



Vanskeligregulerbar diabetes – pankreas-eller øycelletransplantasjon?

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Children and adult diabetes in Norway

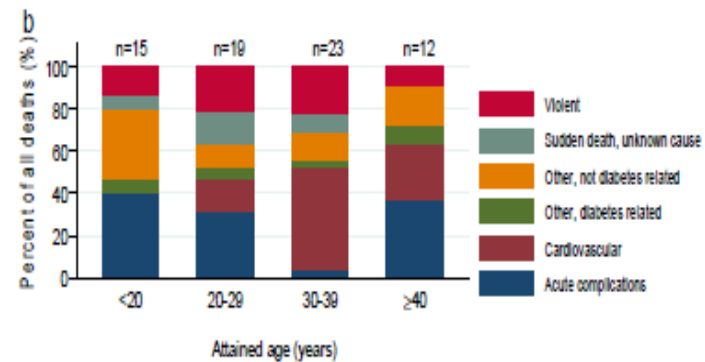
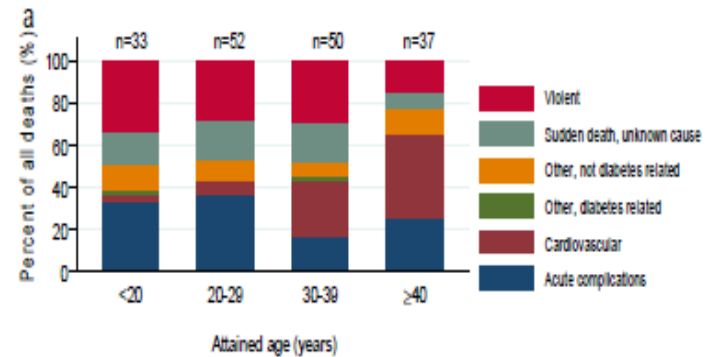
'Cause-specific deaths'

- n=7.871, 132.143 person-years
- Mean follow-up 16.8 yrs
- Mean age at end of follow up: 25.6 yrs
- 241 deaths (3.1%)
 - 5% dead in bed
 - 26% acute diabetic complications (hypoglycaemia, ketoacidosis)
 - 28% CVD

Children and adult diabetes in Norway

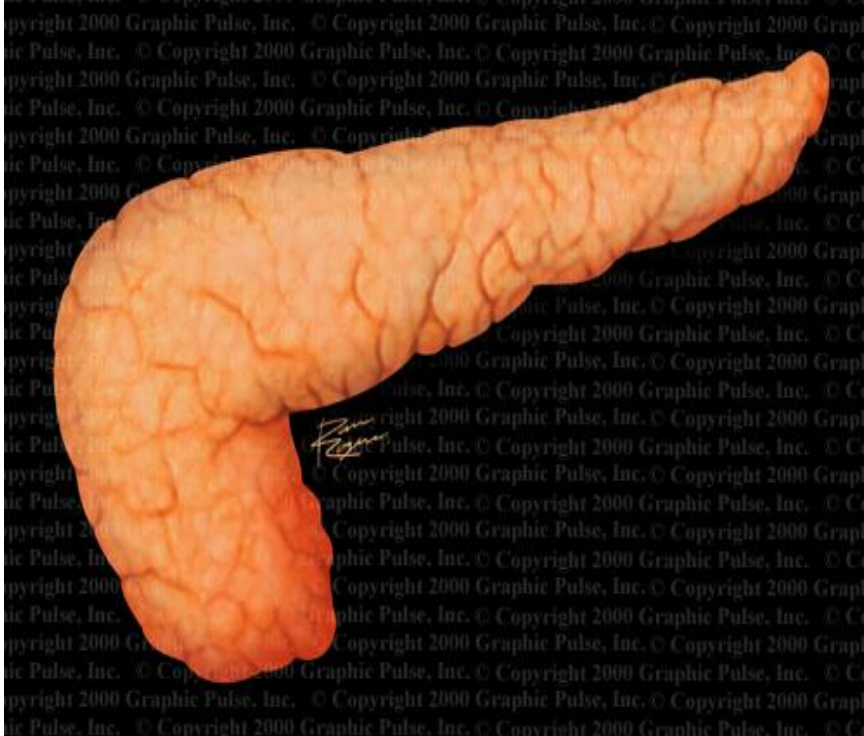
'Cause-specific deaths

ESM Figure 1 Causes of death for each sex. The data are given by age at death in males (a) and females (b) in 241 individuals with childhood-onset type 1 diabetes in 1973-2012 in Norway, age 2-55 years



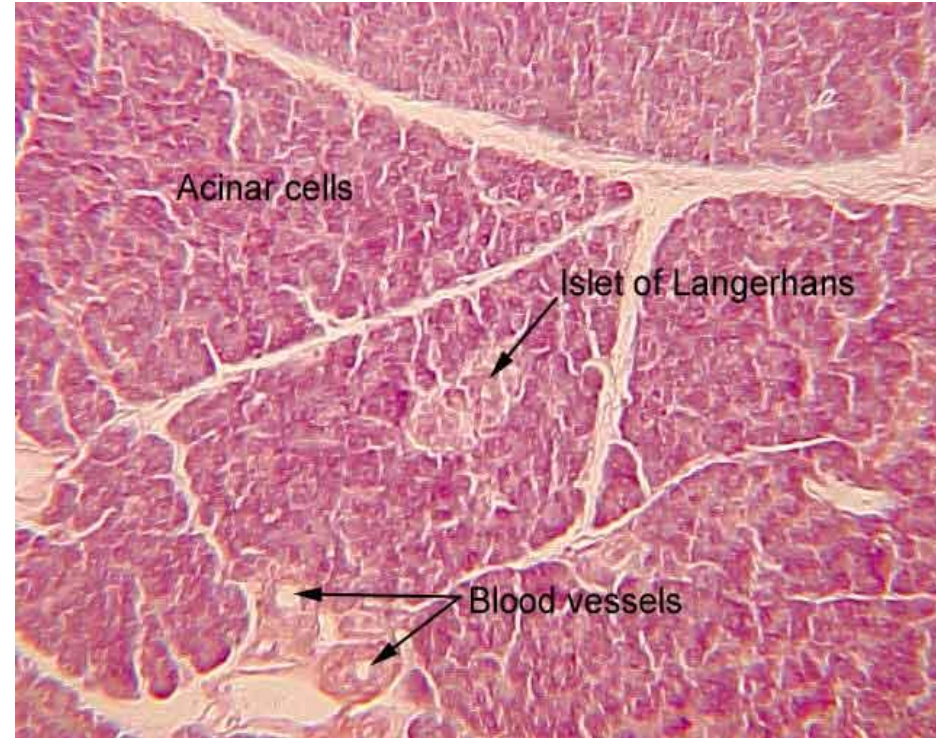
Norway

Pancreas



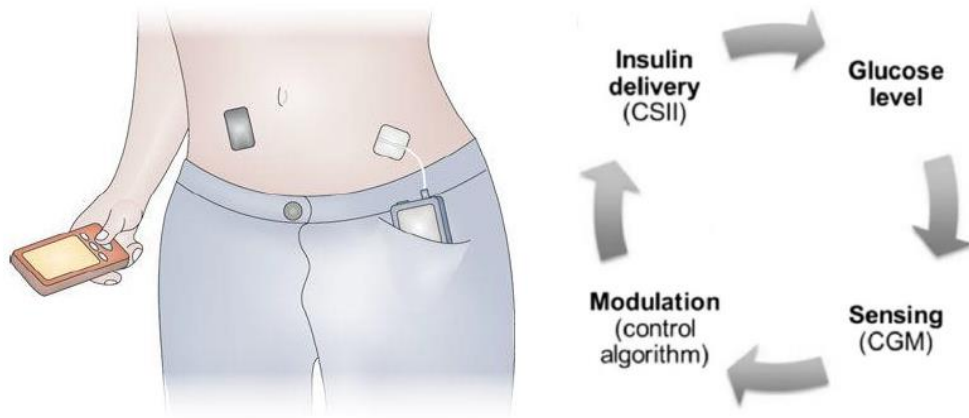
1983

Islets of langerhans



2001

Insulinpumpe-sensor system



Hybrid closed-loop system

Medtronic

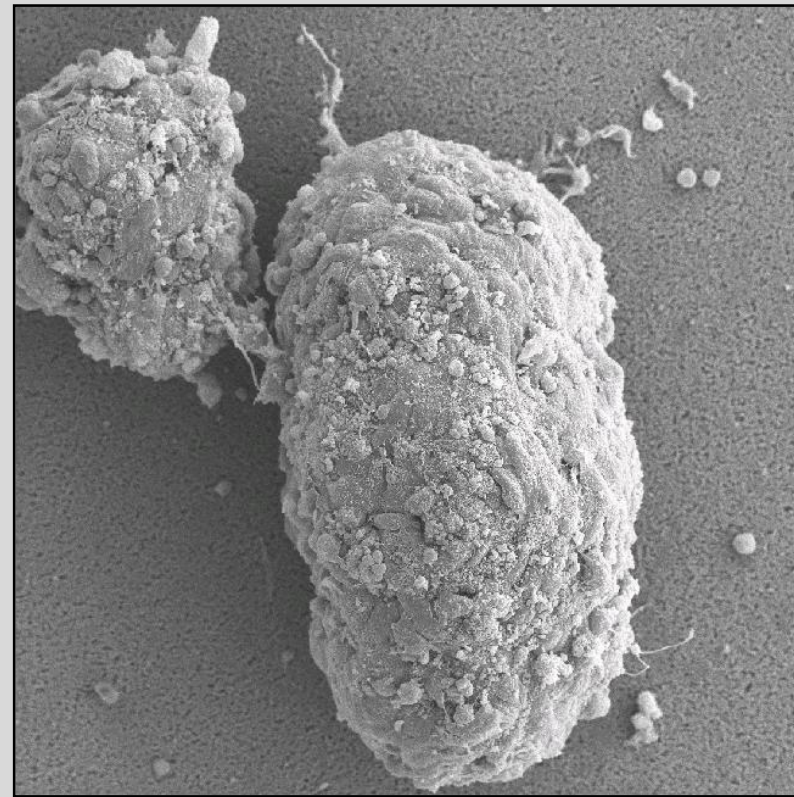
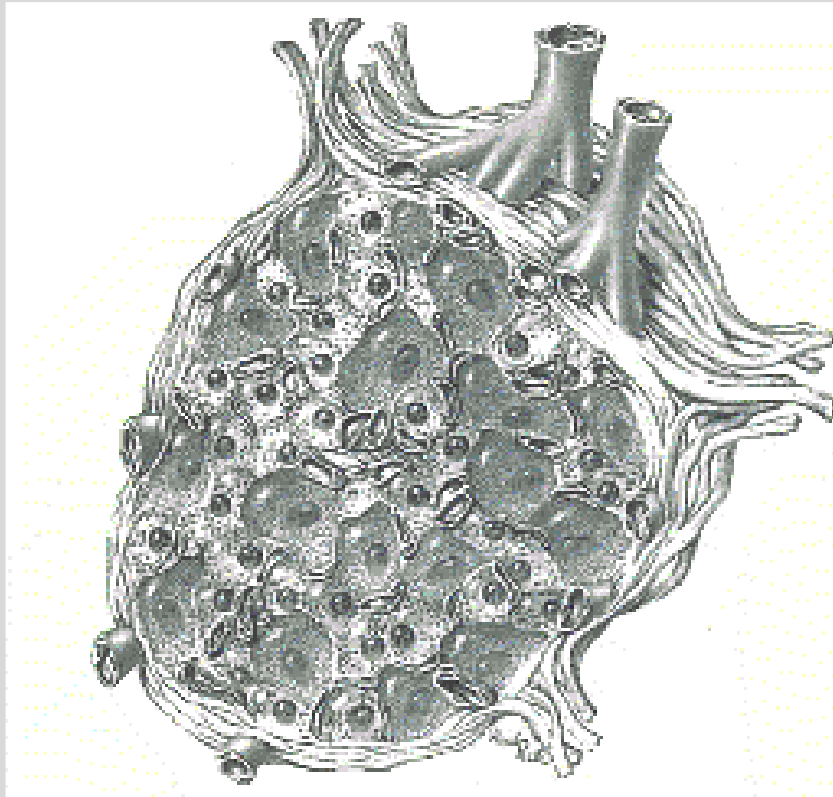
CamAPS FX

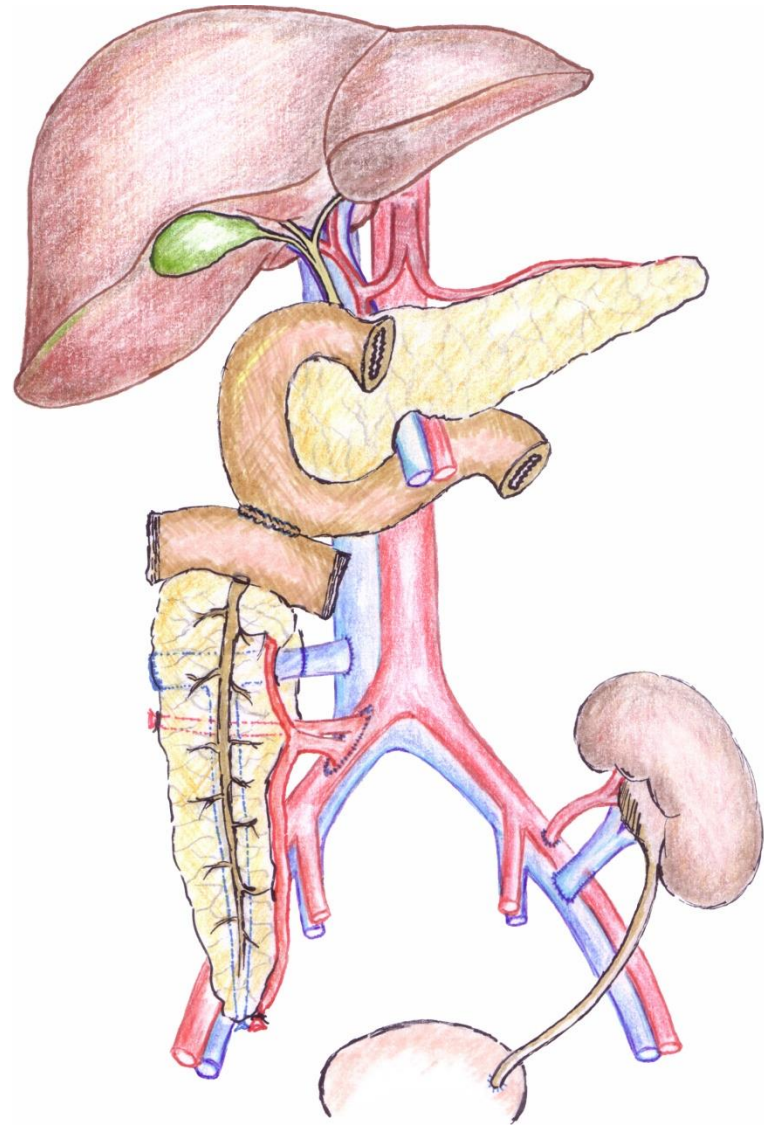
Control IQ

Omnipod 5

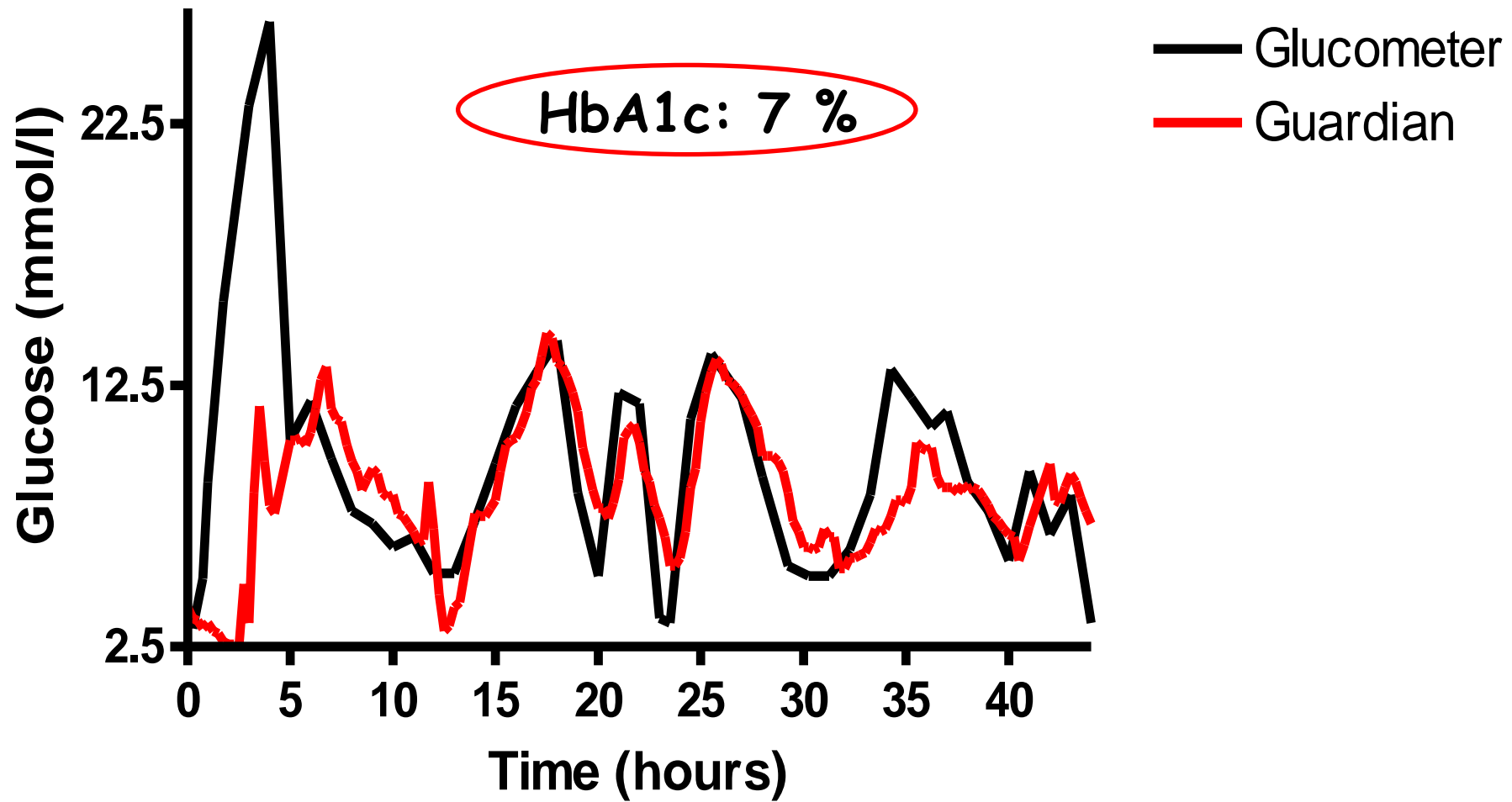


Islet of Langerhans - a microorgan





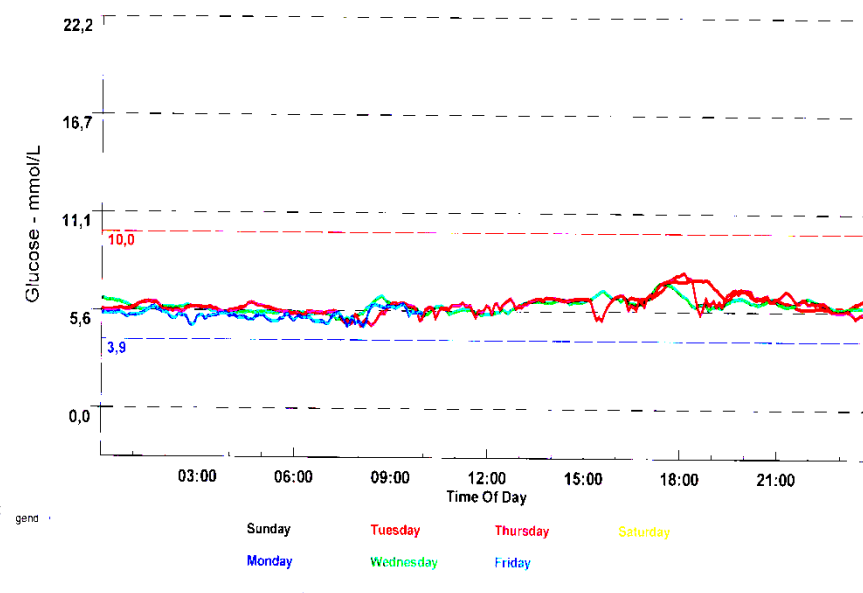
**Rune Horneland
2014**



24-timers glukosemåling i 3 døgn før og etter transplantasjon av single pankreas



Report Printed: 02.02.2010 08:26



Dr. Jenssen

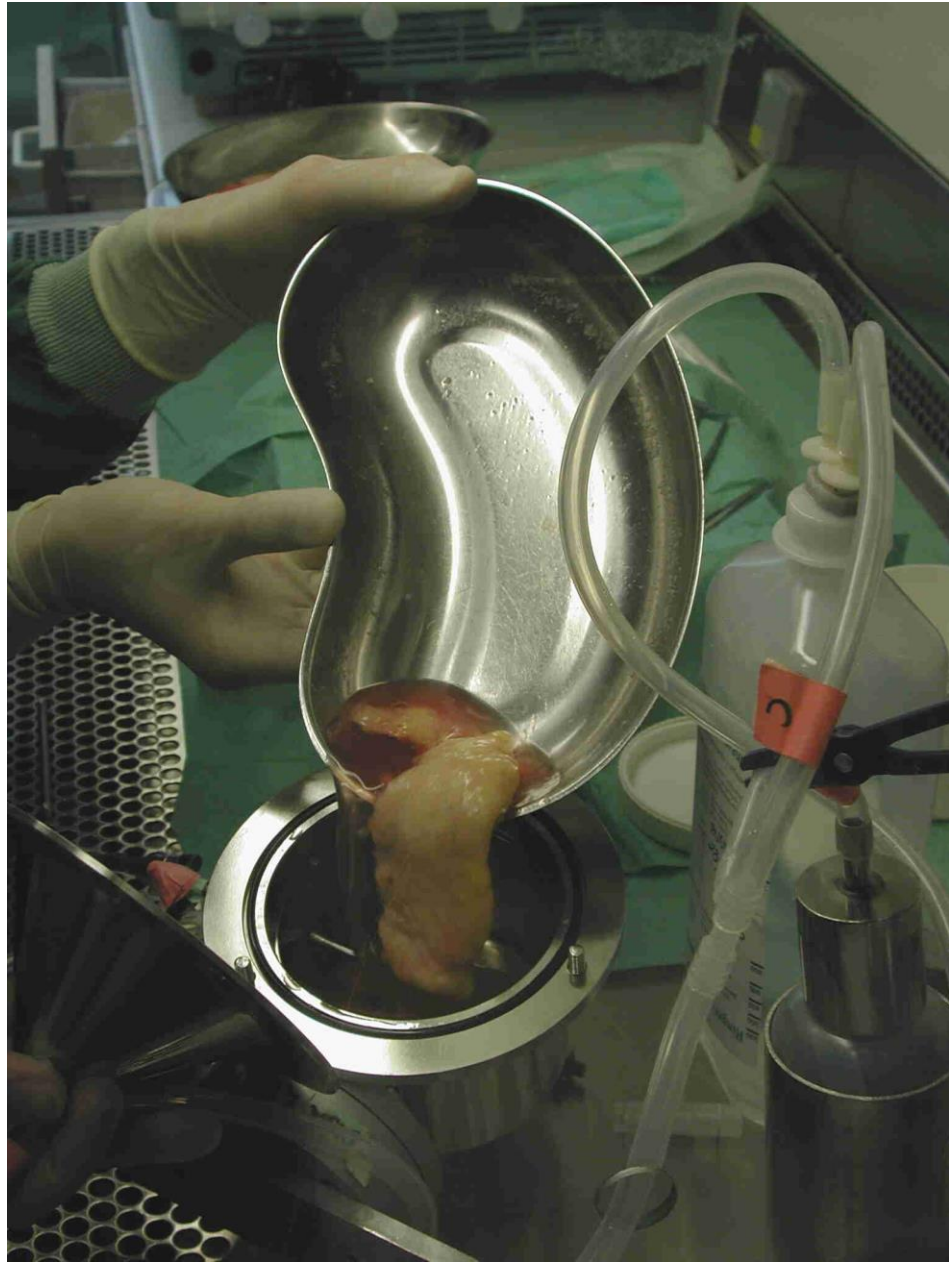
Report Printed: 31.08.2012 10:20

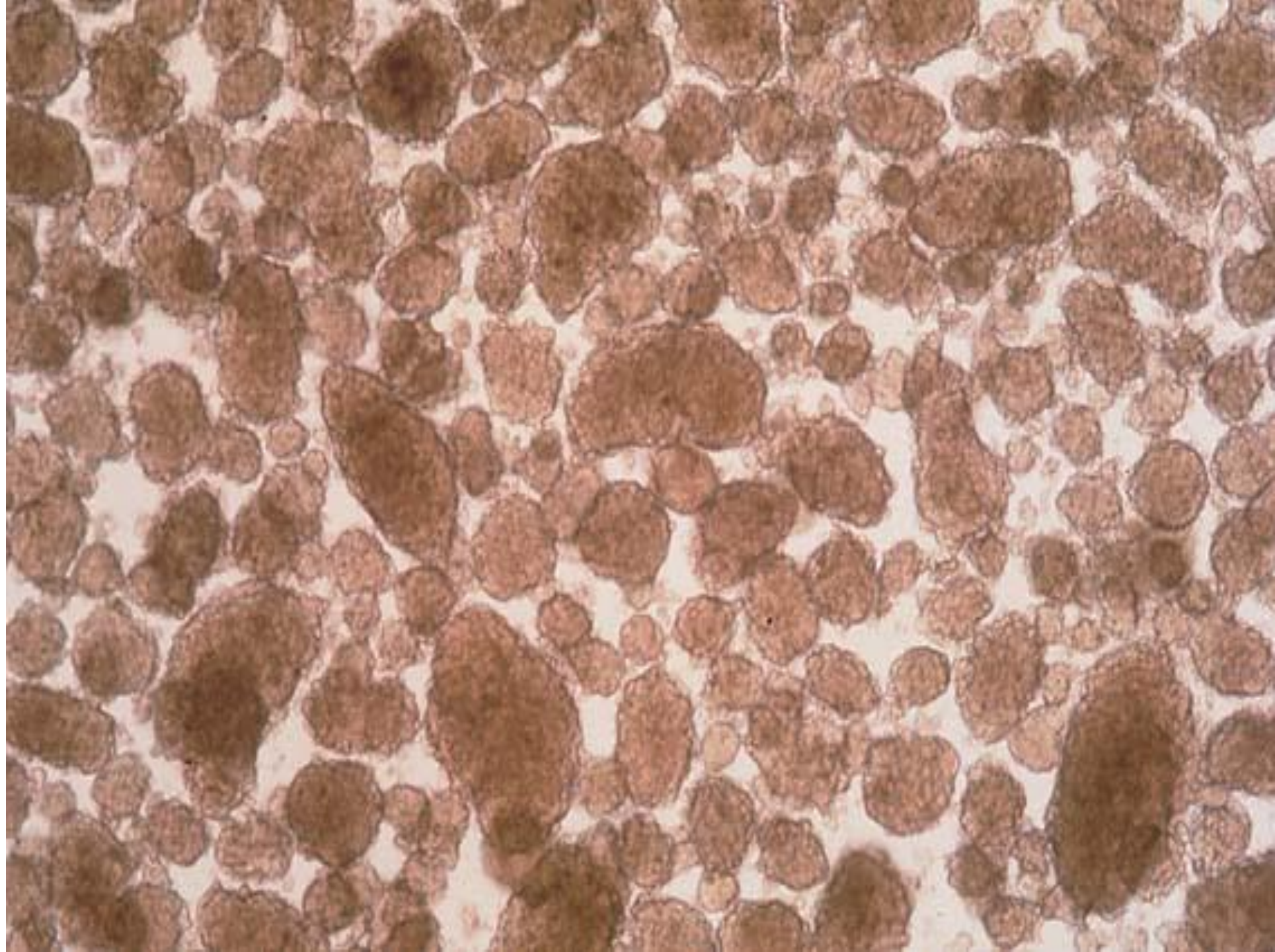


Øycelleisoleringslaboratoriet ved OUS

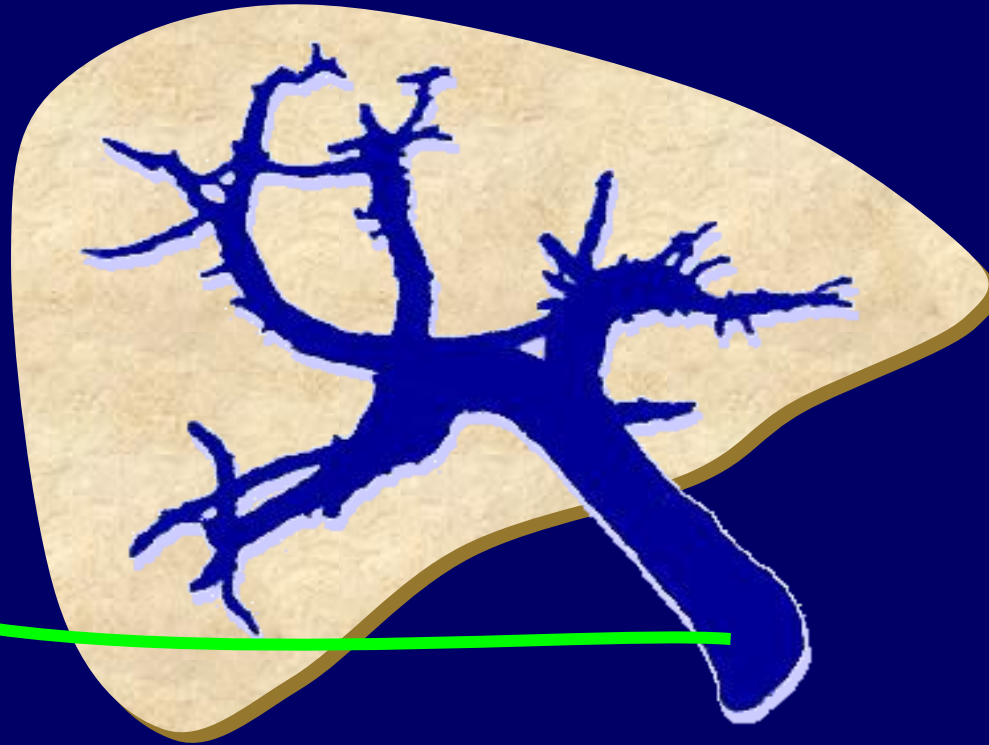
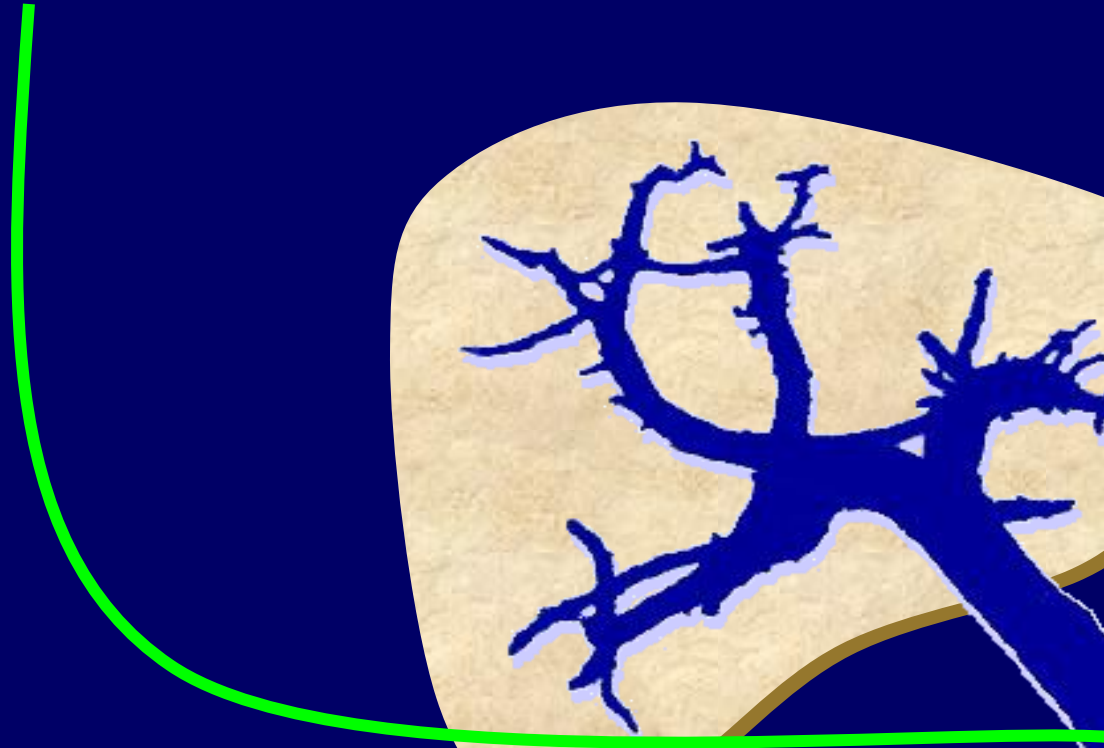
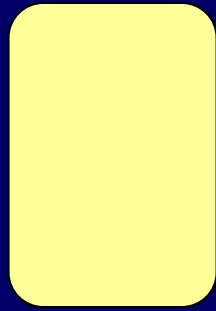


Seksjon for Celleterapi, Radiumhospitalet



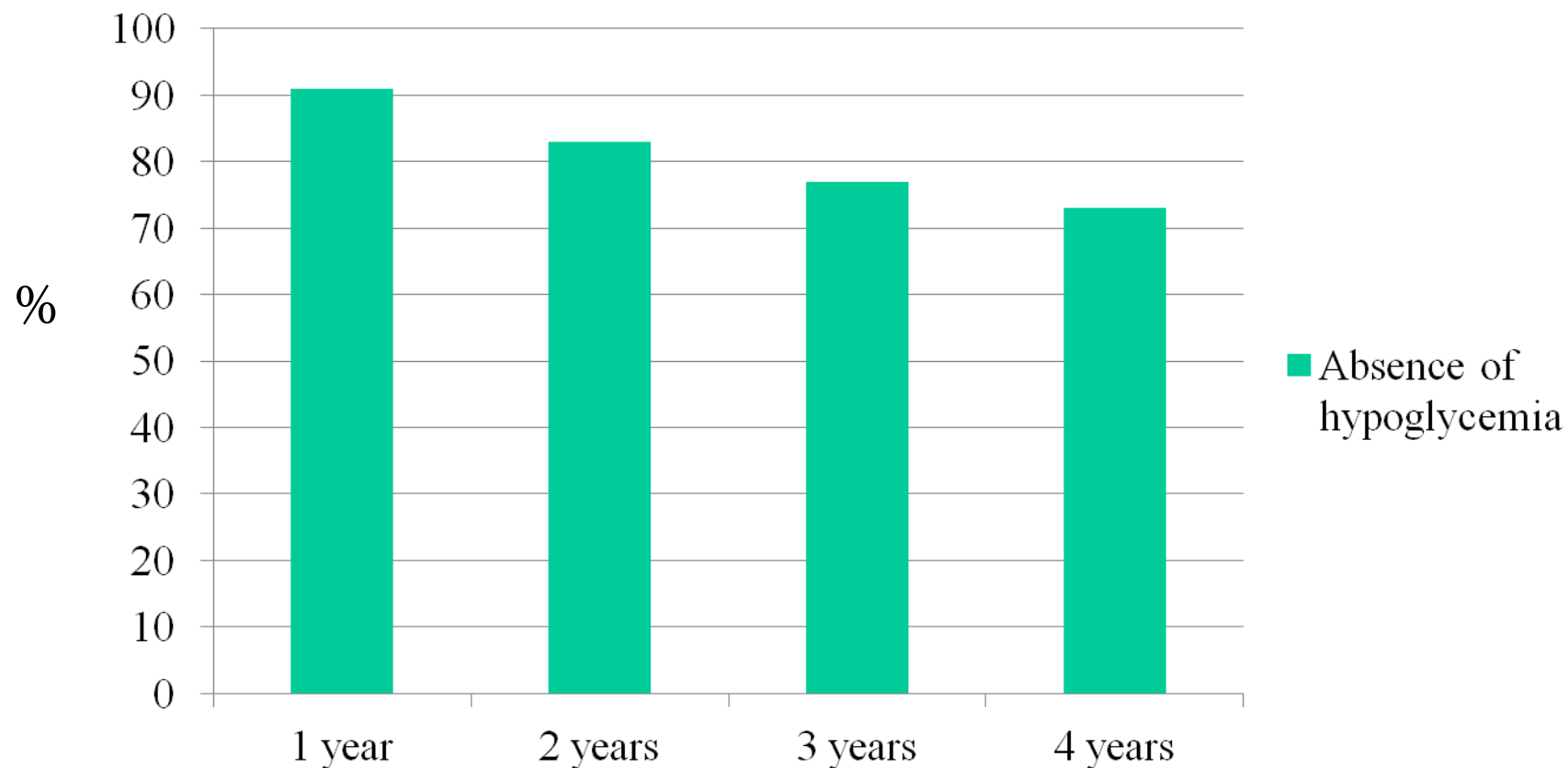


Islet infusion



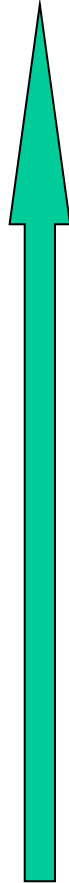
Clinical Islet Transplantation Registry

(n=347 allogeneic islet transplant recipients)



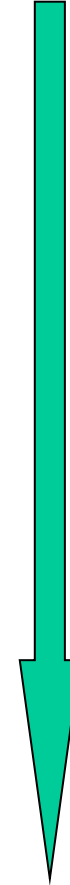
Hvem er kandidatene?

Pancreas tx



- Kronisk hyperglykemi (HbA1c > 10% «når alt annet har vært prøvd eller vurdert»)
- Glukosesensor løser ikke problemet tilfredsstillende
- Betydelig nedsatt livskvalitet på grunn av ustabile blodsukker
- Unawareness
- Clarke score ≥ 4

Øycelle tx



Insulinbehov ≥ 40 enh/ dag

Insulinbehov < 40 enh/ dag

Kontraindikasjoner

	Vaskulær pancreas	Øyceller
GFR < 30 ml/min/1.73 m ²	X	X
Uttalt arteriosklerose, og/ eller EF<30%	X	
Alder >60 år	X	
Aktivt stoffmisbruk Ukontrollert psyk. sykdom	X	X
Malignitet som ikke er i remisjon	X	X

Immunsuppresjon

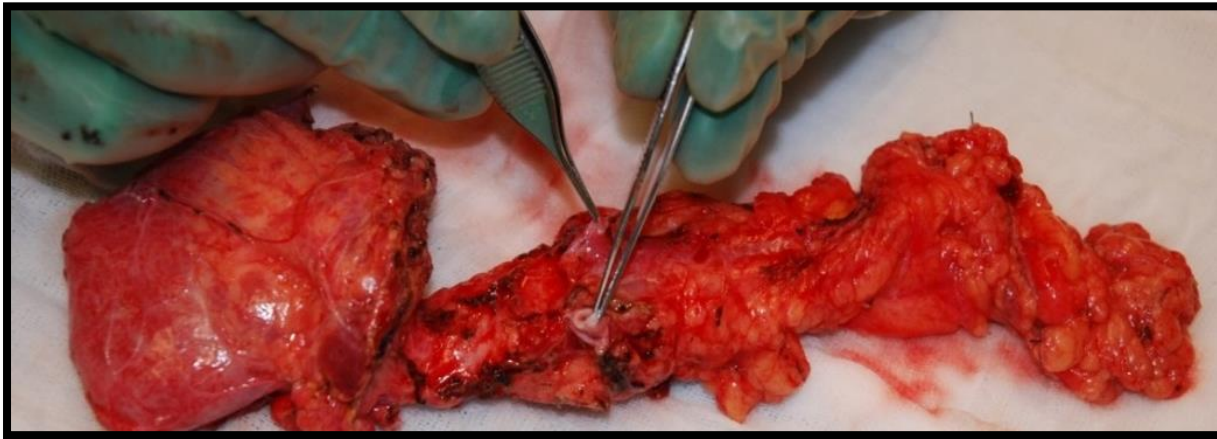
Øyceller

- Thymoglobulin eller basiliximab
- Calcineurin-hemmer
- MMF eller mTor hemmer

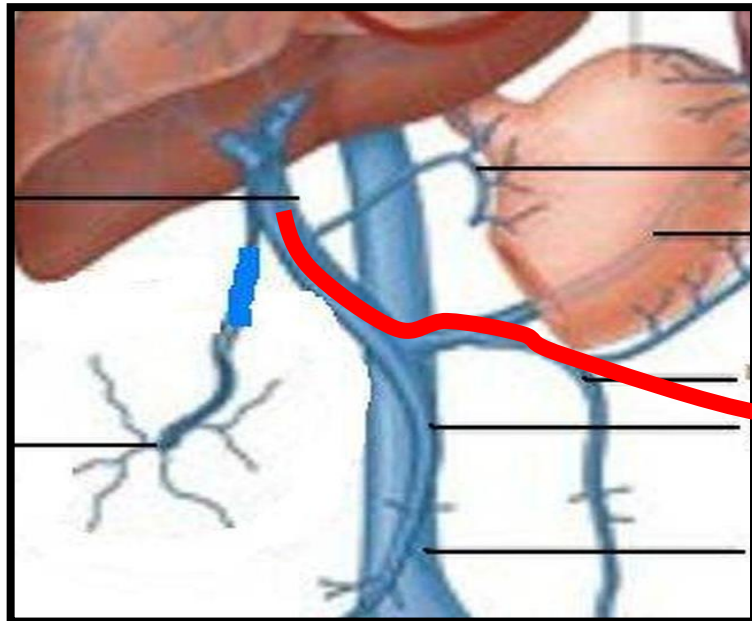
Hel pancreas

- Thymoglobulin
- Prednisolon
- Calcineurin-hemmer
- MMF

Total pankreatektomi med øycelletransplantasjon (TPIAT)

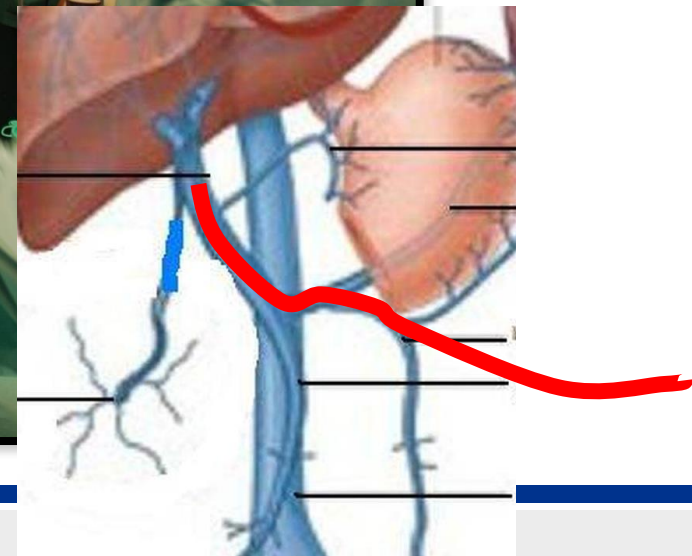
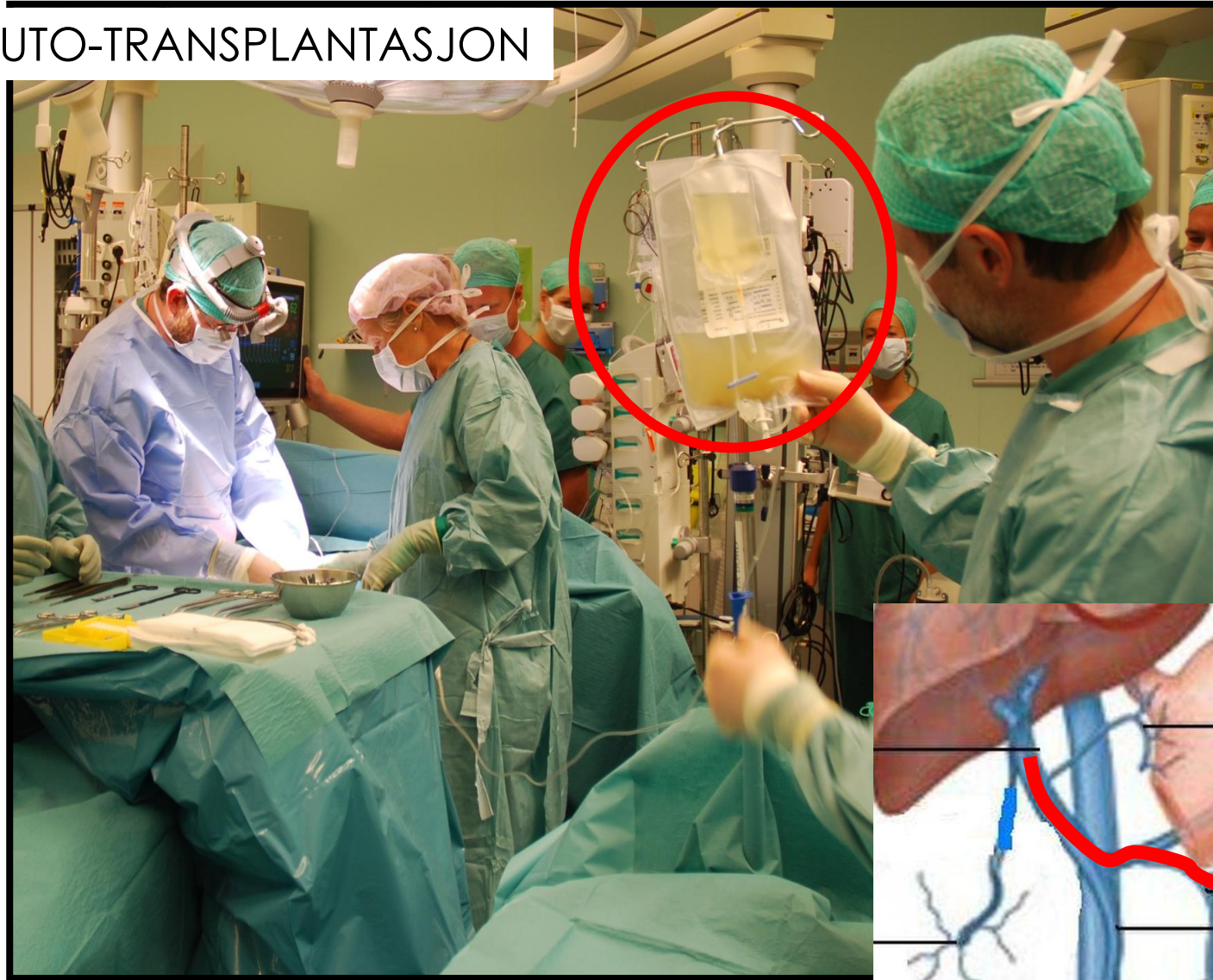


Øycelleisolasjon



To-lumen kateter fra
Vena mesenterica inferior til vena porta

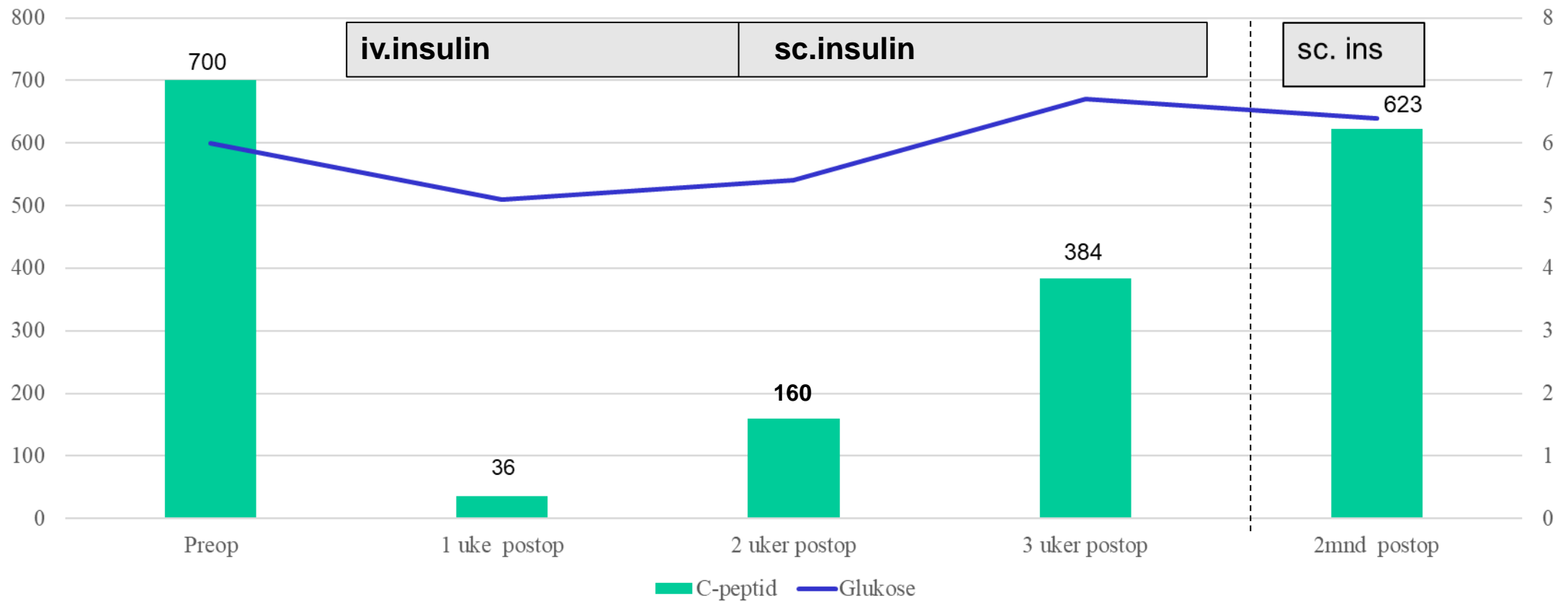
AUTO-TRANSPLANTASJON



Kvinne, 51 år

- Rheumatoid leddsykdom
- Juni 2020 idiopatisk pankreatitt-sykdom
- Smerter, daglig kvalme og oppkast, opiater
- 2021: Atrofisk pankreas, normale blodsukker
- Juni 2021:
 - Total pankreatoduodenektomi
 - Splenektomi
 - Autolog øycelle-transplantasjon

Forløp autolog øycelle-tx

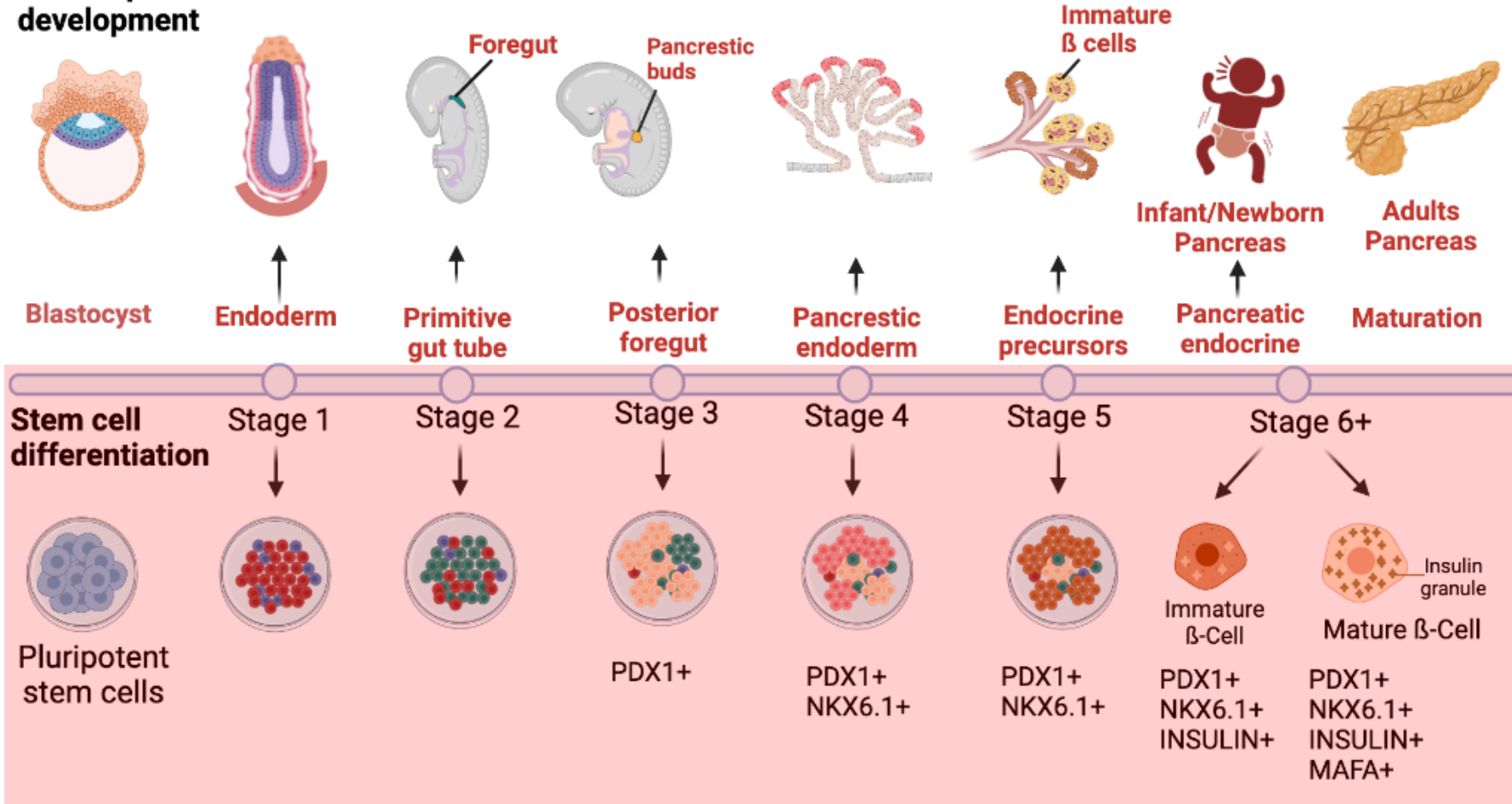


HbA1c 38 mmol/mol
6 enheter Lantus x 1
2 enheter Humalog/måltid

Hvordan lages nye betaceller (øyceller) fra stamceller?

~9 måneder versus 5 uker

Human pancreas development



In vivo



In vitro

Vertex har utviklet verdens første celleproduktet kalt VX-880
VX-880= allogene stamceller er brukt som en kilde til å lage
nye insulin-produserende «øyceller»

58th ANNUAL MEETING

European Association for the Study of Diabetes



19 - 23 September 2022

Stem Cell-Derived, Fully Differentiated Islet Cells for Type 1 Diabetes

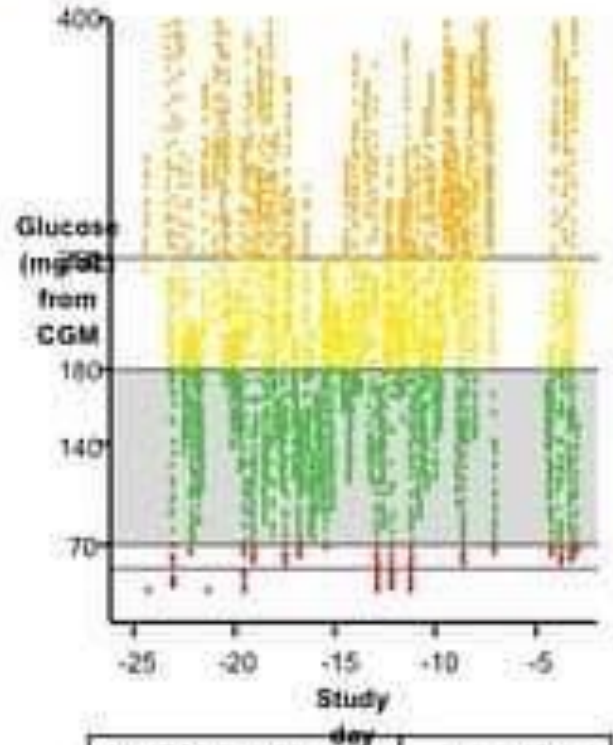
Camillo Ricordi¹, Ali Naji², Michael R. Rickels², Bote Bruinsma³, Gautham Marigowda³, Leorah Ross³, Chenkun Wang³, Felicia Pagliuca³, Bastiano Sanna³, Leslie S. Kean⁴, Anne Peters⁵, Piotr Witkowski⁶, James F. Markmann⁷

¹University of Miami, Miami, FL, US; ²University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, US; ³Vertex Pharmaceuticals Incorporated, Boston, MA, US; ⁴Seattle Children's Research Institute, Seattle, WA, US; ⁵University of Southern California, Los Angeles, CA, US; ⁶University of Chicago, Chicago, IL, US; ⁷Massachusetts General Hospital, Boston, MA, US

Presented at the 58th European Association for the Study of Diabetes Conference (EASD), September 19-23, 2022

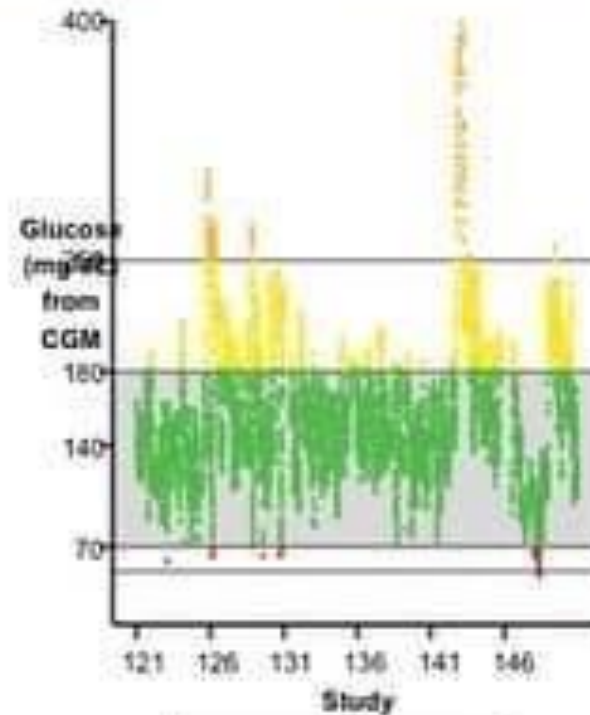
Patient 1 Achieved Insulin Independence with 99.9% Time in Range^a

Baseline



Daily Insulin	34 units
HbA1c	8.6%

Day 121-150

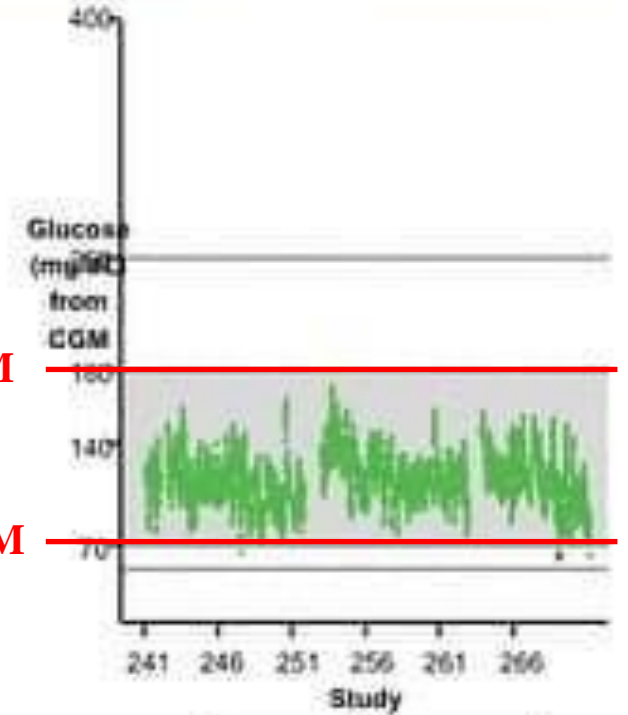


Daily Insulin	2.6 units
HbA1c	6.7%

Day 241-270

10 mM

3.8 mM



Daily Insulin	0 units
HbA1c	5.2%

**Insulin U/ dag
HbA1c (33 mmol/mol)**

Glucose values conversion: 1 mmol/L = 18 mg/dL

^aTime in range 70-180 mg/dL. Data from latest data cut evaluated (Day 241-Day 270)

CGM, continuous glucose monitoring

Takk for oppmerksomheten

