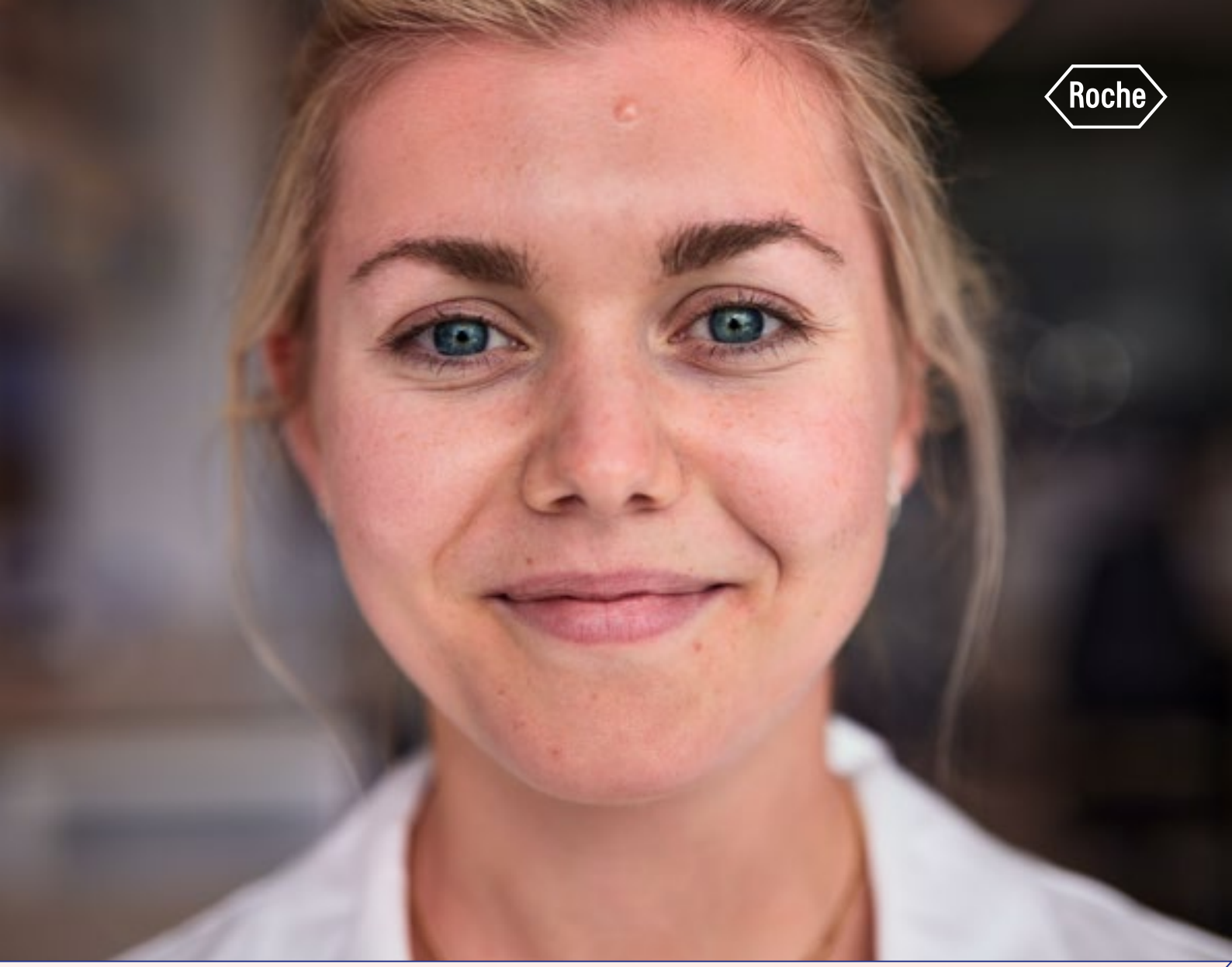


Health is Wealth

– when prioritisation concerns lives, workforce capacity and societal value

May 2025



Executive summary

Health is a long-term investment. This white paper shows how targeted investments in modern treatment and structured follow-up not only benefits individual patients but also strengthens the healthcare system and creates value for society as a whole.

Building on the methodology developed by the WifOR Institute, and combining Danish data, registry information and supplementary analyses, this white paper presents a comprehensive assessment of the socio-economic impact of health. The WifOR Institute is an independent research institute specialised in measuring the economic value of health, and collaborates internationally with, among others, the WHO and OECD.

Across five disease areas – HER2-positive breast cancer, multiple sclerosis, retinal diseases, COPD and haemophilia – this white paper illustrates how early and effective treatment not only improves prognosis and quality of life for the individual, but also reduces disease burden, hospital admissions, and the need for long-term care.

The economic benefits are well-documented. For example, treatment of HER2-positive breast cancer in Denmark is estimated to contribute approximately DKK 200 million to GDP between 2019 and 2027.

These gains occur primarily because more patients – thanks to effective treatment – are able to maintain their participation in the labour market and in society, through both paid and unpaid work.

This white paper highlights the need for a broader approach to value in healthcare – one that considers not only clinical outcomes and healthcare expenditure, but also societal impacts such as productivity, quality of life, and reduced burden on informal carers. This provides a stronger foundation for future prioritisation.

This publication contributes to a more holistic approach to prioritisation in the healthcare sector – one in which investment in modern and effective treatments, as well as targeted health interventions, helps generate greater societal value, thereby increasing productivity and labour supply, to the benefit of both individual patients and society as a whole.

With this white paper, we offer a new perspective on how to drive continued growth and ensure sustainable financing of our welfare state and societal resilience.

Foreword

A healthy life and a well-treated patient represent not only a significant human gain, but also a vital value for the society as a whole

In a time of escalating care needs, an ageing population, mounting pressure on the healthcare system, and staffing shortfalls, it is essential to rethink our understanding of health – not merely as a welfare service, but as a strategic societal investment.

To ensure a financially sustainable and effective healthcare system, we must, as a society, recognise better health as an investment rather than a cost. At the same time, we need to improve our ability to measure the value of health investments and clearly demonstrate their impact – not only in terms of clinical outcomes, but also in relation to patients' lives and the use of societal resources.

This requires broadening our perspective on what creates value – not only within the treatment setting, but across the patient's life and the society that surrounds them, influencing everything from labour market participation to social inequality.

Taking a more holistic approach to health prioritisation and investment will promote well-being, free up labour and economic resources, and strengthen social cohesion.

When we invest in innovative treatments, effective healthcare solutions, and improved public health, we pave the way for a healthcare system that not only treats illness but actively promotes well-being.

The benefits of such an approach are far-reaching: more healthy years for the individual, reduced pressure on healthcare services, and greater societal productivity.

Brian Mikkelsen, CEO, Danish Chamber of Commerce

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– a white paper on health, the workforce and societal value

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Table of Contents

Executive summary 3
Foreword 4
A healthier future 7
A healthcare system that sees the bigger picture 8
Quantifying health 10
A new perspective on value 14
Value in health 16
How we measure value in Denmark 18
Health as an investment 20
When health is not valued as an asset 22
A well-treated patient creates greater societal value 24
Multiple sclerosis (MS): Denmark has the highest prevalence of MS per capita in the world 26
Treatment that fits everyday life 28
NWhen treatment creates value 29
Chronic obstructive pulmonary disease (COPD): A leading public health issue in Denmark 30
The right treatment for every stage of life 32
Breast cancer: Advances in treatment are increasing survival 34
A shared effort for the future 36
When treatment of HER2-positive breast cancer creates value 37
Retinal disease: We can preserve the sight while easing the burden on the healthcare system 38
A clearer outlook for the future 40
When treatment of retinal disease creates value 42
Bringing things into focus 43
Haemophilia: New treatment options give patients a breathing space 44
Life put on hold 46
Health as a driver of societal value 48
Appendix I 50
Appendix II 51
Appendix III 52
Appendix IIII 53
References 54





A healthier future

When health is seen as an investment rather than solely a cost, it opens new opportunities – for patients, the healthcare system and society.

With this white paper, we highlight the value of health. In collaboration with the WifOR Institute, we demonstrate how early and effective treatment – illustrated by case examples from multiple sclerosis, HER2-positive breast cancer, and retinal diseases – not only improves quality of life, but also contributes to higher labour market participation, fewer hospital admissions, and a stronger economy.

This white paper also provides insight into how the value of health is currently measured – and how a broader understanding of dynamic effects, quality of life, and societal value can inform more holistic approaches to prioritisation.

As an international company with a strong presence in Denmark – and working in close partnership with the Danish healthcare system – we consider it our responsibility not only to develop innovative treatments, but also to help build a healthcare system equipped to meet the needs of the future.

When we develop new treatments and solutions, our ambition is to strengthen both patients' lives and the sustainability of society – by reducing pressure on the healthcare system and unlocking resources for the common good.

We hope this white paper can serve as a shared starting point for dialogue and action – and inspire new ways of thinking about investing in health as a means of building a stronger and more sustainable society.

Roche Pharmaceuticals A/S, Denmark

A healthcare system that sees the bigger picture

The dual demographic pressure – more older people and fewer hands to help – makes it necessary to rethink how we approach health. Resources must be used wisely, and limited capacity must be redirected where it can make the greatest possible difference.

When people living with chronic or serious illnesses have access to the best possible treatment, it strengthens their ability to live independently, stay active in the labour market, and reduce the burden on informal carers. This creates value that extends far beyond clinical outcomes.

The challenges we face call for a new understanding of both prioritisation and value.

When health is seen as an investment rather than a cost, it becomes possible to take a long-term perspective: to strengthen patients' daily lives while also ensuring a more sustainable and resilient healthcare system – economically, socially and humanly. Investing in welfare is not only about immediate services, but about long-term gains for society as a whole.

In the context of health interventions, the effects are seen, for example, in improved quality of life, fewer sick days, and increased participation in the labour market. This very point is supported by an analysis from Arbejderbevægelsens Erhvervsråd, conducted in collaboration with Lif in 2020:

"If government administrations begin to quantify the dynamic effects of improved public services, areas such as health policy could help achieve the government's objectives of increasing employment and expanding fiscal space – without increasing inequality or cutting back on welfare. And it is, in fact, entirely possible for ministries to do so."

Arbejderbevægelsens Erhvervsråd
(The Economic Council of the Labour Movement)
(Nielsen & Andersen, 2020)

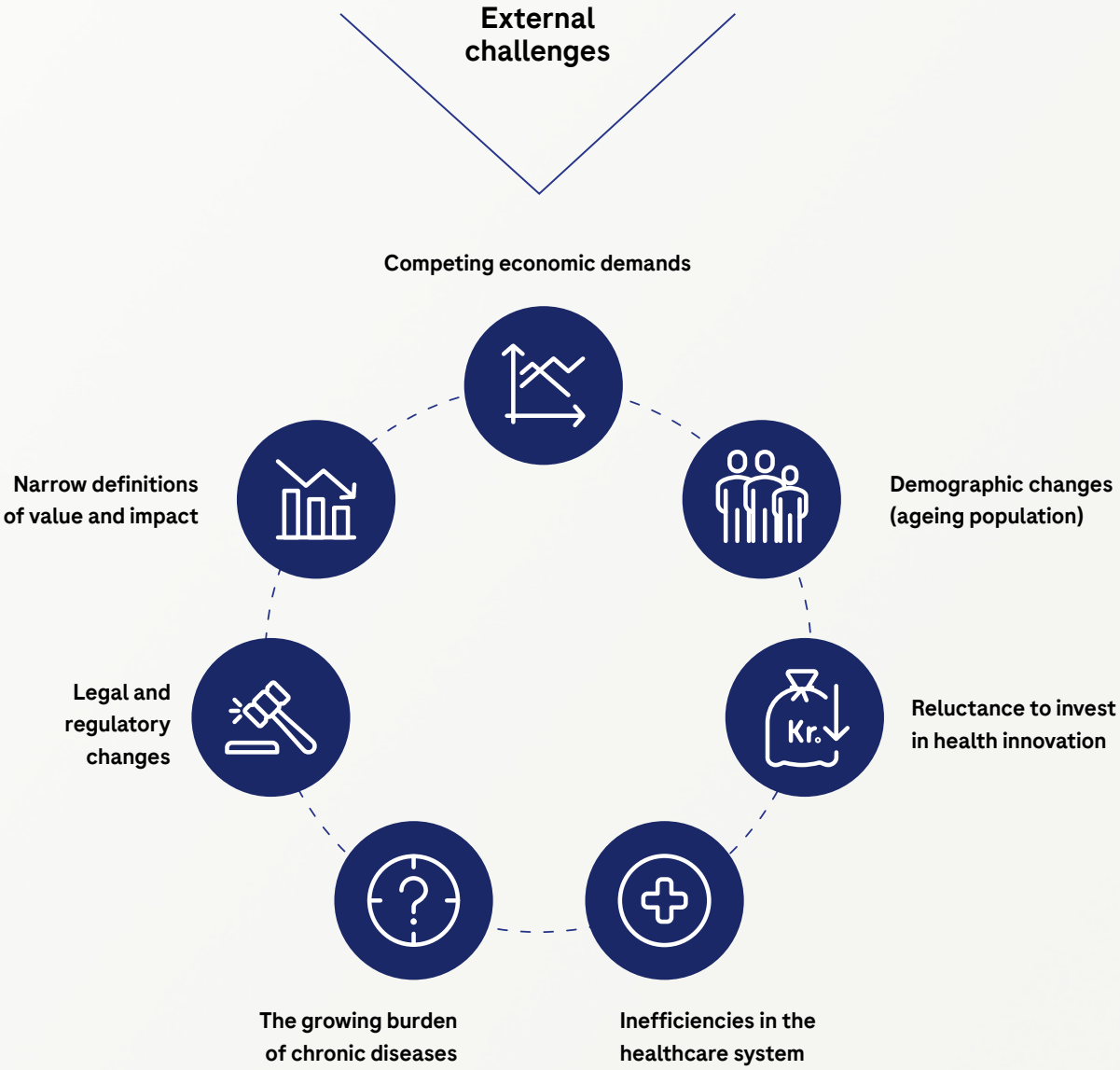
Do we consider societal value when setting priorities?

When a new treatment is assessed, there must be a reasonable balance between its price and the additional clinical value it provides compared to the current standard of care. But how do we measure "more health in relation to cost"? Important factors – such as a patient's ability to return to the labour market or the long-term societal value – are often left out of the equation.

As a result, we risk overlooking effects that extend far beyond clinical outcomes and the health sector alone. This highlights the need for a more holistic approach to evaluating the value of new treatments.

Key challenges in our healthcare system

The external challenges we face call for a new approach





Quantifying health

When health interventions succeed, they generate results that reach far beyond clinical outcomes. Improved treatment, early detection, and prevention can lead to fewer hospital admissions, a higher quality of life, and greater participation in everyday and working life. At the same time, resources are freed up in a healthcare system under pressure. This highlights the need for governance models that take account of the wider societal value of health.

To maximise the value of our health investments, we need a shared standard or reference framework that systematically measures both economic and social returns. The data presented in this white paper are primarily based on the international methodology developed by the WifOR Institute, which is used by organisations such as the WHO and the EU (WifOR Institute, 2024).

The model attributes value to health by linking improved quality of life and increased life expectancy to overall productivity. Based on QALYs – quality-adjusted life years – it calculates how health interventions affect both paid and unpaid work, and thereby contribute to gross domestic product.

In Denmark, several stakeholders – including the Economic Council of the Labour Movement (AE), Lif, and patient organisations – use similar models. One such example is the BIS model (Gross Societal Investment Model), which estimates how improved treatment can enable more people to remain active in the labour market.

The BIS model estimates societal gains in terms of avoided productivity losses and reduced public spending on, for example, social benefits, early retirement pension, and other welfare payments. Both models are described in more detail in the appendix.

Regardless of the approach, the objective remains the same: to make the value of health visible in a broader societal context. When we are able to measure what health "gives back" – to individuals and to society – we gain a stronger foundation for making informed investments in solutions that promote equity, enhance quality of life, and strengthen societal sustainability.

By using models that capture the wider impact of health, it becomes possible to quantify its societal value – and act on it.

Quantifying societal value



Innovative medicines improve patients' health



Health outcomes can be reflected in improved quality of life



A healthier patient contributes to economic welfare

Example of the WifOR Institute's international methodology

What does it mean for society when a new treatment leads to improved health?

Imagine a new treatment for multiple sclerosis becoming available in Spain. For patients aged 20–59, it leads to a combined gain of 1,000 additional years of good health.

When people are in better health, they are more likely to contribute – whether through paid work in the labour market or unpaid work at home, such as taking care of children, preparing meals or caring for elderly relatives.

How do we calculate value?



Paid work

70% of adults in this age group are in employment. This means that 70% of the 1,000 healthy life years become years in which people are able to work and earn an income.

Each year in employment contributes an average of DKK 40,000 to the economy.
So for the 700 'working years' *(70% of 1,000),* the estimated value is:

Working years	×	Gross value added (GVA)	=	Paid work
700		DKK 40,000		DKK 28 million



Unpaid work

The remaining 300 years not spent in the labour market still count, because people also do important work at home – even if it isn't paid.

To estimate the value of this work, we apply two adjustments:

- **Time adjustment:** People spend approximately 75% as much time on unpaid work as on paid work.
- **Value adjustment:** Unpaid work is estimated to have roughly half the economic value.

So, the value of one year of unpaid work becomes:
DKK 40,000 × 0.75 × 0.5 = DKK 15,000

That means the value of the 300 unpaid years is:

Unpaid years	×	Gross value added (GVA)	=	Unpaid work
300		DKK 15,000		DKK 4.5 million

Total societal value

Paid work	+	Unpaid work	=	Productivity gain
DKK 28 million		DKK 4.5 million		DKK 32.5 million

See Appendix I for a more detailed explanation.



An interesting example of a new model for quantifying health and social interventions can be found in Aarhus Municipality.

In this context, Aarhus Municipality's Social Investment Fund serves as a framework for initiatives focused on social impact investment. The fund is administered by the Council for Social Investment, which initiates programmes that both improve residents' lives and reduce municipal expenditure.

A social impact investment is a collaborative model in which a public authority, a welfare service provider, and an investor work together to implement an intervention that can generate social change for the individual and, over time, deliver financial benefits for the public sector. The investor provides risk-bearing capital to enable the provider to deliver the intervention. The authority repays the investor only if the agreed, measurable outcome targets are met.

This approach makes it possible to assign a monetary value to the gains a public authority can achieve by investing in, for example, prevention and early detection. (Aarhus Kommune, 2020; Center for Offentlig-Privat Innovation, 2023).

When discussing the value of improved treatment, the focus extends beyond patients' participation in the labour market. Health interventions also make a difference for elderly who are able to maintain their independence for longer; for children who thrive and perform better in school; and for people with disabilities, severe or chronic illnesses who experience higher quality of life and better opportunities to take part in everyday life and participate actively in society. These are benefits – reaching beyond the individual – that, collectively, help build a stronger and more resilient society.

A new perspective on value

Today, health interventions are often assessed in terms of what must be deprioritised – and how to maximise health outcomes within a tight budget. But what if we shifted the perspective and asked instead: What value can health create?

With this white paper, we propose taking a step back to reconsider how we understand value in health. When people receive timely and appropriate treatment, they recover more quickly, return to the labour market, take part in everyday life, and contribute to society – both economically and socially.

Experts increasingly point to the need to factor productivity gains into the assessment of health interventions – for example, when an intervention results in increased labour supply, reduced reliance on public benefits, or higher tax revenues. These gains can be substantial and should be reflected in how we prioritise and allocate health budgets (Østby & Kristiansen, 2023).

Yet research shows that efficiency gains – such as new treatments, workflows or technologies – rarely result in the systematic reinvestment of the resources they free up within the healthcare system (Fox, 2010).

The potential societal gains therefore risk being absorbed into the overall national budget – with no guarantee that they will benefit patients directly. This creates a risk of inequality and distortion in resource allocation, where funding is channelled towards areas where impact is easiest to document (Fox, 2010; Fisher et al., 2009).

If we want to ensure that these gains benefit the healthcare system, part of the documented socio-economic effects should be channelled back into the sector – for example, through new budgeting principles or distribution mechanisms. As Østby & Kristiansen (2023) argue, a more systematic inclusion of productivity gains in prioritisation models and budgeting practices may offer a way forward. In this way, investment in health can create a positive cycle, where better treatment benefits patients and strengthens the economy.

In the pursuit of maximising value in healthcare, it is equally important to recognise that treatment is not always the best or most value-generating course of action. In certain cases, the decision not to initiate treatment – whether due to patient preferences, the burden of side effects, or insufficient evidence of effectiveness – may be the most ethically sound and economically sustainable option.

This requires enhanced clinical decision-making and a value-based framework in which patients' quality of life and preferences are weighed equally with clinical evidence and professional judgement. A more differentiated approach to treatment requires that we assess value not only in terms of *"what we can do"*, but also *"what we ought to do"* – including recognising when refraining from intervention is, in fact, the most meaningful choice.

Such an approach supports fair prioritisation and can help avoid overtreatment, resource waste and unnecessary harm – to the benefit of both individual patients and the healthcare system as a whole.

How to ensure that efficiency gains benefit the healthcare system

There are several examples of how systematic and transparent models – such as the budgeting method – can help ensure that gains from health interventions, such as increased labour force participation and reduced public expenditure, are reinvested in the healthcare system. In this way, the resulting socio-economic value can strengthen both capacity and welfare without placing additional pressure on public finances (Østby & Kristiansen, 2023).

Several countries have already adopted this approach, showing how the targeted reinvestment of health gains can lead to actual improvements for patients, healthcare staff, and society alike.



Today, health is typically assessed as a cost – but there is a need for a more holistic perspective, enabling us to prioritise based on a consistent methodology and the value a well-treated patient represents.

Because when we start measuring what truly matters, we can make better decisions – for patients, for the healthcare system, and for society as a whole.

FROM

Health as a cost

Siloed and fragmented decision-making
Health in isolation
Focus on inputs – not outcomes or dynamic effects
Increasing healthcare costs



TO

Health as an investment

Sustainable employment
Improved health
Higher quality of life



In **the United States**, states such as **Oregon** and **Arizona** have introduced models in which surpluses from Medicaid organisations are systematically reinvested in community-based health initiatives. Oregon's SHARE initiative, for example, requires that funds be earmarked for housing support, mental health and social well-being (Oregon Health Authority, 2020; Bachrach et al., 2018).

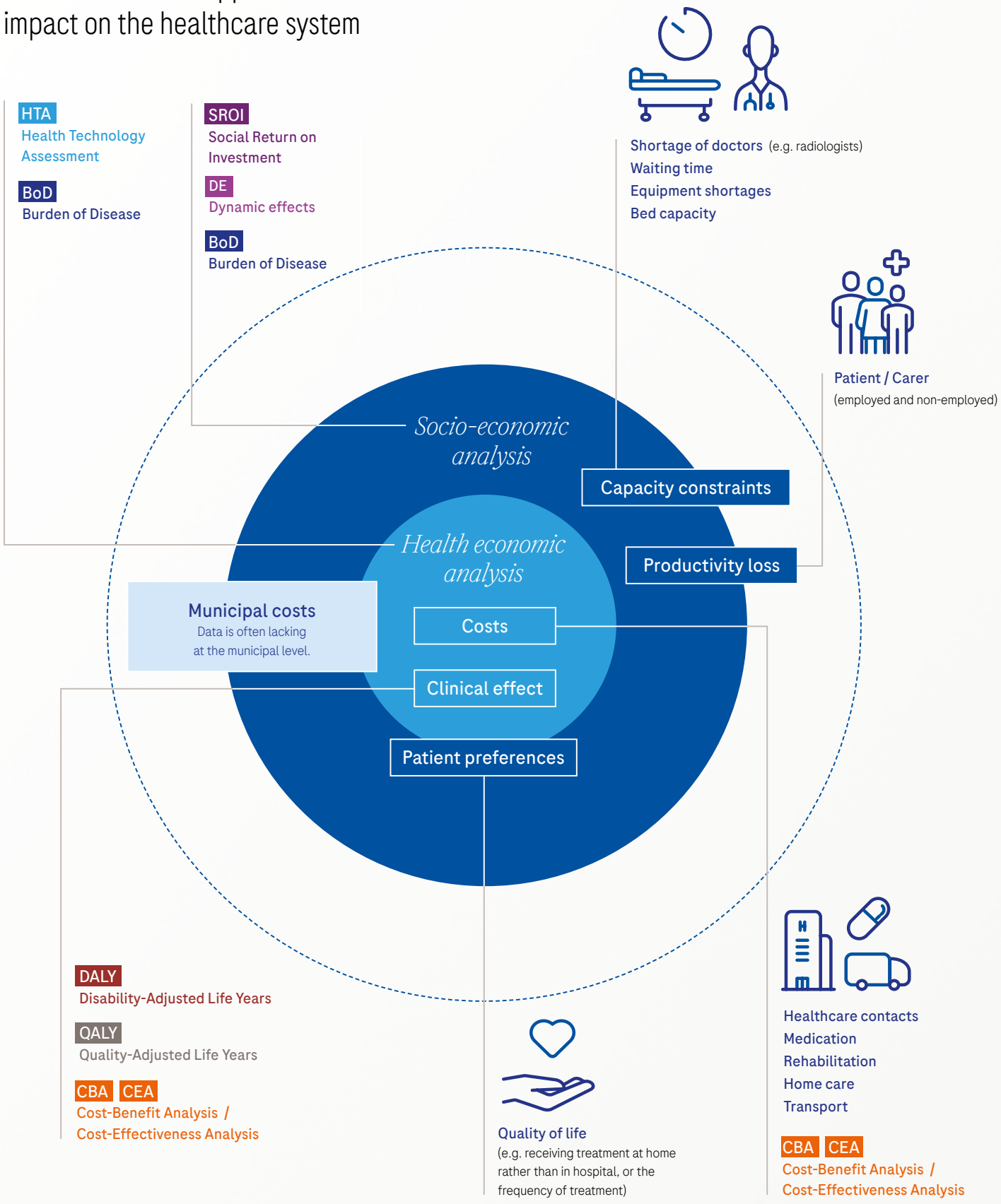
In **Estonia**, efficiency gains have been systematically reinvested in healthcare staff salaries and improved access to care. This has helped eliminate the need for informal payments and has contributed to greater equity within the health system (WHO, 2019).

In the **Netherlands** and **Sweden**, an analysis prepared for the Health Structure Commission shows that regions use targeted funding models and outcome indicators to strengthen capacity, proximity and prevention in the primary care sector (Boston Consulting Group, 2023).

Experience shows that when efficiency gains are coupled with systematic reinvestment, health improvements are no longer just abstract savings on a spreadsheet – they translate into tangible benefits for patients, staff, and the wider economy (Peikes et al., 2009; RAND Corporation, 2005; Ham et al., 2010).

Value in health

Towards a holistic approach to investment and impact on the healthcare system



The societal value of health interventions

The societal value of initiatives within the healthcare system can be measured, assessed and compared. There are several well-established methods and concepts that can be used to quantify the value of health interventions. Below is an overview of the most commonly used approaches.

Method	Example
BoD Burden of Disease / **BoI** Burden of Illness	
The burden of disease is measured in terms of mortality, demand on healthcare resources, and absence from the labour market.	*Excess mortality among men and women who smoke or have smoked in the past accounts for approximately 30% of all deaths – underscoring the need for preventive measures such as higher tobacco taxes and smoking cessation campaigns.*
HTA Health Technology Assessment	
A method for evaluating medical technologies and interventions based on their effectiveness, costs, ethical implications and organisational impact. It is used as a basis for decision-making in the healthcare sector.	*An assessment of whether a new cancer medicine offers a reasonable balance between price and clinical benefit, and whether sufficient resources – such as specialist doctors – are available to support its implementation.*
CBA Cost-Benefit Analysis / **CEA** Cost-Effectiveness Analysis	
Analyses the economic value of interventions. CBA: Whether the value exceeds the costs. CEA: Compares the cost-effectiveness of interventions, e.g. using cost per QALY.	*A vaccination programme costs DKK 10 million and prevents 15,000 cases of illness, corresponding to a cost of DKK 667 per case avoided.*
QALY Quality-Adjusted Life Years	
Assessing the benefit of a treatment. QALY combines the length and quality of life gained through treatment. One QALY corresponds to one year in perfect health.	*A new cancer treatment extends a patient's life by two years. During that period, the patient's quality of life is estimated at 80%. This corresponds to a total gain of 1.6 QALYs.*
DALY Disability-Adjusted Life Years	
Measuring lost health: The sum of years of life lost and years lived with reduced functioning. Primarily used to quantify the burden of disease.	*If a disease causes a person to die 10 years prematurely and, prior to that, to live five years with a 50% reduction in quality of life, the total disease burden is calculated as 12.5 DALYs. This is because one year lived at half quality of life counts as 0.5 DALY.*
DE Dynamic effects	
Focuses on long-term societal consequences such as productivity, innovation, and behavioural change. Used in macroeconomic analyses.	*A smoking cessation programme reduces lung cancer, lowers healthcare costs, and increases productivity – generating socioeconomic value.*
SROI Social Return on Investment	
Quantifies the societal value of interventions in economic terms, including social, environmental and financial factors.	*Early treatment of wet AMD helps prevent vision loss, enables patients to stay in the labour market, and reduces the need for home care.*

How value is measured in Denmark

In Denmark, **Health Technology Assessment (HTA)** is used as a method for evaluating health technologies, including pharmaceuticals, medical devices and treatment methods. HTA is the foundation of the decision-making process in the healthcare system. The aim is to ensure that new treatments are both clinically effective and cost-effective compared to existing options.



What does HTA include?

HTA focuses on clinical and economic parameters that can be measured and compared:

Clinical effect – e.g. improved survival, fewer symptoms, and better quality of life. Often measured in QALYs or DALYs.

Direct healthcare costs – diagnostics, medication, treatment, hospital stays, consultations, rehabilitation, and in some cases, municipal costs such as assistive devices and home care.

Burden of Disease (BoD) – assessment of the impact of disease on society.

Cost-Effectiveness Analysis (CEA) – compares the cost per QALY gained.

Cost-Benefit Analysis (CBA) – assesses whether the value of the benefit exceeds the cost.



What is often not included in HTA?

Although HTA assesses clinical effect and direct costs, it often overlooks broader societal factors.

Patient preferences – e.g. preference for home-based treatment.

Capacity constraints – staff shortages, waiting times, and logistical bottlenecks.

Productivity loss – time away from the labour market for both patients and informal carers.

Municipal costs that are difficult to document – e.g. assistive devices and social support, despite potential health-economic relevance.

Dynamic effects (DE) – long-term socio-economic consequences such as labour market participation, reduced burden on informal carers, innovation, behavioural change and shifts in working patterns.

Unpaid work – contributions from patients and informal carers, such as household tasks or voluntary work, which also have socio-economic value.



Example: How value matters
– for both patient and society

Breast cancer patient

Bettina, aged 45, has been diagnosed with HER2-positive breast cancer. A new treatment is available that may extend her life and reduce side effects. A typical HTA focuses on overall survival and direct healthcare costs such as medication and hospitalisation – but often overlooks broader societal consequences.

If Bettina is able to remain in work, public spending on sickness benefits is reduced, and productivity losses are avoided. Receiving treatment at home may improve her quality of life, yet patient preferences are rarely considered in Danish HTA evaluations. Moreover, if her husband needs to provide less support, his ability to work may improve – a benefit that is typically not taken into account.

Bettina may also continue to contribute through unpaid work at home or voluntary activities – tasks that might otherwise require paid assistance. These dynamic effects are often excluded from current HTA processes, despite their impact on both the economy and society.

By focusing only on clinical outcomes and direct costs, the current HTA framework fails to reflect the full societal impact of treatment. A more holistic approach would offer a more accurate picture of value – not only for the healthcare system, but for society as a whole.

Health as an investment

In Denmark, health interventions are often assessed based on their direct costs, while long-term value – such as fewer hospital admissions, shorter duration of illness and increased labour market participation – are often overlooked. Research and new models show that investing in health can deliver significant economic returns over time.

The healthcare sector has traditionally been viewed as an isolated system focused primarily on the treatment of illness. While this remains a core function, recent analyses show that investments in health are often undervalued in decision-making processes and insufficiently integrated across sectors (McKinsey Global Institute, 2020; Kraka Economics, 2024; Dansk Erhverv, 2024; Kofoed, 2025; Ohrt, 2025).

According to an analysis by McKinsey, global productivity losses due to poor health – including premature death and reduced work capacity – **reduces to up to 15% of global GDP each year** (McKinsey Global Institute, 2020). At the same time, it is estimated that for **every krone invested in health may generate an economic return of two to four kroner**, primarily through increased labour supply, fewer sick days and reduced pressure on the welfare system (Business Review, 2022).



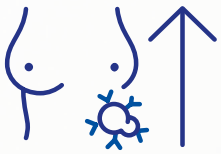
40%
2024

McKinsey also estimates that **the global burden of disease could be reduced by up to 40% by 2040**, with 70% of this reduction attributable to well-established preventive measures such as smoking cessation, healthier environments, and improved access to treatment.



35% in 1980
16% in 2016

A concrete example comes from Australia, where the proportion of adult smokers fell from 35% in 1980 to 14% in 2016 – contributing to a significant decline in chronic diseases and an overall improvement in public health. (McKinsey Global Institute, 2020).



123,000
additional quality-adjusted life years (QALYs) gained between 2017 and 2023

There is also documented impact in the treatment of HER2-positive breast cancer – a subtype affecting 15–20% of breast cancer patients globally (OncLive, 2021). An analysis by the WifOR Institute conducted for Roche shows that treatments with innovative medicines for HER2-positive breast cancer in ten countries* have contributed to more than 123,000 additional quality-adjusted life years (QALYs) between 2017 and 2023.



Societal Value
DKK 57 bn

The total Social Impact of these treatments amounted to approximately DKK 57 billion.

Timely treatment is also associated with a 20% better outcome per patient and reduced need for subsequent care and support measures (WifOR Institute, 2024).

These findings highlight the importance of integrating broader socio-economic effects into the assessment of health interventions – not only as a benefit to the individual patient, but also as a key factor in ensuring societal sustainability and economic resilience.

How can the socio-economic value of treatment be measured?

The WifOR Institute has conducted an analysis for Roche estimating the Societal Impactfrom improved treatment of HER2-positive breast cancer, multiple sclerosis and retinal diseases.

The analysis includes patients who have been treated with medicines developed by Roche in selected disease areas. It provides an example of how better health outcomes generated by innovative medicines can be translated into economic value – by converting improvements in health into measurable economic effects. This is done using the following components:

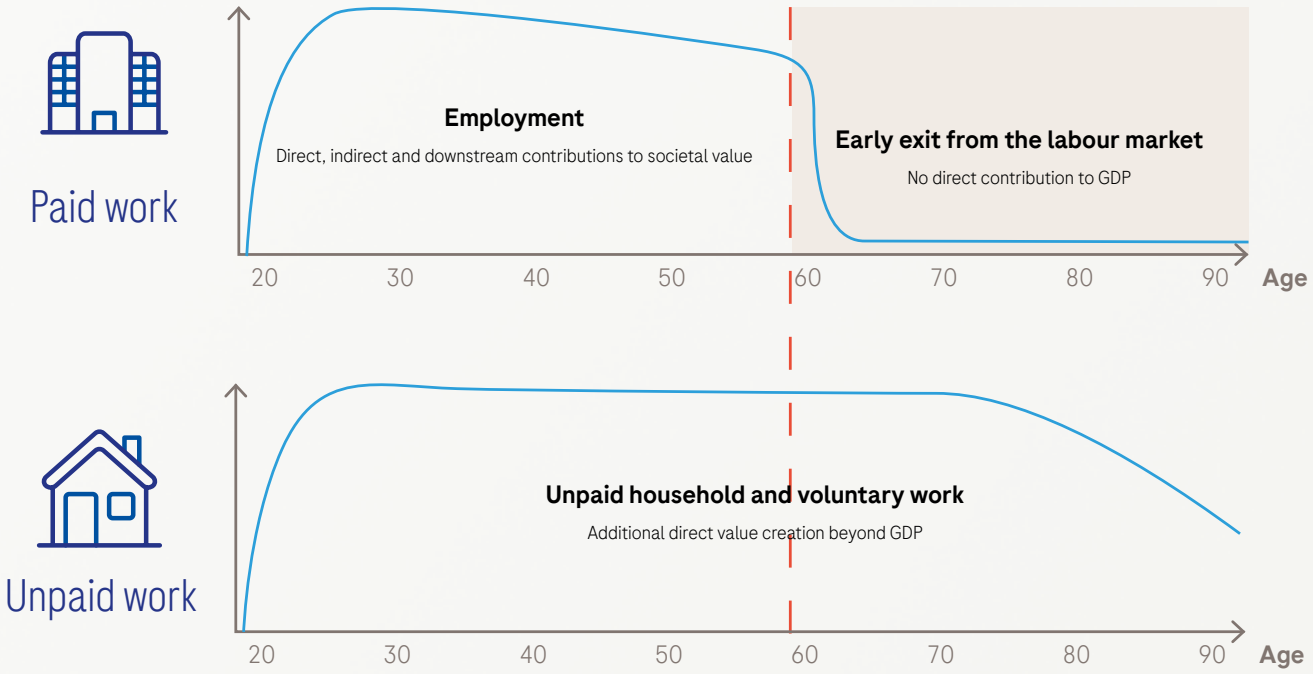
Direct effects:

- Patients' ability to participate in the workforce improves, resulting in higher productivity.
- Patients can contribute with unpaid work – such as household tasks or voluntary activities – which also supports the functioning of society.

Indirect and downstream effects:

- As patients regain their health and become more productive, demand for goods and services increases. This, in turn, drives economic growth in sectors that support both productivity and health.
- Broader improvements in health lead to increased consumer spending, which in turn stimulates further economic growth.

(WifOR Institute, 2024)



When health is not recognised as wealth

In tax, climate and labour market policy, it is standard practice to include dynamic effects such as labour supply, innovation and public expenses. Yet health interventions are still often assessed without considering their broader socioeconomic consequences and value. This raises the question of why health is not given the same priority as other sectors – despite well-documented effects that reach far beyond the individual patient.

Investments in health can generate what are often referred to as dynamic effects – such as higher employment and lower public spending – comparable to those recognised in other sectors.

Yet the broader socioeconomic consequences are only to a limited extent included when health interventions are assessed in Denmark. This stands in contrast to practices in other policy areas, where it is common to account for indirect economic effects.

In tax policy, for example, the Ministry of Finance uses dynamic modelling to assess how changes in tax rates affect both labour supply and tax revenue (Ministry of Finance, 2024).

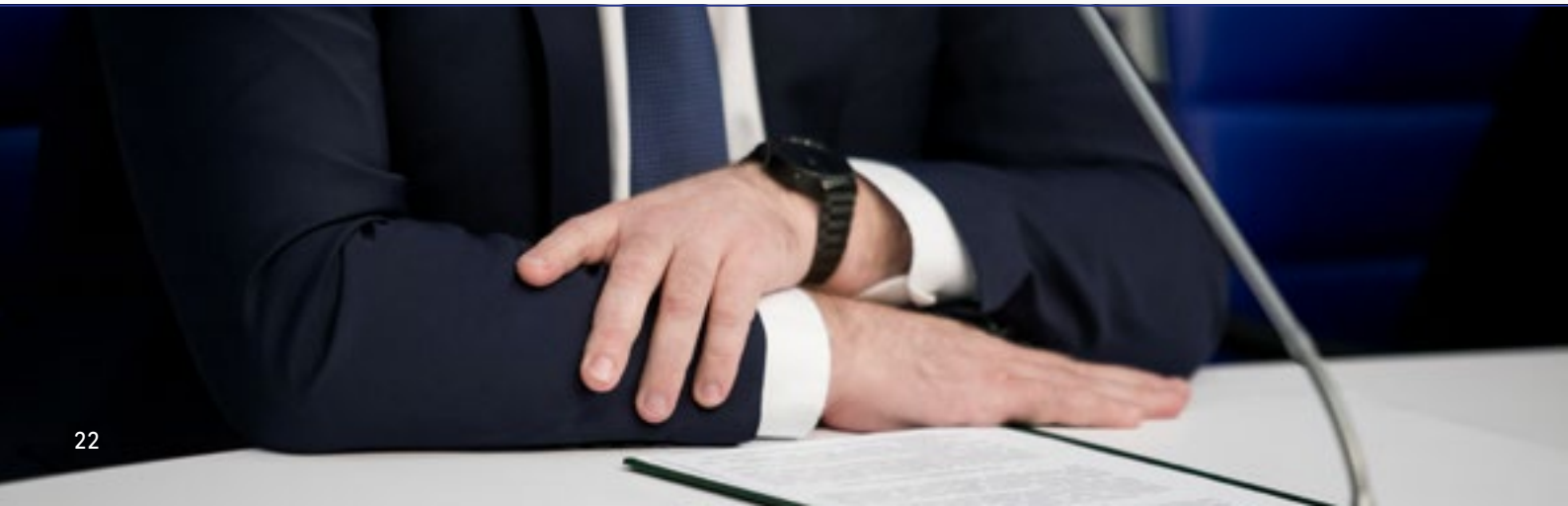
In climate policy, advanced models are used to capture effects such as innovation, green job creation, and improved health resulting from better environmental quality (European Commission, 2021).

In the field of employment, organisations such as *Dansk Arbejdsgiverforening* and *De Økonomiske Råd* continuously assess the effects of reforms on labour supply and public spending (Dansk Arbejdsgiverforening, 2024; De Økonomiske Råd, 2023). The existence of dynamic effects is also confirmed by the current public debate:

"From a broader perspective, it is clear that positive dynamic effects of public spending do exist – otherwise, it would simply be impossible to explain why the Nordic countries perform so well economically."

Torben M. Andersen, Professor of Economics, Aarhus University

(From the article: *Kan man rette op på Finansministeriets skæve regnemodeller?* – Mandag Morgen)



What are dynamic effects?

Dynamic effects describe the indirect and often long-term socioeconomic consequences of a political decision, reform or investment – beyond the immediate budgetary effects

These concern how areas such as health, tax policy, and education influence residents' behaviour, productivity, and participation in the labour market – and how these, in turn, affect labour supply, tax revenue, public spending, and GDP.

(Finansministeriet, 2024; De Økonomiske Råd, 2023; Nielsen & Andersen, 2020; McKinsey Global Institute, 2020; EU-Kommissionen, 2021)

Examples of dynamic effects include:

- **More people in work as a result of better health or lower taxes** → increased labour supply and higher tax revenues
- **Effective treatment** → fewer sick days and reduced expenses on social benefits and healthcare services
- **Prevention** → fewer hospital admissions and reduced pressure on the healthcare system
- **Technological innovation** → greater efficiency and lower long-term costs

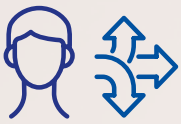
Terms typically used in analyses of dynamic effects:



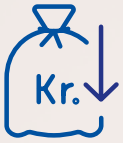
Labour supply effect:
When more people enter the workforce due to improved health or changes in tax incentives.



Productivity effect:
When individuals work more efficiently – for example, after recovering from illness or through health innovation.



Behavioural response:
How people adapt to new rules, treatment options or incentives



Spillover effects on public finances:
For example, lower public spending on sickness benefits, early retirement pension or home care.

(Finansministeriet, 2024; Nielsen & Andersen, 2020); De Økonomiske Råd, 2023)

How can improved health generate value for society as a whole?

There is currently a clear difference in how the impact of interventions is assessed – depending on the policy area in which they belong. This raises the question of why improvements in health are still so rarely viewed as a societal benefit, even though we know that their effects do not stop with the patient but extend to the labour market, public finances and the economy as a whole.

A well-treated patient creates greater value for society

By prioritising prevention, early treatment, and innovative solutions, we can not only reduce the burden of disease but also free up resources that can be redirected to other priority areas within the healthcare system.

Imagine the difference: A subcutaneous (SC) treatment that can be administered at home in just a few minutes, versus an intravenous (IV) treatment that requires several hours in hospital.

For patients, subcutaneous treatment means less time away from work and family – and more independence in everyday life. For the healthcare system, it saves resources and eases the burden on staff.

This shift not only improves patients' quality of life – it also reduces sick leave and lowers costs related to logistics and hospital time (WifOR Institute, 2024; McKinsey Global Institute, 2020).

But effective treatment is not only about freeing up resources. It is also about access to new and innovative treatments – and about who benefits from progress. As Morten Sodemann, Professor and Chief Physician at the Migrant Health Clinic at Odense University Hospital, expresses it:

"When we talk about effective treatment, it is not just about medicine and procedures – it is also about ensuring equal access to healthcare for all patients, regardless of their social or economic circumstances. A well-treated patient is not only a societal gain, but also a reflection of a healthcare system that functions fairly and sustainably for everyone."

Morten Sodemann, Professor and Chief Physician at the Migrant Health Clinic, Odense University Hospital





According to a recent Danish analysis, the use of **SC-administered immunotherapy can reduce the amount of time healthcare professionals spend per patient** with

66%,
corresponding to 12.2 hours per care pathway.

At the same time, it can **reduce the costs** by

34%,
corresponding to just under DKK 2,500 per care pathway.

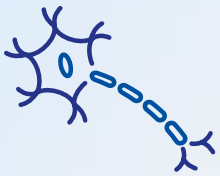
The analysis examines a case involving 800 lung cancer patients receiving immunotherapy. In this scenario, switching to SC administration could save the healthcare system **9,760 hours** of staff time and **€250,400** (approx. DKK 1.86 million) in annual costs. (Beck et al., 2024)

Being well treated is not only about reducing symptoms – it is about enabling a dignified and active life. For patients with conditions such as haemophilia, breast cancer or multiple sclerosis, lifelong effective treatment offers more independence and better opportunities to participate in working life and family life, to take holidays, and to plan for the future with a sense of control and independence. For healthcare professionals, time can be used more efficiently on other clinical tasks.

When fewer sick days and higher productivity ease the pressure on the healthcare system, they generate a positive economic effect. This, in turn, strengthens the overall social fabric and contributes to a more sustainable system.

Receiving the right treatment throughout life is an investment – not only for the individual, but for all of us.

In the following sections, we explore how health can be viewed as a holistic investment through concrete examples from disease areas such as multiple sclerosis (MS), chronic obstructive pulmonary disease (COPD), breast cancer, retinal disease and haemophilia.



Denmark has the highest prevalence of multiple sclerosis (MS) per capita in the world

Multiple sclerosis (MS) is a condition that often affects people in their most productive years and has significant consequences for patients, families and society.

Multiple sclerosis (MS) is a chronic disease of the central nervous system in which the body's immune system attacks the protective layer around nerve fibres (myelin). This can disrupt nerve signalling and affect both physical function and cognitive abilities. Symptoms vary from person to person, but many experience fatigue, reduced muscle control, sensory disturbances, or memory problems.
MS typically affects young adults and develops gradually over time. Its progression – both visible and invisible – has a significant impact on quality of life and on the ability to participate in working life and everyday activities (Blaabjerg, 2024; Scleroseforeningen, 2025). Early intervention and awareness of disease progression are therefore essential.

The untapped potential

While MS presents significant challenges, there are **significant opportunities** to improve quality of life, make better use of healthcare resources, and strengthen the national economy:

- **Early diagnosis and treatment** can help more people remain active in the labour market.
- **Investment in treatment and support** can reduce hospital visits and lower the economic burden on society.
- **A more inclusive labour marke**t can ensure that more people with MS maintain their connection to society.

With the right solutions, we can create better living conditions for people with MS – while also strengthening society's shared resources. A gain for both the individual and the community.

Globally, nearly 3 million people are living with MS – an increase of 500,000 since 2013. The majority are women (WifOR Institute, 2024).

According to the latest figures from the Atlas of MS, Denmark has the highest prevalence of MS in the world in proportion to its population (Scleroseforeningen, 2025).

18,616
People living with MS (2023)



Approx. 500
New cases each year

306
cases per 100,000 population (2023)

69% women

31% men

(Scleroseforeningen, 2024; Dansk Multipel Sclerose Register, 2024).

The number of people of working age living with MS increased globally by 10% between 2013 and 2023. According to analysis by the WifOR Institute (2024), this development is primarily driven by improved survival rates resulting from better treatment – including disease-modifying therapies that can slow disease progression and improve quality of life. This is also confirmed by Det Danske Scleroseregister (2024), which shows that modern disease-modifying therapies for MS can slow disease progression, reduce the number of relapses and alleviate symptoms.

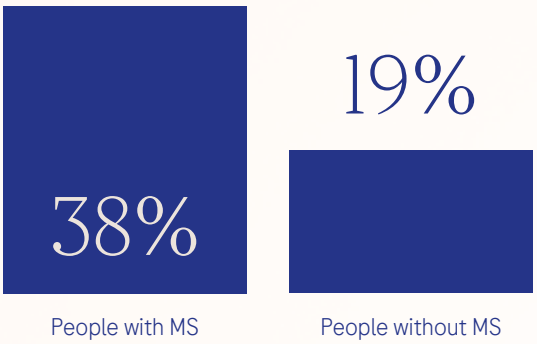


When illness limits an active life

When people with MS leave the labour market, it affects both their daily lives and the national economy. A Danish registry study by Wandall-Holm et al. (2022a) shows how MS often strikes during the most active phases of life, depriving individuals of the opportunity to pursue education, employment and financial independence.

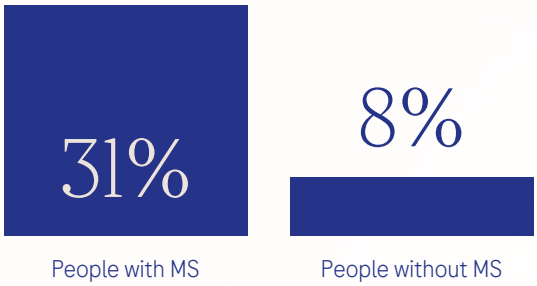
The study highlights the proportion of people with MS who have no earned income, and how many receive early retirement pension compared to individuals without MS. It clearly shows how the disease frequently leads to the loss of job opportunities, income and prospects – leaving significant economic and social consequences for both the individual and society.

People of working age (18–65 years) without income from employment in 2018:



This corresponds to approximately **4,300 people with MS** out of a population of 11,287 working-age individuals with MS (Wandall-Holm et al., 2022a).

People receiving early retirement pension in 2018



Among young adults aged 25–34, the difference is particularly striking: people with MS are **22 times more likely to receive early retirement pension** compared to their peers without the disease (Wandall-Holm et al., 2022a).

Treatment that fits into everyday life

For people living with MS, timely and effective treatment is essential to maintaining independence, and the ability to lead an active life. When more people with MS are able to remain in work, it not only provides security and quality of life for them and their families – it also reduces economic dependency and the risk of having to leave the labour market prematurely.

When treatment is initiated early in the disease course – ideally within six months of the first symptoms – the risk of long-term disability is significantly reduced. Studies show that delayed treatment can increase the risk of disability up to 42%. Early intervention can therefore help more people with MS remain self-reliant, stay in employment, and live a more independent life. (Chalmer et al., 2018; Wandall-Holm et al., 2022b).

A significant potential

The earlier MS is treated, the greater the chance of slowing the progression of the disease. Effective treatment is therefore not only a benefit to the individual, but also an investment in a stronger and more self-reliant life – with significant gains in both quality of life and socio-economic terms.

When people with MS lose their ability to work, it comes with significant personal and economic costs. But that trajectory can be changed. This is shown by an analysis by the WifOR Institute for Roche:



79%

of the total socio-economic benefit from MS treatment comes from patients returning to **paid work.**



21%

comes from patients once again contributing through **unpaid work** – such as household tasks, childcare or voluntary engagement.

If more patients gain access to early and effective treatment – particularly disease-modifying therapies (DMTs) that can slow disease progression and prevent long-term disability – they are more likely to remain in the labour market or continue their roles at home and in civil society. This enhances overall productivity – through both paid and unpaid work.

More good years of life

Between 2019 and 2023, MS treatment has provided:

8,316
Danish patients

316
additional years of life in better health and with improved quality of life.

Social Impact

From 2019 to 2023, MS treatment has contributed:



DKK 341 m
to the economy through productivity gain

corresponding to the cost of approximately



750 neurology specialist nurses

- In 2023, the contribution was DKK 96.7 million. The annual impact varies depending on the patients reached.
- Looking at the average for the period 2019 to 2027, the annual gain is expected to be DKK 89.7 million.

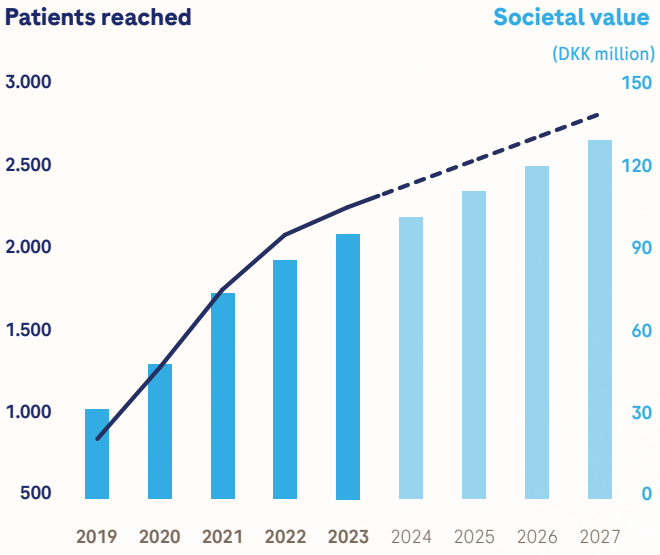
(WifOR calculations)



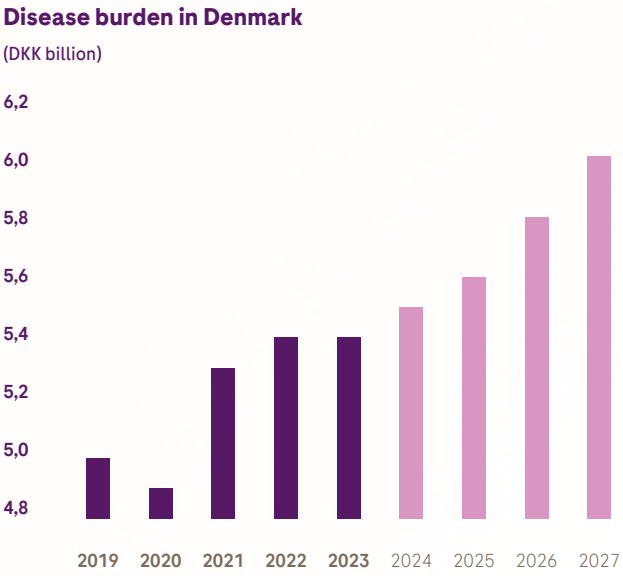
When treatment creates value

MS treatment not only improves individual health – it also has a measurable impact on the national economy. Calculations by the WifOR Institute for Roche show that, **between 2019 and 2023, treatment gave 8,316 patients in Denmark with a total of 316 additional years of life** with improved quality of life.

At the same time, the Social Impact has grown significantly – from DKK 32.7 million in 2019 to nearly DKK 97 million in 2023. And this upward trend is expected to continue: by 2027, the annual gain is projected to exceed DKK 130 million. This value arises primarily because more patients are returning to work or are once again able to contribute through unpaid roles at home and in society.



MS continues to represent a significant disease burden. In 2023, the total socio-economic burden of the disease amounted to **DKK 5.4 billion** – a cost that, despite advances in treatment, is increasing slightly over time.



Source: WifOR Institute, based on Danish input data using the same methodology as described in the analysis The Value of Investing in Innovative Medicines: Socioeconomic Burden and Annual Social Impact of Roche Treatments for HER2+ Breast Cancer, Multiple Sclerosis and Retinal Disease by WifOR Institute (2024). Data projected from 2024 to 2027.

Chronic obstructive pulmonary disease
One of Denmark's biggest public health challenges

Denmark faces an important task in improving the lives of people living with chronic obstructive pulmonary disease (COPD). Although COPD is one of the most widespread chronic conditions, increased efforts in prevention and lifelong, targeted treatment hold significant potential to improve patients' daily lives and enhance the resilience of society.

COPD is a progressive lung disease that affects the airways and makes breathing difficult. It typically develops over many years and is often caused – in Denmark – by smoking or long-term exposure to air pollution.

Symptoms such as shortness of breath, coughing, and increased mucus production can make even basic daily activities challenging. The disease leads to more frequent sick leave, early exit from the labour market, and reduced quality of life. (Mairey et al., 2023; Lungeforeningen, 2024a).

Untreated or poorly managed COPD also leaves a significant burden on the healthcare system. In 2023 - 15,174 patients were admitted to hospital with acute COPD exacerbation, and 16% died within 30 days, while 17% were readmitted within a month (Lungeforeningen, 2024b). One year after first hospital admission, the mortality rate had reached 31% (Regionernes Kliniske Kvalitetsudviklingsprogram, 2024).

The untapped potential

According to *Sygdomsbyrden i Danmark* (Mairey et al., 2023), COPD is one of Denmark's most serious public health challenges, costing society:

DKK 4.8 bn
in healthcare costs

and nearly

DKK 4 bn
in productivity losses due to sick leave and premature death.



Case

Prevention and improved treatment make a difference

In Aarhus, a collaboration between municipal emergency nurses and lung specialists from Aarhus University Hospital has shown that a cross-sectoral lung team, supported by telemedicine, can reduce hospital admissions among residents with severe COPD. Patients are able to contact the team directly in case of worsening symptoms and receive prompt assistance – often at home. Experience shows that hospital admissions have been reduced from 1.9 to 0.6 per patient per year – a difference of 1.3 admissions per patient. This means fewer hospital stays, fewer acute exacerbations and improved quality of life.

Economic potential

To assess the overall socio-economic impact of the lung team's work in Aarhus, the Danish Lung Association applied the BIS model. The calculations are based on data from approximately **13,000 annual COPD patients** with hospital contact, focusing on admissions in the five years following their first hospital encounter.

Within this group, the total cost of admissions is estimated at DKK 1.2 billion over five years. If the documented effect from the Aarhus project – a reduction of 1.3 admissions per patient – is applied, the model shows

a saving of approx.

DKK 4,100

per patient each year



equivalent to

DKK 322 bn

over five years.

These calculations only take into account the reduction in hospital admissions – not shorter lengths of stay or other downstream effects. The overall potential may therefore be even greater if models such as the one in Aarhus are scaled up systematically and targeted towards relevant patient groups. (Mogensen, 2024**).

Investing in lifelong treatment creates value

- **Early detection and improved treatment** can help reduce the gap in labour market participation between people with and without COPD – potentially increasing labour supply by 3,590 full-time positions.
- **More patients can live a stable everyday life** – with improved access to rehabilitation, support and telemedicine that helps prevent exacerbations and improve quality of life.
- **Less pressure on the healthcare system** – fewer acute exacerbations and readmissions free up capacity and resources.

(Dansk Erhverv, 2024; PreCareKlinikken, 2025; Vingtoft & Hansen, 2023; Mairey et al., 2023)

Number of people with COPD:



159,850

(+ an estimated 150,000 undiagnosed cases)

Increase in COPD patients:

25%

ver the past 10 years

Prevalence:

2,700

cases per 100,000 populations

Annual deaths:



6,154

excess deaths among people over the age of 30

Number of deaths:

11,6%

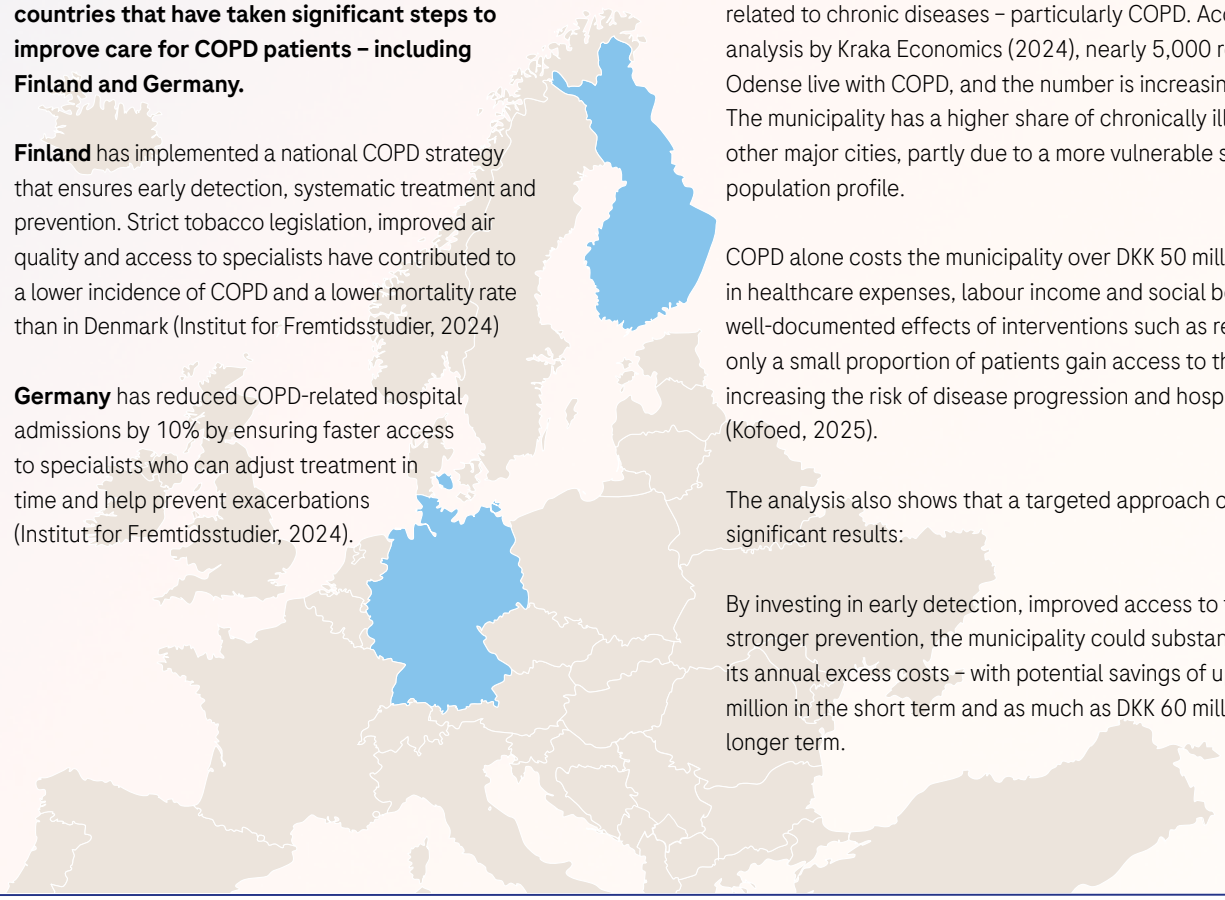
of all deaths in Denmark

(Dansk Erhverv 2024, Mairey et al., 2023; Jensen citeret i Altinget, 2025)

The right treatment throughout life

A more coherent and integrated approach can ensure that people with COPD receive correct treatment throughout their lives – resulting in better quality of life, fewer exacerbations and less need for hospitalisation. Experience from Denmark and abroad shows that systematic follow-up, improved treatment and targeted prevention can strengthen patients' daily lives and support a more sustainable healthcare system with freed-up resources.

Denmark has the highest rate of COPD-related deaths in Europe. We can learn from other countries that have taken significant steps to improve care for COPD patients – including Finland and Germany.



Finland has implemented a national COPD strategy that ensures early detection, systematic treatment and prevention. Strict tobacco legislation, improved air quality and access to specialists have contributed to a lower incidence of COPD and a lower mortality rate than in Denmark (Institut for Fremtidsstudier, 2024)

Germany has reduced COPD-related hospital admissions by 10% by ensuring faster access to specialists who can adjust treatment in time and help prevent exacerbations (Institut for Fremtidsstudier, 2024).

A local challenge with national implications

Odense Municipality is facing a significant health challenge related to chronic diseases – particularly COPD. According to an analysis by Kraka Economics (2024), nearly 5,000 residents in Odense live with COPD, and the number is increasing year by year. The municipality has a higher share of chronically ill people than other major cities, partly due to a more vulnerable socioeconomic population profile.

COPD alone costs the municipality over DKK 50 million each year in healthcare expenses, labour income and social benefits. Despite well-documented effects of interventions such as rehabilitation, only a small proportion of patients gain access to these services – increasing the risk of disease progression and hospital admissions (Kofoed, 2025).

The analysis also shows that a targeted approach can yield significant results:

By investing in early detection, improved access to treatment, and stronger prevention, the municipality could substantially reduce its annual excess costs – with potential savings of up to DKK 30 million in the short term and as much as DKK 60 million in the longer term.

International experience – and the local example from Odense – points to one conclusion: If we are to reduce the growing burden of COPD, it will require a far more ambitious and systematic approach. This is not only essential for improving the quality of life for individual patients – it is also vital to ensuring a sustainable healthcare system.

Reducing re-hospitalisations should not be seen merely as a cost-saving measure, but as an opportunity to improve the quality of care and treatment – benefiting all patients, regardless of the severity of their condition.

PreCare-COPD – an untapped potential

In Region Sjælland, the PreCare-COPD programme has been developed – an initiative in which COPD patients use monitoring equipment at home to receive faster and more effective care through close collaboration between hospitals and municipal emergency nurses.

- **Faster care and reassurance at home** – Patients can takemeasurements and have medication adjusted without having to go to the hospital.
- **Preventing acute exacerbations** – Frequent monitoring and close follow-up give patients a better chance of responding in time.
- **Improved disease awareness** – Patients become better equipped to manage their own condition, reducing the risk of hospitalisation.

Many COPD patients experience daily anxiety about being unable to breathe, but with PreCare-COPD, they have faster access to healthcare professionals – creating a sense of reassurance and stability.

Since joining the PreCare-COPD programme, patients have had significantly fewer hospital contacts, fewer acute admissions, and on average:

57%

lower hospital treatment costs,

equivalent to savings of

DKK 47,500

per patient each year.

PreCare-COPD is based on the ECM (Epital Care Model) – an evidence-based digital health service. A recent randomised study has confirmed that the model reduces hospitalisations and increases patients' sense of security – aligning with the experience from Region Sjælland.

(PreCareKlinikken 2025; Vingtoft & Hansen 2023; Phanareth et al., 2017).



Advances in breast cancer treatment improve survival

Breast cancer is the most common cancer among women in Denmark and is associated with significant health and socioeconomic consequences. Improvements in diagnosis, treatment and follow-up have contributed to increased survival over time – highlighting the potential of continued innovation and treatment.

Breast cancer occurs when abnormal cells in breast tissue begin to divide uncontrollably. The disease can develop rapidly or over several years, and it affects women of all ages – although the risk increases with age.

Early detection and new treatment options have significantly improved survival rates. Today, the 5-year survival rate is 87%, and even higher when breast cancer is diagnosed at an early stage. Nevertheless, many patients live with long-term effects such as fatigue, pain, and reduced mobility – all of which can affect their working lives and social participation (NORDCAN, 2023; Kræftens Bekæmpelse, 2023).

Investing in health creates value

A strengthened effort can improve both patients' quality of life and the efficiency of the healthcare system:

- **Targeted treatments** can reduce the risk of relapse and mortality, resulting in fewer hospital admissions and better daily functioning.
- **Improved rehabilitation** helps patients return to active life and reduces the need for long-term healthcare services.
- **Better coordination** of treatment pathway ensures more effective use of healthcare resources and frees up capacity for other patients.

(Bjerre et al., 2024; Dansk Brystkræft Organisation, 2024; Bjerre et al., 2024; Mairey et al., 2023)





Investing in better treatment not only benefits individual patients – it also creates significant societal value.
When more patients avoid serious long-term effects and relapses, the need for long hospital stays and readmissions can be reduced. This is reflected today in the fact that people with breast cancer have significantly more contact with the healthcare system than others – including nearly 279,000 additional outpatient visits and over 60,000 more contacts with general practice (Mairey et al., 2023).

At the same time, a faster return to the labour market means fewer individuals have to leave work or rely on early retirement pension – an element often overlooked in discussions of health investment.

There is therefore significant potential in strengthening diagnosis, treatment and follow-up – so that more patients not only survive but also enjoy a **better quality of life and are able to stay on the labour market.**

Number of people **diagnosed with breast cancer** annually:

4,900

Number of people **living with or having survived breast cancer:**

Approx. 70,000

25%

of **all cancer cases among women** in Denmark

87%

5-year survival rate

- **Average age at diagnosis:** 62 years
- **Hereditary predisposition:** 5–10% of all breast cancer cases are caused by inherited genetic factors
- **Screening programme: Women aged 50–69 are offered screening every two years**

(Kræftens Bekæmpelse, 2023; NORDCAN, 2023;Dansk Brystkræftforeningen, 2024)

A joint effort for the future

Breast cancer treatment in Denmark has already advanced significantly, but there is still considerable potential to optimise diagnosis, treatment and follow-up – so that more patients not only survive but also live better lives and remain active members of society.

Targeted treatment means longer and better lives
Treatment continues to improve and is becoming increasingly tailored to the individual patient. By adapting treatment to the specific characteristics of each cancer type, outcomes can be improved while reducing side effects (Bjerre et al., 2024).

Recent medical advances – such as HER2-targeted therapy – have transformed the outlook for many breast cancer patients. HER2-positive breast cancer was once one of the most aggressive subtypes, but today targeted therapies have significantly improved the prognosis (Celik et al., 2021; WifOR Institute, 2024).

A Danish study from 2020 shows that patients with HER2-positive metastatic breast cancer now live an average of around four years – twice as long as before (Celik et al., 2021). This remarkable improvement is due to the therapy's ability to block the HER2 receptor, which would otherwise stimulate the growth of cancer cells.

The result is not just more years of life, but better years, with fewer symptoms and side effects (WifOR Institute, 2024).

HER2-positive breast cancer affects approximately 15–20% of all breast cancer patients – both in Denmark and internationally. It is a more aggressive form of breast cancer that requires specialised treatment, and there is still a need to expand and ensure access to targeted therapies (Celik et al., 2021; American Cancer Society, 2025).

"HER2 therapy has revolutionised breast cancer treatment. We are now seeing patients live for several years with the disease – and live well. Early intervention is key."

Ann Søegaard Knoop, oncologist and researcher, Rigshospitalet

More good years of life

From 2019 to 2023, HER2 therapy was provided to:

2,601
Danish patients

210
additional years of life with better health and quality of life

Social Impact

From 2019 to 2023, HER2 therapy contributed with

DKK 124 m
to the economy

equivalent to the cost of

approx. 2
high-performance diagnostic scanners

- In 2023 alone, the contribution amounted to DKK 19 million. The annual contribution varies from year to year and depends on the number of patients reached.
- Looking at the average for the period 2019–2027, the annual Social Impact is expected to be DKK 22.1 million. Further details are provided on the following page.

(WifOR calculations)

When treatment for HER2-positive breast cancer creates value

Treatment of HER2-positive breast cancer is not only about improving the prognosis for the individual patient – it also has a clear socio-economic impact.

Calculations from an analysis conducted by the WifOR Institute for Roche show that, between 2019 and 2023, treatment provided **2,601 patients in Denmark with a total of 210 additional years of life** with improved quality of life.

At the same time, the Social Impact **has steadily increased – from DKK 4.6 million in 2019 to DKK 18.9 million in 2023** – depending on patients reached in a given year. In 2027, the projected annual gain is DKK 19.3 million, assuming a similar treatment volume.

This value arises primarily when more patients are able to return to work or once again take on unpaid roles at home and in society.

61%

of the gain comes from **paid work**

39%

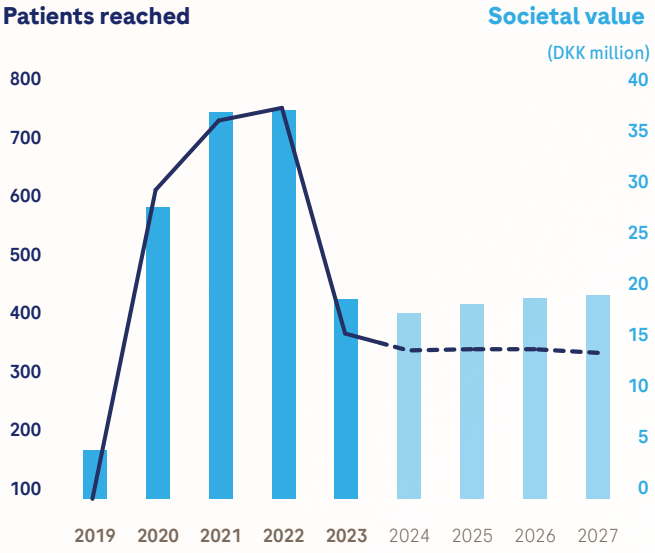
from **unpaid work** – such as household tasks, childcare and voluntary activities

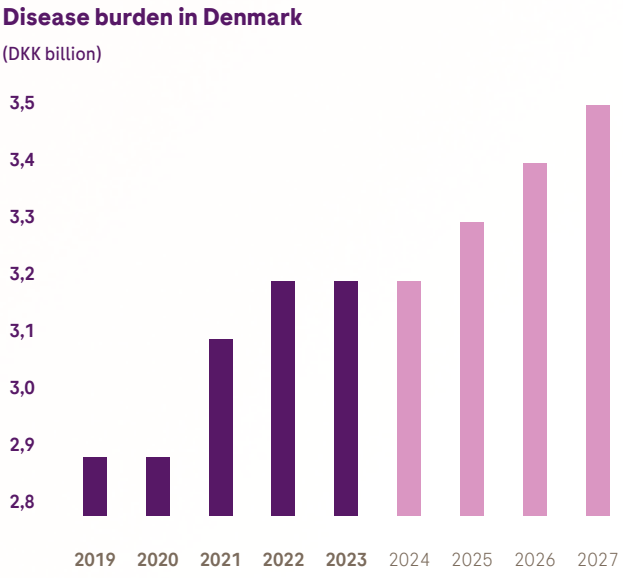
The potential of targeted treatment risks being lost if patients do not receive timely access to optimal care – for example due to late diagnosis, regional disparities, or limited access to advanced therapies.

This can lead to undertreatment, which comes at a cost to both quality of life and potential societal value.

A Danish study (Artzi et al., 2023) shows that only just over half of patients diagnosed with HER2-positive metastatic breast cancer in Denmark between 2014 and 2019 received treatment in line with national guidelines – and these patients experienced significantly longer survival: on average over 50 months, compared to 27 months for those who did not.

Despite these gains, HER2-positive breast cancer remains associated with a high disease burden. Based on calculations from the WifOR analysis, the total socio-economic cost in 2023 was DKK 3.2 billion, with projections indicating a rise to DKK 3.5 billion by 2027. This includes both lost labour productivity and the value of unpaid work – such as caregiving, household tasks and voluntary contributions – and thus provides a comprehensive picture of the broader societal impact of the disease.





Source: WifOR Institute, based on Danish input data using the same methodology as described in the analysis The Value of Investing in Innovative Medicines: Socioeconomic Burden and Annual Social Impact of Roche Treatments for HER2+ Breast Cancer, Multiple Sclerosis and Retinal Disease by WifOR Institute (2024). Data projected from 2024 to 2027.



We can preserve the sight while easing the burden on the healthcare system

Every day, people experience vision loss caused by retinal diseases such as AMD and DME. These conditions can make it difficult to read, recognise faces and move around independently. Fortunately, new treatments can help many people preserve their vision for longer, continue their daily activities, and live more independently. Without timely treatment, vision loss can progress quickly and limiting both independence and quality of life.

Wet AMD and DME are two vision-threatening conditions that can lead to severe sight loss.

Wet AMD primarily affects people over the age of 60 and is one of the most common causes of vision impairment in older adults. The condition occurs when new, fragile blood vessels grow beneath the retina and leak fluid or blood. This damages the part of the eye responsible for sharp central vision, making it difficult to recognise faces, watch television, or read. The condition may progress gradually, but without treatment, it can lead to significant and irreversible vision loss. (Bek & Sørensen, 2023; Medicinrådet, 2023a; 2023b).

DME is a sight-threatening complication of diabetes. Prolonged high blood sugar can damage the blood vessels in the retina. DME often develops gradually, but if not detected and treated in time, it can cause permanent vision loss (Bek, 2024; Roche, 2023).

Treatment for both wet AMD and DME involves healthcare professionals injecting medication directly into the eye. The medication prevents fluid leakage from the blood vessels and helps protect vision. The treatment requires multiple repeated injections over time, as the diseases are not curable, but can be managed effectively if treatment is initiated early (Bek & Sørensen, 2023; Medicinrådet, 2023a).

Treatment intervals and resource optimisation in AMD care
The treatment interval for AMD is tailored to the individual patient but also depends on the specific medication used. Treatment may range from monthly injections to longer intervals (Subhi et al., 2024).

According to Medicinrådet, extending treatment intervals can reduce the burden on patients and optimise resource use within the healthcare system (Medicinrådet, 2023a; 2023b). This is supported by research showing that newer treatment regimens can reduce the number of injections needed – easing the load on both patients and healthcare professionals (Subhi et al., 2024).

Timely treatment is crucial, as wet AMD without proper intervention can lead to permanent vision loss – affecting patients' ability to work, move safely, and maintain an independent daily life (Medicinrådet, 2023a; 2023b).

Wet AMD:

60+ years
is the age group primarily affected by wet AMD.

30,000
people in Denmark are **living with wet AMD.**

18,000
are **receiving treatment** for wet AMD in Denmark.

Diabetic Macular Oedema (DME):

Approx. 7%
of **people with diabetes** develop DME.

Approx. 450
new cases of DME **requiring treatment** each year

(Medicinrådet, 2023a; Bek & Sørensen 2023; Thinggaard et al., 2023).



A vision for the future

Access to regular treatment in Denmark has a significant impact on patients with retinal disease. It enables more people to continue reading, maintain their independence – and for some, even stay in the labour market. This development makes a meaningful difference to quality of life and underscores the importance of ensuring timely access to care.

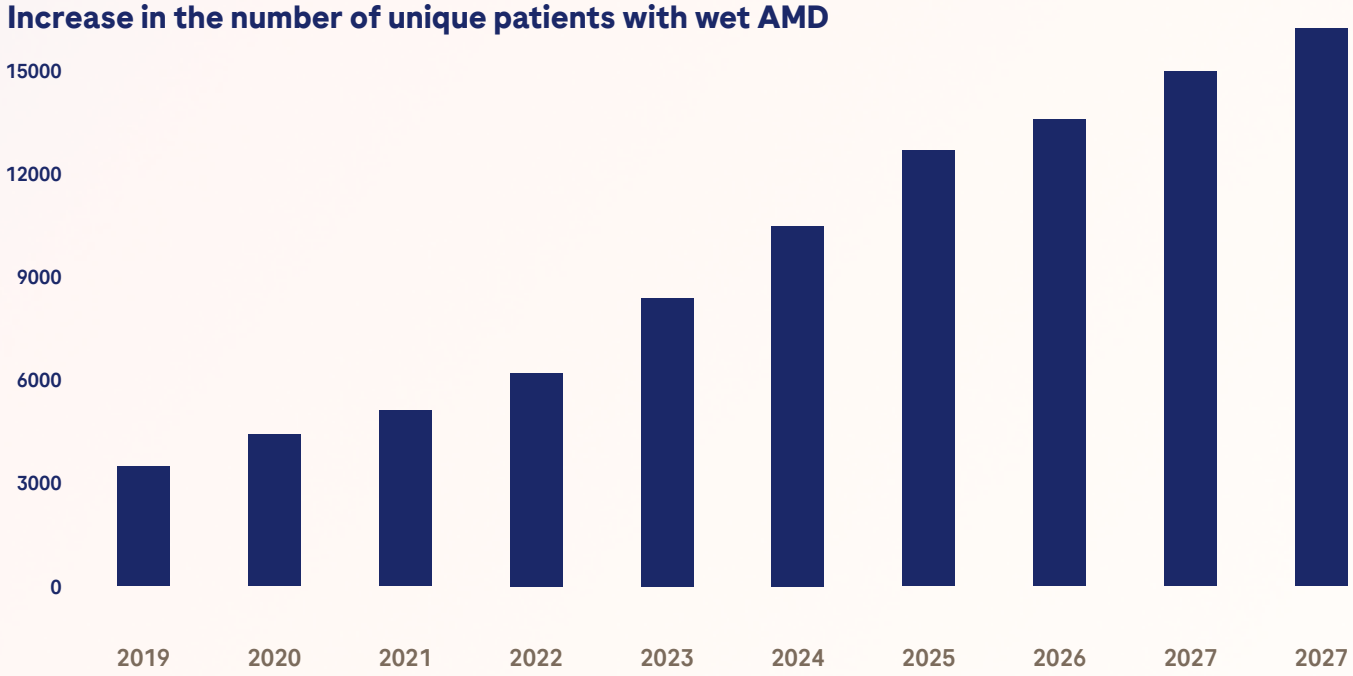
As more people in Denmark live longer, the number of patients with wet AMD continues to grow. As the graph shows, the number of patients reached increased from 2,684 in 2011 to more than 16,000 in 2021 – an increase of more than 600% in just 10 years. At the same time, the number of ophthalmologists has not kept pace, resulting in longer waiting times and more pressure on hospital capacity (Danske Regioner, 2023a).

In addition, treatment requires staff, equipment and physical space – all of which constitute significant operational costs for hospitals. This trend highlights a growing need for more efficient treatment options that can help ease pressure on the healthcare system.

This development is not unique to Denmark. Across Europe, the number of people living with AMD is expected to rise from 67 to 77 million by 2050 due to an ageing population – a shift that will require a significant strengthening of both monitoring and treatment capacity (Li et al., 2020).

The trend underscores the need for new, effective solutions that can ensure timely care while easing the burden on ophthalmology clinics. In Denmark, one such model is currently being piloted, where opticians screen patients with vision problems – an initiative aimed at accelerating triage and freeing up resources in hospitals (Danske Regioner, 2023a).

Increase in the number of unique patients with wet AMD



Source: Own calculations based on data from the National Patient Register (Danske Regioner, 2023).



Socioeconomic impact

A high treatment frequency results in:

- **Increased staffing costs** – More injections require more doctors and nurses
- **Transport costs** – Particularly for patients in rural or remote areas
- **Lost productivity** – For both patients who must take time off work, and for relatives who accompany them

Effective AMD treatment benefits not only the individual patient – but also the healthcare system and society as a whole

More good years of life

Although the quality of life benefit from each individual treatment for retinal diseases such as AMD and DME is limited, the cumulative number of treatments results in a significant benefit for the patient.

In 2024, treatment for wet AMD provided:

13,503
people in Denmark

6
additional quality-adjusted life years (QALYs)
– contributing to improved health and quality of life

Social Impact

In 2024, treatment for wet AMD contributed:

DKK 1.9 m
to the economy

equivalent to the cost of approx.

25
hip replacements***

- The contribution varies from year to year, depending on the number of patients receiving treatment. Treatment for DME is scheduled to begin in 2025, which is why 2024 figures reflect the AMD indication alone.
- Looking at the average for the period 2024 to 2027, the expected annual gain is DKK 21.9 million. Further details follow on the next page.

(WifOR calculations)

When treatment for retinal disease creates value

Treatment for retinal disease is not only about preserving vision – it also has a clear socio-economic impact. Calculations from an analysis conducted by the WifOR Institute for Roche show that treatment from 2023 onwards has generated increasing Social Impact. In 2023, the gain was DKK 0.5 million; in 2024, DKK 1.9 million; and by 2027, it is expected to reach DKK 30.6 million. This value arises primarily because more patients – especially older individuals – are able to maintain their functional ability and continue contributing to both working life and society:



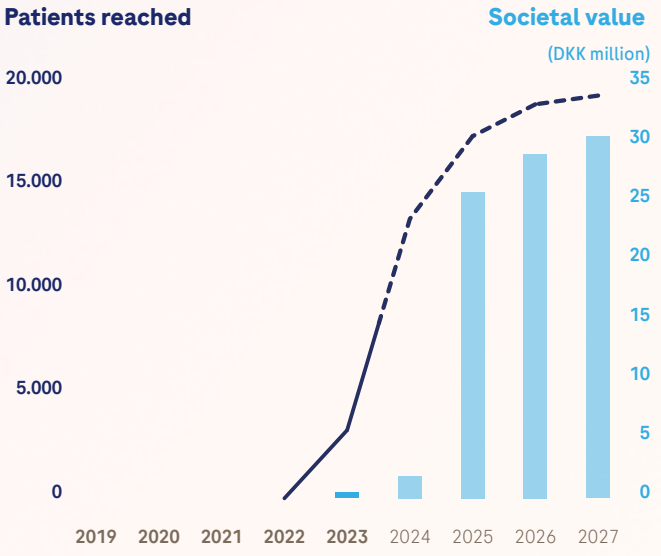
64%

of the gain comes from **paid work**



36%

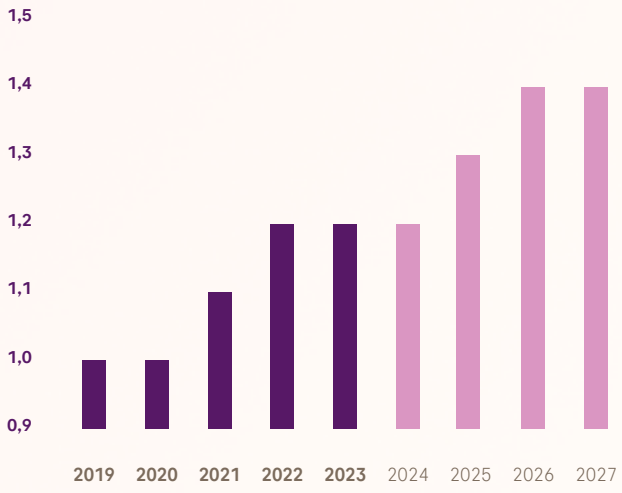
from **unpaid work** – such as grocery shopping, caring for grandchildren and volunteering



Research also shows that timely treatment reduces the need for home care, assistive devices and other social support services (Thinggaard et al., 2023). On average, newer treatments require fewer injections per patient, which can free up resources for others (Subhi et al., 2024). In hospitals, a reduced injection frequency can help ease capacity constraints, as more than 30,000 patients in Denmark regularly require injections (Danske Regioner, 2023b).

Despite the potential, retinal disease remains associated with a significant socio-economic burden. In 2024, the total disease burden was DKK 1.2 billion, and it is projected to rise to DKK 1.4 billion by 2027.

Disease burden in Denmark



Treating vision loss is often seen as an inevitable part of ageing – but with the right treatments, that future can look very different, as illustrated by Henrik Tauber Lassen's story on the next page.

Source: WifOR Institute, based on Danish input data using the same methodology as described in the analysis The Value of Investing in Innovative Medicines: Socioeconomic Burden and Annual Social Impact of Roche Treatments for HER2+ Breast Cancer, Multiple Sclerosis and Retinal Disease by WifOR Institute (2024). Data projected from 2024 to 2027.

Seeing the bigger picture

The rising incidence of retinal diseases such as wet AMD and DME places new demands on the capacity and organisation of the healthcare system. To address these challenges, a number of initiatives have been launched that not only have the potential to improve patients' quality of life, but also to increase the societal value of health interventions through earlier detection, more efficient use of resources, and a reduction in the need for municipal and social services.

In Region Midtjylland, a new model is being piloted in which optometrists play an integrated role in the diagnostic pathway. Here, patients referred by their GP undergo visual screening in optician clinics. The model supports better prioritisation: patients requiring specialist care can be referred more quickly, while others can be managed outside of the hospital setting (Danske Regioner, 2023a). This helps free up capacity and supports more targeted use of healthcare system resources.

In Region Sjælland, screening is brought even closer to residents through the research project "Undetected Vision Loss". As part of a collaboration between home care providers and ophthalmology specialists, residents aged 75 and over are offered eye tests at home.

The aim is to assess whether early detection and intervention in the patient's home can reduce loss of function, prevent accidents, and lower the need for assistive devices and care. At the same time, the project explores the potential to enhance quality of life and independence for the individual (Sjællands Universitetshospital, 2023).

These initiatives represent a new direction in the organisation of eye care – where societal value is integrated into decision-making through improved prioritisation, cross-sector collaboration, and preventative efforts delivered close to home.

The story of Henrik Tauber Lassen, shared with "Fight for Sight" (Øjenforeningen), clearly illustrates how time is a critical factor. Henrik was diagnosed with wet AMD, but was initially sent home with the reassurance that there was no cause for concern. After a long wait – and permanent vision loss in one eye – he finally began treatment

"I was sent home from the ophthalmologist and was not offered treatment straight away. When I finally began treatment, the sight in one of my eyes was already gone. For me, this isn't just about saving vision – it is about staying independent and needing less home care."

Henrik Tauber Lassen, retired and eye patient

Henrik's experience highlights the consequences of delayed care. It also underlines the need for systematic triage and more differentiated care pathways – not only in the interest of individual patients, but also to ensure that society's resources are used as effectively as possible.



New treatments give haemophilia patients breathing space

New treatment options have significantly improved the lives of people living with bleeding disorders. Preventive treatment enables children to play without fear of serious bleeds, empowers young people to pursue their education, and helps adults stay in work without frequent sick leave. In the past, untreated haemophilia was associated with severe limitations and serious complications. Today, with appropriate treatment, many patients can live almost normal lives and avoid the most debilitating consequences of the condition.

Bleeding disorders are rare conditions in which the blood does not clot properly, leading to prolonged bleeding after injury or surgery. In some cases, internal bleeding may occur, potentially damaging joints and muscles (Kampmann, 2025).

Haemophilia – a hereditary bleeding disorder
Haemophilia is caused by a deficiency in one of the clotting factors in the blood, meaning that even minor injuries can lead to prolonged and serious bleeding. Many patients experience spontaneous bleeding into joints and muscles, which can result in lasting damage (Bick et al., 2022). The condition primarily affects boys, but women who carry the gene may also experience symptoms (Kampmann, 2025).

Von Willebrand disease – the most common bleeding disorder
Von Willebrand disease is caused by a defect in a protein that helps blood cells clump together to form clots. It can result in frequent nosebleeds, heavy menstrual bleeding, and prolonged bleeding after injuries (Kampmann, 2025).

Quality of life and the impact of modern treatment

Bleeding disorders were once associated with serious restrictions, but modern preventive treatments have significantly improved quality of life for many patients.

These treatments make it possible to pursue education, maintain stable employment, and take part in social activities without constant fear of bleeding episodes (Schnohr et al., 2023).

Treatment for haemophilia primarily involves the replacement of the missing clotting factor – either factor VIII or IX – administered as needed or on a preventive basis to reduce the risk of bleeding.

New treatment approaches mean that some patients now require fewer injections and less frequent treatment, improving their daily quality of life and flexibility (Heilskov, 2022; Kampmann, 2025).

At the same time, intensive research is ongoing into gene-based therapies – including gene therapy – which may in future offer longer-lasting treatment options, and in some cases, the potential for a cure (Steen-Andersen, 2020).

Despite significant progress, many patients still face physical and social challenges:

- **Repeated hospital visits** and ongoing treatment
- **Reduced mobility due to joint and muscle bleeds**
- **Difficulty maintaining employment** – particularly among patients over the age of 45 (Schnohr et al., 2023)



Haemophilia:

A hereditary bleeding disorder that primarily affects

♂ Boys

Approx. 250

people in Denmark are **living with haemophilia A or B**

Treatment consists of **factor replacement therapy** or newer long-acting products

Von Willebrand disease:

The most common bleeding disorder, affecting both men and women

Approx. 1%

of the population has a mild form

500

Danes are registered with Von Willebrand disease

– Although the estimate is just 1%, it corresponds to approximately 50,000 people living with the condition in Denmark.

Symptoms can vary from mild bruising to severe bleeding after surgery

(Kampmann, 2025; Danmarks Bløderforening, 2021; Vojdeman, 2019).

When life is put on hold

For many families, daily life with haemophilia is shaped by concerns about bleeding episodes, frequent hospital visits and the challenge of balancing work and family life. This affects not only their quality of life, but also their families.

Prevention and flexibility in treatment
Without adequate treatment, repeated bleeds can lead to chronic pain and reduced mobility – making everyday activities more difficult.

The right treatment reduces the risk of long-term complications and helps patients maintain physical function for as long as possible (Schnohr et al., 2023).

With the right care, treatment is not just about preventing serious bleeds – it is also about ensuring a better quality of life and less daily anxiety.

When illness gets in the way of working life
Many people with bleeding disorders are now able to complete their education and take part in social life on equal terms with the general population – a testament to the progress made in treatment and support. However, for some, staying in the labour market remains a challenge – particularly among those aged 45 to 64, where the employment rate for people with haemophilia is lower than in the general population (Schnohr et al., 2023). Von Willebrand disease can also entail social and occupational limitations. Patients with this condition often face extended hospital stays and a greater need for medical care (Vojdeman et al., 2019; Schnohr et al., 2023).

Health-wise, a study of Danish patients with bleeding disorders shows that people with haemophilia have a significantly increased risk of joint pain, osteoarthritis and other chronic conditions, which impact mobility and quality of life. They also experience higher rates of hypertension and stroke compared to the general population. This highlights the need for a comprehensive approach to treatment – one that not only focuses on bleeding risk, but also addresses the secondary complications that affect mobility, health spending and overall well-being in the long term (Schnohr et al., 2023).

Early diagnosis and individualised treatment are crucial for reducing the long-term impact of haemophilia. New treatment forms, including subcutaneous options that require fewer injections and cause fewer side effects, allow for more flexible and less burdensome treatment pathway (Steen-Andersen, 2020; Steen-Andersen, 2024; Gøtze, 2023).

Despite advances in treatment enabling many patients to live more independently, there is still a need to ensure access to the right support and care.

By focusing on early intervention, improved pain management and flexible treatment options, more people with bleeding disorders can enjoy a stable and active life – free from unnecessary restrictions (Schnohr et al., 2023; Gøtze, 2023).





A case from a life with a bleeding disorder

A childhood life with structure – and independence

Axel is an eight-year-old boy with severe haemophilia A. Thanks to a preventive treatment plan, he is able to live an active life – going to school, playing and doing sports without the constant fear of serious bleeds. But that independence comes with structure: the whole family is involved in planning, administering treatment and maintaining close contact with the healthcare system. Axel's older sister is also an important support, and the family describes how the condition sets the rhythm of everyday life (Bløderforeningen, 2023).

Based on a personal story shared by the Danish Haemophilia Society

How to live with a disease?

It is not only about treating a disease – it is about creating a future where bleeding disorders don't put life on hold.

Health as a driver of societal value

The healthcare system is a powerful driver of societal value – playing a vital role in building healthier communities, stimulating economic growth and improving overall quality of life. Health is not merely a cost – it is a long-term investment that generates value across society. When we prioritise the right interventions, embrace innovation and make better use of resources, we gain more than just improved outcomes for patients – we gain a stronger, more socially and economically sustainable society.

The transformative effects of investing in health become clear when we view health in a wider perspective – from individual well-being to a stronger economy, increased innovation, and a more resilient population and healthcare system. Health is not a sector apart – it is a driver of societal value that delivers long-term gains across welfare, the labour market and the economy. Health is one of the most powerful drivers of economic and social sustainability.

When we invest in health, we invest in people – strengthening the labour market, increasing productivity, and safeguarding our shared welfare. A sustainable future depends on long-term solutions that not only address today's challenges, but also create lasting value for future generations.

Investing in health pays dividends – and brings:

Stronger communities and economic stability

A well-functioning healthcare system ensures that more people can live longer and healthier lives – benefitting not only the individual, but also families, workplaces and overall societal productivity.

Social sustainability and improved quality of life

When patients are able to remain active in the labour market – or contribute through volunteering and unpaid work – they generate value far beyond the healthcare sector. Better health reduces reliance on social benefits, reinforcing both individual autonomy and the sustainability of society as a whole.

A more resilient and efficient healthcare system

When we view health as a driver of value, we invest in solutions that extend healthy life years, reduce pressure on the healthcare system, and support a more stable workforce that contributes actively to society.



Appendix I

Methodology: Estimating societal value and disease burden (WifOR)

Data

The WifOR analysis is based on international data sources, including the World Bank, UN national accounts, input-output tables, and statistics from national statistical agencies.
Roche have provided data on the number of patients treated with Roche medicines within the selected disease areas (Patients Reached). The Global Burden of Disease (GBD) database was used to source data on mortality, prevalence, life expectancy and disability weights.

Population

The analysis includes patients treated with Roche medicines in selected disease areas, categorised by age, country and disease/indication. The three disease areas included are HER2-positive breast cancer, multiple sclerosis (MS), retinal diseases: neovascular age-related macular degeneration (nAMD) and diabetic macular oedema (DME). The data does not include individuals treated with other medicinal products.

Age groups and time period

Under 20 years: Not included in productivity estimates
Ages 20–59: Included in estimates for both paid and unpaid work
60 years and above: Included only for unpaid work

Valuation of unpaid work and volunteering

WifOR's methodology uses gross value added (GVA) per economically active person as a proxy for productivity. The value of unpaid work is estimated by applying the average productivity of the working population (GVA/worker).
This value is adjusted by:

- **a time factor** (to reflect the average time spent on unpaid vs. paid work)
- **a productivity adjustment** (recognising that unpaid work is generally less economically productive than, e.g., engineering)

The analysis includes both a retrospective period (2019–2023), based on actual treatment data, and a projection period (2024–2027), based on estimated numbers of patients reached with Roche medicines.

Disease burden and health benefits

Disease burden is measured in DALYs (Disability-Adjusted Life Years) – a metric that reflects the number of years lost to illness or premature death. One DALY corresponds to one year of healthy life lost. The greater the number of DALYs, the heavier the disease burden. Health gains are measured in QALYs (Quality-Adjusted Life Years), which combine extended life expectancy with improved quality of life. Both DALYs and QALYs are calculated using clinical evidence that demonstrates the impact of treatment on patient outcomes and quality of life.

Societal value

The avoided disease burden is translated into economic value by estimating the monetary impact of treatment. Input-output multipliers are applied to account for indirect and induced effects across the economy. Avoided DALYs are converted into productivity gains (in monetary terms) using gross value added (GVA) per economically active person. The analysis accounts for both paid and unpaid work, such as household labour and volunteering. Labour market participation and the value of unpaid work are therefore key components of the overall estimate of societal value.

Appendix II

Summary of the methodology behind the WifOR and BIS models

WifOR and the BIS (Investment in Health Calculation) model serve the same overall purpose – to make the dynamic effects of investing in health visible. Below is a brief comparison of the two approaches.

	WifOR	The BIS model (Gross Societal Investment Model)*
PURPOSE	Quantifies the health and socio-economic value of medicines (QALY, GDP effect)	Measures the impact on government revenues through increased employment
MAIN OUTPUT	Monetary value of PRODUCTIVITY GAINS linked to longer life expectancy and improved quality of life – measured via paid and unpaid work and direct, indirect and induced effects	REVENUE TO THE STATE (e.g. taxes, VAT, reduced social transfers) resulting from health interventions
INCLUDES	QALYs (based on clinical evidence) → Increased productivity → Higher GVA	Estimated change in: → Employment levels → Tax contributions, transfer payments, and municipal healthcare services
TARGET POPULATION EFFECTS	Includes age groups 20+ and distinguishes between paid and unpaid work, both retrospectively and prospectively	Focus on people in employment
APPLICATION	International sources (WEF, WHO, EU, International Life Sciences, etc.)	Used by the Danish Economic Council, LIF, patient organisations in Denmark, and internationally by WEF, WHO, EU etc.
DATA	Primarily international: IHME (disease burden, e.g. DALYs), World Bank / Eurostat (labour participation), Danish "Patient Reach" data from Signum DW statistics	Danish registry data: Based on DREAM (labour market attachment, social benefits, early retirement pension etc.), linked with LPR (hospital data), the National Prescription Registry, SMR (GP contacts), and RUKS (chronic diseases).
DISEASE COVERAGE	Applicable to all disease areas; in this publication based on diseases treated with Roche medicines	Covers 32 disease groups, including emerging areas such as dementia and migraine

*Is a Danish health economics model used to quantify the total economic and societal return on investments in health, including productivity gains, reduced informal care needs, and broader welfare effects

Appendix III

Methodology: Calculating disease burden and productivity loss in the Danish disease burden report

The report *The Burden of Disease in Denmark – Diseases* (Version 2.0) was prepared by the National Institute of Public Health at the University of Southern Denmark for the Danish Health Authority. It applies a register-based cost-of-illness approach to estimate the excess burden and the socioeconomic consequences of 15 selected diseases in the Danish population.

Methodological approach

Reference population: All analyses are based on comparison with a matched reference group without the disease in question, but with the same sex, age, educational level, and comorbidity (measured using the CCI score).

Burden indicators:
The report estimates the excess burden of disease in terms of:

- Mortality
- Hospital contacts (inpatient and outpatient)
- General practice contacts
- Long-term sickness absence (30+ days)
- New granted of early retirement pension
- Economic consequences: productivity loss and healthcare system costs

Data: The estimates are based on national health and population registers, including the National Patient Register, the Health Insurance Register, the Cause of Death Register, and the DREAM database.

Time period: All data are calculated as annual averages for the period 2017–2018 and presented in 2018 price levels.

Note on productivity loss: Productivity loss is calculated as the total societal cost of reduced labour force participation due to sickness absence, early retirement pension, or premature death. It relates specifically to the working-age population (16–64 years)

This methodology allows for the quantification of the impact of disease on both the healthcare system and the broader economy, and it serves as an important foundation for decision-making around health system prioritisation and prevention.

Note: This source is cited in the text as (Mairey et al., 2023) and is listed with full bibliographic reference in the list of references.

Appendix IV

Explanation of asterisk notations used in this white paper

***Note 1:** The WifOR analysis covers ten selected countries with diverse health-economic profiles: Brazil, Canada, China, France, Germany, Italy, Japan, Spain, the United Kingdom, and the United States.

****Note 2:** BIS (Investment in Health Calculations 2.0). BIS is a health-economic investment model that estimates the broader economic effects over time of investing in health.

The calculations are based on Lungeforeningen's own analyses using the BIS model (Investment in Health Calculations), which estimates the economic effects of improved treatment. The model is based on data from patients with hospital contact between 2009 and 2013 and does not include patients seen only in general practice. The calculations are based on the assumption that the effect observed in the Aarhus project can be applied to a broader patient group.

*****Note 3:** 2024 DRG rate (Diagnosis Related Group tariff)

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