Life Science Report 2025

Turning evidence into excellence

Munich RE

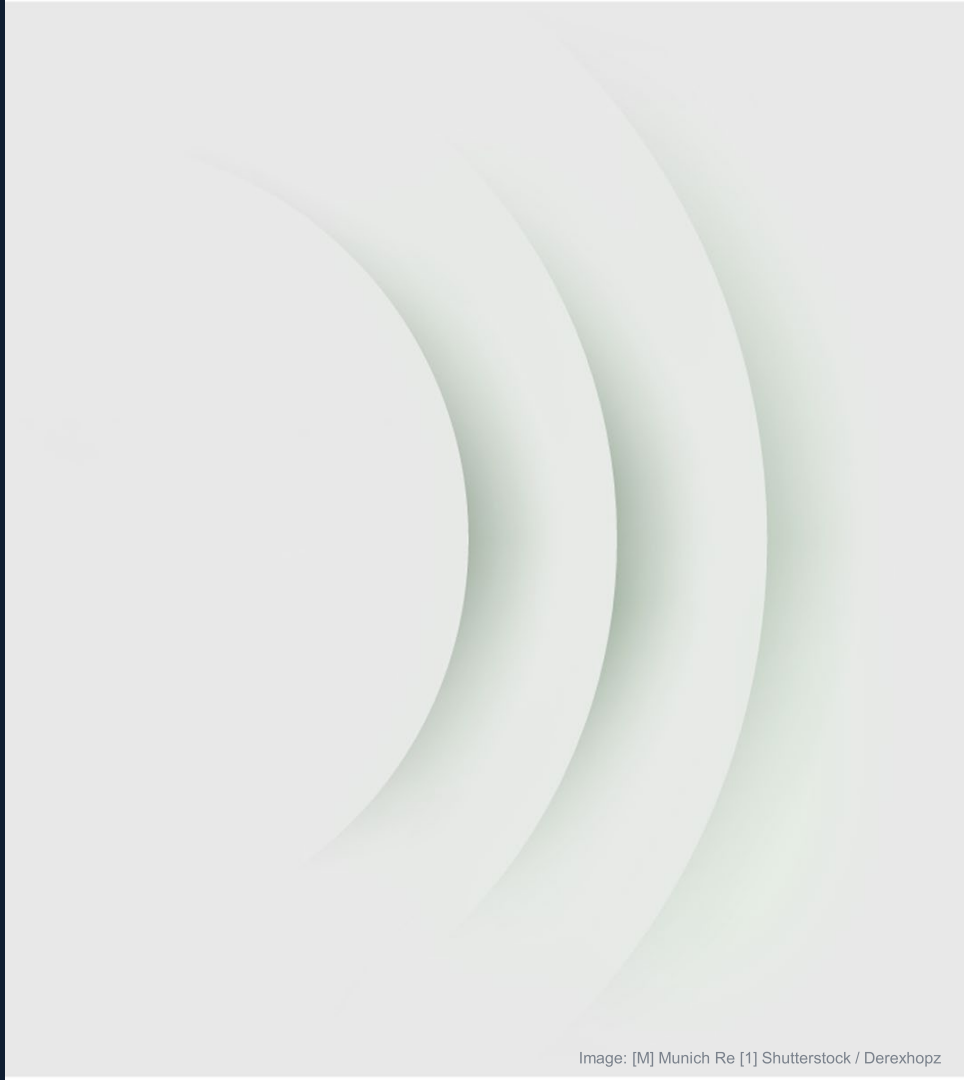

Image: [M] Munich Re [1] Shutterstock / Derexhopz

Life Science Report
Editorial

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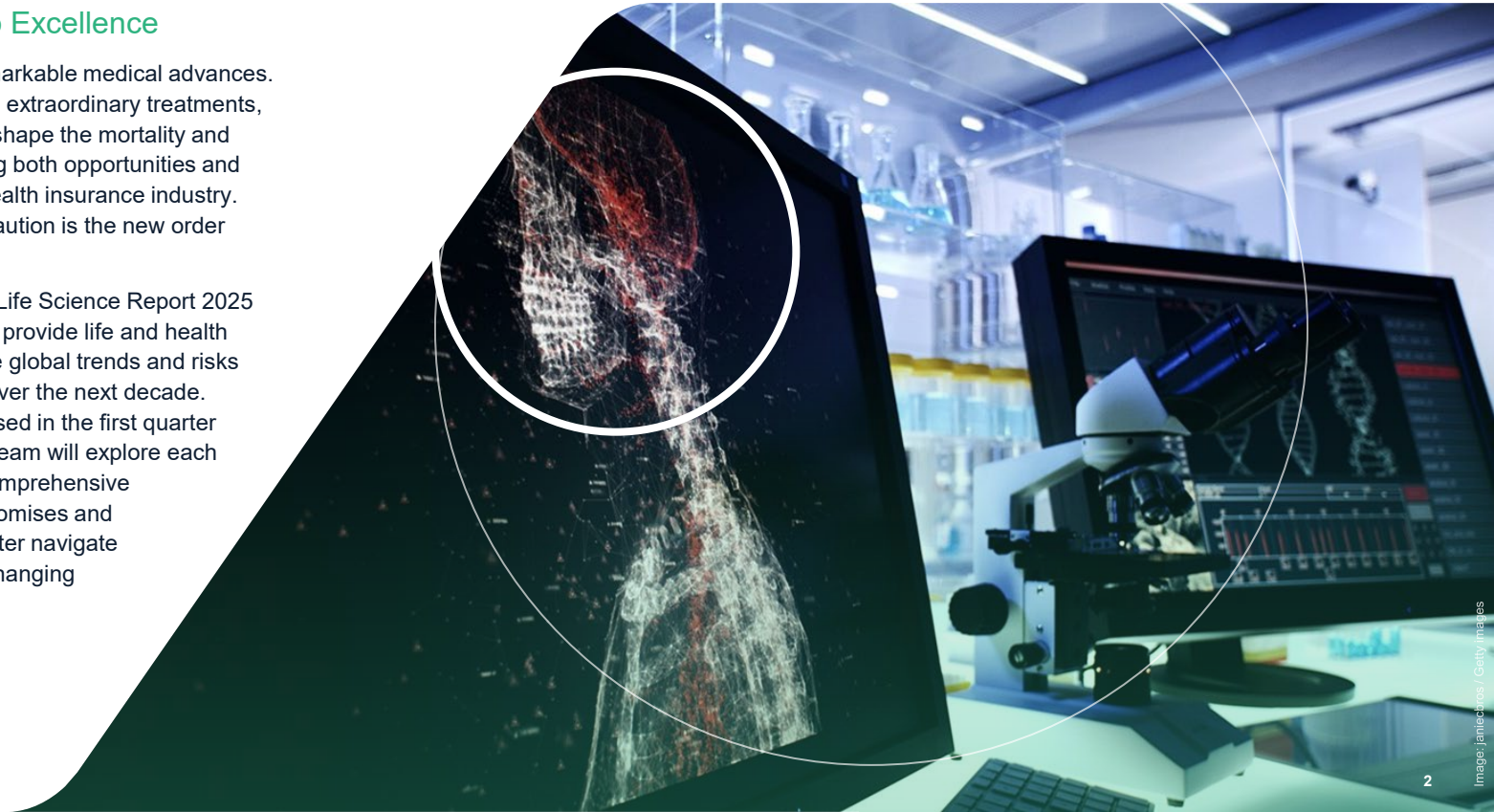
Turning Evidence into Excellence

Recent years have seen remarkable medical advances. From new diagnostic tests to extraordinary treatments, they have the potential to reshape the mortality and morbidity landscape, creating both opportunities and challenges for the life and health insurance industry. Enthusiasm balanced with caution is the new order of the day.

In this context, Munich Re's Life Science Report 2025 has been carefully crafted to provide life and health insurers with insights into the global trends and risks that will shape the industry over the next decade. In five tailored editions released in the first quarter of 2025, our global medical team will explore each area in depth, providing a comprehensive understanding of both the promises and pitfalls to help our clients better navigate in this new environment of changing mortality and morbidity risks.



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AI in Healthcare

The chapter on **Artificial Intelligence in Healthcare** examines the future impact of AI on medicine, focusing on the traditional domains of prevention, diagnosis, and treatment.

It also describes its impact on foundational medical knowledge, and the implications for life and health insurance.

Improving Cancer Outcomes

Advances in our understanding of cancer, along with novel treatments, continue to improve the survival rates of individuals with cancer.

The chapter on **Improving Cancer Outcomes** describes how progress in cancer genetics will change cancer classification, how new diagnostic tests will diagnose cancer sooner, and how innovative treatments will alter cancer survival rates.

Improvements in mortality and morbidity are on the horizon that will significantly change the future of life and health insurance.

Prevention

The **Prevention** chapter examines how insurers can develop prevention strategies for insured lives, based on a comprehensive understanding of insured portfolios and with the aid of personalized risk profiling, digital risk scores, and advanced analytics.

Insurers are now poised to assume a new role: as active participants in the well-being of their policyholders, which has the potential to transform life and health insurance from settling claims to actually improving lives.

Obesity

According to projections, by 2035, more than half of the global population will be overweight or obese.

The **Obesity** chapter assesses the potential of recently released anti-obesity medications to reverse this upward obesity trend, and to reduce mortality and morbidity from a wide variety of medical conditions.

The impact of these newer medications on the population is potentially enormous, as is their contribution to mortality improvement in the future.

Climate Change

Recent and radical climate events raise urgent questions about the future impact of climate change on human health – and, by extension, on life and health insurance.

The **Climate Change** chapter explores climate-related hazards that could worsen mortality and morbidity and introduces a new modelling approach to assess potential impacts on underwriting, portfolio management and claims.

Life Science Report
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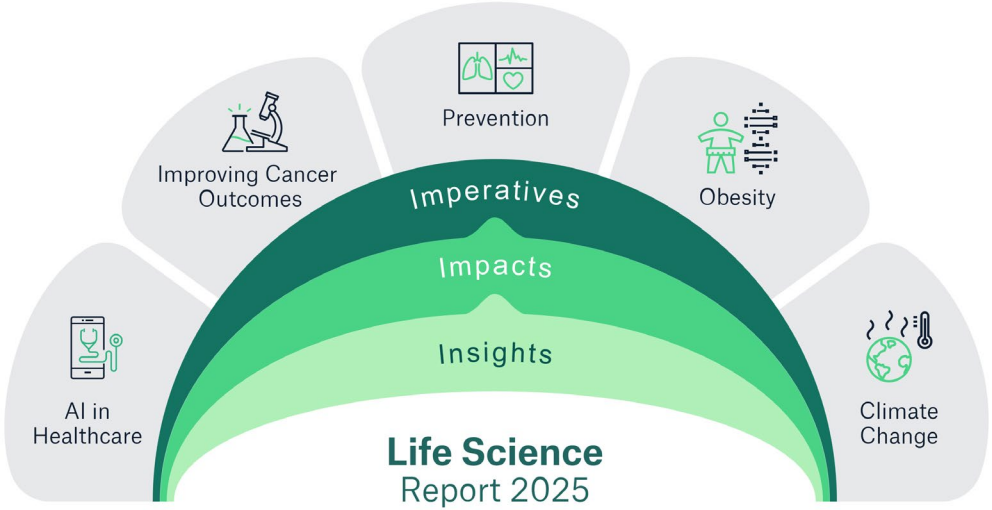
Throughout the report, Munich Re's global medical team offers in-depth insights into the medical, technological, and environmental factors that will influence underlying biometric risks and insurance operations, through three distinct sections in each chapter.



Imperatives

A list of the imperatives life and health insurers should consider in order to capitalize on the opportunities that biomedical advances will bring and prepare for scenarios that may pose a threat to operations and products.

Impacts

A description of the impacts of these changes on specific risk factors and product lines.

Insights

A review of the biomedical advances and risks, which provides succinct insights into their relevance for life and health insurance.

To make the Life Science Report an actionable business guide, we supplement each of the five chapters with an overview of Munich Re's regionally tailored services and solutions, which we invite you to explore further.

The Life Science Report 2025 will help you to turn **medical evidence into business excellence.**

Obesity

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Obesity
Key Takeaways

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Forecasts predict that the worldwide prevalence of **obesity will continue to trend upward through 2035.**

Unfortunately, **adverse health risks caused by obesity continue to increase** with adverse effects on mortality and morbidity.

The current literature on **newer drugs for adults with obesity supports weight loss outcomes never seen** with prior weight loss medications.

If these **medications can stop or reverse the upward obesity prevalence trends,** the potential impacts on mortality and morbidity could be huge.

Obesity
Executive Summary

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Obesity has long been a global health issue, with a tripling of prevalence since 1975.[1] Despite public health efforts to manage the global obesity crisis, forecasts predict that the worldwide prevalence of obesity will continue to trend upward through 2035, by which point more than half of the world will be overweight or obese.[2] In addition, childhood obesity could more than double by 2035.

For over 20 years, the World Health Organization has attempted to tackle this issue with a global strategy on diet, physical activity, and health.[3] Unfortunately, adverse health risks caused by obesity continue to increase, with adverse effects on mortality and morbidity.

This paper focuses on newer treatment options for adults with obesity, including glucagon-like peptide-1 (GLP-1) receptor agonists and dual action GLP-1 and glucose-dependent insulinotropic polypeptide (GIP) receptor agonists. The current literature supports weight loss outcomes never seen with prior weight loss medications.

As many adverse medical conditions are associated with obesity, if these medications can stop or reverse the upward obesity prevalence trends, the potential impacts on mortality and morbidity could be huge.

On the basis of the current medical literature, this paper also includes a plausible estimation of the revolutionary impact weight loss medications may have on life, disability, and critical illness portfolios.

In addition, ongoing studies are revealing added benefits for many other medical conditions, including cardiovascular disease, obesity-related cancers, obstructive sleep apnea, fatty liver, certain neurological diseases, and even smoking cessation and addiction.

As the literature continues to expand at a rapid pace, **it is imperative that insurers maintain a dedicated, vigilant, and knowledgeable medical team to address these findings, as medical research has only discovered the tip of the iceberg** with regard to potential insurance impacts.

Obesity

Insights – Impacts – Imperatives

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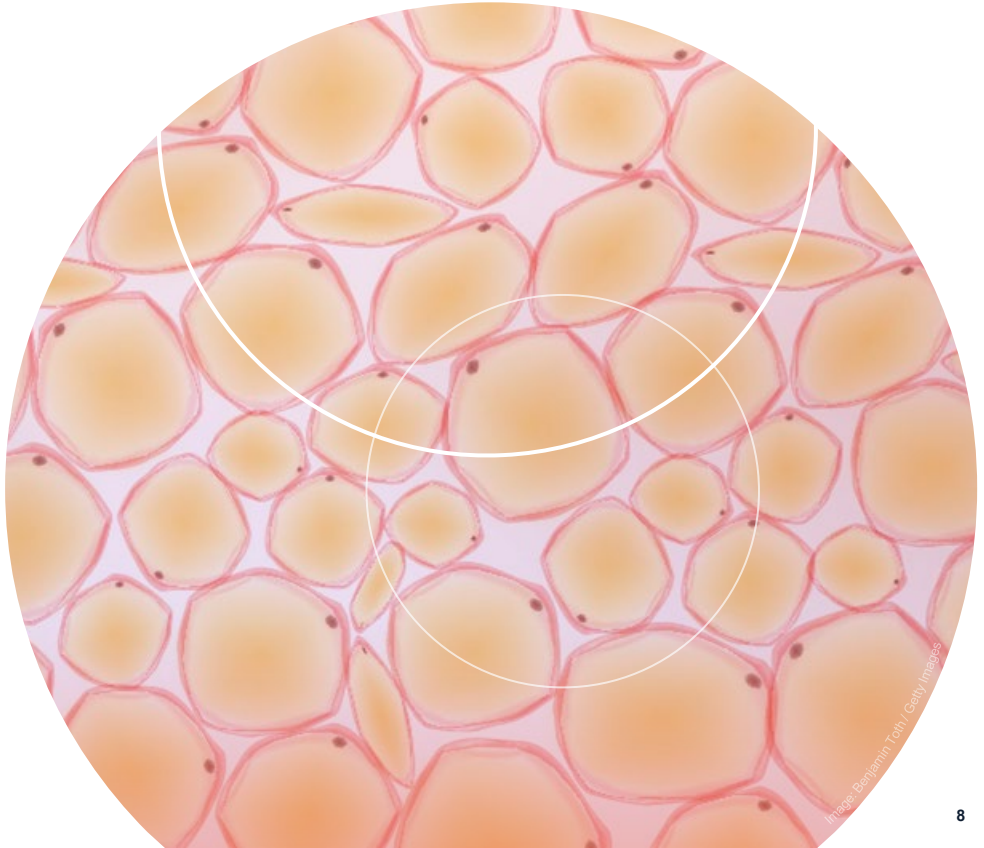
Obesity

Obesity is a chronic medical disease manifested as **excess body fat.** The mortality and morbidity associated with obesity is clear in the medical literature, with strong evidence showing an association between adiposity and many medical conditions with high mortality and morbidity, including hypertension, type 2 diabetes mellitus, heart disease, liver disease, and cancer. (See also ‘Prevention’)

Body mass index (BMI) is often used to define a person’s weight status. The index was first introduced as a research tool in the mid-19th century by Lambert Quetelet, a mathematician looking for a way to relate a person’s height to his/her ideal weight.[3]

BMI is calculated by dividing a person’s weight (in kilograms) by the square of his/her height (in meters). For adults, the WHO categorizes adults as follows:

BMI (kg/m²)	Healthy Weight	Overweight	Obesity	Severe Obesity
	18.5–24.9	25–29.9	30 or higher	40 or higher



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Obesity

Insights – Impacts – Imperatives

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Obesity

BMI, however, has limitations, as the calculation is not a direct measure of body fat. Therefore, **while BMI is useful in screening for obesity, other measures of body fat distribution might be more predictive** in terms of determining risk, such as waist circumference, waist to height ratio, waist to hip ratio, or more advanced imaging techniques such as dual-energy x-ray absorptiometry (DEXA), bioelectrical impedance analysis, CT scans, or MRIs.

Most of the research addressed here uses BMI as the reference point; thus, for the purposes of this paper BMI will be used.

Image: AbleImages / Getty Images

Obesity
Insights – Impacts – Imperatives

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Treatment Options

While weight loss has been shown to decrease both mortality and morbidity risks, it can be difficult to achieve and sustain. Prior to 2021, there were limited FDA-approved medications available to successfully treat adults with obesity.

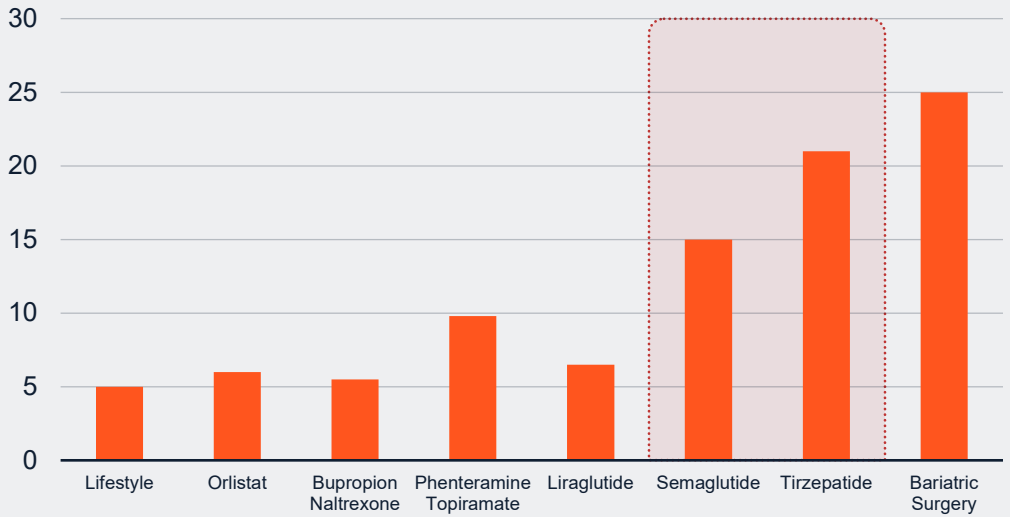
Fortunately, newer treatment options for adults with obesity include **glucagon-like peptide-1 (GLP-1) receptor agonists (e.g., semaglutide)** and **dual action GLP-1 and glucose-dependent insulinotropic polypeptide (GIP) receptor agonists (e.g., tirzepatide)**, with the literature supporting 15–21% weight loss outcomes, never seen with prior weight loss medications.[4]

GLP-1 and GIP are short-acting gut peptide hormones that are activated when you eat and which work together to stimulate insulin production, which lowers blood sugar. GLP-1 also slows gastric emptying, which manifests as early satiety.[5]

Weight loss outcomes by treatment option

FDA-approved Options

in %



Sean P. Heffron. Circulation Research. Treatment of Obesity in Mitigating Metabolic Risk, Volume: 126, Issue: 11, Pages: 1646-1665, DOI: (10.1161/CIRCRESAHA.119.315897)

Obesity
Insights – Impacts – Imperatives

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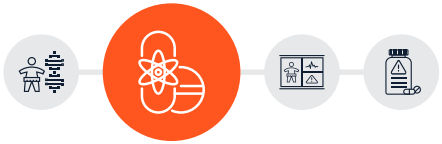
Treatment Options



GLP-1 receptor agonists (GLP-1 RAs) were initially approved for type 2 diabetes mellitus (DM) in 2005 and are longer-acting versions of gut peptide GLP-1. Since then, more GLP-1 RAs have been discovered, with additional studies not only showing class efficacy in treating type 2 DM but also showing effectiveness in weight loss.[4] This prompted additional studies that evaluated this class of drugs specifically for obesity in non-diabetics, with favorable findings of proven weight loss and added metabolic benefits such as improved cholesterol and blood pressure.[6]

The effects of these drugs vary by indication (diabetes vs. obesity), dosing schedule (daily vs. weekly), and dose. In general, the dose used for obesity is higher than that used for type 2 diabetes. At this time, **two GLP-1 RAs and one dual action GIP/GLP-1 RA are FDA-approved for obesity.** The addition of the GIP RA is believed to enhance the effects of GLP-1 RAs. All three are injectable medications. An oral version of semaglutide is currently available for type 2 diabetes and is currently being studied for weight management. Manufacturers attempt to distinguish between these variants by using different brand names for the same generic drug name.

Medications for Adults with Obesity

Generic Name	Indication	Brand Name	Dosage	Manufacturer	FDA Approval
liraglutide	Type 2 diabetes	Victoza®	1.2 mg to 1.8 mg SQ* daily	Novo Nordisk	Jan 2010
	Obesity (ages 12+)	Saxenda®	3.0 mg SQ daily	Novo Nordisk	Dec 2014
semaglutide	Type 2 diabetes	Ozempic®	Escalating doses up to max 2.0 mg SQ weekly	Novo Nordisk	Dec 2017
	Type 2 diabetes	Rebelsus®	3 mg to 14 mg once daily pill	Novo Nordisk	Sep 2019
	Obesity (ages 12+) AND to reduce major cardiovascular events	Wegovy®	Escalating doses up to max 2.4 mg SQ weekly	Novo Nordisk	Jun 2021 Mar 2024
tirzepatide	Type 2 diabetes	Mounjaro®	2.5 mg to 15 mg SQ weekly	Eli Lilly	May 2022
	Obesity	Zepbound®	2.5 mg to 15 mg SQ weekly	Eli Lilly	Nov 2023

Many more medications in this class are in the pipeline and in various stages of research, including an oral version for weight loss and a longer-acting monthly injectable, so expect much more to come in the near future with regard to obesity management.

* subcutaneous

Obesity

Insights – Impacts – Imperatives

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Effects on Other Co-morbidities

1 Cardiovascular Disease[6]

A landmark trial published in 2023 showed that semaglutide also produces a mortality benefit in overweight/obese patients with preexisting heart disease and BMI > 27 kg/m^2 while also improving risk of nonfatal myocardial infarction and nonfatal stroke.

On top of standard care, 2.4 mg semaglutide administered once weekly reduced major adverse cardiovascular events in adults by 20% compared to placebo. Because of this landmark study, Wegovy® (semaglutide) is the first and only medicine FDA-approved to decrease risk of cardiovascular events in overweight individuals with preexisting heart disease.

2 Obesity-Related Cancer

Obesity may negatively affect the body's immune system and inflammation, which can increase one's risk of cancer. The American Cancer Society lists thirteen cancers that are associated with overweight and obesity. From 2005 to 2014, cancers associated with overweight and obesity increased 7% in the United States (cdc.gov). In addition, cancer incidence is rising among adults under 50,[7] quite possibly due to the rising incidence of obesity in this cohort. This is a disturbing trend, since young women with breast cancer are more likely to have more aggressive forms with higher mortality risk.[8]

On a positive note, weight loss drugs may lower risk for as many as 10 cancers. Wang et al.[9] showed that GLP-1 RAs were associated with lower risk of obesity-associated cancers in patients with type 2 DM compared to those treated with insulin or metformin. This is preliminary evidence for a potential benefit of GLP-1 RAs in reducing cancer risk. More research is needed in larger cohorts, but the preliminary outlook appears promising.

3 Sleep Apnea

In the 2024 SURMOUNT-OSA trial,[10] which studied patients with moderate to severe obstructive sleep apnea (OSA), tirzepatide was found to reduce body weight and blood pressure, and to improve two sleep apnea parameters (apnea-hypoxia index and low oxygen burden), paving the way for its use as a potential treatment option for moderate to severe OSA.

Lowering blood pressure may also be a very important additive benefit to improving cardiovascular mortality and morbidity risk in this cohort.

Effects on Other Co-morbidities

4 Fatty Liver Disease

With the rising prevalence of obesity, fatty liver disease is also rapidly increasing in prevalence, becoming the world's most common liver disease. Previously referred to as non-alcoholic fatty liver disease (NAFLD), metabolic dysfunction-associated liver disease (MASLD) increases risk of cirrhosis and mortality.

While weight loss is the ultimate goal, lifestyle modification is not successful for all. Several studies are currently reviewing the role of GLP-1 RAs in the treatment of fatty liver disease. Initial studies using liraglutide and semaglutide in these patients demonstrated these drugs were safe, well tolerated, and led to improved BMI, visceral fat accumulation, liver function tests, glucose intolerance, and liver inflammation as confirmed in liver biopsies.[11] Preliminary studies on survodutide (another dual action GLP-1 and GIP receptor agonist) may prove it is even more effective in treating MASLD and liver fibrosis.[12]

5 Neurological Disease

Alzheimer disease (AD) is the most common cause of dementia worldwide, and effective treatments are lacking.

Multiple medical studies have suggested possible neuroprotective anti-inflammatory effects to reduce the risk of or even treat Alzheimer and/or Parkinson disease.[13] Although more studies are needed, the potential is plausible.

6 Addictions/Smoking Cessation

Studies have also suggested a potential positive impact on the brain's pleasure/reward center, opening a possible treatment for various addiction disorders.

Ongoing studies[14-16] are analyzing the value of this class of medications in smoking cessation, alcohol use disorder, anxiety disorder, and depression.

Obesity

Insights – Impacts – Imperatives

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Additional Consider-ations

Benefits of these medications must be weighed against adverse side effects (often gastrointestinal in nature, e.g., nausea, vomiting, diarrhea), high costs, risk of weight rebound, and supply and demand.

Patients must also understand that anti-obesity medications will only help them achieve and sustain their intended weight loss effects when combined with lifestyle interventions.

Thus, **lifestyle counselling regarding nutrition and exercise must be done concurrently to achieve optimal effectiveness.**

Image: Ricky / Getty Images

Obesity

Insights – **Impacts** – Imperatives

Numerous academic studies have shown that **newer anti-obesity medications have the potential to reduce the prevalence of obesity**, which could also potentially materially improve Life, Disability, and Critical Illness portfolios.

Munich Re recently conducted an analysis to quantify the potential impact these newer anti-obesity medications may have on insurance portfolios. While it would be ideal to attempt to project a positive overall global impact, variations in obesity prevalence and access to medications, among other factors, will result in different outcomes across regions.

Our analysis of the potential impact is based on a hypothetical scenario that is contingent on several key study methods and assumptions:

1 Time frame studied

We chose to project the impact of these drugs over the next 10 to 20 years. While some benefits are expected much sooner, this time horizon reflects the period expected for broader drug adoption.

2 Prevalence

Because obesity prevalence is high in the United States and general population data is available, we focused our analysis on US data. Our analysis assumes current obesity trends will continue to rise in the absence of new treatments. This assumption may overestimate the potential impact these drugs may have over this time frame.

3 Insured population

Our team first reviewed general population studies regarding obesity and various medical impairment risks, along with research on anti-obesity medications in the US. We then reviewed general population obesity prevalence by income status and used internal Munich Re insurance data to develop a proxy insured population.

Image: Kobus Louw / Getty Images

Obesity

Insights – **Impacts** – Imperatives

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Image: sanjeri / Getty Images

4 Efficacy

Numbers chosen are based on available published clinical data on anti-obesity medications in the US.

5 Uptake rate

The uptake rate is a key uncertainty, and the projection is contingent on a high rate. We chose an uptake rate of 50% as a realistic assumption, given the future development of more drugs in this class with improved side effects, expanded drug access, and improved efficiency. Achieving this rate will require a massive scaling of production and reducing barriers to adoption, including steep prices, side effects and patients' compliance with regular injections. However, history gives grounds for optimism, as in the past, the widespread adoption of breakthrough drugs has been achieved despite initially low uptake and prohibitive costs. Additionally, progress in drug efficacy, more convenient methods for administering drugs, government funding and substantial capital investment should aid adoption.

6 Mortality impact

One important assumption in our projections is that weight reduction from these drugs will also translate into reduced mortality. As these drugs are new, there is limited data to support that. However, studies on bariatric surgery, which similarly targets weight reduction, have shown significant decreases in mortality rates.[17] This data indirectly supports our assumption.

Obesity

Insights – **Impacts** – Imperatives

Mortality Impact

in the Insured Population

The projection considers future trends in obesity rates, anticipated uptake of GLP-1 receptor agonists, and their expected efficacy. It considers the insured population's socio-economic mix and differences in mortality causes compared to the general population.

We account for mortality impact from major causes of death such as cancer, cardiovascular disease, neurological disorders, and respiratory diseases. Due to the expected rise in severe obesity over time, we also differentiate between non-severely obese individuals with BMI between 30 and 40 kg/m^2, and severely obese individuals with BMI above 40 kg/m^2, considering their respective differences in potential long-term health and mortality benefits from GLP-1 receptor agonists.

Our final analysis projects a 21% mortality reduction for non-severely obese individuals and an impressive 40% mortality reduction for severely obese individuals in the general population over the next 10 to 20 years. In attempting to forecast the impact on the insured population, we utilized internal Munich Re North American claims data to estimate the proportion of policyholders in each weight category. If the key assumptions mentioned earlier materialized, **Munich Re forecasts that 0.3% to 0.7% of the current expectation of future annual mortality improvement could be driven by the impact of obesity drugs improving the ongoing adverse obesity trend**.

Image: Caique de Abreu / Getty Images

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Morbidity and Critical Illness Impact
in the Insured Population

Estimating the impact of obesity on the Disability (DI) and Critical Illness (CI) business lines is more complex due to the wide range of obesity-associated comorbid conditions. Moreover, there are few comprehensive cohort studies on the general population examining the morbidity effects of weight loss after using GLP-1 drugs on these conditions.

Although there is very limited evidence suggesting that weight loss in obese individuals can directly reduce the risk of developing relevant medical conditions, clinical studies as mentioned above have shown improvement in those with certain obesity-related comorbidities.

Therefore, for DI and CI claims related to diabetes, cancer, and cardiovascular events, we also expect a favorable impact very similar to the life insurance impact.
The industry will have to wait until further evidence develops for a more concrete analysis.

Image: ZeynepKaya / Getty Images

Obesity

Insights – Impacts – **Imperatives**

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As literature continues to be produced at a rapid pace, it is imperative that insurers maintain a dedicated, vigilant, and knowledgeable medical team (and/or a good reinsurance partnership)

to address the forthcoming developments concerning this class of drugs, as medical research has only revealed the tip of the iceberg with regard to potential insurance impacts.

1

From an underwriting perspective, **key considerations include the duration of anti-obesity treatment, presence of any comorbidities, assessment of side effects, and assessment of weight trends over time.**

2

Clearly, successful weight loss including post-treatment weight stability as well as **resolution of any obesity-related comorbidities is ideal.**

3

From a pricing perspective, insurers must consider the **impact these medications may have on future mortality and morbidity pricing assumptions**, as the impact may be substantial.

Obesity

Insights – Impacts – **Imperatives**

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Keep in mind that our **analysis was based on US data and includes multiple variables** based on several key assumptions.

4

5

Variations in any of the variables, e.g., prevalence, efficacy, and uptake rate (access to medications), among other factors, **will result in different outcomes across different markets.**

For more information including requests for additional analyses, please contact us.

Obesity

Munich Re’s services and solutions

Image: [M] Munich Re [1] FluxFactory / Getty Images

Obesity

Overview of regionally tailored services and solutions

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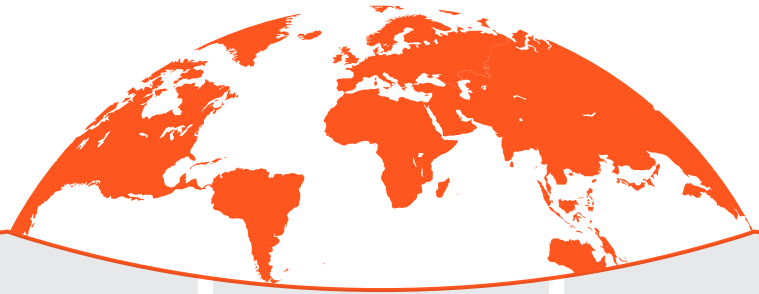

United States of America, Canada and Caribbean

- Obesity Risk Perspectives
- Obesity Drugs Impact on Reducing Heart Disease
- Metabolic Risk Calculator EDGE Underwriting Manual

Europe and Latin America

- Metabolic Risk Calculator MIRA Underwriting Manual

Asia-Pacific, Middle East and Africa

- Metabolic Risk Calculator MIRA Underwriting Manual

Click on Service/Solution to go to Designated Slide

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United States, Canada and Caribbean

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Obesity Risk Perspectives

Insights

Despite the growing risks posed by increasing obesity in North America, new tools, predictive analytics, and disruptive technology solutions make it possible to develop fairer and more accurate pricing while potentially expanding the insured population. The key is moving beyond imprecise measures like BMI in isolation and holistically considering multiple associated factors to assess metabolic health more accurately.

Benefits

Munich Re is committed to helping you develop the best understanding of metabolic risk and better assess, manage and mitigate it in your business. We also continue to study new third-party solutions with the potential to revolutionize underwriting programs. Partner with us to leverage our powerful tools and innovative solutions such as the metabolic risk calculator and BMI misrepresentation model.

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Learn more

Obesity Drugs Impact on Reducing Heart Disease

Risk factors for heart disease include obesity, high blood pressure, high cholesterol, diabetes mellitus, and smoking. Controlling these risk factors can lower the risk of heart disease and subsequent early death. Heart disease can be prevented as well as treated with healthy lifestyle modifications such as diet and exercise – but what more can be done?

From a life insurance underwriting perspective, GLP-1 drugs and future combination drugs could not only make a significant impact on worsening rates of obesity, but now we have evidence that the mortality from heart disease can also decrease. Given the prominence of heart disease as a leading cause of death in North America, this could have a profound impact on mortality projections in the future.

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Learn more

United States, Canada and Caribbean

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Metabolic Risk Calculator
EDGE Underwriting Manual

Solution

Our Metabolic Risk Calculator (MRC) uses a sophisticated, multivariate approach to gauge an applicant's metabolic risk, taking a holistic view of build, blood pressure, lipids, blood glucose and cardiovascular screening. It's intended for use with individual life and group life products.

Benefits

The underlying data used to build the MRC was gathered on 1.5 million individual life insurance applicants observed over 10 years encompassing a range of ages, BMIs, cholesterol and BP ranges. This was analyzed by Munich Re's medical, underwriting, and data science staff to create an algorithm tailored to the North American market.

Contacts

Visit our EDGE Underwriting Manual and search for "Metabolic Risk Calculator" or "MRC" or contact us for a demo if you do not have access to EDGE.

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Europe and Latin America

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Metabolic Risk Calculator
MIRA Underwriting Manual

Solution

Cardiovascular diseases are among the leading causes of death worldwide. They also play an important role in morbidity and disability. With unprecedented detail and accuracy, the multivariate Metabolic Risk Calculator considers all four major cardiovascular risk factors – excess weight, blood pressure, blood lipids and blood glucose – as well as their correlations and interactions.

Benefits

Embedded in Munich Re's MIRA underwriting manual, the Metabolic Risk Calculator enables holistic risk assessment that takes into account complex correlations and interactions of relevant factors.
In addition to providing convenient and practical support in day-to-day underwriting, the benefits for you and your applicants include greater accuracy and fairness, increased confidence in risk assessment based on evidence-based research and, in many cases, more favorable ratings.

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Asia-Pacific, Middle East and Africa

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Metabolic Risk Calculator
MIRA Underwriting Manual

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Obesity

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