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Diabetes Care in The Netherlands:
Improving Health and Wealth

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Diabetes Care in The Netherlands:
Improving Health and Wealth

This book was issued at the occasion of World Diabetes Day 14 November 2011.

Preface

Diabetes mellitus, a silent killer of pandemic proportions. Not only is it a medical challenge but at least as much a burden for the Dutch economy and society. Costs related to loss of productivity as well as costs related to the treatment of the disease amount to billions of euros in The Netherlands on a yearly basis. With currently about 1 million people with diabetes in The Netherlands, do we really know how diabetes will change our future? Do we really have the information and tools necessary to defeat the disease? Do we really know what initiatives are effective and cost efficient when initiating diabetes care innovation?

These questions and uncertainties have inspired Novo Nordisk B.V. to ask Booz&Co to investigate diabetes care in The Netherlands and define recommendations for effective policies. It is the mission of Novo Nordisk to defeat diabetes, its human disaster and the societal burden on the basis of reliable information and by means of relevant innovations.

The team at Booz&Co, led by professor Ab Klink, has done a tremendous job. They have written a very inspiring report full of innovative ideas and practical solutions. The contributions from experts in the field of diabetes care, from insurance companies, hospitals, patient organisations and professional organisations have been instrumental.

We sincerely hope that the results of this report will bring patients, health care professionals, health insurance companies, government, Novo Nordisk and society more closely together in a common fight for a healthier future with less diabetes.

Piet van der Wal, MD, PhD
Director Public Affairs
Novo Nordisk B.V.

www.changingdiabetes.nl

Summary

Diabetes is a serious and demanding disease. Complications can be severe (e.g. stroke, heart disease, visual impairment, kidney disease). Effective treatment allows most patients to live a life close to normal, but diabetes treatment requires disciplined self-management. Patients need to manage diets and exercise carefully to control or lose weight, and most take daily medication. Insulin dependent diabetes patients need to closely match insulin intake with their diets and with their exercise intensity. Too little insulin will lead to long-term complications and too much insulin may lead to hypoglycaemic episodes (hypos) – risking unconsciousness, coma and/or brain damage. A frustrating side-effect of insulin therapy is weight gain.

For society, diabetes is a source of medical costs and lost productivity. Our analysis suggests that the problem may be underestimated. While recognizing that further studies are needed (especially where data sources are conflicting), we estimate that there are already more than one million diabetes patients in the Netherlands. We estimate the costs of treatment and complications of diabetes at EUR 2-3 billion, twice as high as typically reported. Adding other medical costs, the total medical costs of diabetes patients are EUR 4-5 billion. In addition, we estimate that the costs associated with lost productivity for diabetes patients are EUR 5-6 billion. More importantly, all estimates and sources have one thing in common; they stress the impact of diabetes on patients and society.

Professionals and patients can be proud of diabetes care in the Netherlands. Quality of care is high compared to other countries and the majority of patients enjoy a close to normal life. Evidence from a selection of primary care groups suggests that large quality gains have been realized since the nineties. For these care groups, roughly two thirds of patients have blood glucose levels (HbA1c) below the target of 7% (53 mmol/mol).
However, substantial non-compliance and apparent practice variations in quality of care suggest that there is still potential to further improve the health of Dutch diabetes patients. Further improving health of diabetes patients may lead to EUR 1.5-2 billion of medical cost and productivity benefits in 2020. The national primary care benchmark for diabetes under development by the patient federation and professionals will be important to develop detailed insight in practice variation.

Projected cost savings from better care for people with chronic diseases are sometimes received with scepticism, grounded in the idea that complications can be delayed but not avoided. But delaying complications reduces the time that people live with costly complications, and increases participation in both

the workforce and in social life. In addition to societal benefits, social participation is in itself also an effective stimulator for the wellbeing of patients.

We conclude that there are still important barriers to innovation, to quality improvement and to improving self-management capabilities for patients. The result is an environment that can be frustrating for passionate professionals, patients and insurers. Our recommendations address these barriers. They are intended to contribute to a more rewarding climate for quality, innovation and engagement of employers, participative care and the patient's social network.

Recommendation 1: Refine economic incentives to encourage integrated primary and specialist care and quality improvement

Current economic incentives do not encourage quality improvement and innovation. Professionals are still primarily rewarded for volume, not for quality of care. For insurers, savings that can be expected from investing in quality are difficult to trace on the macro level and easily fail to materialize. Individual patients may have fewer hospital admissions, doctor visits and other health care costs. However, there is a risk that second 'cash change' does not occur involving the closure of beds and surgery infrastructure, redeployment of staff or reduction in procurement activity. Hence, the risk is that insurers pay double: for the innovation initiative and for the unchanged volume of regular care.

Economic incentives should create more room for doctors, nurses and patients who are passionate about improving care. Our proposed refinements include:

- *Integrate contracting of primary care and specialist care in networks.* Introducing a model where primary care and specialists jointly evaluate diabetes patients. This further empowers primary care to treat diabetes patients. It also reduces the inclination for specialists to maintain patients in a specialist care environment. Volume agreements between insurers and health care providers are needed to ensure that win-wins are traced and materialized. Gain-sharing creates the right incentives to encourage continuous quality improvement (*quality* production instead of *volume* production) and will remove some of the frustrating disincentives that so often block quality initiatives.
- *Extra insurer compensation for diabetes patients in the risk equalization scheme.* Incorporating a small profit margin on diabetes patients in the risk equalization schemes will encourage competition between insurers on quality of

diabetes care. Extra compensation will mitigate the risk that insurers investing in high quality care attract more financially unattractive patients.
- *Build infrastructure for integrated primary care and specialist care.* The integrated funding model of network care should be expanded to include hospital care for diabetes (e.g. by incorporating specialist care in the *keten-DBC*). Insurers should support professionals in creating a supporting IT infrastructure.

Recommendation 2: Engage employers, UWV and participative care in diabetes care

Employers, the UWV and participative care are still little engaged in diabetes care. There is more economic benefit of better care in improving labour (and social) participation than in lowering medical cost. Productivity benefits will gain even more importance given the expected tight labour market and the associated risks of wage inflation and waiting lists for cure and care due to personnel shortage.

There is a role for employers and government to contribute to increased participation of diabetes patients.

- Insurers can offer collective diabetes insurance modules focused on increased participation of diabetes patients;
- Companies and UWV can invest in such collective insurance for employees and welfare recipients (potentially negotiated in central labour agreements);
- Insurers can integrate contracting of participative and curative care;
- Participative care's primary role should be to ensure a working environment that encourages patients to comply with therapy and that keeps patients motivated to keep working as long as possible. Coping with a disease in a stimulating environment can be highly complementary to the more classical function of curative health care.

Recommendation 3: Encourage the patient's social network to support self-management

The patient's social network is not systematically engaged in the patient's care, leaving many patients alone in self-management. For the majority of patients, regular doctor visits are sufficient, but for many this is not enough.

Physicians should have tools to encourage support for patients who need it. Patients and the patient federation should have a key role in developing these tools. We recommend:
To include behavioral dimensions in medical guidelines for diabetes (e.g. family present at key doctor visits);

To scale up the use of social media. Health communities with patients, the patient federation and professionals encourage frequent interaction and informal support in self-management;
To educate amateur coaches for non-adherent patients. Physicians should be able to refer an eligible group of patients to coaching. The coach is preferably someone from the social circle of the patient (partner, parents, children). These coaches should receive a basic education in diabetes care (via insurers or pharmaceutical companies). Physicians may refer to professional, intensive coaching by diabetic nurses for a small group of difficult to reach patients.

Recommendation 4: Introduce conditional market access models for new therapies and medication to assess behavioral impact

The current generation of diabetes medication is therapeutically highly effective. Curing diabetes inspires fundamental research and innovation. In the coming decade most innovation can be expected in increasing therapy convenience for patients - e.g. reducing the risk of hypos, simplifying monitoring and eliminating weight gain effects. Higher convenience will lead to better compliance and ultimately to health benefits. Clinical trials required for regulatory approval, however, typically do not provide evidence for such behavioral impact.

Conditional access models are a solution for treatments and medication with a likely but unproven upside of better compliance. In conditional access models, professionals, patients and insurers evaluate real-life impact on compliance. CVZ can base the final scope of insurance coverage on this evaluation, and professional and insures can include any behavioral benefits in guidelines. Pharmaceutical companies and insurers should share the financial risks of a negative decision on final access. DVN and NDF are currently proposing pilot projects for conditional access with ZonMW.

- Diabetes is a challenging disease for patients
  - Treatment requires large behavioural change and poses a real risks of side effects
  - Complications from diabetes are potentially severe (e.g. stroke, kidney disease heart disease)
  - Fortunately high quality treatment and strict compliance has proven to keep diabetes patients healthy for a long time

- Novo Nordisk has asked Booz & Co to perform a study with the objective to identify how our health care system could be improved to empower professionals in providing high quality of care for diabetes

- Better diabetes care has value for patients and society
  - Improves health of the patient: improving life expectancy and quality of life
  - Reduces health care cost: prevention, reduction, and delaying of complications
  - Reduces the demand for increasingly scarce labour health care (ZorgInnovatiePlatfrom projects 450.000 vacant employment positions in health care in 2025)
  - Improves productivity by increasing workforce participation of diabetes patients

- This document presents the findings of the study. It is intended to serve as a basis for further discussion with patients, medical professionals, policymakers and insurers

Contents

Main conclusions

Objective

Further improve health for patients and society

1 Diabetes is a challenging disease for patients, and a major and underestimated source of medical costs and lost productivity for society
- 1.0-1.1M diabetes patients (~100,000 more diagnosed patients than reported)
- EUR 4-5 B total medical costs for diabetes patients, of which EUR 2.5 B costs for diabetes treatment and complications (more than double of reported). On top of that EUR 6 B lost productivity
- Total costs could rise to EUR 16-19 B in 2020

2 Diabetes care in The Netherlands has reached a high level of quality, but there is still opportunity for further improvement

3 Further improving health of diabetes patients may lead to EUR 1.5-2 B of economic benefits in 2020 (less medical costs and higher productivity)

The road

Fewer barriers for quality in our health care system

1 Refine economic incentives to encourage integrated care and quality improvement

2 Engage employers, UWV and participative care in diabetes care

3 Engage the patient's social network to support self management

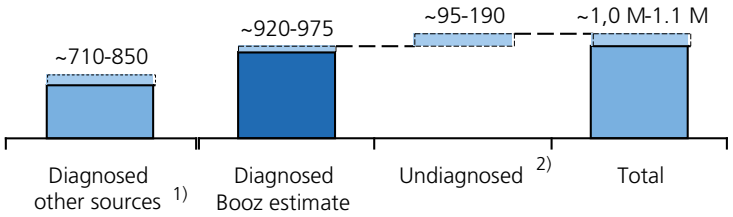
4 Introduce conditional market access models for new therapies and medication to assess behavioural impact

1

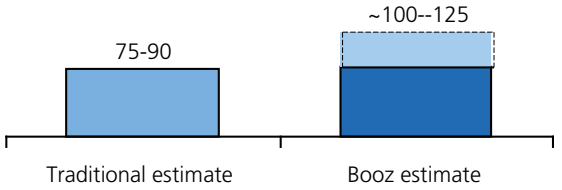
Diabetes is a major and underestimated source of medical costs and lost productivity

Higher prevalence

More than 1M diabetes patients in the Netherlands
2010; '000

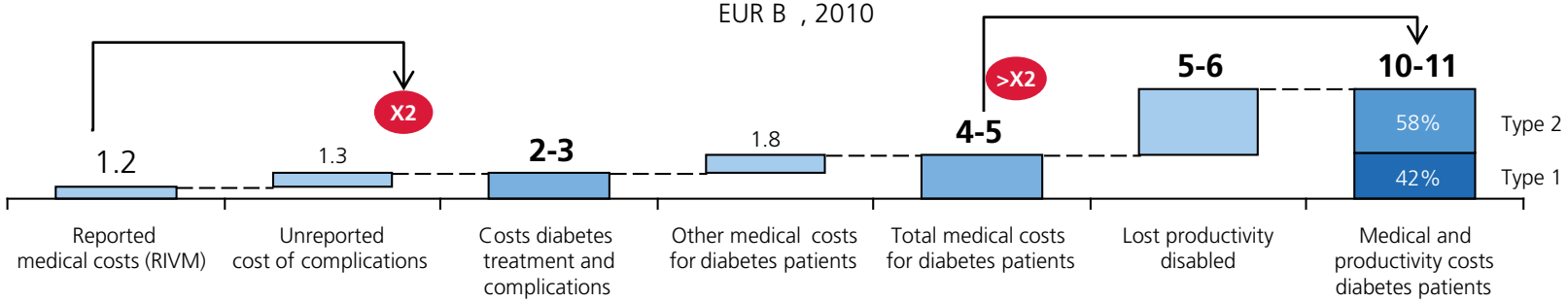


Diabetes Type 1 may be more prevalent than assumed
2010; '000



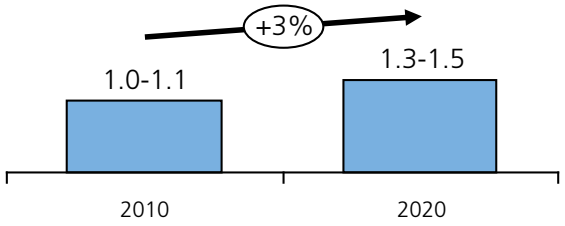
More costs

Costs of complications and treatment diabetes double of reported. Lost productivity more than medical costs
EUR B , 2010



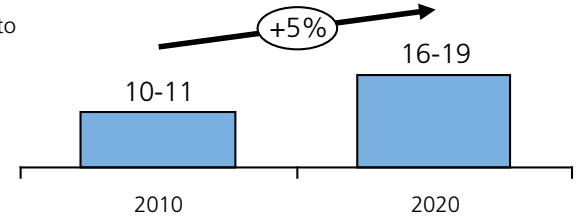
Faster growth

~1.4 M Diabetes Patients in 2020
M



Total costs could rise to EUR 16-19 B
EUR B

Cost grow faster due to increasing share of diabetes patients in workforce age



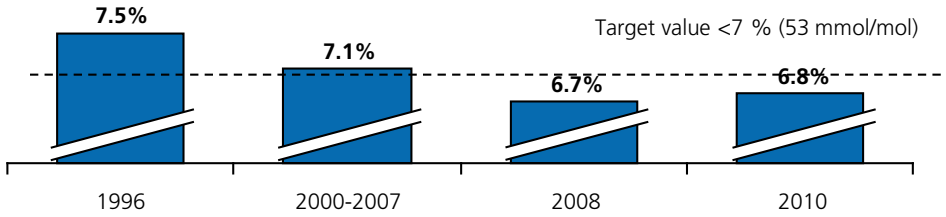
1) Other sources include CBS (710), DVN (750) and RIVM (850) (2) Range between 10% and 20%
Source: CBS, DVN, RIVM, SFK, Janssen et al. Screening Study, DFN, IDF, CMR-Nijmegen, ADA, Diabetes Richtlijnen, DBC pricelist 2011, DiabetesZorgBeter, UWV, Booz & Company Analysis

2

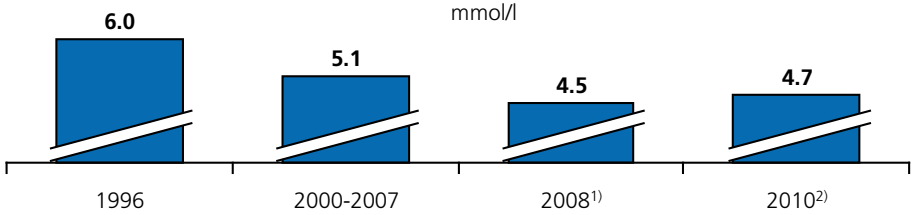
Diabetes care in The Netherlands has reached a high level of quality, but there is still opportunity for further improvement

Diabetes care clearly improved in The Netherlands
Selected Care Groups– 1996-2010

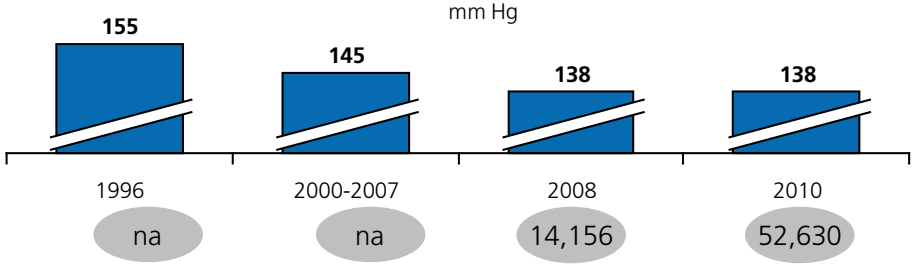
Average HbA1c values now below target value



Average cholesterol level has decreased with ~ 20%
mmol/l



Average systolic blood pressure lowered substantially
mm Hg



1) Data based on DiabetesZorgBeter study
2) 4 GP Care groups included
Source: Diabeteszorggroepen en de keten-DBC 2010, DiabetesZorgBeter, Zorg voor patienten met diabetes mellitus type 2 in de 1e lijn 2008, Diabeteszorg Zorggroepen 2010, Booz & Company analysis

Opportunity for further improvement in high quality care and better compliance

High quality care leads to better outcomes to fewer complications

- The population in DiabetesZorgBeter shows a lower relative risk of major complications (kidney insufficiency -80%; chronic heart failure -50%; stroke -40%)
- PoZoB diabetes program realized HbA1c<7 % (53mmol/mol) with ~70% of the patients and improvements in both blood pressure and cholesterol levels
- Kaiser Permanente achieved 1.2% reduction of HbA1c in a program focusing on poorly controlled patients (with values much above the average NL level)

Better compliance can be stimulated and leads to fewer hospitalizations

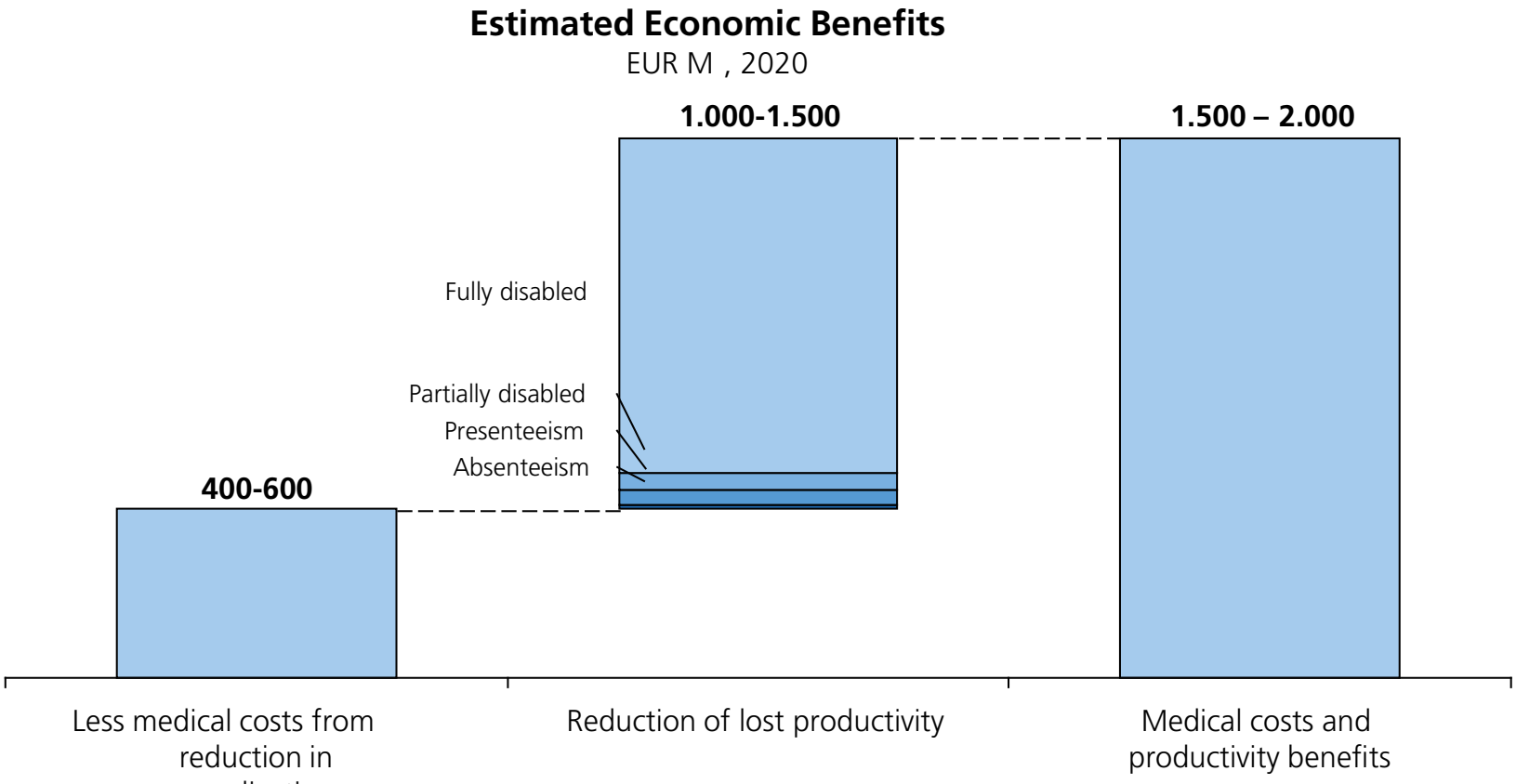
- Kaiser Permanente has achieved a 45% reduction in hospitalizations with better compliance
- US study shows that total medical costs (including medication costs) of fully compliant patients can be up to twice as low as the cost of non-compliance

Clear potential in high quality treatment implementation and compliance improvement seems likely

- Incentives in the heath care system do not encourage highest quality care
- Regional variances in care patterns still seem high. The national primary care benchmark for diabetes under development by the DVN and professionals will provide more precise insight in practice variation.
- Various studies suggest that non-compliance is a common problem

3

Further improving health of diabetes patients may lead to EUR 1.5-2 B of economic benefits in 2020



Comments:

- Reduction in cost due to less complications

- Reduction in inflow of new working disabilities
- Reduction of ab- and presenteeism in line with reduction in complications

Source: Booz & Company Analysis

1

Recommendation 1: Refine economic incentives to encourage integrated care and quality improvement

Barrier

Current economic incentives do not encourage quality improvement and innovation

Diagnosis

- Insurers are supporting quality improvement, but they are confronted with (perceived) financial disincentives
  - High quality care is perceived to only delay complications and cost (however, an indicative analysis suggest ~25% life time cost reduction if complications are delayed with 3 years)
  - Differences in risk exposure for specialist and primary care
  - Higher quality diabetes care may attract more loss-making patients for the insurer
  - (Hospital) capacity that is freed up by quality improvements tends to fill up with other patients (leading to double cost)
- Limited collaboration incentive for primary care and specialist care
- Quality improvement initiatives are frustrated by fragmented budgeting (and ad hoc budget cuts)
- Individual quality incentives are lacking for Primary Care, Specialists and Patient
- Significant evidence gaps in basic statistics and in treatment evidence suggest insufficient supporting incentives for critical research

Recommendation

Insurer

- Integrate contracting of primary care and specialist care in networks
- Provide patient incentive for compliance (bonus miles, gain-sharing)
- Enable research funding from regular budget

Government

- Adjust risk equalization scheme to ensure small profit margin on diabetes patients for insurers
- Create an integrated funding model for primary and specialist care networks

2

Recommendation 2: Engage employers, UWV and participative care in diabetes care

Barrier

Employers, UWV and participative care are still little engaged in diabetes care

Diagnosis

- Ageing will create an extremely tight labour market over the coming decade
- Labour shortage from late nineties illustrates the risk for our economy
- Diabetes has a high prevention potential for lost productivity
  - 92,000 of working disabled have diabetes,
- However, curative and participative care (arbo- and bedrijfsarts) are still two different worlds

Recommendation

Insurer

- Offer collective insurance modules for diabetes to increase the participation of diabetes patients
- Integrate contracting of participative and curative care

Companies and UWV

- Invest in collective insurance for employees and welfare recipients

Participative care

- Ensure a working environment that encourages compliance and motivates to work as long as possible

3

Recommendation 3: Engage the patient's social network to support self management

Barrier

The social network is not systematically engaged in patient's care

Diagnosis

- Medical treatments for Diabetes Type 1 and Type 2 can be effective, however compliance is a huge challenge
  - Effects of non-compliance are severe
  - Non compliance is a challenge of distant benefits and large required behavioural change
- Facilitated patient networks are successful in other distant benefits – high behavioural change conditions
- Examples of patient networks for other conditions (e.g. obesitas) can be instructive for diabetes
- Integrated behavioural interventions have been successful in improving compliance (e.g. Kaiser Permanente Evidence)

Recommendation

Medical professionals: Include behavioural dimension in medical guidelines

- Include family in standard treatment (e.g. family at key doctor visits)
- Add checklist for aligning treatment with personal life (mass customization)

Novo Nordisk: Scale-up social media

- Scale-up diabetes health communities with patients and their professionals (mijn zorgpagina DVN, mijnzorgnet)

Novo Nordisk: Educate amateur coaches for non-adherent patients

- Develop screening instrument for coaching eligibility for physicians
- Educate amateur coaches
- Select professional coaches in a selected group of complicated cases

4

Recommendation 4: Introduce conditional market access models for new therapies and medication to assess behavioural impact

Barrier

Decisions on insurance coverage tend to undervalue behavioural impact

Diagnosis

- Optimal treatment with current generation of diabetes medication is therapeutically highly effective if patients are compliant
- But new medication could add a lot of value in boosting compliance
- CFH medication access criteria allow evaluation of impact on compliance, however the required evidence is usually not generated by trials

Recommendation

Government and insurer

- Define models that allow for conditional access to proof indirect effects on compliance
- Include compliance in the guidelines as a factor driving the choice of medications

Contents

Summarized findings and recommendations

The opportunity

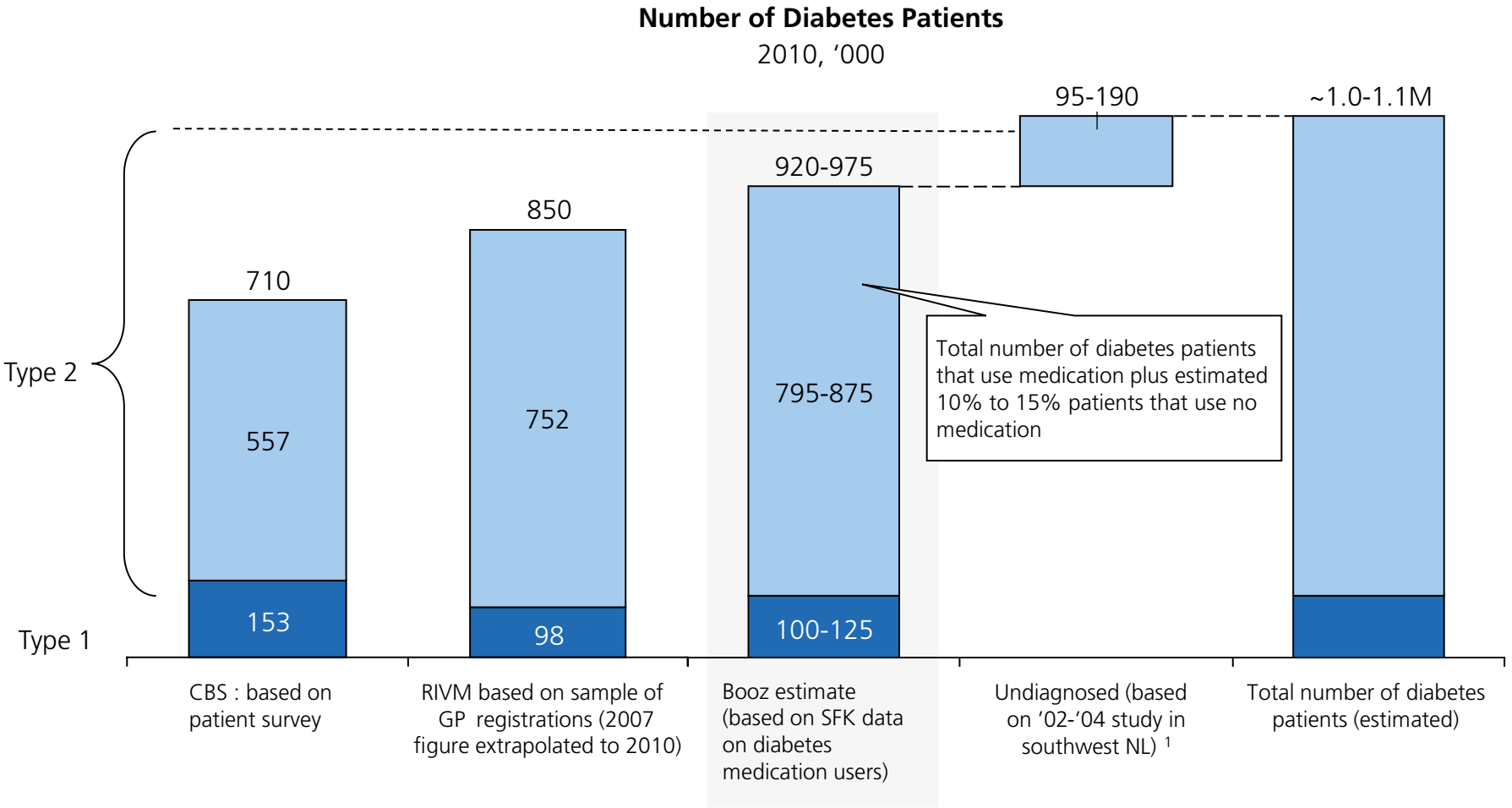
- Diabetes is a major and underestimated source of medical costs and lost productivity
- Diabetes care in The Netherlands has reached a high level of quality, but there is still opportunity for further improvement
- Further improving health of patients may lead to EUR 1.5-2 B of economic benefits in 2020

The road

- Refine economic incentives to encourage integrated care and quality improvement
- Engage employers, UWV and participative care in diabetes care
- Engage the patient's social network to support self management
- Introduce conditional market access models for new therapies and medication to assess behavioural impact

Appendix: list of sources

Already more than 1M diabetes patients in the Netherlands - ~100.000 more diagnosed than usually reported



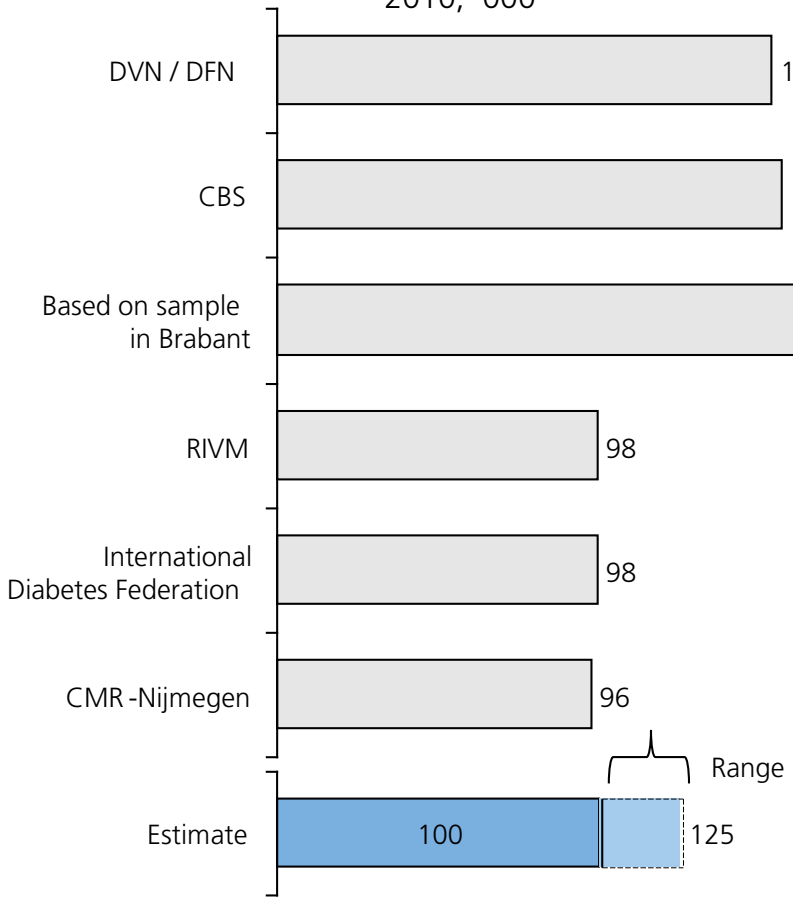
(1) Based on study of 50-70 years old patients. Undiagnosed rate of 10-20% has been extrapolated. SFK reports 830.000 patients on diabetes medication. SFK data covers 92% of the market. We have not scaled up SFK numbers because there is also a fraction of over-registration SFK data (~5-10%) as some people taking medications from multiple pharmacies are counted twice

Source: CBS, RIVM, SFK, Janssen et al. Screening study, Booz & Company Analysis

Diabetes Type 1 may be more prevalent than assumed – but data sources are highly conflicting

Number of Diabetes Type I Patients based on different sources

2010, '000



Comments

DVN / DFN [1)]
- DVN and NDF quote 150,000 Type 1 patients (methodology not further explained)
- This translates into 20% of diagnosed diabetes patients

CBS
- Survey sample in which patients responding yes to 3 questions were identified as Type 1: (1) Do you have diabetes? (2) Do you use insulin for this? (3) Did you start using insulin within 6 months after being diagnosed?
- Drawback of methodology is that the answers to the questions may not be a reliable proxy for share of Type 1 patients

Based on sample in Brabant
- PoZoB (GP support Brabant) includes 15,500 Diabetes Type 2 patients in their programs, of which 14% uses insulin
- Extrapolating this to the national level, and with a total of 285,000 insulin users (source SFK), this would imply 162.500 Type 1 patients

RIVM
- RIVM estimates 10% Type 1 of diagnosed patients, based on GP registration
- Drawback of methodology is that maybe not all Type 1 patients are registered by GP, such that GP registrations are not fully accurate

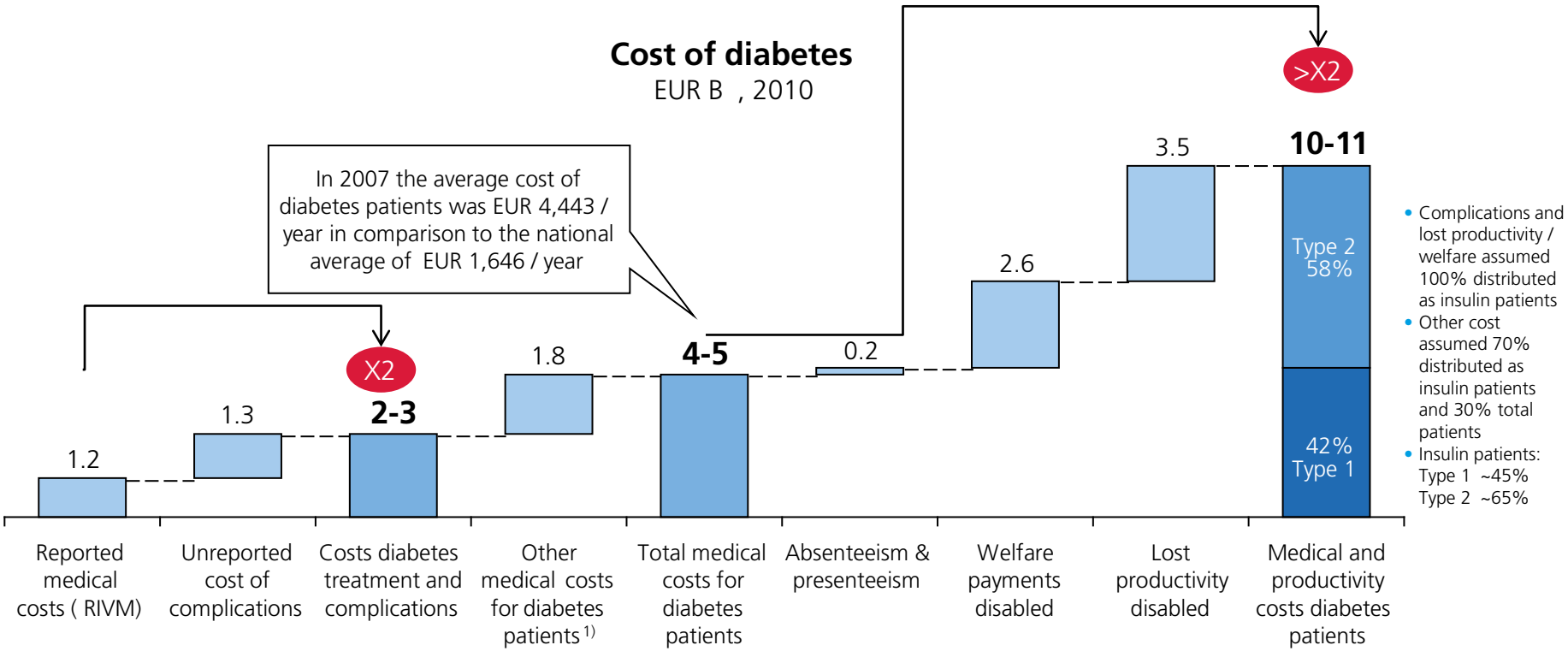
International Diabetes Federation
- IDF estimates 10% Type 1 of diagnosed patients, however not NL specific

CMR -Nijmegen
- CMR -Nijmegen estimates 9.8% Type 1 ('05-'08 period) of diagnosed patients, based on GP registration in Nijmegen
- Drawback of methodology is that representatively may be questionable

Estimate
- Booz estimates 100,000 to 150,000 Type 1 patients, based on different sources
- For calculation purposes the average of 125,000 will be used

1) 2011 estimate
Source: DVN/DFN, CBS, RIVM, IDF, CMR-Nijmegen, Booz & Company analysis

Costs of complications and treatment of diabetes double of reported, lost productivity more than medical costs

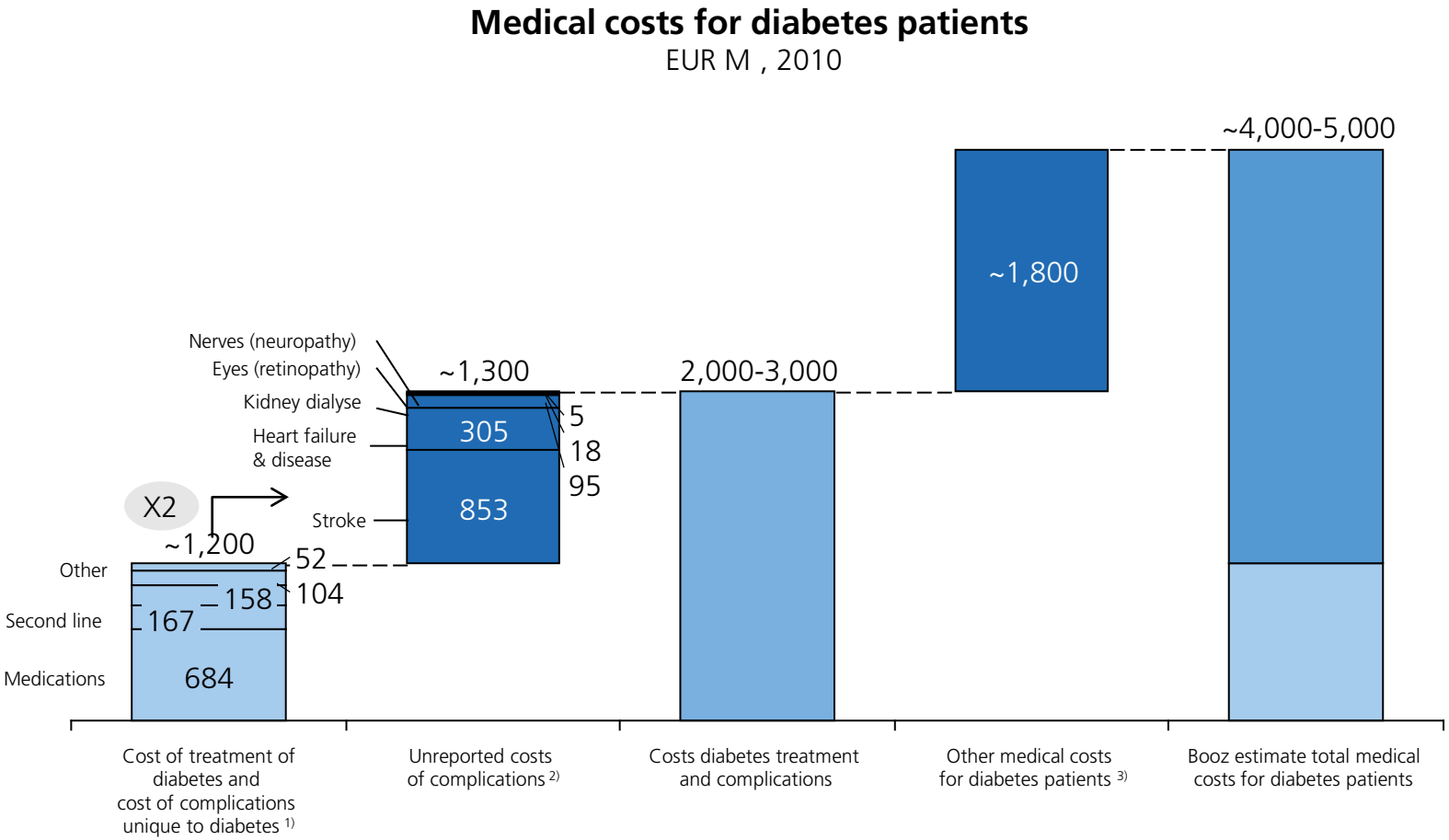


Comments	Estimated by RIVM	Bottom up Booz estimate		Difference between medical costs for patients with diabetes and medical costs for treatment and complications of diabetes	Based on total medical costs for diabetes patients (NPCF)	Effect of hypos on absence from and inefficiency at work, based on ADF study (but numbers vary in different publications)	Based on 75% of modal income * and 98,000 disabled with diabetes	Based on modal income and 98,000 disabled

1) Other unreported medical costs include costs caused by additional use of medical care by diabetes patients; 2007 estimate
Source: NPCF, ADF, CBS, RIVM, SFK, DiabetesZorgBeter, Diabetes Richtlijnen, DBC pricelist 2011, Booz & Company Analysis

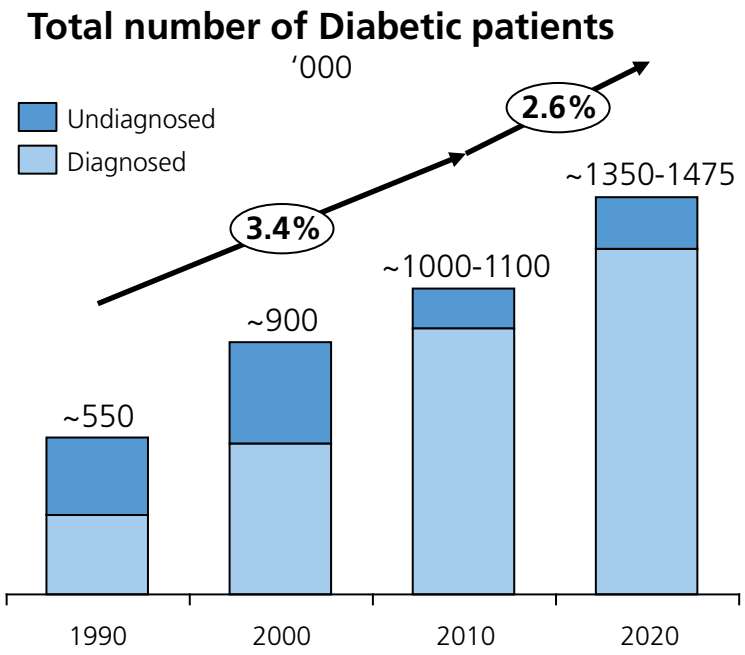
Costs of diabetes complications and treatments are underestimated

BACK -UP

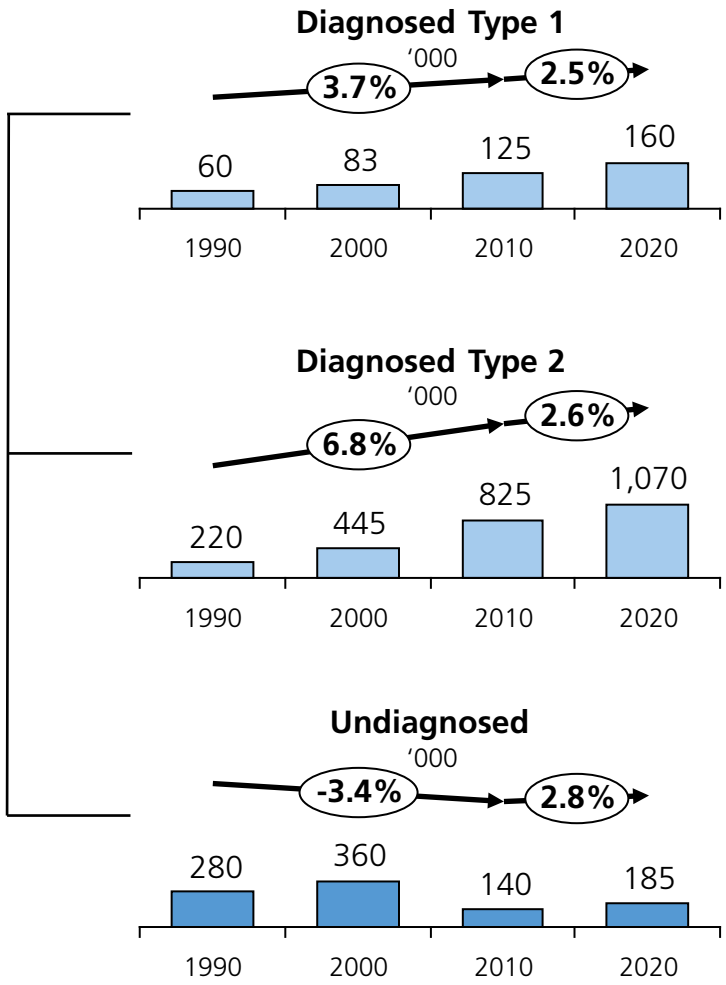


1) Other includes other health care providers and maintenance; costs of diabetic foot and hypos are included in the second line
2) Cost of direct treatment of complication for heart disease, eyes and nerves; lifetime costs of stroke, heart failure and kidney dialyse
3) Other unreported medical costs include costs caused by additional use of medical care by diabetes patients
Source: NPCF, RIVM kostenvanziekten.nl, DiabetesZorgBeter, Diabetes Richtlijnen, DBC pricelist 2011, Booz & Company analysis

Number of patients reaches ~1.4M in 2020



Diagnosed rate	50%	60%	80-90%	80-90%



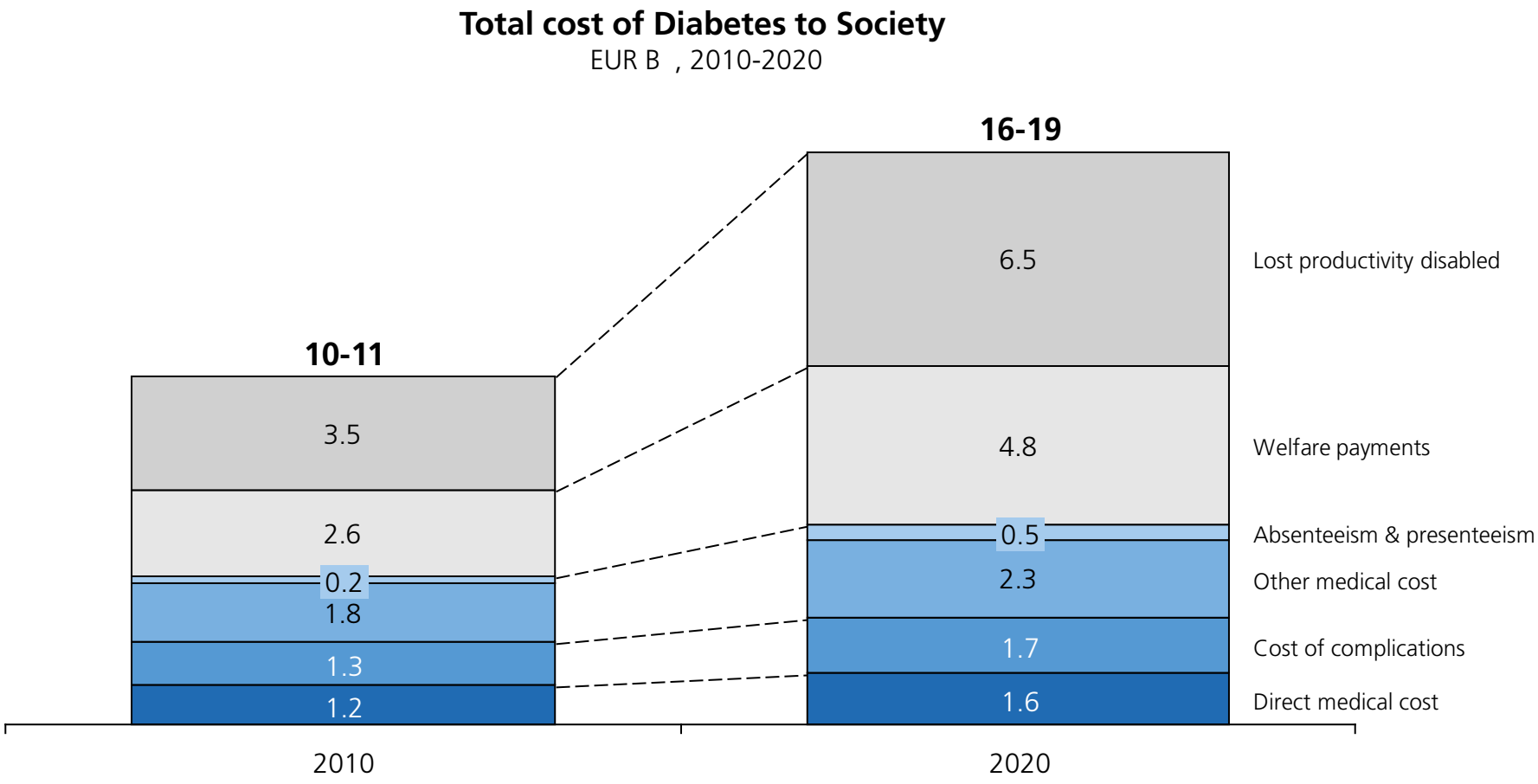
- Past figures extrapolated from CBS data
- Future growth maintained at average growth
- Estimate type 1 based on higher end of range 2010

- Past figures extrapolated from RIVM
- Future growth based on actual Type 2 growth 2000 to 2010

- Past rate based on quotes
- Current rate expected to be stable in future

Source: RIVM, SFK CBS, Booz & Company analysis

Medical costs and lost productivity of diabetes patients could rise to ~ EUR 16-19 B



Source: RIVM, Booz & Company Analysis

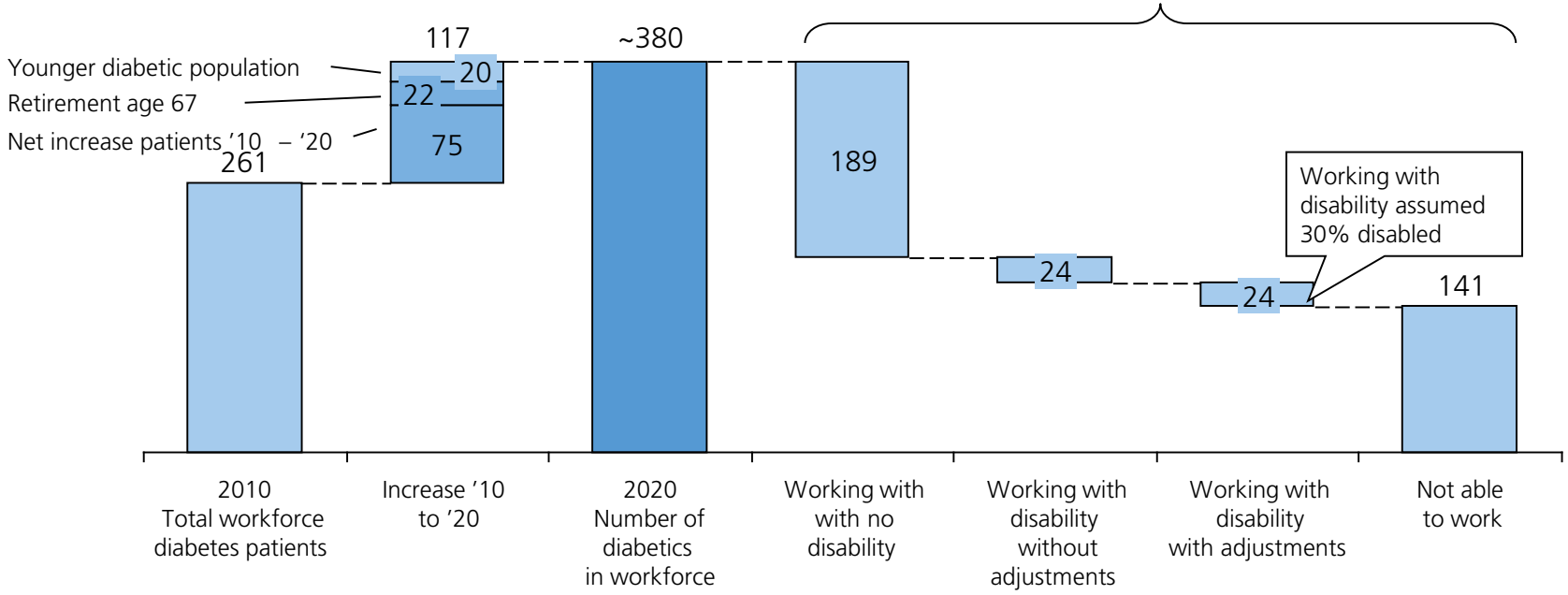
Increase in lost productivity is driven by an increasing number of diabetes patients in workforce (~380k in 2020)

BACK -UP

Increase and breakdown of diabetes patients in workforce

2010 - 2020, '000

- Disability estimates based on welfare registration of the UWV
- Reflects the number of disabled with diabetes



One out of three new diabetes patients in the workforce will be Type 1 patients

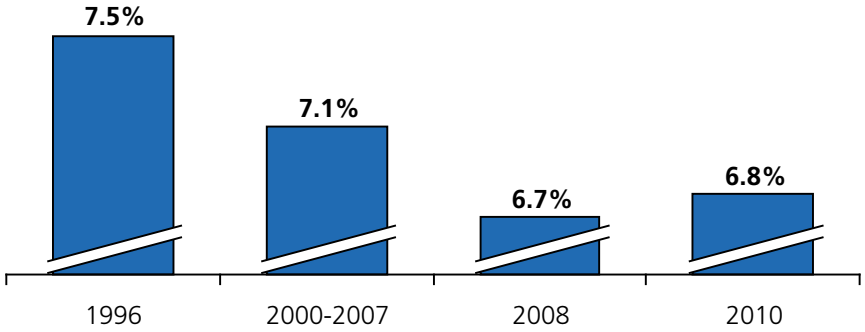
Source: CBS, UWV, Booz & Company Analysis

Contents

Diabetes care clearly improved in the Netherlands – Values from a selected group of care providers

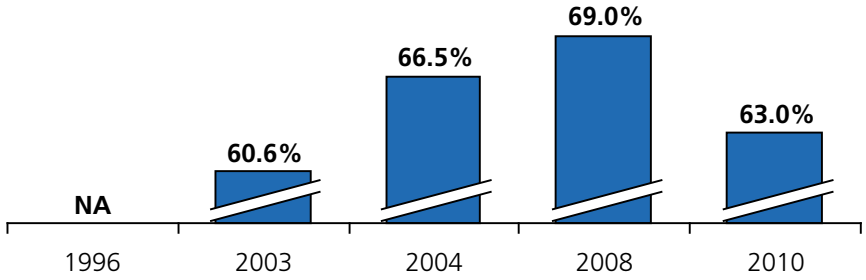
ILLUSTRATIVE

HbA1c values (target value 7% - 53 mmol/mol)



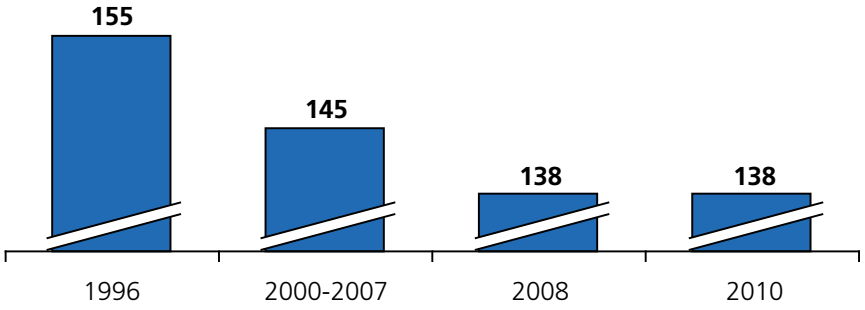
HbA1c < 7% / 53mmol/mol

% of patients



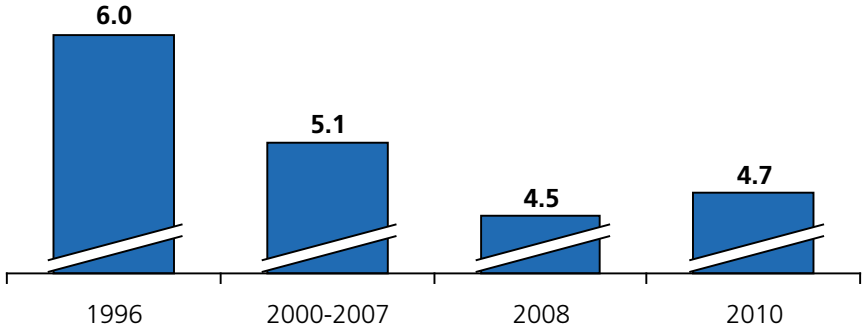
Systolic blood pressure

mmHg



Cholesterol level

mmol/l



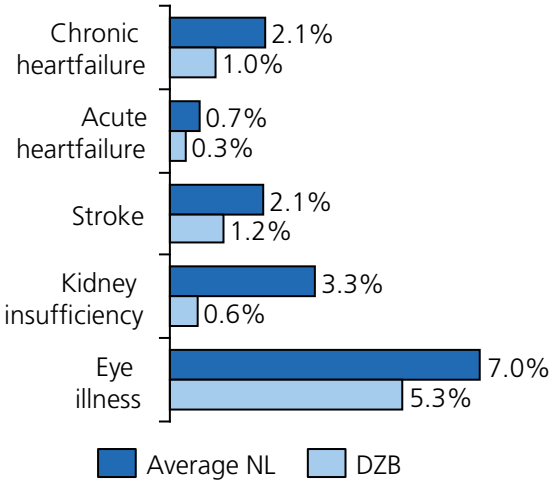
Note: 1996 data based on 5 networks of GP's; 2000-2007 data based on all publications from GP's; 2003 and 2004 hbA1c values < 7% based on study with 7,893 patients spread of NL; 2008 data based on study with 14,156 patients from 8 networks and cholesterol level from DiabetesZorgBeter networks; 2010 data based on 52,630 patients in 6 networks

Source: Diabeteszorggroepen en de keten-DBC, Zorg voor patienten met diabetes mellitus type 2 in de 1e lijn, Interview Prof. G.E.H.M Rutten, Julius Center, Booz & Company analysis

High quality care leads to excellent outcome values and to fewer complications

CASE EXAMPLES

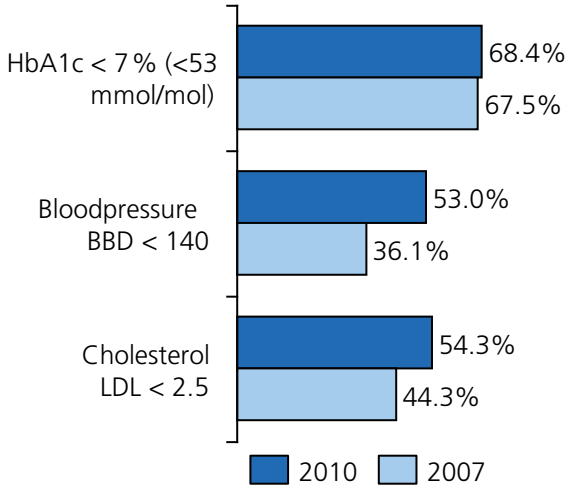
DiabetesZorgBeter 1 st line protocol reduces risk of major complications
Frequency of diabetic complications (2008)



Main interventions

- Strict protocol for diabetes management supported by IT-system
- Benchmarking of GP's
- Training of GP's & assistants

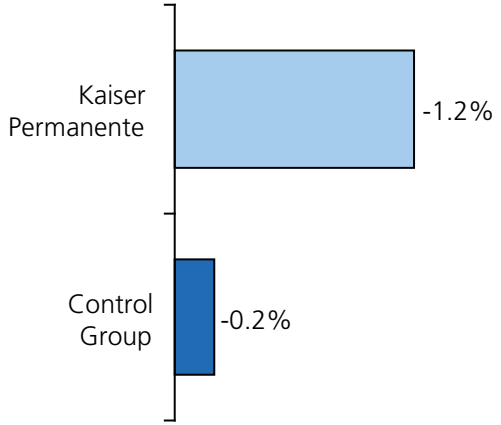
PoZoB achieves HbA1c objectives with ~70% of the patients– also improvements in blood pressure and cholesterol levels
Indicators DM (2007 -2010)



Main interventions

- Standard protocol supported by IT system
- Training of GP's & assistants

Through personalized coaching Kaiser permanente reduces HbA1c by 1.2%
Change HbA1c values (1999)



Main interventions

- Focus on poorly managed diabetes patients (starting level much higher than average NL situation)
- Personalized coaching
- Patient networks on- and off-line

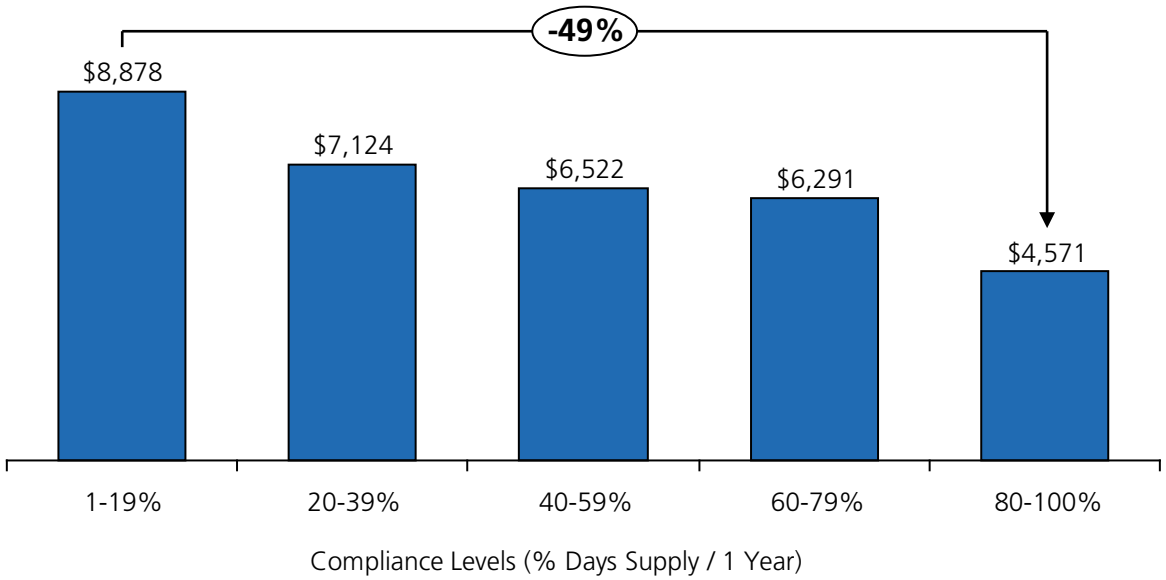
Source: DiabetesZorgBeter, PoZoB, Kaiser permanente, Booz & Company analysis

Better compliance can be stimulated and leads to fewer hospitalizations

CASE EXAMPLES

Medical cost of fully compliant patients up to half of non-compliant patients

Average Expenditure per year (USD, 2005)

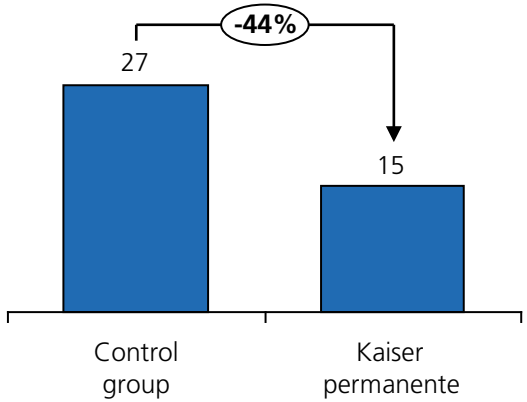


Main interventions

- Compliance to treatment plan:
  - Medication
  - Doctor's visits
  - Lifestyle advice (quit smoking, etc.)

44% reduction in hospitalizations at Kaiser permanente program

Hospitalization/1000 persons -months (1999)



Main interventions

- Focus on poorly managed diabetes patients
- Personalized coaching
- Patient networks on- and off-line

Source: Sokol M et al. Impact of Medication Adherence on Hospitalization Risk and Healthcare cost, Kaiser permanente, Booz & Company analysis

Clear potential in high quality treatment implementation and compliance improvement

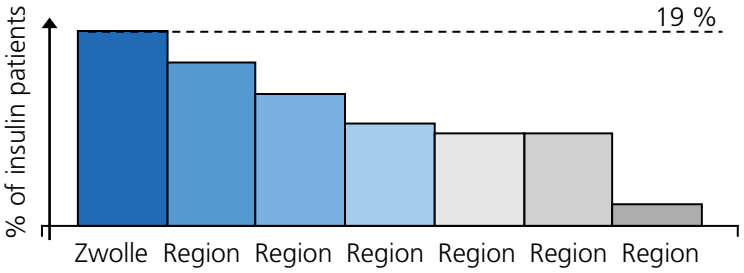
ILLUSTRATIVE

Primary care protocol can bring life expectancy of Type 2 patients to normal levels

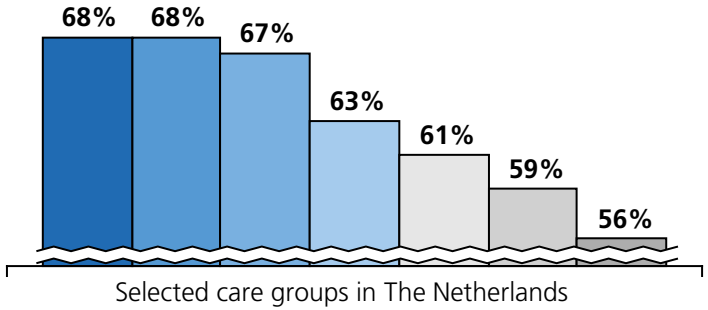
Article:
Life expectancy in a large cohort of type 2 diabetes patients treated in primary care
Lutgers LH, Gerrits EG, Sluiter WJ, Ubink-Veltmaat LJ, Landman GWD, Links TP, Gans ROB, Smit AJ, Bilo HJG; (ZODIAC-10). PlosOne 2009;

Regional variances in care patterns are still high

% of Type 2 insulin patient in first line (2008)



% of patients with HbA1c < 7% per health care group in 2009 & 2010



Non-compliance significant as different studies indicate

Studies of therapy adherence on the Dutch diabetes Type 2 patients

Paes e.a.; 1998:
Therapy adherence related to:
- Frequency of dosage 66-99%
- Prescribed doses 38-79%

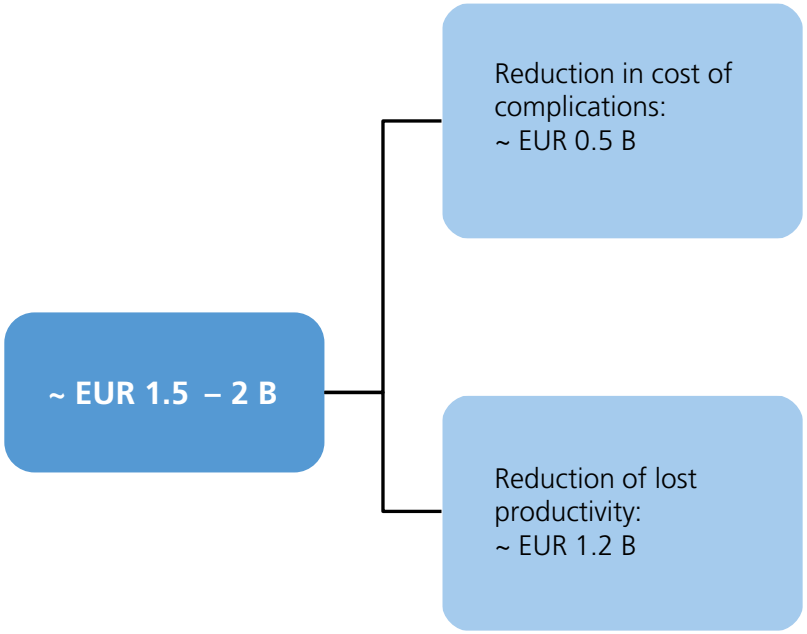
Cramer; 2004:
General Therapy adherence
- Type 2 diabetes 36-93%

Professionals and DVN are developing national primary care benchmark for diabetes for more insight in practice variations

Source: DiabetesZorgBeter - Prof H. Bilo, PoZoB, Kaiser permanente, Diabeteszorg Zorggroepen Nederlandse Huisartspraktijken - van Rutten, Booz & Company analysis

Contents

Further improving health of patients may lead to EUR 1.5-2 B of economic benefits in 2020



- Estimated based on a combination of improved compliance and an increased reach of high quality care. Two high-level approaches result in a similar estimate
  - A Kaiser Permanente study shows that total medical cost of 80-100% compliant patients are ~25 -30% lower than of patients who are 60-80% compliant
  - If the national average would show the same relative risk of complications as in the DiabetesZorgBeter study, this would reduce cost of complications by more than 30%
- The combination of improved care and improved compliance may have higher potential

- Absenteeism and presenteeism and the related cost decline in line with the expected decline in the number of complications
- Assumption is that 50% of the inflow of disabled in the workforce with diabetes, would have been able to remain active in the workforce if there would not have been diabetes complications
- Estimate is that 50% inflow can be reduced in line with the assumed reduction in the number of complications (~30%)

Source: CBS, DiabetesZorg Beter study, UWV, Booz & Company Analysis

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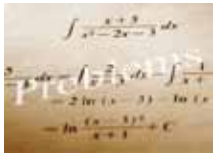
Insurers are supporting quality improvement, but they are confronted with (perceived) financial disincentives

Perception that investing in diabetes care is only delaying and not eliminating complications and therefore not generating revenues

- This perception is invalide but will need to be addressed specifically



Differences in risk exposure to primary care and specialist

- The risk and budget allocation mechanism lead to a lower risk burden for the insurer for hospital care versus primary care

High quality diabetes care may attract more than fair-share diabetes patients

- Diabetes patients seem to be on average loss-making even after budget allocation corrections

(Hospital) capacity that is freed up by quality improvements, tends to fill up with other patients (leading to double cost)

- Cost benefits on the patient-level often lost due to extra volume from other patients

Insurers do invest in initiatives – but they tend to see it as a quality differentiator with no or modest economic benefits

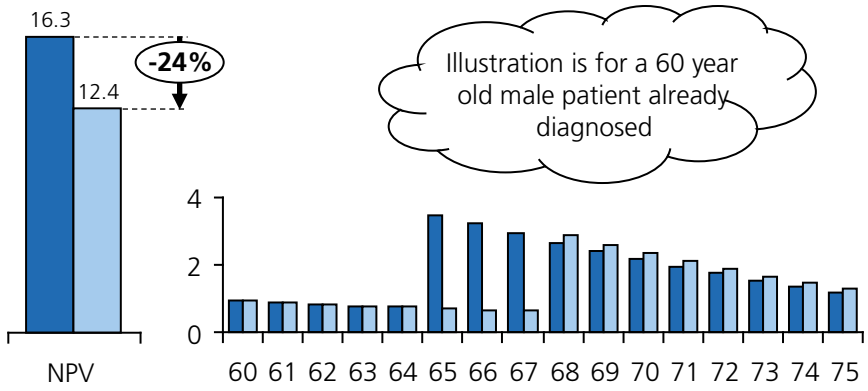
Source: Booz & Company analysis

Delaying complications saves medical costs – despite occasional skepticism

ILLUSTRATIVE

Illustration: calculation, the value of 3 year delay of complications

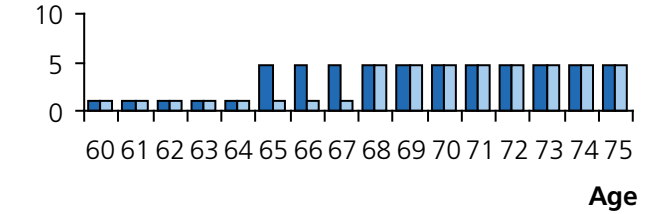
NPV, annual costs EUR '000



- Patient of 60 years old diagnosed with Type 2 diabetes. assuming complications will occur after 5 years
- Cost if we would be able to delay complications with 3 years with an intervention, less complications occurring after 8 years

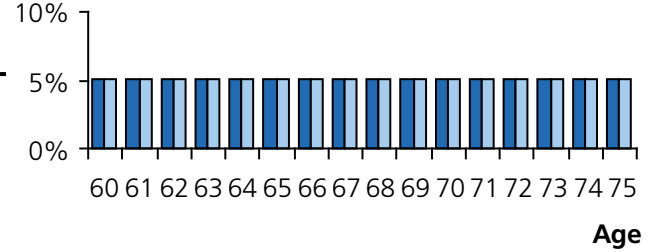
Cost per year (based on average costs of treatment and complications, excl. other medical costs

EUR '000



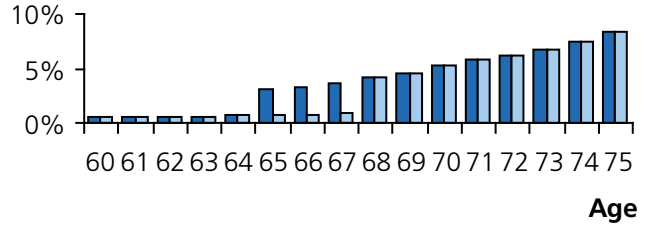
Attrition

%



Mortality

%



Details

- Given that patient is alive and remains within insurance plan
- Complications assumed to occur after 5 years
- Assumed that intervention can delay complications for 3 years
- Attrition level assumed constant at 5%
- Mortality % of diabetes patients estimated **2.2** times as high as person without diabetes (source interview medical specialist)

Source: Booz & Company analysis

Higher quality diabetes care may attract more loss-making patients for the insurer

- **Diabetes patients typically have high per patient health care cost (cost that are assumed to be caused by diabetes plus other health care expenditures). Total costs EUR 4,500 per diabetes patient versus EUR 1,650 average**
  - *'Diabetes patients typically have a wide range of health problems, not necessarily related to diabetes'*
  - *'Diabetes Type 2 is a lifestyle disease, but an unhealthy lifestyle can lead to a lot more problems than just diabetes'*
  - *'Diabetes is a disease of the system. It deteriorates your overall health to a wider extent than the regular diabetes complications'*

- **Still a suspicion that the risk equalization scheme does not sufficiently compensate**
  - Diabetes patients have historically been loss making (2006 EUR 74 per person loss after equalization; 2007 EUR 140 per person loss after ex-ante compensation – but differences not statistically different from zero)
  - The 2011 risk equalization proposal indicates a EUR 3,409 loss per self reported diabetic, which is equalized to a loss of EUR 235 (which is statistically not significantly different from zero). (source: Prof. Van der Ven)
  - The classification criteria for diabetes within the risk equalization scheme are strict. As a result, the insurer does not receive ex-ante risk compensation for all its diabetes patients

- **Hence, there is a downside in offering higher quality, since insurers offering high quality would be likely to attract more patients**

Source: Booz & Company analysis. Expert interviews. Expert interview with Prof. van der Ven – Erasmus University

Limited collaboration incentive for primary care and specialist care

	Objectives	Resource	Constraints	Practice that would result from objectives, resources and constraints
Primary Care   GP POH	• Provide complete and comprehensive care • Realize income	• Applying the GP diabetes protocol • Referring to specialist	• Lack of time for dedicated diabetes service • Lack of specialist diabetes knowledge • No control on what is happening in the hospital	• Most patients are effectively treated • But some patients may be unnecessarily referred to medical specialists • Some patients may receive late referrals to specialists
				Relatively little interaction and collaboration
Hospital care  Medical specialist  Diabetic nurse	• Provide the best diabetes care • Realize revenues for the hospital and himself/herself	• Applying hospital services • Applying Specialist knowledge	• No information on patients in primary care • No influence on patients in primary care	• Tends to keep patients in the hospital *'Once they have been here, surrounded by diabetic specialist, it is hard to send them back to the first line'* Medical Specialist

Despite limited collaboration incentives, care groups have achieved much progress in quality of diabetes care

Quality improvement initiatives are frustrated by fragmented budgeting (and ad hoc budget cuts)

Problem	 Providers	 Insurer
No full cycle business case underpinned	• Ambitions are often only qualitative (whereas *investments* are quantified)	• Initiatives with cost saving potential, may be interpreted more as quality differentiators than cost savers – Insurer support for lean initiatives hospitals, anti-smoking programs etc .
Fragmentation	• Initiatives often optimized for a single provider in the chain • High quality may lead to budget overruns and consequently budget cuts	• Initiatives may be evaluated from a single funding compartment (e.g. AWBZ/ZFW), instead of full value chain
No scalability	• Initiatives are often fully dependent on the passion and intrinsic motivation of the initiators	• Limited tools to stimulate initiatives outside the group of passionate initiators
Fill-up effects	• Resulting behaviour from other players in the value chain is not anticipated nor mitigated	• Cost benefits on the patient-level often lost due to extra volume with other patients
	• Frustration that great ideas for care are not always embraced by the insurer	• Wary of investments in care, since benefits are not guaranteed to materialize

Individual quality incentives are lacking for primary care, specialists and patients

Primary care

Keten-DBC is related to number of contacts, no quality commitment

- No incentives for monitoring of therapy adherence

Specialist

Specialist is paid for volume rather than quality input or outcome

- No financial incentive to critically review necessity of treatment
- No payment for quality outcomes and monitoring of therapy adherence
- No incentive to refer back to primary care

Patient

No short-term financial incentive to comply

- E.g. reduction of deductible, bonus points

Significant evidence gaps in basic statistics and in treatment evidence suggest insufficient supporting incentives

EXAMPLES

Descriptive statistics

- How many patients are there?
- How many Type 1 patients are there?
- In what stages of the disease are they?
- In which regions and which groups is therapy adherence high?
- How often do complications really occur?
- What is the impact of labour productivity of the different complications?
- What is the average cost of treatment Type 1 and 2 per stage of diabetes?
- What is the relationship between cost of complications and the progression of the disease?
- What are cost of treatment differences per region?

Effect of treatment

- How often do which diabetic complications lead to working disability?
- What is the impact of therapy adherence?
- What is the life expectancy of Type 1 and Type 2 patients?
- What is the impact of prescribing insulin when currently SU-pills are prescribed?
- How would GLP -1 contribute to therapy adherence?

Recommendation 1: Insurer should integrate contracting of primary care and specialist care in networks

Integration contracting of primary care and specialist care

- Gain sharing for primary care
- Expected impact of substitution in volume agreements with hospital
- Specialist can charge standard hour tariff for support to primary care
- Support IT infrastructure

Insurer

	Objectives	Resource	Constraints	Resulting behaviour
  **Primary care**	• Provide complete and comprehensive care • Realize income	• Protocol • Income related to quality gains • Access to specialist advice Resource from integrated care	• Lack of time for dedicated diabetes service	• High quality primary care in collaborations with the specialist Impact Integrated care
		Interaction and collaboration		
  **Specialist care**	• Provide the best care • Realize revenues for the hospital and himself/herself	• Periodic reviews with GP on patients in the GP practice • Enabling IT support Resource from integrated care	• (Largely) fixed income for diabetes patients Constraint from integrated care	• Supports GPs in providing better care • Serves patients who really need specialist care Impact Integrated care

Recommendation 1: Other refinements in economic incentives

Insurer

Patient

- **Provide incentives to patient for compliance by reducing own risk**

Research funding

- **Enable research funding from normal budget**
  - Fund trials to increase the evidence base of regular medical treatments

Government

Risk equalization scheme

- **Incorporate small profit margin for insurers in the risk equalization scheme so that insurers will compete for diabetes patients**
  - E.g. 5-10% margin

Integrated funding

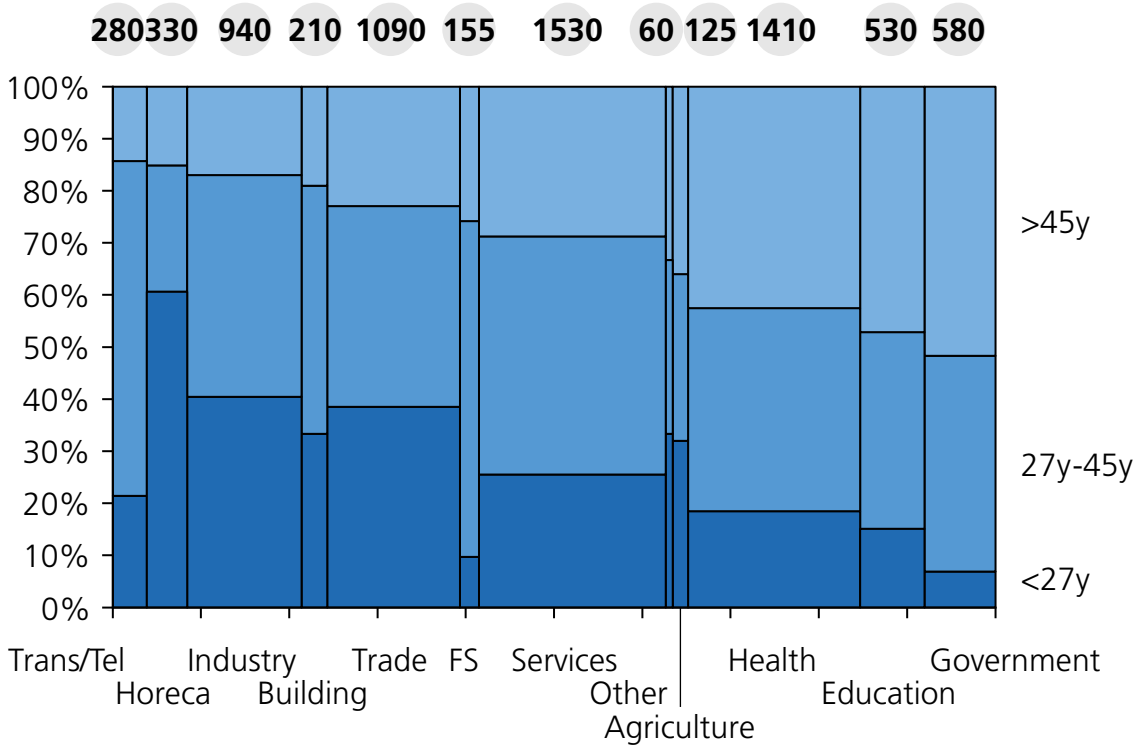
- **Create an integrated funding model for primary care and specialist care**
  - E.g. incorporating specialist care in keten-DBCs
- **Avoid fragmented budgeting and ad hoc budget cost (these frustrate innovations that are effective over the full cycle of care)**

Contents

Ageing will create an extremely tight labour market over the coming decade

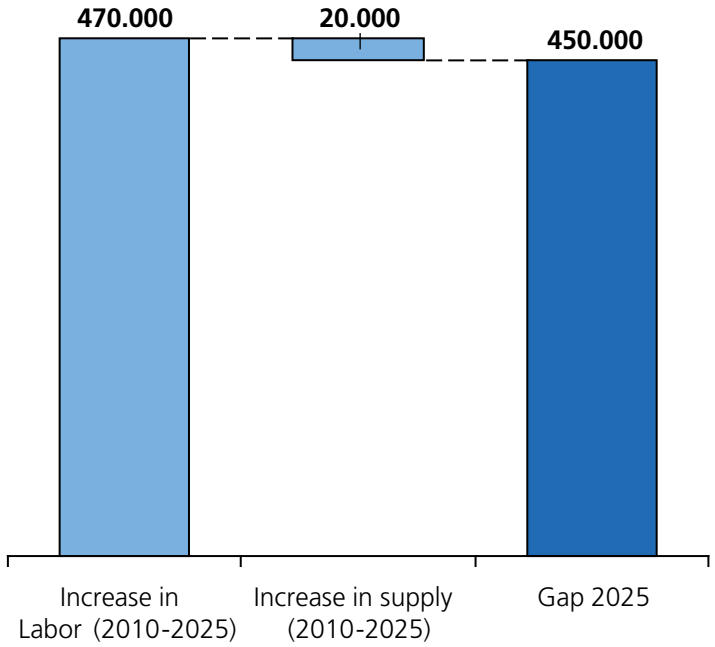
Labour market is ageing rapidly

Employees x 1.000



Leading to enormous shortages

E.g. 450.000 projected vacant employment positions in health care

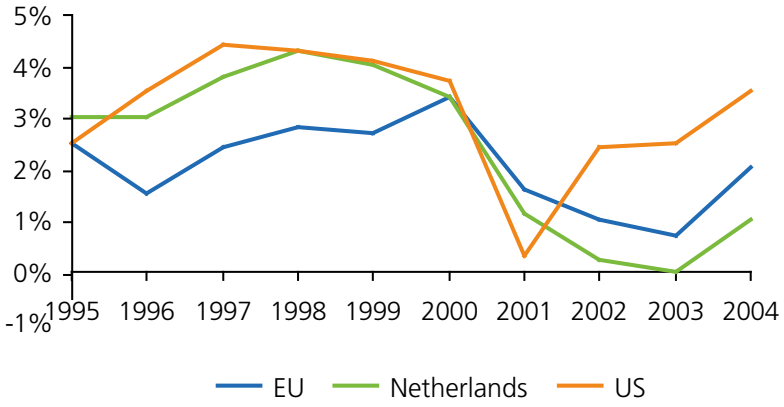


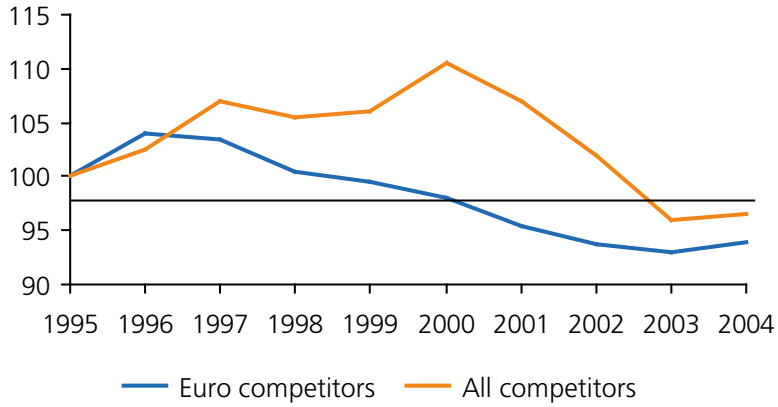
Source: Vergrijzing en krapte op de arbeidsmarkt UWV Werkbedrijf, SEO, CBS, Randstad, Raad voor de Volksgezondheid, Skipr; Booz & Company analysis

Labour shortage from late nineties illustrates the risk of tight labour markets for our economy

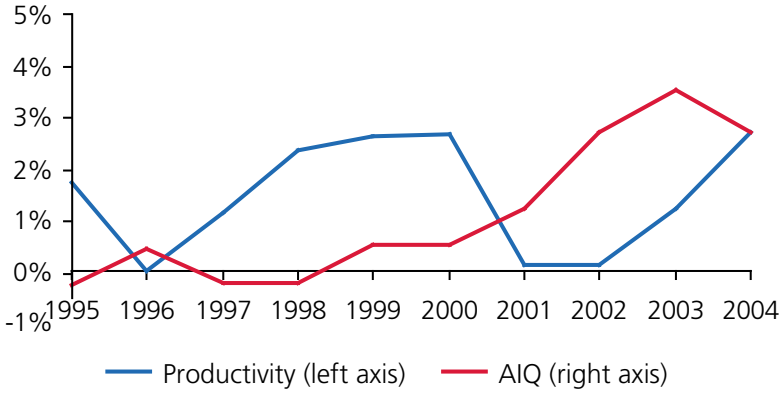
Competitive Power Based on Labor Cost [1)]

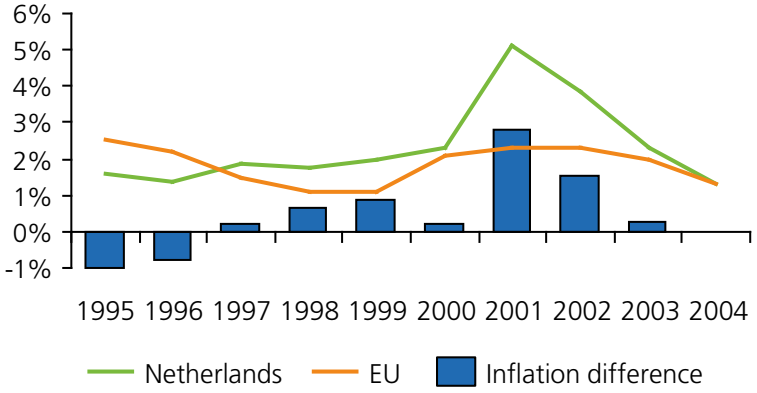
(Index, 1995 = 100); 1995–2004





Development of Productivity: 1995–2004

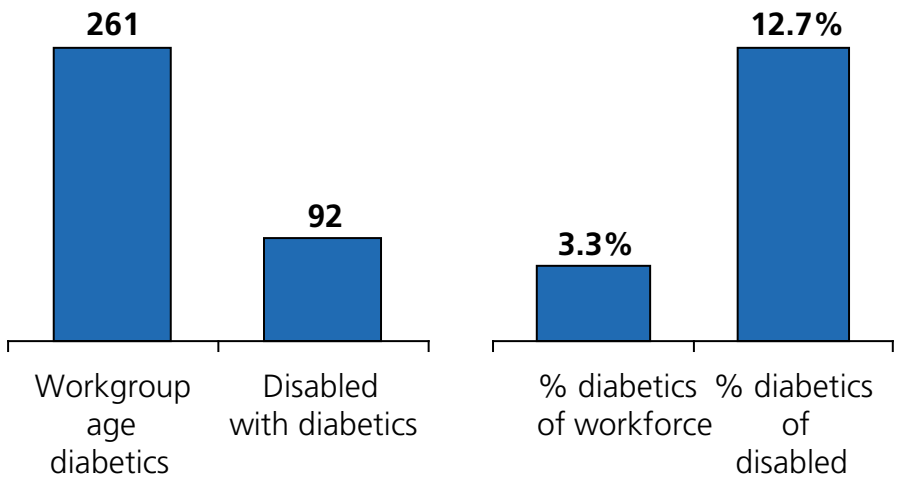




Diabetes has a high prevention potential for lost productivity

Diabetes is a common condition in workforce

15 – 65 years of age, 2009, '000, %



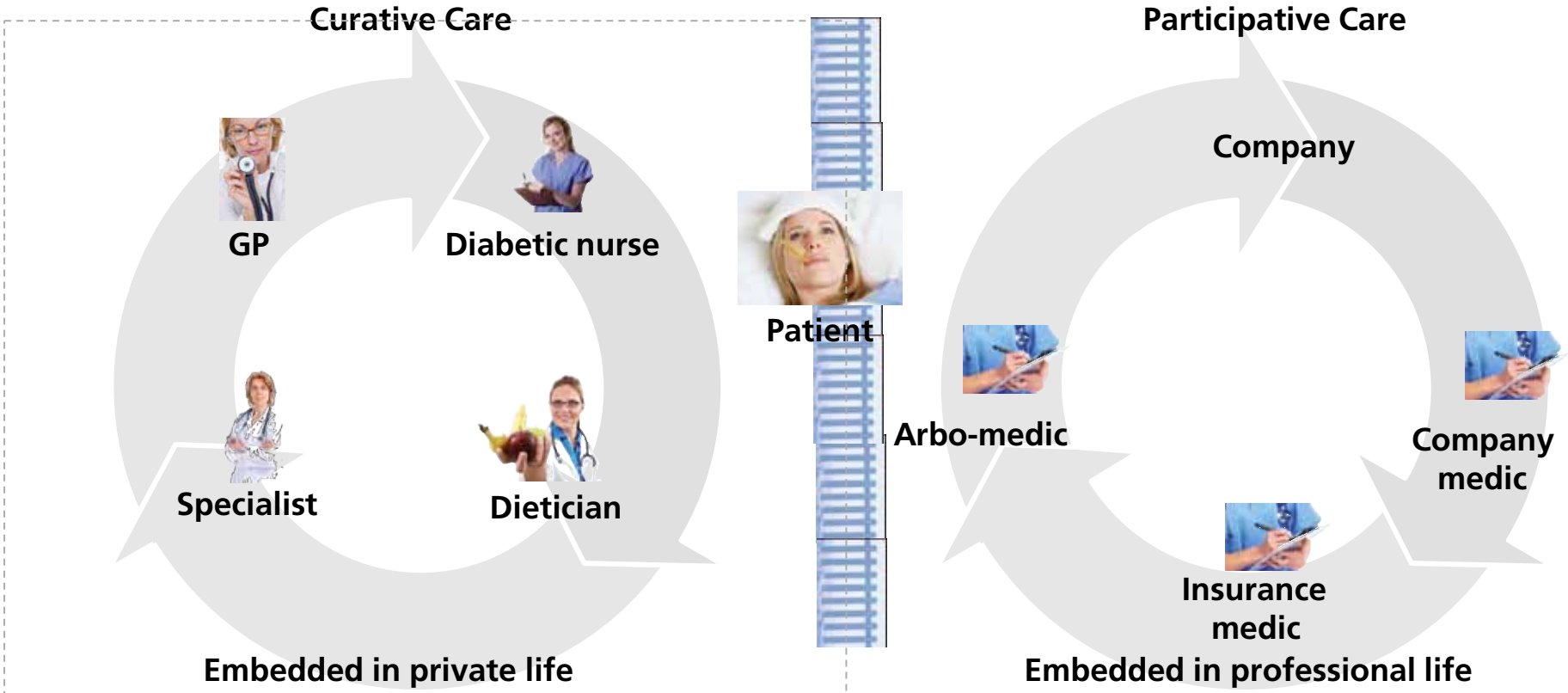
Good treatment increases participation substantially

- Quality of primary care is really good. The vast majority of patients have excellent values and can live active lives'
  Prof. dr. Guy Rutten; Julius Center
- The life expectancy in our treatment program of Type 2 patients is the same as the general population due to earlier diagnostics and high quality care'
  Prof. dr. Henk Bilo; VUMC
- 'Type 1 patients, when adhering to the medication, are able to have a relative normal life and perform well in most types of jobs'
  Prof. dr. Cees Tack, UMC St Radboud

Limited insight in the reasons why diabetes patients obtain working disabilities

Source: CBS Statline, UWV, Booz & Company Analysis

However, curative and participative care are still two different worlds



Role

- How to prevent complications
- No advice on participation

Role

- How to improve participation in society
- How to change working environment
- No advice on treatment

Source: Booz & Company Analysis

Recommendation 2: Increasing participation of diabetes patients should be a priority for employers and government

Insurer

Offer supplementary collective diabetes care modules for employers

- **Offer collective insurance modules for diabetes for increasing the participation of diabetes patients**
  - Specific intensive coaching, services by non-curative care medics (' bedrijfsarts ' or 'arbo arts') if needed

Integrate contracting of participative and curative care

- **Integrate collaboration models**
- **Align funding incentives for curative and participative care**
  - Bonus fee on top of keten DBC for GP to align with non - curative care medics
  - Negotiated tariff for non-curative care medics

Curative care **Participative care**

UWV / Companies

Companies and UWV to invest

- **Companies and UWV to invest in collective insurance for employees and welfare recipients (directly or via collective supplementary modules)**
  - Such arranges could be part of central labour agreements

Participative care

Ensure a positive working environment

- **Encourage compliance**
  - Supporting treatment recommended by curative care
- **Encourage working environment that motivates to work as long as possible**

Contents

Summarized findings and recommendations

The opportunity

- Diabetes is a major and underestimated source of medical costs and lost productivity
- Diabetes care in The Netherlands has reached a high level of quality, but there is still opportunity for further improvement
- Further improving health of patients may lead to EUR 1.5-2 B of economic benefits in 2020

The road

- Refine economic incentives to encourage integrated care and quality improvement
- Engage employers, UWV and participative care in diabetes care
- Engage the patient's social network to support self management
- Introduce conditional market access models for new therapies and medication to assess behavioural impact

Appendix: list of sources

Medical treatments for Diabetes Type 1 and Type 2 can be effective, however compliance is a huge challenge

It is possible to live a very good life with diabetes…

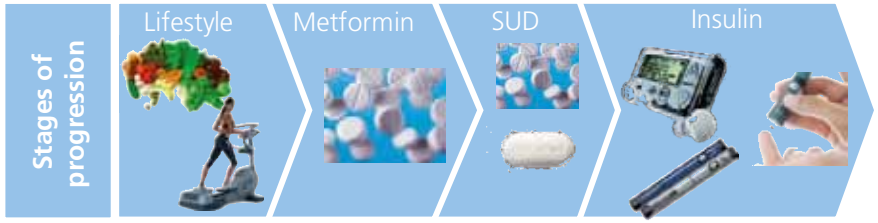
Type 1 treatment
'Living a pleasant life with diabetes is possible! But you need to put an effort in it. Watch your blood levels, carbohydrate intake, treatment schedule; actually everything you do. Every day again. That takes up energy, but is worthwhile. Because a healthy lifestyle makes you feel good.'

Diabetes Fonds

Type 2 treatment
'People with diabetes can eat everything that healthy people enjoy, but the key to a safe diet is to limit intake of unhealthy food'

Beter leven met Diabetes

…But this requires compliance to a demanding treatment scheme…

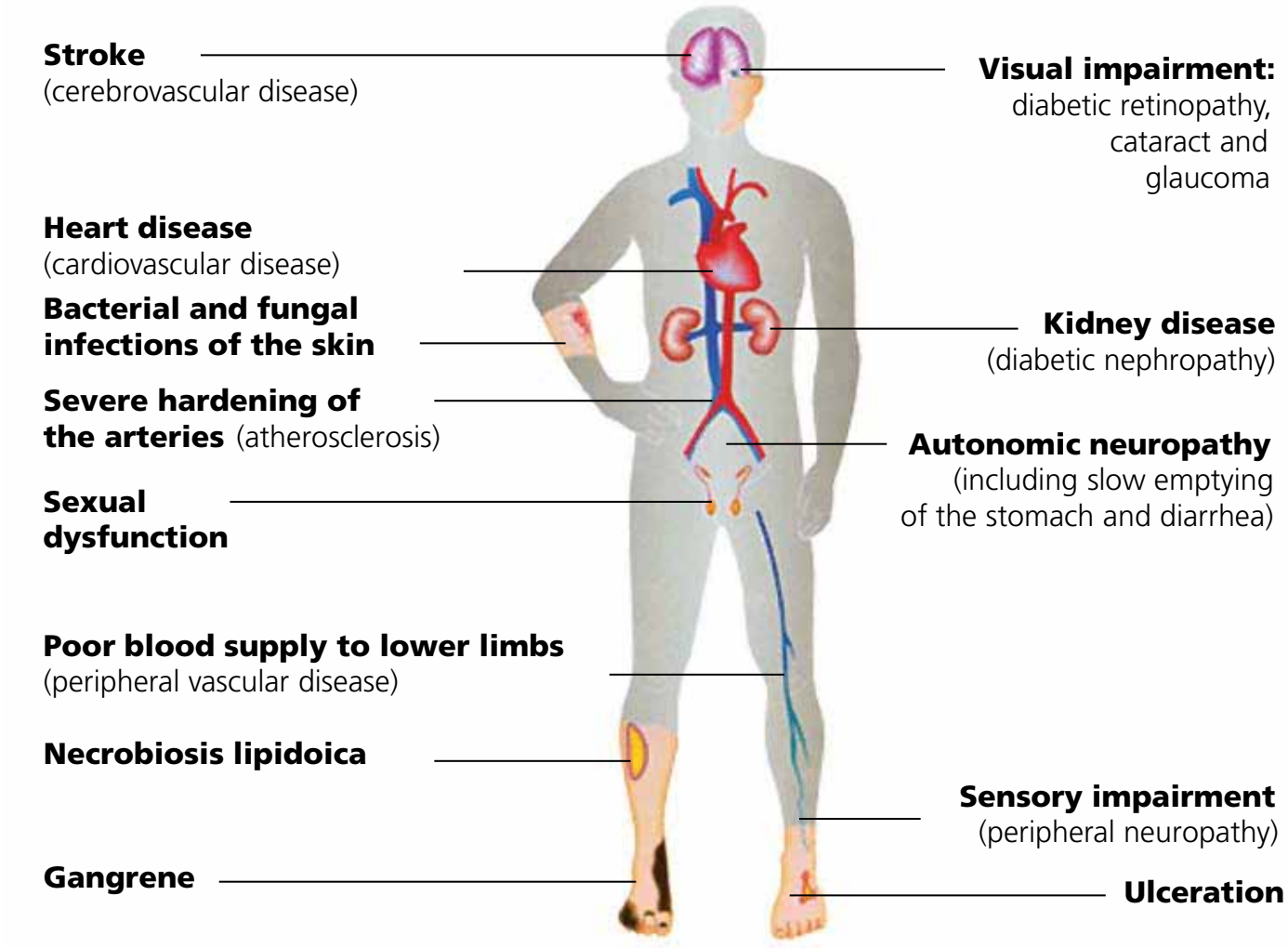


	Lifestyle	Metformin	SUD	Insulin
Activities	• Changing lifestyle; • Diet • Exercise	• Intake of pills 1 to 4 times a day of met	• Intake of pills 1 to 4 times a day of met and SUD	• Injection of insulin 1 to 4 times a day (with use of pump Type 1) • Self measurement 3 to 4 times a day • Adjusting insulin intake to lifestyle
Applicable to	• Type 1 & 2	• Type 2	• Type 2	• Type 1 & 2

Studies indicate non-compliance can be up to 65%

Source: Beterlevenmetdiabetes.nl, diabetesfonds.nl, Booz & Company Analysis

Non-compliance leads to severe complications - Diabetes affects the whole organism



Source: World Health Organization, American Diabetes Association, NIDDK, National Diabetes Statistics fact sheet. HHS, NIH

Non-compliance is a challenge of distant benefits and large required behavioural change

Weak motivation to comply

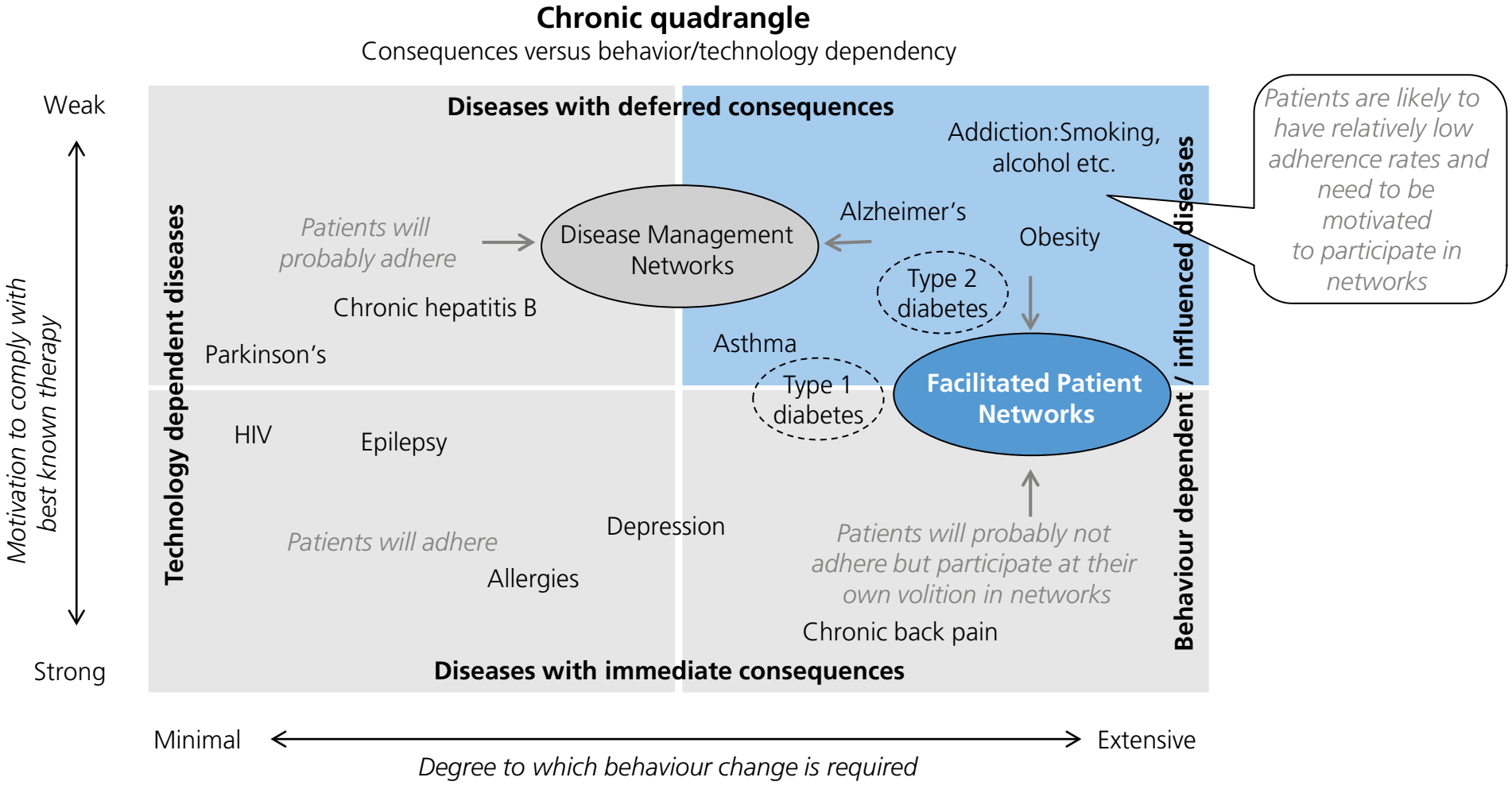
- **Motivation to change is typically limited: no sense of urgency**
  - No feeling of illness (especially in early stages)
  - Acceptance of illness
  - Benefits of compliance are distant
- **Compliance creates a short–term risk of side effects**
  - e.g. especially hypos

Extensive behavioural change required

- **Far reaching change in daily routines**
  - Sleep times,
  - Diet
  - Exercising
- **Requires an adjustment in social life**
  - Social pressure to engage in social activities not congruent with treatment
  - Environment may perceive the distance as an 'excuse' to avoid participation
- **Requires an advanced understanding of the disease**
  - Complex intake schemes that are dependent on the context of daily activities
  - Need to develop a optimized personal routine

Source: Apotheke und krankenhaus Ursachhen der Non-Compiance, Booz & Company Analysis

Facilitated patient networks are successful in other distant benefits – high behavioural change conditions



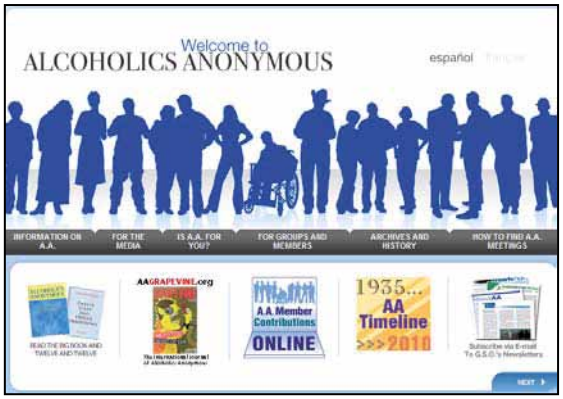
Source: The Innovator's prescription, Christensen, Booz & Company Analysis

Examples of patient networks for other conditions may provide learnings for diabetes

EXAMPLES

Alcoholics Anonymous

- The network organises events in which patients share their experiences
- Online patient network in which the participants teach each other how to overcome the disease of alcoholism
- Help line that is 24 hours available



Weight Watchers

- Online community of people that share the same aim of loosing weight
- Points plan for weight watchers; a clear guide in which all nutrition is translated in points - a participants is only allowed to use a certain amount of point per day
- Weekly meetings in which participants are weighted and in which a coach provides support in reaching their target weight
- Help line that is 24 hours available

Quitting smoking – 'De Opluchting'

- Online community of people that want to quit smoking
- Online video classes in which the addiction is explained, participants are prepared for the first period of quitting and help with their decision is provided
- E-mail courses that aim to make participants more aware of their smoking habits
- Training in which participants learn how to better understand their addiction and how to quit

Source: www.aa-nederland.nl, www.weightwatchers.nl, www.stoppenmetroken.com, Booz & Company Analysis

Integrated behavioural interventions have been successful in improving compliance

Example: Diabetes Population Management Program of KAISER PERMANENTE

Level 3 Intensive Care

- Complex medical issues
- Psycho -social barriers to self-management

Endocrinologist / Diabetologist

- Confirms diagnosis
- Identifies comorbidities
- Optimizes medication regimen
- Mentors case and care managers

Case Manager

- Coaches members in crisis
- Manages access to specialty and ED care
- Coordinates care across continuum

Level 2 Care Management

- ED visits
- Hospitalization
- HgA1c ≥ 8.5%
- Microalbumin > 30

Any of the above WITH

- HTN . Dyslipidemia

Outreach and Triage

- Prioritize CV risk factors:
- HTN Dyslipidemia (LDL > 100)
- Treatment according to protocols
- Behavior change / motivation
- Reinforce self-management
- Patient returns to Level 1

Week 1	Week 2	Monthly	2-6 Months
			
Intake Visit	**Group Appointment**	**Group Appointment**	**Telephone Follow-up Visits**
• One-to-one • Office visit • Risk reduction • Goal setting	• Assessment • Care Manager • Behaviorist • Dietitian	• Clinical / behavioral interventions • Care Manager • Behaviorist • Dietitian	• (1:1 office visit as needed)

Level 1 Self-Care

- Diabetes is well controlled
- Member practices effective self-care

As Needed

Living Well with Diabetes Class

- ,,, and others

Educational Resources

- Healthwise Handbook
- KP online

Primary Care Team

- Reviews, adjust medications
- Regular screening
- Reinforces self-management

Source: Kaiser permanente, Booz & Company Analysis

Recommendation 3: Facilitate network solution around the patient to support better diabetes care

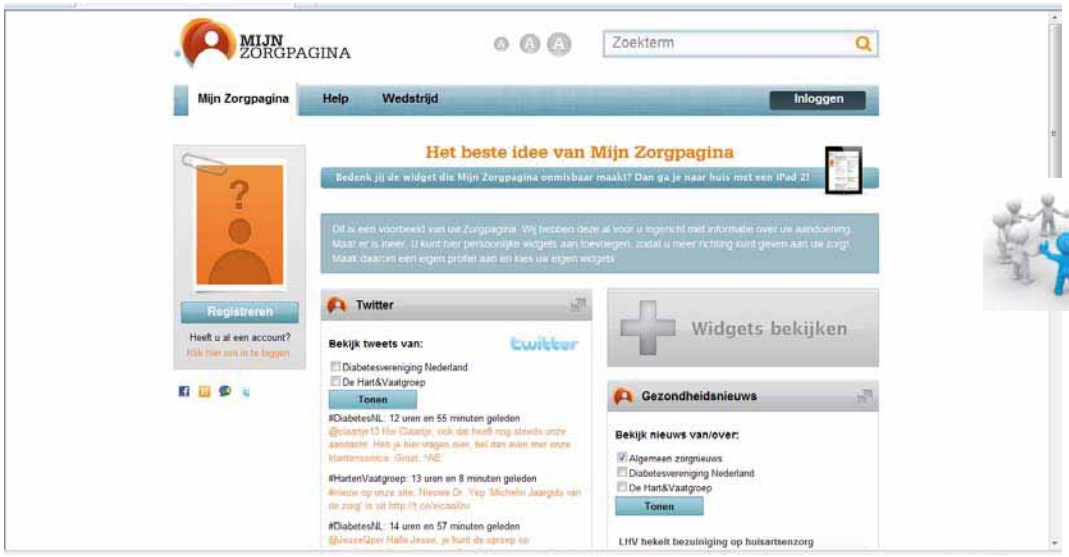
Suggested initiators	Recommendation	Description	Impact
Diabetesvereniging Nederland nhg nederlands huisartsen genootschap	*Include behavioral dimension in medical guidelines* 	• If appropriate, include family and friends in standard treatment (e.g. family present at key doctors visits) • Add checklist for aligning treatment with personal life (mass customization; checklist on lifestyle before therapy starts)	• Actively engage family members to support treatment • No need for patient to remember everything alone (extra ear from family member) • Stimulate early discussion on how to combine treatment with personal life
novo nordisk®	*Scale-up use of social media* 	• Scale-up diabetes health communities with patients, their families and their professionals (mijnzorgnet) • Participation of professionals is key	• Lower barrier to ask questions • Shared experiences, tips and tricks between GPs and patients • Family members / friends can engage for patients without access • Unities patients and health care providers so that they can share experiences
novo nordisk®	*Amateur and professional coaching for non-adherent patients* 	• Develop coach select screening instrument (who should receive a coach for what) • Educate amateur coaches • Select an amateur coach; and select a professional coach for difficult patients	• Encourages disease knowledge with patients • Encourages adhere to therapy

'You shouldn't be alone in self management'

Social media examples

BACK -UP

Mijn zorgpagina



Diabetesvereniging Nederland

Mijn zorgnet

MijnZorgnet.nl

Source: mijnzorgnet.nl, Booz & Company Analysis

Contents

Summarized findings and recommendations

The opportunity

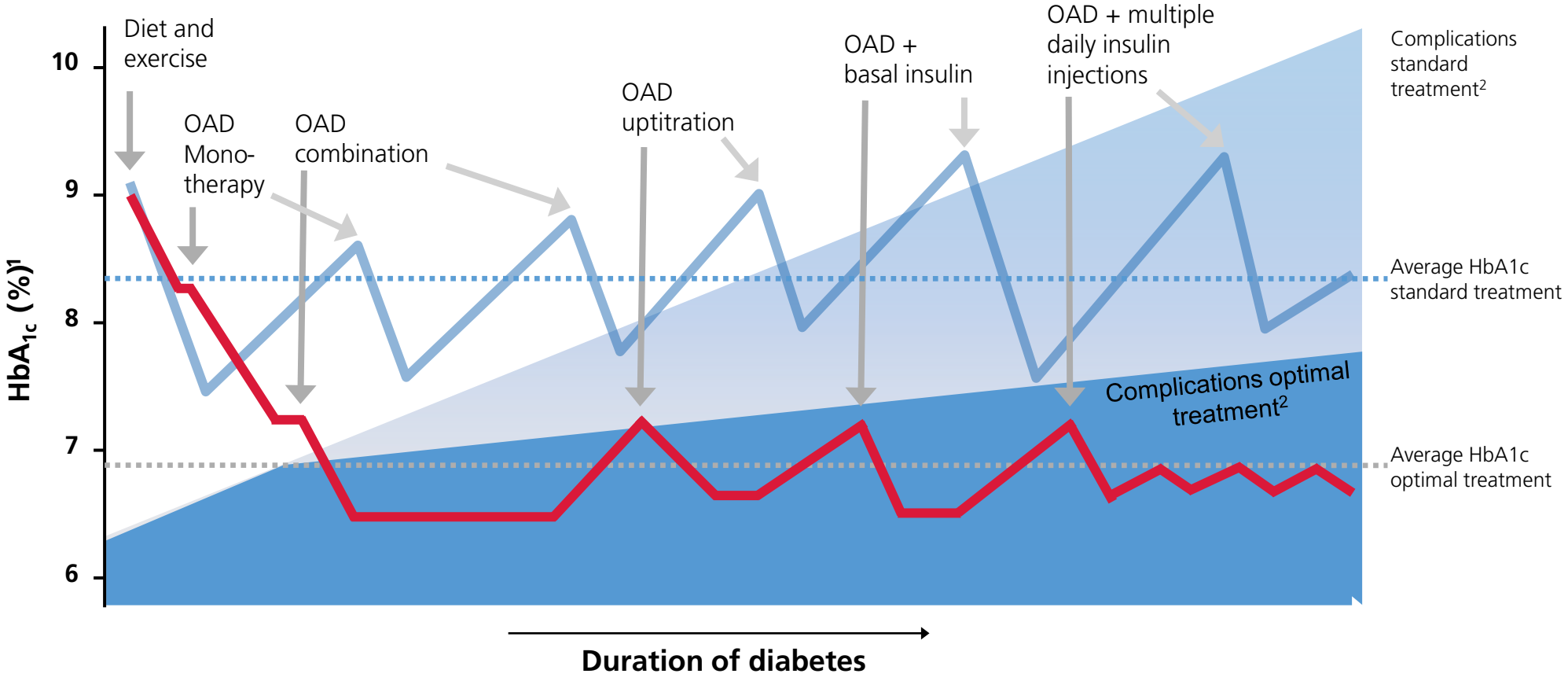
- Diabetes is a major and underestimated source of medical costs and lost productivity
- Diabetes care in The Netherlands has reached a high level of quality, but there is still opportunity for further improvement
- Further improving health of patients may lead to EUR 1.5-2 B of economic benefits in 2020

The road

- Refine economic incentives to encourage integrated care and quality improvement
- Engage employers, UWV and participative care in diabetes care
- Engage the patient's social network to support self management
- Introduce conditional market access models for new therapies and medication to assess behavioural impact

Appendix: list of sources

Optimal treatment with current generation of diabetes medication is therapeutically highly effective *if* the patient is compliant



OAD = oral anti-diabetic

Del Prato S *et al. Int J Clin Pract* 2005; 59:1345–1355.
[2]Stratton IM et al. BMJ 2000; 321:405–412.

But new medication could add a lot of value in boosting compliance

Reasons of non -compliance

Motivation

- **Motivation to change is typically limited: no sense of urgency**
  - No feeling of illness (especially in early stages)
  - Acceptance of illness
  - Benefits of compliance are distant
- **Compliance creates a short–term risk of side effects**
  - e.g. especially hypos

Behavioural change

- **Far reaching change in daily routines**
  - Sleep times,
  - Diet
  - Exercising
- **Requires an adjustment in social life**
  - Social pressure to engage in social activities not congruent with treatment
  - Environment may perceive the distance as an ‘excuse’ to avoid participation
- **Requires an advanced understanding of the disease**
  - Complex intake schemes that are dependent on the context of daily activities
  - Need to develop a optimized personal routine

Potential impact of easier-to-use-medication

- Inherent property of the disease

- Potentially less invasive treatment schemes

- Potentially less invasive treatments schemes

- Therapy may be easier and less time consuming

Source: Apotheke und krankenhaus Ursachen der Non-Compiance, Booz & Company Analysis

CFH access criteria evaluate impact on compliance, however evidence is usually not generated by trials

Category	Argument	Metrics	CFH criteria	CFH Document	Type of evidence from trial	Would extra compliance lead to higher score?
Medical	Characteristics	Composition, type of administration, dosage, Operational area	✓	Farmacotherapeutisch dossier	✓	No
	Improvement vs current medication	Relevant end points in term of morbidity and mortality. Report utilities and survival	✓	Farmacotherapeutisch dossier	✓	No
	Side effects vs current medication		✓	Farmacotherapeutisch dossier	✓	Yes
Patient	Ease of use / ease of administration	QALY's	✓	Farmacotherapeutisch dossier	?	Yes
	Quality of life	QALY's	✓	Farmaco -economisch dossier	?	Yes
	Life expectancy	Increase in years	✓	Farmacotherapeutisch dossier	✓	Yes
Economics	Direct treatment cost per year	EUR	✓	Farmacotherapeutisch dossier	✓	No
	Indirect cost per year	EUR	✓	Farmacotherapeutisch dossier	✓	No
	Long term cost effect (medical)		?		?	No
	Loss of productivity		?		?	No

Contents

List of sources used

Sources Used

- Alcoholics Anonymous, www.aa-nederland.nl
- American Diabetes Association (ADA), Economic Costs of Diabetes in the U.S. in 2007
- Apotheke und krankenhaus Ursachen der Non-Compliance
- Beter leven met diabetes, www.beterlevenmetdiabetes.nl
- CBS, Statline: http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=81173NED&D1=2-4&D2=0-13,32-37,68-74&D3=0&D4=l&VW=T http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=70084NED&D1=a&D2=1&D3=a&HDR=T&STB=G1,G2&VW=T
- CMR Nijmegen, http://www.nationaalkompas.nl/gezondheid-en-ziekte/ziekten-en-aandoeningen/endocriene-voedings-en-stofwisselingsziekten-en-immuniteitsstoornissen/diabetes-mellitus/omvang/
- DBC pricelist 2011
- De Opluchting, www.stoppenmetroken.nl
- DVN, http://www.dvn.nl/diabetes/in-cijfers
- DiabetesZorgBeter, Prof H. Bilo
- Diabetesfonds, www.diabetesfonds.nl
- Health and Human Services (HHS)
- Impact of Medication Adherence on Hospitalization Risk and Healthcare cost, Sokol et al.
- International Diabetes Federation, http://www.idf.org/types-diabetes
- Kaiser permanente
- MijnZorgnet.nl
- National Diabetes Statistics Fact Sheet
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
- National Institutes of Health (NIH)
- NDF Richtlijnen, http://www.diabetesfederatie.nl/downloaden-documenten/richtlijnen.html
- Nederlandse Patiënten Consumenten Federatie (NPCF) Eindrapportage 2007
- PoZoB
- RIVM, Diabetes tot 2025, C.A. Baan & C.G. Schoemaker
- RIVM, Kostenvanziekten.nl, http://www.kostenvanziekten.nl/kvz2005/cijfers/start-tabellen-grafieken-volgens-zorgrekeningen/Default.aspx?ref=kvz_v2l1b1p4r0c4i0t1j0o3y4a-1g0d25s54z0f0w2
- Screening study: Low yield of population-based screening for Type 2 diabetes in the Netherlands: the ADDITION NL study, Janssen et al.
- SFK, http://www.sfk.nl/publicaties/2011denf.pdfm
- The Innovator's prescription, Christensen
- UWV provided, data available on Statline, http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=70084NED&D1=0,2-3&D2=79&D3=6&HDR=T&STB=G1,G2&VW=T
- UWV provided, data available on Statline http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=70087NED&D1=0-3&D2=31&D3=6&VW=T
- Weight Watchers, www.weightwatchers.nl
- World Health Organization

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As a world leader in diabetes care Novo Nordisk's aspiration is to defeat diabetes by finding better methods of diabetes prevention, detection and treatment. This includes initiatives contributing to activities to reduce the growth of diabetes related costs for society. The Changing Diabetes program has been developed to support these initiatives. The program entails various national and international initiatives, focussing on communication with and providing information to people with diabetes, their families, friends, educators, politicians, health care professionals, healthcare insurance companies, and other stakeholders. With the Changing Diabetes program Novo Nordisk wants to change and improve the way diabetes is treated and managed by society.

Novo Nordisk is a global pharmaceutical company with almost 90 years of experience in the field of diabetes care. The company offers innovative medicines, advanced administration systems as well as services to optimise the treatment of people with diabetes. Furthermore, Novo Nordisk sets the standard in the areas of haemostasis, growth hormone therapy and hormone substitution therapy.

Novo Nordisk has more than 30.000 employees in 76 countries, bringing products to patients in 179 countries. Novo Nordisk B.V. holds the third position in the 2011 Great Place to Work listing and is 16th on the European list of the 25 Best Multinational Workplaces in Europe 2011. This makes Novo Nordisk one of the best employers in The Netherlands in 2011.

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