



# 4<sup>TH</sup> WORLD CONGRESS ON INTERVENTIONAL THERAPIES FOR TYPE 2 DIABETES

HILTON MIDTOWN, NEW YORK CITY  
APRIL 8-10, 2019

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FROM GUIDELINES  
TO IMPLEMENTATION



IN PARTNERSHIP WITH



**APRIL 8-10, 2019, NEW YORK CITY**

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AACE Gulf Chapter



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Diabetes UK



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Metabolic and Bariatric  
Surgery



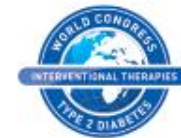
European Association  
for the Study of Obesity



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for Endoscopic Surgery  
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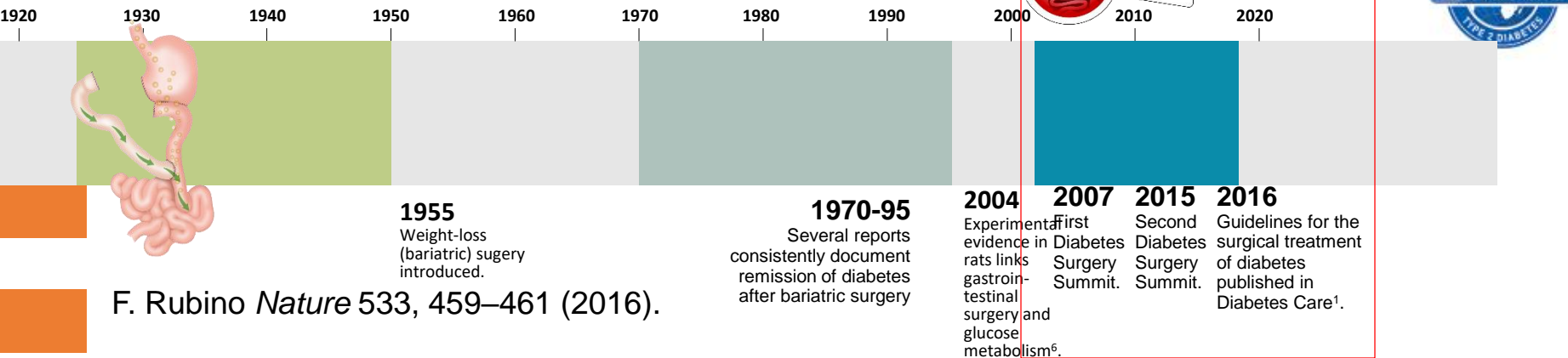
- Rome 2007,
- London 2015



- New York 2008
- New York 2011
- London 2015
- New York 2019



# THE (long) ROAD TO METABOLIC SURGERY



F. Rubino *Nature* 533, 459–461 (2016).

## GLOBAL DSS GUIDELINES



### PARTNER DIABETES ORGANISATIONS OF THE DSS-II

American Diabetes Association (ADA) International Diabetes Federation (IDF) Diabetes UK (DUK) Chinese Diabetes Society (CDS) Diabetes India (DI)

### ENDORSORING SOCIETIES OF THE DSS-II CONSENSUS STATEMENTS & GUIDELINES (as of August 2017)

#### INTERNATIONAL ORGANISATIONS

IDF International Diabetes Federation APBMS Asia-Pacific Bariatric and Metabolic Surgery Society EASO European Association for the Study of Obesity IFSO Int. Federation for the Surgery of Obesity & Metabolic Disorders ALAD Latin American Association of Diabetes

#### NATIONAL ORGANISATIONS / SOCIETIES

Argentinian Society of Diabetes (SAD)  
Argentinian Society for Bariatric and Metabolic Surgery (SABO)  
Argentinian Society of Nutrition (SAN)  
Australian Diabetes Society (ADS)  
Belgian Diabetes Association (ABD)  
Brazilian Society of Diabetes (SBD)  
Brazilian Society of Bariatric and Metabolic Surgery (SBCBM)  
Czech Society for the Study of Obesity (CSO)  
Chilean Society of Endocrinology and Diabetes (SCED)  
Chilean Society for Bariatric and Metabolic Surgery (SCBMB)

Chinese Diabetes Society (CDS)  
French Society of Diabetes (SFD)  
French Society of Bariatric and Metabolic Surgery (SOFBMO)  
German Diabetes Society (DDG)  
German Society for Obesity Surgery (CA-ADIP)  
Hellenic Diabetes Association (HDA)  
Diabetes India (DI)  
Irish Endocrine Society (IES)  
Israel Diabetes Association (IDA)  
Italian Society of Bariatric & Metabolic Surgery (SICOB)  
Italian Society of Diabetology (SID)  
Italian Society of Clinical Endocrinologists (AME)

Japan Diabetes Society (JDS)  
Mexican College of Bariatric and Metabolic Surgery (CMCCKM)  
Mexican Society of Nutrition and Endocrinology (SMNE)  
Portuguese Society of Diabetology (SPD)  
Qatar Diabetes Association (QDA)  
Saudi Diabetes and Endocrine Association (SDEA)  
Slovakian Diabetes Society (SDS)  
Obstetrics Section Slovakian Diabetes Society (OS SDS)  
South African Society for Surgery Obesity and Metabolism (SASSO)  
Spanish Society for Bariatric and Metabolic Surgery (SECO)  
Spanish Society of Diabetes (SED)

Diabetes UK (DUK)  
Association of British Clinical Diabetologists (ABCD)  
British Obesity and Metabolic Surgery Society (BOMSS)  
Society for Endocrinology (SfE)  
American Diabetes Association (ADA)  
American Association of Clinical Endocrinologists (AACE)  
American College of Surgeons (ACS)  
American Gastroenterological Association (AGA)  
American Society for Metabolic and Bariatric Surgery (ASMBS)  
Endocrine Society  
Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)  
Society for Surgery of the Alimentary Tract (SSAT)  
The Obesity Society (TOS)

# Diabetes Care

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

www.diabetescare.org



**Metabolic Surgery for Type 2 Diabetes: Changing the Paradigm of Diabetes Care**

Volume 40 | Number 1 | January 2018

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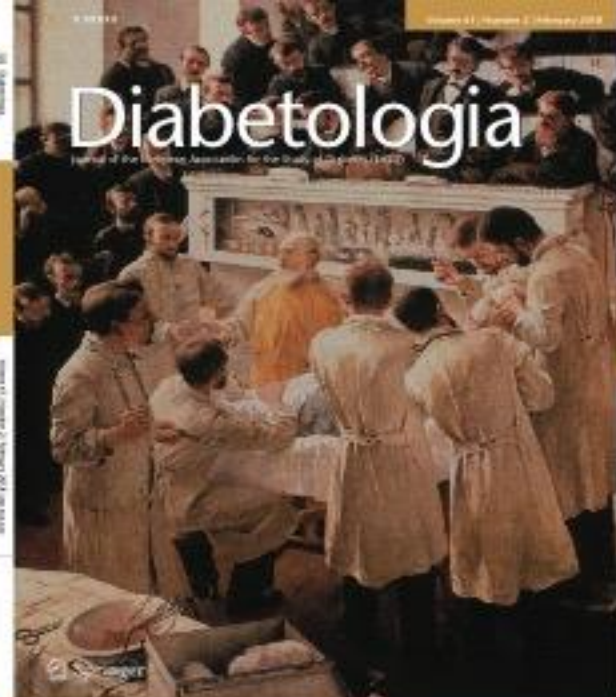
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Metabolic Surgery for Type 2 Diabetes: Changing the Paradigm of Diabetes Care

# Diabetologia

Journal of the European Association for the Study of Diabetes (EASD)



# nature

THE INTERNATIONAL SCIENTIFIC JOURNAL OF SCIENCE



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HEALTH SCIENCE

## CUTTING-EDGE MEDICINE

Why surgery is the next big thing in type 2 diabetes

PAGE 459

HOW CITIES CAN SAVE US ALL A vision for a zero-waste, driver-free, energy-positive urban future

# SCIENTIFIC AMERICAN

PLUS

IS DARK MATTER MADE OF BLACK HOLES?

A cosmic mystery PAGE 38

SURGERY STOPS DIABETES...

...and leads to a new theory of the disease PAGE 40

# OPERATION: DIABETES

Surgery that shortens intestines gets rid of the illness, and new evidence shows the gut—not simply insulin—may be responsible

By Francesco Rubino

THE JOURNAL OF CLINICAL AND APPLIED RESEARCH AND EDUCATION

# Diabetes Care

www.diabetescare.org

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AMERICAN DIABETES ASSOCIATION

## STANDARDS OF MEDICAL CARE IN DIABETES—2017

AMERICAN DIABETES ASSOCIATION

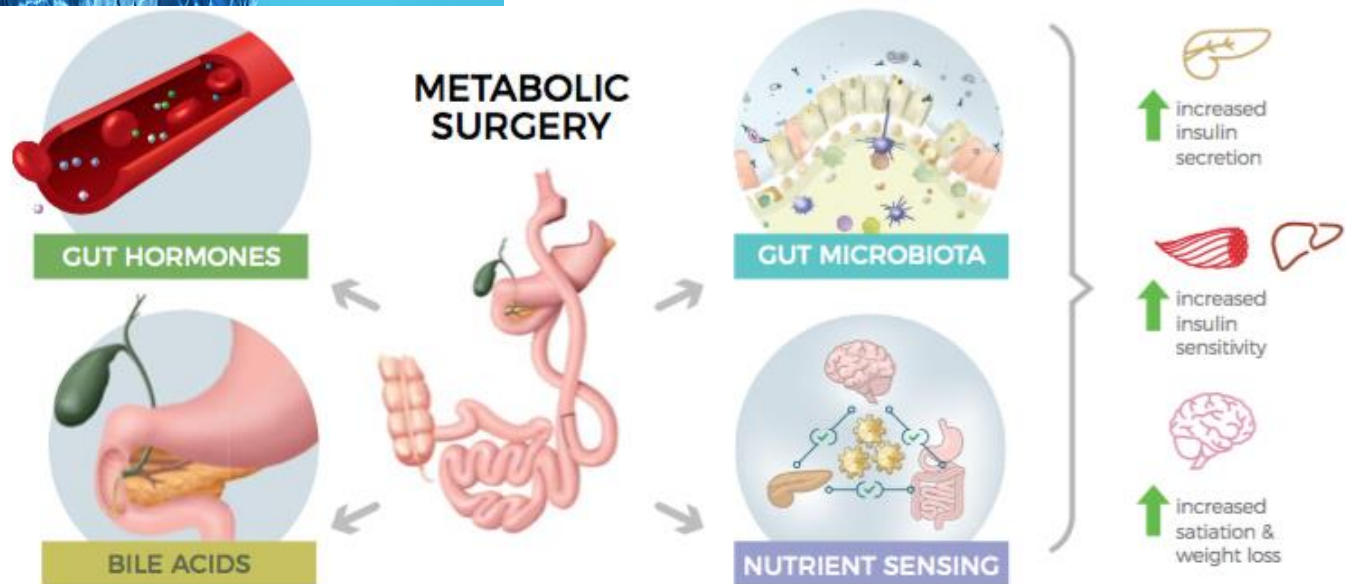




***“Given its role in the regulation of glucose levels in homeostasis and in disease, the GI tract constitutes a clinically and biologically meaningful target for anti-diabetes interventions”***

## **DSS-II**

Metabolic Surgery changes various mechanisms of GI physiology involved in metabolic regulation<sup>(3,4)</sup>



***“Given its role in metabolic regulation, the GI tract constitutes a clinically and biologically meaningful target for the management of T2D.”*** DSS-II<sup>(2)</sup>

# nature



UIG/GETTY



Surgery can be an effective treatment for type 2 diabetes.

## Time to think differently about diabetes

New guidelines for the surgical treatment of type 2 diabetes bolster hopes of finding a cure, writes **Francesco Rubino**, but long-standing preconceptions must be put aside.

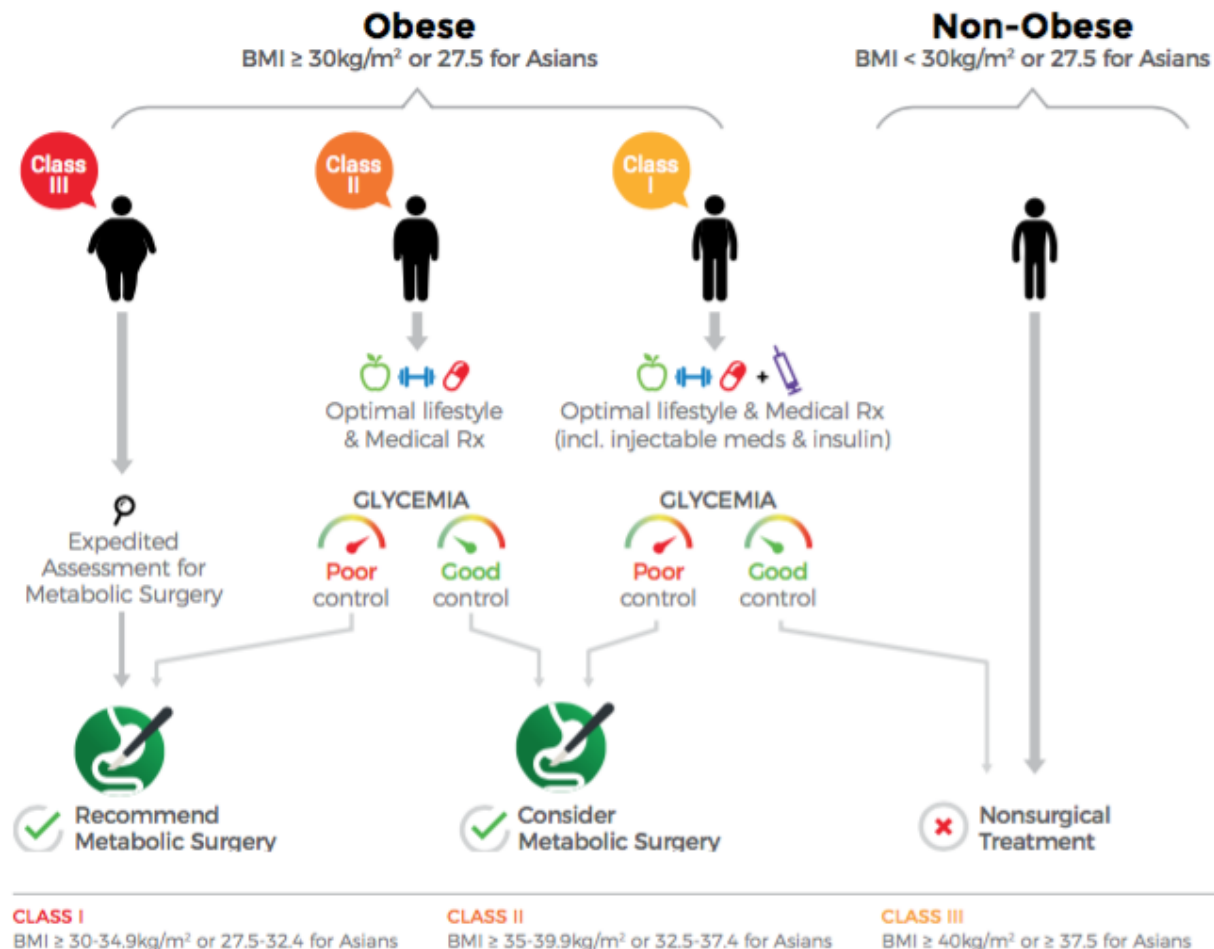


# Indications for Surgical Treatment

*"There is now sufficient clinical and mechanistic evidence to support inclusion of metabolic surgery among antidiabetes interventions for people with T2D and obesity."* DSS-II<sup>(2)</sup>



## Algorithm for patients with Type 2 Diabetes



Based on Rubino F. et al. Diabetes Care 2016; 39, 861-877

# THE TIMES

## Scalpel, Please

Gastric surgery can achieve extraordinary results for diabetes sufferers

Health secretary would lightly spend £600 million on 100,000 operations if he did not think they were essential. That is why the diabetes research community has assembled every possible argument in favour of gastric surgery as a treatment for the condition. The arguments are compelling and Jeremy Hunt and NHS regulators should pay attention to them.

Gastric surgery is traditionally seen as a last resort for the morbidly obese. The latest science suggests that it may in fact be the closest thing yet to a cure for diabetes, which afflicts 4 million people in Britain and consumes 12 per cent of global healthcare spending.

Diabetes is the pandemic of the modern age. There is a direct correlation between rising GDP and the incidence of obesity-linked type 2 diabetes. There are also serious barriers to the adoption of gastric surgery as a way of containing it, including the high cost per patient and the widely held view that the first line of defence should be a move to healthier lifestyles by people seen to have brought the illness on themselves. Economics as a science suggest otherwise. Gastric bands

and bypasses on a mass scale may be the best investment on offer to a cash-strapped NHS.

Research released yesterday based on 11 clinical trials finds that surgery can attack the causes of diabetes, not just its symptoms — and can do so more effectively than drugs, diet or exercise. In one study by Newcastle University the blood-sugar levels of 18 patients returned to normal after gastric bypass surgery. In another published last year half the subjects were, effectively, free of diabetes five years after a similar procedure. Meanwhile, fewer than half of sufferers who rely on conventional treatments significantly lower their risk of complications, which include stroke, kidney failure, blindness and heart disease.

How surgery can achieve such dramatic results is not yet clear. Some experiments suggest that it boosts natural insulin production by altering the secretion of hormones in the gut. Others point to fat loss in the pancreas itself, allowing formerly obese patients to resume virtually normal blood-sugar management. However, the potential for surgery to reverse the effects of diabetes rather than merely treat them is clear. The conclusion

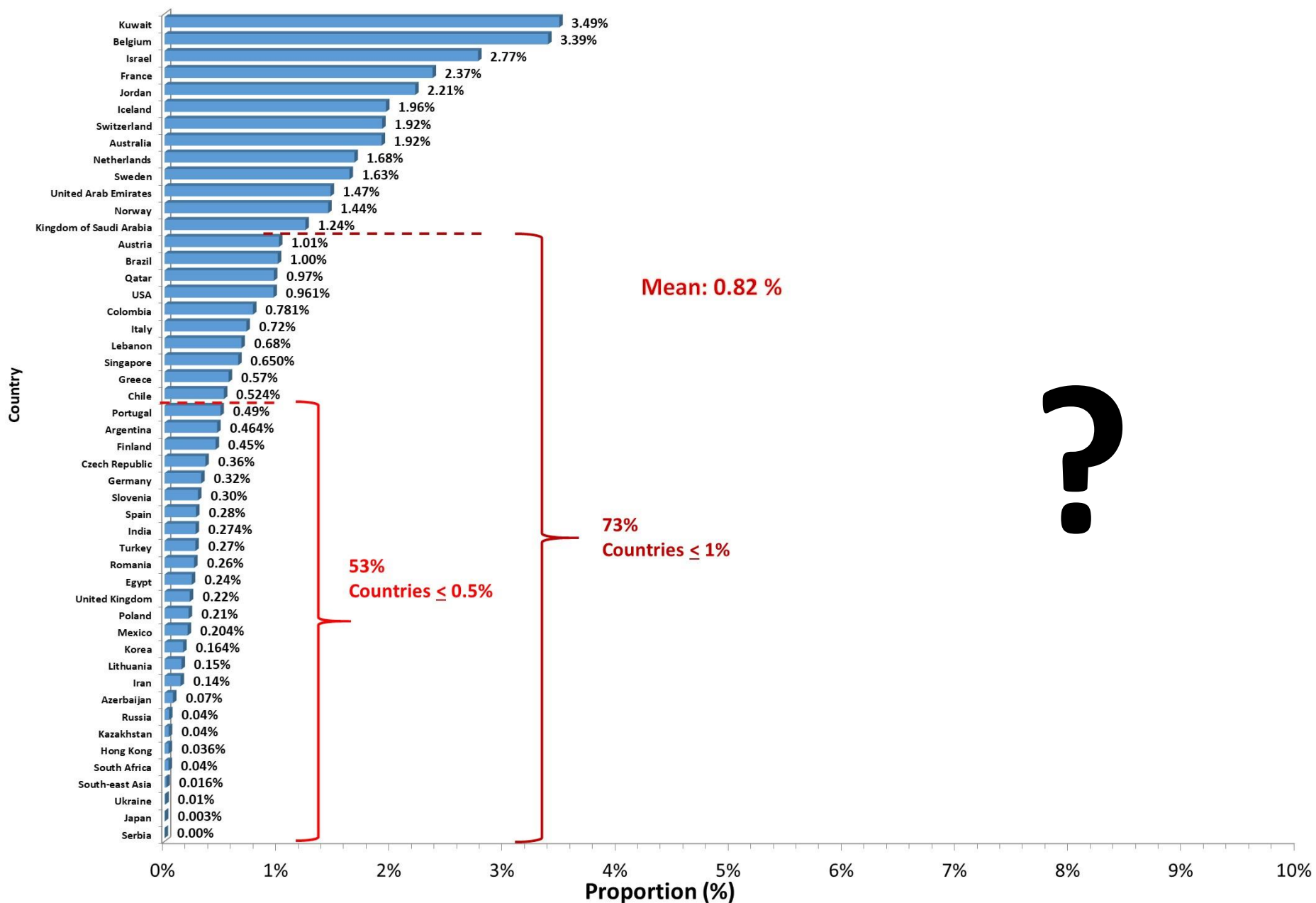
that surgery should be considered a mainstream response is unavoidable.

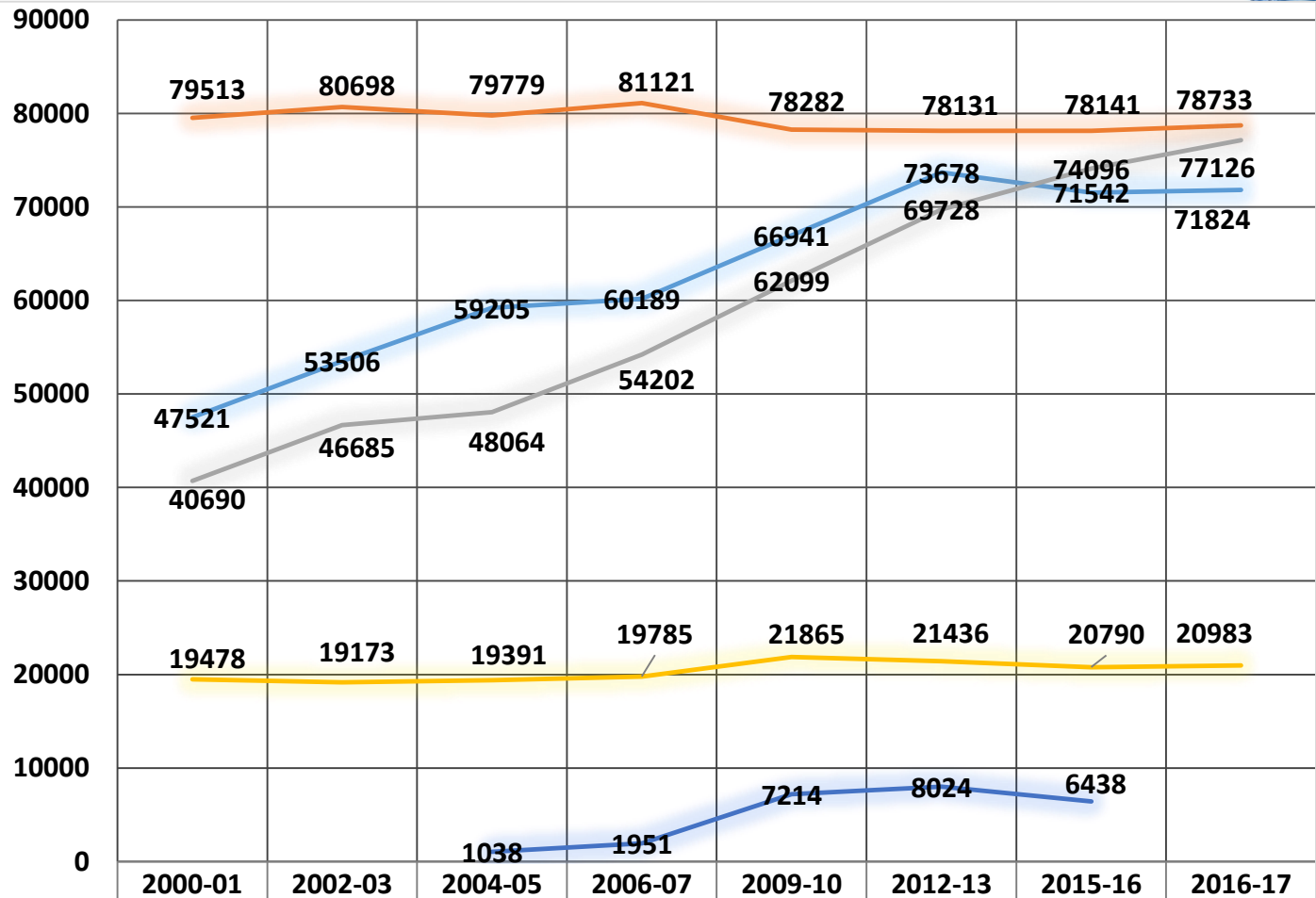
In Britain the first step towards this would be for the National Institute for Health and Care Excellence (Nice) to approve surgery not just for extreme obesity but specifically for advanced type 2 diabetes. About a million patients would be eligible. Of these 100,000 would be highly likely to benefit. At present, their treatment costs the NHS about £3,000 per patient a year. At an average cost per operation of £6,000 the health service could expect to earn that back in subsequent savings within two years.

Some worry that the easy availability of surgery would signal to diabetes sufferers that better diets and less sedentary lifestyles were no longer paramount. This advice has not stopped the global incidence of diabetes quadrupling since 1980. Moreover, surveys show that the rapid results achieved through surgery often encourage patients where willpower alone has let them down. In straitened times, with an ageing population and spiralling diabetes-related costs, Nice and the NHS need to think outside the box and embrace the band.

**“The conclusion that Surgery should be considered a mainstream response is unavoidable”**

# Proportion of patients undergoing metabolic surgery among eligible patients worldwide





	2000-01	2002-03	2004-05	2006-07	2009-10	2012-13	2015-16	2016-17
Hip Replacements	47521	53506	59205	60189	66941	73678	71542	71824
Inguinal Hernia	79513	80698	79779	81121	78282	78131	78141	78733
Gallbladder	40690	46685	48064	54202	62099	69728	74096	77126
Colectomies	19478	19173	19391	19785	21865	21436	20790	20983
Bariatric Surgery			1038	1951	7214	8024	6438	

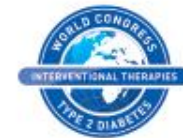
## Hospital Admitted Patient Care Activity

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National Statistics



# Barriers to Implementation of Metabolic/Bariatric Surgery



- Safety ?
- Education/Awareness (patients and HCPs) ?
- Costs?
- Insurance Coverage ?
- Or something else?

# (Historical) Clinical Rationale for Bariatric Surgery

Bariatric surgery



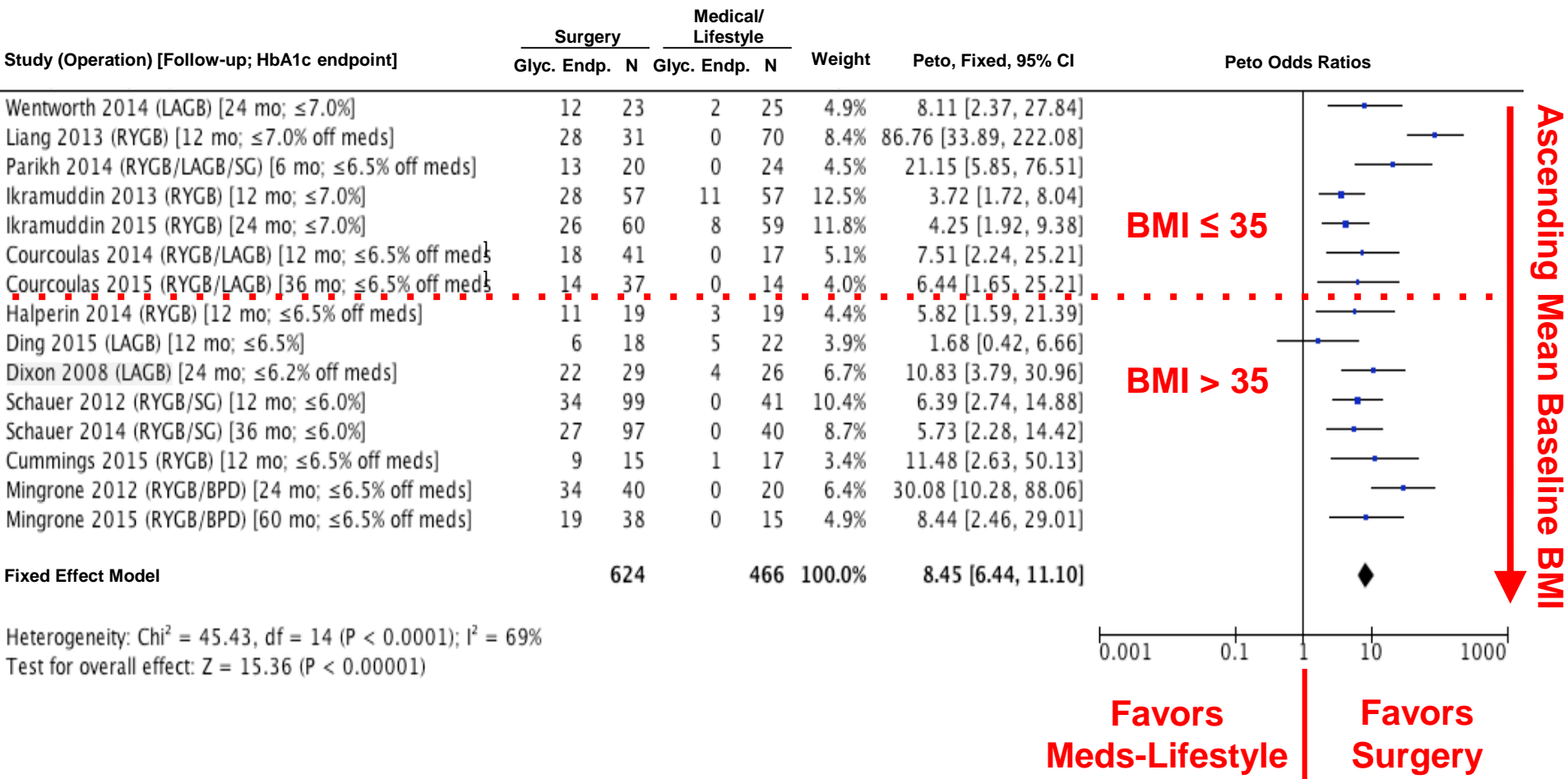
## Weight Loss Surgery





# Misperceptions about Evidence

# Evidence for Metabolic Surgery in Patients with T2D







## **Bariatric Surgery**



## **Elective General Surgery**

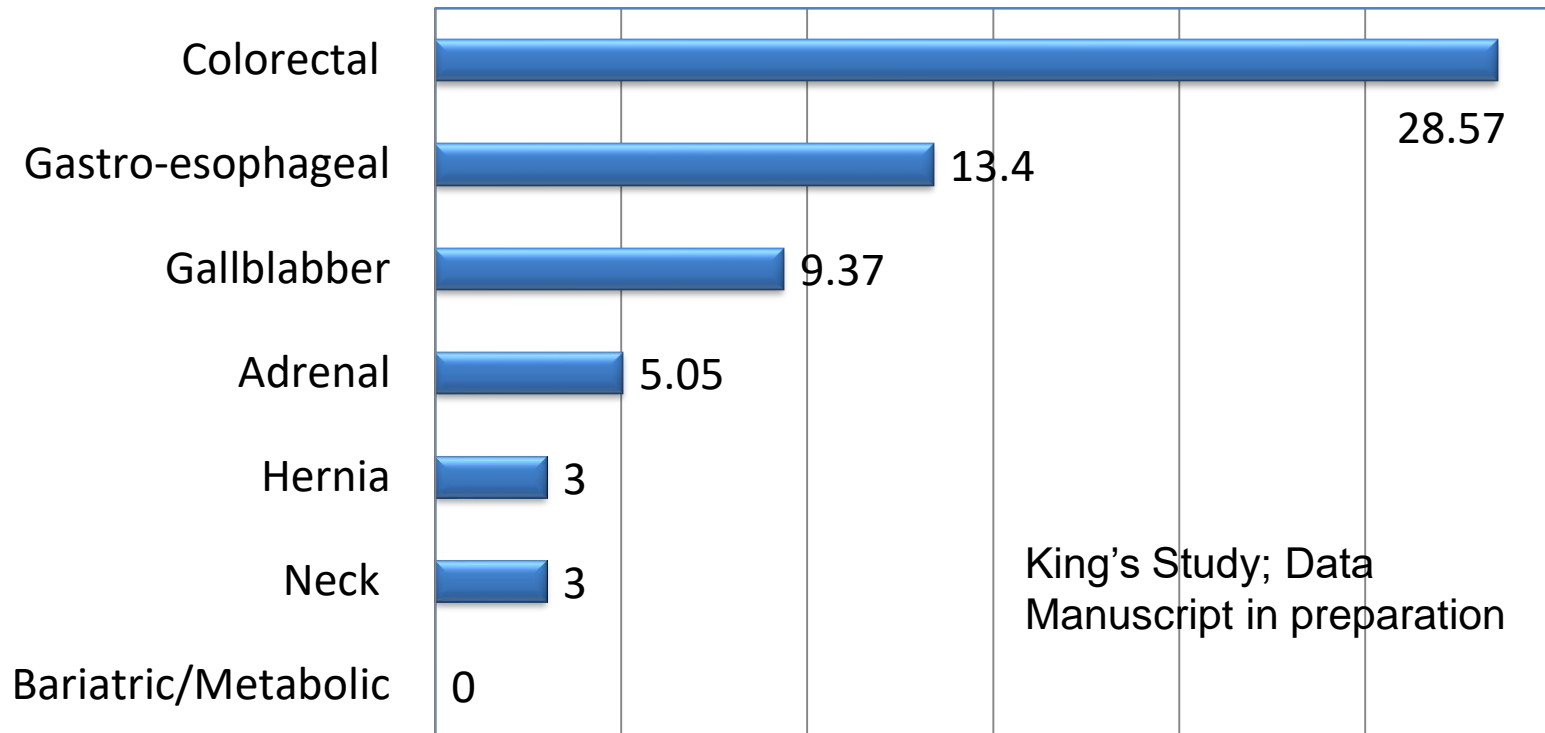
Cholecystectomy, Hernia Surgery,  
Reflux Surgery, Colorectal (benign)

## ***Bariatric Surgery Mortality Rate: 0.3% (55,567 patients)***

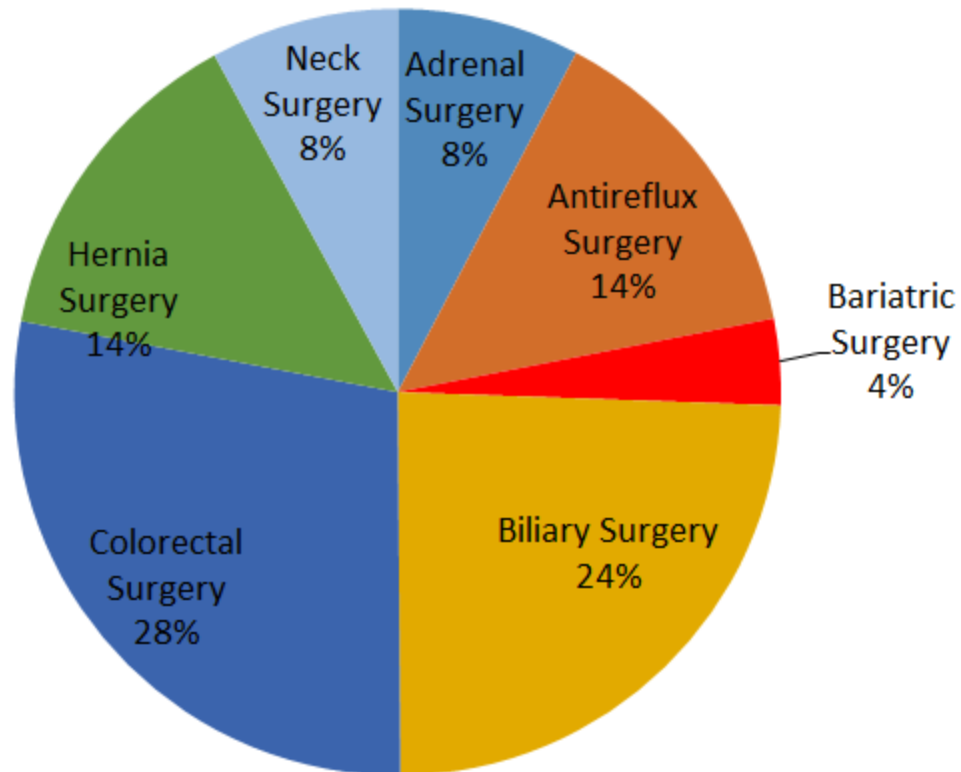
	Aortic Aneurysm	CABG	Craniotomy	Esophageal Resection	Hip Replacement	Pediatric Heart Surgery
Hospitals Performing Operation	2485	1036	1600	1717	3445	458
Mortality Index ( %)	3.9	3.5	10.7	9.1	0.3	5.4
Median Volume per Hospital	30	491	12	5	24	4

*Source: Dimick JB, Welch HG, Birkmeyer JD. Surgical mortality as an indicator of hospital quality. JAMA 2004;292, 847-851*

## Safety Composite Endpoint 30 days re-admission, re-operation, major morbidity of elective procedures



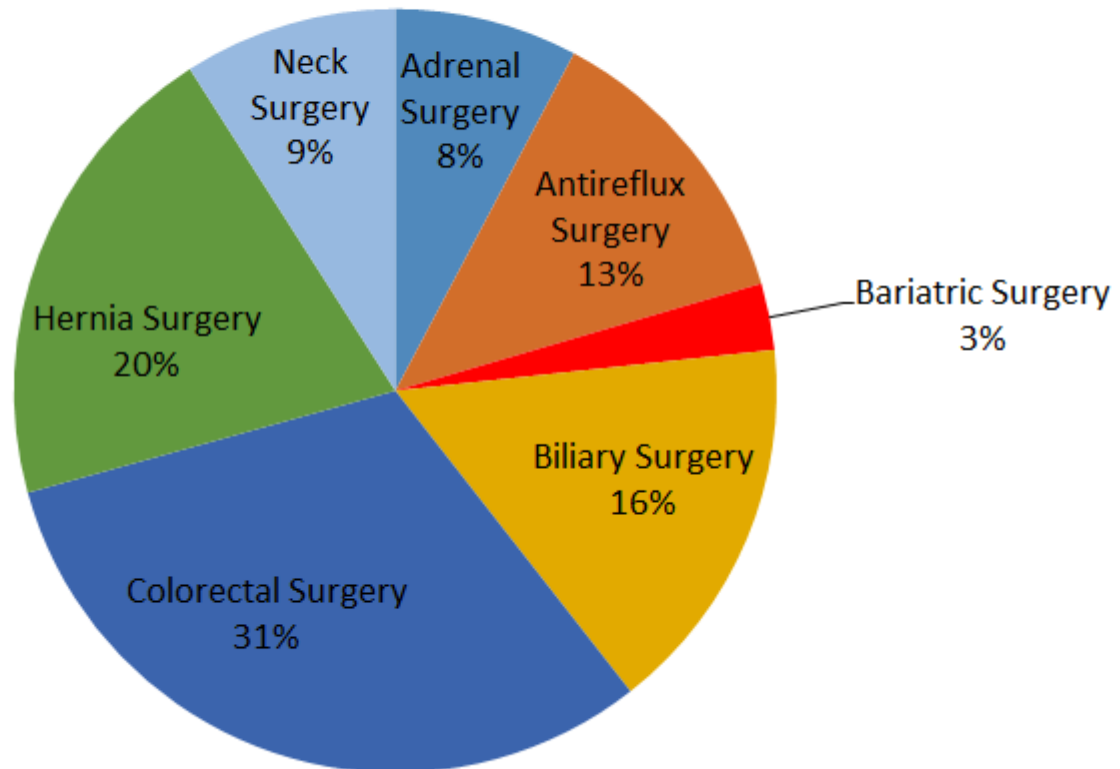
**Proportion of Emergency Department Attendances of  
each specialty over the 5 year follow up period**



King's Unpublished Data



### Proportion of Inpatient re-admission of each specialty specialty over the 5 year follow up period



King's Unpublished Data



# Misperceptions about Costs



# EXPRESS

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# NHS squanders millions on fat surgery

A RECORD number of patients have had “quick-fix” obesity surgery on the NHS at a cost of £29million a year, shocking new figures show.

# Health Insurance and Bariatric/Metabolic Surgery








- Long-term cost-effectiveness
- Quality of Evidence
- Return of Investment
- Upfront Costs
- “Fear of Opening the Flood Gates”





## In Context....



	Surgical Treatment of Osteoarthritis (Knee/Hip)	Metabolic/Bariatric Surgery
Disease Prevalence	+++	+++
Safety		
QoL		
Life-Saving	/	
Average Cost	\$50,000	\$23,000
Potential for Re-operation	++	+

	Knee / Hip Replacement	Metabolic/Bariatric Surgery
USA	1.1 M	200K
UK	160,000 (1.5/yr)	6,000 (25M/yr)

# Barriers to Implementation of Metabolic/Bariatric Surgery

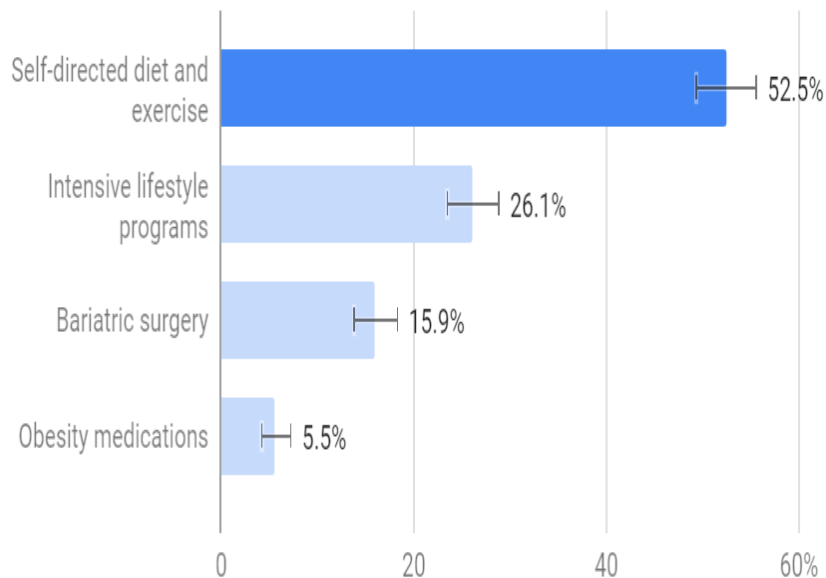


- Safety ?
- Education/Awareness (patients and HCPs) ?
- Costs?
- Insurance Coverage ?
- **Or something else?**

## Obesity Surgery - U.S.

1. Which of the following treatments for obesity is most effective?

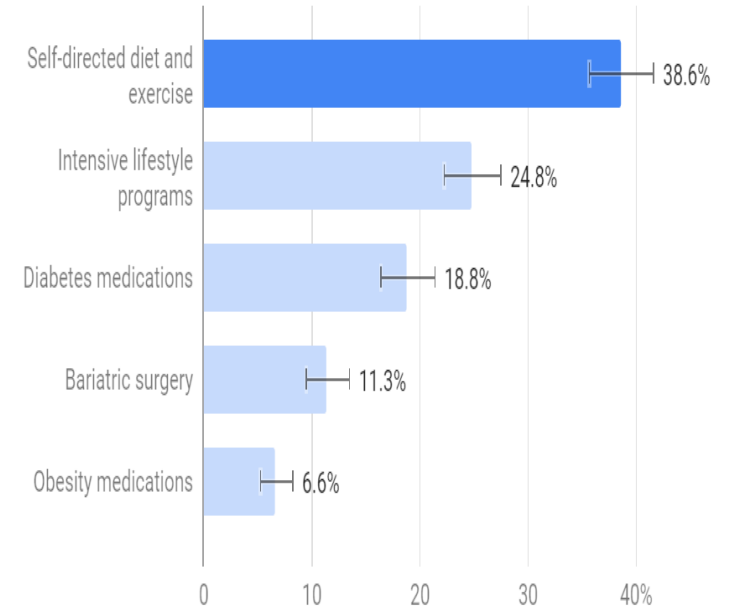
776 respondents



## Diabetes Surgery - U.S.

1. Which of the following treatments for type 2 diabetes is most effective in people who also have obesity?

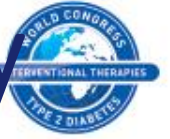
728 respondents



# **Are Misconceptions and Stigma Holding Back Evidence-Based Metabolic Surgery?**



# Stigma and Metabolic/Bariatric Surgery

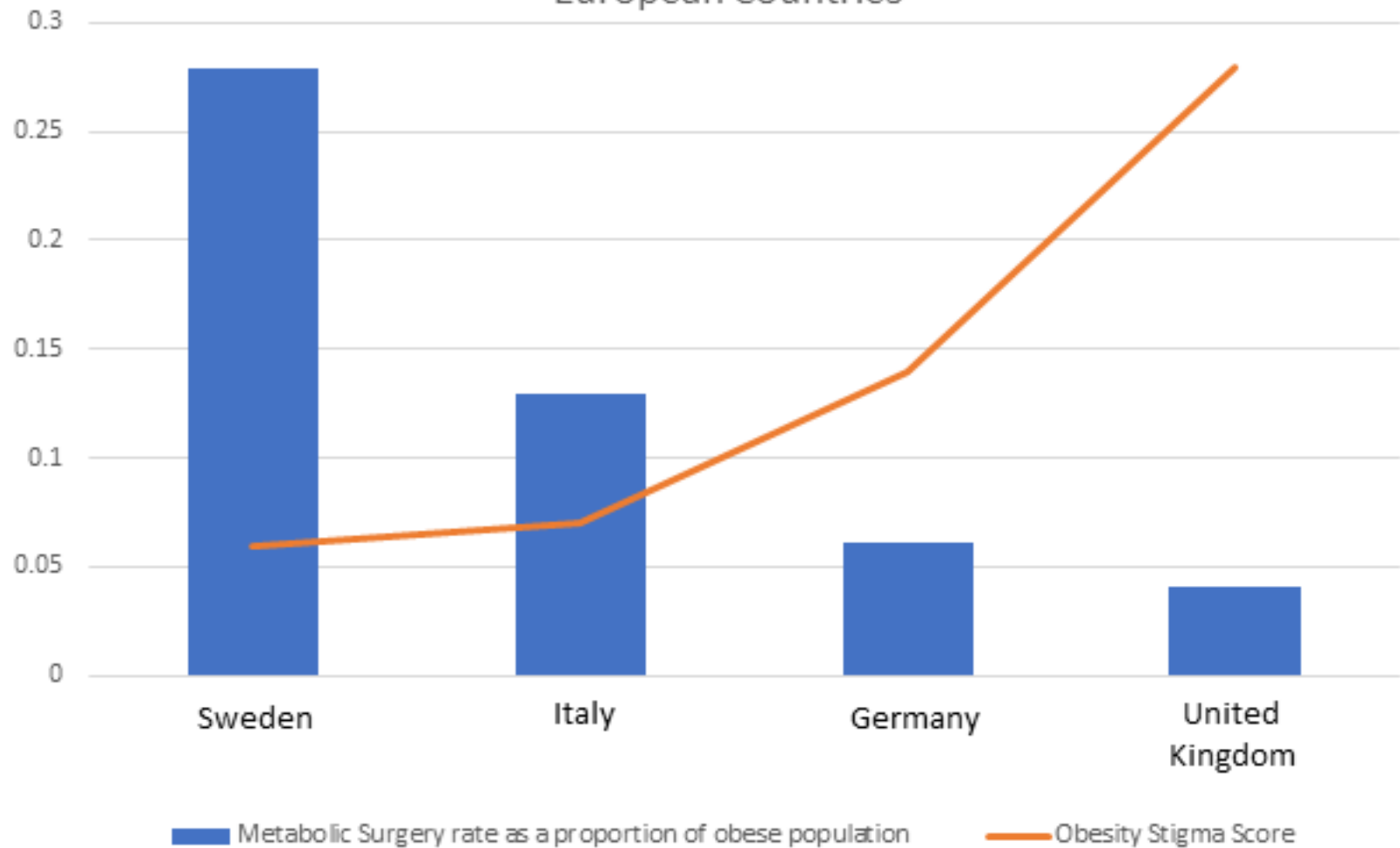


- Internalized stigma exacerbates feelings of self-blame, which may deter patients from seeking bariatric surgery.
- Bariatric surgery is stigmatized as ‘the easy way out’ and a treatment for people too ‘weak’ to lose weight without surgery.
- Healthcare organizations’ policies may reflect stigmatizing beliefs that surgery should be rationed to “deserving” patients.

# Britain 'prejudiced against fat people'



## Obesity Stigma plotted against rate of Metabolic Surgery across four European Countries



# Attitudes, Stigma & Knowledge: The ASK Study



O'Keeffe<sup>1</sup>, S.W. Flint<sup>2</sup>, D. Qanaq<sup>3</sup>, L. Ferraro<sup>3</sup>, F. Rubino<sup>3</sup>

<sup>1</sup>Department of Nutritional Sciences; <sup>3</sup>Department of Diabetes, **King's College London, UK**

<sup>2</sup>School of Sport, **Leeds Beckett University, UK**

To understand *attitudes towards obesity* and *type 2 diabetes* as well as the *role and value of treatments* in an international sample of *healthcare professionals (HCPs)* and the *general population*.

**N=3044**



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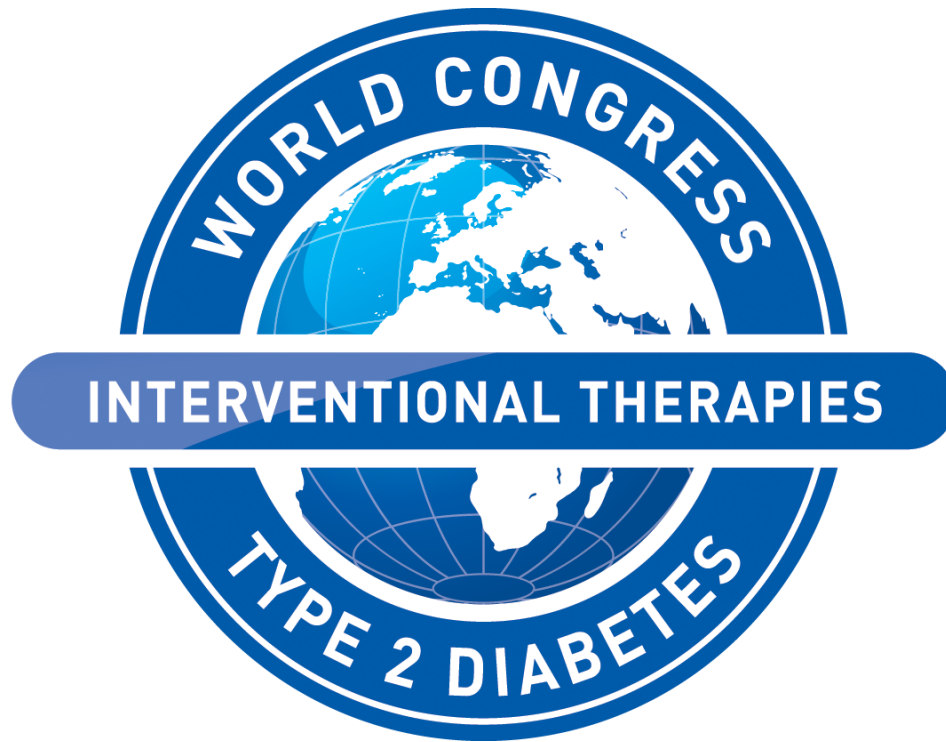


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