

Prof.dr E.J. Hazebroek

Inaugural lecture upon taking up the position of Special Professor of Nutrition and Obesity Treatment at Wageningen University & Research on 14 November 2019



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Turning the Scale

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Turning the Scale

Esteemed rector magnificus, dear colleagues, family and friends, ladies and gentlemen,

A century ago, William Howard Taft was running for president of the United States. Serving for years as minister of War under Theodore Roosevelt, he was highly respected, but also about to become the heaviest president in history¹. For many years, Taft had been struggling to control his weight. Carrying 160 kilograms, he suffered from several medical conditions including heartburn, fatigue and restless sleep. Concerned with his extreme overweight and image he sought for remedies to turn the scale.

Eventually, he found the help of a doctor, a well-known diet expert in London who prescribed the soon-to-be-president a low-fat, low-calorie diet and advised him to keep a diary of what he ate and log his weight every day. Taft corresponded almost weekly with his doctor on the other side of the Atlantic to report on his progress, and in return the doctor wrote back. Taft was prescribed a very strict diet plan that consisted of small portions of lean meat



Figure 1. William Howard Taft (1857-1930), 27th President of the United States of America. Source: dkfindout.com

or fish, cooked vegetables, plain salad and fruit. He was allowed to drink one glass of 'unsweetened' wine for lunch. For 'in between snacks', the doctor even had developed special biscuits. And on a regular basis, Taft ordered a shipment to the US.

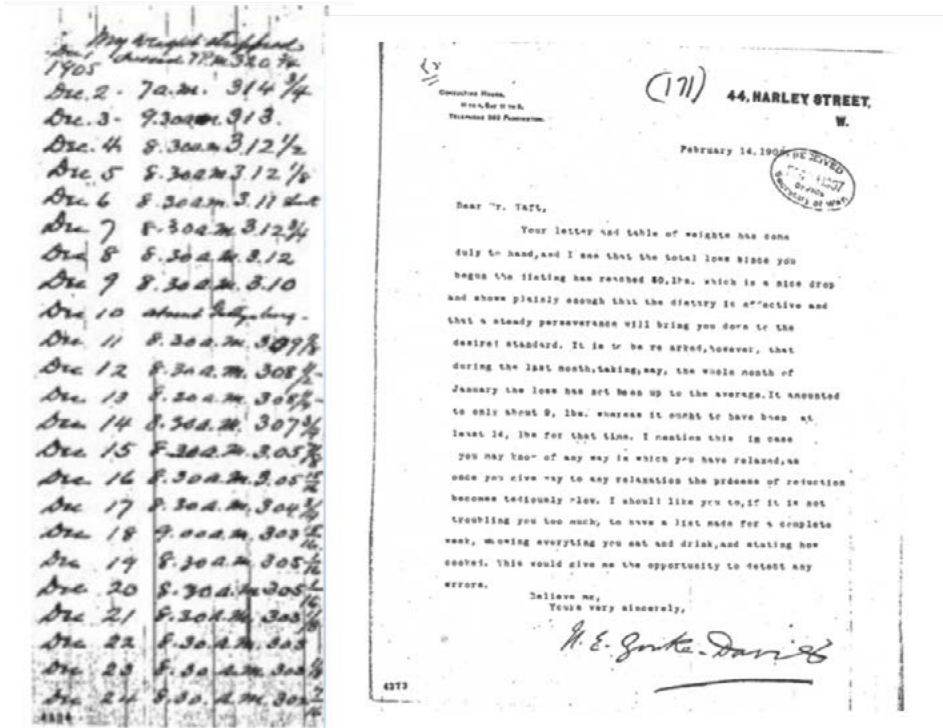


Figure 2. (left) Handwritten record of William Howard Taft's weight loss, 1905. Source: Library of Congress, Presidential Papers of President William Howard Taft, MSS42234.

Figure 3. (right) Correspondence from doctor, 1906. Source: Library of Congress, Presidential Papers of President William Howard Taft, MSS42234.

According to the diaries, Taft tried to adhere to the diet program. He also hired a personal trainer, played golf and rode a horse for outdoor exercise. Initially, the program proved to be a success. Six months after his first letter to the doctor, Taft had managed to lose 30 kilograms. People around him praised his achievements and told him he looked much healthier. But Taft complained that he was 'continuously hungry'. When at some point he started to regain weight, he stopped writing to the doctor, who advised him to immediately return to the diet program or "in another 3 or 4 years you will be almost back to your original weight".



Figure 4. Taft playing golf, undated photograph.
Source: [gettyimages.nl](https://www.gettyimages.nl)



Figure 5. Taft on horseback, 1905.
Source: [Library of Congress, LC-USZ62-88514](https://www.libraryofcongress.gov).

And so it happened. By the time Taft was inaugurated as president in 1909, he not only regained all the weight he had lost, but had gained even more, weighing almost 170 kilograms.

Like today, obesity was a condition that could lead to physical, social and emotional problems.

Taft's obesity had long been the subject of jokes and cartoons, fueled by a rumor of having been stuck in one of the White House bathtubs. And it also affected the opinions of journalists who questioned his leadership abilities in relation to his overweight.



Figure 6. Photograph of four men in Taft's tub, originally published in issue of *Engineering Review*, 1909.
Source: [history.com](https://www.history.com)

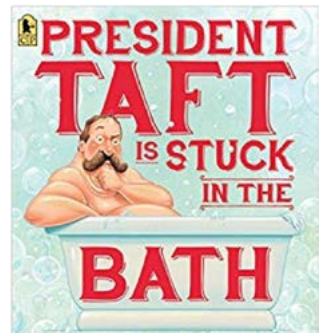


Figure 7. Cartoon of Taft being stuck in the bath tub.
Source: [Macbarnett.com](https://www.macbarnett.com)

But Taft never gave up his battle. When he died in 1930 from heart failure at the age of 73, he weighed 140 kilograms.

Although the extensive correspondence between the president and his doctor took place more than hundred years ago, it shows striking similarities with modern weight loss management. Not only does it illustrate the difficulty many people have in achieving and maintaining weight loss, but also that we have not come a long way in developing a diet that leads to permanent weight loss.

But the story of president Taft tells us other important things. First of all, that obesity has been present long before the rise of fast-food and take-out meals, which indicates that there are other factors involved than the ones inflicted by our environment. And it shows that ‘corpulence’ as obesity was called back then, was recognized as a serious medical problem requiring serious attention. Ironically, it even challenges the prevalent view that failing to achieve weight loss is caused by a lack of willpower, as it is unlikely to become president of the United States with a lack of willpower!

But let’s jump back to our modern time and address the magnitude of the problem we are facing today.

Obesity, also described as ‘the excess accumulation of body fat in a way it poses serious health risks’, has become a widespread phenomenon. A true global epidemic affecting all levels of society irrespective of age, gender or race. In the past 40 years, not a single country in the world has experienced a reduction in the prevalence of obesity ². When we use the body mass index (or BMI) as a marker for body fat, more than half of the population in the Netherlands is overweight and 14% even severely overweight, also known as ‘obese’ ³. Carrying extra weight can lead to a wide range of comorbidities: health problems that exist in addition to obesity. Obesity is associated with a number of chronic conditions such as diabetes, high blood pressure, sleep apnea, infertility and various forms of cancer. It adversely affects mental health and leads to a lower life expectancy. In fact, the American Medical Association has declared obesity a disease ⁴.

Because obesity is related to an increased exposure to unhealthy food and lack of exercise, it is often considered a lifestyle choice. But at the end of the day, nobody *chooses* to be fat.

Erasmus once said: ‘*prevention is better than cure*’. And these words are still true today. The best remedy for obesity is to make sure that you do not gain weight in the first place. Because by the time body weight has dramatically increased, the way back is almost impossible.

Many people think it is like bookkeeping: “a simple calculation of calories in vs. calories out”. In other words: if you eat too many calories but do not exercise enough to burn the calories, the energy will be stored in your body as fat. And often, just as we heard in President Taft’s case, the advice will be: eat less and exercise more. But interventions that focus only on these two items have a tendency to fail and intensive dieting may even result in weight gain exceeding the starting weight. The misconception that obesity has a simple cause is unfortunately widespread. More importantly, it blocks the way to develop appropriate strategies for prevention and treatment.

Like many problems in healthcare today, the management of obesity involves various questions. Why is it so difficult for many people to lose weight and keep it off? How can we influence factors that contribute to weight regain after weight loss? How can we treat obesity effectively and reduce the risk of complications? Answering these questions start with an understanding of the factors that are involved in the biology of body weight regulation.

Explaining body weight regulation

The accumulation of body fat is a normal process as fat is one of the most important energy sources for our body and our organs. In prehistoric times, when food was scarce, some fat storage was very useful. But in times where food, and especially unhealthy food, is available in abundance, there is a risk for developing too much body fat.

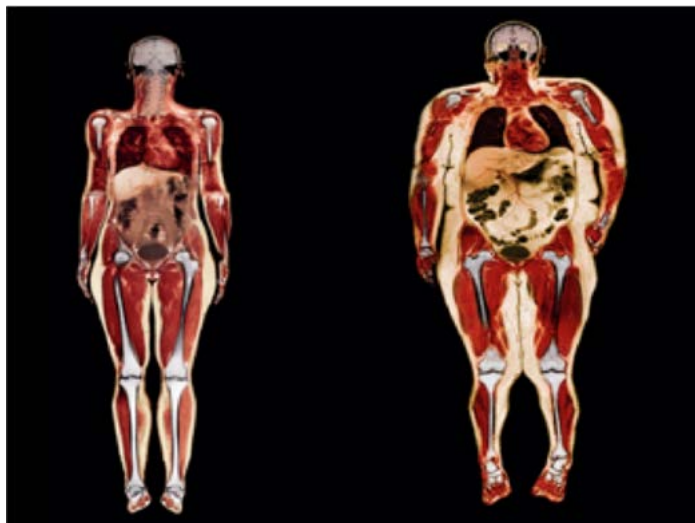


Figure 8. Body scan of person with normal weight (left) and person with obesity (right).

As this body scan shows, the yellow substance is not just a layer beneath the skin, but can be found at many other locations.

Excess fat accumulates in and around metabolic organs such as the liver and muscle. An excess of abdominal (or belly) fat is more harmful than the fat on our hips due to an increased risk of cardiovascular disease and diabetes.

People vary widely in how easily they put on weight and how difficult it is for them to lose it. Studies in twins show that 40 to 70% of variability in weight is inherited ⁵. But the actual **genetics** are complex. The amount of body fat is affected by many different factors, and each of these factors is influenced by hundreds of genes ⁶. Each gene will only contribute to a small amount of risk, but all of these genes together can make the difference between being slim or having to struggle to maintain a healthy weight. Another important factor is our **microbiome** ⁷. Our bowels contain a wide spectrum of microorganisms, most of which are bacteria. These gut bacteria help us get more energy from food by breaking down nutrients. And they also can stimulate the production of appetite-controlling hormones. People with obesity have different types and amounts of gut bacteria than thin people. Much remains unknown about how these bacteria interact with body fat, but the populations in our gut are largely determined by the food we consume.

The rapid increase in obesity we have seen over the past several decades is not due to genetics, but to an altered environment involving increased availability and marketing of cheap, highly processed foods and sugar-sweetened beverages, along with the rise in supermarkets and fast-food industries. This '**obesogenic environment**' also involves a reduction in physical activity during work, domestic activities and leisure time.

In short, our genes and gut bacteria combined with environmental factors play an important role in regulating body weight. If you are lucky, you have favorable genes and gut bacteria and will be able to maintain a stable weight despite having unhealthy eating habits or lack of exercise.

To address the question why it is so difficult for many people to lose weight, the complexity of obesity is further highlighted by a theory how our body weight is regulated. Although exact mechanisms are largely unknown, this theory describes that the human body has a weight range that is regulated to a '**set-point**' ⁸. A simple way to picture this set-point would be to compare it to a thermostat in our living room.

This set-point is different for every person and is influenced by the genes we inherit from our parents. The human body uses this mechanism to keep its weight within a natural range.

These findings imply that areas in our brain controlling food intake and energy are able to monitor how much fat is present in the body, and then respond by changes in signaling hormones that control hunger and satiety⁹. This set-point is not fixed, but is influenced by external factors and therefore can change. This also explains why some people who had a stable weight for most of their life can experience rapid weight gain after pregnancy, stress or use of medication.

If the environment has influenced our set-point over time, an obvious solution would be to try to move the set-point back. But changing our environment is easier said than done. We do not know if, and how exactly we can achieve this, but what we do know is that losing weight and keeping it off using willpower alone, is practically impossible. In fact, it is very similar to the control we have over our breathing. If we were asked to reduce our breathing to 10 times per minute instead of the usual 16-18, we would be able to do this for a while. But the question is, for how long?

All these mechanisms are important to acknowledge when we restrict food intake to achieve weight loss. It is also the reason why people on diets, as you just heard in the case of President Taft, get hungry when they lose weight, why they crave food, and why their body conserves energy. Their body wants to return to that high set-point.

In summary, when obesity is influenced by our biology and our environment, it is clear that it is not primarily someone's fault to develop obesity. Despite these facts, the prevalent view is that obesity is self-inflicted and the individual's responsibility to do something about it.

Of course, some people ignore all health risks despite knowing better. But many people will repeatedly fail to achieve weight loss, and simply telling them to try harder is not the way to go. Creating a better food and social environment and early education on healthy nutrition and lifestyle are essential. But for people who already have obesity, preventive measures are too late.

Obesity treatment: metabolic surgery

If president Taft would have lived today, his doctors probably would have offered him to consider weight loss surgery. Weight loss surgery, also known as 'bariatric surgery' is a drastic solution to treat obesity but when it is applied in combination with adjustments in lifestyle, dietary advice and psychological support, it is by far the most effective treatment available.

Surgery can be considered for people who have a body mass index higher than 40 or a BMI higher than 35 with serious weight related health problems.

The word 'bariatric' is derived from the Greek words *baros* (meaning 'weight') and *iatros* (meaning 'doctor'). The procedures most often performed are the gastric bypass

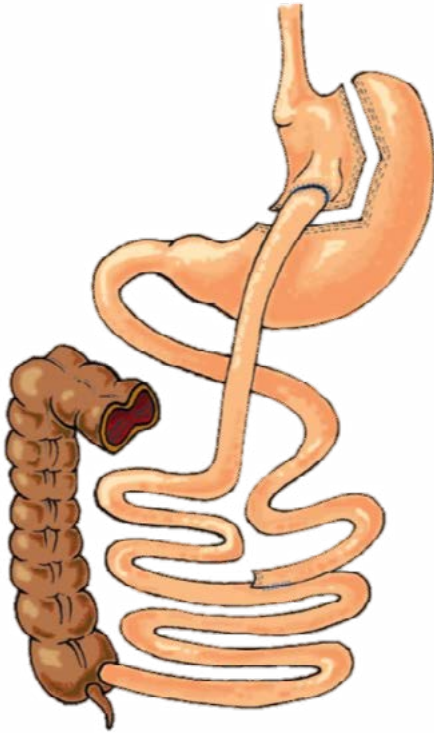


Figure 9. Gastric bypass

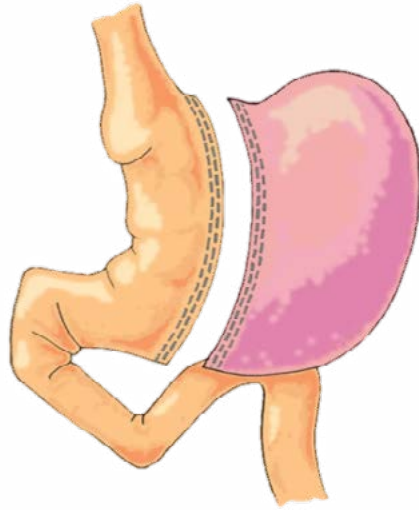


Figure 10. Sleeve gastrectomy

and the sleeve gastrectomy. Both techniques have in common that they interfere with food passing through the digestive tract. Both lead to substantial long-term weight loss and an improvement in several metabolic parameters. People will also live longer and with a better quality of life.

Initially, it was thought that the weight loss was a result of the restricted stomach size or poor absorption of nutrients. But it is far more interesting than that. It appeared that after surgery, most patients do not feel hungry all the time and don't crave food as much as before ¹⁰. Some will prefer certain types of food, like salad or other vegetables, which they did not like at all before the operation. Sometimes our patients even ask if they were not operated on the brain instead of their stomach!

Research shows that hormones controlling satiety, appetite and hunger are responsible for this ¹¹. Although the exact mechanisms are still being investigated, there is evidence that the set-point regulating body weight indeed is permanently set at a lower level ^{12,13}. After surgery, appetite is reduced and then followed by weight

loss over a period of months. And after a while, the body weight settles at a new, healthier level.

Interestingly, symptoms of diabetes may improve immediately after surgery, and many patients will have normal blood sugar levels and require less medication long before the weight loss has occurred ¹⁴.

Worldwide, these interesting effects have started a whole new field of research. These research domains are still being developed and involve the bacteria in our gut, bile acids and various hormonal pathways that affect our metabolism. Because surgery induces these metabolic effects, we now often speak of ‘metabolic’ surgery instead of ‘bariatric’ surgery.

There is increasing evidence that metabolic surgery is a safe and effective intervention for patients with obesity and type 2 diabetes ^{15,16}.

This means that these operations can now also be considered for patients with a BMI lower than 35, which constitutes the majority of people with diabetes worldwide.

This new way of thinking about obesity treatment also offers new possibilities.

If we can identify which mechanisms are influenced by our surgical interventions, we can develop medication with similar effects. Good examples are recent drugs called ‘GLP-1 receptor agonists’ that improve blood glucose control and promote weight loss. The challenge for the future will be to define which person benefits most from which treatment.

Although I strongly believe that surgery is a very good option for treating severe obesity, it also carries risks. And these risks must always be balanced with its benefits.

I cannot stress enough that surgery must be considered a major step and not just a ‘quick fix’. Besides meeting strict criteria, it requires motivation and willingness to adapt to a new eating pattern.

And there are other challenges to address when attempting to turn the scale. First of all, there is considerable variation in the degree of weight loss following surgery ¹⁷. The majority of patients will manage to lose at least two-thirds of their excess weight, but there is always a risk of **weight regain** after the operation. And consequently, this may have an effect on the recurrence of **co-morbidities**. Second, bariatric surgery is associated with a risk of developing **nutritional deficiencies** due to poor absorption of nutrients. For this reason, patients are advised to use vitamin supplements long after the operation ¹⁸. These issues imply that we need a better understanding on how our treatments are influenced by nutritional factors and vice versa. And these challenges bring me to Wageningen...

Two years ago, Rijnstate joined the Nutrition and Healthcare Alliance, a collaboration between the Division of Human Nutrition and Health of Wageningen University and Gelderse Vallei Hospital. This partnership offered new possibilities for Vitalys, part of Rijnstate and one of the largest bariatric centers in the Netherlands.

I am very pleased that our shared vision to incorporate Wageningen's well-established position in nutritional research with our clinical expertise have resulted in the special Chair 'Nutrition and Obesity Treatment'.

This special Chair is embedded in the Chair group Nutrition and Disease, which is one of five Chair groups of the Division of Human Nutrition and Health.

Approaching nutritional issues from different perspectives makes the Division of Human Nutrition and Health unique.

In the Helix building, everything is under one roof. A modern infrastructure, supporting top level research and education. Here we can do independent research why someone eats a particular food, what happens during digestion and what are the consequences. The Division has ample experience with the design and conduct of prospective observational cohort studies as well human intervention studies. Validated and novel dietary assessment methods are core business. In unique facilities, dietary interventions can be conducted, serving controlled diets to large groups of study participants. And collaborations with other groups within and outside the university, enable linkage of the neurobiology of eating behavior to adipose tissue, gut hormones and the microbiome. These examples show that in Wageningen, nutrition is studied at the level of the cell, the individual and the population.

Research agenda

The research of the Special Chair Nutrition and Obesity Treatment will be built around three objectives: First, we will explore appropriate strategies to minimize the risk of **weight regain** following treatment. Second, we will evaluate methods to reduce the risk of **nutritional deficiencies** after bariatric surgery. Third, we will assess how our interventions affect **comorbidities** such as sleep apnea.

Research in these three domains is already ongoing, and currently involves five PhD candidates.

Weight regain

One of the main challenges in bariatric and metabolic surgery is the management of weight regain, which often starts 1 or 2 years after the operation ¹⁹.

The goal of our first project is to assess which dietary and lifestyle interventions will be most effective in managing body weight after a period of successful weight loss. First, in an observational study, we will evaluate which factors are associated with successful weight loss after bariatric surgery. These factors include anatomic adjustments to the surgical procedure, such as variations in bowel length or gastric pouch size. Second, it is investigated whether the consumption of certain food groups is associated with weight regain after surgery. And third, we will use functional MRI scans to assess if gastric pouch emptying is related to weight regulation after a bariatric procedure. In these studies, which are performed in collaboration with the chair group Sensory Science and Eating Behavior, we will compare gastric bypass patients with a good result to a group with insufficient weight loss.

Nutritional deficiencies

Nutritional surveillance is an essential component of bariatric surgery, mainly because of the risk for developing vitamin deficiencies. But people with severe obesity may present with nutrient deficiencies before the operation, mostly due to poor diet quality²⁰. Together with the Dietary Assessment Group, we will assess if surgical patients adhere to the Dutch Dietary Guidelines. We will use the biochemistry facilities in Wageningen for assessment of specific vitamin deficiencies before and after surgery. These results will be of value for the development of optimized multivitamin supplements for bariatric patients.

The majority of our patients is female and often in the childbearing age. Therefore, the metabolic consequences of surgery related to macro- and micronutrient deficiencies may also have an effect on future pregnancies²¹. For these projects, we will work together with the departments of Gynecology and Obstetrics in Arnhem, Ede, Leeuwarden and Veldhoven and benefit from specific expertise in Periconception Epidemiology at Erasmus MC Rotterdam.

Comorbidities

Earlier, I mentioned that excess body fat is stored in various locations in our body. In fact, it even surrounds our airway and can infiltrate our heart. Obesity is therefore also an important risk factor for developing obstructive sleep apnea²². A serious condition characterized by periodic breathing stops during sleep, with increased cardiometabolic risk.

Historical reviews suggest that President Taft also suffered from sleep apnea, which explains his daytime sleepiness and tendency to fall asleep at many public functions!

After bariatric surgery, most patients will be cured from their sleep apnea as a result from the massive weight loss. In a large prospective cohort study, we will evaluate safety and cost-effectiveness of different peri-operative strategies to monitor bariatric patients²³. We have included more than 1300 patients from 7 participating hospitals and expect to present our first results next year. This cohort provides a perfect platform to study the cardiometabolic effects of sleep apnea and how this relates to body weight regulation long after the operation.

Cutting across these three objectives, it becomes clear that our research offers many opportunities to collaborate with other divisions in Wageningen. Studies on energy metabolism, in particular mitochondrial function, will be interesting to perform with the Human and Animal Physiology group. And I look forward to collaborate with the Food Quality & Design group to further investigate how processed foods influence gut microbiota function.

But obesity treatment involves more than nutrition. We also need to address other important factors influencing weight loss maintenance, such as genetics and physical activity. And treatment of obesity related co-morbidities involves different clinical specialties. Therefore, I argue that setting up strategic alliances with other institutions is mandatory to achieve our goals. I will give you a brief overview of PhD-projects that we have set up with other institutions.

At the beginning of this lecture, I mentioned the influence of **genetic** factors in developing obesity. And also, that weight loss results after bariatric surgery vary. In collaboration with the Dept. of Clinical Genetics at Amsterdam UMC, the genomic DNA of more than 1000 bariatric patients was sequenced. These studies may provide insights on the role of genetics in the long-term risk of weight regain or insufficient weight loss after an operation.



Figure 11. Sleep apnea in the White House, undated photograph of Taft. The distinct floor shadow suggests it is daytime. Source: Sotos JG. Chest 2003 124 (3): 1133-1142

One of the challenges in bariatric surgery is that the profound weight loss phase following surgery may be accompanied with a loss in **fat-free mass**. In other words: we aim to get rid of the fat, and at the same time need to preserve muscle. Together with the Dutch Obesity Clinic and the Department of Physiology at Radboudumc, we will investigate methods to reduce the loss of fat-free mass with a combination of diet and physical activity.

We will widen our scope on **cardiometabolic co-morbidities** by joining forces with the Departments of Cardiology of Rijnstate and University Medical Center Groningen. The specific goal here is to discover if cardiovascular risk factors such as epicardial fat disposition are influenced by surgery.

With nuclear imaging techniques performed at the Department of Nuclear Medicine at Radboudumc, we try to unravel some of the mechanisms behind **diabetes** remission in relation to metabolic surgery.

And we will learn more about how our gut talks to the brain...

Together with the Donders Institute for Brain, Cognition and Behavior at Radboudumc and TNO in Leiden, we will investigate how bariatric surgery affects changes in adipose tissue and gut microbiota composition and how this correlates with **cognitive** performance.

These examples illustrate our continuous efforts to improve clinical outcome. Understanding the mechanisms behind our interventions will eventually contribute to developing more personalized treatments. For conducting multidisciplinary research, we need to build strong relationships with our scientific partners. As the chair of Nutrition and Obesity Treatment, I will continue to foster these connections.

Education

‘Nutrition and Health’ is one of the most popular BSc and MSc programs at Wageningen University attracting almost 200 national and international students per year. Knowledge gained by the research conducted within this special chair, will be implemented within these programs. For example, in the course General Medicine, we have incorporated interactive sessions with a former obese patient to explain the consequences of bariatric surgery and lifestyle modification. The experience with online education within Wageningen, provides possibilities for educating students at a distance, for instance by adding Massive Open Online Courses on this particular topic. Master-theses as well as internships in the field of Nutrition and Obesity Treatment will be provided within this special chair, in collaborations between clinicians and scientists.

As a former medical student, I know that medical and healthcare education programs always had limited attention for nutrition. But there is growing awareness, and the majority of medical students today would like to have more knowledge on nutrition in relation to health and disease²⁴. Besides knowledge, skills are required to be able to openly discuss diet and lifestyle in the doctor's office. Commissioned by the Ministry of Health, Welfare and Sport, the Alliance has started the project "Attention for overweight in healthcare education". Together with Partnership Obesity Netherlands (PON), Hogeschool Utrecht (HU) and a large network of partners, this project focuses on the curriculum of medical schools and nursing training programs and aims to incorporate nutrition, exercise and recreation in the treatment of obesity in healthcare education.

Stigma

The beauty of an inaugural lecture is that today I am the one doing the talking and everyone else needs to listen.... This allows me to place a more critical note. I think it is time to shift gears and move away from the judgment that people with obesity often experience. It is striking to notice that lifestyle-related conditions are still 'weighed' differently. Not just by the public, but also by healthcare providers. Some doctors consider bariatric surgery 'a moral dilemma'. Some still believe that any form of medical therapy for obesity is inappropriate. But when you look at some of the criticisms against a medical approach to obesity, these arguments are quite weak.

To illustrate this, let me give you a few quotes I have encountered over the years:

- "*Obesity cannot be cured*". That may be true, but diabetes and hypertension cannot be cured either, and there are no doubts that we should treat those conditions.

- "*After obesity treatment patients will regain weight, so it comes back*". But so can cancer. And we have no issue with starting another round of chemo- or radiotherapy when this happens.

- "*Obesity can be prevented. Why spend so much money on a preventable disease?*"

AIDS is a preventable disease, and I have not heard anyone arguing that we should not treat a patient infected with HIV.

And what about treating someone who gets lung cancer after smoking? Or sport injuries, bicycle accidents....? Where do we draw the line what is a 'lifestyle problem' and whether or not this should be treated?

While these arguments associated with obesity stigma have been reported frequently, less is known about potential negative attitudes towards people who consider weight

loss surgery or already had an operation. Studies have shown that problem focused and engaging strategies, such as dieting and exercising, are perceived more favorable as they imply that people are *'making an effort'*²⁵. Surgery on the other hand is often seen as *'taking the easy way out'*²⁶. Together with the Social Sciences group here at Wageningen University, we intend to set up a project on these public perceptions in four European countries. If it is shown that stigmatization withholds people from undergoing weight loss surgery, or decrease the wellbeing of patients who already had an operation, it would be important to change these attitudes. Reducing weight stigma may subsequently lead to improved patient care.

President Taft is probably one of the most prominent figures in history facing stigma from obesity. But his resilience to public humiliation also made him symbolic of the medical management and struggles associated with sustaining long-term weight loss. Taft wanted his obesity to be recognized **as a disease**, a statement which was officially endorsed by the American Medical Association more than a century later. But the acceptance that obesity is a disease remains a challenging topic, and depends from which perspective it is viewed. In some countries, *health insurance companies* will be reluctant to call obesity a disease, because of a higher need for reimbursement. The *food industry* will probably also not be too keen, concerned for being held partly accountable. But from a *health care provider's* perspective it makes perfect sense to call obesity a disease, with all its related health problems.

Actually, the question whether or not obesity **is** a disease is not that relevant. The most important consideration is that we at least **treat** obesity as we would treat any other chronic condition that poses serious health risks. Just as we would treat high cholesterol or high blood pressure.

I have almost come to the end of this lecture. I have shown you that obesity is a multifactorial, chronic condition and that treating it can be challenging. When more than a thousand genes, numerous bacteria, and several hormonal pathways between our brain and gut are involved



Figure 12. Cartoon of William Howard Taft, 1906. Source: alamy.com

in regulating our body mass, that tells us this is a difficult subject to unravel. Our modern environment caused something to go wrong, and it is evident we need to find ways to fix it. Prevention is crucial, but for people who fail to combat obesity with lifestyle adjustments, we must provide the best treatments available. For some this will be medication, others will benefit from surgery, and sometimes perhaps even a combination of the two.

Obesity can be a lifelong struggle. More research is needed to establish if dietary exposures and specific food groups contribute to sustainable weight loss after our interventions.

Ultimately, these new insights may lead to less-invasive alternatives for the operations we perform. And maybe one day, we will even be able to 'bypass the bypass', as somebody once said. Most importantly, we need a new perspective on obesity, one that does not rely on a person's appearance but rather emphasizes the underlying biology. This means that as a society, we should avoid stigma and recognize obesity as a chronic disease with serious health risks. Only then, we will be able to turn the scale effectively.

Tot slot wil ik graag een woord van dank uitspreken.

Allereerst wil ik u allen danken voor uw komst vandaag.

Ik ben de Raad van Bestuur van Wageningen Universiteit, de Raad van Bestuur van Rijnstate, de Coöperatie Medisch Specialisten Rijnstate en de vakgroep Chirurgie-Orthopedie zeer erkentelijk voor het mogelijk maken van mijn leerstoel.

Prof. Ellen Kampman, leerstoelhouder Voeding en Ziekte, wiens visie en vooruitstrevendheid bepalend zijn geweest bij de totstandkoming van deze leerstoel. Vanaf onze eerste ontmoeting was het duidelijk dat deze samenwerking een succes zou gaan worden.

Prof. Jaap Bonjer, mijn opleider en promotor. Hij wakkerde mijn enthousiasme voor wetenschappelijk onderzoek aan en is nog altijd mijn grote voorbeeld op het gebied van de laparoscopische chirurgie.

Prof. Johan Lange en Dr. Erwin van der Harst, mijn andere opleiders in Rotterdam. Beiden stonden aan de basis van mijn chirurgische carrière en gaven mij richting.

Prof. Garrett Smith in Sydney en Prof. Hein Gooszen in Utrecht zijn van grote invloed geweest bij het ontwikkelen van mijn kennis en vaardigheden op het gebied van slokdarm- en maagaandoeningen.

Dankzij Dr. Bert van Ramshorst en Dr. René Wiezer kon ik in het Antonius mijn bariatrische ambities verder ontplooien. Hun no-nonsense aanpak is kenmerkend voor Nieuwegein. Altijd scherp, en het hart op de juiste plaats.

Zonder de support van al mijn maten uit de vakgroep Chirurgie-Orthopedie Rijnstate had ik hier niet kunnen staan. En dat geldt in het bijzonder voor mijn bariatrische collega's: Theo Aufenacker, Bart Witteman en Wouter Vening. Samen met Willem den Hengst en Gabie de Jong houden zij de boel draaiende, zodat ik elke donderdag naar Wageningen kan.

Het voltallige Vitalys-team in Arnhem en Velp, aangestuurd door manager Kristy Leenders en (kersverse) algemeen directeur Claudia de Swart. Het is oprecht een voorrecht om met zoveel toegewijde mensen te mogen werken! Brigit Hogeweg wil ik danken voor haar inzet bij de organisatie van deze dag.

Met veel plezier mag ik een aantal gedreven promovendi begeleiden. Het fundament van de Vitalys-onderzoeksgroep werd 10 jaar geleden gelegd door chirurgen Ignace Janssen, Frits Berends en Edo Aarts. Door de samenwerking met Wageningen is de groep inmiddels flink uitgebreid en het onderzoek staat als een huis. Dank voor ieders inzet en enthousiasme.

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“It ain’t so hard to do if you know how...”.

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Ik beloof jullie dat we ook nog een keer naar een concert gaan, waar geen ‘hoogbejaarde kerels’ op het podium staan... De toekomst is van jullie. Geloof in jezelf, jaag je dromen na, en geniet van het leven!

Ik heb gezegd.

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Prof.dr E.J. Hazebroek

'For people with severe obesity, bariatric (or metabolic) surgery is currently the most effective treatment to achieve long term weight loss and resolution of comorbidities.

But there are many challenges to address when attempting to turn the scale. First of all, there is considerable variation in the degree of weight loss following surgery. And there is always a risk of weight regain after the operation, which consequently has an effect on the recurrence of co-morbidities. Furthermore, bariatric surgery is associated with a risk of developing nutritional deficiencies due to poor absorption of nutrients. These issues imply we need a better understanding on how our treatments are influenced by nutritional factors and vice versa.'