

BARIATRISCHE CHIRURGIE BIJ NIERTRANSPLANTATIE PATIENTEN

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Transplantatie chirurg

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Disclosure belangen spreker

(potentiële) belangenverstrengeling	Geen
Voor bijeenkomst mogelijk relevante relaties met bedrijven	Bedrijfsnamen
<ul style="list-style-type: none">• Sponsoring of onderzoeksgeld• Honorarium of andere (financiële) vergoeding• Aandeelhouder• Andere relatie, namelijk ...	<ul style="list-style-type: none">• NVT• NVT• NVT• NVT

OBESITAS

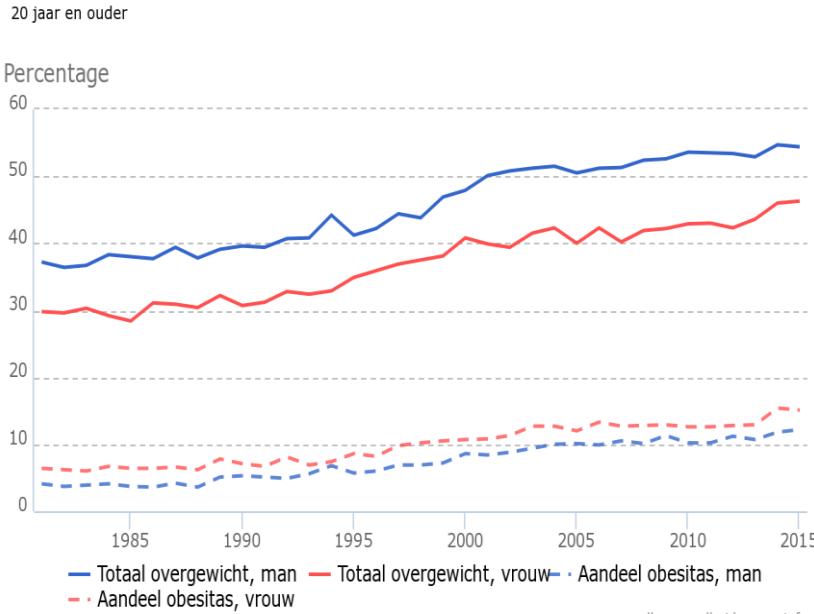
Obesitas

Classificatie	BMI
Gezond gewicht	18.5 – 25
Overgewicht	25 - 30
Obesitas	30 – 35
Ernstige obesitas	35 – 40
Morbide obesitas	>40

→ Indicatie bariatrische behandeling

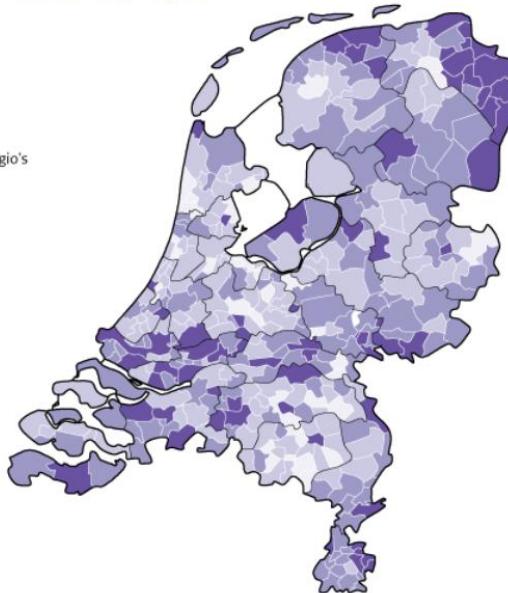
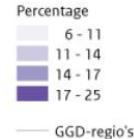
Obesitas in Nederland

Percentage volwassenen met overgewicht en obesitas van 1981-2015



Obesitas 2016

Per gemeente, volwassenen van 19 jaar en ouder



Bron: Gezondheidsmonitor Volwassenen en Ouderen 2016 GGD'en, CBS en RIVM

Bariatrie en nierfunctie

RESEARCH ARTICLE

Effects of Bariatric Surgery on Renal Function in Obese Patients: A Meta Analysis

Kun Li^{1*}*, Jianan Wang², Weiwei Liu³, Qingguo Guo¹, Mingwei Zhang³,

- PLoS One, Oct 2013
- 32 observational studies

Conclusion: Bariatric surgery could prevent further decline in renal function by reducing proteinuria, albuminuria and improving glomerular hyperfiltration in obese patients with impaired renal function. However, whether bariatric surgery reverses CKD or delays ESRD progression is still in question, large, randomized prospective studies with a longer follow-up are needed

Function
ew and

Overzicht van de literatuur

OBESITAS BIJ NIERTRANSPLANTATIE



Obesitas bij Niertransplantatie

ORIGINAL ARTICLE

Conclusion: Obese patients in all weight classes are at an increased risk for DGF after renal transplantation, although differences in non-death-censored graft survival are such that transplantation should not be denied on the basis of BMI criteria alone

American Journal of Transplantation 2015; 15: 2378–2386
Wiley Periodicals Inc.

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and the American Society of Transplant Surgeons

doi: 10.1111/ajt.13363

Kidney Transplantation Significantly Improves Patient and Graft Survival Irrespective of BMI: A Cohort Study

Conclusion: For transplanted patients, there was no difference in patient or graft survival between the defined BMI bands

Organ Donation and Transplantation data for patients listed from January 1, 2004 to December 31, 2010. (N=8088)

Obesitas bij Niertransplantatie

Increased Recipient Body Mass Index Is Associated With Acute Rejection and Other Adverse Outcomes After Kidney Transplantation

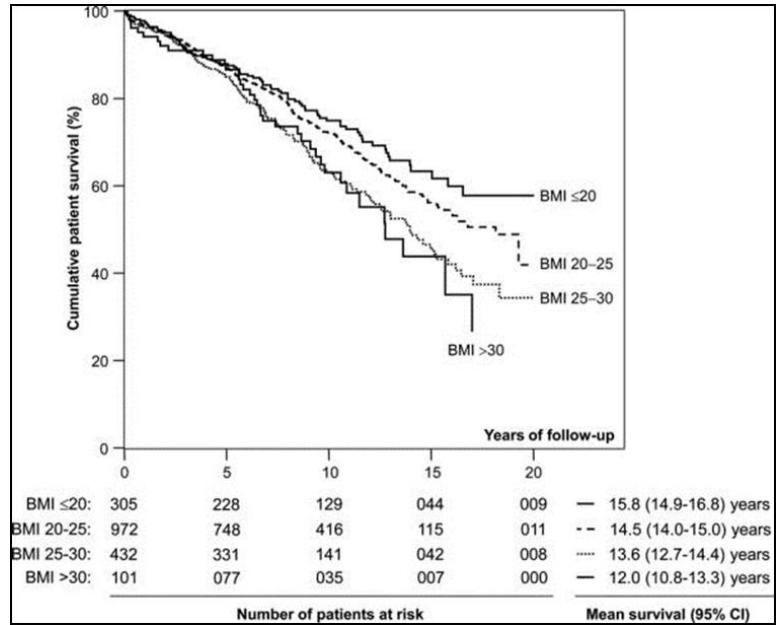
Conclusion: Recipient BMI of 30 to 34.9 and >35 was associated with an increased risk of delayed graft function an increased risk of BPAR, all-cause graft failure and death-censored graft failure

The impact of body mass index on renal transplant

Conclusion: BMI has a very strong association with outcomes after renal transplantation independent of most of the known risk factors for patient and graft survival. It is important to note that elevated BMI was significantly associated with worse graft survival independent of patient survival

Obesitas bij Niertransplantatie

Conclusion: One year post transplant BMI and BMI increment are more strongly related to death and graft failure than pretransplant BMI among kidney transplant recipients. Patients with BMI more than 30 kg/m² compared with a normal BMI have approximately 20% to 40% higher risk for death and graft failure.



Obesitas bij Niertransplantatie

Conclusion: Obese patients have increased risk for DGF. In the past years, obesity was a risk factor for graft loss, death by CVD, and all-cause mortality. However, for the obese transplanted patient today, the graft and patient survival is the same as that of the nonobese patient.

Nephrol Dial Transplant (2015) 30: 1403–1411
doi: 10.1093/ndt/gtv214
Advance Access publication 4 June 2015

ndt

Conclusion: Despite having a much higher likelihood of DGF, obese transplant recipients have only a slightly increased risk of graft loss and experience similar survival to recipients with normal BMI.
including 158 881 patients were analysed

Obesitas bij Niertransplantatie

Lafranca et al. BMC Medicine (2015) 13:111
DOI 10.1186/s12916-015-0340-5



Obesity: exploring the causes, consequences and solutions

RESEARCH ARTICLE

Open Access

Body mass index and outcome in renal transplant

Conclusion: Significant differences in favour of low BMI concerning mortality, DGF, BPAR, 3-year graft and patient survival, wound complications, NODAT, hospital stay, hypertension and incisional hernia

Published in final edited form as:
Am J Nephrol. 2014; 40(4): 315–324. doi:10.1159/000367812.

Body Mass Index and Mortality in Kidney Transplant Recipients: A Systematic Review and Meta-Analysis

Conclusion: underweight and obese classes were associated with higher risk of graft failure. HR for mortality is higher in underweight, overweight, and all obese BMI classes compared to the normal BMI class

Conclusie

Verhoogd risico op DGF

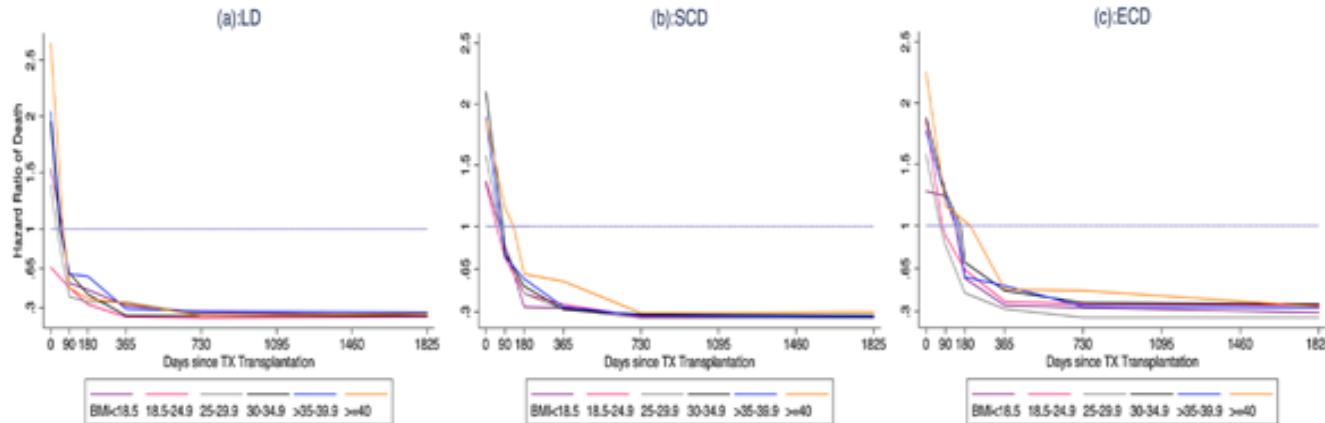
Aanwijzingen voor verlaagde graft survival

Aanwijzingen voor verlaagde patiënt survival

Mogelijk verhoogde kans op BPAR

Mogelijk meer postoperatieve complicaties

Niertransplantatie vs dialyse bij obesitas



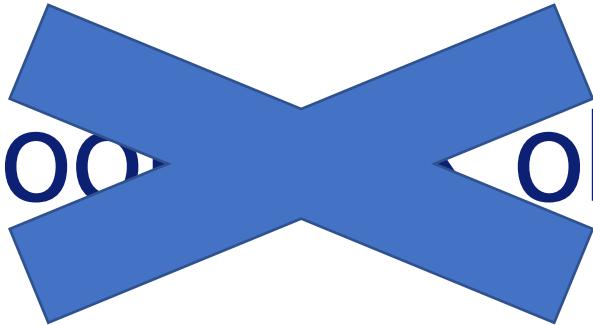
Transplant recipients in all BMI groups had a significantly lower long-term risk of death with transplantation from all donor sources compared to dialysis

Gill, J. S., Lan, J., Dong, J. The Survival Benefit of Kidney Transplantation in Obese Patients
American Journal of Transplantation 2013 vol 13- 8 1600-6143

Erasmus MC

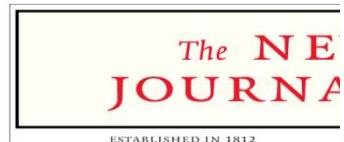


Grens voor obv BMI?



GEWICHTSREDUCTIE

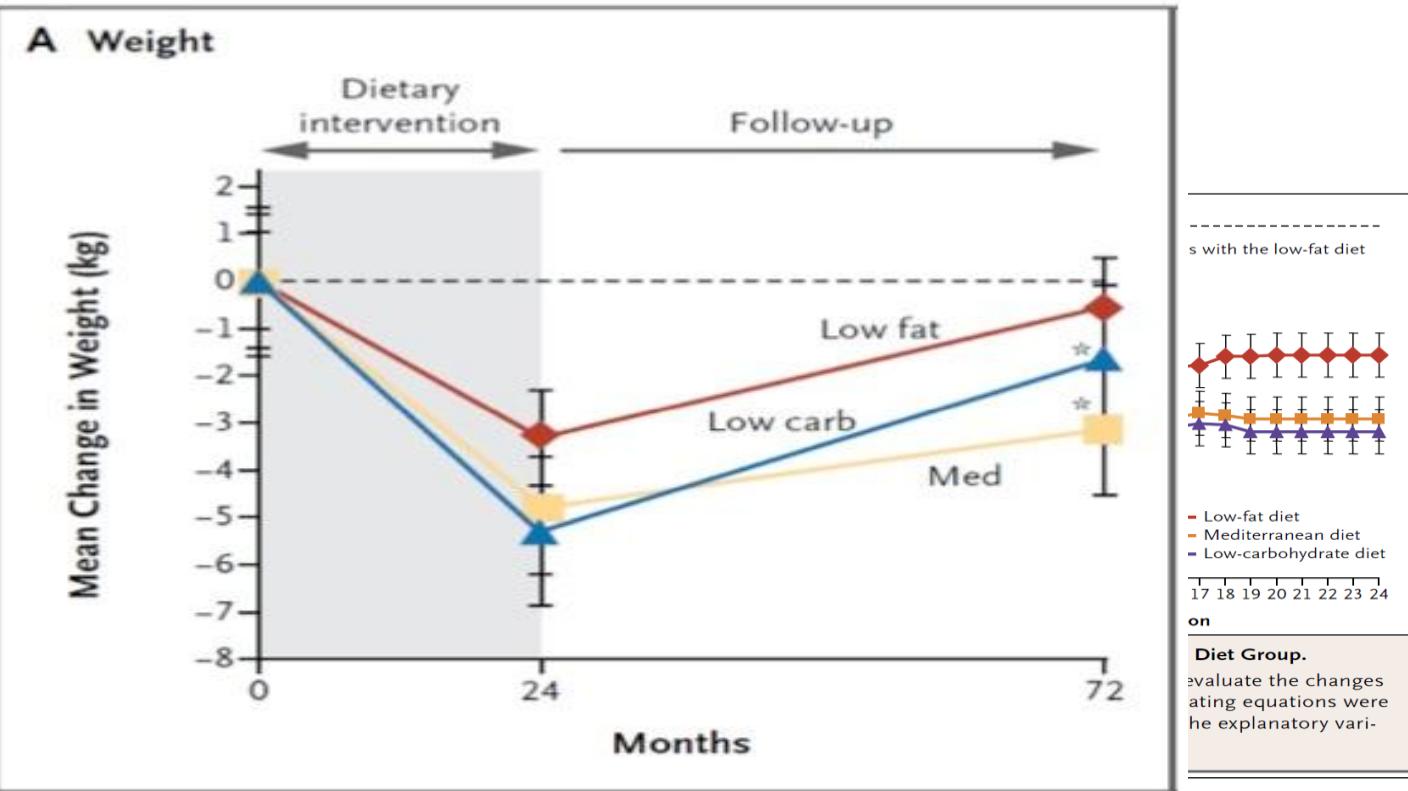
Effect van de



Weight Loss with a

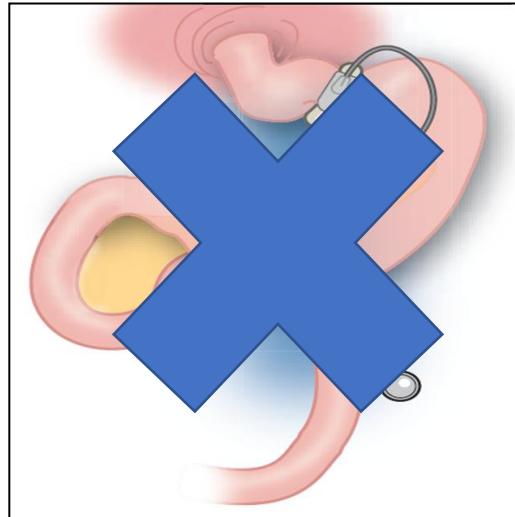
Iris Shai, R.D., Ph.D., Dan Schwarz, M.P.H., Shula Witkow, R.D., M.P.H., Ilana Greenberg, Arkady Bolotin, Ph.D., Hilel Vardi, Benjamin Sarusi, M.Sc., Dov Brickner, M.Sc., Esther Katorza, M.Sc., Joachim Thamer, Michael Stumvoll, M.D., and the Dietary Intervention Study Group

In this 2-year trial, moderately obese patients with a body mass index 31 to one of three diets: a low-fat diet; a restricted-calorie, low-carbohydrate diet; or a low-carbohydrate, low-calorie diet.

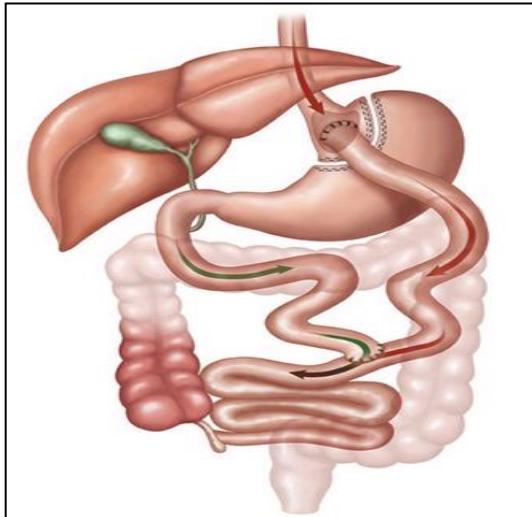


Bariatrisch-chirurgische technieken

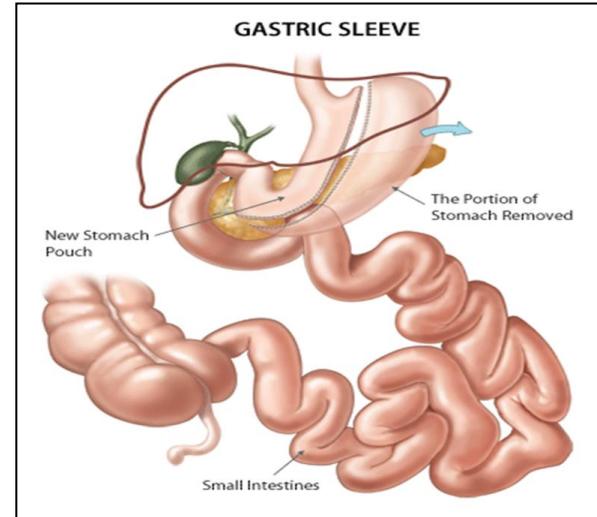
Maagband (LAGB)



Roux-Y gastric bypass
(LRYGB)



Sleeve resectie
(LSG)



BARIATRIE BIJ NIERTRANSPLANTATIE

Bariatrie voor of na niertransplantatie

Received: 5 June 2017 | Revised: 4 August 2017 | Accepted: 4 August 2017
DOI: 10.1111/ajt.14463

ORIGINAL ARTICLE

Laparoscopic sleeve gastrectomy improves renal transplant candidacy and posttransplant outcomes in morbidly obese patients

Y. Kim | A. D. Jung | V. K. Dhar | J. S. Tadros | D. P. Schauer | E. P. Smith |

D. J.

E. S.

Gastric Bypass in Chronic Renal Failure and Renal Transplant

J. Wesley Alexander, MD, ScD; and Hope Goodman, MPT
Center for Surgical Weight Loss, University of Cincinnati, Cincinnati, Ohio

Integrated health original article

Safety and effectiveness of bariatric surgery in dialysis patients and kidney transplantation candidates

Mohammad H. Jamal, M.B.Ch.B.(Hons.) Med.^{a,b}, Ricard Corcelles, M.D., Ph.D.^{a,c}, Christopher R. Daigle, M.D.^a, Tomasz Rogula, M.D., Ph.D.^a, Matthew Kroh, M.D.^a, Philip R. Schauer, M.D.^a, Stacy A. Brethauer, M.D.^{a,*}

^aDepartment of Gastrointestinal S

Transplantation. 2009 April 27; 87(8): 1167–1173. doi:10.1097/TP.0b013e31819e3f14.

Bariatric surgery among kidney transplant candidates and recipients: Analysis of the United States Renal Data System and literature review¹

Kian A. Modanlou, MD², Umadevi Muthyala, MD³, Huiling Xiao, MS³, Mark A. Schnitzler, PhD³, Paolo R. Salvalaggio, MD, PhD^{2,3}, Daniel C. Brennan, MD⁴, Kevin C. Abbott, MD, MPH⁵, Ralph J. Graff, MD², and Krista L. Lentine, MD, MS^{3,6}

AJT



Surgery for Obesity and Related Diseases 13 (2017) 909–915

SURGERY FOR OBESITY AND RELATED DISEASES

Original article

Laparoscopic sleeve gastrectomy: gateway to kidney transplantation

Katrin Kienzl-Wagner, M.D., Annemarie Weissenbacher, M.D., Philipp Gehwolf, M.D.,
Thomas Wenzel, M.D., Thomas Marberger, M.D., Stephan Öfner, M.D., Stefan Schneeberger, M.D.*

Thoracic Surgery, Innsbruck Medical University, Innsbruck, Austria
revised November 29, 2016; accepted January 1, 2017

American Journal of Transplantation 2015; 15: 1360–1368
Wiley Periodicals Inc.

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and the American Society of Transplant Surgeons

doi: 10.1111/ajt.13116

Addressing Morbid Obesity as a Barrier to Renal Transplantation With Laparoscopic Sleeve Gastrectomy

C. M. Freeman¹, E. S. Woodle¹, J. Shi²,
J. W. Alexander¹, P. L. Leggett³, S. A. Shah¹,
F. Paterno¹, M. C. Cuffy¹, A. Govil⁴,
G. Mogilishetty⁴, R. R. Alloway⁵, D. Hansman¹,
M. Cardi⁵ and T. S. Diwan^{1,*}

intensive care unit; LSG, laparoscopic sleeve gastrectomy

Received 09 July 2014, revised 20 October 2014 and accepted for publication 16 November 2014

Review artikel

OBES SURG (2017) 27:2696–2706
DOI 10.1007/s11695-017-2854-8



CrossMark

REVIEW ARTICLE

The Role of Bariatric Surgery in Abdominal Organ Transplantation—the Next Big Challenge?

Tomasz Dziodzio¹ · Matthias Biebl¹ · Robert Öllinger¹ · Johann Pratschke¹ ·
Christian Denecke¹

Bariatric procedures before renal transplant

Author	Year	No. of pt	Morbidity	Mortality 1-y	Graft survival
Alexander et al.	2007	41/9	n.r.	4.9%	n.r.
Koshy et al.	2008	3/1	0	0	100%
Modanlou et al.	2009	29/20	0	3,4%	n.r.
Marszalek et al.	2012	1/1	0	0	100%
Lin et al.	2013	6/2	17%	0	n.r.
Kienzl-Wagner et al.	2015	1/1	0	0	Good
Freeman et al.	2015	52/6	0	3,8%	n.r.
Jamal et al.	2015	21/2	28,6% (2 early, 4 late)	4,8%	n.r.
Kienzl-Wagner et al.	2017	8/7	0	0	100%
Totaal		162/49	4,9%	3,6%	

Bariatric procedures after renal transplant

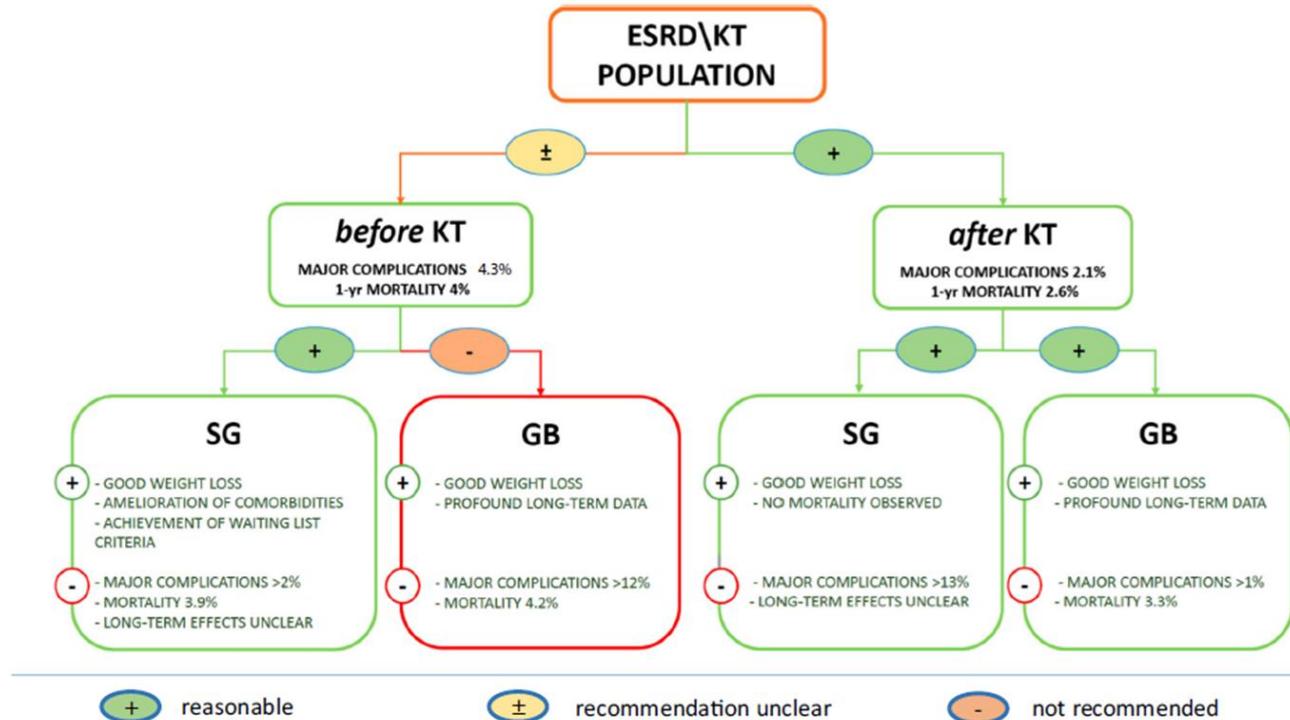
Author	Year	No of pt	Morbidity	Mortality 1-y	Graft survival
Marterre et al.	1996	3	n.r.	n.r.	100
Modanlou et al.	2009	86	1,2%	2,3%	100
Ziemianski et al.	2014	1	0	n.r.	93
Szomstein et al.	2010	5	0	0	100
Khoraki et al.	2015	4	25%	0	100
Golomb	2014	10	20%	0	100
Alexander et al.	2007	10	n.t.	10%	100
Totaal		119	3,3%	2,5%	

Dziodzio, T., Biebl, M., Öllinger, R. et al. OBES SURG (2017) 27: 2696.

Conclusie

Complication rates were slightly higher compared to the non-transplant population, whereas weight loss and improvement of comorbidities were comparable. Sleeve gastrectomy (SG) was the preferred procedure before KT and superior to gastric bypass (GB) in regard to mortality and morbidity. If conducted after KT, both procedures showed comparable results.

Algoritme



Bariatrische chirurgie bij dialyse patienten

Surg Endosc (2016) 30:2583–2591
DOI 10.1007/s00464-015-4530-1



Safety analysis of primary bariatric surgery in patients on chronic dialysis

Amin Andalib¹ · Ali Aminian¹ · Zhamak Khorgami¹ · Sankar D. Navaneethan² · Philip R. Schauer¹ · Stacy A. Brethauer¹

Retrospective analysis: N=234 DD and 113,677 ND patients were analyzed

Conclusion: Thirty-day mortality rates for DD and ND patients were 0.43 and 0.11 %, respectively ($P = 0.134$). DD patients had a higher 30-day major morbidity compared to ND patients (5.98 vs. 2.31 %; $P < 0.001$, respectively). Despite a crude OR of 2.70 (95 % CI 1.57–4.63) after adjusting for confounding, dependence on dialysis was not found to be an independent predictor of major morbidity.

SLEEVE VS GASTRIC BYPASS NA NIERTRANSPLANTATIE

Effectiviteit

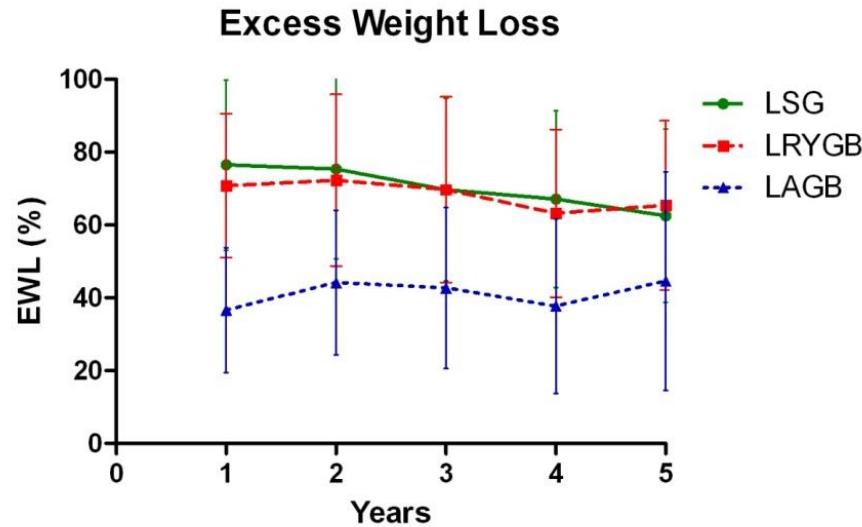
LSG versus LRYGB/LAGB

Periode 2007-2010

Matched controlled

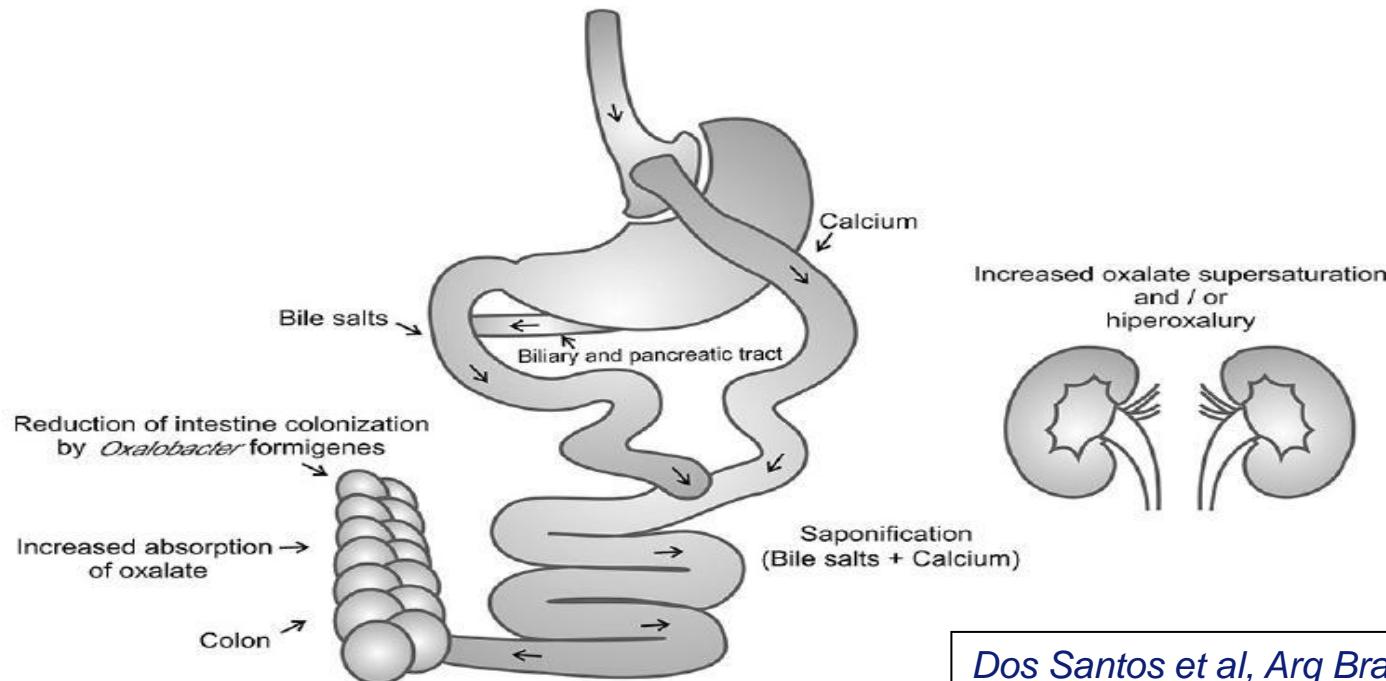
N=245 per arm

Eindpunt EWL



Dogan, K., Gadiot, R.P.M., Aarts, E.O. et al. OBES SURG (2015) 25: 1110.
<https://doi.org/10.1007/s11695-014-1503-8>

Hyperoxalurie na gastric bypass



Dos Santos et al, Arq Bras Cir Dig. 2014

Hyperoxalurie



Surgery for Obesity and Related Diseases 12 (2016) 1513–1522

Original article

Conclusion: Roux-en-Y gastric bypass surgery is associated with higher risk of renal stone and increased urine oxalate and calcium oxalate supersaturation

<http://www.kidney-international.org>
© 2007 International Society of Nephrology

original article

see commentary on page 8

Hyperoxaluric nephrolithiasis is a complication of Roux-en-Y gastric bypass surgery

MK Sinha¹, ML Collazo-Clavell², A Rule³, DS Milliner³, W Nelson⁴, MG Sarr⁵, R Kumar^{2,3,6} and JC Lieske^{3,7}

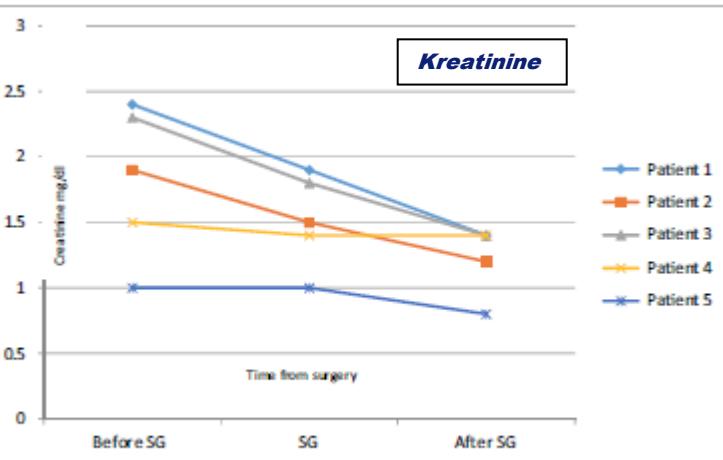
¹Department of Internal Medicine, Mayo Clinic College of Medicine, Rochester, Minnesota, USA; ²Division of Endocrinology, Diabetes, Metabolism and Nutrition, Department of Internal Medicine, Mayo Clinic College of Medicine, Rochester, Minnesota, USA; ³Division of Nephrology and Hypertension, Department of Internal Medicine, Mayo Clinic College of Medicine, Rochester, Minnesota, USA; ⁴Division of Gastroenterology and Hepatology, Department of Internal Medicine, Mayo Clinic College of Medicine, Rochester, Minnesota, USA; ⁵Division of General Surgery, Mayo Clinic College of Medicine, Rochester, Minnesota, USA; ⁶Division of Urology, Mayo Clinic College of Medicine, Rochester, Minnesota, USA; ⁷Division of Epidemiology and Biostatistics, Mayo Clinic College of Medicine, Rochester, Minnesota, USA

We conclude that hyperoxaluria is a potential complicating factor of RYGB surgery manifested as a risk for calcium oxalate stones.

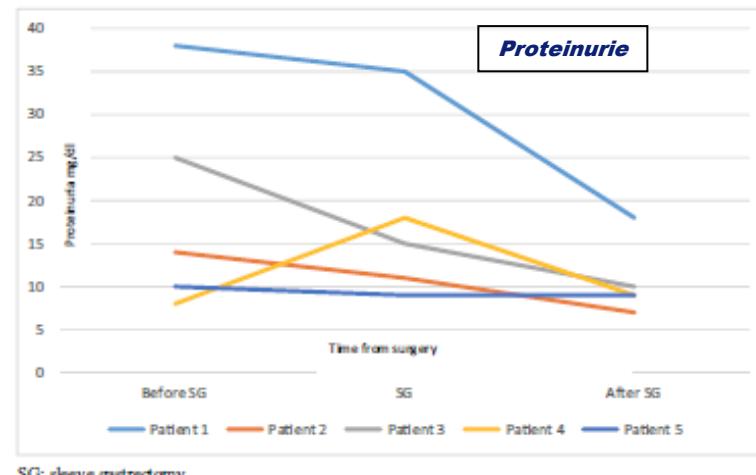
Sleeve Gastrectomy after Renal Transplantation

Germán Viscido¹ · Verónica Gorodner² · Franco Jose Signorini¹ · Mario Campazzo¹ · Luciano Navarro¹ · Lucio Ricardo Obeide¹ · Federico Moser¹

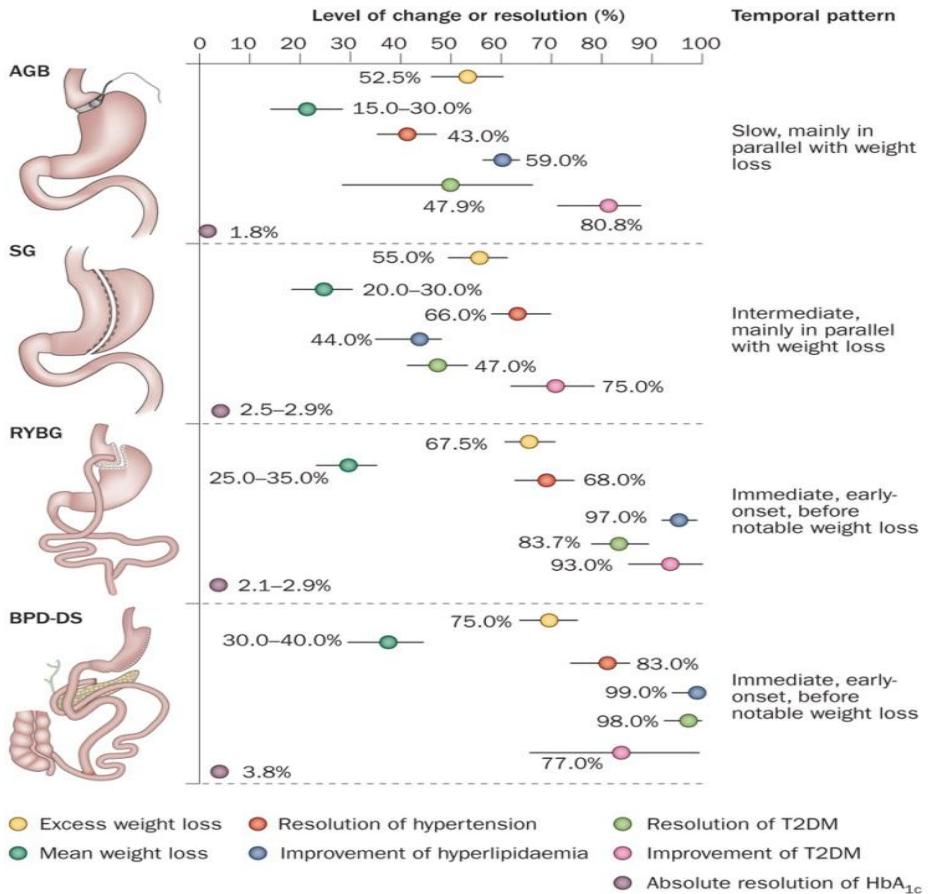
N=5, tijd tussen NTX en SG 3-22 jaar. Geen perioperative complicaties of mortaliteit



SG: sleeve gastrectomy



SG: sleeve gastrectomy



Overwegingen:

- **47-83% resolutie DM**
- **66-68% resolutie HT**
- **75-93% verbetering DM**

IMMUNOSUPPRESSIE

Pharmacokinetics of mycophenolic acid, tacrolimus and sirolimus after gastric bypass surgery in end-stage renal disease and transplant patients: a pilot study

Christin C. Rogers^{a,*}, Rita R. Alloway^b, J. Wesley Alexander^a, Michael Cardi^c, Jennifer

Conclusion: When comparing the PK of sirolimus, tacrolimus, MPA and MPAG to published PK data in the non-bypass population, significant differences are observed. It is likely that transplant recipients with GBS would need higher doses of tacrolimus, sirolimus and MMF to provide similar exposure to a non-bypass patient.

G).

Safety and feasibility of sleeve gastrectomy in morbidly obese patients following liver transplantation

Matthew Y. C. Lin · M. Mehdi Tavakol ·
Ankit Sarin · Shadée M. Amirkiai · Stanley J. Rogers ·
Jonathan T. Carter · Andrew M. Posselt

N=9, Sleeve gastrectomie na LTX (5.9 ± 2.4 jaar),

Conclusion: There was no difficulty in maintaining immunosuppression, no need for dose escalation of calcineurin inhibitors, and no episodes of acute rejection.

Immunounsuppressie

Inventarisatie Rotterdamse situatie:

- Retrospectief onderzoek
- 28 patiënten (21 ♀ / 7 ♂)
 - 12 ondergingen eerst een NTx, daarna bariatrische chirurgie
 - 12 ondergingen eerst bariatrische chirurgie, daarna een NTx
 - 2 met status na bariatrische chirurgie in afwachting van NTx
 - 2 met status na NTx in afwachting van bariatrische chirurgie
- Tacrolimus dosis na gastric bypass gemiddelde toename van 19% (resorptie?)
- Tacrolimus dosis na sleeve gastrectomie gemiddelde toename van 14,3%
- Hogere MCM spiegels na gastric bypass (betere resorptie of gewichtsverlies?)
- Na sleeve gastrectomie meer variatie en hogere spiegels van MCM
- Geen serieuze problemen gezien bij het handhaven van adequate spiegels

Jan Steven Burgerhart

PROTOCOL EMC

Protocol EMC Indicatie bariatrie

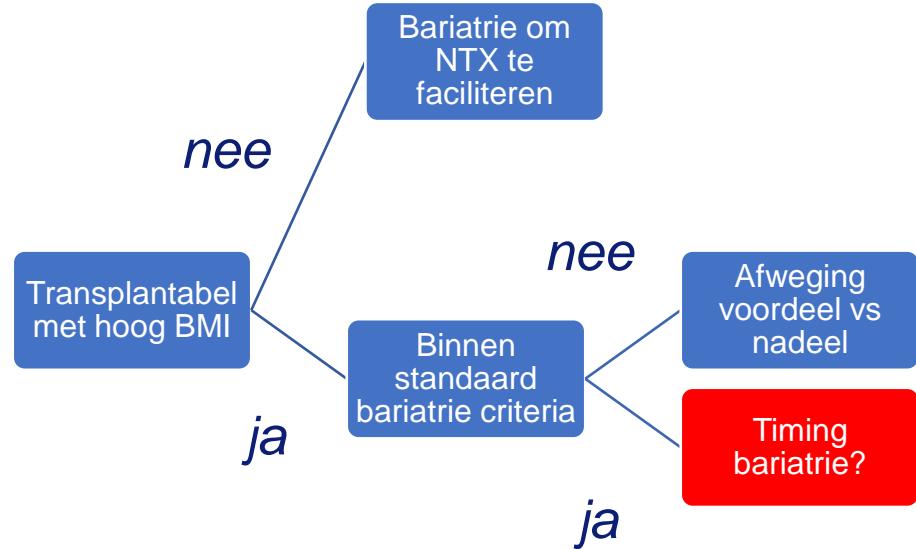
Patiënt afgekeurd voor
niertransplantatie i.v.m. hoge BMI

Bariatrische chirurgie om
niertransplantatie mogelijk te maken

Patiënt goedgekeurd voor
niertransplantatie ondanks hoge BMI

Patiënt valt binnen standaard criteria
voor bariatrie

Patiënt valt buiten standaard criteria
voor bariatrie



Timing

Indien er uitzicht is op
transplantatie < 1 jaar
(levende donor / Bloedgroep
A of AB) → eerst NTX dan
bariatrie

Indien langere wachttijd
(afhankelijk van
dialysestatus) → eerst
bariatrie dan NTX

Conclusie

- Patiënten met morbide obesitas hebben ondanks verhoogd risico baat bij niertransplantatie
- Selectie obv BMI niet ondersteund door literatuur
- Gewichtsreductie lijkt positieve effecten te hebben op uitkomsten van niertransplantatie
- Bariatrische chirurgie is relatief veilig voor en na niertransplantatie
- Sleeve gastrectomie lijkt het aangewezen medium gekeken naar perioperatieve risico's en immuunsuppressie

Vragen?



A successful surgeon should be a man who, when asked to name the three best surgeons in the world, would have difficulty deciding on the other two.

— Denton Cooley —

AZ QUOTES

Thank you for your attention



Veel vragen

Ontbreken prospectieve studies specifiek naar uitkomsten NTX voor / na bariatrie

Invloed van bariatrie op lange termijns uitkomsten van NTX?

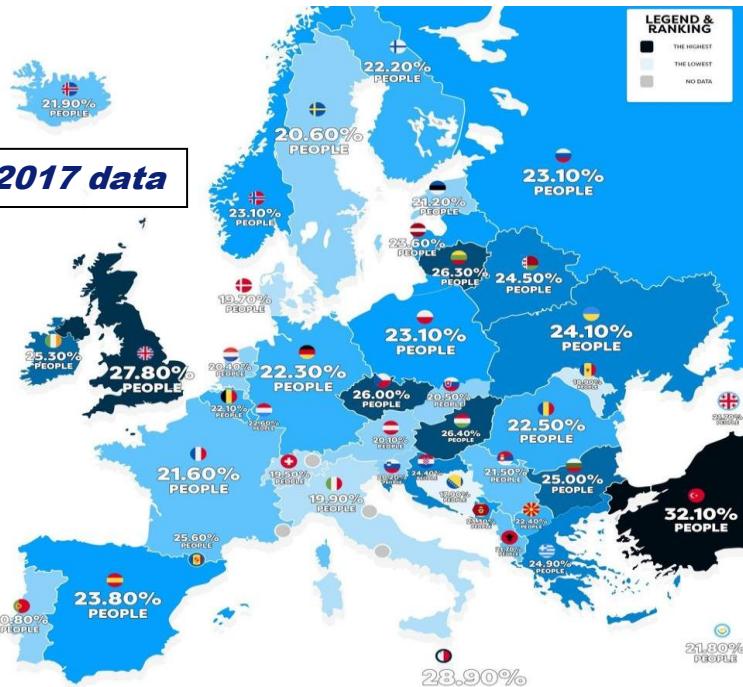
Zijn mensen met morbide obesitas beter af met combinatie bariatrie en NTX dan aan de dialyse?

Zijn de standaard criteria voor bariatrie van toepassing op ESRD patiënten?

Is het mogelijk maken van een NTX voldoende indicatie voor bariatrische chirurgie?

Obesitas

WHO 2017 data



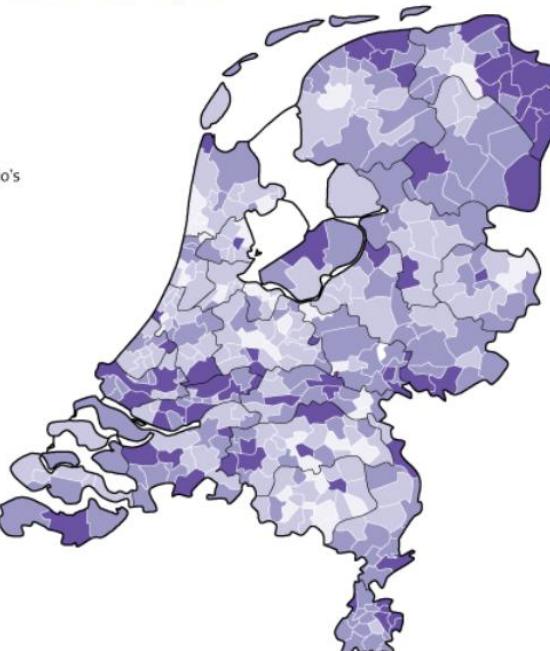
Obesitas 2016

Per gemeente, volwassenen van 19 jaar en ouder

Percentage

6 - 11
11 - 14
14 - 17
17 - 25

GGD-regio's



Bron: Gezondheidsmonitor Volwassenen en Ouderen 2016 GGD'en, CBS en RIVM