Diabète et grossesse

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Liens d'intérêts

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Participation à des boards :
Boehringer Ingelheim, Lifescan, Timkl, Dexcom, Abbott, Sanofi

Congrès ou réunions scientifiques :
Isis Diabète, Lilly, MSD, Novo Nordisk, Orkyn, Roche, Sanofi

Participation à des émissions :
Lilly, Novo Nordisk

Les issues de grossesses restent défavorables au cours de la grossesse chez la patiente diabétique de type 1

Characteristics and outcomes of pregnant women with type 1 or type 2 diabetes: a 5-year national population-based cohort study

Helen R Murphy, Carla Howgate, Jackie O'Keefe, Jenny Myers, Margery Morgan, Matthew A Coleman, Matthew Jolly, Jonathan Valabhji, Eleanor M Scott, Peter Knighton, Bob Young, Nick Lewis-Barned, on behalf of the National Pregnancy in Diabetes (NPID) advisory group*
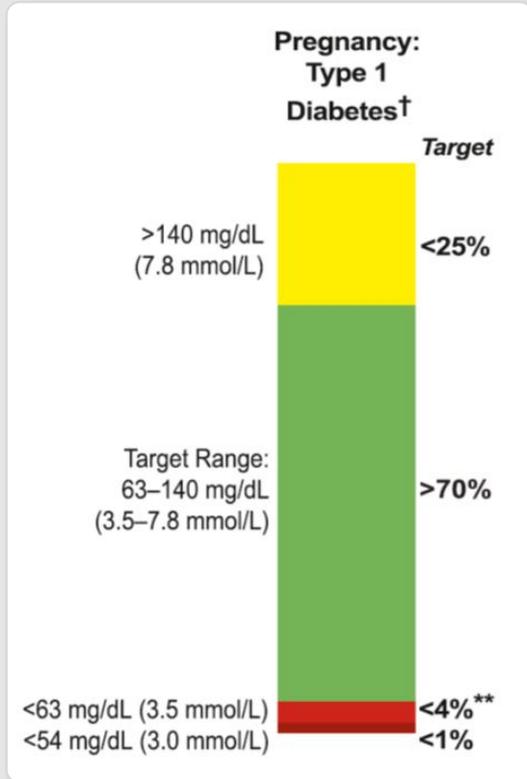
- 2014-2018
- 8690 DT1
- Age moyen 30 ans
- Durée de diabète 13 ans

- 4,5 % malformations congénitales
- 1,7 % morti-mortalité
- 42,5% prématurité < 37 SA
- 52,2% LGA
- 12,7% Transfert néonatal

HbA1c <6,5% ou TIR <70 %

Pregnancy:
Type 1
Diabetes†

Target

>140 mg/dL
(7.8 mmol/L)   **<25%**

Target Range:
63–140 mg/dL
(3.5–7.8 mmol/L)   **>70%**

<63 mg/dL (3.5 mmol/L)   **<4%****
<54 mg/dL (3.0 mmol/L)   **<1%**
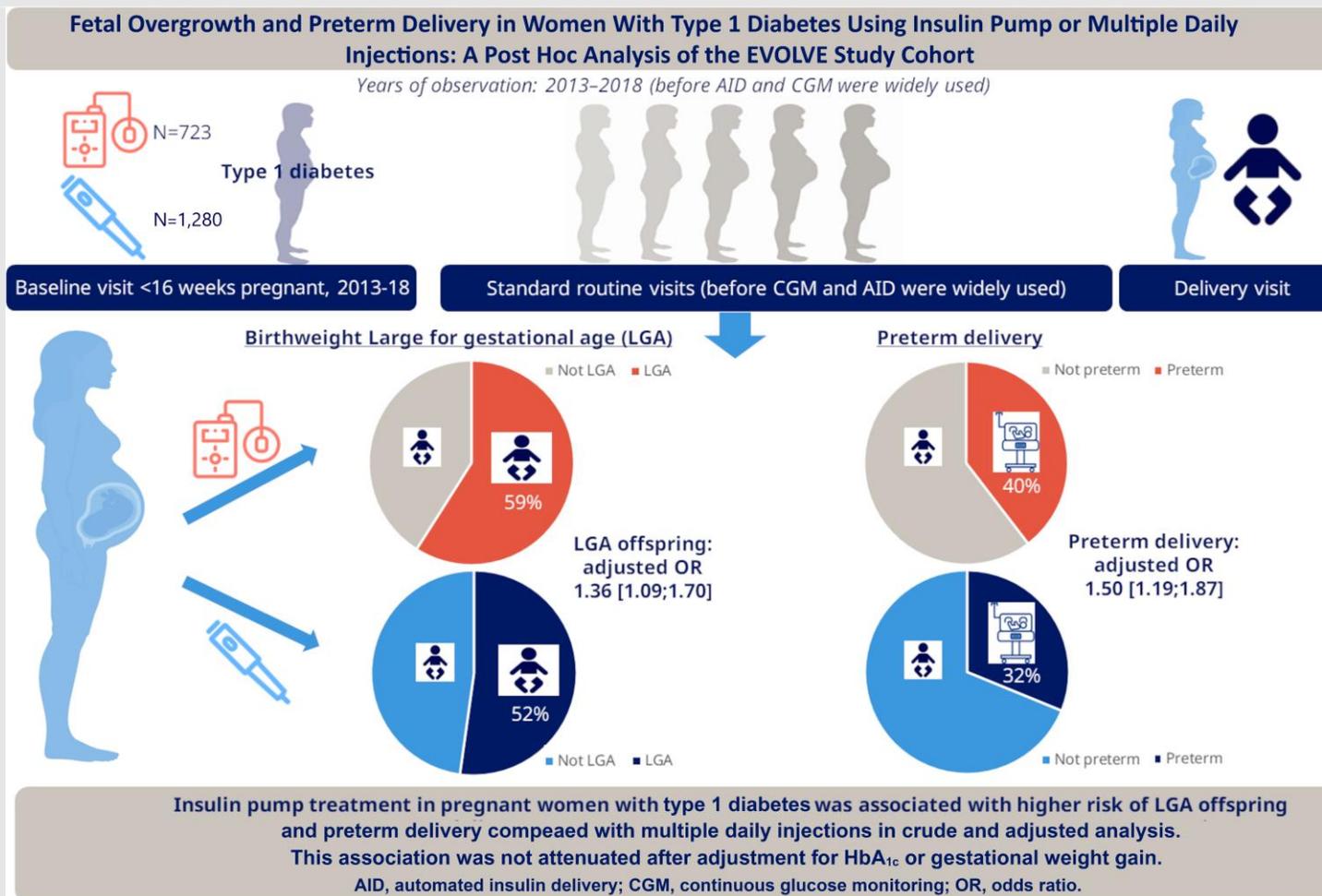
- **Temps dans la cible :**
  - 63-140 mg/dL
  - >70% des données

- **Temps en-dessous de la cible :**
  - Niveau 1 : < 63 mg/dL, <4% des données
  - Niveau 2 : < 54 mg/dL, <1% des données

- **Temps au-dessus de la cible :**
  - > 140 mg/dL
  - <25% des données

Un TIR de 70% correspond à une HbA1c de 6,7%

Chaque augmentation de TIR de 10% correspondant à une diminution de 0,8% d'HbA1c.

Battelino et al. Diabetes Care 2019;30:2785-2791

Vigersky RA et al. DTT 2019

Pompe ambulatoire au cours de la grossesse DT1

Fetal Overgrowth and Preterm Delivery in Women With Type 1 Diabetes Using Insulin Pump or Multiple Daily Injections: A Post Hoc Analysis of the EVOLVE Study Cohort

Years of observation: 2013–2018 (before AID and CGM were widely used)

N=723
Type 1 diabetes
N=1,280

Baseline visit <16 weeks pregnant, 2013-18 | Standard routine visits (before CGM and AID were widely used) | Delivery visit

Birthweight Large for gestational age (LGA)
■ Not LGA ■ LGA
59%
52%
■ Not LGA ■ LGA

LGA offspring:
adjusted OR
1.36 [1.09;1.70]

Preterm delivery
■ Not preterm ■ Preterm
40%
32%
■ Not preterm ■ Preterm

Preterm delivery:
adjusted OR
1.50 [1.19;1.87]

Insulin pump treatment in pregnant women with type 1 diabetes was associated with higher risk of LGA offspring and preterm delivery compeaed with multiple daily injections in crude and adjusted analysis.
This association was not attenuated after adjustment for HbA$_{1c}$ or gestational weight gain.
AID, automated insulin delivery; CGM, continuous glucose monitoring; OR, odds ratio.

Mathiesen E et al. Diabetes Care 2023:47:384-392

Un système de boucle fermée spécifique pour la grossesse

CLIP-02
Murphy HR et al. (2011)

Crossover RCT
n = 12
24hr closed-loop vs. SAP
2 x 24hr inpatient admissions
Snacks, meals and exercise

CLIP-04*
Stewart ZA et al. (2018)

Crossover RCT
n = 16
4 weeks 24hr
HCL vs. SAP
Home setting

Commercialised HCL (2020)

CamAPS Fx
Licensed in pregnancy

CLIP-01
Murphy HR et al. (2011)

Exploratory safety study
n = 10
2 x 24hr inpatient admissions
1st : early pregnancy (12-16 weeks)
2nd : late pregnancy (28-32 weeks)
High carbohydrate meals

CLIP-03
Stewart ZA et al. (2016)

Crossover RCT
n = 16
4 weeks overnight
HCL vs. SAP
Home setting
Optional continuation

Adaptability in labour and delivery
Stewart ZA et al. (2018)

n = 27
Continuation phase of CLIP-03 and CLIP-4 for rest of pregnancy including
home and hospital settings

HbA1c **<7.5%** achieved **78% TIRp** & mean glucose **6.4mmol/L** (1.15g/L)
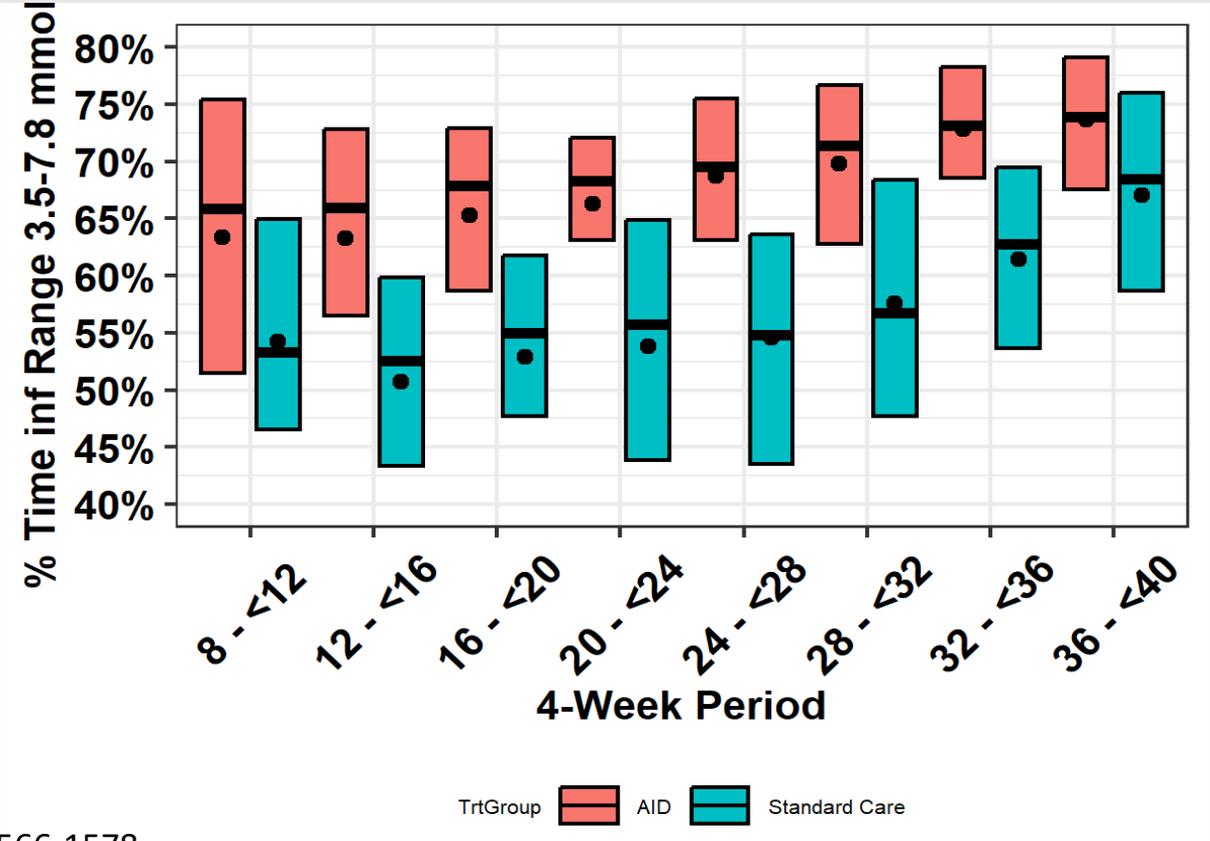HbA1c **>7.5%** achieved **69% TIRp** & mean glucose **7.0mmol/L** (1.26g/L)

Lee T et al N Engl J Med 2023; 389:1566-1578

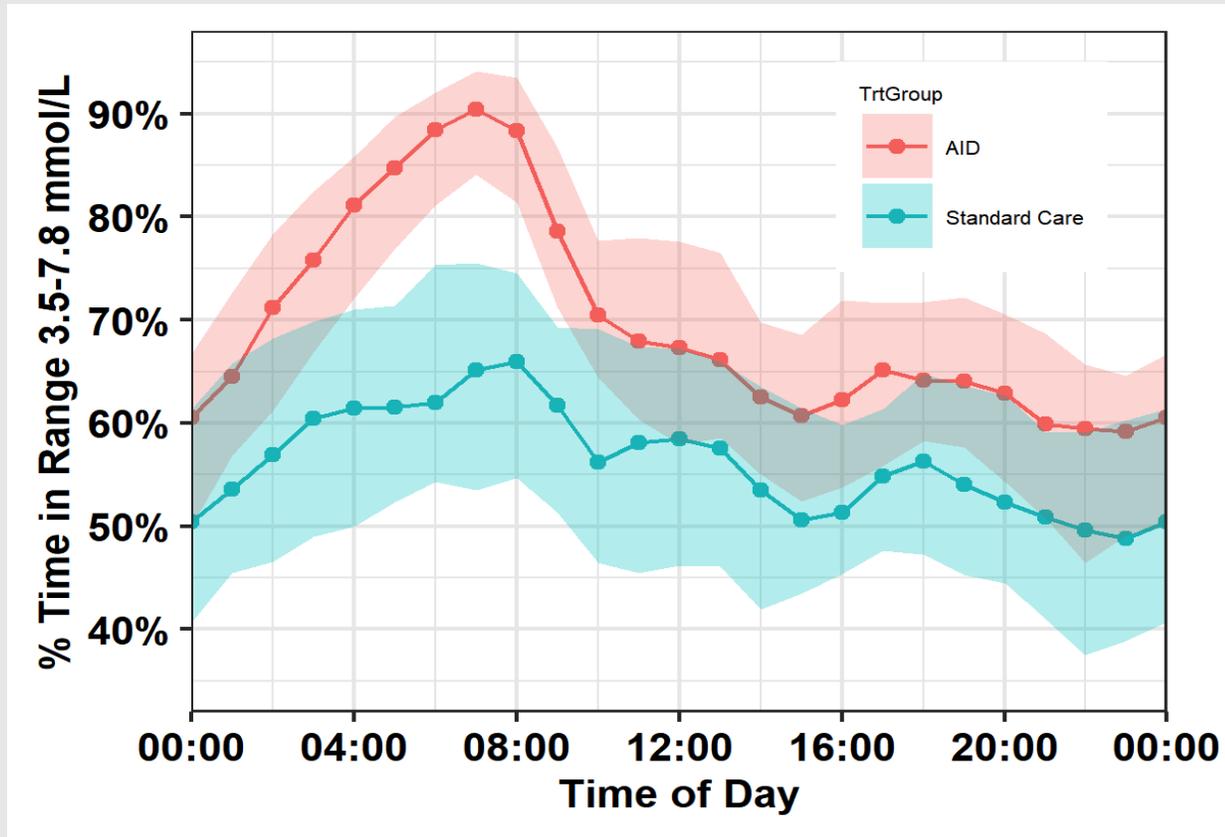# CamAPS FX augmente vite le temps dans la cible

Lee T et al N Engl J Med 2023; 389:1566-1578

Efficace pendant 24 heures

L'efficacité du système est identique pour toutes

	Closed loop		Standard Care		P-value for interaction[a]
	N	Change from baseline (mean ± SD)	N	Change from baseline (mean ± SD)	
Overall	59	20% ± 14%	59	11% ± 12%	
Maternal Age					0.91
18-24	9	20% ± 15%	15	14% ± 13%	
25-35	41	19% ± 13%	35	10% ± 12%	
>35	9	25% ± 16%	9	9% ± 8%	
Baseline HbA1c					0.91
≥6.0%-7.0%	22	17% ± 11%	11	10% ± 10%	
≥7.0%-<8.0%	20	26% ± 16%	23	12% ± 12%	
≥8.0%	17	18% ± 13%	25	10% ± 12%	
Insulin pre-enrolment					0.91
Pump	30	19% ± 13%	22	8% ± 10%	
MDI	27	22% ± 14%	36	13% ± 12%	
AID	2	20% ± 18%	1	9% ± 0	

CamAPS FX améliore le temps dans la cible en réduisant l'hyperglycémie

Lee T et al N Engl J Med 2023; 389:1566-1578
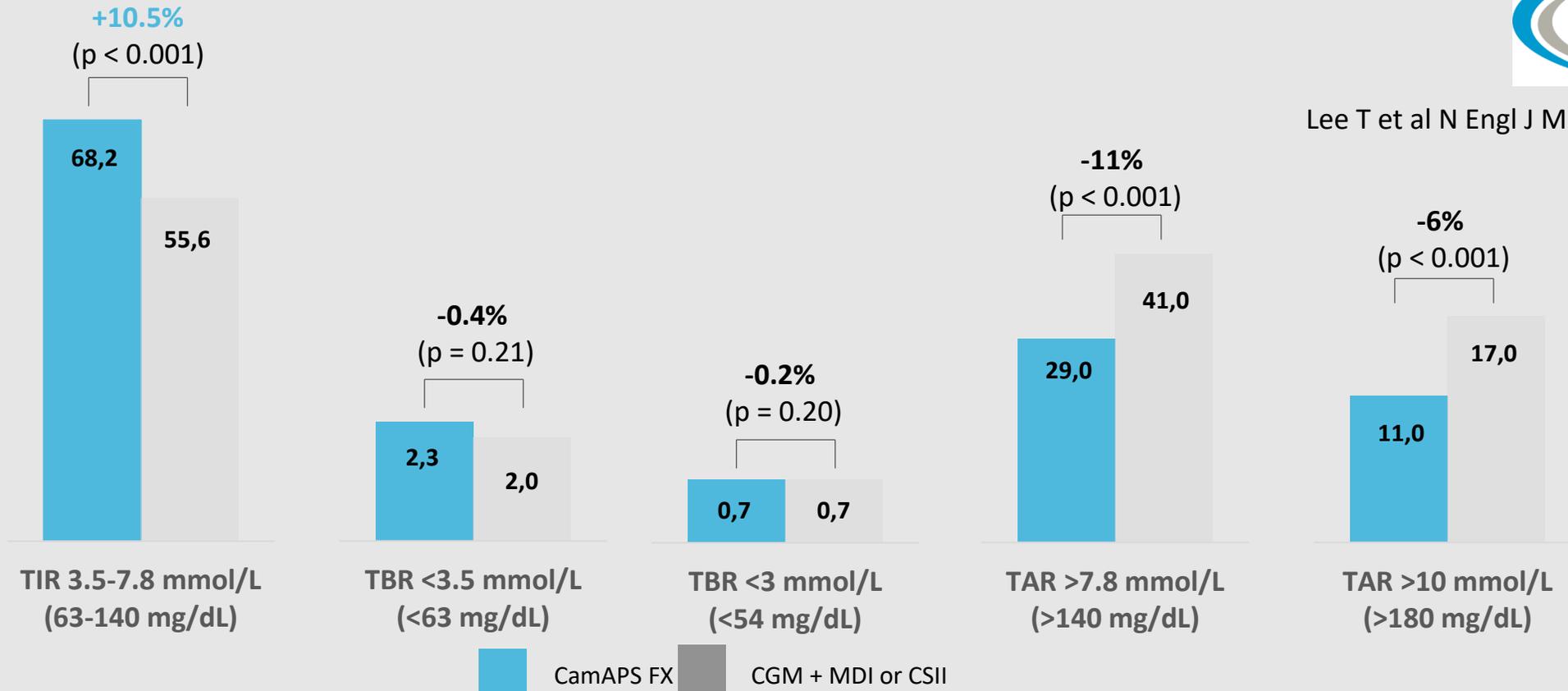
Après la naissance

Image: kieferpix/Getty Images

Points particuliers d'adaptation

- Augmenter la cible de glucose a 1,10 g/l dix

- Ease-off +++

- Le ratio insuline/glucide

- Objectif 3.9 – 10.0mmol/L (0.70-1.80g/dL)

- Adapter l'insuline basal
  - 50% DTQ 36 SA ou niveau pre-grossesse

- Adapter le poids de la maman

L'utilisation de CamAPS pendant six mois dans le post-partum

Figure 17. Boxplot of % time in range by 4-week period during postpartum
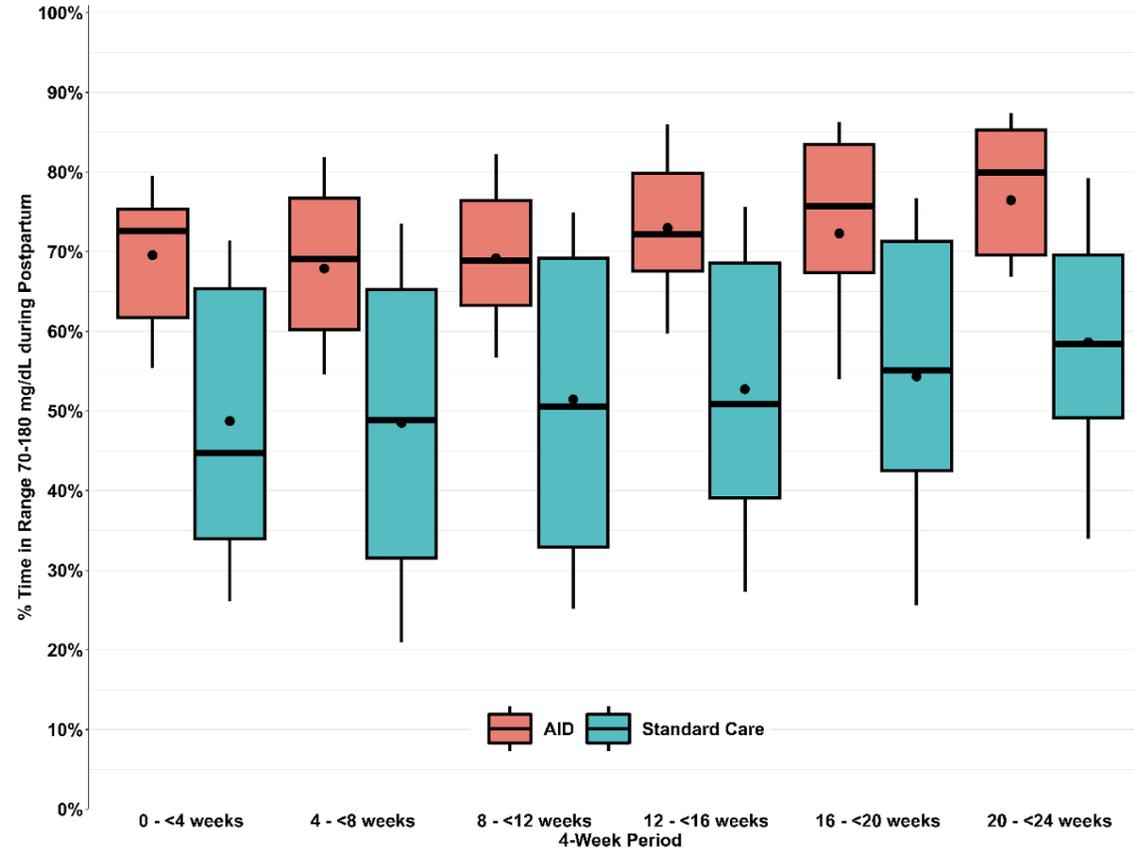
Comparing advanced hybrid closed loop therapy and standard insulin therapy in pregnant women with type 1 diabetes (CRISTAL): a parallel-group, open-label, randomised controlled trial

Katrien Benhalima*, Kaat Beunen*, Nancy Van Wilder, Dominique Ballaux, Gerd Vanhaverbeke, Youri Taes, Xavier-Philippe Aers, Frank Nobels, Joke Marlier, Dahae Lee, Joke Cuypers, Vanessa Preumont, Sarah E Siegelaar, Rebecca C Painter, Annouschka Laenen, Pieter Gillard, Chantal Mathieu

Multicentrique
Etude en ouvert
Prospective
randomisée

Age 18-45 ans
HbA1c <10%
Pompe ou multiinjections
n=43 HCL vs n=48

Critère primaire:
% temps dans la cible 63-140
66,5± 10 vs 63,2 ± 12,4
p=0,17
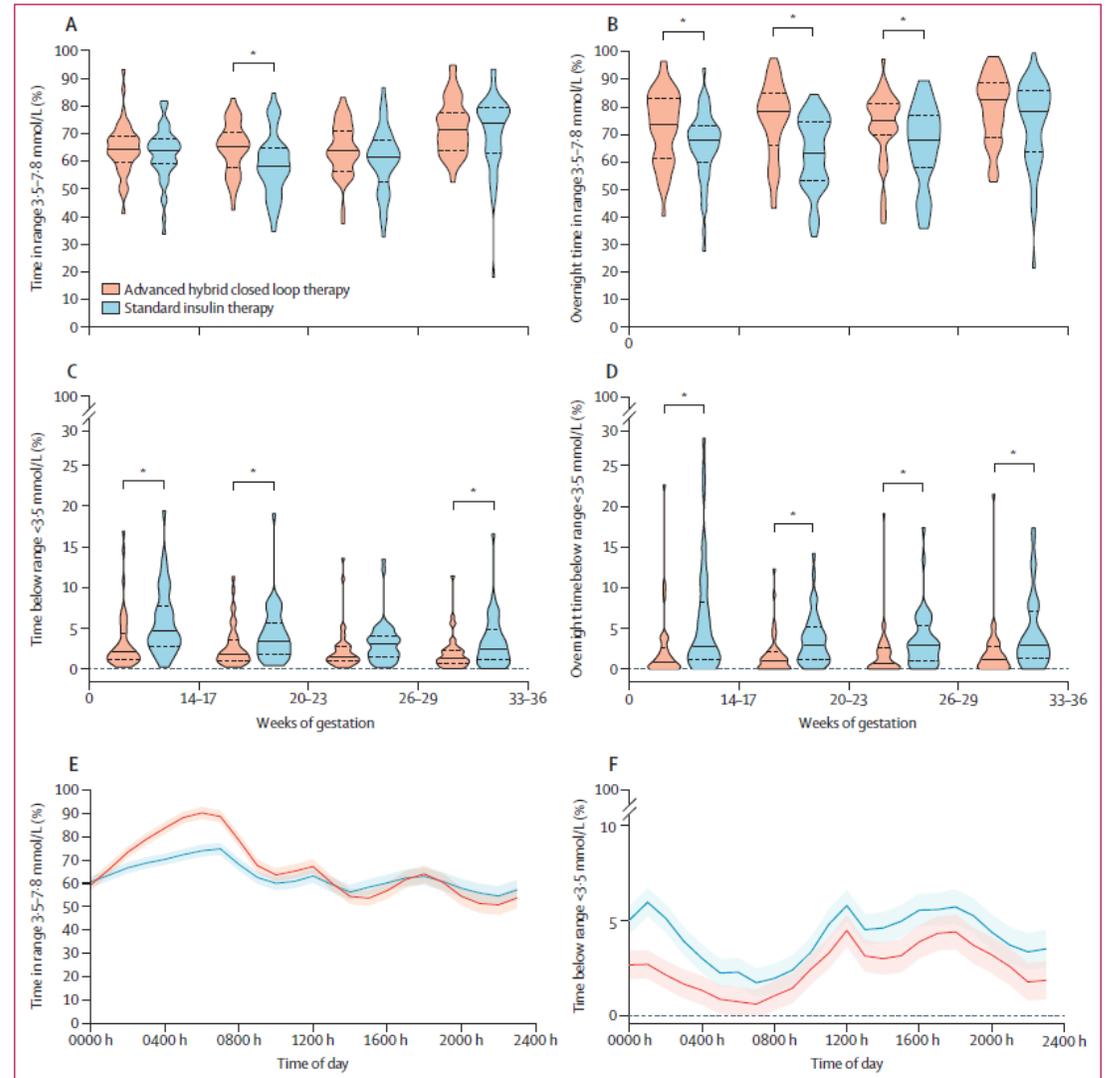
Benhalima K et al. Lancet Diabetes Endoc 2024

	Advanced hybrid closed loop therapy (n=43)	Standard insulin therapy (n=46)
Obstetric and maternal outcomes		
Gestational hypertension	4/43 (9·3%)	6/46 (13·0%)
Pre-eclampsia	4/42 (9·5%)	2/46 (4·3%)
HELLP syndrome	1/42 (2·4%)	0/46 (0·0%)
Mode of delivery		
Vaginal	16/43 (37·2%)	14/45 (31·1%)
Vacuum pump (instrumental)	6/43 (13·9%)	2/45 (4·4%)
Caesarean section (total)	21/43 (48·8%)	29/45 (64·4%)
Planned or elective caesarean section	14/21 (66·7%)	19/29 (65·5%)
Unplanned or emergency caesarean section	7/21 (33·3%)	10/29 (34·5%)
Repeat caesarean section	10/21 (47·6%)	9/29 (31·0%)
Total gestational weight gain (kg)*	11·8 (4·2)	13·9 (5·7)
Excessive gestational weight gain†	14/43 (32·6%)	26/46 (56·5%)
Median duration of postpartum hospital stay (days)	4·0 (3·0–5·0)	4·0 (3·0–4·0)
Breastfeeding‡	33/41 (80·5%)	37/45 (82·2%)

	Advanced hybrid closed loop therapy (n=43)	Standard insulin therapy (n=46)
Fetal and neonatal outcomes		
Miscarriage (<20 weeks)§	2/45 (4·4%)	1/47 (2·1%)
Death in utero or stillbirth (≥20 weeks)¶	1/45 (2·2%)	0/47 (0·0%)
Neonatal death	0/42 (0·0%)	0/46 (0·0%)
Gestational age at delivery (weeks and days)	37 weeks and 2 days (1 week and 1 day)	37 weeks and 5 days (1 week and 1 day)
Preterm birth (<37 weeks)‖	12/43 (27·9%)	9/46 (19·6%)
Birthweight outcomes**		
Birthweight (kg)	3·6 (0·6)	3·7 (0·5)
Small for gestational age	0/43 (0·0%)	0/46 (0·0%)
Large for gestational age	24/43 (55·8%)	31/46 (67·4%)
Extremely large for gestational age (>P97)	16/43 (37·2%)	20/46 (43·5%)
Macrosomia (>4 kg)	13/43 (30·2%)	15/46 (32·6%)
Birthweight >4·5 kg	2/43 (4·7%)	4/46 (8·7%)
Median sum of skinfolds (mm)	18·8 (15·1–19·8)	18·4 (15·8–21·8)
Median neonatal body fat mass (g)	1514·4 (1381·7–1619·6)	1436·4 (1262·5–577·0)
Median neonatal body fat mass (%)	39·0 (39·0–39·0)	39·0 (39·0–39·0)

Benhalima K et al. Lancet Diabetes Endoc 2024