/QALY gained)	13,844	
NMB	119,671	
Subgroup HbA1c \geq 8%		
Incremental LY (years)	1.276	1.276

Incremental QALY (years)	1.813	1.837
Incremental costs (\$)	15,745	-957
ICER (\$/QALY gained)	8,684	Dominant
NMB	165,555	184,657
Subgroup TBR \geq 4% of time		
Incremental LY (years)	1.459	1.459
Incremental QALY (years)	1.733	1.302
Incremental costs (\$)	-8,452	10,561
ICER (\$/QALY gained)	Dominant	8,111
NMB	181,752	119,639

Abbreviations: DKA: Diabetes ketoacidosis; EDIC, Epidemiology of Diabetes Interventions and Complications; HbA1c, glycated hemoglobin; ICER, incremental cost-effectiveness ratio; LY, Life-years; NMB, net monetary benefit; QALY, quality-adjusted life-years; SHE, severe hypoglycemia event; SweNDR, Swedish national diabetes registry; AID automated insulin delivery; TBR: Time Below Range; USD-\$, United States Dollar.

Supplementary Table 11. Cost-effectiveness scenario analyses in adults (base-case population)

Scenarios	NSHE < 54 mg/dL	NSHE < 70 mg/dL
	Tubeless AID vs. SoC	Tubeless AID vs. SoC
1. Base-case		
Incremental LY (years)	1.022	1.022
Incremental QALY (years)	1.112	1.123
Incremental costs (\$)	11,465	-8,029
ICER (\$/QALY gained)	10,310	Dominant
NMB	99,735	120,329
2. Pittsburg		
Incremental LY (years)	0.765	0.765
Incremental QALY (years)	0.898	0.913
Incremental costs (\$)	9,468	-8,515
ICER (\$/QALY gained)	10,548	Dominant
NMB	80,332	99,815
3. SweNDR		
Incremental LY (years)	0.857	0.857
Incremental QALY (years)	0.903	0.919
Incremental costs (\$)	13,545	-6,111
ICER (\$/QALY gained)	15,000	Dominant
NMB	76,755	98,011
4. 5 years		
Incremental LY (years)	0.039	-
Incremental QALY (years)	0.108	-
Incremental costs (\$)	-1,054	-

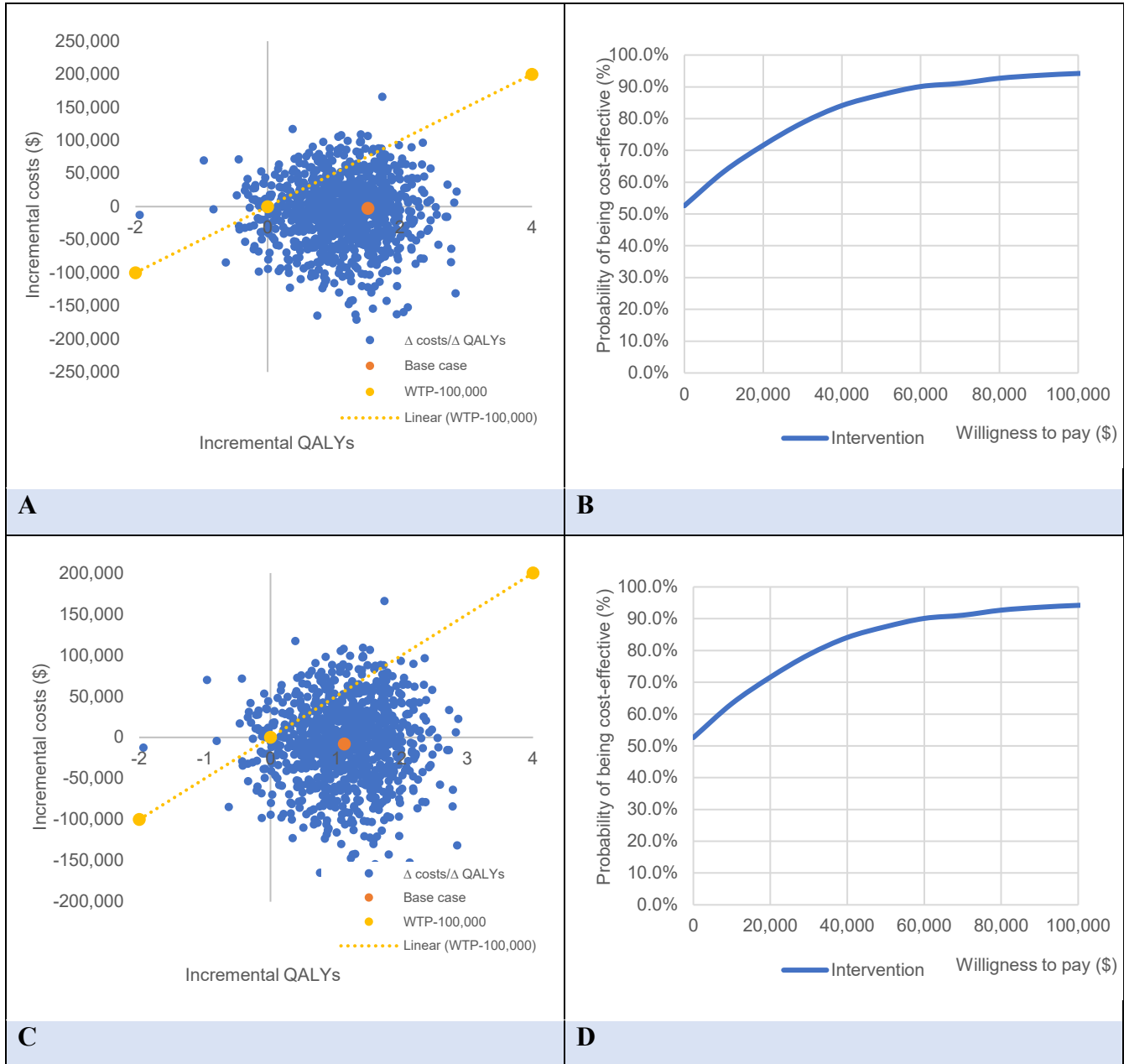
ICER (\$/QALY gained)	Dominant	-
NMB	11,854	-
5. 10 years		
Incremental LY (years)	0.123	-
Incremental QALY (years)	0.246	-
Incremental costs (\$)	-1,244	-
ICER (\$/QALY gained)	Dominant	-
NMB	25,844	-
6. 20 years		
Incremental LY (years)	0.386	-
Incremental QALY (years)	0.553	-
Incremental costs (\$)	1,430	-
ICER (\$/QALY gained)	2,585	-
NMB	53,870	-
7. 40 years		
Incremental LY (years)	0.871	-
Incremental QALY (years)	1.005	-
Incremental costs (\$)	7,981	-
ICER (\$/QALY gained)	7,941	-
NMB	92,519	-
8. 80 years		
Incremental LY (years)	1.015	-
Incremental QALY (years)	1.111	-
Incremental costs (\$)	11,704	-
ICER (\$/QALY gained)	10,535	-
NMB	99,396	-

Assuming all severe hypoglycemic events need medical attention		
Incremental LY (years)	1.022	1.022
Incremental QALY (years)	1.301	1.312
Incremental costs (\$)	5,805	-13,689
ICER (\$/QALY gained)	4,462	Dominant
NMB	124,295	144,889
No cost for DKA		
Incremental LY (years)	1.022	1.022
Incremental QALY (years)	1.112	1.123
Incremental costs (\$)	51,036	31,541
ICER (\$/QALY gained)	46,896	28,086
NMB	60,164	80,759
Impact on HbA1c reduced with 50% (-0.360% to -0.180%)		
Incremental LY (years)	0.957	
Incremental QALY (years)	1.022	
Incremental costs (\$)	12,763	
ICER (\$/QALY gained)	12,488	
NMB	89,437	
Impact on NSHE reduced with 50%		
Incremental LY (years)	1.022	
Incremental QALY (years)	0.974	
Incremental costs (\$)	15,746	
ICER (\$/QALY gained)	16,167	
NMB	81,654	
Subgroup HbA1c ≥ 8%		
Incremental LY (years)	1.513	1.513

Incremental QALY (years)	1.687	1.748
Incremental costs (\$)	23,510	1,963
ICER (\$/QALY gained)	13,936	1,123
NMB	145,190	172,838
Subgroup TBR \geq 4% of time		
Incremental LY (years)	0.989	0.989
Incremental QALY (years)	1.243	0.881
Incremental costs (\$)	-5,314	6,377
ICER (\$/QALY gained)	Dominant	7,238
NMB	129,614	81,723

Abbreviations: DKA: Diabetes Ketoacidosis; HbA1c, glycated hemoglobin; ICER, incremental cost-effectiveness ratio; LY, Life-years; NMB, net monetary benefit; QALY, quality-adjusted life-years; SHE, severe hypoglycemia event; SweNDR, Swedish national diabetes registry; AID automated insulin delivery; TBR: Time Below Range; USD-\$, United States Dollar.

Supplementary Figure 1. Cost-effectiveness scatterplots and Cost-effectiveness acceptability curves (comparing tubeless AID vs SoC, NSHE <70mg/dL)



A Cost-effectiveness scatterplot for tubeless AID vs SoC (children with NSHE <70 mg/dL). **B** Cost-effectiveness acceptability curve for tubeless AID vs SoC (children with NSHE <70 mg/dL). **C** Cost-effectiveness scatterplot for tubeless AID vs SoC (adults with NSHE <70 mg/dL).

mg/dL). **D** Cost-effectiveness acceptability curve for tubeless AID vs SoC (adults with NSHE <70 mg/dL).

AID, automated insulin delivery; QALY: Quality-adjusted life-years; USD-\$, United States Dollar; WTP, willingness-to-pay.

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