

Traitements chirurgicaux du diabète



Université Lille Nord de France



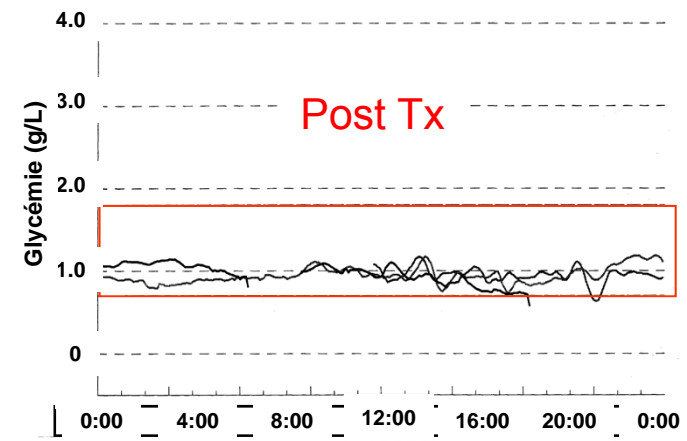
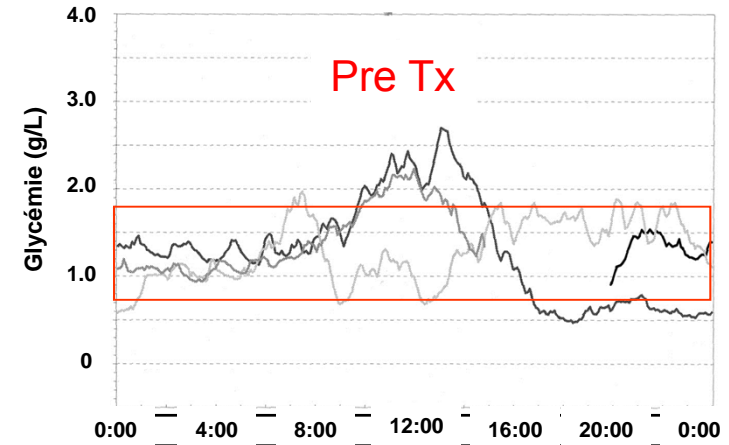
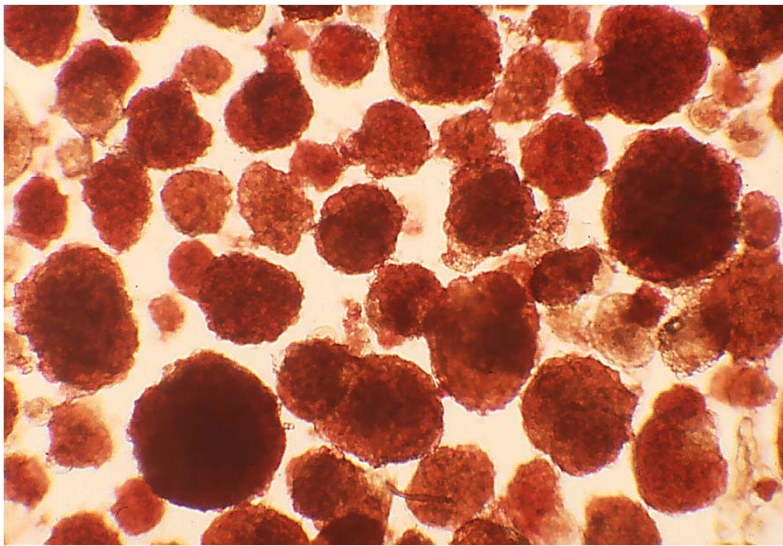
Francois Pattou

Chirurgie Générale et Endocrinienne, CHRU de Lille

INSERM UMR 859 - Biotherapies for Diabetes

LABEX - European genomic institute for diabetes

Thérapie cellulaire / diabète de type 1



Pattou et al. *New England J Med* 2010

Vantyghem et al. *J Clin Endocrinol Metab* 2012

Diabète de type 2



**> 4 % de la population française
17 milliards d'euros de dépenses de sante en 2011**



diabetes care

GREAT BUY!

The shelf is organized into several sections:

- Top Shelf:** Medications including Aspirin, Advil, Tylenol, and various vitamins.
- Second Shelf:** Glucose meters and test strips, including OneTouch Ultra and UltraMini.
- Third Shelf:** More glucose meters and test strips, including Accu-Chek and Breeze2.
- Fourth Shelf:** Insulin pens and cartridges, including Accu-Sol and Accu-Check.
- Fifth Shelf:** Diabetic supplements like Glucerna, Extensil, and Nepro, along with fish oil and vitamins.
- Sixth Shelf:** Additional diabetic supplements and products.
- Bottom Shelf:** More diabetic supplements and products.

Price tags are visible on each shelf, indicating various sale prices. A sign on the right side of the shelf asks: "Q: Can I find these monitoring strips? A: Yes, available in the pharmacy." A hanging display of "Wipes" is also visible on the right side.

TeleGreen
3/5 4

Chirurgie métabolique ?

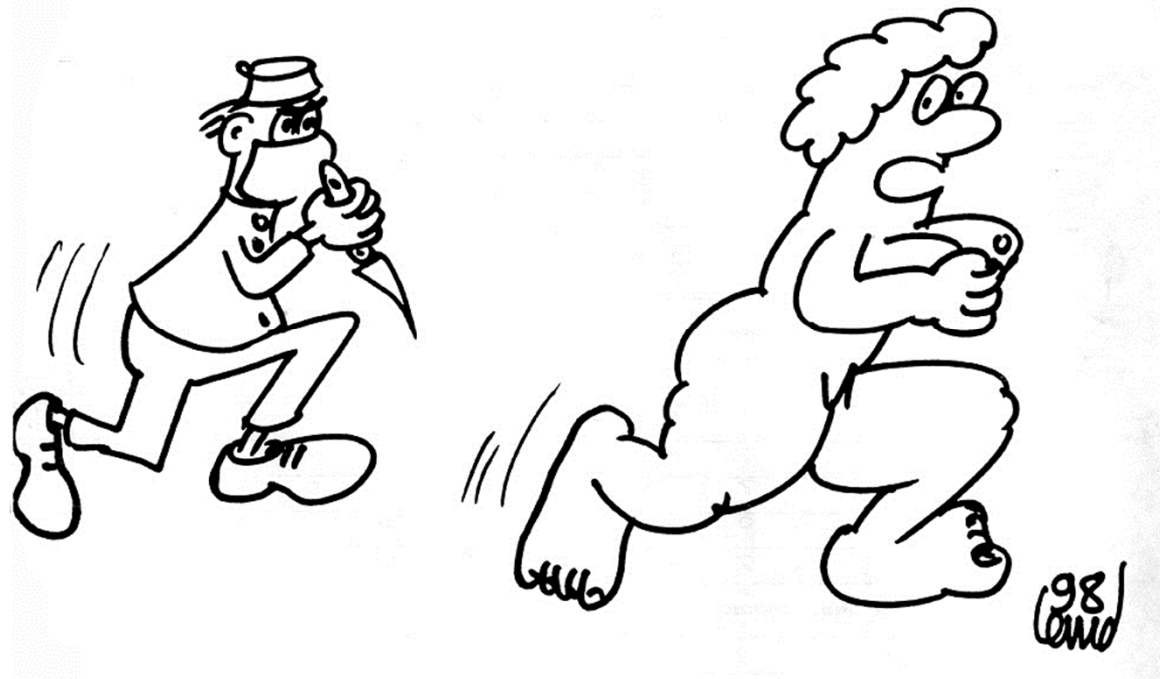


Efficace

Explicable

Durable

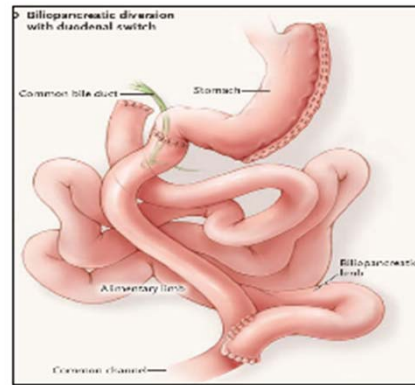
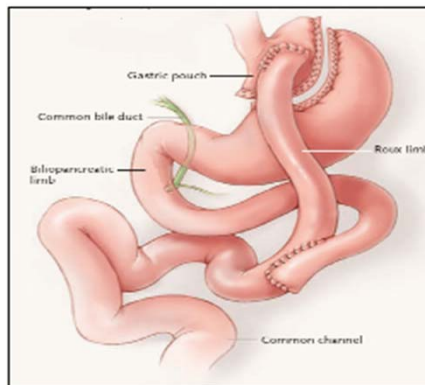
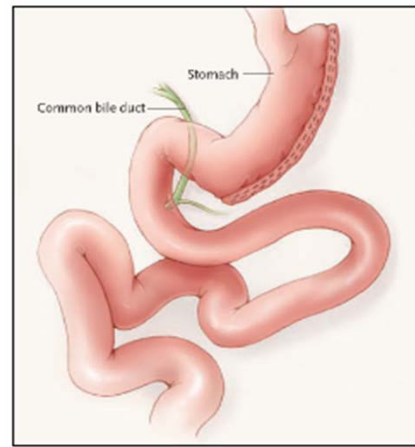
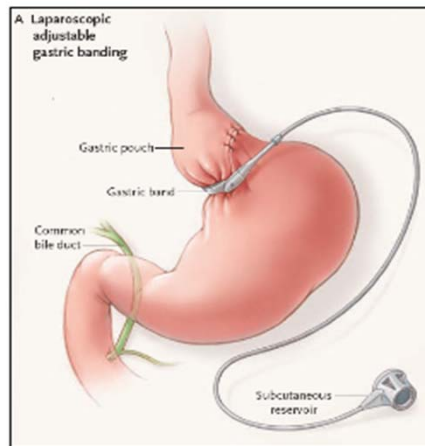
Sur



Chirurgie bariatrique

Gastric banding

Sleeve gastrectomy

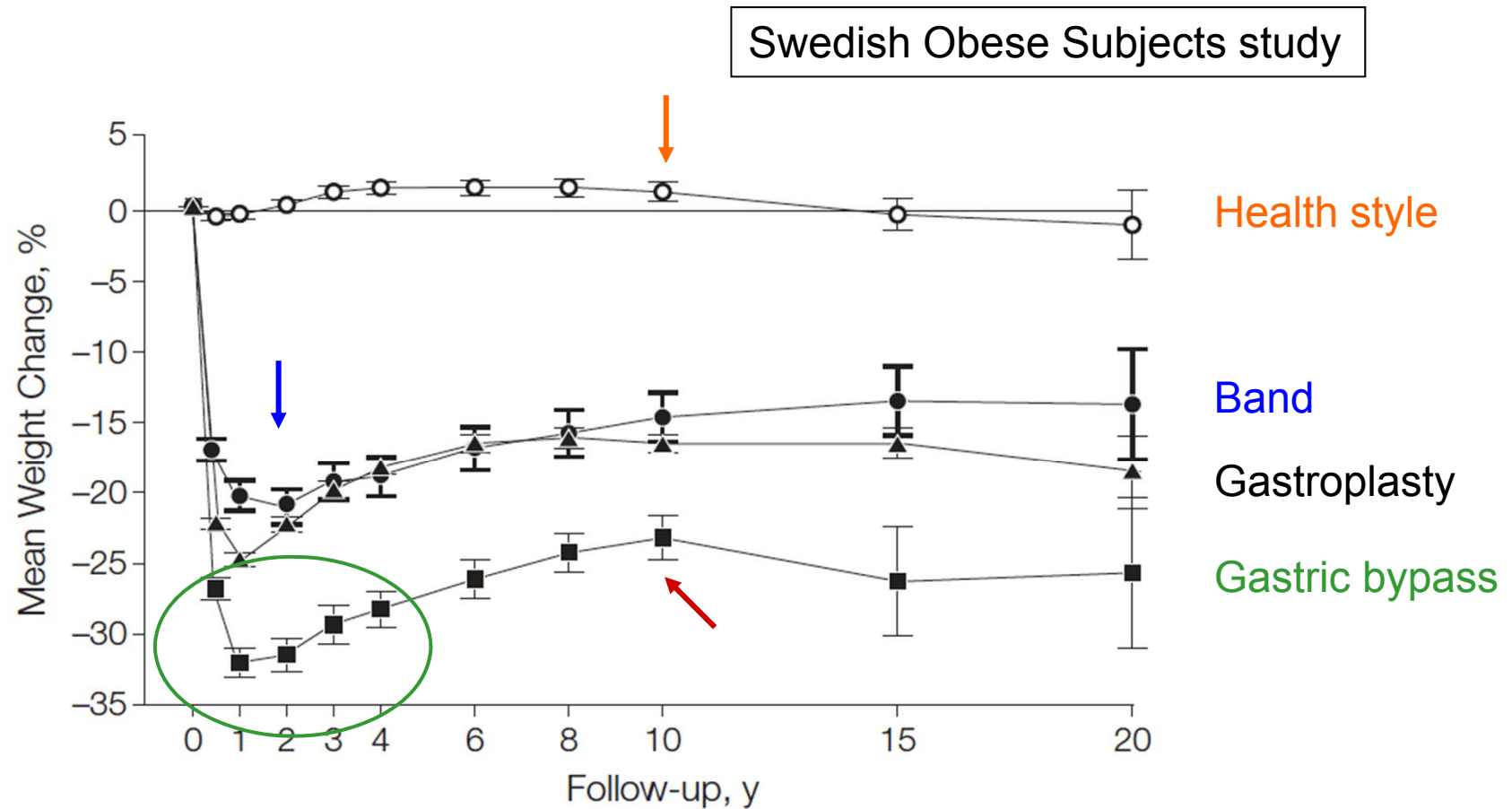


Gatric bypass

Duodenal switch

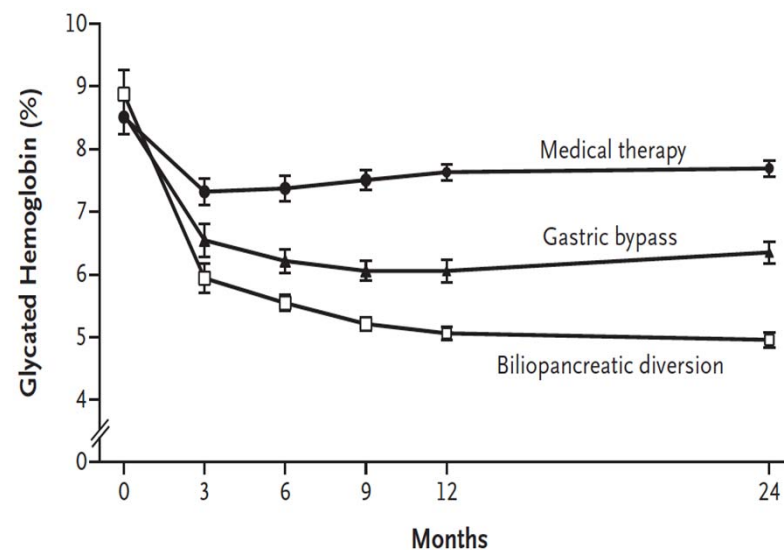
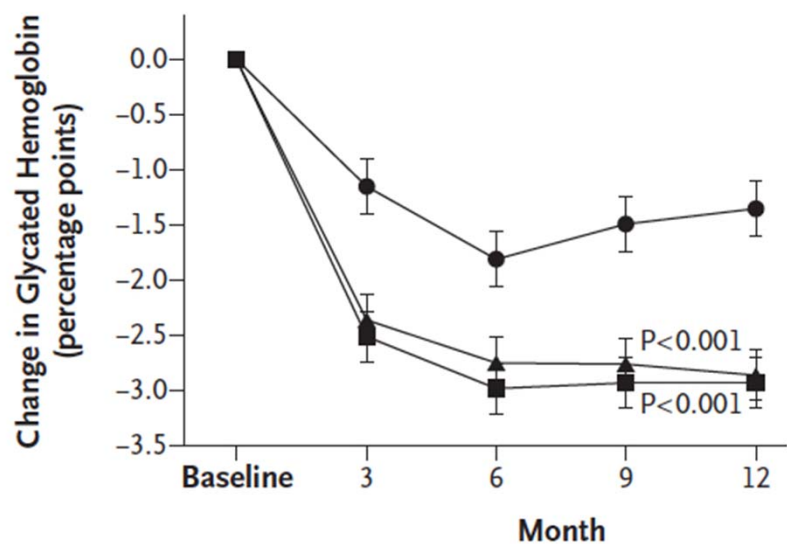
> 35 000
interventions / an
en France

Perte de poids



Sjostrom et al. *New Engl J Med* 2004 ; 2007 - *JAMA* 2012

Surgery or Medical Therapy for Obese Patients with Type 2 Diabetes?



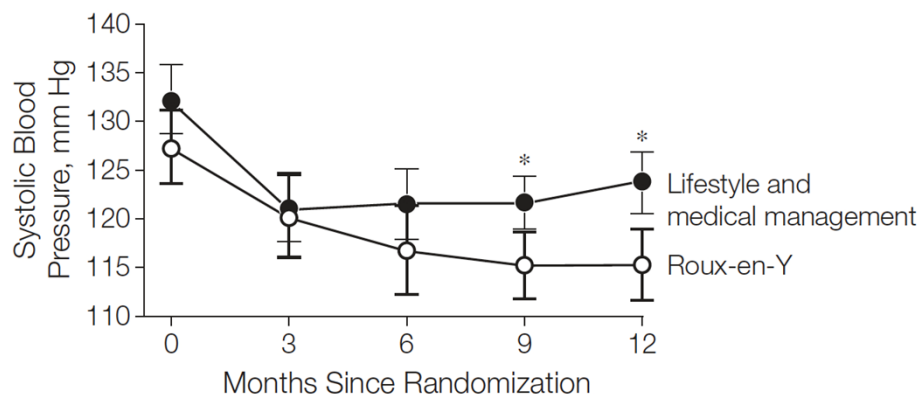
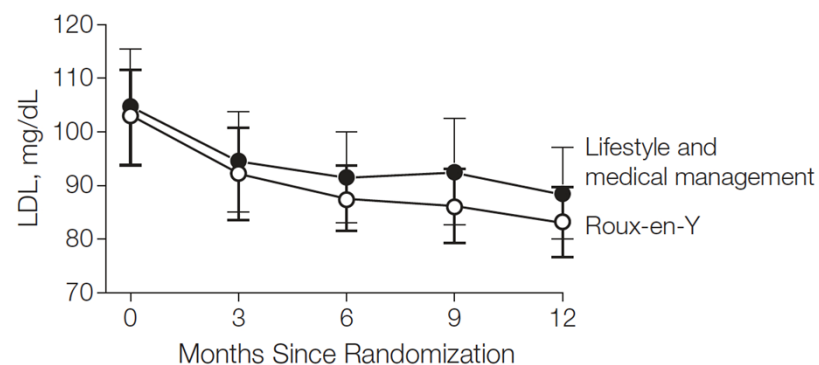
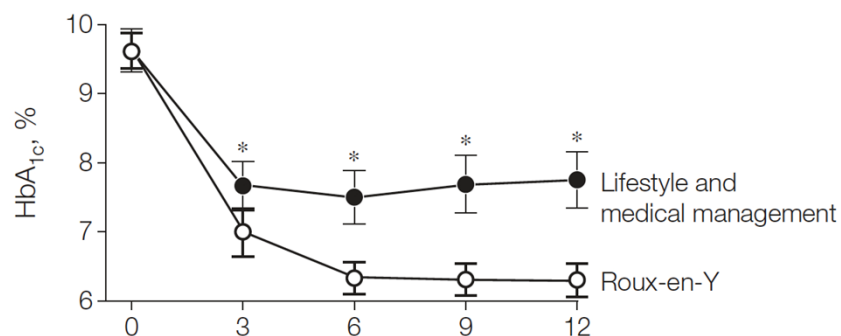
Value at Visit

Intensive medical therapy	8.9	7.7	7.1	7.4	7.5
Roux-en-Y gastric bypass	9.3	6.8	6.3	6.4	6.4
Sleeve gastrectomy	9.5	7.1	6.7	6.7	6.6

Schauer et al , Mingrone et al. New Engl J Med 2012 On line (26/03)

Contrôle du diabète

Best medical care **alone (60)** vs **gastric bypass (60)**



Composite end point

HbA_{1c} < 7.0%

LDL cholesterol < 100 mg/dL

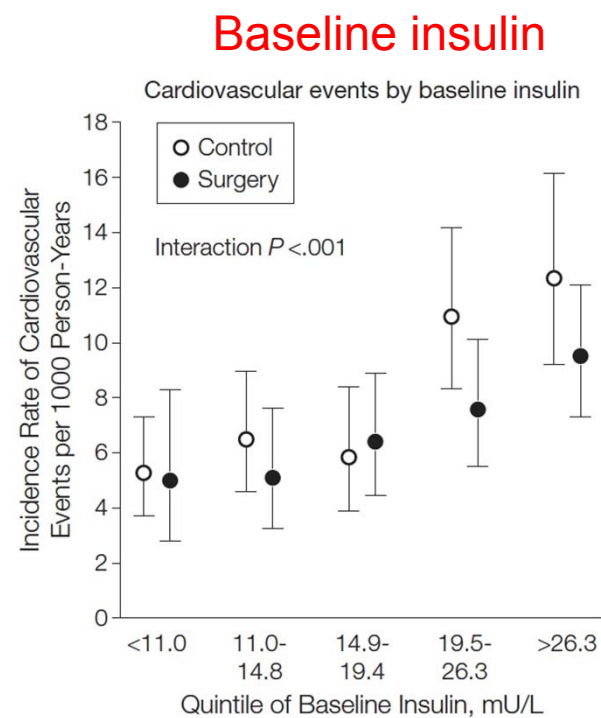
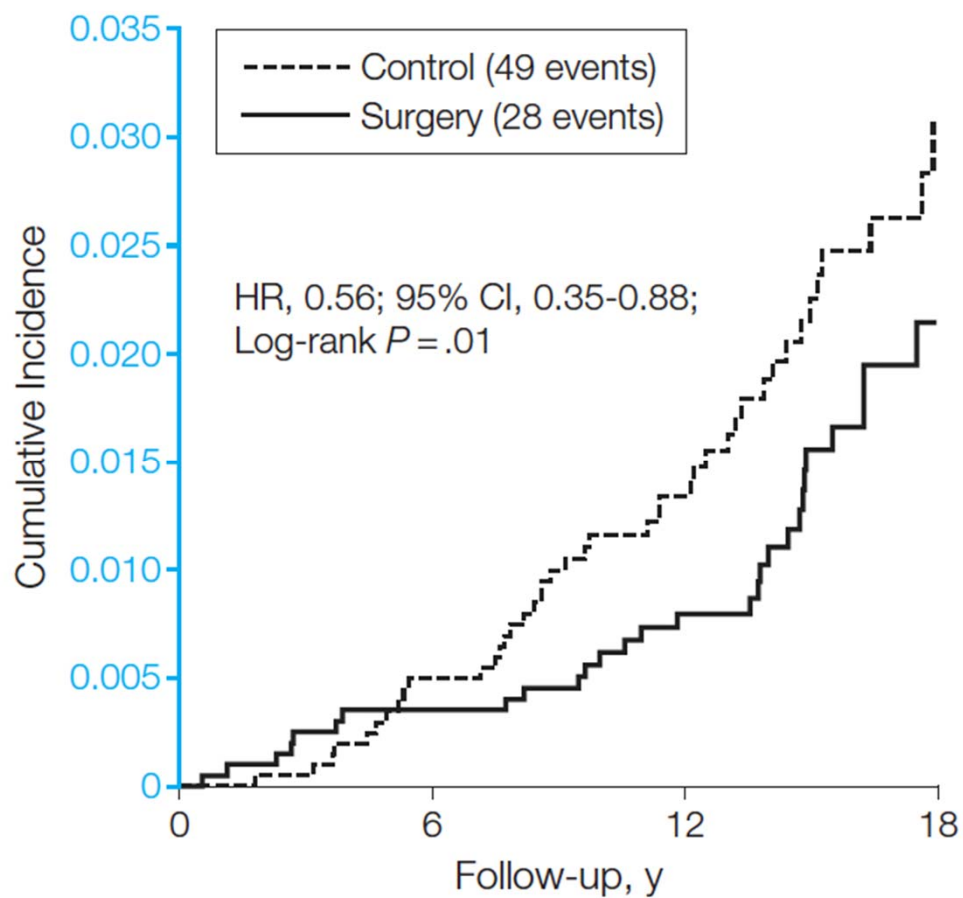
PA systolique < 130 mm Hg

19% vs **49%**

Odds ratio **4.8** (95% CI, 1.9-11.7)

Ikramuddin et al et al. *JAMA* 2012

Chirurgie et mortalité / obèses

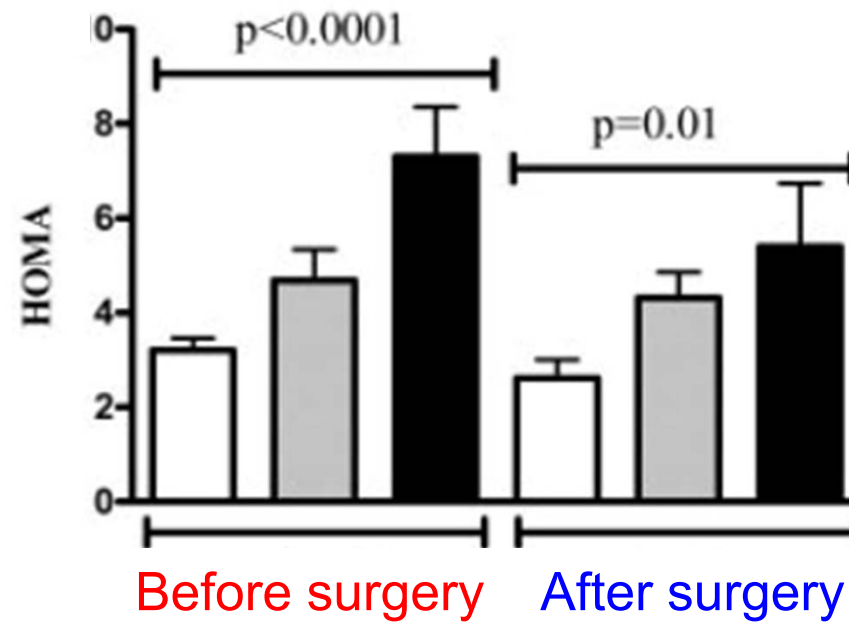


Sjostrom *JAMA* 2012

Effet transgénérationnel



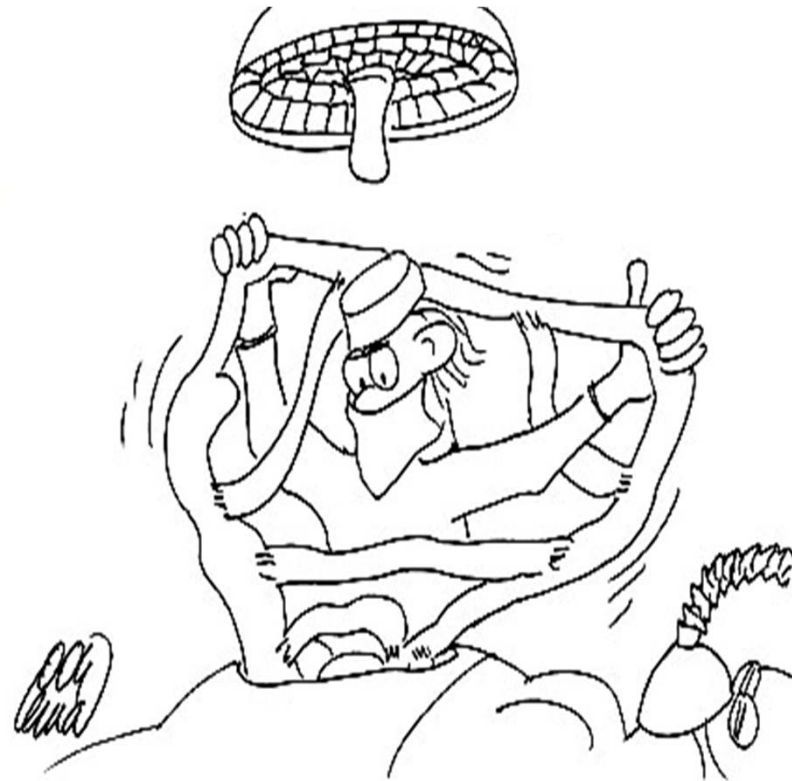
Enfants nés de mères obèses **avant** vs **après** chirurgie



Smith et al. J Clin Endocrinol Metab 2009

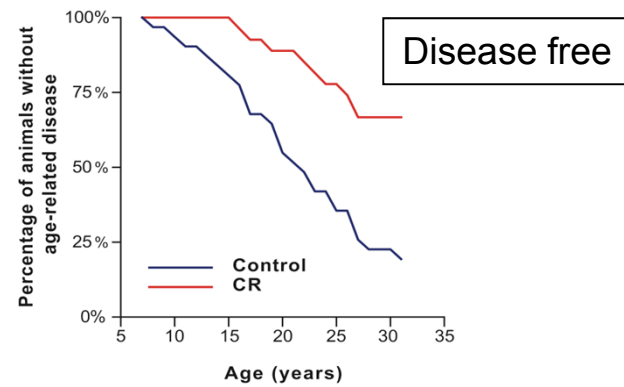
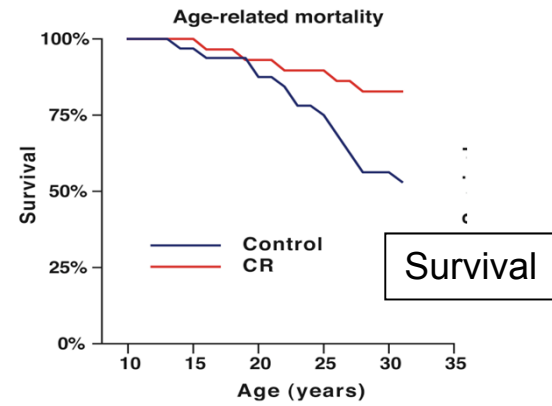
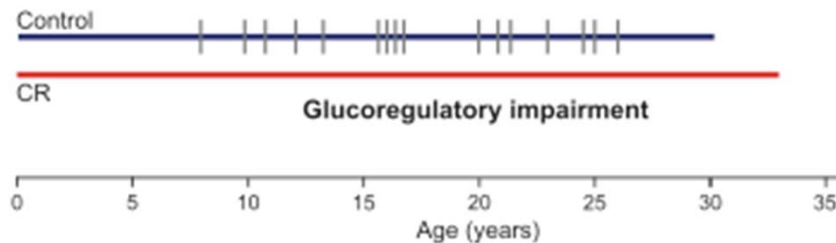
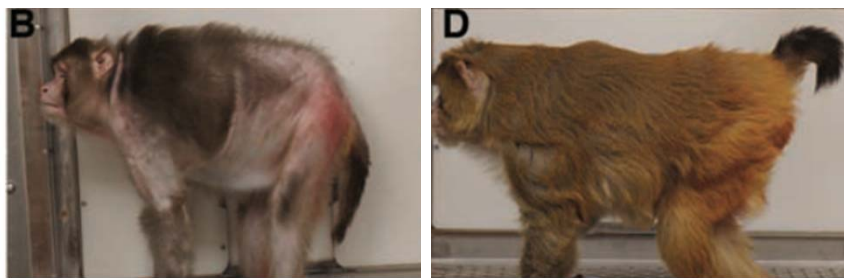
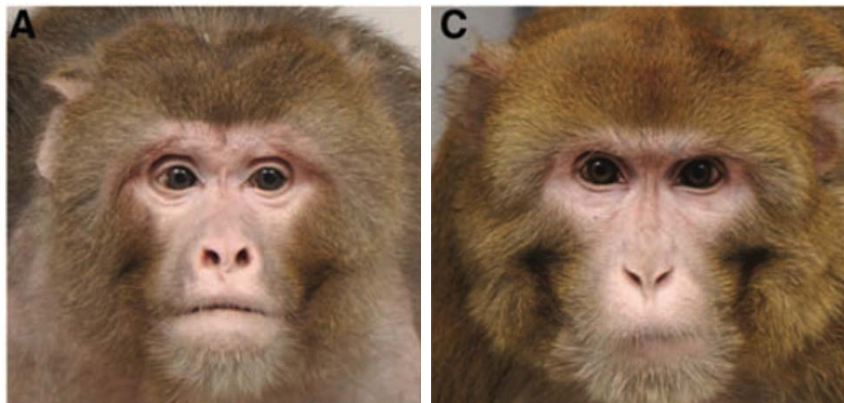
Guenard et al. PNAS 2013

1. Explicable ?



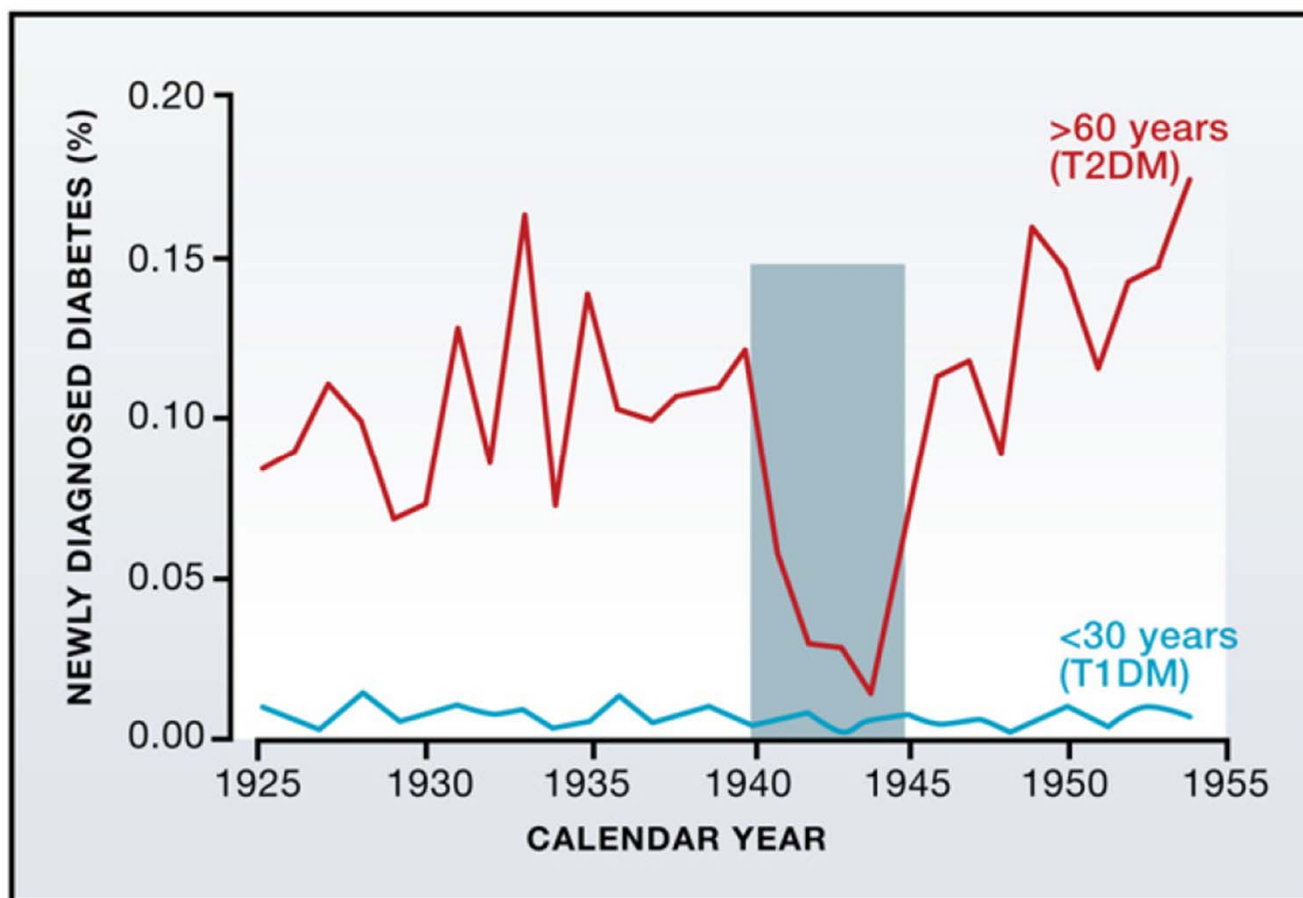
Life long caloric restriction

Fed *ad libitum* **30% caloric**

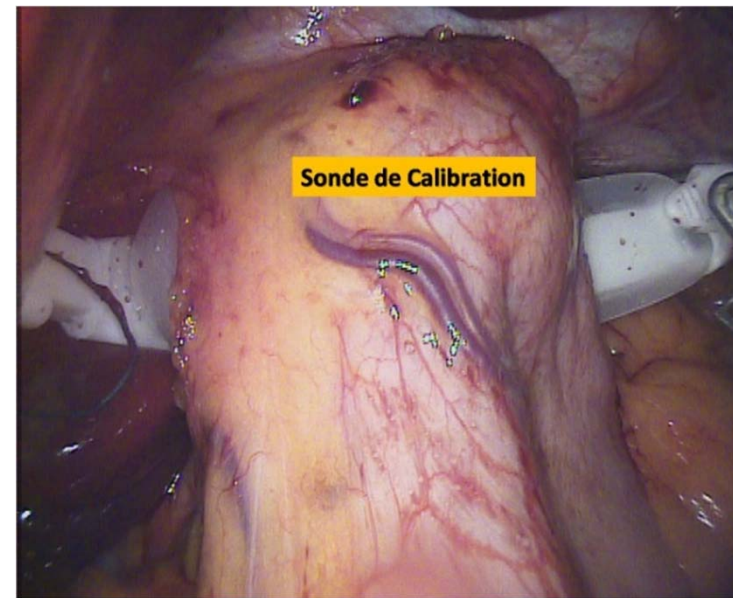
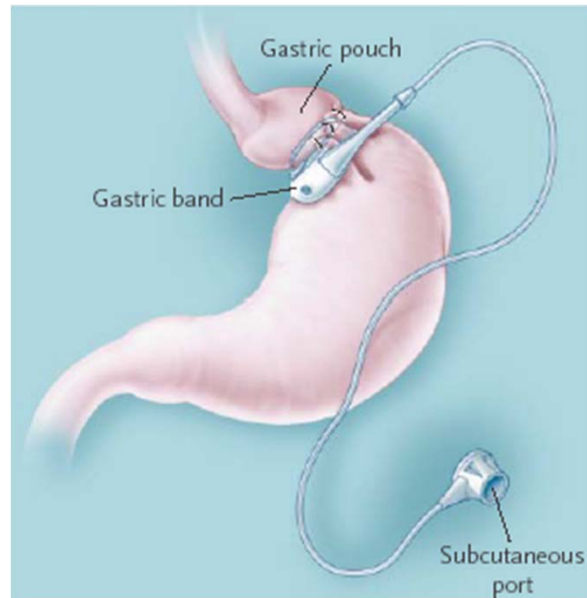


Colman et al *Science* 2009

Diabetes incidence

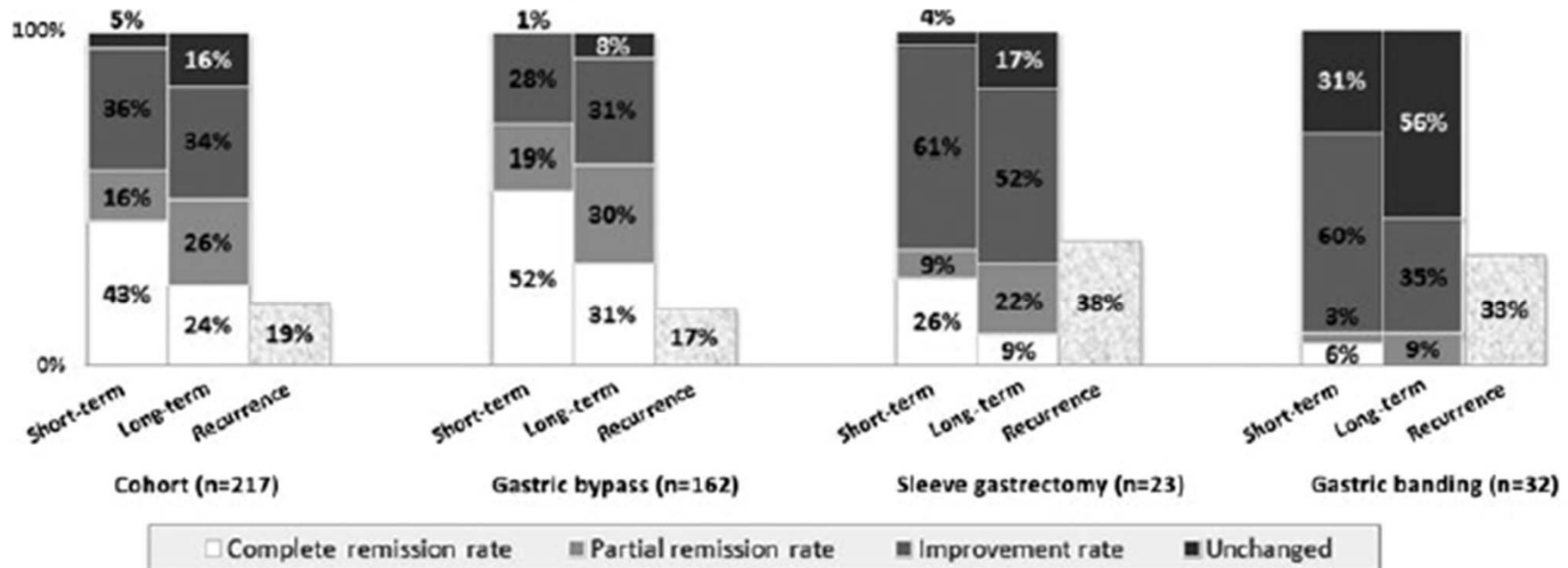
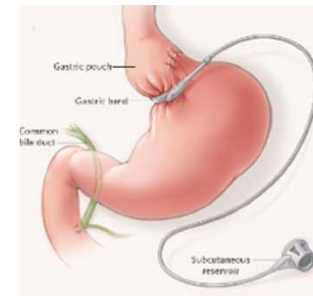
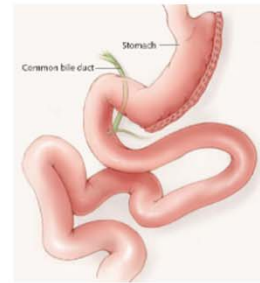
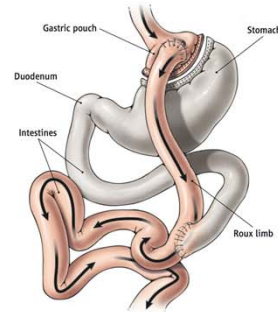


Restriction anatomique

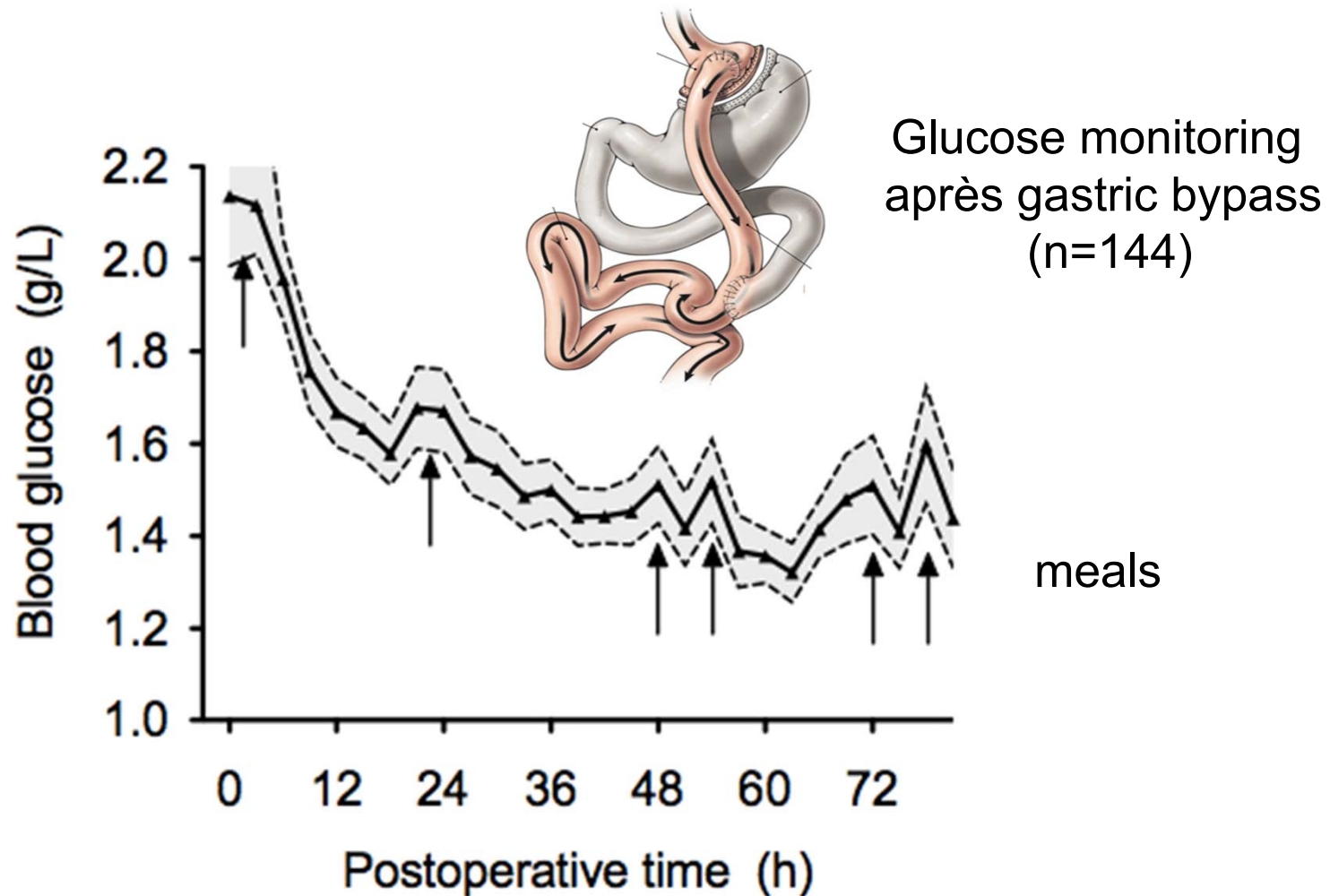


Les interventions ne sont pas égales

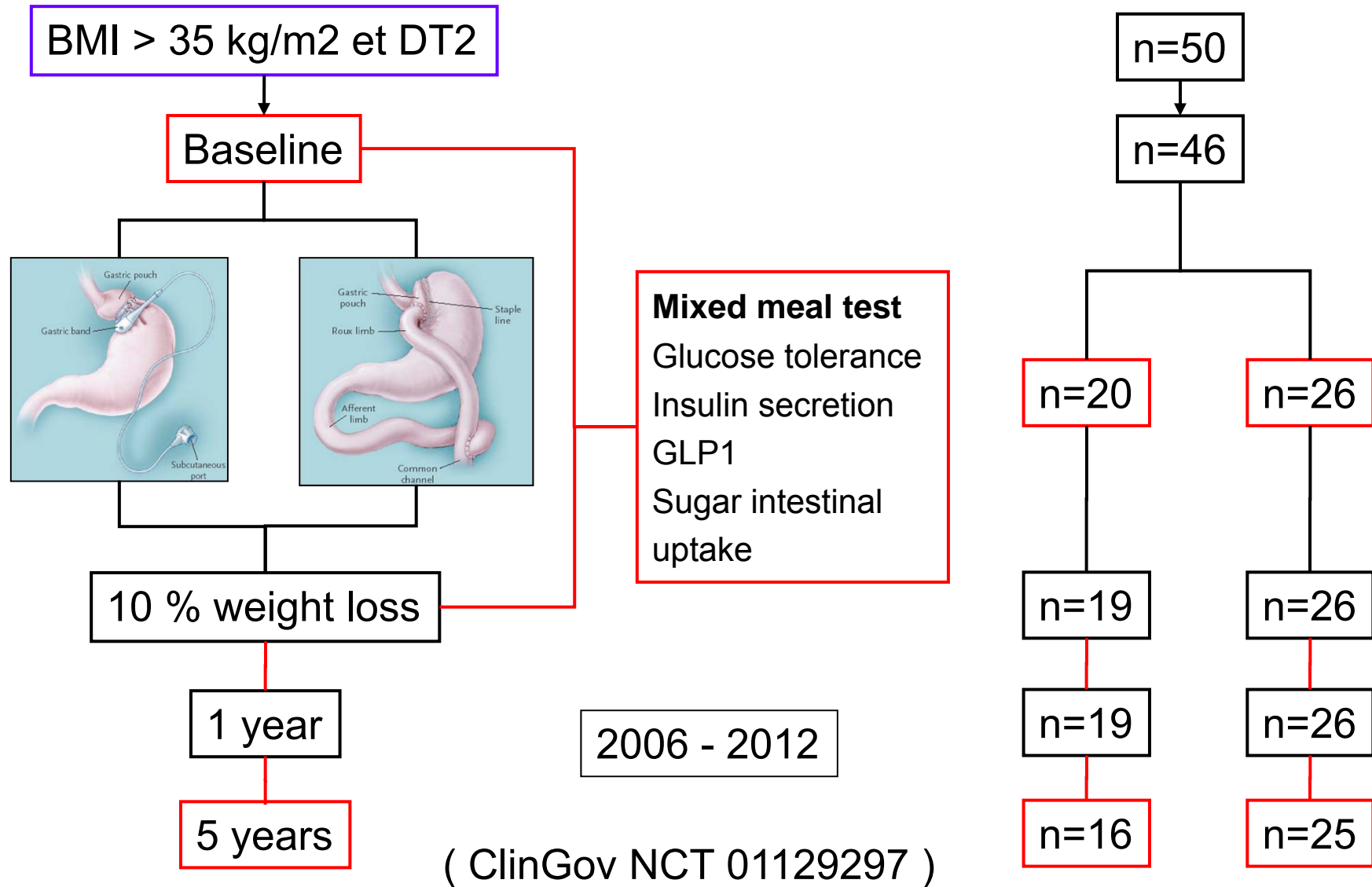
217 patients with diabetes



Effet indépendant de la perte de poids ?



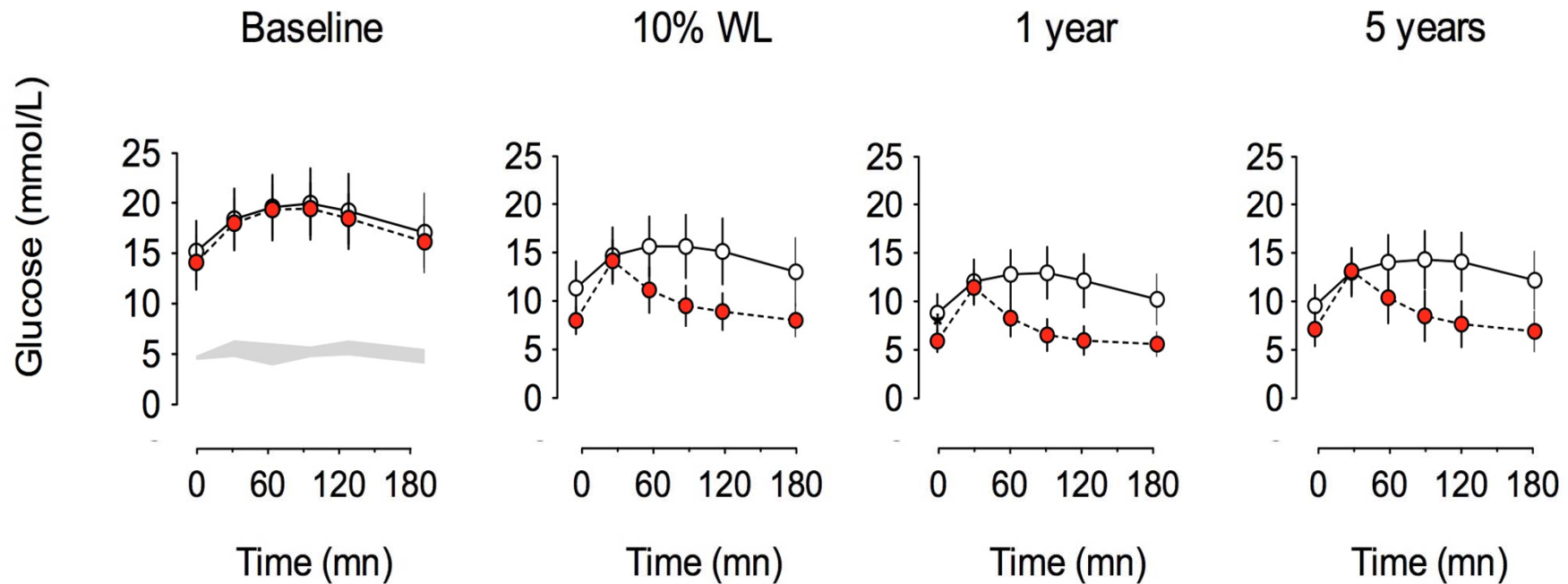
Obediab study



Excursion glycémique postprandiale



Longitudinal mixed meal test study in **diabetic** individuals (OBEDIAB)



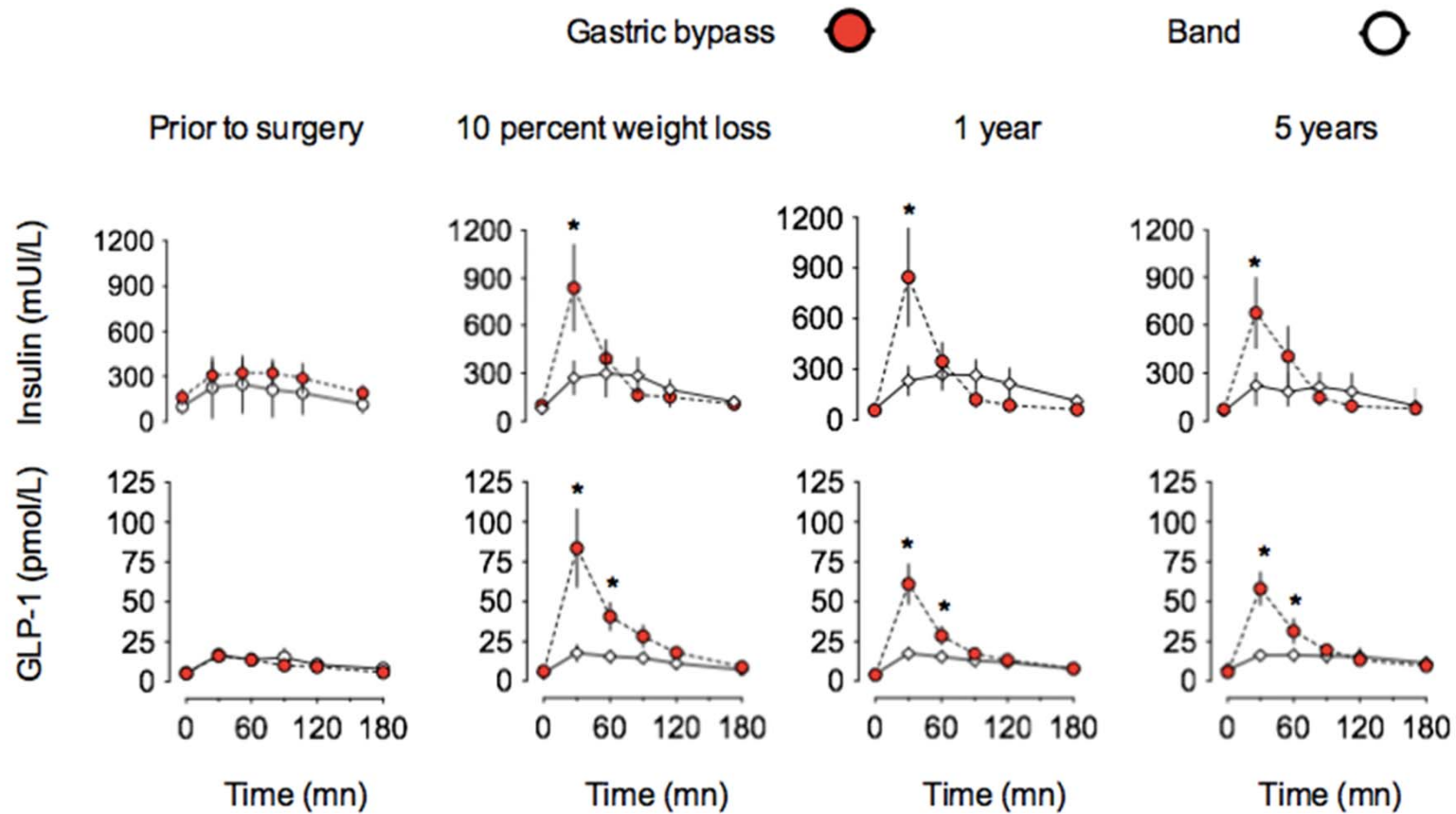
Healthy controls (n=10) / **Gastric bypass (n=26)** / Band (n=20)

(unpublished data)

Changement hormonaux



Longitudinal mixed meal test study in **diabetic** individuals (OBEDIAB)

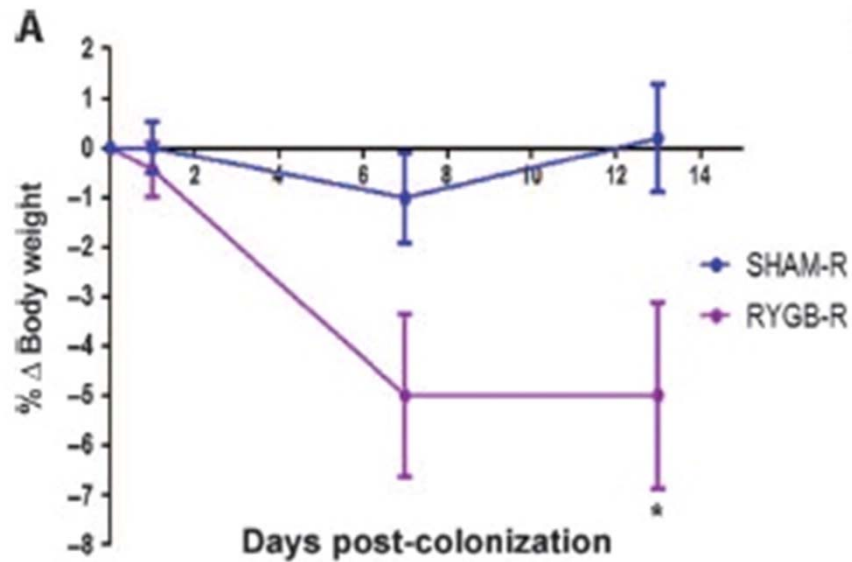


(unpublished data)

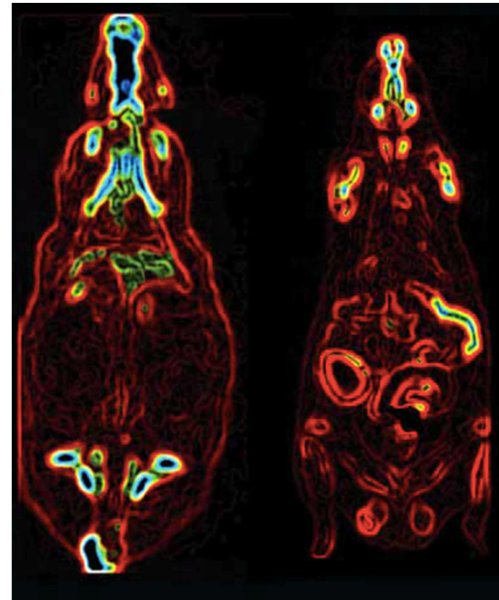
Intestin et diabète ?

Microbiote ?

Glucose intestinal uptake ?

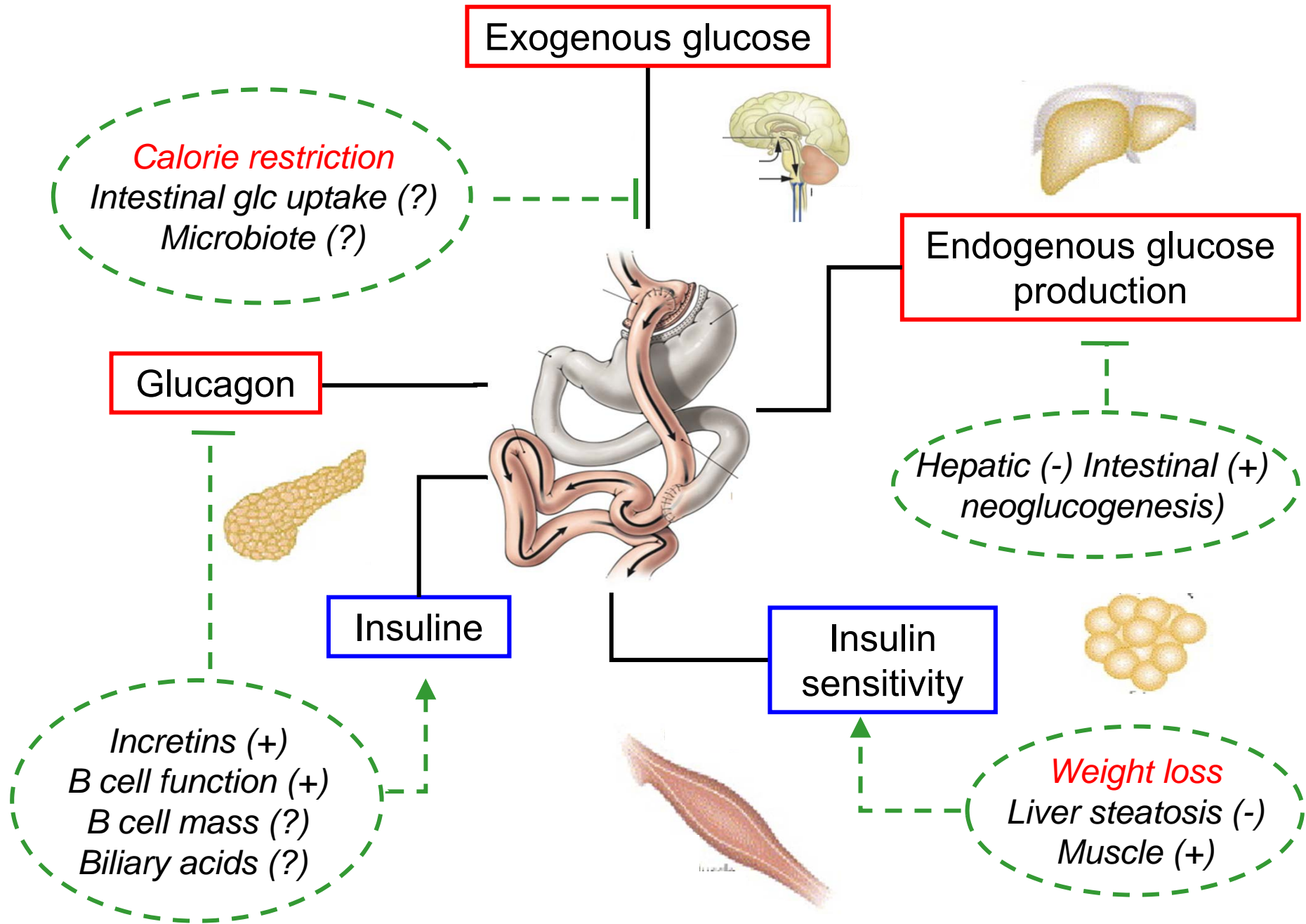


B

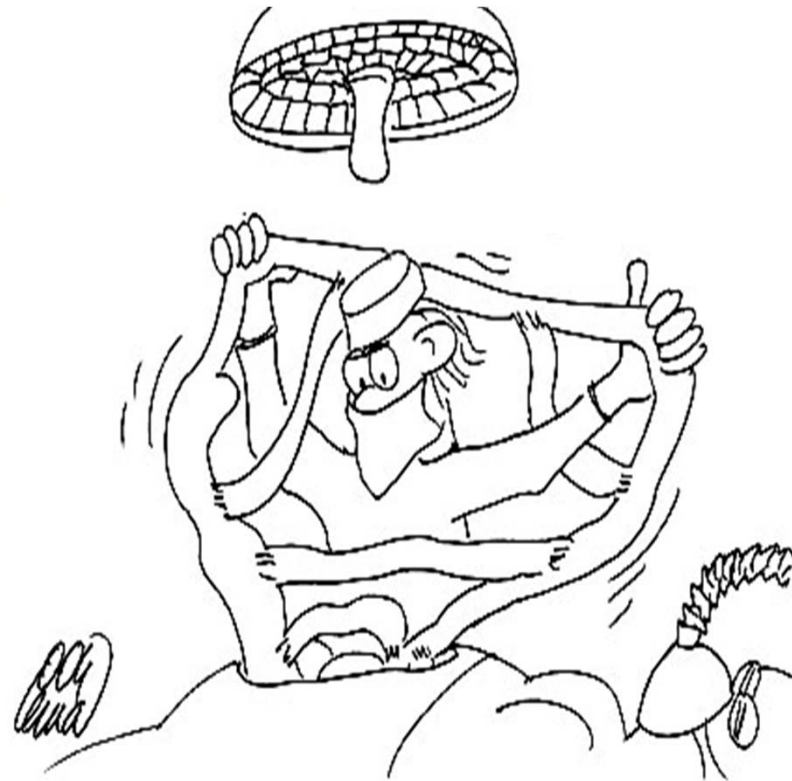


Liou *Science Translat Med* 2013

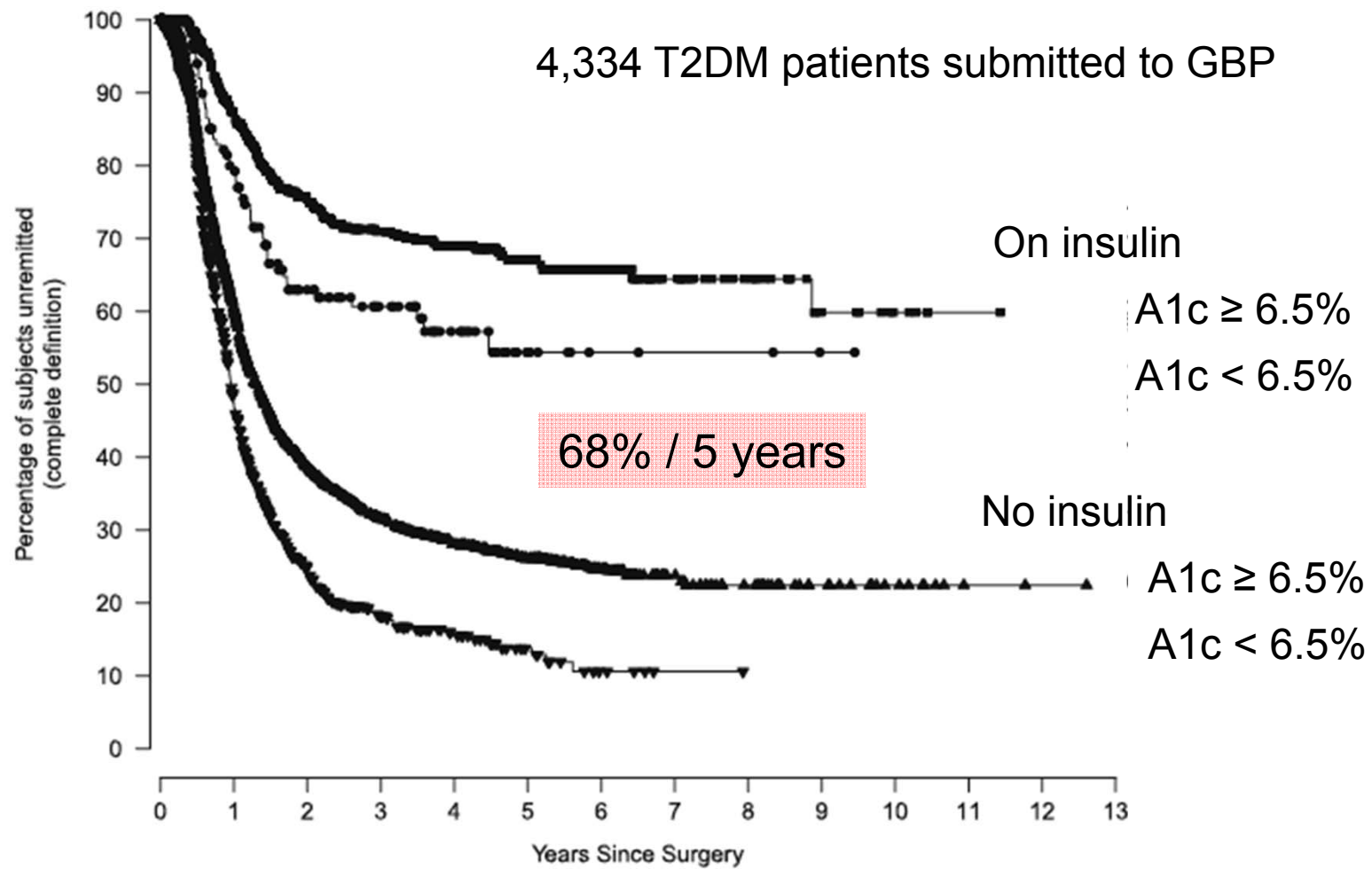
Saeidi *Science* 2013



2. Prédicible ?



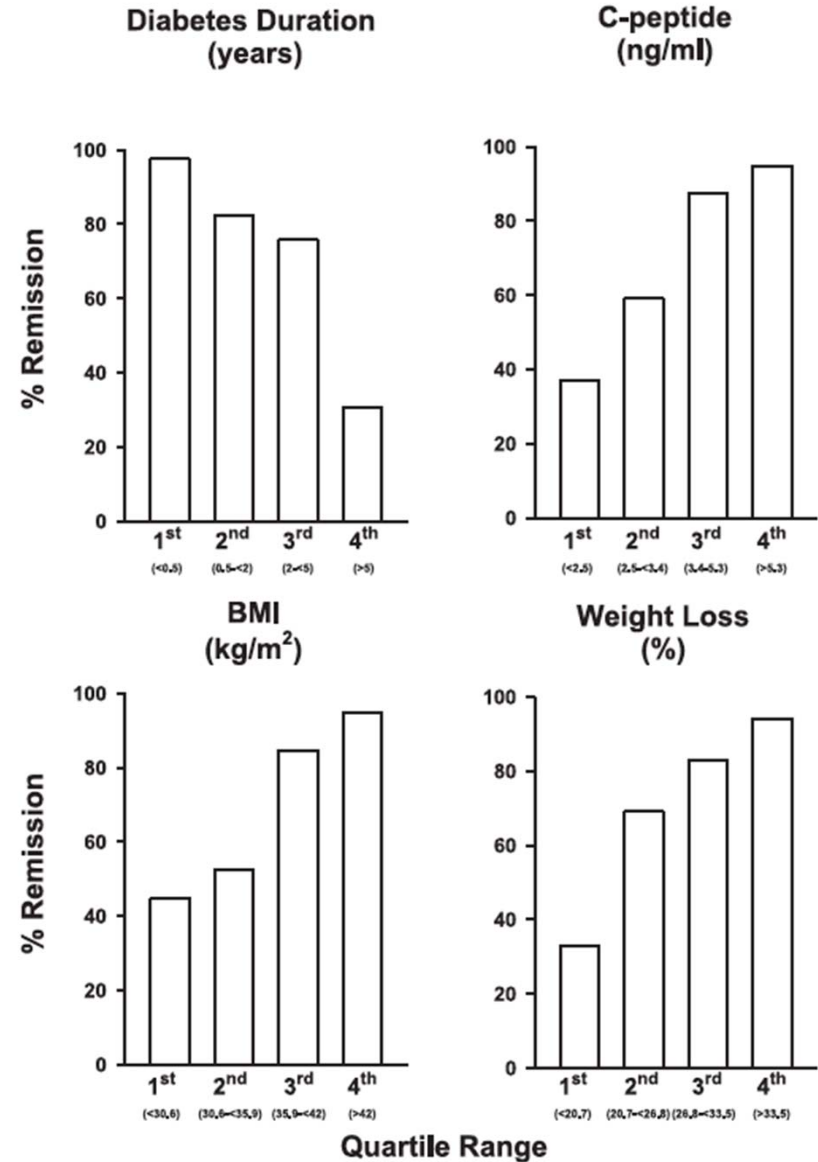
Diabetes Remission



Prédire la rémission du diabète

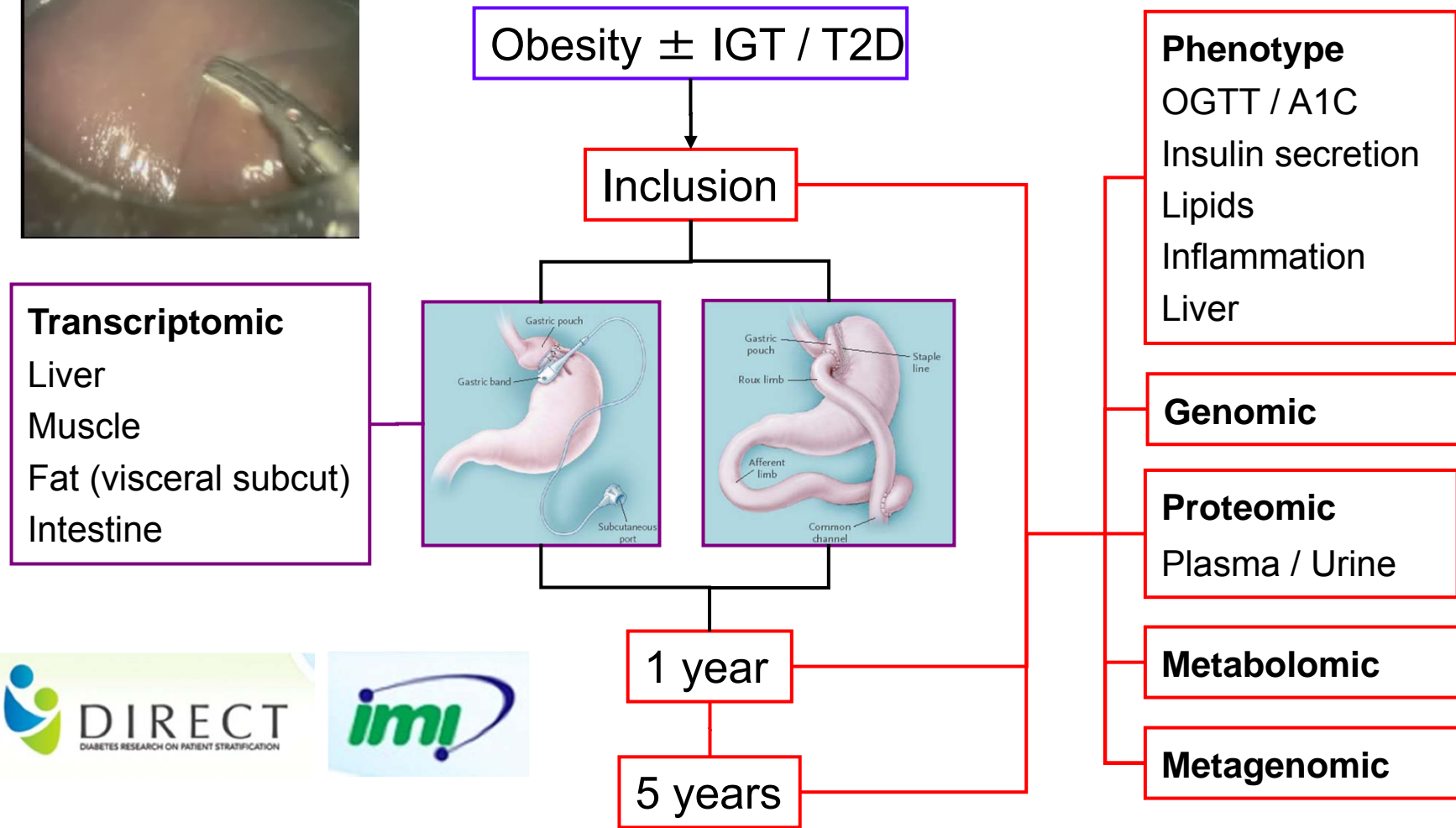
154 T2DM patients submitted to GBP

1. Diabetes duration < 4 years
2. BMI > 35 kg/m²
3. C-peptide < 2.9 ng/mL



Dixon et al. *Diabetes Care* 2013

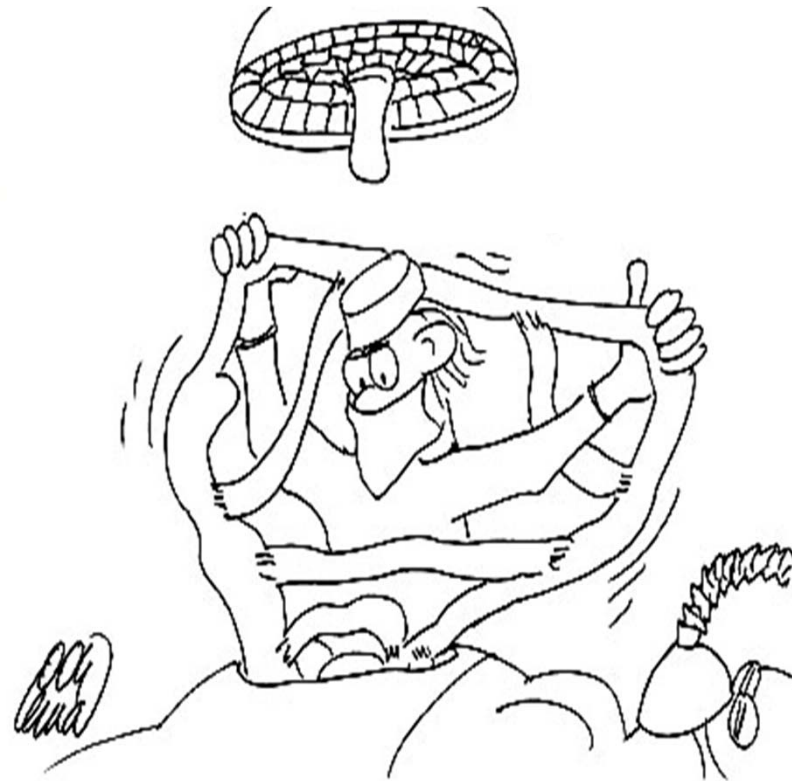
System biology / Obesity surgery



Walter et al. *Nature* 2010
 Ichimura et al. *Nature* 2012

ABOS Longitudinal study / 1000 patients

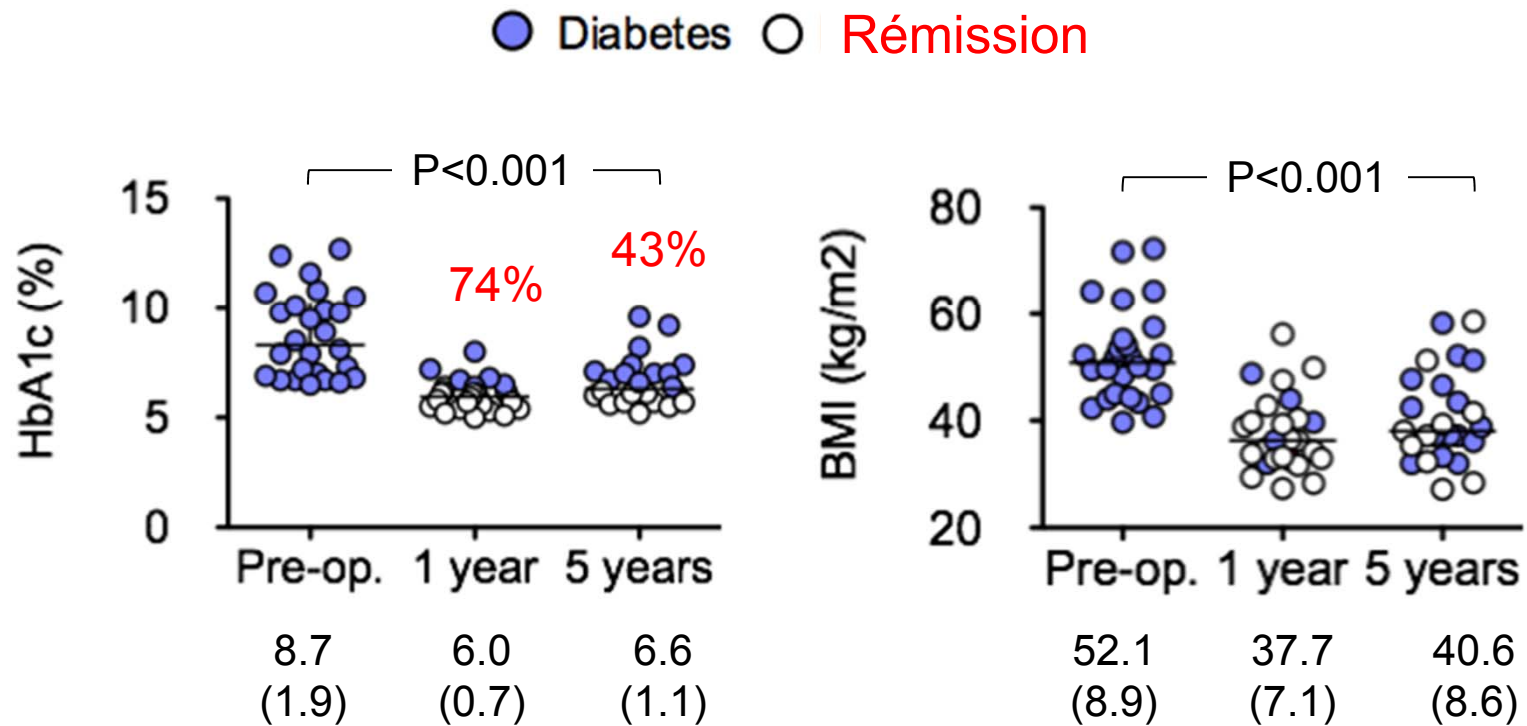
3. Durable ?



Résultats / 5 ans

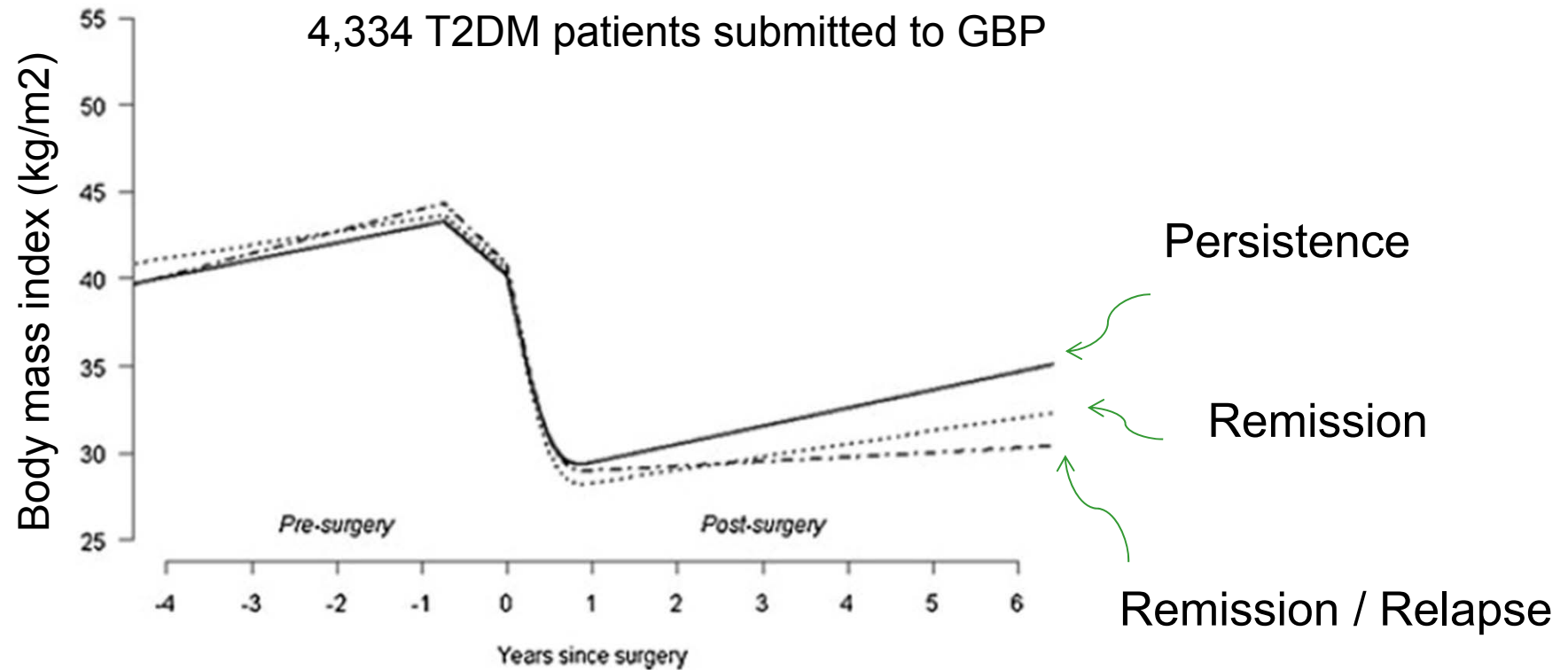


Longitudinal study in 26 individuals with DT2M after GBP



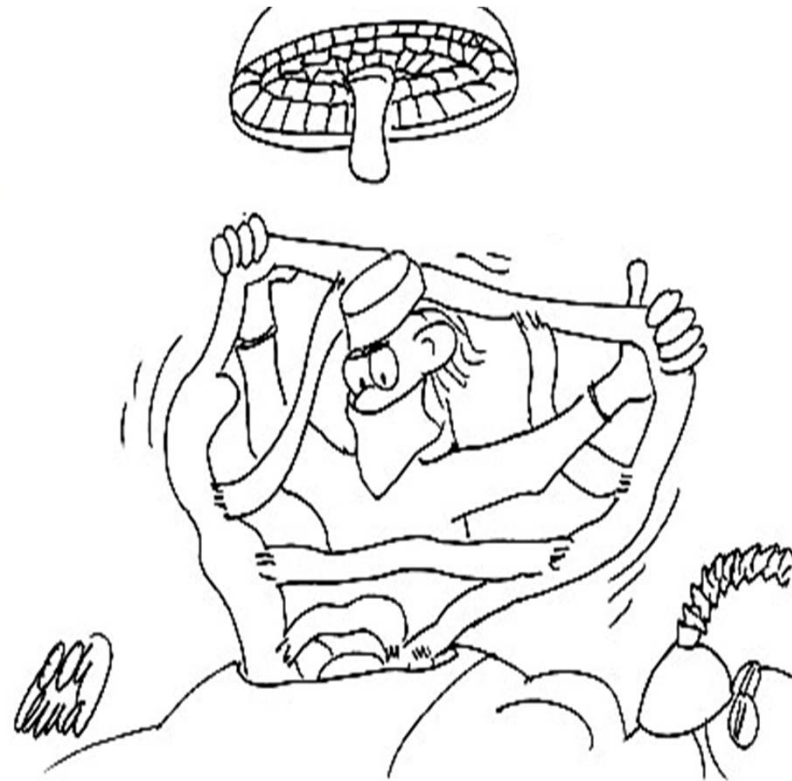
(unpublished data)

Récidive du diabète / BMI



Arterburn et al. *Obesity Surg* 2013

4. Sure ?



Risque Péri-opératoire

Table 2. Adverse Outcomes within 30 Days after Surgery, According to Surgical Procedure.

Outcome	Total (N=4610)*	Laparoscopic Adjustable Gastric Banding (N=1198)	Laparoscopic Roux-en-Y Gastric Bypass (N=2975)	Open Roux-en-Y Gastric Bypass (N=437)	P Value†
		<i>number (percent)</i>			
Death	15 (0.3)	0	6 (0.2)	9 (2.1)	<0.001
Deep-vein thrombosis or venous thromboembolism	20 (0.4)	3 (0.3)	12 (0.4)	5 (1.1)	0.05
Tracheal reintubation	20 (0.4)	2 (0.2)	12 (0.4)	6 (1.4)	0.004
Endoscopy	51 (1.1)	1 (0.1)	45 (1.5)	5 (1.1)	<0.001
Operation					
Tracheostomy	11 (0.2)	0	6 (0.2)	5 (1.1)	0.001
Placement of percutaneous drain	16 (0.3)	0	13 (0.4)	3 (0.7)	0.48
Abdominal operation	118 (2.6)	9 (0.8)	94 (3.2)	15 (3.4)	<0.001
Failure to be discharged by day 30	17 (0.4)	0	13 (0.4)	4 (0.9)	0.02
Composite end point‡	189 (4.1)	12 (1.0)	143 (4.8)	34 (7.8)	<0.0001

Long term benefits and risks ?

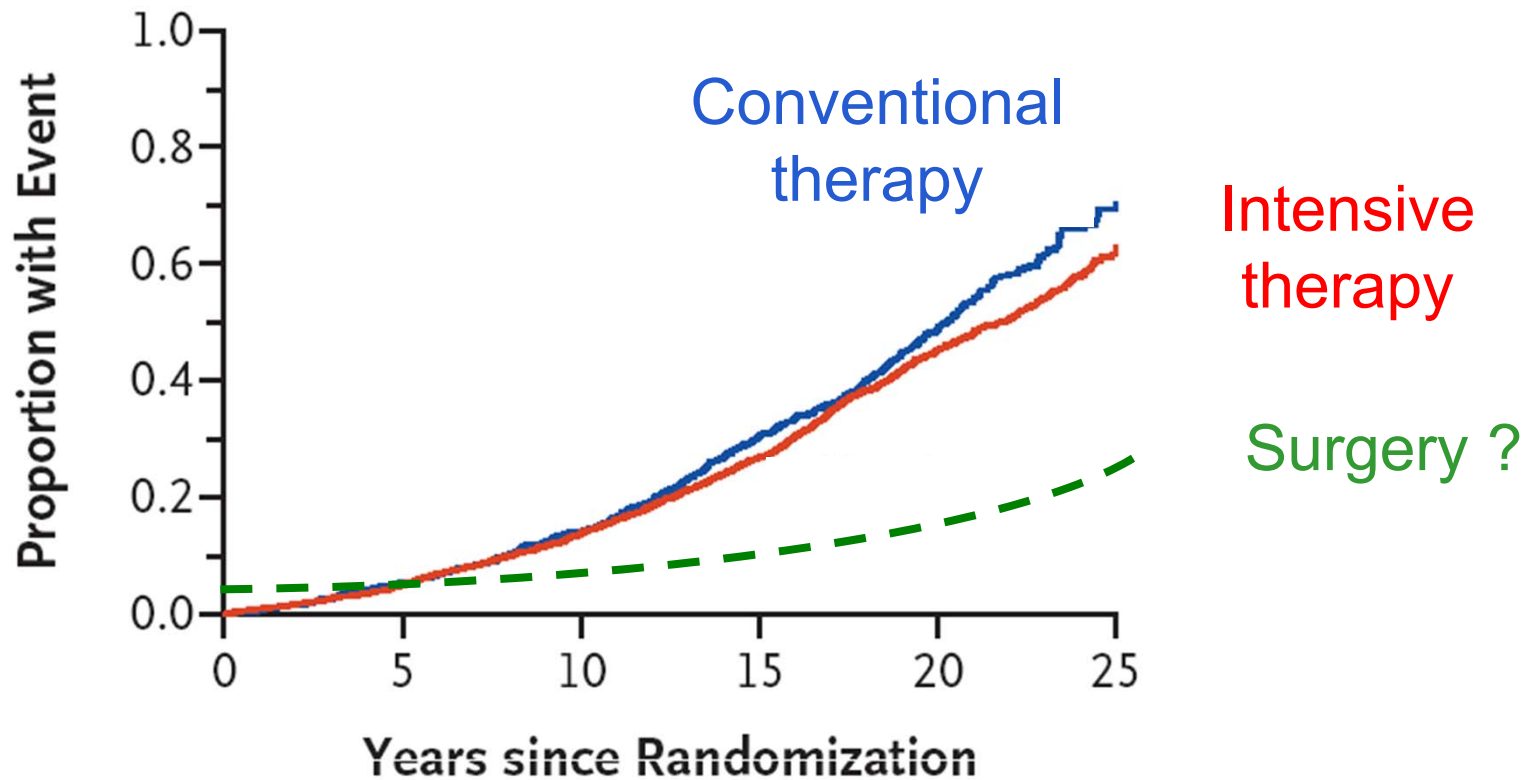


Reprise de poids / récidence du diabète
Effets secondaires inattendus
Effets transgénérationnels ?

Bénéfice clinique ?

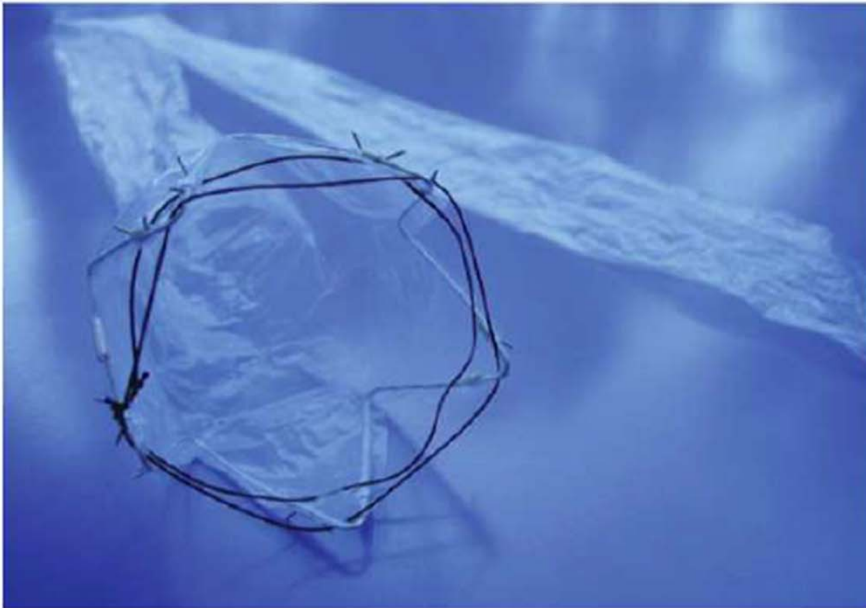


Mortality



Adapted from UKPDS *New Engl J Med* 2008

Duodeno jejunal bypass (Endobarrier)



Tarnoff *Surg Endosc* 2009

Schouten *Ann Surg* 2010

Gersin *Gastrointest Endosc* 2010

De Moura *Ob Surg* 2011

Escalona *Ann Surg* 2012

En résumé



Thank you ...

Endocrine Surgery

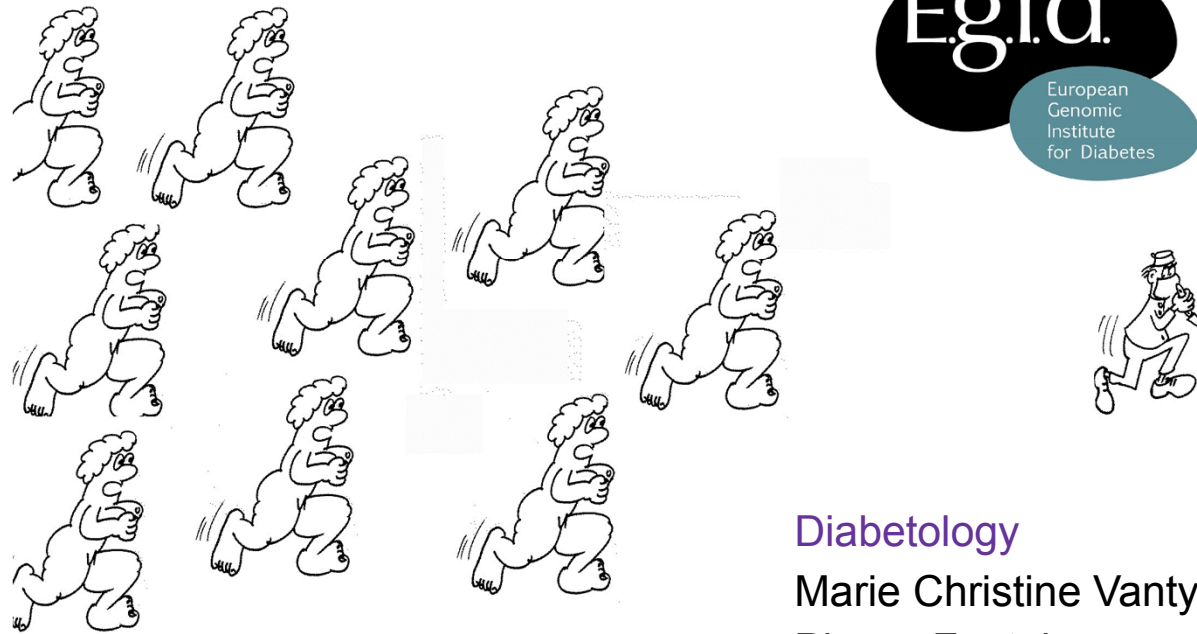
Robert Caiazzo
Fanelly Torres
Violeta Raverdy
Adrien Sterkers
Carole Eberle
Sarah Surmont
Marie Clément

Nutrition

Monique Romon
Marie Pigeyre
Helene Werkindt

INSERM U 859
Biotherapies for diabetes

Julie Kerr-conte
Valery Gmyr
Philippe Lefebvre
Brigitte Vandewalle
Thomas Hubert



EGID
Philippe Froguel
Bart Staels



Université Lille Nord de France



Diabetology

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Pierre Fontaine
Catherine Fermont