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Experimenting with a bundled payment system for diabetes care in the Netherlands

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FOREWORD

Around the world, more and more people are developing diabetes, and their numbers have been increasing steadily for decades. That is certainly true of the Netherlands as well. Sharp rises in diabetes cases in the past, and the expected continuing growth in the foreseeable future, will have serious ramifications in terms of the burdens and costs of health care. Consequently, diabetes has long been one of the priority focuses in the chronic disease prevention policies of the Dutch Ministry of Health, Welfare and Sport.

Both the ministry and the health care profession acknowledge that the care of people with diabetes can and must be improved. Numerous initiatives to enhance the effectiveness and quality of diabetes management in the Netherlands have already been developed in recent years. Many of these focus on multidisciplinary cooperation. Some major stumbling blocks in the creation of collaborative arrangements in health care are the fragmented pricing of the various components of diabetes care and the inadequate funding of supporting services that do not belong to the direct provision of health care.

In 2004, the ministry wrote in its policy statement 'Diabeteszorg beter' ('Diabetes care better') that the management of diabetes must be improved. An action plan was developed in 2005 by the Diabetes Care Programme Task Force. The decision was made to implement bundled payment scheme for diabetes management, in conformity with the Health Care Standard of the Dutch Diabetes Federation (NDF). This has laid the groundwork for a broad innovative approach to chronic diseases.

Several years ago, the Netherlands Organisation for Health Research and Development (ZonMw) was commissioned to launch the Integrated Diabetes Care research programme, in which ten 'care groups' began working on an experimental basis with a bundled payment system for diabetes. RIVM has now evaluated that experiment and the results are presented in this report. I am very grateful indeed to ZonMw, RIVM and the participating care groups for their efforts to facilitate this important programme.

The present evaluation has generated a substantial amount of information about the process of pricing, delivering and insuring diabetes care in the form of bundled payments under the auspices of care groups. The report has also raised many issues that are of concern both for the policy process and for progress in health care practice. The evaluation data on the bundled payment arrangements for diabetes, as well as the experiences gained in the care groups, will be highly valuable for the future development of Dutch government policy on chronic diseases, in particular with respect to bundled payment arrangements.

This report forms a milestone on the route I set out in my 2008 policy statement on the programmatic approach to chronic diseases. The patients are the focal point of this policy. Health care providers work with patient organisations to create a full continuum of care, extending from early detection and health promotion to self-management and quality treatment and care. Bundled payment schemes, based on recognised health

care standards, will be a key instrument for ensuring sustainable, high-quality care for chronic diseases.

Many of the recommendations made in this report are consistent with other evidence that has already been reaching me from the field of practice. I have taken such information into account whenever possible in further developing government policy in this area. This report will help strengthen the conditions for successfully implementing integrated care for chronic diseases.

The Minister of Health, Welfare and Sport,

A. Klink

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KEY FINDINGS

Experimental implementation of a bundled payment system for diabetes care

In recent decades, the numbers of people with diabetes have risen sharply and the increase is set to continue in the future. This will have considerable ramifications for the provision of care and treatment to patients and for the burdens and costs of care. Both the Dutch Ministry of Health, Welfare and Sports and the health care providers acknowledge that the care of people with diabetes can and should be improved. Numerous initiatives to enhance the effectiveness and quality of diabetes care in the Netherlands have already been taken in recent years. Many of these developments involve multidisciplinary cooperation. Major stumbling blocks to such collaborative efforts are the fragmented funding structures of the respective components of diabetes care and the securing of funds for components that do not directly involve treatment or care. The latter components include the coordination of health care services, the information technologies and the collecting and reporting of reflective feedback data. They are essential for delivering cohesive care but are often funded on a project-by-project basis with no guarantee of continuity. The Dutch Health Ministry has therefore drafted a comprehensive funding plan for diabetes care. On an experimental basis, ten 'diabetes care groups' have been established in different parts of the country. These work according to a bundled payment system as part of the Integrated Diabetes Care research programme funded by the Netherlands Organisation for Health Research and Development (ZonMw). We have conducted a one-year evaluation study of this experiment and we report the results here. Our findings derive from data recorded by the care groups, from interviews with stakeholders and from patients' questionnaires.

Diabetes care groups of all shapes and sizes but GPs were always the major players

A diabetes care group is set up as a legal entity in which health care providers work together. The term *diabetes care group* refers to the principal contracting organisation of an integrated bundled payment contract, not to the team of health care providers that deliver the actual care. The care group serves as the main contractor and is responsible for organising the care and ensuring its delivery. In the care groups we studied, most services or care components were contracted by the care group individual health care providers or agencies (subcontractors) but a limited amount of care was delivered directly by providers that were affiliated with the care group. There was considerable variation in the ways in which the evaluated care groups were organised. Several legal formats were encountered: private limited liability companies, cooperatives, limited partnerships and foundations. Half of the care groups were made up of general practitioners only; the others had people or agencies from other disciplines as part-owners. The organisational structures of several groups were not in full compliance with the Health Care Governance Code, particularly in terms of how supervision and oversight were organised.

Variation in content and rates of the bundled payment contracts

A bundled payment system involves standard diabetes care – treatment and care for people diagnosed with diabetes but without serious complications. The bundled payment contracts define which components of diabetes care are purchased as an all-inclusive product, which is covered as such by the health insurance companies. This is based

on the Diabetes Health Care Standard established by the Dutch Diabetes Federation (Dutch abbreviation: NDF). All the bundled payment contracts we evaluated were in broad conformity with the NDF Health Care Standard. All provided the recommended 12-month and 3-month check-ups, the annual eye and foot examinations and (in eight of the nine contracts) the laboratory examinations. Differences between the contracts lay in arrangements made for additional diabetes-related GP consultations, help and guidance in smoking cessation or reduction, or foot care. These health care services are not described precisely in the NDF Diabetes Health Care Standard, leading to varying interpretations of the care components to be contracted. Early bundled payment contracts contained only limited provisions for justifying the content and quality of care to health insurance companies but this occupied an increasingly prominent place in newer contracts. The rates charged under the bundled payment contracts varied widely, from €258 tot €474 per patient per year. The price differences were explained in part by actual differences in the care provided. The real costs of the diabetes care bundles are not known.

Individual subcontracted health care providers felt the care groups had an overly strong negotiating position in the purchasing process

The introduction of bundled payment divides the existing health care purchasing market into two parts: one market in which health insurance companies contract care from diabetes care groups and one market in which diabetes care groups subcontract services from individual providers. In the former market, the present trend to set up only one care group per region raises the risk of insufficient competition, leading to suboptimal care or excessive costs. Health insurers acknowledged this danger but most indicated that no major problems had occurred as yet. In the latter purchasing market, individual health care providers reported that the negotiating advantage of the care groups was too strong; providers risked receiving no contract at all or one containing unreasonable conditions (a danger of exclusion or exploitation). The permanent introduction of a range of bundled payment systems for different diseases is expected to strengthen the negotiating position of the care groups even further vis-à-vis both the health insurance companies and the individual health care providers.

Positive effects of bundled payment on the work process, but IT was an inhibiting factor

Bundled payment makes the care group responsible for the quality of the organisational arrangements in diabetes care. Cooperation between a care group and its individual health care providers was formalised in contracts or subcontracts that defined which services would be provided by whom and at what price. The care groups set requirements for continuing and further training and for attendance at multidisciplinary consultations. Agreements were also made about the recording and reporting of care-related data; this would enable the care groups to supply reflective information to their contracted providers about their performance in comparison to the group as a whole. In most groups, however, the IT systems were not yet adequate to deliver the information needed by health care providers, care groups and health insurers.

Quality of diabetes care was good, but not measurably improved one year after implementation of bundled payment

Although a large proportion of the diabetes patients was periodically checked for HbA1c, blood pressure, cholesterol and body mass index (BMI) in accordance with the NDF Diabetes Health Care Standard, there was still room for improvement, especially as to the annual foot and eye examinations. In terms of patient outcomes, no considerable changes were seen at the end of one year. Although good patient outcomes were achieved by the care groups, these were also present at baseline. There was still room for improvement in the prevention of risk factors for cardiovascular disease (high blood pressure and body weight). Nor had the introduction of bundled payment led to further improvements in patient satisfaction in terms of the cooperation and coordination between participating health care agencies and health care providers.

Clients' freedom of choice under pressure

Clients were allowed to receive diabetes care exclusively from providers who were affiliated with a care group. All of the care groups we studied worked with preferential health care providers. This meant they had not signed contracts with all available providers but only with those with whom they had managed to reach firm agreements about the quality of the services, availability, the recording and reporting of data and rates. For some care components (including the annual eye examinations and, in some groups, dietary counselling), care groups had contracted only one provider. The contracting of preferential providers constrained or eliminated the clients' freedom of choice, even though many clients may have been entitled to this in their health insurance policies. A further finding was that client participation in many care groups had not yet sufficiently materialised. In most groups it consisted merely of periodic consultations with the regional patients' association. The care groups have not yet determined how to give patients a meaningful role in the newly set up organisations.

Several issues remain with regard to the funding of integrated diabetes care bundles

A number of components of diabetes care had not yet been included in some or all of the new bundled payment contracts. Nor had the exact content of the diabetes care bundles been firmly defined. The risk exists that certain components were paid for twice. For example, an ophthalmologist might claim on the health insurance for performing an eye examination that was already funded within the bundled payment contract. Or, as was indeed the case in certain care groups, annual eye examinations might be contracted within the bundled payment system but not performed on all clients registered with the group. Many of the margins arising in this way would be to the advantage of the care group. We could not determine how many patients were involved. Another source of 'double costing' lay in so-called bypass constructions. Care components not fully contracted within the bundled payment system might be claimed later via the ordinary insurance system. In one care group, for example, about one fifth of the patients received referrals from the GPs for overweight or hypercholesterolaemia diagnoses because of the limited dietary counselling in the care bundle contracted.

Effects on the macro costs of care are unknown

The Health Ministry expects that comprehensive health care funding will both improve the quality of care and reduce its costs. It is not yet possible to estimate what effects bundled payment for diabetes care will have on the macro costs of health care. On the one hand, costs are expected to decline over the long term as hospital care is substituted for outpatient care in the care groups and as fewer referrals are made to secondary care. On the other hand, wider implementation of integrated diabetes care may lead to intensified health care utilisation by many diabetes patients (both in standard diabetes care and in hospitals), as well as to increased uptake by patients who fall just outside the diagnostic criteria for diabetes. A rigorous economic analysis of the bundled payments for diabetes care in terms of macro health care costs will be needed to document these partially opposing effects.

Evaluation found both positive and negative effects as well as several unknowns

The above findings show that the introduction of experimental bundled payments for diabetes care has had both positive and negative consequences. Additional issues have also emerged that would need to be resolved before the bundled payment system for diabetes can be implemented on a structural basis. In view of the critical role now played by the NDF Health Care Standard in the purchasing of services, this Health Care standard needs to be clarified and expanded. More specifically, some health care activities need to be defined more unambiguously; others, which are not part of direct care provision but are nonetheless essential to the cohesive delivery of diabetes care, need to be specified. More attention also needs to be focused on the fit between the content of the Diabetes Health Care Standard, the bundled payment contracts, the mandatory basic health insurance package, complementary voluntary health insurance and the compulsory policy excess paid by patients. Much effort will be required to develop IT capabilities that will meet the needs of health care providers, care groups, insurance companies and patients. Additional sticking points are the constraints on clients' freedom of choice, the lack of clarity about responsibilities and accountabilities, the overly strong negotiating position of the care groups and the failures to comply with the Health Care Governance Code.

Open questions in the implementation of the bundled payment approach for other chronic diseases

The Dutch Health Ministry has announced plans to introduce bundled payment systems for a number of different illnesses. Beyond the issues that arose in the bundled payments for diabetes care, there are also other questions to be addressed if additional bundled payments are to be implemented on a structural basis. One of these involves the creation of health care standards by the appropriate disciplines; these have not yet been established for all the diseases now nominated for comprehensive funding. In view of the new function that such health care standards are being assigned in the purchasing process for health care services, there is a danger of considerations not specific to the care and treatment of the diseases affecting the formulation of such health care standards. Clearly, health care standards that put great emphasis on the required skills and competences will give the health care providers a strong negotiating position as the standards are translated into care components to be contracted within a care bundle. A second issue involves multi-morbidity. Patients with more than one chronic condition will be involved in more

than one disease-specific care programme. Some of their complex care needs may not then be adequately met by any of the disease-specific care bundles. It is also important to ensure that the creation of bundled payment systems for different diseases does not erect new funding barriers in the health care system. The bundled payment systems must be articulated and integrated in ways that avoid any new compartmentalisation.

1 INTRODUCTION

1.1 Background

Diabetes is a widespread illness, affecting 4% of the Dutch population
Diabetes mellitus is a widely prevalent chronic disease that can have serious long-term complications, including cardiovascular diseases, blindness and damage to the kidneys and nervous system. In recent decades, the numbers of people with type 1 or type 2 diabetes mellitus have risen sharply in the Netherlands, as they have worldwide. As of 1 January 2007, 670,000 Dutch people were known to have diabetes. In the course of that year, 71,000 people were diagnosed with diabetes mellitus for the first time (Baan et al., 2009a). In addition to the patients with diabetes who are known to their general practitioners (GPs), there are many more people who have diabetes without knowing it – at least 250,000.

Steep rise in diabetes cases is set to continue
In the 2000-2007 period, the year's prevalence of diagnosed diabetes mounted by 55%. The increase is expected to continue to an estimated 1.3 million people with diagnosed diabetes by 2025, or 8% of the Dutch population. Most of them will have type 2 diabetes. Broadly speaking, the increase can be attributed to three factors. One of these is the ageing population. In addition, GPs have become more alert to diabetes in recent decades, resulting a more systematic, proactive case-finding approach. A third important factor involves the growing numbers of people who are overweight or have other risk factors for diabetes (Baan et al., 2009b).

Growing demand for care due to increasing patient numbers
The recent rise in the number of diabetes patients and the anticipated growth in the near future will have considerable ramifications both for the provision of care and for the health care burden and related costs. The bulk of the Dutch health care budget is already spent on chronic conditions, including diabetes; the proportion is set to expand in the future (VWS, 2008b). Both policymakers and health care providers acknowledge that the care of people with diabetes can and must be improved. Numerous initiatives to enhance the effectiveness and quality of diabetes management in the Netherlands have already been developed in recent years. Some of these focus on the organisation of care and the necessary operating conditions and others on the development and provision of specific care components. The fragmentary funding of various components forms a major obstacle to the establishment of long-term cooperative arrangements (Baan et al., 2003; IGZ, 2003; Taakgroep, 2005).

Greater quality and efficiency needed in care processes

Doctors already know how to treat diabetes effectively. Standard diabetes care[1], intended for people diagnosed with diabetes but without serious complications, was developed by the Dutch Diabetes Federation (NDF) and formally laid down in its Diabetes Health Care Standard Type 2 (NDF, 2003), which was later revised (NDF, 2007; see *box 1.1*). The aim of standard diabetes care is to reduce symptoms, enhance quality of life and to prevent or delay the development of complications. If the treatment objectives of standard care are not attained, or in the event of insufficient improvement, acute dysregulation or substantial complications, patients are generally referred to secondary care specialists for 'complex care'.

Box 1.1: NDF Health Care Standard Type 2 Diabetes

The NDF Diabetes Health Care Standard outlines the various components of 'good' diabetes care (NDF, 2007). The standard basically defines diabetes management in terms of the specific health care services (the 'what') that are needed. They set out which components of care are required, without specifying who is to provide these or where and how they are to be delivered. Health care providers have to be qualified and accredited in accordance with the Individual Healthcare Professions Act (Dutch abbreviation: Wet Big).

The required components are
- one elaborated 12-month check-up
- three 3-monthly check-ups
- one annual foot examination
- one annual eye examination
- dietary counselling (frequency dependent on length of patient's diabetes history)
- support and counselling in smoking reduction or cessation
- laboratory testing (HbA1c, LDL cholesterol, kidney function, microalbuminuria)
- patient education and support in self-care (self-management).

The NDF Health Care standard specifies the treatment and care to be provided after a patient has been diagnosed with diabetes. The diagnosis itself is not covered by the health care standard. Besides giving a description of diabetes care in terms of the needed health care services, the Health Care standard also describes the involved 'core disciplines'. The core disciplines are to be represented in every 'care group' – the principal organisations contracting the care. The remaining care providers are involved in the provision of diabetes are not part of the care group. With these care providers ongoing working arrangements are to be made.

The NDF Health Care standard has recently been supplemented by two annexes: 'Type 1 Diabetes – Adults' and 'Type 1 Diabetes – Children and Adolescents'. In 2008, the NDF care standard was supplemented by the 'e-Diabetes Dataset'.

Patients' version of the NDF Health Care Standard: the Diabetes Care Guide

On the basis of the NDF Health Care Standard and in consultation with the NDF, the Netherlands Diabetes Association (DVN) has developed a version of the Health Care standard designed for patients. This Diabetes Care Guide (in Dutch: Diabetes Zorgwijzer; DVN, 2008) helps patients to ensure that they receive the care they are entitled to under the NDF Health Care standard.

In 2004, the Dutch Minister of Health sent a policy letter to the Parliament entitled Diabeteszorg beter ('improving diabetes management'). It argued that the care of people with diabetes needed improvement because practice data showed that only one third of them were receiving the right treatment (according to the NDF health care standard) and

1 Treatment is designed to maintain optimal blood glucose values through a healthy diet and lifestyle. Medication in the form of pills and/or insulin is often included. Treatment also focuses on cardiovascular risk factors, such as high blood pressure or cholesterol, on reducing overweight and on the early detection of diabetes-related complications in periodic check-ups (including eye and foot examinations).

that the other two thirds were receiving mediocre or wholly inadequate treatment (VWS, 2004). In the same year, the weekly journal Medisch Contact published an article that argued that the organisation of diabetes management was 'unnecessarily convoluted' and that 'the growing numbers of patients with diabetes compels us to reflect on a suitable organisational framework for Dutch diabetes care' (Rutten, 2004).

Care groups and bundled payment approach as a possible strategy for improvement
In standard diabetes care, numerous developments have taken place in recent years that were aimed at improving the effectiveness and quality of treatment and care. To rapidly ensure that quality diabetes care is available to all people with diabetes nationwide at an acceptable cost, efficiency improvements in the care provision process are urgently needed. In 2005, the Diabetes Care Programme Task Force drew up an action plan to improve diabetes management on a nationwide scale (Taakgroep, 2005). This was to be based on three premises: (1) quality care for people with diabetes requires a multidisciplinary approach; (2) the necessary health care activities can largely be delivered in the primary care sector; (3) the care must conform to the NDF health care standard.

The action plan was designed to create conditions in which health insurance companies can purchase good-quality care from a diabetes care group that is organised on a multidisciplinary basis and provides health care services that conform to the NDF health care standard. A bundled payment system for diabetes could be a key resource in this targeted purchasing strategy (VWS, 2005).

1.2 The ZonMw Integrated Diabetes Care research programme

In response to the report by the Diabetes Care Programme Task Force, the Dutch Health Ministry commissioned the Netherlands Organisation for Health Research and Development (ZonMw) to set up a research programme on integrated diabetes care. The stated aims were:

- to promote an organisational framework for diabetes management within which 'diabetes care groups' gain experience in using a provisional bundled payment system as a new approach to funding. The RIVM was commissioned to carry out an evaluation study of the experiences with this new working and funding procedure. The results are presented in this report.
- to promote diabetes education via a sub-programme. This topic is not addressed in the present report.

The purpose of this evaluation study is to clarify the process of organising diabetes care in care groups and working with bundled fees, as well as to assess the satisfaction of all stakeholders and the quality of the care.

Our evaluation began on 1 January 2007. We gathered both quantitative and qualitative data. We monitored the diabetes care groups for 12 months in their efforts to develop

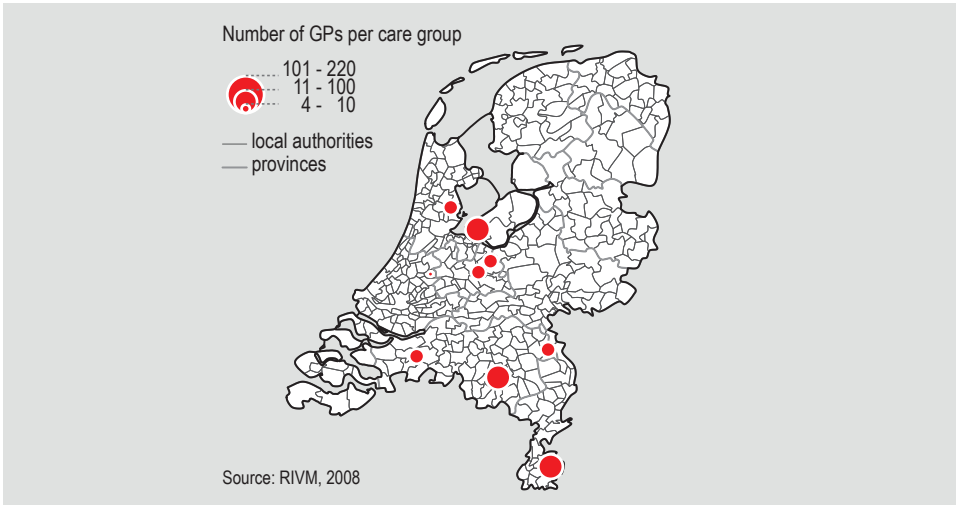


Figure 1.1: Care groups included in the evaluation study.

their organisations and to work with the bundled payment system. On two occasions in the study period, we administered questionnaires to patients and extracted data from patient records. A detailed account of the study period and the data collection is given in *appendix 2*.

The evaluation initially included ten diabetes care groups. During the course of study, one group proved unable to continue participation for various reasons (see *appendix 2*, *section A2.1*). The findings in this report therefore apply to nine care groups.

The legal basis for the experiment with the bundled payments derives from the policy provision Innovation in Support of New Health Care Health Services as applied by the Dutch Healthcare Authority (NZa, 2009a). This provision enables health insurers and health care providers to experiment on a small scale with new or modified health care services for up to three years.

1.3 Broader framework

At the time the Integrated Diabetes Care research programme was commissioned, the assumption was that the Health Ministry would use the results to decide whether bundled payments would be implemented nationwide (VWS, 2005; VWS, 2008b).

After this ZonMw programme began, the ministry continued to develop its policy on chronic diseases. Its policy letter entitled Programmatisch Aanpak Chronische Ziekten ('programmatic strategy for chronic diseases') set out four aims: (1) the growth in the numbers of people with chronic diseases must be curbed; (2) the age of onset of chronic diseases must be delayed; (3) complications arising from chronic illnesses must be prevented or delayed; (4) people with chronic diseases must be enabled to cope with their condition as best as possible, in order to ensure the best possible quality of life (VWS,

2008b). The Health Ministry has shaped these aims into a 'programmatic strategy', also known as disease management.

This approach can promote linkage and improvement in relation to three essential focuses: more cohesion between prevention and treatment, encouragement of self-management and better integration of multidisciplinary care. The NDF Health Care Standard forms the basis of the programmatic strategy; diabetes care is to be delivered according to these standards in multidisciplinary cooperation. The ministerial policy letter highlights diabetes care as the priority or exemplary implementation area for the chronic disease management strategy of the government. The Health Ministry provides incentives for development and improvement of health care standards for diabetes, vascular risk management, chronic obstructive pulmonary disease (COPD), heart failure, depression, overweight and obesity, arthritis and dementia. It is currently also exploring the options for a Health Care standard for patients who have had a stroke.

In late 2008, the Health Minister announced policy proposals to fund the care of chronic diseases through bundled payment schemes (VWS, 2008a). These are based on the needs or illness of the patients. The ministry expects bundled payment to promote disease management, thereby enhancing both the quality and the efficiency of the care (VWS, 2008a). In a letter in mid-2009, the minister submitted further details on the policy plans to Parliament for preliminary scrutiny (VWS, 2009a).

1.4 Structure of this report

Our evaluation has yielded a wealth of information. We report our most important findings as answers to seven key questions, deriving from the research questions addressed in the evaluation study. Several appendices contain more detailed information on specific topics. The seven key questions are as follows:

1. What are the basic premises of the bundled care model?
2. How are the diabetes care groups organised in practice?
3. What are the principal features of bundled payment schemes for diabetes?
4. How does the health care purchasing process work?
5. How is the work carried out?
6. What quality of care is provided by diabetes care groups at the end of the 12-month period?
7. How satisfied are the various stakeholders?

Chapter 2 is an introduction to the Dutch health care system. *Chapter 3* provides answers to all seven key questions. *Chapter 4* reviews and discusses our most important conclusions. It also raises new issues relevant to the bundled payment approach and its rollout to other chronic diseases. The Key Findings section at the beginning of the report summarises the most important conclusions and recommendations; it may be read as an executive summary.

Appendix 1 lists the people at the RIVM who have contributed to the report, as well as two external groups of experts: the ZonMw Steering Group and the Research Advisory Committee. The policy-related management of the evaluation is in the hands of the steering group for the ZonMw Integrated Diabetes Care research programme. Its members were appointed by ZonMw in a personal capacity because of their expertise in the field of diabetes management or related research. On the basis of the findings of the evaluation, the steering group will draw up recommendations both for policy and the field of practice. The quality of the research in this theme report has been overseen by the experts in the Research Advisory Committee. *Appendix 2* gives a detailed description of the design and methods of the evaluation. *Appendix 3* explains the organisational structures of the various care groups we studied. In *appendices 4* and *5*, we report the results from the various data modules of the evaluation: the assessment of the quality of care based on data from patient files, patient questionnaires and interviews with health care providers, insurance company officials and other relevant stakeholders. The final two appendices discuss potential shifts in liabilities and responsibilities that result from the implementation of care groups (*appendix 6*) and market power in relation to care groups (*appendix 7*).

2 THE DUTCH HEALTH CARE SYSTEM

The Netherlands has a unique but complex health care system. Insight in the idiosyncrasies of the system may help to appreciate the significance of the introduction of the bundled payment model for diabetes care and the results of the present evaluation. This chapter focuses on the organisation and funding of the Dutch health care system, against the background of the system reforms introduced in 2006. But first, some population and demographic data are presented *(box 2.1)*.

Box 2.1: Population and demographics

March 2010, almost 16.6 million people are living in the Netherlands, 49.5% being male. In 2009, 206,619 children were born and 140,527 people died. Infant mortality was 3.8 per 1,000 life born children. Life expectancy at birth was 78.6 for males and 82.5 for females (CBS Statline, 2010). Like other Western countries, the Dutch population is ageing. That process is expected to reach its peak at the end of 2039. The percentage of persons over 65 years in that year is estimated to be 25.1% as compared with 15.3% in 2010 (CBS Statline, 2010).
Over 20% of the Dutch population has a foreign background: 11.2% non-Western (first and second generation) and 9% non-Dutch Western. The largest groups of people of non-Western origin are Turkish people (384,164), Moroccans (349,270) and people from Surinam, a former Dutch colony (342,016).

Health system reform

2006 was a landmark year for the Dutch health system. Minor changes to the health care system had been gradually introduced in previous decades, to culminate in the introduction of market forces and competition on a much wider scale in 2006. By opening up the health care market to more competition it was aimed to keep health care affordable while ensuring good quality care and accessibility for all. The market is not entirely free but a regulated market, as it is subjected to laws and regulation to safeguard public interest. Quasi-governmental, independent oversight bodies monitor whether these rules are observed by the market players (Schäfer et al, 2010). To make the health care market work, the stakeholders in health care, the care consumers, the providers of care and the health insurers were assigned a much more prominent role while the government, although still pulling the final strings, assumed a less controlling role. The legal foundation for the new health system was laid by the Health Insurance Act (Zorgverzekeringswet (Zvw)), the Health Care Institutions Admission Act (Wet toelating zorginstellingen (Wtzi)) and the Health Care Market Regulation Act (Wet marktordening gezondheidszorg (Wmg)), which came into force in 2006.

The main features of the new health system are a mandatory 'basic' health insurance for everybody covering essential medical care, mandatory acceptance by the insurer and switching insurer by enrolees is allowed, risk equalisation for insurers, health insurers as private companies, limited price negotiations, selective contracting on certain conditions and in-kind and restitution policies.

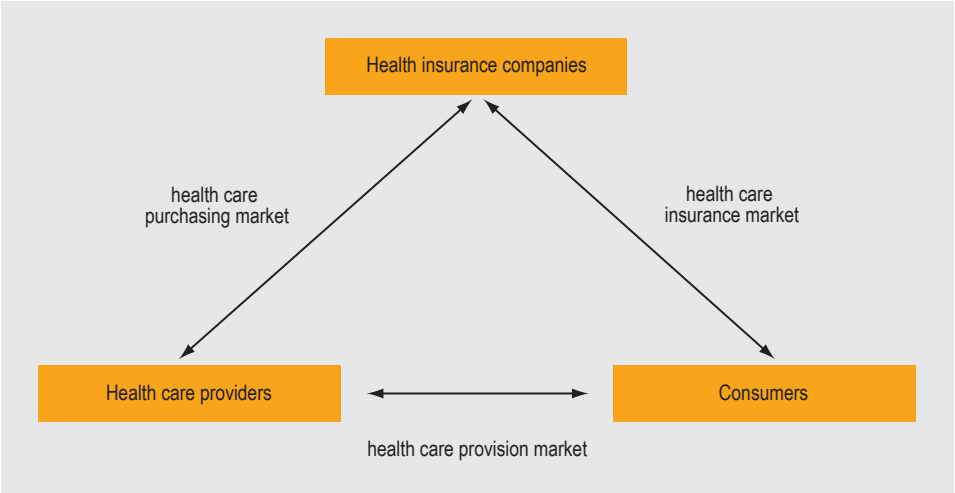


Figure 2.1: The existing Dutch Health care system and its three markets.

Health care market

The health care reforms introduced market forces in the health care market to a far wider extent than before. The three market players, the patients or consumers, the care providers and the insurance companies, were consigned far more prominent roles in making the health care market work. The health care market consists in three subsidiary markets: the *health care provision market*, the *health care purchasing market* and the *health insurance market*. The three markets are interrelated: for a single market to work, the other markets have to work too (see *figure 2.1*).

On the *health care purchasing market* health insurers purchase care from health care providers. For this market to work properly, they should purchase good-quality care at competitive prices. Insurers indicate, however, that as yet quality of care plays hardly any role in the purchase of care, as information on quality of care is scarce (NZa, 2010a). Still, extensive efforts are being made to make quality of care more transparent. Such efforts include the development and use of quality indicators by, e.g., the Health Care Inspectorate (Inspectie voor de Gezondheidszorg (IGZ)) and in the framework of the Transparent Care programme (Zichtbare Zorg). To monitor consumer experiences with (quality of) care, the Centre for Consumer Experience in Health Care (Centrum Klantervaring Zorg, (CKZ)) has developed Consumer Quality indices. Results, although still limited, are made accessible through websites like kiesBeter.nl.

Competition on price is possible to a limited extent only. As to hospital care, a distinction is made between an A- and a B-segment. The rates for services provided in the B-segment are the result of negotiations between providers and insurers, while the rates for services in the A-segment are fixed. The size of the B-segment is growing; between 2006 and 2010 it increased from 6% to over 30% (CBS, 2010). The rates for physiotherapy have been freely negotiable since 2008. The rate of GP care is negotiable for a small part only and concerns subsidies for 3 'modules' for GP practice assistance (Praktijkondersteuning Huisarts (POH)),

Table 2.1: Health insured mobility, (2005-2009) (Vektis, 2010)

	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Switchers total (%)	18.1	4.5	3.5	3.5	4.1

a population-related subsidy and a subsidy for Modernisation and Innovation (M&I) (NZa, 2010a). The influence of health insurers on the purchasing market has probably been most pronounced in relation to medicines, due to the introduction of a preferred medication list. Unless medically indicated, only preferred medicines are reimbursed by the health insurer. For the remainder of care, competition is possible on how and by whom care is delivered, through, e.g., selective contracting and substitution of care. Selective contracting is still little employed by health insurers. For hospital care, it is limited to services like specific bundled payment schemes and independent treatment centres (Zelfstandige Behandel Centrum (ZBC)). In GP care, an increasing number of GP tasks are taken over by practice assistants and nurses.

On the *health insurance market* health insurers supply health insurance, which is purchased by consumers. Since the Zvw, all health insurers are private companies and allowed to make a profit and pay dividends to shareholders (Schäfer et al, 2010). However, there are still a number of health insurance companies that operate on a non-profit basis.
Health insurers are allowed to compete on quality of care, services and premium. They can do so by for instance purchasing care from providers of their choice, operating certain bundled payment schemes or running their own care facilities. After the introduction of the Zvw and the mandatory basic health insurance in 2006, competition among health insurers has been especially fierce on premium, even to the extent that they incurred losses. They made a profit on the basic insurance for the first time in 2009. Competition on coverage of the basic health insurance package is not possible, as under the Zvw coverage it is the same for all basic packages. For the insurance market to work, consumers need to be able to switch health insurers. This is provided for by the Zvw, which allows the insured to change insurer at the beginning of each year. In 2006, 18.1% of the enrolees took advantage of this provision and switched. Since then, this percentage has dropped to pre-Zvw levels of about 3.5% (see *table 2.1*).

Under the Zvw, insurers have an obligation to accept all applicants living in the Netherlands or abroad who are compulsorily insured under the Zvw (Zvw, 2010). To compensate insurers for enrolees with a predictably higher care consumption and thereby to prevent risk selection, there is a risk equalisation scheme. The scheme distributes funds from the Health Insurance Fund across the health insurers on the basis of the risk-profiles of enrolees. Information on insurers and insurance packages is provided by websites like kiesBeter.nl and independer.nl. They present for all health insurers, for both basic and complementary health insurance packages, conclusive lists of services covered plus premiums. This allows consumers to choose a package according to their needs or on premium.

On the *health provision market* health care suppliers provide care to care consumers. Still, as previously stated, information on quality of care is hardly available, making

it hard for the care consumer to make an informed choice regarding care providers. Consumers are increasingly using the Internet to look for information on care providers and quality of care. The website kiesBeter.nl offers information on quality of care for a number of care services and enables a comparison between care providers. Performance qualifications are based on data from the programme Zichtbare Zorg and data from the providers themselves. However, for a large number of care providers (some) quality data are still lacking. The website consumentenbond.nl allows the consumer to select hospitals that offer the best treatment for 10 common diagnoses, including diabetes. The qualifications are based on CQ indexes and the results of expert panels. Consumers with a personal health budget (persoonsgebonden budget (pgb) are able to buy care from either professional or informal caregivers of their own choice, or from both. Very little is known of the quality of care funded by the pgb.

Health insurance system

The Dutch health insurance system consists in three 'compartments' (Schäfer et al, 2010). The *first compartment* comprises a compulsory social health insurance scheme for long-term care, which is regulated by the Exceptional Medical Expenses Act (Algemene wet bijzondere ziektekosten (Awbz)). The Awbz is funded by social security premiums, taxes and income-related co-payments. The average Awbz premium paid by everybody amounts to €320 per month, that is 12.5% of income before tax. Especially for people living in institutions with a limited income, co-payments may take up the major part of their income. The Awbz covers chronic care that is in principle too expensive for the private market. It includes nursing and residential care for the elderly, the mentally and physically handicapped and chronic psychiatric patients. Everyone who lives in the Netherlands is insured under the Awbz. To be eligible for Awbz care, a request must be submitted to the Centre of Needs Assessment (Centrum Indicatiestelling Zorg (CIZ)). CIZ determines whether one is entitled to Awbz care as well as the kind and amount of care one is entitled to. The responsibility for organising and purchasing that care remains with regional care offices (zorgkantoren), which are affiliated with health insurance companies. Applicants may opt for care in kind or, with some exceptions, for a pgb.

The *second compartment* consists in a social health insurance scheme for basic health insurance, which is regulated by the Zvw. It substitutes the former two-tier system of state-regulated compulsory sickness funds for people on a lower income and private health insurance schemes for people on a higher income. The scheme is paid for in two ways. Every insured person (with the exception of children up to the age of 18 who are paid for by the state) pays a 'nominal' flat premium to the health insurer and an income-related contribution to the Health Insurance fund. The nominal premium is the same for people with the same insurance policy regardless of age, income, wealth or health and averaged €1.145 in 2010. Collective contracts and voluntary excess (up to €500) are the exception to this rule, as they allow for a premium discount of up to 10% and €30-300 respectively. Collective contracts are contracts between insurance companies and specific groups of people, like company employees or patient organisations. In 2010, 64.3% of all insured had a collective insurance with an average premium discount of 6.4%. Although

growing, the proportion of insured with voluntary excess is small, 6% in 2010 (Vektis, 2010). To compensate low-income households for the nominal premium, they are entitled to a health care allowance under the Healthcare Allowance Act (Wet op de zorgtoeslag (Wzt)). In 2010 the allowance amounted to a maximum of €735 and €1,548 depending on the number of persons per household and income (VWS, 2010). Coverage includes care provided by GPs and medical specialists, hospital care, dental care up to the age of 18 and dentures, pharmaceutical care (in accordance with the Medicine Reimbursement System), maternity care, transportation by ambulance and taxi, necessary medical care when abroad and, to a limited extent, certain types of allied health care and mental health care (CVZ, 2010a).
The contribution to the Health Insurance fund is levied through taxes. For employees it is deducted from their salary by their employers, who are legally obliged to compensate their employees for the contribution. Self-employed people pay their contribution themselves through taxes. Because of the employer compensation, the contribution for employees is higher than for self-employed people, with a maximum of €2.339 and €1.642 per year respectively (Belastingdienst, 2010).
In an attempt to make people more aware of the costs of health care, compulsory excess for everybody was introduced in 2008. In 2010 the compulsory excess, which is indexed each year, amounts to €165 (CVZ, 2010b). Under certain conditions, people are compensated financially for the compulsory excess to a maximum of €54.

The *third compartment* consists in the complementary voluntary health insurance. Coverage and premium are determined by the health insurers; all health insurers offer a variety of policies against different premiums. Coverage may include care not covered by the Awbz or Zvw, like dental care for adults over 22 years old, additional allied health care services and medical aids, as well as co-payments for, e.g., ambulatory mental care. It is possible to take out a basic health insurance and complementary insurance with different companies. However, this is done by less than 1% of the insured. A small, though growing, proportion of the insured does not take out complementary insurance, 7% in 2006 versus 14% in 2010, mainly because of cost considerations.

In addition to Awbz home care, there is home care regulated by the Social Support Act (Wet maatschappelijke ondersteuning (Wmo)). The Wmo came into force in 2007, making local councils responsible for the funding and provision of support and home care and allowing them to tailor the provision of care to the needs of the local population. The target population of the act consists in chronically ill people, disabled people and the elderly in need of support. The allowance depends on income, age and household composition and the local council.

Control and oversight

There are four main organisations that watch over the performance of health care and the health care market.
The *Health Care Insurance Board* (College voor Zorgverzekeringen (CVZ)) advises the Ministry of Health as to coverage of the basic health insurance. It does so on the basis of

care-related as well as financial and social considerations. The final decision about coverage is made by the ministry. CVZ manages the Health Insurance Fund and the Exceptional Medical Expenses Fund and distributes the funds among care offices (Zorgkantoren) responsible for organising and purchasing long-term Awbz care and health insurers. As such, it operates the risk equalisation scheme. CVZ also handles the care-related paperwork of pensioners and benefit recipients living abroad, it reimburses the cost of care for those with conscientious objections to health insurance and collects premiums from people who have failed to take out health insurance or to pay their premiums.
The *Dutch Healthcare Authority* (Nederlandse Zorgautoriteit (NZa)) has a special role as supervisor, market maker and regulator in health care and long-term care. NZa monitors competition and determines maximum tariffs. NZa establishes rules, budgets and fees for the part of health care that is regulated and formulates conditions for market competition for the liberalised market (NZa, 2010b). NZa also acts as the supervisor of the healthcare market and monitors the conduct of providers and insurers on the curative and long-term care market and monitors whether they act in accordance with the Zvw, the Awbz and the Wmg. The ultimate aim is to protect the care consumers by safeguarding their freedom of choice and legal rights as well as to attain market transparency.
The *Healthcare Inspectorate* (Inspectie voor de Gezondheidszorg (IGZ)) focuses on the quality of health services, preventive care and medical products, ultimately to promote public health. It does so by applying measures, such as advice, encouragement, pressure and coercion and advising responsible ministers. The IGZ acts independently of party politics and the current care system (IGZ, 2010).
The *Netherlands Competition Authority* (Nederlandse Mededingings autoriteit (NMa)) enforces compliance with the Dutch Competition Act, takes action against parties that participate in cartels by, for example, fixing prices, sharing markets or restricting production; takes action against parties that abuse a dominant position and assesses mergers and acquisitions (NMa, 2010).
As supervisors of financial institutions, the Netherlands Authority for the Financial Markets (Autoriteit Financiele Markten (AFM)) and the Dutch Central Bank (De Nederlandsche Centrale Bank (DNB)) also watch over health insurers.

Health care expenditure

In 2009, health care expenditure amounted to almost €84 billion, with hospital care and care for the elderly together accounting for over 40% of that amount (see *table 2.2*) (CBS, 2010). Costs of care have risen by 5.8% in 2009 compared to 2008. Over the last few years, growth in the volume of care has been the major determinant of the rise in costs (Westert et al., 2010).

Health expenditure as a share of gross domestic product (GDP) rose from 13.3% in 2008 to 14.7% in 2009. This increase is mainly due to a drop in GDP (–4.0%) due to the economic recession combined with a continued growth in healthcare spending.
Expenditure per capita was €5,069 in 2009 versus €4,818 in 2008 (CBS, 2010).

Table 2.2: Health care expenditure (million €) by (groups of) providers (CBS, 2010).

	2007	2008*	2009*	2008-2009**
Providers of health care - Total	43,138	46,382	48,602	5.6
Hospitals and medical specialists	18,275	20,371	21,353	7.3
Mental health care providers	4,634	4,895	5,470	11.8
GP practices	2,425	2,471	2,505	2.7
Dentist practices	2,021	2,215	2,371	8.1
Allied health care providers and midwife practices	1,602	1,649	1,831	7.6
Municipal health care services	708	789	781	6.4
Occupational health care and safety agencies	1,177	1,150	1,272	5.0
Providers of medicines and medical goods	6,020	6,103	6,200	1.7
Providers of therapeutic equipment	2,634	2,993	2,636	-10.0
Providers of support services	1,320	1,404	1,640	9.1
Providers of other health care	2,322	2,341	2,545	5.1
Providers of social care - Total	28,183	30,223	32,106	6.2
Providers of long-term care for the elderly	13,974	14,774	15,466	4.7
Providers of care for the disabled	6,626	7,194	7,844	9.0
Providers of other social care	7,583	8,255	8,796	6.6
Administration and management organisations	3,040	2,992	3,100	3.6
Total health care expenditure	**74,362**	**79,091**	**83,809**	**5.8**

* provisional figures; ** %-mutation

3 ASSESSMENT OF THE SEVEN KEY QUESTIONS

Evaluation method
For the evaluation study we collected data from (1) the patient record systems of the health care providers, (2) questionnaires completed by patients and (3) semi-structured interviews. A detailed description of the method is provided in appendix 2.

1) Patient record systems of health care providers
Content Each diabetes care group reported patient-level pseudonymous data (in terms of process variables and patient outcome variables) on the services delivered.
Time period The patient record data were collected for a 12-month period. The starting date of the baseline assessment was the same as the starting date of the care group's bundled payment contract (usually 1 January 2007); as contracts for some care groups were to take effect later, their baseline date was 1 April 2007. All patients who underwent an annual or three-monthly check-up within three months of baseline (with one month's leeway) were included in the sample. Each patient was tracked for 12 months (with one month's leeway) to ascertain what treatment, care and other health care services that patient received during that period.
Analyses The results of the baseline and 12-month assessments were compared using McNemar and paired t-tests. Comparisons between care groups were hampered by the fact that data could not be adjusted for differences in patient populations. Many patients entered the sample after the baseline assessment period, so that their baseline data were missing. Other patients began treatment after the baseline inclusion time and were therefore not included in the analyses.

2) Patient questionnaires
Content The patient questionnaire was composed of existing, validated scales that focused on the coordination and cohesion of the health care services delivered and on the patient's health, quality of life and lifestyle. The questionnaires were administered at baseline and at the 12-month assessment. In each care group, 250 questionnaires were distributed at baseline; an identical questionnaire could also be completed via the Internet. At the 12-month assessment, questionnaires were sent only to patients who had taken part in the baseline assessment and had consented to be contacted again. Care groups 5 and 8 had already carried out a patient experience survey previously. To avoid burdening their patients, we decided with ZonMw approval not to administer patient questionnaires in those groups. Care group 7 also did not distribute patient questionnaires due to delays in setting up the care group. In total, questionnaires were administered in six groups.
Time period The time period covered by the questionnaires was identical to the time period over which the patient record data were obtained.
Analyses In analysing the results of the patient questionnaires, we mainly used descriptive statistics (frequency tables). Due to the small numbers of patients surveyed per care group, we do not report significance levels for changes in the outcome measures by care group (see *table A5.1*).

3) Semi-structured interviews with health care providers and insurance officials
Content Semi-structured interviews, using a 'topics list' approved by the ZonMw steering group, were conducted in all care groups. The purpose was to gain more clarity about the experiences of the various stakeholding parties. More than 40 interviews were carried out at baseline with people from care groups, health care providers and insurance companies. Fewer interviews (20 in all) were held at the 12-month assessment, as these early follow-up interviews were found to yield little new information and largely to confirm the findings of the baseline interviews (data saturation). The interviews were administered by two interviewers (JS, BG) and were tape-recorded with the informants' consent.
Time period The time period covered by the interviews was identical to the time period over which the patient record data were obtained.
Analyses The taped interviews were transcribed and (after informants' approval) they were then anonymised before the data was entered into the analyses. The transcriptions were studied and analysed independently by three researchers (JS, LL, SH). The aspects reported here and the quotations cited were determined jointly by these three researchers.

3.1 What are the basic premises of the bundled care model?

Outline
The introduction of bundled care constitutes a change in the existing Dutch health care system. In this section, we examine the basic premises of the bundled payment model, indicating what changes it would entail for the existing model (see *chapter 2*). Many of these premises were not yet fully developed when our evaluation started. They have now become more clear, partly due to experiences gained in the evaluation.

Basic premises of the bundled payment model

Bundled payment entails comprehensive funding of standard diabetes care
The bundled payment model is designed to facilitate multidisciplinary cooperation between health care providers by eliminating existing financial barriers between care sectors and disciplines. This bundled payment system enables 'standard' diabetes care to be purchased, delivered and billed as a single product or service (Taakgroep, 2005). The scheme mainly serves people who have recently been diagnosed with diabetes, people whose condition is well controlled and those who have no serious complications (NDF, 2007). A bundled payment contract also covers consultations with (but usually not treatment by) secondary care specialists. Overhead costs such as management, coordination and office space may also be covered; these are difficult to budget under the existing health care model.

A bundled payment system is defined in terms of health care services prescribed by the NDF Health Care Standard

The NDF Health Care standard sets out a model to which good diabetes care should conform. It may also serve as a template in the purchasing of diabetes care. The NDF Health Care standard describes the care and treatment activities (the 'what'), but it does not specify the providers or the means of provision (the 'who', 'where' and 'how') of those activities. This definition, based on components of care, is meant to encourage task delegation and substitution (as far as is allowed under the wet Big). Because a bundled payment system specifies only components and not providers, it is not confined to the primary care sector and may be characterised as 'sector-independent'.

A legal entity is necessary

To enter into a contract for bundled payment, a legal entity is required. It serves as the principal contractor of the care and concludes bundled payment contracts with insurance companies. This principal contractor is also known as a care group. It either contracts and coordinates health care providers for the actual provision of the specified health care services or it provides certain or all of the care components itself. It is allowed to selectively contract agencies or individual health care providers with the aim of promoting and safeguarding quality and efficiency. As the principal contractor of the bundled payment scheme, it is contractually responsible for the coordination, cohesion and quality of the diabetes care. The NDF standard requires the core disciplines to be represented in every care group. By signing one diabetes care contract with a care group, insurance companies fulfil their duty to ensure necessary and appropriate health care services.

Introduction of care groups

The implementation of the bundled payment scheme has introduced a new player into the health care system: the care group. Care groups have been defined in various ways. In this report, we use the definition given in *box 3.1*.

Box 3.1: Definition of care group used in this report

A care group is an organisation with a legal identity in which affiliated health care providers take responsibility for coordinating and delivering chronic care to a specified patient population, often in a particular geographical region, on the basis of bundled payment contracts. Such contracts contain provisions concerning

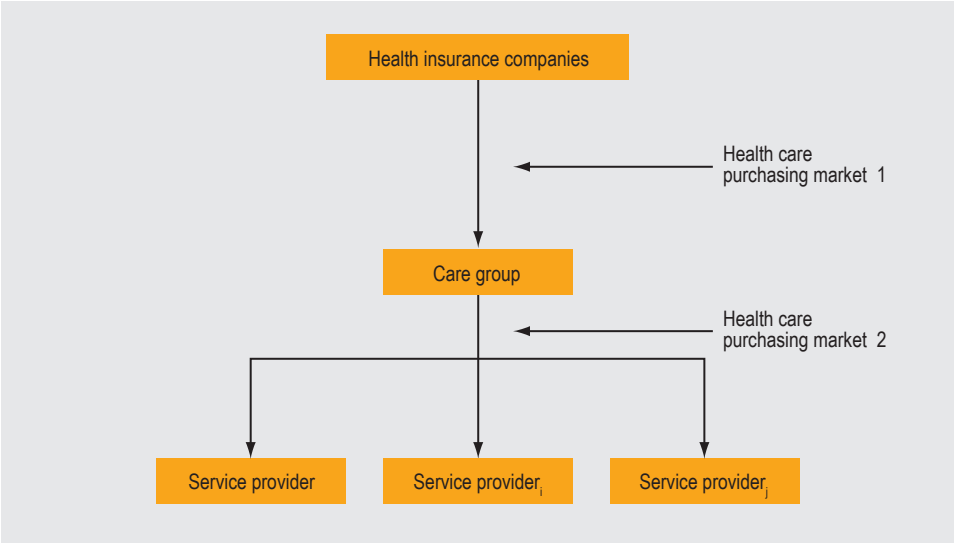
- minimum quality requirements for health care services on the basis of established standards of health care
- freely negotiable, comprehensive fees
- accountability reporting to insurance companies.

A care group may deliver the contracted care itself or subcontract it to individual health care providers or agencies. Subcontracts contain provisions concerning

- minimum quality requirements for the contracted health care services (deriving from the multidisciplinary protocol established by the care group)
- fees, responsibilities and liabilities
- accountability reporting to the care group.

Traditional health care purchasing market superseded by two purchasing markets

The introduction of a bundled payment scheme and the resulting care groups superseded the traditional health care purchasing market with two markets (*figure 3.1*):



Figuur 3.1: Schematic diagram of the bundled payment model on the health care purchasing market.

1. purchasing market 1, in which health insurance companies sign bundled payment contracts with care groups
2. purchasing market 2, in which care groups sign subcontracts with individual health care providers or agencies.

Role of the care group in the actual provision of health care services

The role of the care groups in providing diabetes care can be formally structured in different ways (*figure 3.2*). One approach is to hire staff to deliver the services directly; in this variant, there is no real second purchasing market. Another way is to contract independent health care providers (or agencies) to provide the actual care. A third possibility involves a mixture of the two variants, with the care group contracting independent providers for some services and employing its own providers for other health care services. In the second and third variants, the health care providers no longer have a direct relationship with the health insurers in relation to diabetes care (although they still have such a relationship for services not included in the bundled payment contract).

Fees for bundled payment contracts and associated subcontracts are freely negotiable

The fees for bundled payment contracts are freely negotiable, under the general assumption that they will be as comprehensive as possible. The fees for the underlying subcontracts between a care group and the individual health care providers are likewise freely negotiable. The assumption is that freeing the prices will encourage efficient purchasing. A bundled payment contract is negotiated first of all with the health insurance market leader in the region. The care group then asks other insurance companies to sign the contract, including companies not strongly represented in the region. These may either accept the contract with the market leader or insist on making their own bundled payment agreement.

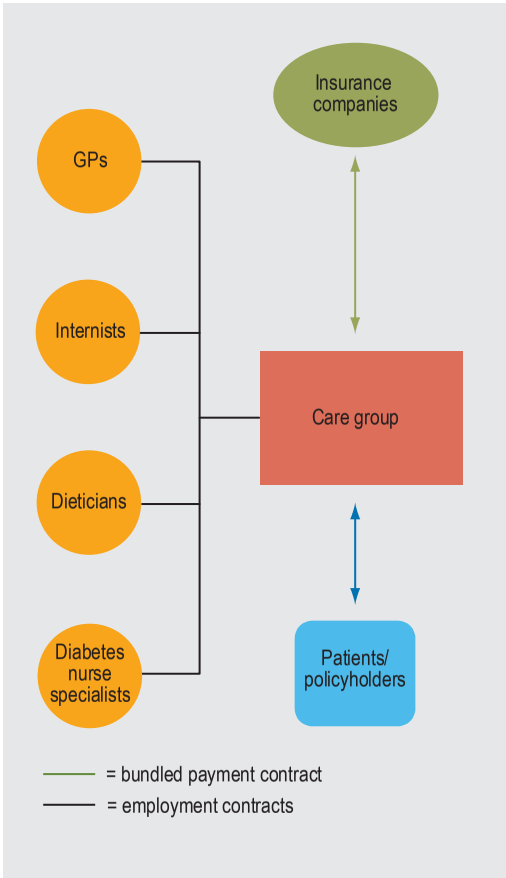


Figure 3.2a: Variant 1 for health care delivery: salaried health care providers.

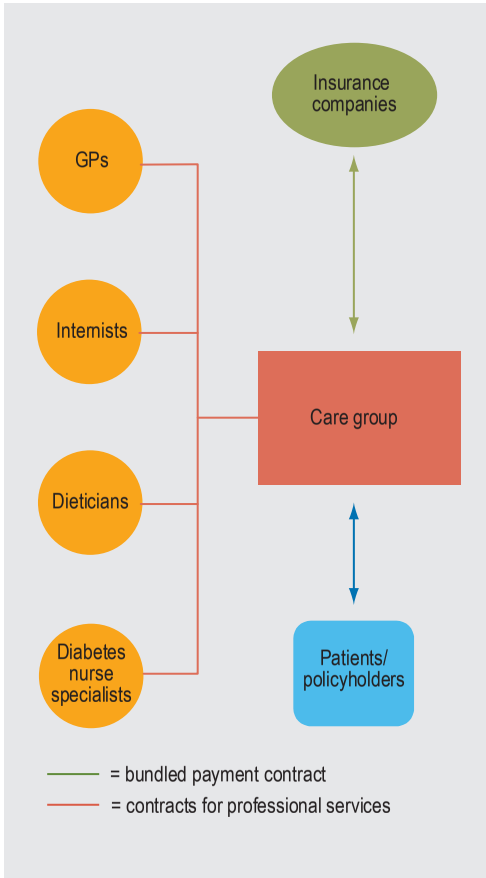


Figure 3.2b: Variant 2 for health care delivery: contracted health care providers.

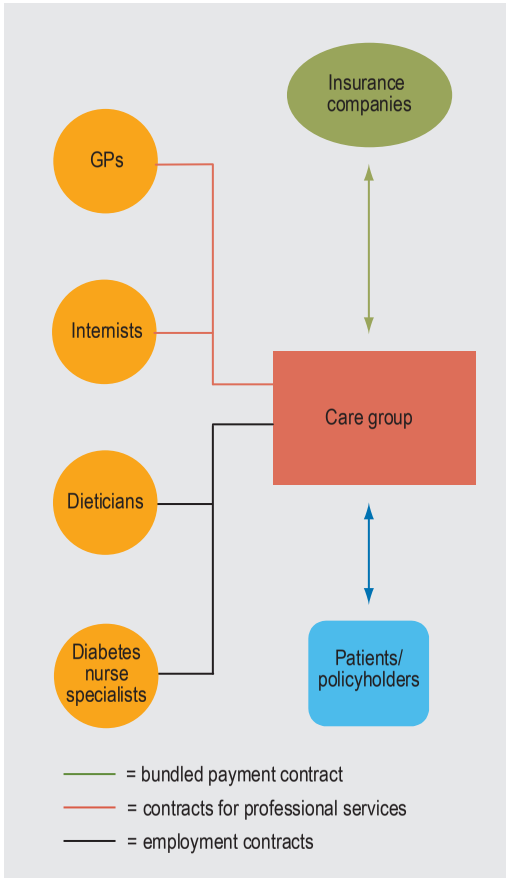


Figure 3.2c: Variant 3 for health care delivery: contracted and salaried health care providers.

Bundled care may not take place simultaneously with a hospital-based payment for 'uncomplicated diabetes'

A bundled payment contract confines itself to standard diabetes care. A care group may have an internal medicine specialist under contract for consultations. If the specialist is consulted, an outpatient hospital treatment bundle for uncomplicated diabetes may not be activated (officially referred to as 'diabetes mellitus without secondary complications'). At the moment the treatment responsibility for a patient is transferred from the GP to a specialist, a patient is no longer 'under the care' of the care group and the bundled payment for the patient is terminated. The specialist then bills the health insurer directly for that patient. As long as the hospital payment scheme from the specialist has been activated, the care group cannot claim a bundled fee for that patient.

3.2 How are the diabetes care groups organised in practice?

Outline

The next section examines how the bundled payment model was organised in practice by the nine care groups we studied. We discuss features such as the legal form they were given, ownership, organisational structure and the content of their contracts. *Appendix 3* includes a summary diagram for each of the nine groups.

Legal entity

As pointed out in *section 3.1*, the introduction of bundled payments has given rise to a new legal entity. In practice, the care groups we studied had chosen several different legal formats (*table 3.1*). Decisions on which format was appropriate were based on organisational structures that already existed, as well as on legal considerations such as VAT exemptions, responsibilities or liabilities. Four large care groups had chosen for a combination of legal entities: the care group was one operating company in a holding company. Other operating companies within this holding company structure might be an out-of-hours medical care service or a primary care laboratory.

Ownership of a care group

All nine of the care groups had general practitioners as owners or co-owners (*table 3.1*); four groups also had people from other health care disciplines as co-owners, based on the consideration that multidisciplinary ownership of a care group would facilitate the rollout of bundled payment systems for other diseases.

The NDF Health Care Standard assumes multidisciplinary care groups in which the following core disciplines of diabetes management are represented: GPs, general practice nurses, diabetes nurse specialists, GP assistants and dieticians (NDF, 2007). Not a single care group had all these core disciplines as co-owners. Four of the groups did not satisfy the principle of a multidisciplinary care group at all.

Table 3.1: General characteristics of the care groups

Care group	Organisational form	Holding company structure?	Ownership	Number of GPs (at start of study)
1	Cooperative association	No	GPs	7
2	Foundation	No	GPs + hospital	7
3	Private limited liability company	Yes	GPs + care consortium (H+HC+N&C)	29
4	Private limited liability company	Yes	GPs	111
5	Limited partnership	Yes	GPs + GP lab	115 FTEs
7	Foundation	No	GPs + GP lab	7
8	Cooperative association	No	GPs	29
9	Foundation	Yes	Foundation	39
10	Private limited liability company	No	GPs	31

H = hospital; HC = home care; N&C = nursing and care.

The number of GPs that were owners in care groups ranged from 7 to 115 full-time equivalents (*table 3.1*). This was not a stable figure and especially the smaller care groups were seeing rapid growth during the evaluation. Care group 7, for example, grew from 7 participant GPs at the start of the study to 65 at the end and care group 1 merged with a large care group of more than 100 GPs.

Organisational structure of the care groups

The care groups were structured in several different organisational layers:
- a management and policy layer
- an operational layer
- a supervisory layer.

We shall examine each layer more closely. The specific structures of the individual care groups are described in *appendix 3*.

Management and policy layer

Differentiation between management and policy

The management and policy layer consisted of a medical coordinator and a general or financial manager or managing director. In all care groups, the medical coordinator was a GP. The main tasks of the medical coordinators involved health care-specific policy, including the creation of a multidisciplinary protocol, the coordination of record-keeping and reporting of the data needed to facilitate the patient care process and to provide reflective information and the accountability reporting to the insurance companies on the quality of the care delivered. They also oversaw health care delivery, including coordinating the collaborative activities of the health care providers. In some care groups, the medical coordinator led working groups of experts from several health care disciplines, such as working groups for quality or for implementation.

The tasks of the general or financial manager included arranging the purchasing contract for the care bundle with the regional insurance market leader (in direct cooperation with the medical coordinator), contracting the other insurers, contracting the individual health care providers and billing the insurers for the care bundle delivered. In half of the care groups, the manager was contracted from outside and the other half employed their own manager.

Operational layer

Much of the actual health care delivery was contracted out to individual health care providers

As we noted in *section 3.1*, care groups have the option of either employing 'in-house' health care providers or contracting individual providers from outside. As *table 3.2* shows, seven care groups had contracted external providers for their health care delivery and two groups had both contracted external providers and hired in-house providers. None of the groups delivered all the care themselves.

Core discipline of specialist diabetes nursing was not always contracted

The core disciplines specified for diabetes management in the NDF Health Care standard were contracted by virtually all care groups (*table 3.2*). Two groups did not contract diabetes nurse specialists but delegated the tasks to practice nurses. Those groups reported that the task of diabetes nursing was changing. In primary care, it was now confined to supporting the practice nurses and in several care groups the diabetes nurses themselves were no longer providing direct care to the patients. In secondary care settings, diabetes nurse specialists provided the more complex care.

Some supporting disciplines were commonly contracted

In addition to the core disciplines, the NDF Health Care standard also specifies 'supporting disciplines' with which the care groups are to make ongoing working arrangements (NDF, 2007). In particular, ophthalmologists, internists, clinical biochemists and podiatrists were commonly contracted (*table 3.2*). Supporting disciplines that had not been contracted by a particular care group were unlikely to have ongoing arrangements with that care group.

Supervisory layer

Five care groups had independent supervisory boards

Five of the nine care groups reported having an independent supervisory body (*table 3.3*) that oversaw the management layer. The other four groups had no supervisory board and such was not required in that they had fewer than 50 employees (see box 3.2). Care group 10 explained the absence of a supervisory board by a desire to limit bureaucracy and overhead costs; it considered the accountability reporting to the shareholders to be sufficient at the present stage.

Table 3.2: The contracted health care providers and their types of contracts within the bundled payment scheme, by care group

	Care group																	
	1		**2**		**3**		**4**		**5**		**7**		**8**		**9**		**10**	
Core disciplines																		
GPs	+	(C)	+	(C)	+	(C)	+	(C)	+	(C)	+	(C)	+	(C)	+	(W)	+	(C)
Practice nurses	+	(C^)	+	(C^)	+	(C^)	+	(C^)	+	(W)	+	(C^)	+	(C^)	+	(W)	+	(C^)
Diabetes nurse specialists	-		+	(C^)	+	(C^)	-		+	(W)	+	(C^)	+	(C^)	+	(W)	+	(C^)
GP assistants	+	(C^)	+	(C^)	+	(C^)	+	(C^)	+	(C^)	+	(C^)	+	(C^)	+	(W)	+	(C^)
Dieticians	+	(W)	+	(C)	+	(C^)	+	(C)	+	(C)	+	(C)	+	(C)	+	(W)	+◊	(C^)
Supporting disciplines																		
Ophthalmologists	+	(C)	+	(C)	+	(C)	+	(C)	+	(C)	-		+	(C)	+	(C)	+	(C)
Internists	+	(C)	+	(C)	+#	(C)	+	(C)	+	(C)	+#	(C)	+	(C)	+	(C)	+	(C)
Nephrologists	-		-		+#	(C)	-		-		-		-		-		-	
Cardiologists	-		-		+#	(C)	-		-		-		-		-		-	
Neurologists			-		+#	(C)	-		-		-		-		-		-	
Vascular surgeons	-		-		+#	(C)	-		-		-		-		-		-	
Clinical biochemists	+	(C)	+	(C)	+	(C)	+	(C)	+	(C)	+	(C)	-		+	(C)	+	(C)
Pharmacists	-		-		-		-		-		-		-		-		-	
Physiotherapists	-		-		-		-		-		-		-		-		-	
Social workers	-		-		-		-		-		-		-		-		-	
Medical (psychologists)	-		-		-		-		-		-		-		-		-	
Podiatrists / pedicurists	-		+	(C)	+	(C)	+	(C)	+	(C)	-		-		+	(C)	-	
Other disciplines																		
Optometrists	-		-		-		-		-		-		-		-		-	

C = contract; S = salaried staff of care group (see also appendix 3); ^ = contracted via an agency or GP and therefore not employed by the care group; # = e-mail or telephone consultations; ◊ = limited to new patients or those in insulin adjustment phases.

Table 3.3: Diabetes care groups with and without supervisory boards

Care group	Supervisory board	Details
1	No	-
2	Yes	Members were one hospital board member, one representative from the Netherlands Diabetes Association (Diabetes Vereniging Nederland (DVN)) and one GP.
3	Yes	The care group was an operating company in a holding company and was accountable to the supervisory board of the holding company. That board was comprised of the director of a regional bank, an industrial medical officer, the director of a reintegration agency and a retired corporate director.
4	Yes	The care group was an operating company in a holding company and was accountable to the supervisory board of the holding company.
5	Yes	Members were the director of a management consultancy firm, a former director of a multinational company and the director of a care agency for people with learning impairments.
7	No	-
8	No	-
9	Yes	Members were the chair of the executive committee of a national organisation, the director of a management consultancy firm, the chair of a hospital board and the director of a national organisation.
10	No	-

Are care groups required to have a supervisory body?

There is some debate about whether care groups must have a supervisory layer in their organisational structures. The main focus in the discussion is on care groups that provide no actual care themselves but contract it out to individual health care providers or agencies. The issue is whether such care groups ought to be defined as 'health care institutions' under the Wtzi) and as such be required to have a supervisory level. The standpoint of the Health Ministry is that any organisation that contracts care under the Zvw) or the Awbz is a health care institution under the Wtzi (see *box 3.3*).

Oversight in care groups not in compliance with Care Governance Code

The Dutch health care sector has established its own Care Governance Code that sets ground rules and standards of conduct concerning good governance, effective oversight and accountability reporting on governance and oversight (BoZ, 2005). The Care Governance Code recommends avoiding conflicts of interest at all times. For example, the members of a supervisory board should not have commercial interests in any of the contracts the care group may sign with other parties. The code also advises against the right of the care group to nominate new members (RVZ, 2009), because their independence would not be fully guaranteed.

In the five care groups with a supervisory board, the arrangements made for 'oversight' did not comply in all cases with the Care Governance Code at the time of the study. One example was the board in care group 2, which had three members: one had been appointed by the Netherlands Diabetes Association (Diabetes Vereniging Nederland (DVN)); the second belonged to the governing board of a hospital that was engaged by the care group as a subcontractor; and the third was a GP who was also being subcontracted

Box 3.2: Diabetes care group is a 'health care institution'

There is some debate about whether care groups that provide no actual care themselves should be defined as 'health care institutions' under the Wtzi. The standpoint of the Dutch Health Ministry is that any organisation that contracts care under the Zvw or the Awbz is a health care institution under the Wtzi. It does not matter whether the actual care is delivered by the care group itself or by health care providers or agencies contracted by it.

Requirements set by the Wtzi for health care institutions are
- a governance structure (supervisory body, right of investigation)
- operational management (defined powers and duties for the different organisational bodies, financial management)
- accountability reporting on business operations (annual social accountability document)

Additional criteria and reporting requirements are
- quality, in compliance with the Care Institutions Quality Act (Kwaliteitswet (Wkz))
- rights of complaint, in compliance with the Clients' Right of Complaint (Care Sector) Act (Wet klachtrecht cliënten zorgsector (Wkcz))
- patient participation, in compliance with the Participation of Clients of Care Institutions Act (Wet medezeggenschap cliënten zorginstellingen (Wmcz))

The accountability reporting on business operations is not required of care groups as long as they are not defined as institutions for specialist medical care or care covered by Awbz. The transparency requirements for the governance structure do not apply to care groups with fewer than 50 employees. In neither of these two cases are care groups required to have an independent supervisory board.

by the care group. In the four care groups that were part of a holding company, questions also arose about accountability (see quote).

Care group X is also such a case. X is a limited partnership with sleeping partners and a managing partner. The managing partner is the holding company that also owns the laboratory. At the same time, the laboratory is a subcontractor of the care group, so the situation arises that the care group is negotiating with a subcontractor that is also its employer. We made no objection to this in the pilot project but the question is whether this is desirable.... The other side of the coin is that we insurance people have been arguing for years that they should work together more. So here we now have GPs that have started collaborating and we should give them a chance. It clearly has two sides. This causes a critical tension between collaboration and market competition in the health care sector.
Insurance company official

Care groups are young organisations and need time to professionalise

Some health insurance companies urged for more rigorous internal oversight in the care groups themselves and sufficient openness and transparency in the recruitment and selection of the overseers. Yet they also indicated that the care groups should be allowed a few years to achieve this. They are still young organisations that are working hard to professionalise their management. If self-regulation should not sufficiently get off the ground, insurance companies said they would consider insisting on stricter requirements in the bundled payment contracts.

3.3 What are the principal features of bundled payment schemes for diabetes?

Outline
This section examines in more detail the bundled payment schemes for diabetes as formalised by Dutch care groups and insurance companies. We first discuss the content of the care covered by the contracts and then the fees and other aspects.

Care components included in bundled payment contracts

The fundamental premise of integrated care packages is that the services to be delivered must conform to the NDF standard. *Table 3.4* gives an overall view of the content of the different bundled payment contracts we studied and shows which of these services are included in the NDF Health Care standard.

Diagnostic phase

Formal diagnosis not part of the bundled payment contracts
The NDF Health Care standard describes the care to be provided from the moment a diagnosis of diabetes mellitus is made; the activities needed to reach the diagnosis fall outside a bundled payment system. Hence, the formal diagnosis was not included in any of the contracts we studied. Initial risk assessments, even if part of the diagnostic phase, were included in all the contracts.

Treatment and standard check-ups

Periodic check-ups as well as specialist consultation were included in all bundled payment contracts
All the contracts included the full 12-monthly check-up, the 3-monthly check-ups and the annual eye and foot screenings. There was no disagreement about whether these periodic check-ups were part of the NDF standard. Consultative services with internists were also part of all contracts, as long as the patient's GP retained ultimate responsibility.

Laboratory testing contracted by all care groups except one
Lab testing is included in the NDF Health care standard and it was also covered by the bundled payment contracts of eight of the nine care groups we studied. It was not included in the group 8 contract because the insurance company concerned already had long-term contracts with a medical laboratory in the area (*table 3.4*).

Care group 9 did have lab testing included in its contract but when it billed the insurance company for the bundled care, that company turned out to have its own long-term contract with the same general practice laboratory. To avoid double payment, the care group reimbursed the insurance company.

Table 3.4: Content of the bundled payment contracts by diabetes care group

		Diabetes care group								
	Required by NDF Health Care standard	**1**	**2**	**3**	**4**	**5**	**7**	**8**	**9**	**10**
Diagnostic phase										
Formal diagnosis	No	-	-	-	-	-	-	-	-	-
Initial risk assessment	Yes	+	+	+	+	+	+	+	+	+
Treatment and standard check-ups										
12-monthly check-ups	Yes	+	+	+	+	+	+	+	+	+
3-monthly check-ups	Yes	+	+	+	+	+	+	+	+	+
Eye examinations	Yes	+	+	+	+	+	+	+	+	+
Foot examinations	Yes	+	+	+	+	+	+	+	+	+
Supplementary foot exams	Unclear	-	+	+	-	+	-	-	+	-
Foot treatment	No	-	-	+	-	-	-	-	-	-
Laboratory testing	Yes	+	+	+	+	+	+	-	+†	+
Smoking cessation support	Yes	-	+	-	-	+	-	+	+	-
Exercise counselling	Yes	+	+	+	+	+	+	+	+	+
Supervised exercise	No	-	-	-	-	-	-	-	+‡	-
Dietary counselling	Yes	+	+	+	+	+	+	+	+	+/-#
Medication	No	-	-	-	-	-	-	-	-	-
Psychosocial care	No	-	-	-	-	-	-	-	-	-
Medical aids	No	-β	-	-	-	-	-	-	-β	-
Additional GP consultations (diabetes-related)	Unclear	-	+/-	+/-	+/-	-	+/-	+/-	+/-	+/-
Additional GP consultations (non-related)	No	+/-	-	-	-	-	-	-	-	-
Specialist consultations	Yes	+	+	+	+	+	+	+	+	+

† = Supplementary fee paid for laboratory testing (€27 per patient per year) via a module additional to the bundled fee; # = Dietary counselling contracted for new patients only (module 1) and for those in insulin adjustment phases (module 3) but available to other patients on specific GP referral; ‡ = Exercise programme mentioned in contract at additional fee of €5 per patient per year; β = Medical aids limited to blood glucose strips and billed at a maximum additional fee of €4.50 per patient per year.

Support in smoking reduction or cessation often not contracted

Five care groups did not include smoking cessation support in their bundled payment contracts, even though it is included in the NDF Health care standard. This does not mean that patients in these groups received no support to stop smoking. Possibly, such counselling was paid for via the conventional policies (in this case, the elective supplementary coverage).

Supervised exercise covered by two contracts but not as part of the bundled fee

It is not clear what elements of exercise programmes are included in the NDF Health Care standard. Exercise counselling is mentioned but not supervised exercise. Although the latter was mentioned in the bundled payment contracts of group 9, a separate annual fee of €5 per patient was levied, making it unclear whether it should be considered part of the bundled care arrangements. The same applied to medical aids. These were mentioned

in two contracts but were limited to blood glucose strips, likewise at an additional fee of €4.50 per patient per year (*table 3.4*).

Additional foot examinations covered in some contracts
All bundled payment contracts included standard annual foot screening. Four care groups also included supplementary foot exams, to be carried out by a podiatrist if abnormalities came to light during the routine annual screening. It is unclear whether such additional examinations are part of the NDF Health Care standard. Care group 3 also contracted 'foot treatment' (*table 3.4*), which is indicated if complications are detected in the supplementary exam. It is probably not part of the NDF standard.

Medication and psychosocial care are not part of the NDF standard and were not contracted
Medication was not covered by any of the bundled payment contracts, nor was psychosocial care. Neither of these are mentioned in the NDF standard.

Uncertainty about extra GP consultations
It was unclear whether additional GP consultations were included in the bundled payment contracts – that is, 'non-routine' visits to the GP taking place outside the 3-monthly and 12-monthly check-ups. These may be distinguished into diabetes-related and non-diabetes-related consultations. The non-related visits were not included in any of the bundled fees. Two of the care groups we studied reported that 'additional diabetes-related consultations' were not covered by their bundled payment contracts and that they claimed these separately from the insurance companies. In the other care groups, it was unclear which GP consultations were and were not considered to be diabetes-related and we found no conclusive answer in the contracts. The interviews indicated that some insurance companies interpreted this more broadly than the care groups.

Fees for the bundled care arrangements

Wide variations in fees agreed for integrated diabetes care
Considerable differences emerged in the amounts charged for the integrated diabetes care under the bundled payment contracts we studied. The bundled fees for the year 2007 ranged from €258 to €474 per patient per year (*table 3.5*). The two care groups with the lowest fees were entitled to a bonus of 10% from the insurance companies if they scored above average on patient satisfaction (assessed by the companies in questionnaires).

The fee variations were explainable in part by differences in the content of the care included in the contracts. In addition, some contracts specified a separate IT allowance, which was not explicitly mentioned in other contracts. The fees agreed with the individual subcontracted health care providers (health care purchasing market 2) were not available to us.

Table 3.5: Bundled fees for integrated diabetes care, by care group (per patient per year)

Care group	Fee
1	€474
2	€474
3	€457.50
4	€404
5	€404
7	€465
8	€258 + bonus (max. 10%)
9	€258 + lab exam €27 + exercise programme €5 + glucose strips €4.50 + bonus (max. 10%)
10	€438

How the bundled fees relate to the costs to the care groups is unknown

Most care groups were unwilling to reveal the fees they paid to individual health care providers, citing trade secrecy in a market environment. The actual costs of the services to the care groups are therefore unknown.

In calculating the direct medical costs, most care groups translated the care activities into a mathematical model, also incorporating the number of minutes each activity required and the hourly fees. In most groups, this pricing model contained five modules representing different categories of diabetes patients based on expected care intensity (see *box 3.3*). After weighting by the percentages of patients in each category currently being served by the care group, they arrived at a single cost estimate for the direct medical costs. They then estimated indirect costs such as those for IT, office space and coordination activities, divided these by the number of diabetes patients and added them to the direct costs per patient.

Box 3.3: Modules in pricing models for bundled services

The following modules form the basis for the pricing model for bundled health care services:
Module 1: new patients
Module 2: 'routine' patients not on insulin
Module 3: patients in year of insulin adjustment
Module 4: 'routine' patients on insulin
Module 5: patients with complications (not always present)

Lack of reference framework contributed to fee variations

Neither the insurance companies nor the care groups had adequate benchmarks for estimating market-competitive prices for their health care bundles. The only document available was a draft report from Cap Gemini (Wahle et al., 2004) that gave estimates deriving from expert meetings held under NDF auspices. Depending on the variant chosen, the estimates ranged from €407 to €861 for the first year after diagnosis and €358 to €759 annually in subsequent years. The draft report was used in several sets of negotiations to help determine fees for bundled diabetes services.

One insurer used performance-based remuneration

One insurance company had incorporated performance-based reimbursement into the bundled payment contracts; care groups that scored well on a patient experience survey received a bonus (up to 10% of the fee). The other contracts specified a fixed fee for the health care bundle. The subcontracts with the individual health care providers and agencies were also based on fixed fees, as far as we could determine. Either these 'subcontractors' were paid by the consultation (fee-for-service) or they charged a fixed fee for performing this health care activity for patients registered with the care group, irrespective of the number of consultations (capitation).

Care groups and VAT

At the time the bundled payment contracts were drawn up, it was unclear which care items and activities were subject to VAT. To what extent are activities in the diabetes care bundles exempt from VAT? Which items are exempt and which are not? During the course of our evaluation, most care groups gained more clarity after submitting the VAT arrangements to their regional tax offices. Several care group managers reported that VAT guidelines tailored to care groups were non-existent and that no generic solutions to the problem had been found, due to the highly specific nature of the material. As a consequence, new care groups are now submitting their arrangements to their regional tax offices in advance to have them assessed and approved. Both health care providers and health insurance companies expressed the need for a central information desk to deal with such questions.

Lack of clarity about the total financing of care groups

Our evaluation confined itself to the content of the bundled payment contracts. A number of interviewees reported that some care groups receive money from other institutions, such as hospitals, quite apart from the fees they receive under the bundled payment contracts. There is still a lack of clarity about such streams of funding.

Interviewees also reported that other forms of revenue, such as allowances for practice nurses that are provided under the existing remuneration system, have been adjusted to avoid double payment. The lack of clarity about this adds to the difficulty of comparing the care groups in terms of the fees and the content of the bundled payment contracts.

Other issues

Limited accountability information for health insurance companies specified in contracts

The information necessary for accountability reporting to insurance companies was not fully specified in the bundled payment contracts. Often, these simply referred to the indicators defined by the NDF standard. In the course of our evaluation study, increasing emphasis was being put on the need for accountability information. This is expected to assume greater importance in the coming years as insurance companies scrutinise more closely whether the health care is being delivered according to the contractual agreements.

Many bundled payment contracts not accommodated to new payment method
Most of the care groups we studied gave us access to the agreements they had made with the insurance companies they dealt with. We submitted these to an expert on health law for closer analysis. The conclusion was that only a few of the contracts were specifically written with the model of bundled payment in mind. In most cases, insurers had simply taken model contracts they used in purchasing care according to the existing payment system and then adapted or supplemented certain parts of them. The health law expert also pointed out that the contracts were generally difficult to follow and that certain relevant aspects of integrated care remained unmentioned, including some liability issues (see also *section 3.5* and *appendix 6*).

Three care groups gave us access to contracts with their subcontractors; the other care groups refused to do so, again for reasons of trade secrecy. A disparate picture emerged from the agreements we saw. In care group 1, the agreements may be said to be specifically formulated for the conditions of integrated care and to clearly define the tasks, responsibilities and obligations of both parties under the contract. The contracts of care group 2 largely emphasised technical issues related to integrated care, such as record-keeping methods. In care group 3, the contracts were not accommodated to integrated care; as a consequence, relevant issues such as liabilities and responsibilities were not, or not adequately, stipulated.

3.4 How does the health care purchasing process work?

Outline
In this section we trace the purchasing process for diabetes care under the bundled payment scheme. For this topic we have mainly used data from the interviews. The findings are summarised schematically in *figure 3.3*. This is followed by an explanation illustrated by quotes from the interviews.

Intensive negotiations with the regional market-leading insurance company
Negotiations between the care groups and the health insurance market leader in their region were intensive. Neither party had any experience with formulating a bundled payment contract, in terms of either the content of care or the determination of fees (see also *section 3.3*). The NDF Health Care standard was multi-interpretable in several respects, leading to prolonged negotiations about exactly what provisions the contract was to cover. Negotiations involved not only the necessary components of the care but also the frequency and quantity of the care to be contracted. Several care groups expected that the next round of negotiations would focus more on fees than on content of care.

In addition, some interviewees remarked that funding for activities which were not explicitly mentioned in the NDF Health Care standard (such as the costs for IT, coordination activities and office space) but were nevertheless essential to the integrated delivery of the services, was more difficult to secure.

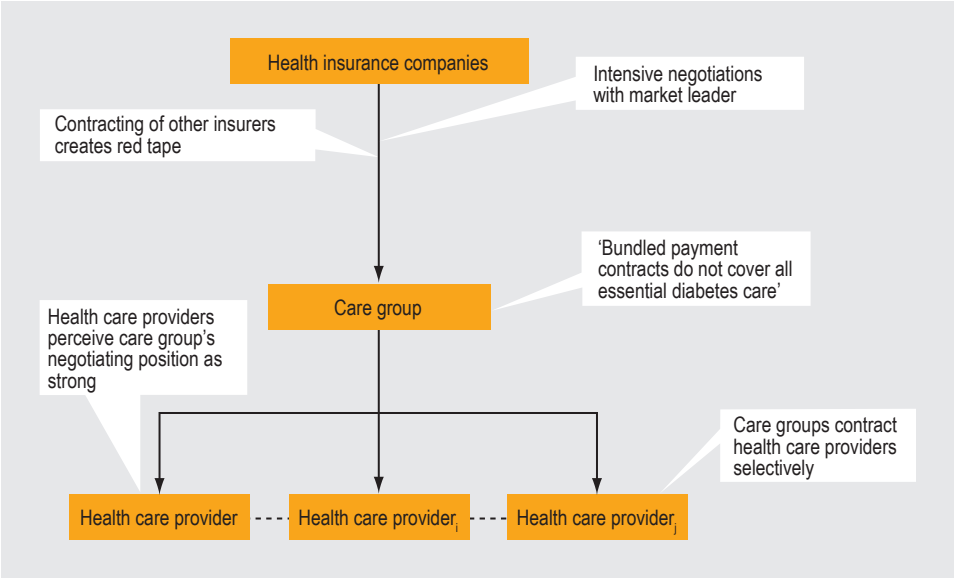


Figure 3.3: Effects of bundled payment system on the health care purchasing process.

Contracting non-market-leading health insurance companies causes considerable red tape

Once the care groups had signed a contract with the health insurance market leader in their region, they submitted it to all other health insurers in the country, requesting them to also sign. This proved to generate considerable bureaucracy, mainly due to a lack of clarity about which official or department was responsible in each company. Care group 8 reported having to send the contracts up to three times to some companies before these reached the right people. In interviews during our 12-month assessment, care groups complained that the problem still existed and that no consistent rules of play had yet been agreed to resolve the issue.

'Bundled payment contracts do not cover all essential diabetes care'

Many interviewees commented that important components of diabetes care – such as medication, medical aids, exercise programmes, foot treatment and psychosocial care – had not been contracted by care groups. Some of these items, such as foot care and exercise programmes, are not part of the NDF standard and were not contracted for that reason. Such services were claimed under the existing fee-for-service system. A number of health care providers and project leaders expressed a desire to expand the bundled care packages to include such services.

A number of other services had only been contracted to a limited or insufficient extent. Most frequently mentioned was the limited number of care minutes for dietary counselling. The number of available care minutes resulted from negotiations between care groups

and health insurers on the fees and content of services and from the interpretations given to the NDF Health Care standard. Care group 10, for instance, had contracted dietary counselling only for new patients or those in insulin adjustment phases but not for longer-term patients. Other care groups had contracted counselling for all patients with diabetes.

What a pity that exercise in particular is not included in the care bundle. And it's really too bad that psychological counselling is not included.... The amount of consultation time for a dietician is now very meagre compared to the way things used to be.

Project leader in care group

So one thing I consider a drawback is that certain essential items of diabetes care haven't really been contracted. People do get those services but they're not included in the bundled care package.

General practitioner

I consider the possibilities under the bundled payment system to be a big step backwards as compared to the services that are available under the basic health insurance coverage. The options available now are limited in comparison with the old situation.

Dietician

Several care groups reported that their GPs checked HbA1c every three months – more often than the twelve months specified in the bundled payment contracts. They had decided on this even though the care group had to bear the costs. They did so both on quality considerations and because the bundled fee for the diabetes care package gave them the financial latitude to do so. They thereby deviated from the NDF Health Care standard, as well as from the underlying standards of the Dutch College of General Practitioners (NHG; Bouma et al., 2006), which advise HbA1c testing once a year.

Care groups contract health care providers selectively

All care groups worked with preferential health care providers. This means they did not sign subcontracts with all health care providers in their region but only with those with whom they had managed to reach satisfactory agreements about the quality of the services to be delivered, accessibility, record-keeping, data reporting and also fees.

The policyholders' freedom of choice is an issue that could throw a spanner into the bundled payment works. Health insurance policies state that policyholders are free to choose whichever health care providers they wish but the care group sends them to their own preferred providers.... The patients' freedom of choice is at stake and we wonder whether this is going to be the future of our health care system.

Insurance company official

The selective contracting of health care providers by the care groups thus creates a situation where patients no longer have full freedom of choice, even though many of their policies guarantee it. Constraints on freedom of choice are more of an issue in smaller care groups than in larger ones. Care group 1, for example, a smaller group, had contracted only one dietician, whereas the large care group 4 had contracted several. Many care groups had contracted only one institution or agency for eye examinations. If a patient, for whatever reason, was not satisfied with this selected provider, such care groups had no alternative to offer.

Health care providers pointed to strong negotiating position of care groups
A number of individual health care providers argued that the level playing field between the different providers was being undermined by the contractual relationships with care groups. Frequently cited was the position of GPs as central providers of health care and simultaneously as co-owners of care groups. Dieticians also raised this point in the interviews. The negotiations with the care groups on the number of minutes of dietary counselling and/or the fees to be paid were said to be mostly arduous (see appendix 7). Some dieticians even contended that the negotiations with the care group were not really negotiations at all. The care groups acknowledged this but insisted this was only the case once contracts for dietary counselling had been signed with other dieticians in the region; in contracting new dieticians, the care groups did not want to diverge from already existing contracts, so as to avoid getting into a maze of contracts and variable fees.

In our interviews with the care group managers, we also discussed the fee negotiations with the ophthalmologists. Negotiations had proceeded awkwardly in several groups and for this reason, some groups had not even contracted an ophthalmologist by the time our evaluation began. In cases where no contracts with ophthalmologists existed, any eye examinations were paid for under the existing payment system.

To put it bluntly, the bottom line is that the GPs now have a bag of money and they pretty much decide which discipline will do what.
Contracted dietician in private practice

We've signed a bundled payment contract and we're sitting on the right side of the table. Personally, I find it exciting and enjoyable to do the negotiations.
Commercial director of a care group

3.5 How is the work carried out?

Outline
This section broadly outlines the work processes in the care groups, with information drawn mainly from interviews. Our interview design is described in appendix 2. The main findings are summarised schematically in *figure 3.4*. The text below explains the work process, illustrated by quotes from interviewees.

Care groups assume a managing role in coordinating and organising diabetes care

Practically all the stakeholders we spoke to reported that the care groups were now responsible for organising and coordinating diabetes care (pathway) and assuring the quality of care. This was one result of the contracts they had signed with the health insurance companies. The care groups played an increasingly active role in aligning and coordinating the services. This managing role manifested itself in activities like the convening of multidisciplinary consultations with participating health care providers or the drafting of multidisciplinary protocols based on the NDF Health Care standard. The protocols created clarity for everyone about which health care providers were to deliver which items of care and what criteria of referral and back-referral should apply. Care groups that operated an integrated information system (IIS) had incorporated the protocols into the technology as much as possible. Only care group 7 had not created a multidisciplinary protocol; it made reference to existing guidelines and left the timing of referrals and back-referrals to the professional autonomy of the health care providers themselves.

We now know what we can expect of each other. The expectations and commitments have been made explicit.... It's no longer 'I'll send this patient to a dietician and the dietician will do what they see fit'.

General practitioner

It's now possible to enforce cooperation.

Care group manager

Cooperation was more intensive and the work better structured

Virtually everyone we interviewed reported that the bundled payment system now enabled health services to be delivered in a more coordinated fashion than in the 'old situation'. People felt they could now count more on the cooperation of others due to the contractual relationship between the care group and the individual providers. Agreements about quality, fees, record-keeping and data reporting were now laid down in formal contracts.

In the old situation, patients often had to make appointments themselves but that's no longer the case. We now give structured care.... I can tell the quality of care is improving.

Practice nurse

The patient data is being recorded a lot better and I'm working a lot more systematically.

Practice nurse

The patient data is being recorded a lot better and I'm working a lot more systematically.

Practice nurse

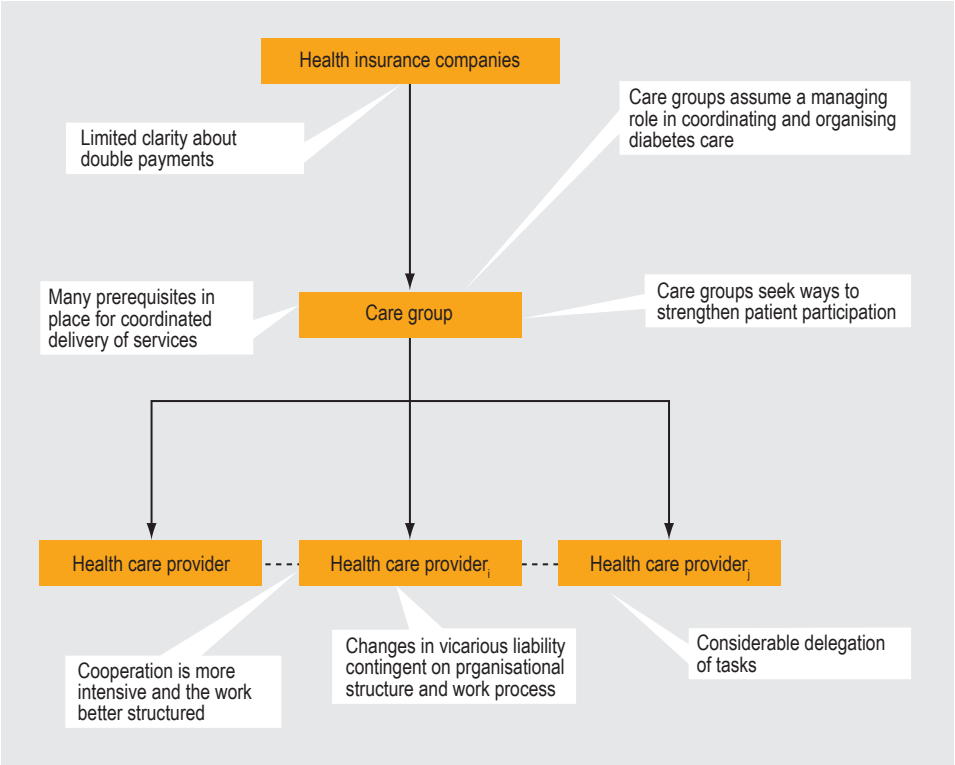


Figure 3.4: Effects of bundled payment system on the work process

Considerable delegation of tasks

As the interviews revealed, the practice nurses had increasingly become the pivot of diabetes care in many care groups. This trend had already been underway before bundled payment was introduced but it then accelerated in many GP practices. One insurance company made the signing of bundled payment contracts conditional on the presence of a practice nurse in all GP practices in the care group.

The role of the GPs was often now limited to the annual check-ups. The role of diabetes nurse specialists was also changing. As a consequence of task delegation to the practice nurses, the diabetes nurses had fewer direct patient contacts (under the bundled payment scheme). In some of the care groups we studied, the diabetes nurses mainly gave expert support to the practice nurses. Increasingly, they were providing continuing and further training. In some care groups, they had been given a key role in collecting and discussing reflective information. In many care groups, the three-monthly check-ups, annual foot screenings, general dietary counselling and some parts of the annual check-ups were all being performed by the practice nurses (see also *section 3.2* and *appendix 3*). The ultimate medical responsibility always lay with the patient's GP. Several GPs and care group managers we spoke to saw this extensive delegation of tasks to practice nurses as a potential risk to the quality of care. The reduced contacts with patients could compromise the GPs' ability to maintain their knowledge levels and manage the patient care processes. This would justify a minimum of one GP consultation per year for patients with diabetes.

In the integrated care delivery, you see a whole lot of things being delegated to the practice nurses, but that makes it hard for the GPs to maintain control.

Care group manager

It's more than just task delegation. By operating this kind of integrated care arrangements, primary care is also appropriating more and more tasks to itself that it would have otherwise had little or no part in.

Medical director of a care group

Task substitution in eye screening was difficult to accomplish during our evaluation period In several care groups, we saw the annual eye examinations being shifted from ophthalmologists to optometrists, to diabetes nurses working in general practice laboratories or to specially trained 'graders'[2]. All these groups experienced problems in transferring tasks from ophthalmologists to these newly contracted health care providers. Task substitution was not fully completed by any care group by the end of our evaluation. The main problem was that ophthalmologists were still allowed to perform the annual eye exams and were not required to actively cooperate in the task transfer to the care groups.

Task substitution did succeed for the annual foot screenings. These had previously been carried out almost exclusively by GPs. The practice nurses had now taken over the screening in all care groups, though performing it under a GP's responsibility. Five care groups had also contracted a podiatrist to carry out supplementary foot examinations if needed; this was only performed if abnormalities came to light during the annual screening.

Many prerequisites had been created for the coordinated delivery of services

In addition to the protocols and the multidisciplinary consultations referred to above, many care groups had succeeded in creating the essential operating conditions for the coordinated delivery of diabetes care.

Proactive patient recall system for no-shows implemented in all care groups

All care groups except for group 7 reported taking a proactive approach to patients who failed to report for the routine annual or quarterly check-ups. Such patients were contacted to make sure they would receive the periodic check-ups. Recall systems for other care items such as eye screening were not mentioned.

Continuing and further training for health care providers was arranged by the care groups

All care groups with the exception of group 7 arranged continuing and further training for contracted health care providers. This was intended in particular for practice nurses and GPs and was meant to facilitate protocol-driven work processes, the discussion of reflective information and (in some care groups) the operation of newly acquired

2 Though these were allowed to carry out the eye examinations, the results could be analysed only by a professional authorised under the Individual Healthcare Professions Act (Big).

integrated patient information systems and the improvement of record-keeping discipline. In some care groups, continuing or further training was mandatory and was stipulated in the contracts with the health care providers. In care group 2, the GPs received additional recompense if they allowed their reflective information to be used in training sessions. The individual health care providers reported to value the training and attendance was high. Many care groups had not anticipated the task of arranging the training courses and had therefore not factored it into their negotiations for the bundled payment contracts, but they stressed that continuing and further education would be provided in the future as standard practice.

Three care groups used multidisciplinary electronic health information systems
All health care providers we interviewed had their own electronic information systems for patient records. Yet such systems were insufficiently capable of exchanging data with other systems. At the care group level, paper-and-pen forms were sometimes still used for data collection (see quote). It goes without saying that these groups were dissatisfied with this situation but they would have to wait until adequate IT facilities were available.

> *One snag is that I still can't get into the system myself. They are still not linked. I have to write everything out on paper and fax it to the GP, whose assistant then puts it into the system.*
>
> Dietician

At the start of our evaluation, three care groups had already implemented multidisciplinary electronic health records (EHR). All affiliated health care providers had access to their care group's electronic health records and could therefore obtain the information they needed to provide their part of the diabetes care. One care group also gave patients access to their own files; two others were planning to do so.

The care groups reported that an multidisciplinary EHR greatly simplified the extraction of management information from the data recorded in the patient care process. Two multidisciplinary EHR also contained an invoicing and appointments system. One electronic health record did not enable all the needed data to be recorded (see quote). An oft-mentioned drawback was that an multidisciplinary EHR was a 'detached system' that ran separately from the individual record systems. Health care providers had to enter their data twice. The care groups that did not yet have a multidisciplinary EHR extracted their data from the patient record systems of the individual health care providers.

> *The record keeping on medicines is particularly inadequate. I find that a very serious constraint. You can tick a box to indicate whether someone takes medication for their diabetes, yes or no. That's nowhere near how it should be. You need to know which medicines, which dosages and when they were last adjusted. Dieticians consult the same screen and that's no use to them at all. They need to see when something was increased or decreased. So that's really lousy.*
>
> General practitioner

Care groups provide GPs and practice nurses with reflective information
Notwithstanding the limitations of the current IT systems, eight of the nine care groups were able to supply reflective information to their GPs. Most reflective information was limited to the performance of GPs and the practice nurses. Such information enables insights into how a GP practice is performing in terms of particular quality indicators relevant to diabetes care. It can be used to devise improvement targets and plans. The care groups also supported GP practices in achieving those improvement targets. Interviewed health care providers deemed this highly valuable for improving the quality of care.

The variables used for the reflective information largely corresponded to the indicators specified by the NDF Health Care standard. The most commonly used variables were HbA1c (mean; % of patients with <7%), BMI (mean; % of patients with <25, 25-30 and >30 kg/m2), blood pressure (mean; % of patients with systolic pressure <140 mmHg), lipid profile (mean LDL; % of patients with LDL <2.5 mm/L), creatinine levels, creatinine clearance and albuminuria. Some care groups also included data on prescribed medication. Data on foot and eye screenings were not always included in the reflective information. Often, the variables were juxtaposed to the parameters for the GP practice one year previously, as well as to those of other practices in the care group. Many care groups reported that their ability to supply reflective information to their participating GPs improved during the course of our evaluation.

What I find very helpful indeed is that we use that information in our feedback meetings. That way we can assess every GP practice, and also every person, including the practice nurses attached to a particular practice, in terms of the targets that have been set. That's very valuable indeed. Basically it's by far the most important way to help you improve quality, getting access to that information.... You can take that data and use it to further improve the services you're providing. Imagine that your average blood pressure statistics are much higher than the ones in another practice, then you can investigate why that is and take steps to improve it. That's also how we try to present it to the practice nurses and the GPs, and that's interesting.

Project leader in a care group

Care groups use reflective information to manage quality
If a health care provider fails to deliver the required quality, their contract with the care group can be terminated in the worst case. Our interviews indicated that this had happened twice, in care groups 4 and 8. Improvement plans had been made on the care groups' initiative, but they had not succeeded, whereupon the care groups decided to terminate the contracts of the health care providers in question (in both cases GPs) to preserve the quality of care. In care group 4, the patients continued to receive their diabetes care in the same GP practice but henceforth, from a practice nurse supervised by the care group and not by the GP. In care group 8, the GP's patients were no longer served by the care group.

Limited clarity on double payment

All health insurance companies said they wanted to prevent double payment but verification was difficult because of the limited accountability information they were receiving from the care groups. As insurers began giving this greater priority in the course of our evaluation, the quality of the accountability information should improve substantially in the years to come. New bundled payment contracts were setting stricter criteria for the accountability information and more effective arrangements were being made with the care groups.

Yes, one sticking point is that it's not always clear that a client is a diabetes patient. You especially see that in ophthalmology departments. People phone for an appointment with an ophthalmologist for a diabetes eye check-up. They should actually be given a special code in the computer. That should all be paid for from the bundled care budget. If the code isn't entered, then the check-up will be paid for twice. It's still a real problem. A patient should actually have to phone and say, 'I'm a patient from the diabetes care group', to make sure the appointment is recorded properly.... Something needs to be done to improve the recognition of such patients.

Diabetes nurse specialist

The system is open to cheating.... At present, you can claim a second consultation, and okay, fine. So you just go ahead and do that, you know what I mean? And the boundaries are so vague that they encourage strategic behaviour.

Director of a general practice laboratory

All the care is included in the contracts, as specified in the NDF Health Care standard.... Extra consultations are included too.... I'm sure there's people that will abuse the system in both directions. The grey area is poorly defined in the contracts. That's one of the biggest pitfalls.

Insurance company official

Besides the risk of double payments, another potential drawback is that not all the services contracted under a bundled payment system are actually delivered to all patients. The annual eye examination is a case in point (see quote). The resulting surplus mainly benefits the care groups. It is not known how common this is.

For the eye fundus exam, 50% don't turn up.... The fee assumes 90%.... This is one of the flaws in the system. The insurance companies try but they don't succeed. They haven't approached us about it yet, but they will sometime, I think.... It's not my primary responsibility. We try to do our best, but we do see the flaws of the system.

Project leader in a care group

Bypass constructions
Some health care providers pointed to the so-called 'bypass' constructions (see *figure 3.5*). Care items contracted in a bundled payment scheme are also claimed via the ordinary insurance coverage (see quote). An often cited example was dietary counselling. A care group would contract a dietician for a limited number of counselling minutes per patient, but then GPs refer the patient to the dietician again for a condition like obesity or hypercholesterolaemia. The dietician would then claim the fee for the additional referral on the patient's health insurance over and above the bundled payment package.

When we inquired about this of the dieticians in one care group during the 12-month assessment, we learned that about 15%–20% of the patients with diabetes received additional referrals to a dietician from their GPs.

Changes in vicarious liability were contingent on organisational structure and work process
Depending on the organisational structure chosen, the introduction of care groups might give rise to changes in the responsibilities and liabilities of health care providers. This issue was pointed out by one care group (see quote), whilst the other care groups said they were unaware of possible shifting liabilities.

We submitted some of the bundled payment contracts to which we were allowed access to a health law expert for analysis. The conclusion was that most contracts were inadequate in this respect (see also *section 3.3*). The same was true of contracts or subcontracts between care groups and their individual health care providers or agencies. *Appendix 6* discusses in detail the potentially shifting liabilities and responsibilities.

> *Vicarious liability is another troublesome issue. Nobody can explain exactly what the situation is.*
>
> Project leader in a care group

Care groups seek ways to strengthen patient participation
Practically all care groups indicated that their goal of strengthening the role of the patients had not yet been fully achieved. Many groups were still searching for ways to give patients more of a voice within the current organisational structures of the care group. For the time being, patient input was limited to periodic consultations with local or national patient associations. In care group 2, a patient association had a representative in the supervisory board. Some groups conducted polls on patient experiences. Some insurance companies have included such polling as a requirement in the bundled payment contracts and one company paid a bonus to care groups whose patients reported positive experiences.

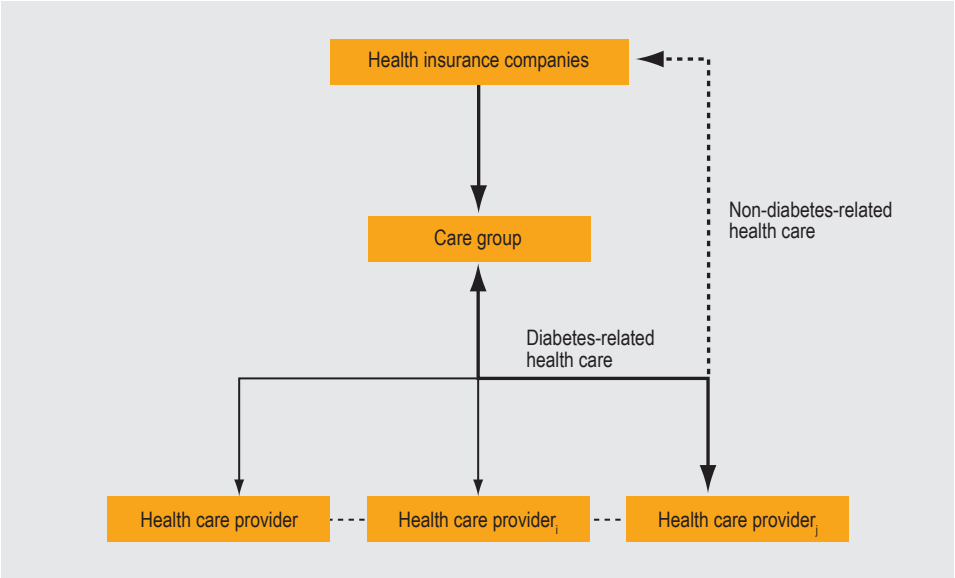


Figure 3.5: Bypass construction

3.6 Quality of care in the diabetes care groups after one year

Outline

This section broadly analyses the quality of care, using the patient record data kept by the care groups. Quality of care is evaluated in terms of indicators derived from the NDF Health Care Standard. Detailed results are reported and documented in *appendix 4*. The research design, methods and statistical analyses are explained in *appendix 2*. Because care group 7 was unable to provide its patient data, the results in this section apply to eight care groups.

Box 3.4: Problems with data reporting and incomplete data

Many of the care groups experienced difficulties in reporting data to the RIVM. We worked intensively with several groups to optimise the quality of the data they delivered. Although this enabled us to correct many deficiencies, it was not possible for certain types of data, including some key variables. Data considered to have insufficient validity has been omitted from the analyses.

Patient characteristics

Heterogeneity of care groups in terms of both numbers and characteristics of patients

A total of 14,156 patients from eight diabetes care groups were included in our analyses (see *table 3.6*). The number of patients with diabetes per care group varied widely, from 362 in group 1 to 5,295 in group 4. Patient characteristics also differed significantly in terms of age and diabetes duration. The mean overall age was 67.1 (with averages ranging from 63.7 to 68.5 across the eight care groups). Mean diabetes duration was 5.7 years

Table 3.6: Baseline patient characteristics by care group

	Care group								
Characteristics	**1**	**2**	**3**	**4**	**5**	**8**	**9**	**10**	**Total**
N	362	670	552	5.295	2.635	1.525	553	2.564	14.156
Mean age	67,0	65,9	67,7	67,0	68,5	67,6	63,7	66,2	67,1 *
Gender (% female)	51,4	54,9	50,7	52,5	53,0	52,7	48,1	48,6	51,7
Mean diabetes duration (years)	5,2	7,5	5,3	5,8	6,6	5,6	5,8	4,4	5,7 *

* = Significant (P < .05)

(ranging from 4.4 to 7.5). In the entire sample, 51.7% of patients were female (ranging from 48.1% to 54.9%). According to care group records, 2.8% of diabetes patients had type 1 diabetes (not shown in table), but this may be a gross overestimate caused by record-keeping errors, given that 65% of those with type 1 were above 50 when the diagnosis was made. Several care groups indicated that their bundled payment system was not limited to people with type 2 diabetes.

Quality of care in terms of process indicators

Almost 80% of patients had four check-ups in the past year

The NDF Health Care Standard states that patients with diabetes should have check-ups four times a year (NDF, 2007). In the 12-month period we studied, 79.5% of the patients in the sample received four check-ups (*table 3.7*); this exceeded 80% in care groups 2, 5, 8 and 10. In groups 3 and 9, the percentages were far lower, at 36%. Groups 1 and 4 were omitted from this analysis due to reporting problems; had they been included, the percentage for the total sample would have dropped to around 50%. This process indicator reflects the amount of care provided but it lacks clinical relevance, in that it measures only the number of check-ups and not whether the patients were well controlled (the purpose of the check-ups).

86.5% of patients had foot examinations in the past year

Foot examinations are an indicated prevention measure to screen patients for foot complications, such as ulcers or infections (Sims et al., 1988; CBO, 2006). They are to be performed once a year. The percentage of patients receiving foot exams during the 12-month study period ranged from 61.5% in care group 10 to 100% in care group 8 (*table 3.7*). Overall, 86.5% of patients were examined. During our evaluation period, several care groups made a special effort to improve the quality of the foot screening, arranging further or continuing training for their contracted health care providers. An important factor in the improvement was the protocol-driven approach. Care groups indicated that the numbers of patients known to have foot problems was increasing as a result of the improved quality of the annual screening.

Percentages of patients whose eyes were examined by the care groups ranged from 4.3% to 78.5%

The purpose of the annual eye examinations is the early detection of diabetic retinopathy in order to avert visual impairment and blindness (Polak et al., 2008; NDF, 2007). There were wide variations between care groups in the 12-month period in terms of the

Table 3.7: Quality of diabetes care in terms of process indicators based on the NDF Health Care standard (percentages)

	Care group								
Process indicator	**1**	**2**	**3**	**4**	**5**	**8**	**9**	**10**	**Total**
Patients with 1 check-up	-	0,3	5,8	-	9,9	0,0	28,0	4,7	6,7
Patients with 2 check-ups	-	0,6	21,4	-	2,1	3,1	12,5	4,3	4,7
Patients with 3 check-ups	-	2,5	36,6	-	7,1	5,8	22,8	5,7	9,0
Patients with 4 or more check-ups	-	96,6	36,2	-	80,9	91,1	36,7	85,3	79,5
Annual foot examination	82,4	93,9	67,8	96,8	89,2	100,0	65,8	61,5	86,5
Annual eye examination	36,6	36,3	4,3	43,2	71,3	78,5	47,2	-	52,0
HbA1c test	89,5	85,2	95,7	96,5	94,7	99,7	90,2	86,0	93,6
Blood pressure test	90,3	86,0	92,8	75,1	99,0	99,6	97,1	84,6	86,4
BMI measurement	85,4	99,4	87,9	83,0	97,7	100,0	79,4	83,2	88,5
Kidney clearance test	80,4	85,4	-	92,6	92,8	77,0	91,0	82,8	88,3
Albuminuria test	-	-	-	-	-	-	-	-	-
LDL calculation	77,3	77,9	75,5	92,9	93,8	81,8	89,9	82,3	88,0
Smoking status known	71,1	100,0	100,0	88,6	69,8	9,1	77,2	93,9	77,6
Dietician consultation	-	-	-	-	-	-	-	-	-
Composite indicators									
4 standard check-ups plus foot and eye exams	-	34,5	2,9	-	52,9	74,1	17,4	-	48,3
Tested/known: HbA1c, blood pressure, BMI, LDL, kidney clearance, eye and foot exams, smoking status	-	24,5	-	28,2	41,3	5,3	25,0	-	27,8

percentages receiving eye exams within their care groups, ranging from 4.3% in care group 3 to 78.5% in group 8 (*table 3.7*). In total, 52.0% of patients received screening within care groups. This does not mean that the remaining 48.0% received no examinations; quite possibly they had eye exams from an ophthalmologist in a hospital or elsewhere, but not under care group auspices. Such examinations would not have been paid for, recorded or reported under the bundled payment schemes. Several care groups reported that they had not succeeded in getting the annual eye exams performed under care group management within the evaluation time frame. Arranging for substitution of tasks proved to be a complex undertaking in some care groups (see also *appendix 4*). Care group 10 was omitted from this analysis due to data reporting problems.

Process indicators HbA1c, blood pressure, kidney function, LDL and BMI were all above 85%

For all care groups, the process indicators based on percentages of patients receiving a HbA1c test, blood pressure test, kidney function test, LDL calculation and BMI measurement in the 12-month period scored above 85% (*table 3.7*). Variations among care groups were considerable; for example, care group 4 took blood pressure in 75.1% of patients and care group 8 in 99.6%.

Viewed over the entire sample, all process indicators showed some room for further improvement. Within care groups, considerable variations were often apparent between

individual indicators. In care group 8, for example, the HbA1c and BMI indicators were both above 99%, while the smoking status indicator was just 9.1%.

Just under 50% of patients had four check-ups as well as eye and foot exams in the past year

If the NDF Health Care Standard is deemed to be fully met when patients have received all six of the specified periodic checks, then the full standard was delivered to 48.3% of diabetes patients during the 12-month study period (*table 3.7*). Care groups 1, 4 and 10 were omitted here due to missing data on one or more process indicators. In care group 3, only 2.9% of the patients received all six examinations, compared to 74.1% in group 8; the low percentage in group 3 was largely due to its low rate of eye screening in the study period.

HbA1c, blood pressure, BMI, LDL, kidney clearance, eye and foot exams and smoking status recorded for 27.8% of patients

The percentage of patients examined for HbA1c, blood pressure, BMI, LDL, kidney function, eye and foot problems and albumin in the study period was 27.8% (*table 3.7*). This composite indicator (or a variant of it) was used by several care groups to determine whether patients were receiving the full package of care as required by the NDF standard.

Care groups used different composite indicators to assess whether they were fully complying with the standards for their patients (see *box 3.5*). Many such indicators did not include consultations with dieticians. The process indicator based on the four periodic check-ups was also not included because of its lack of clinical relevance.

Box 3.5: What percentage of diabetes patients received care in compliance with the full NDF Health Care Standard?

This question will be difficult to answer until an unambiguous definition of the Health Care Standard is established. If we judge only in terms of the periodic check-ups (four quarterly check-ups plus eye and foot screening), then 48.3% received the full package. If we look at the more biomedical process indicators, such as lab tests and smoking status, then 27.8% received it (*table 3.7*).

Process indicators for dietician consultations and albuminuria testing not included

We have not reported dietician consultations and albuminuria testing as process indicators in *table 3.7*. The data on dietary counselling were not adequately provided by any care group. All care groups reported albuminuria testing but the outcomes varied so widely among groups that we could not reliably estimate the actual level of care.

Quality of care in terms of patient outcome indicators

69.0% of diabetes patients had HbA1c levels below 7.0% at the 12-month assessment

At baseline, the percentage of patients with an HbA1c level below 7.0% stood at 71.2%, and this had declined by 2.2 percentage points to 69.0% one year later (*table 3.8*). Average HbA1c in the total sample increased slightly from 6.67% at baseline to 6.72% at 12 months. This increase of 0.05% in the mean HbA1c level is not contrary to good diabetes care, since mean HbA1c levels rise as diabetes duration increases (UKPDS, 1998a). The values

we report for HbA1c may be considered good, compared to those reported in Dutch and international literature (see also *appendix 4*, *section A4.4.1*).

Box 3.6: Interpreting indicators in the absence of background data produces inaccurate quality-of-care assessments Care Standard?

The mean HbA1c level in care group 2 (7.28% at the 12-month assessment) was considerably higher than the average HbA1c level of the other care groups (*table 3.8*), and its percentage of patients with HbA1c <7.0% was considerably lower. This deviation can be blamed in part on the atypical patient population of care group 2. Unlike other groups, group 2 regarded patients being treated by an internist as also 'under the care' of the care group. In addition, the average diabetes duration of the patients in group 2 (7.5 years) was longer than that in other groups (see *table 3.6*). Interpreting the HbA1c outcome indicator without considering this background information could result in erroneous conclusions about the quality of the care provided. If further task substitution takes place from the secondary care sector to the care groups in the future, the average HbA1c levels will also increase in those patient populations, as the care burden shifts towards the care groups.

Mean systolic blood pressure was virtually unchanged at 12 months but more patients had a systolic pressure below 140mmHg

No significant change occurred during the study period in terms of the average systolic blood pressure in the overall sample. The percentage of patients with a systolic pressure below 140 mmHg did increase from 50.4% to 53.0% between baseline and 12 months (*table 3.8*). Systolic blood pressure tends to increase by about 1 mmHg per year of increasing age (Verschuren et al., 2008). In this light, the unchanged mean systolic blood pressure may be viewed positively. Outcome values reported here for systolic blood pressure are comparable to those given in the Dutch and international literature (see also *appendix 4*, *section A4.4.2*).

Mean systolic blood pressure was virtually unchanged at 12 months but more patients had a systolic pressure below 140mmHg

No significant change occurred during the study period in terms of the average systolic blood pressure in the overall sample. The percentage of patients with a systolic pressure below 140 mmHg did increase from 50.4% to 53.0% between baseline and 12 months (*table 3.8*). Systolic blood pressure tends to increase by about 1 mmHg per year of increasing age (Verschuren et al., 2008). In this light, the unchanged mean systolic blood pressure may be viewed positively. Outcome values reported here for systolic blood pressure are comparable to those given in the Dutch and international literature (see also *appendix 4*, *section A4.4.2*).

Mean BMI unchanged (but high) and fewer patients had a BMI below 25 kg/m2

The average BMI in the sample did not change significantly during the study period and was 29.8 kg/m^2 at the 12-month assessment. Despite this stability, the percentage of patients with a BMI below 25 kg/m^2 decreased to 15.7% in the 12-month period, 1.2 percentage points lower than at baseline. The Dutch and international literature reports similar or even higher mean BMI values (see also *appendix 4*, *section A4.4.3*).

Table 3.8: Quality of care in terms of outcome indicators derived from the NDF Health Care Standard

	Care group																	
	1		2		3		4		5		8		9		10		Total	
Outcome indicator	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**	**T0**	**T1**
HbA1c																		
Mean (%)	6,39	6,52 *	7,21	7,28	6,74	6,59 *	6,65	6,71 *	6,72	6,83 *	6,73	6,58 *	6,46	6,68 *	6,55	6,65 *	6,67	6,72 *
% of patients <7.0%	85,2	77,6 *	46,5	40,6 *	72,7	75,7	72,3	69,7 *	67,0	61,6 *	70,1	75,7 *	79,1	71,2 *	76,1	73,6	71,2	69,0 *
Systolic blood pressure																		
Mean (mmHg)	136	136	142	138 *	136	137	141	141	-	141	140	142	139	138	137	136	139	138 #
% of patients <140mmHg	51,9	53,4	43,5	51,6 *	61,6	60,5	45,1	44,9	-	45,3	53,6	50,2	51,8	55,5	54,6	60,3 *	50,4	53,0 # *
BMI																		
Mean (kg/m^2)	29,7	29,8 *	29,7	29,8	29,7	29,9	29,9	30,4 *	29,5	29,3 *	29,3	29,3	29,0	29,4 *	29,6	29,7	29,6	29,8
% BMI <25	16,8	17,9	18,0	17,5	14,2	14,2	16,3	13,6 *	16,5	16,1*	19,1	18,6	17,2	16,4	16,8	15,3	16,9	15,7 *
% BMI 25-30	42,3	41,6	42,4	41,7	45,7	43,3	41,1	41,0	45,0	45,2 *	43,3	43,5	45,3	41,1	43,3	42,7	43,2	42,9
% BMI >30	40,9	40,5	39,5	40,9	40,1	42,5	42,7	45,4*	38,5	38,7 *	37,6	38,0	37,5	42,4 *	39,9	42,0 *	39,9	41,4 *
Foot examinations																		
% of patients with foot problems	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Eye examinations																		
% of patients with retinopathy	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
LDL cholesterol																		
Mean (mmol/L)	2,67	2,60	2,54	2,45 *	2,25	2,21	2,56	2,50 *	2,55	2,54	2,56	2,55	2,60	2,43 *	2,57	2,46 *	2,55	2,50 *
% of patients <2.5 mmol/L	48,6	51,4	52,5	55,1	66,3	64,4	49,9	52,5 *	48,6	51,4 *	47,5	48,0	46,6	54,8 *	48,0	55,2 *	49,3	52,6 *
Kidney clearance																		
% of patients >60 ml/min																		
% of patients 30-60 ml/min																		
% of patients <30 ml/min																		
Smoking																		
% of smoking patients																		
% of quitters at 12 months																		

* Significant effect (P < .05); # = excluding care group 5; ◊ = not shown due to insufficient numbers of cases (n < 10).

LDL cholesterol improved

Mean LDL levels improved significantly in four of the care groups and no care group showed a significant LDL increase (*table 3.8*). LDL also improved significantly from 2.55 mmol/L at baseline to 2.50 mmol/L a year later. The percentages of patients with LDL below 2.5 mmol/L grew in most care groups as well as in the total sample (*table 3.8*). Patient outcomes for LDL were comparable to those in the international literature (see also *appendix 4*, *section A4.4.6*).

Data on foot and eye problems not uniformly reported

Foot and eye abnormalities and complications were not recorded by care groups in a consistent manner during the study period and data were reported to us in highly varied forms. We have therefore not presented those data here. They cannot be used in assessing quality of care until they are recorded and reported in uniform formats.

Kidney functions tested differently

Kidney function data were recorded and reported by all care groups (see process indicator as described in *appendix 4*, *section A4.3.7*). However, kidney functioning was tested by different groups in different ways, resulting in systematic discrepancies among groups. As non-uniform data might have biased the results, we decided not to report this indicator.

Percentage of smokers was slightly above the nationwide average for the age group

According to the patient record data, 16.9% of the patients smoked at baseline and 16.5% one year later (*table 3.8*). These percentages were higher than the Dutch national average of 14% for the 65-to-74 age category (Limperg, 2009). There were wide variations between care groups both at baseline (22.5% smokers in group 9 to 11.1% in group 3) and at 12 months (22.5% in group 9 to 10.1% in group 2). Only in care group 2 did the number of smokers decrease significantly. In many care groups, support in smoking reduction or cessation was not included in the bundled payment contracts (*table 3.4*). Care group 2 did include it.

Box 3.7: Comparing evaluation results with the scientific literature is not easy

Copious data about the quality of diabetes care have been reported in the Dutch and international literature (Gnavi et al., 2009; Janssen et al., 2009; Zoungas et al., 2009; Sequist et al., 2008; Calvert et al., 2009; Cooper et al., 2009; Bovier et al., 2007; Holbrook et al., 2009; Cleveringa et al., 2008; Rutten, 2008b). Comparing such findings with the results of our evaluation is hampered by possible differences between patient populations (e.g., in socioeconomic status, age or ethnicity) and by incompatible or inadequate data on multimorbidity and the use of medication. It is also difficult to determine whether populations are comparable in terms of percentages in secondary care treatment and the types of treatment received. Rigorous comparisons between studies would require more consistent data.

3.7 How satisfied were the stakeholders?

Outline

This section gauges the satisfaction of the various groups of stakeholders with the bundled payment schemes. We differentiate here among patients, care groups, health care providers and health insurance companies. Data on patient satisfaction are based on

a patient survey in six of the nine care groups studied (see *appendix 5*). Findings on the satisfaction of care groups, health care providers and insurers are taken from interviews. We also make regular reference to aspects of satisfaction that have been discussed in previous sections. *Appendix 2* gives a detailed description of our methods and data.

Opinions of patients

Cooperation and coordination among health care providers in the care groups was rated positively at both baseline and 12 months

The patients gave positive assessments of the 'cooperation and coordination on the whole among the different health care providers'. At baseline, 94.9% rated it as 'good' or 'excellent', and the percentage declined slightly to 92.9% at the 12-month assessment (see *appendix 5*, *table A5.4*). The percentage of 'excellent' ratings declined from 27.1% to 23.8% (*figure 3.6*). In care group 3, the percentage judging the collaboration as excellent increased from 30.6 37.0%.

Patients less likely to receive conflicting advice

The overall percentage of patients indicating that they 'almost never received' or 'generally did not receive' conflicting recommendations from different health care providers increased from 84.2% at baseline to 88.3% a year later (see *appendix 5*, *table A5.4*). The percentage indicating that they 'almost always' received conflicting advice declined from 1.8% to 0.7%. In four care groups (1, 2, 3 and 4), not a single patient said they almost always received conflicting advice.

More appointments on the same day

About one in three patients indicated that different appointments could 'almost always' be scheduled on a single day. At baseline, 27.8% of patients reported this and 30.5% did so one year later. Improvement was noted in four of the six care groups (see *appendix 5*, *figure A5.8*). The number indicating that appointments were 'almost never' combined on a single day even declined to 0% in care group 1 and substantial improvements were reported by patients in care groups 9 and 10 *(figure 3.7).*

Opinions of care groups

Care groups were positive about the introduction of the bundled payment system

In the interviews we held with care groups, they gave generally positive assessments of the bundled payment experiment. Positive aspects they mentioned were the managing role of the care group and the resulting power 'to steer the care process', the improved recording of medical data during the patient care process and the increasing possibilities to provide reflective information to the GPs (see *section 3.5*).

All care groups reported that they had already signed or were currently negotiating new bundled payment contracts for diabetes care. Several groups also reported having contracted, or being in negotiation for, similar schemes for other chronic illnesses.

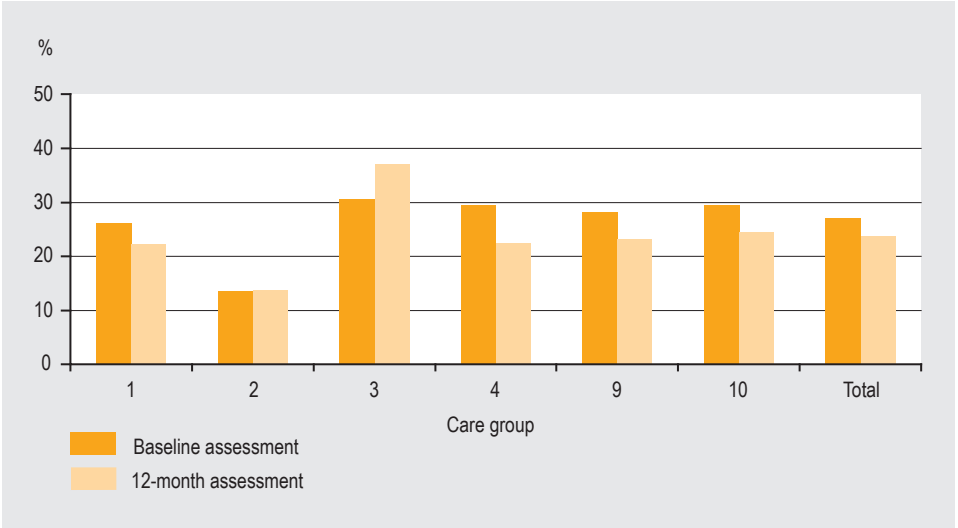


Figure 3.6: Percentages of patients rating cooperation and coordination among health care providers as 'excellent': at baseline and 12 months, by care group and for total sample.

Many care groups discontented with IT

Many care groups complained of the limited possibilities for exchanging or transferring data between different information systems (see *section 3.5*). This hampered them in formulating reflective information, rendering accountability to the insurance companies for the quality of the care and generating other management information, such as billing formats. Several care groups indicated that the implementation of the bundled payment system had accelerated IT developments. They also reported being increasingly able to supply reflective information to their health care providers and accountability information to insurance companies.

IT, well that's a big problem, you know. That makes it a real hassle for us to communicate with people like subcontractors in hospitals.

Project leader in a care group

The whole IT is also flawed. It's clear we've chosen a troublesome course. We feel the patient records should be kept in the GP information system and nowhere else. You've got to keep uniform records. That works okay, but it takes a whole lot of energy both from the GPs and from us to support it. And if you look at it, what will we be assessing? We'll be assessing how well the records have been kept and we'll be assessing the patient outcomes. Sometimes things are still hard to find out, smoking for instance. Indicators like that are just poorly defined operationally.... I'll be curious to see if you can make any sense of that..

Project leader in a care group

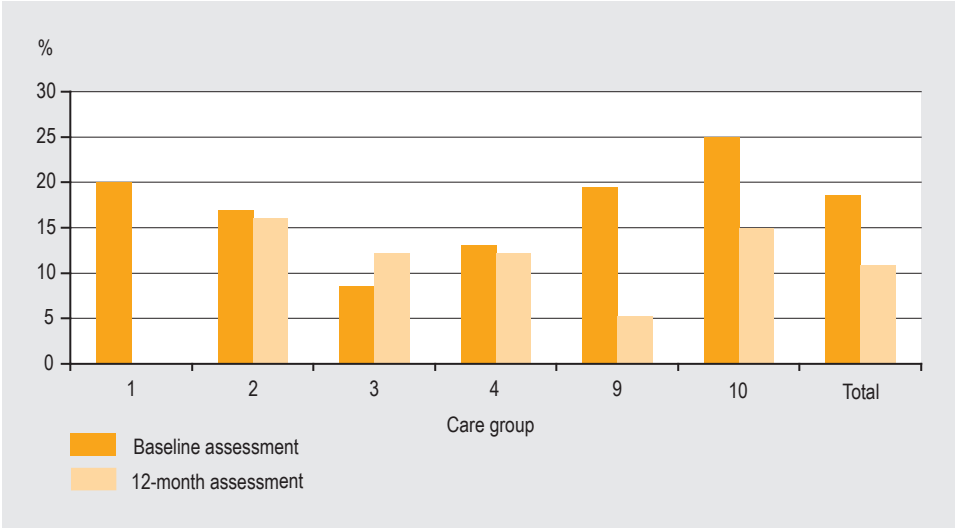


Figure 3.7: Percentages of patients reporting that appointments could 'almost never' be combined on a single day: at baseline and 12 months, by care group and for total sample.

Considerable red tape in contracting peripheral health insurance companies
Several care groups reported in the interviews that the contracting of health insurance companies that were not regional market leaders formed a great source of annoyance and was highly time-consuming and convoluted (see also *section 3.4*).

Opinions of individual health care providers and agencies

Cooperation now more intensive and systematic
Many services and health care providers were positive about the organisational improvements in care. They believed the care was now better coordinated and that the protocols were adhered to more accurately. They also reported that the record-keeping discipline of the health care providers was improving as a result of the formalised working arrangements between the care group and the individual providers.

Advantages of the bundled payment scheme are that you can provide systematic support to the whole client. The health care providers also work in a more coordinated fashion. That really is an advantage. Clients get more face-to-face support. The care is better structured: every three months. That's because there's a comprehensive package of care and it's managed by the practice nurse, who coordinates it well. That's really where the added benefit is. It ensures more coordination and cohesion between the providers of health services.

General practice nurse

The electronic patient records are a new thing in the new situation. A lot has changed. Our structure is more transparent: which appointments a patient has and with whom. It's a lot easier for me to look back and see what we've discussed (in my EPR) and what information the internist has entered. With one qualification: many patients have yet to be entered, and for those who already have been, the doctors still need to start working with the system. What you do notice is that the diabetes nurse specialists consistently work with the EPRs for every consultation, but that the internists don't do that yet. So that's still hampering communication at the moment.

Diabetes nurse specialist

Health care providers saw care groups as having a strong negotiating position

When bundled payment was introduced, the care groups entered into negotiations with their individual health care providers about the delivery of the care components. Many health care providers, particularly dieticians but also general practice labs, felt that the care groups had an inequitable, overbearing bargaining position. We have also discussed this above in *section 3.4*. *Appendix 7* examines in more detail the negotiating position that care groups occupied vis-à-vis both health care providers and insurance companies.

Information technology seen as inadequate

Information technology came up in practically all our interviews with health care providers. Many of them indicated that the current systems were inadequately equipped to enable cohesive care delivery. A number of different issues were singled out, including the insufficient integration of different information systems (hence requiring data to be entered twice) and insufficient possibilities within systems to record all the needed information (hence hampering day-to-day health care delivery). One IIS, for example, only allowed for entering whether or not the patient was taking a certain type of medication but not the dosages and previous adjustments. Several health care providers did point out that the introduction of the bundled payment system had greatly accelerated the development of IT applications. While they were positive about those developments, they maintained that the systems were currently still inadequate.

The computer system has been constructed in a way that you are required to have carried out those and those check-ups, and they are complete or not complete. Such check-ups include a whole lot of things that have to be done, like you have to perform about 20 actions. If one item is missing, then it's not complete, and then they won't pay. That's how rigid they are. That has to do with the process.

General practice nurse

Reflective information and continuing and further training rated very positively

Health care providers reported that more and better records were being kept in the new situation. They were highly positive about the availability of reflective information for the GP practices they worked in. The continuing and further training courses were also valued by many respondents (see also *section 3.5*).

The biggest advantage, I think (but I benefit personally from that), is that more reflective information is available. So we receive a lot more feedback information, things like how we're performing in the diabetes care and in comparison to other colleagues.

General practice nurse

The plus-point of integrated diabetes care is that we'll soon be able to get all that data from the computer. Then we can take a good look at whether there are trends in the statistics. We couldn't really do that before. This generates data we can do something with – like trying to get that HbA1c down under 7. We did try that once by working with the lab, but it didn't really work.

General practice nurse

Opinions of insurance companies

Health insurance companies were positive about the multidisciplinary working arrangements of the health care providers but not always about the introduction of bundled payment

Health insurers expressed favourable opinions about the cooperation between health care providers as well as about the removal of funding barriers among professional groups and between the primary and secondary care sectors. But even though all officials we spoke to were positive about the more cohesive delivery of diabetes care and the work in multidisciplinary teams, not all were convinced that bundled payment schemes were necessary to achieve this. One official indicated that the same thing could be accomplished by keeping the existing fee-for-health care system and providing extra reimbursement for the coordination tasks and other overhead costs. Most insurers were positive about the implementation of bundled payment but preferred a cautious approach in the coming years during the rollout of bundled payment schemes for additional chronic illnesses.

Insurers were positive about the care groups as clear points of contact but questioned their market power

Some health insurers reported that they were satisfied with the function of the care groups as responsible points of contact. One official pointed out explicitly that it was also more efficient to make arrangements with a care group about the care to be delivered than to negotiate with all the health care and health care providers separately. At the same time, insurance companies pointed to the risk that the care groups would come to occupy positions of market power (see also *appendix 7*), although this had not posed many problems so far. One official emphasised that the more services the care groups contracted, the stronger their market power position would become. Insurers pointed out that this risk was greater in the purchasing market between the care group and the individual health care providers (health care purchasing market 2). This was confirmed in the interviews with individual providers. The specific risks noted by the insurance officials were forcing up prices and limiting the patients' freedom of choice. Some insurance officials indicated that they were already considering what solutions would be feasible if the care groups' market power should give rise to problems. Among the solutions were

to formulate a transparent contracting policy for care groups and to set requirements for the organisational forms and structures of care groups.

Too little clarity about the quality of the care delivered

Health insurance companies could not yet obtain sufficient insight into (the quality of) the care that was being delivered. They attributed that to problems with data management in the care groups. Care groups were still insufficiently capable of supplying the insurance companies with good-quality accountability information. Several insurance officials expressed expectations that the accountability information would greatly improve in the years to come. That this type of information was to become available was cited by all insurers as a positive aspect of the integrated care schemes, although some reported that they were still pondering how they could put managerial and other data like this to use to further improve the quality of the care.

Differing opinions were heard from insurance officials about the degree to which task substitution from the secondary care sector to care groups could be achieved by implementing bundled payment schemes. Several officials remarked that they had not yet seen that happening. One official reported that the costs for medication had declined for diabetes patients served by a care group compared to those not yet in a care group. Several companies had already commissioned research on the substitution effects of the introduction of bundled payment systems but their reports were not yet available.

Lack of clarity in bundled payment contracts jeopardises the 'market-follower principle'

The bundled payment contracts signed by care groups with the health insurance market leaders in their regions were not always transparent to other health insurance companies. The assumption was that those insurers would follow the market leader but the lack of clarity in the contracts was undermining that assumption. Some insurance companies told us they were considering creating their own bundled payment agreements. So far, however, all companies reported that they were still 'following' the market leader contracts.

4 DISCUSSION

Diabetes is a serious and widely prevalent illness. In recent decades, the numbers of people with diabetes have risen sharply and the increase is expected to continue into the future. By 2025, an anticipated 1.3 million or more people in the Netherlands will be living with diagnosed diabetes. This will have considerable ramifications, both for the provision of health care and for the burdens and costs of care. Both policymakers and practitioners acknowledge that services to people with diabetes can and must be improved.
Many initiatives to enhance the effectiveness and quality of diabetes management have already been developed in recent years. Some of these focus on the organisation of care and others on the development and provision of specific care components. The fragmentary funding of various components of diabetes care is a major obstacle to the establishment of long-term cooperative arrangements (Baan et al., 2003; IGZ, 2003; Taakgroep, 2005). For this reason, the Dutch Ministry of Health has developed an action plan to create the necessary conditions for diabetes care groups to provide high-quality disease management organised on a multidisciplinary basis. A trial bundled payment system, based on the Health Care standard of the Dutch Diabetes Federation (NDF), forms an essential part of this action plan. In recent years, ten such care groups have been working experimentally with bundled fees as part of the Integrated Diabetes Care research programme funded by the Netherlands Organisation for Health Research and Development (ZonMw). We have evaluated that experiment and published our findings in this report. Our evaluation yielded a substantial amount of data on the process of pricing, delivering and securing insurance coverage for diabetes care through bundled payment arrangements under care group management.

This fourth chapter of the report briefly summarises and discusses the results of the evaluation. *Section 4.1* makes some qualifying remarks about the research method and *section 4.2* puts the research findings into perspective. *Section 4.3* discusses the implementation of bundled payment for diabetes as standard practice and the projected rollout of bundled payment schemes for other chronic illnesses. *Section 4.4* contains our recommendations.

4.1 Research method

Our evaluation of the experimental implementation of bundled payment for diabetes was based on three sources of data: patient questionnaires, patient record data from the care groups and interviews with stakeholders. The purpose was to gather as much information as possible on the work process under bundled payment arrangements as well as on the health care purchasing process, and to assess the quality of the care and the patients' experiences.

Experiment and evaluation were closely tied together
At the start of the ZonMw Integrated Diabetes Care programme, neither the Health Ministry, ZonMw and RIVM nor the care groups, health insurers and other stakeholders

had any real overall view of the experiment with bundled pricing. What was clear was that a new situation had come about in which (especially in the months immediately preceding and following the start of the evaluation) new issues were continually arising and needed to be resolved. The experiment caused such issues to surface more quickly and solutions to spread rapidly. In some ways that was good for the evaluation, since one of its main aims was to document the process of care purchasing and delivery. In other ways though, the simultaneous start of the experiment and the evaluation was not optimal for assessing the quality of care. As a consequence of the hectic situation at the start of the evaluation, the keeping of patient records was initially of secondary importance to the care groups and this caused gaps in the patient records, especially for baseline data.

Low response to patient questionnaires

The response rate to the questionnaires we distributed to patients was low: 43% for the pen-and-paper questionnaires. A low response rate carries a risk that the results will be biased in favour of people who stay at home a lot, are interested in the subject or enjoy filling in questionnaires (Stoop, 2005); patients who are more infirm are less likely to respond. This could compromise the reliability and generalisability of the data. Non-response analysis (see *appendix 5*) showed that the questionnaire respondents did not differ from the total patient sample in terms of the available characteristics gender, age and mean diabetes duration.

Limited ability to assess quality and efficiency improvements in bundled payment schemes

Our evaluation included ten experimental care groups that were not recruited randomly but selected by ZonMw. They were chosen on considerations of nationwide geographical diffusion, start-up phase and variations in group structure and size, in order to ensure diversity in the study population. It is unclear to what extent the findings are generalisable to other care groups. Despite the dissimilarities among many care groups, the results on the process indicators and the patient outcomes were comparable. As the evaluation design did not include control groups, it was difficult to say whether our quality-of-care results showed the effects of the new bundled payment arrangements. These data should therefore be interpreted cautiously. The purpose of the ZonMw programme, though, was to improve the organisation of Dutch diabetes management and gain experience with contracting, delivering and financing diabetes care through bundle payment schemes under the auspices of care groups.

Evaluation shed light on short-term effects on the quality of care

The time frame covered by the evaluation was twelve months, in which we made two assessments of patient outcomes using patient record systems and questionnaires. Because of the limited time frame, it was not possible to assess long-term effects of the bundled payment schemes. The process and outcome indicators in the care groups suggested results that were at least comparable to those reported in the Dutch and international literature. The introduction of bundled payment appears not to have effected any substantial changes in patient outcomes as yet. The limited study period also did not permit conclusions on improvements reflected by process indicators. A thorough understanding of the shorter- and longer-term effects of bundled payment arrangements on the quality of care is still

vitally needed, in view of government moves to permanently implement bundled payment schemes for a range of chronic diseases.

4.2 Findings in perspective

Evaluation overtaken by reality

The creation of new care groups did not remain limited to the ten groups selected for study by ZonMw. By mid-2008, the National Association of Organised Primary Care (LVG) was reporting that about 90 care groups already existed or were being created and that an estimated 70% of Dutch general practitioners already belonged to a care group (De Wildt and Leusink, 2008). At the time the Dutch version of this report was published, there were over 100 care groups (*figure 3.1*). Considering that the care groups averaged 76 GPs per group (according to the LVG study), one might conclude that a nationwide network of care groups now exists. Probably not all care groups have negotiated bundled payment contracts; some will be receiving 'lump sum fees' from insurance companies for overhead costs, while their individual health care providers still contract their services directly to the insurers.

GPs are crucial players in care groups

Care groups are legal entities that sign contracts with health insurance companies concerning the delivery of diabetes care. The NDF Health Care Standard envisages multidisciplinary care groups, with all 'core disciplines' represented in each group (NDF, 2007). This premise was not fulfilled in the care groups we evaluated. Half of the care groups (the prime contractors of the care) were made up exclusively of GPs. This finding was reiterated by the LVG care groups study (De Wildt and Leusink, 2008), which further notes that care groups arise mostly out of existing cooperative arrangements between GPs.

Comprehensive continuum of early detection, prevention and treatment not yet achieved

Treatment-related prevention is designed to delay or prevent complications and co-morbidities in people with diabetes. This type of preventive intervention is included in the NDF Health Care Standard and was contracted in the bundled payment arrangements for diabetes. Examples are the eye screenings, foot examinations and blood pressure checks at least once a year. Indicated prevention measures, which target people with a high risk of diabetes, were not covered by the bundled payment contracts. This means that treatment could not begin until a formal diagnosis of diabetes had been made. This neglected the opportunity to intervene with respect to identified risk factors and thereby, possibly to delay or avoid an ultimate diagnosis of diabetes. Such a dividing line is seriously at odds with the programmatic strategy desired by the Dutch government, which envisages the fullest possible continuum between early detection, indicated and treatment-related prevention, self-management and quality treatment (VWS, 2008b).

Has the diabetes diagnosis been stretched?

Our evaluation found some evidence for an increase in the number of patients in the integrated diabetes care programmes who did not fully satisfy the diagnostic criteria for

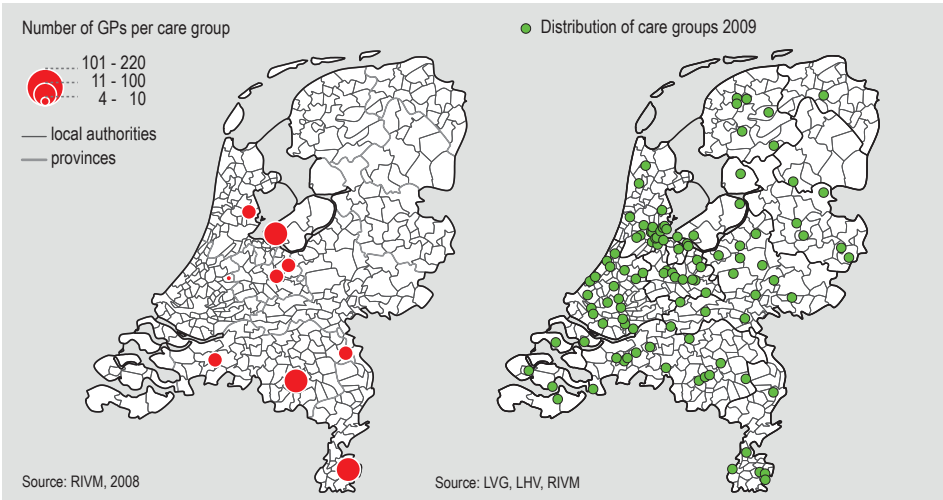


Figure 4.1: Care groups included in the evaluation study (left) and across the Netherlands (as of June 2009) according to LVG, LHV and RIVM data (right).

diabetes ('marginal cases'). An interview with a care group project leader revealed that it was financially worthwhile for GPs to include 'milder cases' in the schemes who needed only some components of the contracted care. GPs and project leaders acknowledged that some 'marginal cases' had been included but only because they expected that those patients would develop full-blown diabetes in the foreseeable future. The GPs considered the early inclusion appropriate to enable timely intervention in existing risk factors; actually, this amounted to indicated prevention.[3]

An important step further in integrating prevention, treatment and care could be made by explicitly including selective and indicated prevention in the health care standard. The NDF is now working towards doing so but the standard needs to be consistent with the new health care standards for overweight and obesity and for cardiovascular risk management, which are currently in development. The mere inclusion of prevention measures in the formal health care standard is not, however, enough to secure the coordinated delivery of prevention and care. This could be an important task for the care groups. More research is needed on the feasibility and limits of contracting and delivering programmatic prevention within (or in combination with) bundled payment schemes. Also needed is more awareness of the effects this might have on the quality of care, the disease burden and the macro costs in the care sector.

Potential adverse effects of task delegation on the up-to-date knowledge of GPs

A substantial delegation of tasks has occurred from GPs to practice nurses within the care groups. So many tasks have been delegated that many GPs now have fewer contacts with their diabetes patients. Some GPs and care group managers expressed concerns

3 The inclusion of patients who do not completely satisfy the diagnostic criteria for diabetes must not be confused with attempts to identify patients with undiagnosed diabetes.

that this might undermine the knowledge levels of the GPs. The doctors argued that GPs needed to see their diabetes patients at least once a year to keep their knowledge up to par. Interviewees also stressed the need for continuing and further training. The risks deriving from task delegation have also been pointed out in the literature (Rutten, 2008a).

Market power of care groups

Individual health care and service providers called attention in the interviews to the strong position held by the care groups in contract negotiations (see appendix 7). Their bargaining position was so strong that they may even have too much power in the market. How realistic the risk to market integrity is will be seen in the coming years. Possibly the problem will be resolved by the different market parties themselves. One insurance company, for example, is working on a code of conduct that would set ground rules for the negotiations between care groups and individual providers. Care groups will be required to conform to these rules to be eligible for bundled payment contracts with that company. Other initiatives may be taken to promote competitive bargaining equilibrium in the health care purchasing markets. It is important to continue monitoring such developments.

Using process and outcome indicators to assess and improve quality of care

As the evaluation showed, insufficient transparency exists at present about the quality of the care being delivered. This report defines quality of care in terms of the process and outcome indicators specified by the NDF Health Care Standard. Many such indicators have been questioned in the literature because their validity and reliability have not been established (Voorham et al., 2008). Moreover, the indicators now in use were designed from the perspective of certain professional groups or disciplines (e.g., indicators for general practice or indicators for hospital care). This makes them inadequate for reflecting the integrated nature of the bundled payment arrangements, where the reasoning is no longer geared to the individual disciplines but to the continuum of care. New indicators need to be developed that are better adapted to the integrated care package for diabetes. Probably these will include 'linked' or 'sequential indicators' (Voorham et al., 2008). A linked indicator is an outcome indicator combined with a process indicator – for example, the percentage of patients with systolic blood pressure above 140 mmHg (outcome indicator) whose medication has been adjusted (process indicator).

Record-keeping discipline of health care providers improved during the evaluation

The health care and service providers improved their record-keeping habits in the course of the evaluation. According to project leaders, this was promoted by adding record-keeping obligations to the contracts with individual providers. The chief initial purpose of the data was to generate reflective information for the health care providers but increasingly, it was also being used in accountability reporting to insurance companies. Many care groups have informed us that the quality of data-reporting greatly improved in 2008 and 2009 in comparison with the data from 2007 and early 2008 used in the present report.

Bundled payment schemes may test the limits of the Dutch basic health insurance package

The evaluation showed that 86.5% of the diabetes patients in the care groups received their annual foot examinations. In the past, the foot exam was always performed by a GP; it therefore still qualifies as GP care for insurance purposes ('care such as is normally provided by general practitioners'; CVZ, 2005). Under the new bundled payment schemes, the foot examination task has been delegated to practice nurses or (to a lesser extent) to podiatrists. Five of the care groups we studied had also contracted supplementary foot exams in their schemes, in addition to the annual exams; those were performed only on patients for whom abnormalities had come to light in the routine screening. In all five groups, the supplementary examinations were carried out by podiatrists, but podiatry is currently not covered by the basic benefits package. Yet, because foot examinations qualified as GP care, the foot exams could be paid for under the basic package after all, even when performed by a podiatrist or a diabetes nurse specialist (CVZ, 2005). Treatment of 'diabetic foot' did not qualify as GP care (CVZ, 2005) and was therefore not normally covered by the basic package (Mullenders et al., 2008); one care group included it in its bundled payment contract and thereby overstepped the bounds of the current basic package.

Implications of bundled payment schemes for the compulsory policy excess

The Dutch mandatory health insurance package contains a compulsory policy excess. Every calendar year, all policyholders are required to pay their first medical expenses (€165 in 2010) out of their own pockets. An exception applies to medical care provided by GPs, which is exempted from the excess. In bundled payment arrangements, GPs work together with other health care providers and some GP tasks may be carried out by those providers. The question is whether the bundled fees are subject to the excess – that is, whether patients pay the first part of the fee. The Minister of Health has informed the Parliament as follows: 'The care such as is normally provided by general practitioners for one of these chronic health conditions, and which is contracted under a bundled payment scheme, falls outside the compulsory excess' (VWS, 2009a). This means that all 'GP care' in the bundled payment arrangements is not subject to the excess, whereas all the other care is.

This distinction raises problems. The Health Care Insurance Board (CVZ) has likewise called attention to the operational complications of allowing for the compulsory excess in the billing procedures (CVZ, 2009). As emerged in our evaluation, it has not yet been clearly defined which bundled services qualify as GP care ('care such as is normally provided by general practitioners') and which do not. Moreover, distinguishing between GP and other care does not do justice to the integrated nature of the diabetes care as provided under the bundled payment schemes. That integrated care, in which payment is made for the 'functioning sum of the parts' and no longer for the separate parts, is the fundamental principle of the ministerial policy (VWS, 2009b). A third problem is that maintaining such a distinction generates additional clerical costs, since the care group has to keep track of which components have to be billed under the excess and which fall outside it for every patient.

More recently, the minister decided to keep the bundled care packages outside the compulsory excess for 2010 (VWS, 2009c). This gives rise to inequities among patients in payment of the excess, since not all bundled payment contracts include the same care components. In care group 8, for instance, laboratory testing was not included in the bundled contract and therefore, had to be paid for by the patients within their excess. In care groups where lab testing was part of the bundle, it fell outside their excess. In practice though, this may not form much of a problem for most diabetes patients, since the majority will have to pay their full excess anyway because of their many care needs.

Content of NDF Health Care Standard, bundled payment schemes and basic health insurance coverage are not yet fully synchronised

The evaluation revealed that the NDF Health Care Standard was open to more than one interpretation on some points and this had led to differences in the services included in the various bundled payment contracts (see *table 2.4*). Because the NDF standard, and by extension the bundled payment contracts, define the care in terms of the services needed, the components of the care do not correspond one to one with the entitlements specified by the basic insurance benefits package (*table 4.1*). Lab testing, for instance, is not included in the bundled payment arrangements as of 2010 (VWS, 2009a), even though it is an essential component of the quality parameters specified in the NDF standard and was contracted by nearly all care groups (see *table 2.4*). Lab testing is covered, though, by the basic health insurance. Another example is the support in smoking cessation or reduction. It is included in the NDF standard but it was contracted in the bundles of only four care groups. An integrated smoking cessation intervention is not yet covered by the basic insurance package. A final example involves medication, which was not contracted by any of the care groups we studied. The Health Ministry has announced plans to integrate medication into the diabetes care package in 2011 (VWS, 2009b). At this writing, no initiatives have been taken to extend the NDF Health Care Standard to include medication by 2011. This confusion of differences between the NDF standard, the integrated diabetes care packages and the basic insurance coverage, along with the lack of clarity surrounding the compulsory policy excess, is a source of uncertainty and inequity in the health care system.

Impact on the costs of care is unknown

The question remains as to whether bundled payment for diabetes management will lead to savings or higher costs. On the one hand, the standard diabetes care may intensify for many patients as a result of the more systematic check-ups, thus generating higher costs. On the other hand, task delegation and the selective purchasing of services could produce savings. The data in our evaluation were limited to the services delivered within care groups. We could not assess to what extent substitution occurred from secondary care to the care groups because no data were available on a possible decline in the numbers of hospital bundled payment schemes activated. It is therefore important to look not just at the numbers of secondary care bundles for diabetes, but at all hospital bundled payment schemes diabetes patients may be involved in. Several insurance companies reported having initiated projects to gain more clarity on this matter.

Table 4.1: Similarities and differences among the Dutch diabetes health care standard, bundled payment schemes, mandatory health insurance package, supplementary insurance packages and compulsory policy excess

	Continuum of care																			
	Prevention			Standard diabetes care (including treatment-related prevention)															Specialist medical care	
	Universal	Selective	Indicated	Formal diagnosis	Risk assessment	Check-ups	Lab tests	Medication	Foot exams	Eye exams	Foot treatment	Medical aids	Smoking cessation	Dietary counselling	Exercise	Psychosocial care	Consultations	Other specialist care
NDF Health Care Standard			IP		Yes	Yes	Yes		Yes	Yes			Yes	Yes			Yes	
Bundled payment schemes					Yes	Yes	Yes»	IP	Yes	Yes	#	IP	#	Yes§			Yes	
Mandatory insurance			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	IP	Yes*	IP	Yes	Yes	Yes
Supplementary insurance											Yes†							
Policy excess							Yes	Yes		Yes		Yes	Yes	Yes‡	Yes	Yes	Yes	Yes

IP = in preparation; * = up to 4 hours by dietician; § = for new patients only; » = in 7 of 9 contracts studied; minister has proposed inclusion in 2011 (VWS, 2009) but status is still unclear; † = if performed by a podiatrist

To explore the ramifications for the macro costs of health care, the Minister of Health commissioned the Netherlands Bureau for Economic Policy Analysis (CPB) to analyse the effects of introducing bundled payment. The ministry had assumed cost savings of €385 million by 2018, compared to previous payment schemes (CPB, 2009). The CPB conclusion was that those savings were unlikely to be achieved through the new bundled payment schemes. It did not even rule out that costs would increase once the four schemes for diabetes, COPD, congestive heart failure and cardiovascular risk management were in place. A recently published international literature review has likewise indicated that quality-of-care improvements do not automatically result in cost reductions; the studies reviewed had varying outcomes (Øvretveit, 2009). The review also showed that many factors governed whether health care quality enhancements led to cost savings. One factor was the introduction of the right financial incentives for health care providers to provide quality care.

4.3 Rollout to other chronic diseases

Bundled payment rapidly gains momentum

Programmes for integrated treatment and care for chronic illnesses are now being implemented in the Netherlands at an accelerated pace. Both the Health Ministry and the practitioners have taken further steps since the start of the experiment we evaluated. The Health Minister announced to Parliament on 13 July 2009 (VWS, 2009) that bundled payment would be introduced on a permanent basis for several chronic diseases as of 1 January 2010. He did not await the findings of the present evaluation. As the evaluation has shown, clearly defined health care standards for the disease in question are crucial to introducing bundled payment, a standpoint shared by the Dutch Healthcare Authority (NZa, 2009b). The accelerated decision-making is undercutting this requirement. Almost none of the chronic conditions for which bundled payment has been proposed or initiated currently have health care standards that enjoy broad endorsement in the field of practice. Consequently, it is unclear which services should be contracted in the bundled arrangements and which should not. This could hamper negotiations between the health insurers and the care groups on prices and other matters and it could result in wide differences between the contracts in terms of the services provided.

Developments in practice settings are proceeding at a rapid pace too. Some care groups are already working with more than one bundled payment system; in almost all cases this includes schemes for COPD. Care group 5 was planning to contract and deliver bundled services for six diseases from 2010: diabetes, COPD, congestive heart failure, cardiovascular risk management, arthritis and depression. Care group 3 was exploring the feasibility of bundled payment contracts for stroke and dementia. It is not yet clear what problems such care groups are encountering in purchasing the appropriate care in the absence of a clear-cut health care standard.

Need for health care standards may give rise to strategic behaviour

Virtually all stakeholders we interviewed expected that defined health care standards would play an important part in the rollout of bundled payment to other chronic illnesses.

Some also pointed to the risk that the new standards would not always be based solely on what services were necessary, but – in view of the new role of the standards as a health care purchasing instrument – strategic considerations might also enter into the creation process. Health care providers insist that the standards must be formulated purely on the basis of the care that is needed. The possible linkage between health care standards and bundled payment arrangements and the strong financial interests this implies, could undermine the base of support among interested parties that is needed for creating the standards. The role that insurance companies might play in drawing up the standards also provokes discussion.
One insurance official we spoke with argued that that role was still too limited and pointed to the fact that health care providers would be establishing the minimum quality requirements for services that must then be purchased by the health insurers from the same health care providers. The question then arises whether the minimum may have been set at a higher level than necessary.

The Health Ministry also acknowledges the importance of establishing health care standards and has promoted the launch of the Health Care Standards Coordination Platform at the Netherlands Organisation for Health Research and Development (ZonMw). This body has been commissioned to draw up a generic template for disease-specific health care standards, in order to ensure conformity in terms of design (services included) and organisational requirements. The health care standards are also to be accompanied by performance indicators. The Health Ministry wants the bundled payment system to correspond to the health care standards. Accordingly, the template should include requirements for implementation in addition to service provision requirements (required health care services expressed in modules) and process-related ones (organisational criteria). Such requirements are necessary to (1) ensure compatibility between the different health care standards (e.g., through a common framework of concepts), (2) enable services to be contracted and paid for on the basis of these health care standards and (3) facilitate the use of performance indicators, electronic patient files and other instruments (Coördinatieplatform, 2009).

Consequences of multiple bundled payment systems for patients with multimorbidity
Multimorbidity will be an increasing concern as care groups work with multiple bundled payment systems for specific diseases. The issue of multimorbidity may be viewed in terms of the services provided and in terms of how they are financed.

Multimorbidity in terms of service provision
Many health care providers have expressed fears that working with parallel bundled fees for chronic conditions will result in new forms of health care compartmentalisation. This concern has also been brought up in recent literature (Van Dijk et al., 2009; KNMP, 2009). Not all the care groups we studied shared these fears. Although the complex health care needs of multi-morbid patients will be addressed by different bundled payment schemes, the services will be provided in an integrated fashion and delivered by a single organisation (the care group). Officials from these care groups pointed to new opportunities to meet the complex care needs of patients with multiple illnesses, because the care will be coordinated by the care group and delivered by contracted service providers under the

ultimate medical responsibility of the patient's general practitioner. If case managers need to be assigned to patients with highly complex care needs, these may also be financed by several bundled payment systems. What will be needed is effective monitoring of whether and how complex care and indicated prevention are being delivered by the care groups, as well as what difficulties they encounter.

Multimorbidity in terms of financing
Double payment is a lurking danger when identical care components are included in the bundled payment arrangements for more than one disease. It is also important to ensure that introducing bundled payment schemes for additional illnesses does not simultaneously erect new funding barriers between different care sectors. Efforts must be made to synchronise and integrate different disease-specific bundled payment systems. One possibility would be to contract all bundled payment schemes together. As a consequence, components such as smoking cessation support may be contracted more than once. Double payments would be offset by reducing the payment due to the 'second' bundled payment arrangement the same patient is involved in. Complexity would increase, however, if care groups have set up different legal entities to spread their risks of contracting different bundled payment schemes. In that case, different legal entities would be claiming different bundled fees for the same patient. Some care groups are already working with combinations of legal entities (see *table 2.1*; De Wildt and Leusink, 2008). A second possibility would be to contract and price certain care components as modules. That would entail removing all generic components (such as smoking cessation support) from the disease-specific bundled payment arrangements. If a patient needs diabetes care, COPD care and smoking cessation support, those would then be claimed as separate modules. That would avoid double payment but it could increase the administrative costs for the health care providers.

4.4 Recommendations

Further to the discussion in *sections 4.1* to *4.3*, we will now formulate recommendations for future policy and practice. Our first suggestions distinguish between the NDF Health Care standard and the bundled payment arrangements for diabetes. We then make recommendations pertaining to diabetes care groups and to the implementation of bundled payment arrangements for other chronic diseases.

Bundled payment systems and the NDF health care standard

Further strengthening the role of the health care standards and performance indicators
The NDF Health Care Standard is crucial to improving the quality of diabetes management. It serves as a guiding framework in negotiations between insurance companies and care groups about good diabetes care. They also play an increasingly prominent role in the development of performance indicators that will provide valid data on the quality of the

care delivered. The role of the NDF Health Care Standard can be consolidated further through the following improvements:

- Inclusion of indicated prevention interventions analogous to those specified in the current health care standards for cardiovascular risk management (from the Platform Vitale Vaten) and for overweight and obesity (from the Partnerschap Overgewicht Nederland, PON).
- Clear definition of the services to be included in the bundled pricing arrangements, while ensuring that task delegation, substitution and reallocation remains possible.
- Specification of which data are to be recorded and how they are to be operationally defined; these should correspond to the formats used by amongst others the Health Care Transparency Programme, which is to establish a minimum dataset in 2010.
- Removal of the distinction between core disciplines and supporting disciplines, as this is at odds with the principles of bundled payment.
- Specification of the tasks and activities that do not qualify as direct care provision but are essential to the integrated delivery of diabetes care. These include information and communication technology, coordination activities, record-keeping and data and accountability reporting. Our evaluation shows it is difficult to secure funding in the bundled payment contracts for ancillary activities such as these, which are not mentioned in the health care standard.

Harmonisation of existing pricing systems with bundled payment

Evaluation reveals that the potential for double insurance claims and 'bypass constructions' (claiming fees for diabetes services in circumvention of the bundled payment agreements) are undesired side-effects of care integration. To keep care affordable, the existing pricing mechanisms need to be harmonised with the bundled payment arrangements.

More study needed of the feasibility of integrating medication into the systems

Medication is not included in bundled payment arrangements at present. In view of the complex distribution and pricing systems for medication, our evaluation indicates that inclusion of medication in the contracts is still a bridge too far. However, since medication forms an important part of diabetes management, it would be advisable to include it in the diabetes health care standard and bundled payment arrangements in the longer term. The impact would be considerable because many patients with diabetes are now taking medicines that could be covered by bundled payment arrangements (SFK, 2009). One possibility is to experimentally include medication in bundled payment schemes and then evaluate the effects and potential hitches. Initial experiments are already underway in which care groups are dispensing diabetes medication.

Templates for bundled payment contracts and underlying subcontracts with individual providers

Some interviewed care group officials reported perceiving the legal aspects surrounding the bundled payment contracts as a complex matter they did not fully understand. They were unsure whether they had adequately covered everything in the contracts. This problem might be addressed by creating model contracts specifically formulated for the bundled payment arrangements. We believe such models would meet the needs of many

care groups (see also our recommendation below on a central information resource for care groups).

Care groups

Encouraging multidisciplinary prime contractorship of care groups
Half of the care groups in our evaluation consisted solely in general practitioners. In some groups, the hegemonic position of GPs threatened to undermine equitable cooperation. Potentially, the monodisciplinary prime contractorship of a care group that arises in the creation of bundled payment systems could be a source of tension between the collaborative care delivery and the functioning of the market. It is advisable to ensure that GPs do not gain unduly strong positions as bundled payment systems are implemented for other chronic diseases. In the case of some diseases such as depression or arthritis, such a prominent role for GPs would also be less appropriate. We therefore recommend promoting multidisciplinary prime contractorship in care groups. Current competition issues also need to be taken into account here.

Good governance is a prerequisite for further quality-of-care improvement
Our evaluation showed that the organisational structures of many care groups failed to comply with the basic rules laid down by the Dutch Care Governance Code (ZGC) for good governance and oversight (BoZ, 2005). Particularly flawed were the oversight arrangements. This might have been expected in view of the recent creation of the care groups. Yet as the groups continue to develop, the importance of effective oversight will grow, a prospect that was recently underlined in a report by the Council for Public Health and Health Care (RVZ, 2009). We therefore recommend that care groups be monitored in terms of the arrangements they put in place for oversight in the coming years. One might consider adapting the Care Governance Code to make it better suited to care groups, possibly resulting in a separate 'care groups governance code'.

Regulations for vicarious liability for care groups ought to be considered
The government should consider introducing vicarious liability for care groups, similar to that which now applies to hospitals. Vicarious liability for hospitals was instituted because it was difficult for patients to determine whether to hold an individual health care provider or the hospital itself responsible in the event of irregularities. Although many health care providers working in hospitals are not employed there, patients may always bring vicarious liability claims against hospitals for inadequacies in fulfilling treatment agreements. A comparable situation exists for care groups. Their complex organisational structures make it difficult for patients to know whether their health care providers are in private practice or are employed by the care group. The implementation of bundled payment systems for additional chronic diseases may complicate the organisational structures even further. To provide clarity on patients' rights, vicarious liability for care groups seems advisable and merits further study.

Central information resource for care groups
The implementation of bundled payment systems and care groups has proved to be a complex, wide-ranging operation. Care group officials expressed a need for a national-level 'helpdesk'. The numerous questions and answers need to be rapidly communicated throughout the field of practice, for instance via FAQs. A central information resource could address this need.

Rapid dissemination of successful means of strengthening patient participation
As the evaluation showed, many care groups are still seeking ways to shape a role for patients within their new organisations. Effective methods of patient participation need to be developed and strengthened.

Monitoring developments in care groups
Bundled payment systems and the associated creation of care groups pose risks to market integrity. The implementation of bundled pricing on a wider basis in the coming years could further swell the power of the care groups. In the patients' interest, the current developments and the risk of care group dominance in negotiating processes need to be closely monitored by the Netherlands Competition Authority (NMa) and the Dutch Healthcare Authority (NZa), to enable timely intervention or regulation.

Rollout to other chronic diseases
Although the recommendations we have just made apply mainly to the bundled payment schemes for diabetes, they are also relevant to the new schemes being introduced in 2010. We shall now make some further recommendations that focus specifically on the rollout to other chronic diseases.

Maintaining the course followed in the implementation for diabetes as well as other relevant elements of that approach
In his letter to Parliament on the programmatic approach to chronic diseases (VWS, 2008b), the Dutch Minister of Health announced that the 'diabetes approach' would be adhered to as the bundled payment schemes were implemented for other chronic diseases. The necessary elements of the diabetes approach are (1) clearly defined health care standards that are widely endorsed in the field of practice, (2) the contracting, pricing and delivery of the required health care services via a bundled payment system, (3) contracting carried out by a care group and (4) quality-of-care assessment using performance indicators. These four elements are inextricably linked; it is unclear what the consequences might be if one or more criteria are not fulfilled. We also recommend sticking to the step-by-step pathway that was followed in implementing bundled pricing for diabetes. This involved first establishing a set of health care standards with broad support in practice and then experimenting and gaining experience with a trial bundled payment system based on those standards and using performance indicators to assess quality.

New health care standards should be based solely on the necessary services; political and strategic health care standards should be avoided
When the first version of the NDF Health Care Standard was drawn up in 2003, it was not known that these would later serve as an instrument in the purchasing of care.

Accordingly, the content of the diabetes care was the sole guiding principle. In the new function these standards have acquired in the care purchasing process, their generic nature has resulted in some ambiguities and hence, to differing interpretations on the part of health care insurers and care groups. Such problems can be resolved by adapting the standards (see the recommendations in the section entitled Diabetes Bundled Payment Systems and the NDF Health Care Standard). As new health care standards are drawn up for other chronic diseases, the new role of the standards is clearly known. This raises the risk that considerations other than the necessary health care services may influence the formulation process. For example, if the standards place a strong emphasis on correct competencies for delivering services, that could give the service providers in question a strong position, as the standards are translated into bundled payment arrangements. Yet the question is whether societal interests such as quality, accessibility and affordability of health care can be sufficiently safeguarded if health care standards are drawn up exclusively by health care providers and their patients. Health insurance companies have indicated that they too, given their role as care funders, wish to be involved in drawing up new health care standards (UVIT, 2009). Although this seems contrary to the notion that the standards should be based solely on the necessary health care services, it is important that health insurers be consulted as the health care standards are translated into clear-cut performance specifications in bundled payment contracts and into uniform performance indicators.

Monitoring the effects of new bundled payment systems in terms of quality of care and patient experiences

The issue of multimorbidity came up many times in our evaluation. Disease management for multi-morbid patients was seen both as an opportunity and a threat. We therefore need more data on how care groups approach the delivery of complex care and indicated prevention via multiple bundled payment systems, as well as on the problems they encounter.

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APPENDIX 2 METHOD

Outline

In our introduction to this report we gave a brief description of our method of evaluation. In this appendix we explain it in more detail. *Sections A2.1* and *A2.2* describe the patient sample and the time frame of the study. *Sections A2.3* and *A2.4* explain the data collection process and the analyses we carried out.

A2.1 Patient sample

The original sampling frame in the evaluation consisted in all people with diabetes for whom bundled payment was claimed by the ten participating care groups. In selecting the ten care groups, ZonMw had taken the sizes and catchment areas of the care groups into account, as well as their geographical location or demographic composition (e.g., urban versus rural areas) and their organisational structures. *Table A2.1* lists the ten participating care groups. They are described in more detail in *appendix 3*.

Table A2.1: The participating care groups (in alphabetical order)*

Care group name
Chronische ketenzorg Land van Cuik en Noord-Limburg B.V.
Het HuisartsenTeam
Huisartsen Chronische Zorg B.V.
Huisartsencoöperatie Bodegraven
Huisartsencoöperatie Zeist
Praktijk Ondersteuning Zuid-Oost Brabant C.V. (POZOB)
Rijnmond
Stichting Diamuraal
Stichting Eerstelijnszorg Zaanstreek/Waterland
Zorggroep Almere

* The alphabetical sequence given here does not correspond to the anonymised numbering of the care groups used in the report.

Data from nine care groups were used in the evaluation

The Rijnmond care group suffered many delays and start-up problems and was ultimately not officially founded during the time frame of the evaluation. It was therefore excluded from the sampling frame as well as from the analyses in the report.

One of the main causes of the start-up problems in the Rijnmond care group was a difference of opinion between the participating GPs and the general practice laboratory about the ownership of the care group and over which parties were and were not to be co-owners. In the course of our evaluation, several additional care groups were set up in the Rijnmond region. They had GPs as owners and had contracted the general practice lab as a subcontractor.

Care group 7 unable to deliver data

As a result of serious delays during its start-up stage, care group 7 proved unable to provide us with patient record data for the evaluation (see *section 2.6* and *appendix 4*). We therefore also did not administer patient questionnaires to this group (see *section 2.7* and *appendix 5*). The commencement date of its bundled payment contract with the health insurance companies was far later (1 October 2007) than that of the other care groups (except group 7); this was due to difficult negotiations about the ownership of the care group and about contracts with 'subcontractors'. Other problems arose concerning IT (bankruptcy of Internet service provider) and dissatisfaction with the functionality of the contracted integrated information system. Care group officials and health care providers from group 7 took part in our interviews.

A2.2 Study period

Our longitudinal data collection consisted in a baseline and a 12-month assessment. The start of the baseline assessment in each care group coincided with the commencement date of its bundled payment contract with the health insurance market leader in its area.

Duration of baseline assessment

Initially, the baseline assessment was to last from 1 January 2007 to 30 April 2007. To increase the number of patients included in the sample, we decided during the evaluation to extend the baseline starting date back to 1 December 2006. This meant that the overall duration of the baseline assessment was five months (*figure A2.1*). All patients who received quarterly or annual diabetes check-ups during that period were eligible for inclusion in the baseline assessment.

Duration of 12-month follow-up assessment

Each patient was 'monitored' for 12 months from the date of their baseline assessment to ascertain what health care services that patient received during the 12-month period. This assessment was extended by allowing one month's leeway. The starting date of each patient's assessment period was different but the 12-month length of the study period was the same for all patients (including a possible 13th month of leeway). *Figure A2.1* shows assessment periods for three fictitious sample members.

Four care groups had different study periods

Due to problems with concluding bundled payment contracts, delays in setting up the care groups and/or IT problems, the 12-month study periods of four of the care groups did not completely coincide with those of the rest (*table A2.2*). In care group 3, the bundled payment contract did not begin until 1 October 2007 but the group began delivering the diabetes services in accordance with that contract nine months earlier; we therefore decided to use 1 January 2007 as the assessment starting date in order to include those data in the evaluation.

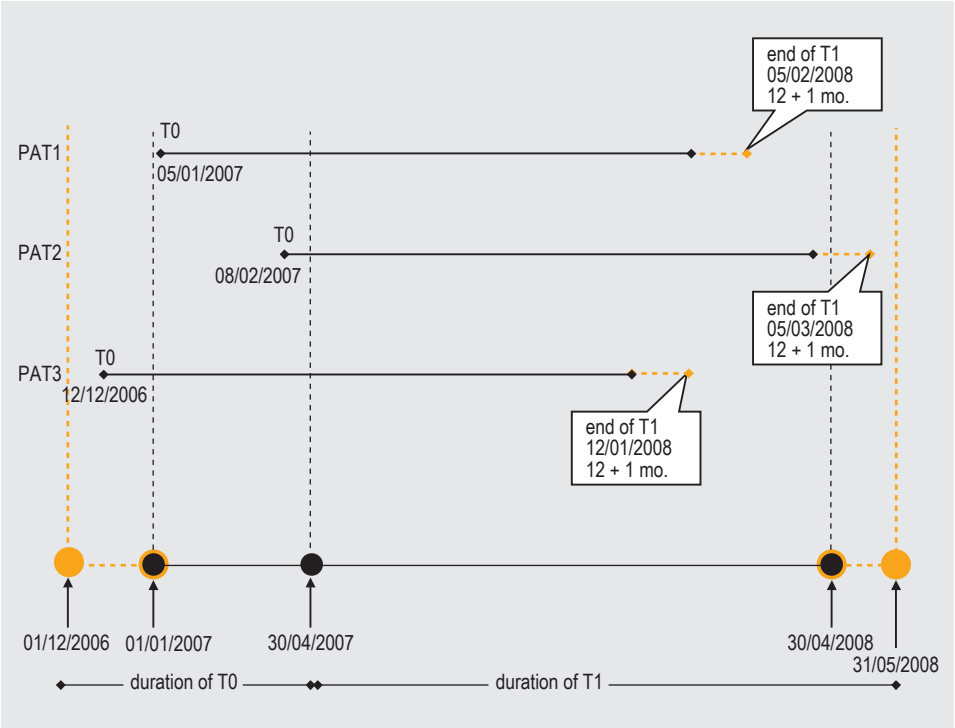

Figure A2.1: Baseline assessment period (T0) and 12-month assessment period (T1) for three fictitious patients (PAT1, PAT2, PAT3).

Table A2.2: Beginning of time line by care group

Care group	Contract commencement	Start of baseline assessment	Exceptional start date	Contribution to data modules		
				PRS	PSQ	INTERV
1	1 January 2007	1 January 2007	No	Yes	Yes	Yes
2	1 January 2007	1 April 2007	Yes	Yes	Yes	Yes
3	1 October 2007	1 January 2007	No	Yes	Yes	Yes
4	1 January 2007	1 April 2007	Yes	Yes	Yes	Yes
5	1 January 2007	1 January 2007	No	Yes	No	Yes
6	-	n.a.	n.a.	No	No	Yes
7	1 October 2007	n.a.	n.a.	No	No	Yes
8	1 January 2007	1 January 2007	No	Yes	No	Yes
9	1 April 2007	1 April 2007	Yes	Yes	Yes	Yes
10	1 April 2007	1 April 2007	Yes	Yes	Yes	Yes

PRS = patient record systems; PSQ = patient survey questionnaires; INTERV = interviews

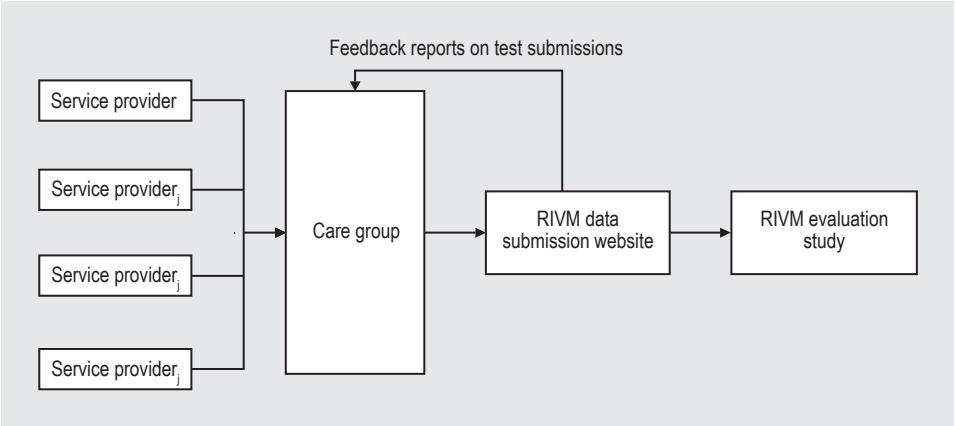

Figure A2.2: Schematic diagram of data collection and data stream.

A2.3 Data collection methods

The data collection consisted in three different data modules:
1. patient record systems
2. patient survey questionnaires
3. semi-structured interviews.

It was important to be able to link the data. We accomplished this by using identical, pseudonymous identification numbers for the patients and care groups in the patient record data and survey data.

A2.3.1 Patient record systems

Reporting procedure for patient record data
The information on the services delivered was centrally collected by the care groups from the patient record systems of the individual health care service providers. It was then relayed to a specially designed RIVM website (*figure A2.2*). Both technical and content checks were performed on each data report. The technical checks followed the specifications created by RIVM. The content checks involved whether the values received were 'logical'. RIVM then produced an error report on the basis of these checks and sent it back to the care group. It indicated at the record level which data had been incorrectly submitted. After revising this, the care group submitted a new data report.

Content of patient record data
RIVM had prepared a document for the care groups indicating which data were to be reported and in what ways. It was drawn up in cooperation with the National IT Institute for Healthcare (Nictiz) and with DBC Onderhoud, an advice and support organisation for bundled payment systems. During the preparations leading up to the baseline assessment, the guidelines were discussed with all care groups in terms of issues such as feasibility and clarity.

A2.3.2 Patient survey questionnaires

Coinciding with the baseline and the 12-month assessments, we administered a survey questionnaire to a subsample of patients from the care groups. Two care groups (5 and 8) turned out to have recently surveyed their patients but those questions did not entirely correspond to those we were asking in our evaluation. At the request of the two care groups and in consultation with ZonMw, we decided not to 'doubly burden' those patients and did not distribute our questionnaire to them. Due to the delays in the start-up phase of care group 7 (see *section A2.1*), we did not administer the questionnaire to its patients either. We therefore had questionnaire outcomes available from patients in six care groups (*table A2.2*).

Content of the patient questionnaires

The survey questionnaires were compiled using questions from several existing, validated scales. The questions on patient characteristics (date of birth, gender, education, ethnicity) were derived from standard questionnaires used in the Dutch Local and National Public Health Monitor (LNM). This was also the source of our questions on nutrition (consumption of vegetables and salads, fruits and juices, and breakfasts) and on alcohol and tobacco use.

The amount of exercise was assessed using the Dutch Standard for Healthy Exercise (NNGB; Wendel-Vos and Frenken, 2008) and Fitnorm (ACSM, 1998). Our assessment instrument for mental health status was the five-item Mental Health Inventory (MHI-5; McCabe et al., 1996). It is part of the Short Form 36 questionnaire and assesses general mental health using five questions on psychological well-being, depression and anxiety.

For questions on the coordination of care, we drew on the National Panel of the Chronically Ill and Disabled (NPCG) from the Netherlands Institute for Health Services Research (NIVEL; Lemmens and Spreeuwenberg, 2008; Rijken, 2006). To assess knowledge of diabetes and nutrition, we used the validated Diabetes Knowledge Test (Fitzgerald et al., 1998); it was translated into Dutch by one researcher (JS) and then back-translated into English by another researcher (WL). The original and back-translated questionnaires proved largely consistent; when not, the researchers reached a consensus about the best Dutch translation.

Questionnaire administration procedure

At the end of their baseline check-up, every patient was asked by their health care provider to complete either the pen-and-paper or the Internet version of the patient questionnaire. A total of 250 pen-and-paper questionnaires were distributed in each participating care group.

These baseline questionnaires were accompanied by a letter drawn up by RIVM. It had been sent electronically to all the care groups; they were to print it on the stationery of the care group or GP surgery and have it signed by the patient's own GP. The care groups were allowed to make adaptations to the RIVM letter. For logistics reasons, we were unable to send reminders at the baseline assessment. The returned paper questionnaires were

processed with a scanning program to create an SPSS file, to which the data from the Internet questionnaires were then added.

Consent for 12-month assessment via reply form at baseline assessment
We attached a reply form to the baseline questionnaire requesting the patient's consent to be contacted again one year later with an additional survey questionnaire. Those who consented were sent the questionnaire by post or e-mail 12 months later; this was done by RIVM to avoid extra work for the care groups. Four weeks thereafter, those who had not yet responded were sent a reminder by post or e-mail.

A2.3.3 Semi-structured interviews

Both at baseline and twelve months, we administered semi-structured interviews to all care groups. The project plan specified that four interviews per care group were to be conducted with health care providers from different disciplines and one interview with an official from the regional health insurance market leader. At baseline, we conducted a total of 41 such interviews. Nine prospective respondents were unable to take part, for reasons of time (n=2), untraceability (n=6) or resignation from the health care agency (n=1). At the 12-month assessment, we decided after the first few interviews to limit the number of further interviews, as they were yielding little new information and were merely confirming what had been said at baseline (data saturation). We therefore conducted only 20 follow-up interviews with care groups, health care providers and insurance officials. In addition to the interviews, we made working visits to various care groups, including attending a multidisciplinary consultation, a care group strategy meeting and a reflective information meeting.

Broad range of health care disciplines included
To ensure that we reached as many health care disciplines as possible, we asked the care groups to provide contact information on service providers from four different disciplines from whom we could request interviews. The following disciplines and other stakeholders were reached: GPs, practice nurses, dieticians, diabetes nurse specialists, home care agencies, general practice laboratories, internists, care group project leaders or managers, care group data managers or administrators, members of care group supervisory boards, health care purchasers and innovation departments at health insurance companies.

Interview content was based on predetermined topics lists
To delimit the content of the semi-structured interview schedules, we developed topics lists, one for health care providers and other people involved in the care groups and one specifically for the health insurance officials. Both lists were first submitted to four external experts on diabetes care; after incorporating their comments, we had the lists approved by the ZonMw steering group.

The interviews were conducted in the respondents' workplaces. Once an appointment had been made, respondents received the topics list to help them prepare for the interview.

During the interview they were allowed to 'tell their own story' as much as possible. The interviewer probed further, if necessary, on the basis of the given topics.

The interviews were administered by two interviewers (BG, JS). The former (BG) had extensive prior interviewing experience and was an objective observer because she was not part of the evaluation team. The latter interviewer was part of the team and had more experience and expertise in research on diabetes care.

Interviews were taped, transcribed and returned for approval
With the consent of the respondents, the interviews were tape-recorded. They were then transcribed word for word and submitted back to the interviewee for approval. The transcript data were analysed after approval.

Many other consultations held with knowledgeable informants
In addition to the interviews with professionals and officials involved in the bundled payment schemes, we also spoke with many other relevant informants, including people from various sections of the Ministry of Health, Welfare and Sport (VWS) – Department of Public Health (PG), Curative Care Directorate (CZ), Market and Consumer Department (MC), Financial and Economic Affairs Directorate (FEZ), Economic Affairs and Labour Market Policy Directorate (MEVA) and Health Care Insurance Directorate (Z). We additionally spoke to informants from the Dutch Healthcare Authority (NZa), Netherlands Competition Authority (NMa), National Association of Organised Primary Care (LVG), Association of Dutch Health Insurers (ZN), Dutch Association of Dieticians (NVD), Dutch Diabetes Federation (NDF), the bundled payment advisory committee of the National Association of General Practitioners (LHV), Erasmus University Rotterdam and the Health Care Transparency Programme (ZiZo). Pertinent information from those consultations has been incorporated into this report.

A2.4 Analyses

The data were analysed at both care group and aggregated levels. We will now describe how we carried out the analyses for the different data collection methods used in the study – patient record systems, patient survey questionnaires and semi-structured interviews.

Patient record data
The patient record data were used to address the key research question on the quality of care being provided by diabetes care groups at the end of the one-year study period (see *section 2.6* and *appendix 4*). A detailed report on these outcomes is given in *appendix 4*. In analysing the patient record data, we used the process and outcome indicators specified by the NDF Health Care Standard. To assess the process indicators, we used the patient record data from the 12-month assessment. For the outcome parameters we compared the baseline and 12-month values. The outcome analyses included only those patients for whom outcome parameters were recorded at both assessments. The results for the process and outcome indicators are reported both at care group levels and for the total sample. Weighted means were used for the total sample.

Paired t-tests were used to compare parameter values. In the case of the clinical outcome indicators, we studied not only the means but also the yes/no dichotomous outcomes (e.g., whether or not the diabetes was well controlled according to NDF target values), using McNemar tests to compare patient percentages at baseline and 12 months. Continuous variables were analysed by linear regression to explore changes in parameters between baseline and the 12-month follow-up, controlling for several patient characteristics (age, gender, diabetes duration) and for the baseline values of parameters.

Patient survey questionnaires

The data obtained from the patient questionnaires were used to address the question of stakeholder satisfaction (see *section 2.7*). A detailed description of the results is found in *appendix 5*. We mainly used descriptive statistics, such as frequency tables, to analyse these results. To compare patient characteristics across care groups and to analyse non-response, we performed analysis of variance on the continuous variables and McNemar tests on the categorical variables. Given the small numbers of cases in separate care groups, we do not report significance levels for changes in outcome measures (see *table A5.1*).

Semi-structured interviews

We used the information obtained from the interviews in addressing most of our key research questions, except those about the basic premises of the bundled care model (*section 3.1*) and about the quality of care at 12 months (*section 3.6* and *3.7*).

In analysing the interview data, we used the transcripts approved by the interviewees. The transcripts were assessed by three independent researchers (SH, LL and JS), who scored them according to success and failure factors relating to the introduction of bundled payment systems. Independently of one another, the three researchers then selected quotes from the interviews that they felt appropriately illustrated the results, later reaching consensus about the most illustrative quotes. The interview results were also used to shed light on care group organisation, contracted services and service providers. The resulting tables (see, e.g., *sections 2.2* and *2.3*), as well as the summarising diagrams (*appendix 3*), were submitted for approval to the project leaders.

In addition to the interview data, we also consulted documents such as annual reports, progress reports from the ZonMw programme and care group newsletters and websites.

APPENDIX 3 SUMMARY OF CARE GROUP CHARACTERISTICS

Outline

In *section 2.2*, entitled 'How Are the Diabetes Care Groups Organised in Practice?' we have given descriptions of the care groups that participated in the evaluation. *Appendix 3* presents an organisational chart of each care group. Each chart shows which health care disciplines worked together in that care group or were contracted by it, as well as which components of care they provided. It also shows which of the prerequisites for the effective organisation of diabetes care (or other types of care) had been implemented. Four general characteristics of the care group are summarised at the bottom of each chart.

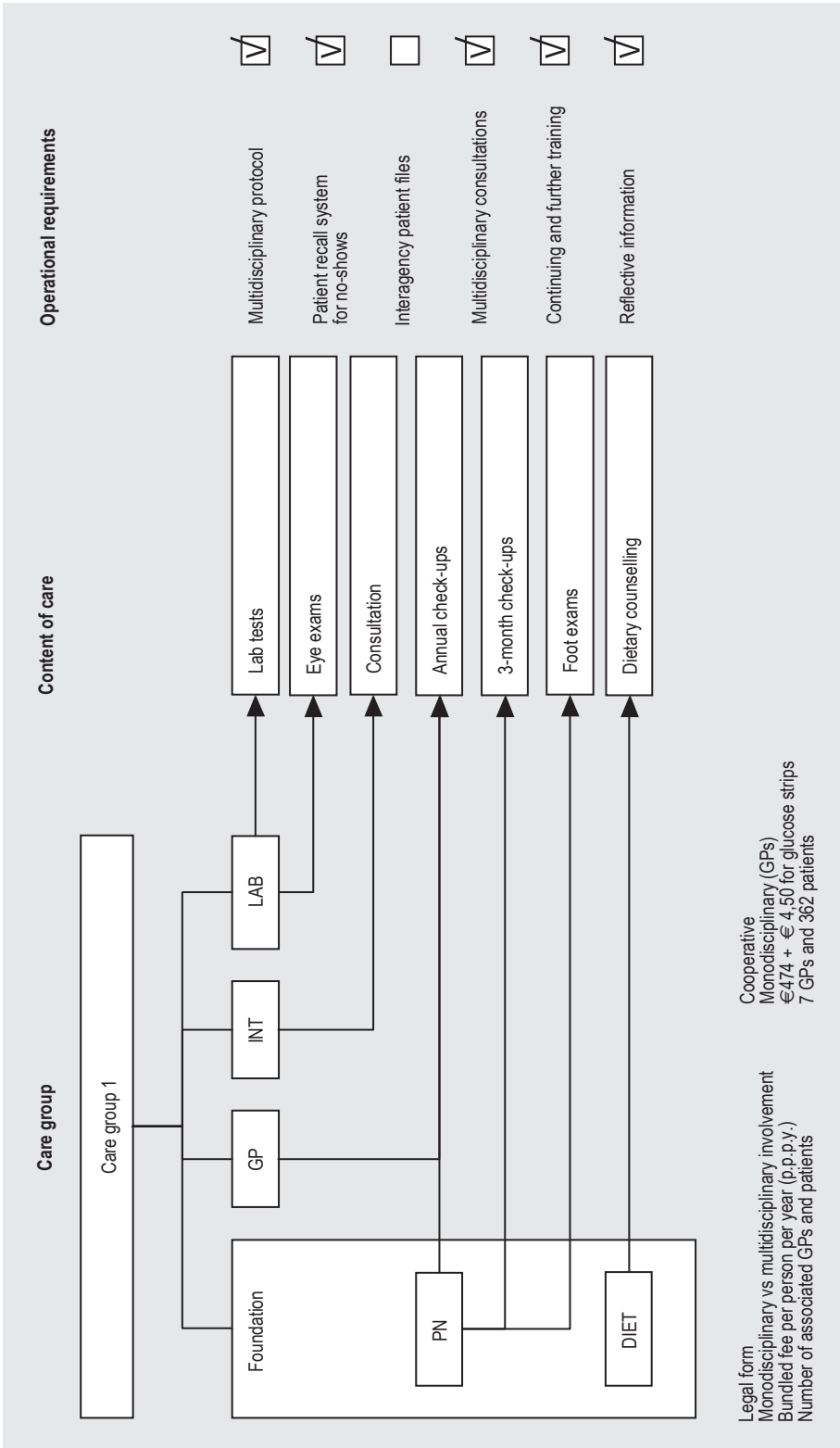

Figure A3.1: Care group 1.

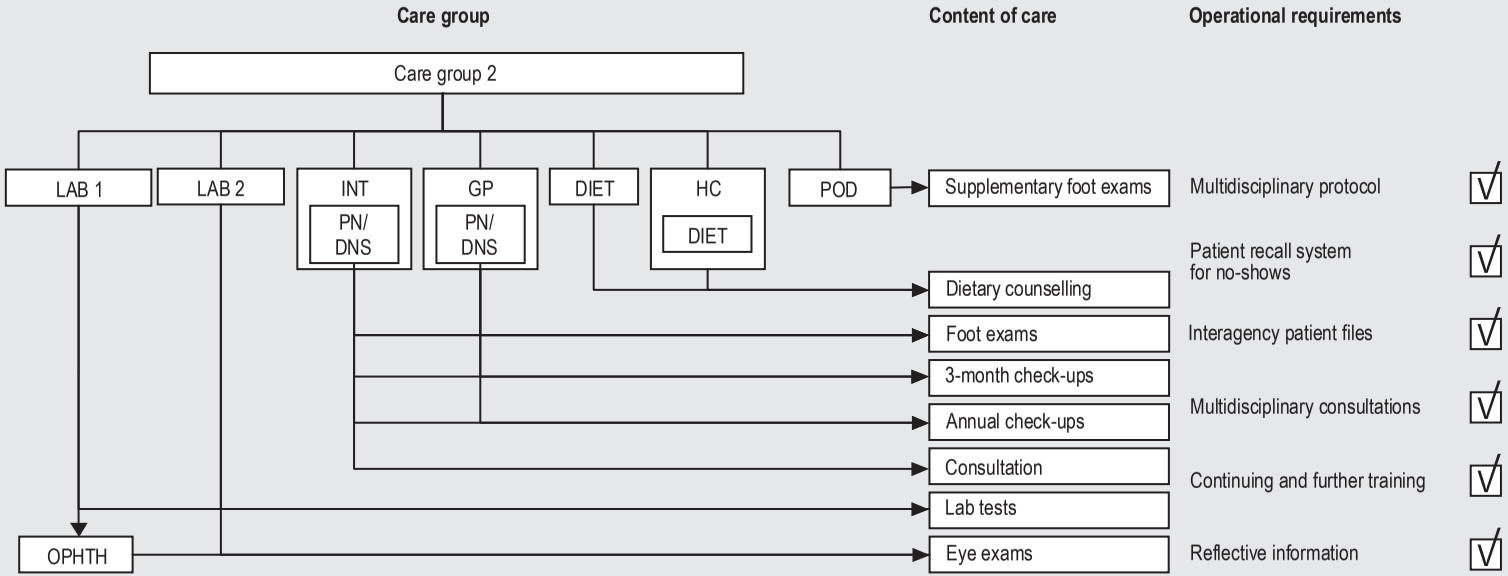

Figure A3.2: Care group 2

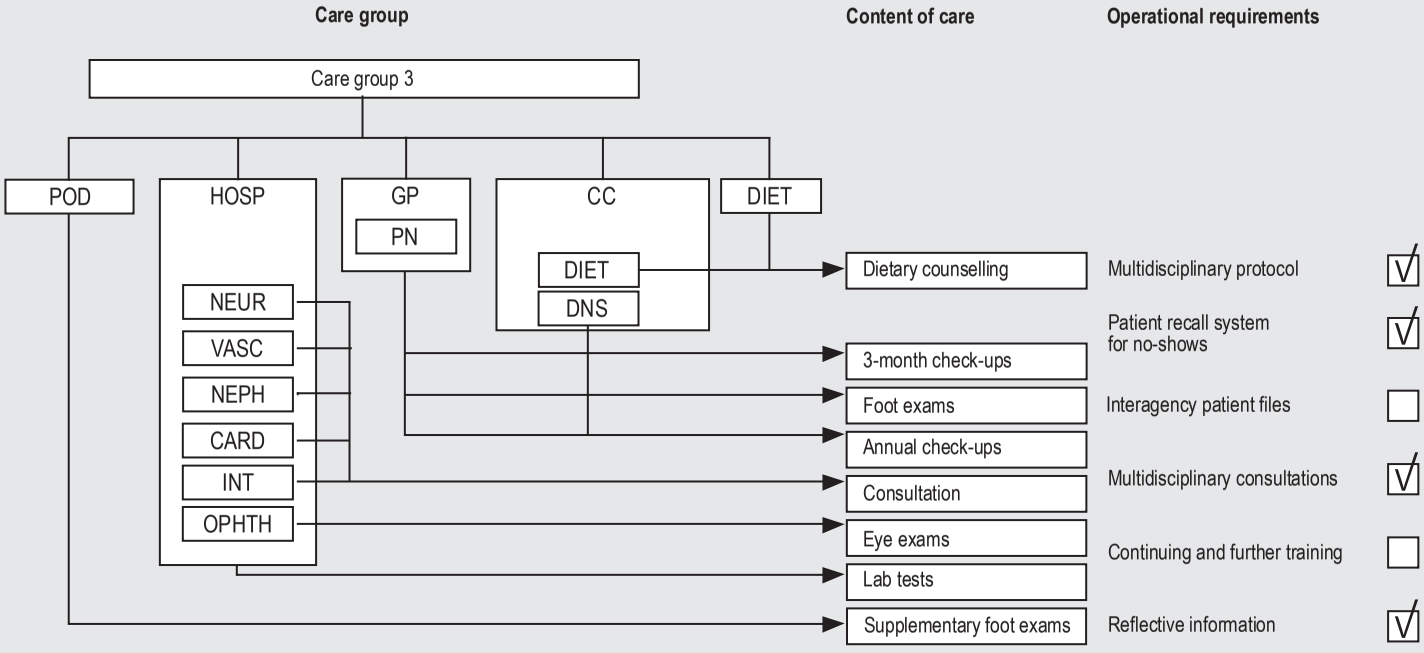

Figure A3.3: Care group 3

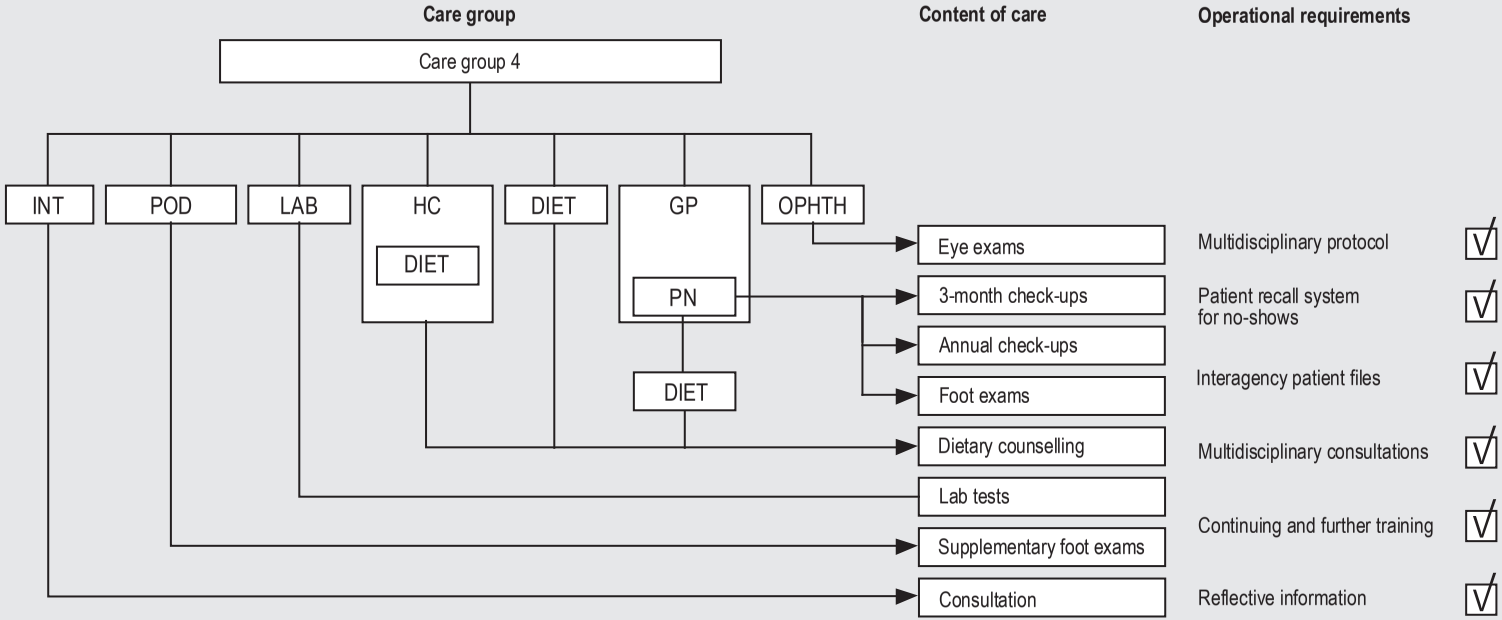

Figure A3.4: Care group 4

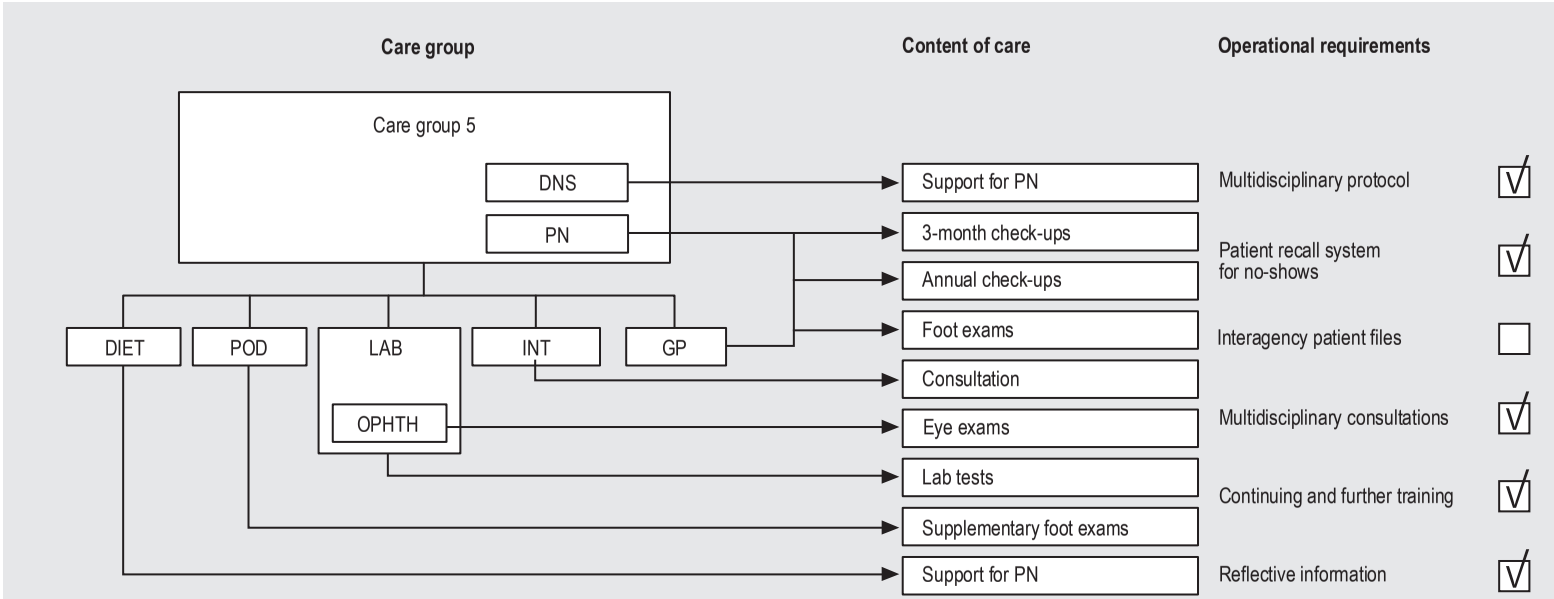

Figure A3.5: Care group 5

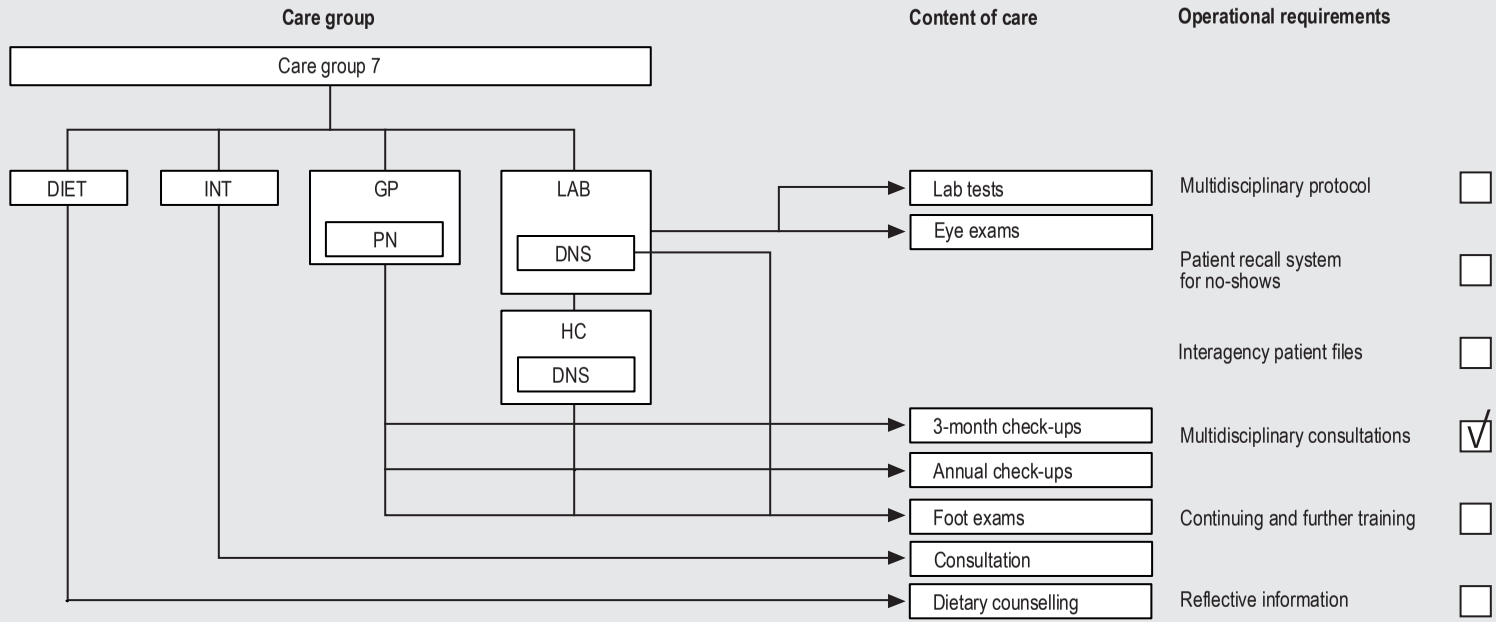

Figure A3.6: Care group 7

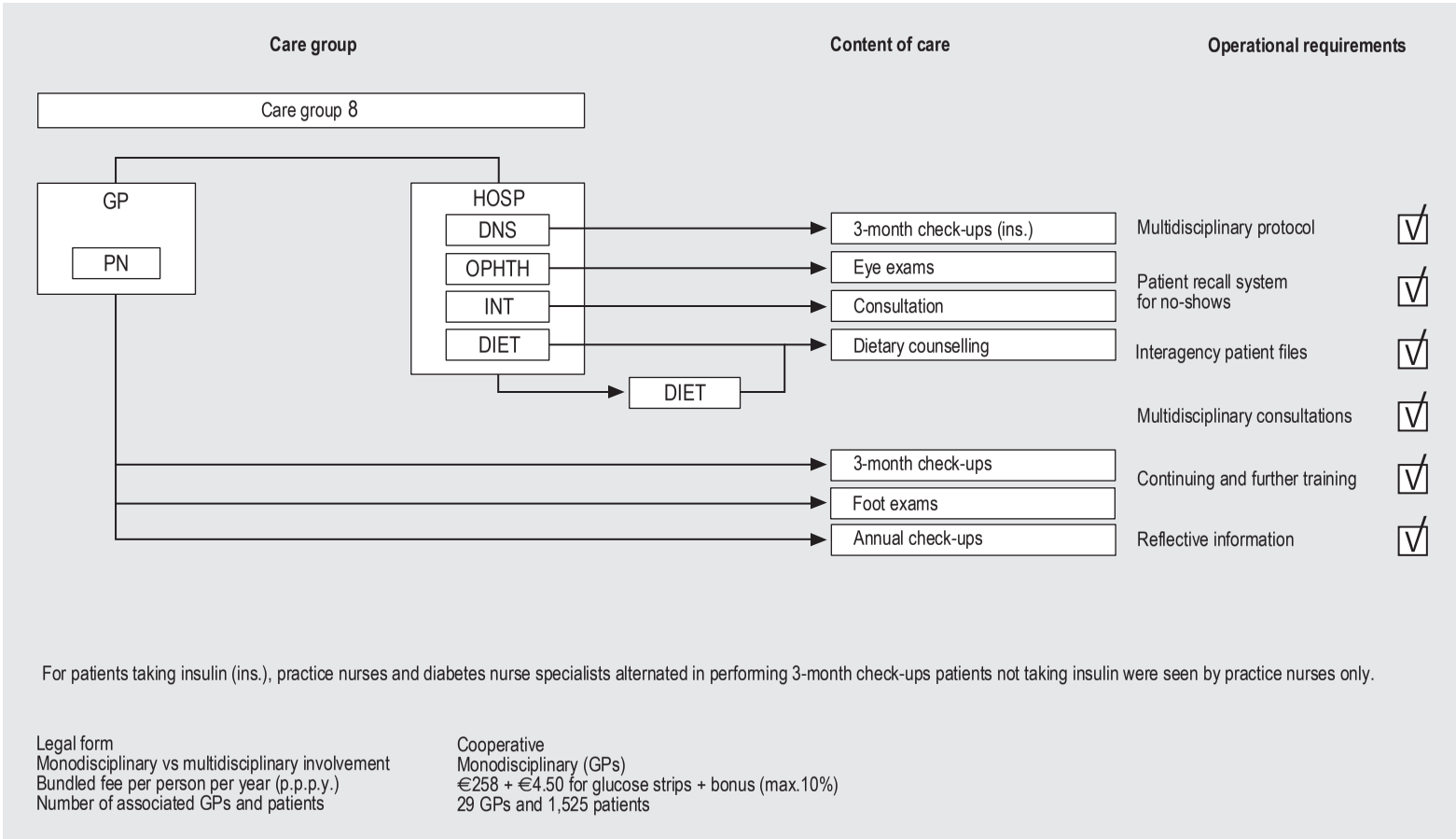

Figure A3.7: Care group 8

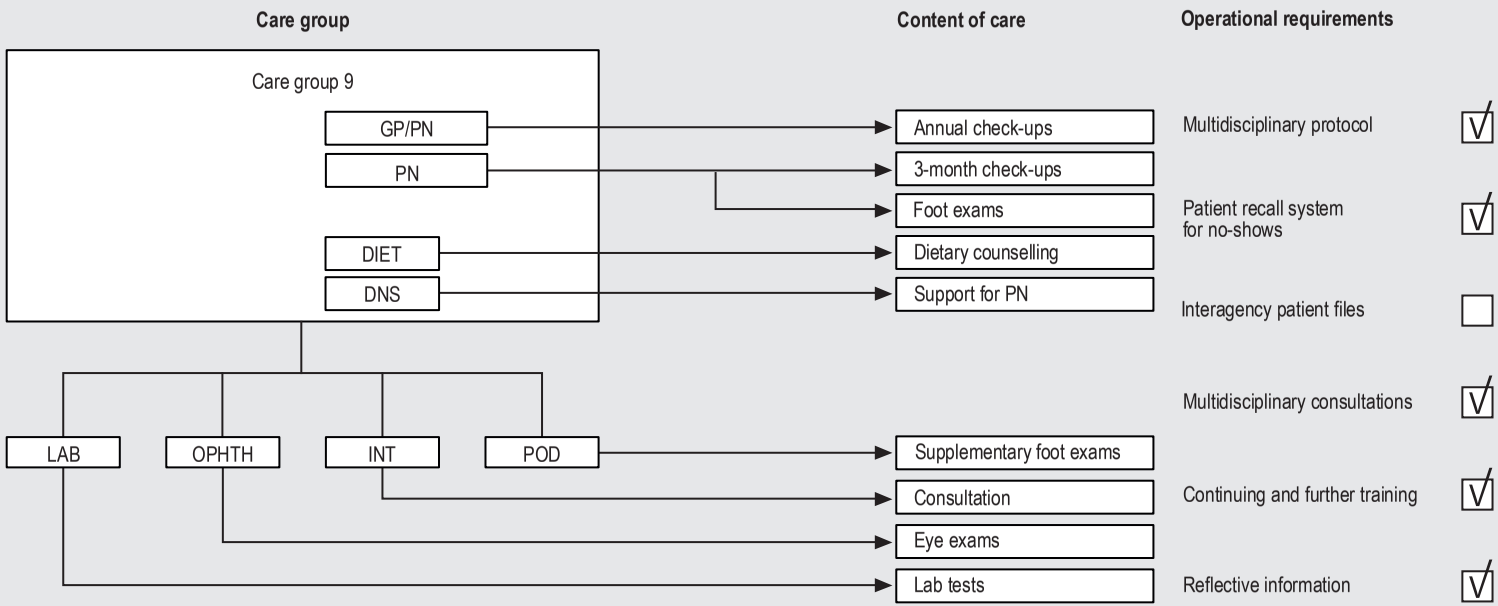

Figure A3.8: Care group 9

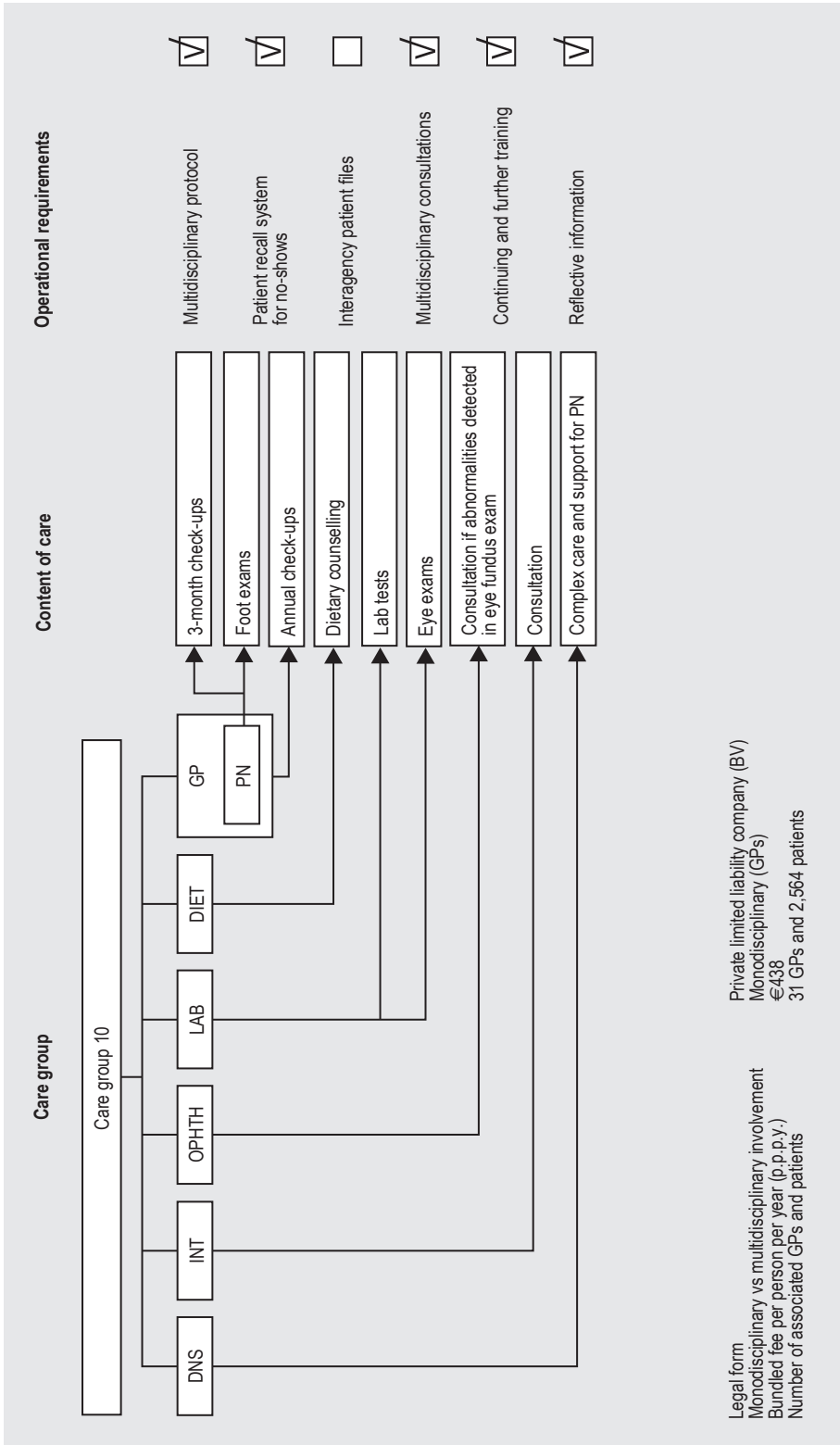

Figure A3.9: Care group 10

APPENDIX 4 QUALITY OF CARE BASED ON PATIENT RECORD DATA

Outline

This appendix has four sections. *Section A4.2* summarises the characteristics of the care group patients in the sample. *Section A4.3* focuses on the process indicators. It assesses what percentages of the patients in the care groups received the required health care services in the 'past year'. That is the term used in the NDF Health Care Standard and it refers in the present evaluation to the assessment at 12 months after baseline. *Section A4.4* examines changes in patient outcomes between the baseline and 12 months. The relevance of each process or outcome indicator is explained in a text box before the results are reported.

A4.1 Introduction

The quality of care is analysed in this appendix on the basis of the patient record data reported by the care groups to a data submission website specially designed for that purpose (see *appendix 2*). The data were reported in the form of the process and outcome indicators specified by the NDF Health Care Standard. As a result of the one-year time frame of the study, the process indicators were assessed only once (at 12 months). We can therefore draw no conclusions about any improvements in the process indicators.

The outcome indicators were assessed twice, enabling cautious conclusions about improvements in the diabetes care in a year's time. In assessing the outcome indicators, we included only those patients whose data were available for both assessments. Comparisons between care groups were seriously hampered because the results could not be adjusted for differences between their patient populations.

A4.2 Description of patient sample

Heterogeneity of care groups in terms of both numbers and characteristics of patients

A total of 14,156 patients with diabetes from eight care groups were included in the analyses (see *table A4.1*). The number of patients per care group varied widely, from 362 in group 1 to 5,295 in group 4. Patient characteristics also differed significantly in terms of age and diabetes duration. The mean overall age was 67.1 (with care group averages from 63.7 to 68.5). Mean diabetes duration was 5.7 years (from 4.4 to 7.5). In the entire sample, 51.7% of patients were female (ranging from 48.1% to 54.9%).

Table A4.1: Patient characteristics at baseline, by care group and in total sample

	Diabetes care group								
	1	**2**	**3**	**4**	**5**	**8**	**9**	**10**	**Total**
n	362	670	552	5.295	2.635	1.525	553	2.564	14.156
Patient characteristics									
Mean age	67,0	65,9	67,7	67,0	68,5	67,6	63,7	66,2	67,1*
Gender (% female)	51,4	54,9	50,7	52,5	53,0	52,7	48,1	48,6	51,7
Mean diabetes duration (years)	5,2	7,5	5,3	5,8	6,6	5,6	5,8	4,4	5,7*

n = number of patients included * = significant (P < .05).

A4.3 Process indicators

A4.3.1 Percentages of patients with four periodic check-ups in past year

Why this indicator is important
The NDF Health Care Standard prescribes that every diabetes patient should have a physical check-up at least every three months and a more extensive check-up once a year (NDF, 2007).

Distinguishing between annual and quarterly check-ups not feasible
Some care groups made no distinction between the extensive annual check-up and the quarterly check-ups. They argued that the extensive check-up was more of a 'theoretical construct' and that the services were organised differently in practice. In those care groups, the extensive annual check-up amounted to a quarterly check-up with some extra activities. For this reason, we decided to simply report the number of 'standard' check-ups irrespective of the annual or quarterly labels.

Data reporting problems led to large variations in the numbers of check-ups reported
Wide differences emerged between care groups in terms of the numbers of standard check-ups they reported. The percentages of patients said to have received four check-ups in the past year ranged from 96.6% in care group 2 to 36.2% and 36.7% in care groups 3 and 9. Care group 4 recorded only the annual check-up in 2007 and did not require the quarterly check-ups to be recorded until 2008. Care group 1 failed to report the dates of the check-ups to RIVM, making it unknown in what periods they were performed. We have therefore omitted the data from care groups 1 and 4.

79.5% of patients had four standard check-ups in past year
In care groups 2, 5, 8 and 10, more than 80% of the patients were reported as having received four check-ups in the past year (*figure A4.1*). In care groups 3 and 9, the rates were 36.2% and 36.7% respectively, indicating much room for improvement. In the overall sample, 79.5% of the patients had four standard check-ups.

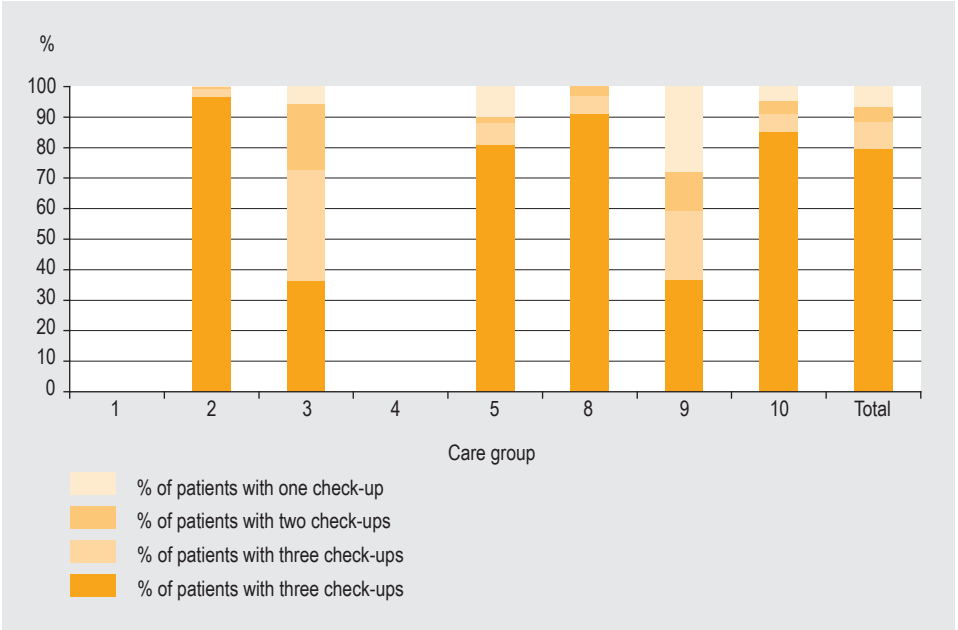

Figure A4.1: Number of periodic physical check-ups per patient in past year (percentages), by care group and in total sample (n= 8,499)

A4.3.2 Percentages of patients receiving foot examinations in past year

Why this indicator is important

Diabetic foot is characterised by infection, ulceration and/or deterioration of deeper tissue structures. These are associated with neurological dysfunction and varying degrees of peripheral vascular disease in the lower extremities (Bouma et al., 2006). If a diabetic foot is left untreated, foot amputation may ultimately be required (CBO, 2006a; Sims et al., 1988). Annual foot screenings help to detect diabetic foot problems in time and prevent complications like ulcers, infections and full or partial amputations.

Foot examinations performed on 87.0% of patients in past year

The percentages of diabetes patients receiving foot exams in the past year ranged from 61.5% in care group 10 to 100% in care group 8 (*figure A4.2*). In the overall sample, 87.0% of patients had foot examinations.

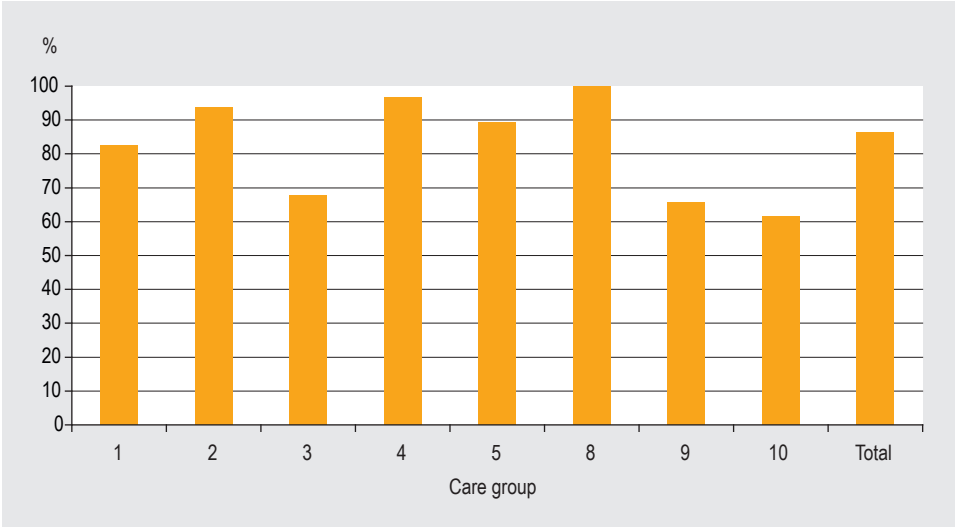

Figure A4.2: Percentages of patients receiving foot examinations in past year, by care group and in total sample (N= 14,156).

A4.3.3 Percentages of patients receiving eye examinations in past year

Why this indicator is important
Retinopathy is a degeneration of the capillaries in the retina of the eye. If left untreated, it may result in visual impairment or even blindness. The purpose of annual eye screening for people with diabetes is the early detection of diabetic retinopathy, in order to prevent or delay visual impairment and blindness (NDF, 2007; UKPDS, 1998b).

Annual eye screenings difficult to accomplish inside care groups
There were wide variations among care groups in terms of the percentages of patients who reportedly received their annual eye examination, from 78.5% in care group 8 to 4.3% in care group 3. Care group 10 was omitted due to data reporting problems.

In the overall sample, 52.0% of the patients were reported as having received eye exams in the past year (*figure A4.3*). This does not mean that the other 48% were not screened. Many were probably examined by hospital ophthalmologists. If so, the eye examination was not paid for by the bundled payment system and for that reason, it was not recorded and reported to the care group.

There are two probable causes for the low rates of reported eye exams. First, the negotiations with ophthalmologists for contracting the routine annual exams were arduous and time-consuming in some care groups. Several of them had therefore not contracted any ophthalmologists by the time our evaluation started. As long as no contracts had been signed, any eye examinations performed would have been claimed on the patients' insurance policies according to the existing fee-for-service system and hence, not recorded by the care groups. Second, some care groups had contracted the

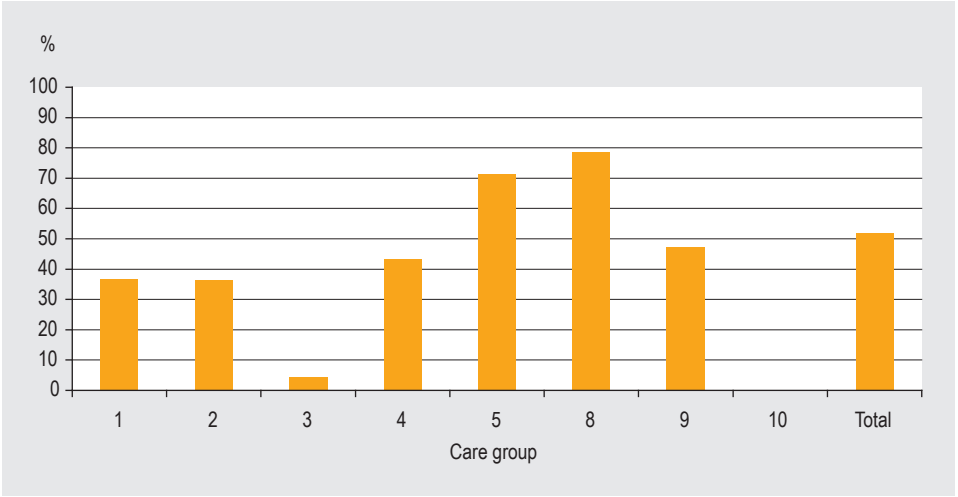

Figure A4.3: Percentages of patients reported as receiving eye examinations in past year, by care group and in total sample (n= 11,592).

eye screenings from service providers other than ophthalmologists, such as optometrists or general practice laboratories.[4] Task substitution from ophthalmologists to the newly contracted service providers proved to be a difficult process; not a single care group managed to fully complete the arrangements during our study period. The chief problem was that the ophthalmologists also had the option of continuing to perform the annual eye examinations without actively cooperating with the task substitution towards the care groups.

This could partly explain the low reported rates of screening. The question from an efficiency point of view is whether a target of 100% is recommendable for this process indicator.

Box A4.1: Annual or biannual eye examinations?

The NDF Health Care Standard recommends eye screening every year (NDF, 2007). The guidelines of the Dutch College of General Practitioners (NHG; Bouma et al., 2006), however, state that one eye check-up per two years is sufficient for patients who have normal blood pressure, well controlled blood glucose levels and no evidence of retinopathy from previous examinations. The guidelines entitled Diabetische Retinopathie from the Dutch Institute for Healthcare Improvement (CBO, 2006a) also state that annual eye screening is necessary only if retinopathy has already been diagnosed or if risk factors are present such as ten or more years' diabetes duration, hypertension or poor glycaemic control. This could partly explain the low screening rates observed in the care groups. The question from an efficiency point of view is whether a target of 100% is recommendable for this process indicator.

4 These providers were only allowed to perform the eye examinations; assessment could be made only by a professional authorised under the Individual Healthcare Professions Act (BIG).

A4.3.4 Percentages of patients with HbA1c determinations in past year

Why this indicator is important

HbA1c values are an indication of the average blood glucose levels in the six to eight weeks preceding the test. They play an important part in the management and treatment of diabetes. A sustained lowering of HbA1c levels may inhibit the development of macrovascular and microvascular complications (UKPDS, 1998a). HbA1c is determined in order to verify whether optimal glycaemic control has been achieved or whether treatment strategy might need to be modified, such as by prescribing new medication (Bouma et al., 2006). According to the quality parameters specified by the NDF Health Care Standard, HbA1c levels should be determined at least once a year (NDF, 2007).

HbA1c levels determined in 93.6% of patients

HbA1c was tested at least once in 93.6% of the diabetes patients in the 12 months after baseline (*figure A4.4*). The rates ranged from 85.2% in care group 2 to 99.7% in care group 8. Our general conclusion is that HbA1c testing was systematically carried out and reported but there was some room for improvement.

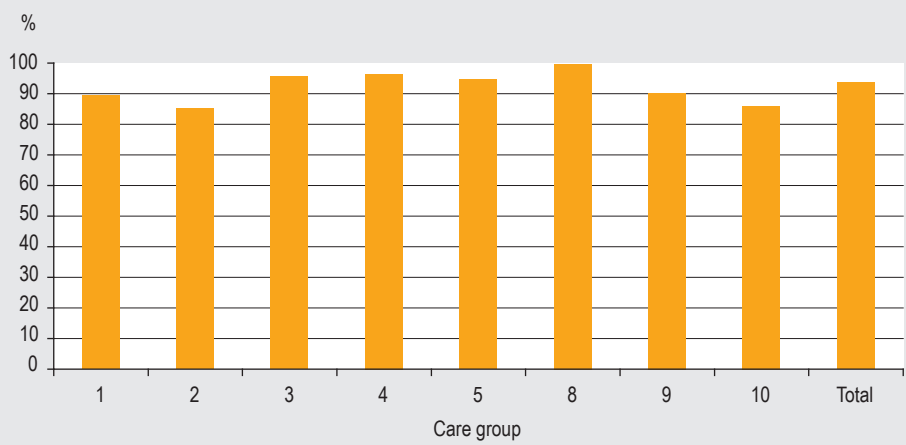

Figure A4.4: Percentages of patients tested at least once for HbA1c levels in past year, by care group and in total sample (N= 14,156).

A4.3.5 Percentages of patients tested for blood pressure in past year

Why this indicator is important
High blood pressure is the most significant indicator for the onset of macrovascular complications. It also plays an important part in the development of microvascular complications. Effective blood pressure management has been shown to reduce macrovascular and microvascular complications and diabetes-related mortality (UKPDS, 1998b; Gaede et al., 2003). The quality parameters of the NDF Health Care Standard prescribes that blood pressure be tested at least once a year (NDF, 2007).

Blood pressure was tested at least once in 86.4% of patients
The percentage of patients whose blood pressure was tested was 86.4% in the year after baseline (*figure A4.5*). Rates varied from 75.1% in care group 4 to 99.6% in care group 8. Improvement was needed in several care groups.

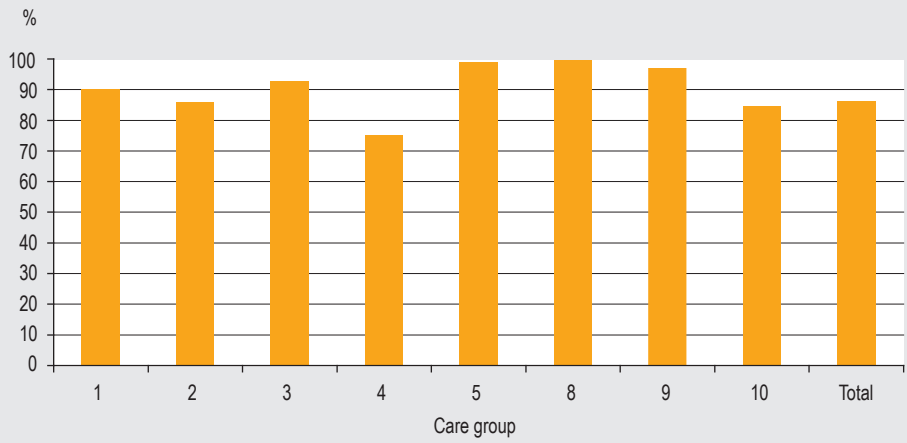

Figure A4.5: Percentages of patients whose blood pressure was tested at least once in the past year, by care group and in total sample (N= 14,156).

A4.3.6 Percentages of patients with BMI measurements in past year

Why this indicator is important

Body mass index (BMI) is a figure that expresses the relationship between body height and body weight. BMI is very important for diabetes treatment and for lifestyle recommendations (NDF, 2007). The guidelines of the Dutch College of General Practitioners (NHG) recommend calculating BMI for all patients in both the annual and the quarterly check-ups, meaning four measurements per year. The quality parameters of the NDF Health Care Standard call for BMI determinations at least once a year (NDF, 2007).

BMI measured for 88.5% of patients

The percentage of patients whose body mass index was calculated at least once in the 12 months after baseline was 88.5% (*figure A4.6*). All patients in care group 8 and 99.4% of patients in care group 2 had BMI measurements. At least 79% of patients were measured in the other care groups.

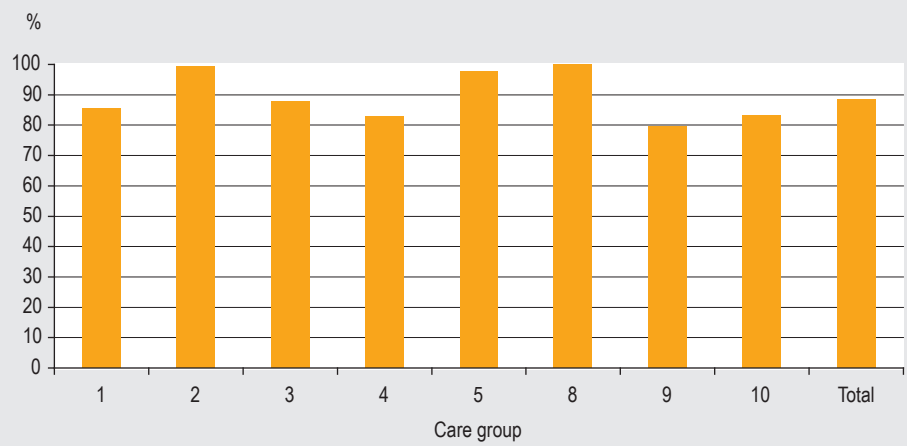

Figure A4.6: Percentages of patients whose BMI was determined at least once in the past year, by care group and in total sample (N= 14,156).

A4.3.7 Percentages of patients with renal clearance testing in past year

Why this indicator is important

Kidney function monitoring is necessary for diabetes patients because of their increased risk of kidney failure, as well as to enable any needed dosage adjustments in medication or co-medication. It is also important because diabetes patients with impaired kidney functions have an elevated risk of cardiovascular disease (Grauw, 2006). According to the NDF quality parameters, renal clearance should be determined at least once a year (NDF, 2007).

Renal clearance was determined in 88.3% of patients

The percentages of patients with at least one kidney function test in the year of the study ranged from 77.0% (in care group 8) to 92.8% (in care group 5); 88.3% of the overall sample were tested (*figure A4.7*). Data for care group 3 were excluded due to insufficient quality.

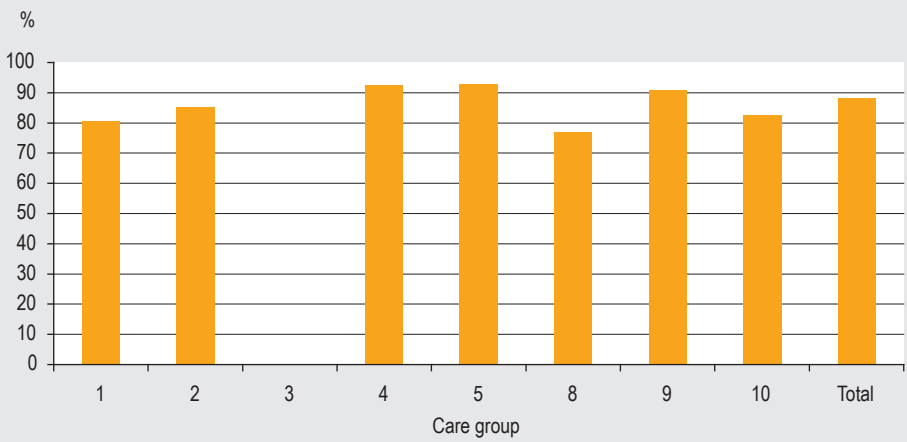

Figure A4.7: Percentages of patients whose renal clearance was determined at least once in the past year, by care group and in total sample (n= 13,604).

A4.3.8 Percentages of patients with microalbumin tests in past year

Why this indicator is important
By measuring the levels of microalbumin in the urine, doctors can estimate the degree of kidney damage in a patient. The test also gives an impression of any vascular damage (Grauw, 2006). The NDF quality parameters call for microalbumin testing at least once a year (NDF, 2007).

There were extremely large variations in the microalbumin data reported by the care groups. They yielded such an unreliable picture of the services delivered that we decided not to report this process indicator.

A4.3.9 Percentages of patients whose LDL cholesterol was measured in the past year

Why this indicator is important
Elevated levels of low-density lipoprotein (LDL) cholesterol bring with them a higher risk of cardiovascular disease. Since diabetes patients are already more at risk for cardiovascular problems, it is important to check LDL cholesterol. According to the quality parameters in the NDF Health Care Standard, LDL should be determined at least once a year (NDF, 2007).

LDL cholesterol testing left room for improvement
LDL cholesterol was measured in 88.0% of the patients (*figure A4.8*). Not a single care group tested all its patients and there was especially room for improvement in care groups 1, 2 and 3.

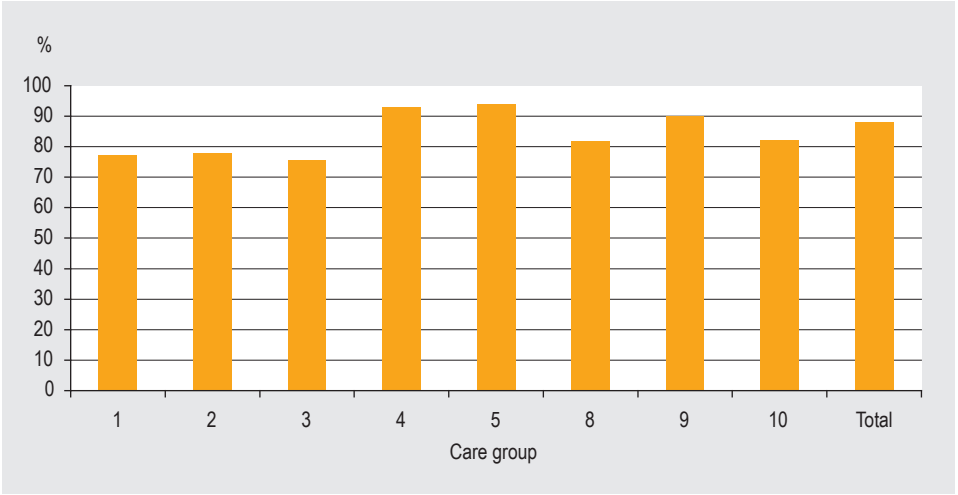

Figure A4.8: Percentages of patients whose LDL cholesterol was measured at least once in the past year, by care group and in total sample (N= 14,156).

A4.3.10 Percentages of patients whose smoking behaviour was recorded in past year

Why this indicator is important
Smoking is a major cardiovascular risk factor for people with diabetes, just as for other people. They therefore urgently need to stop smoking. According to the NDF Health Care Standard, good diabetes care includes helping smokers to stop or cut back on smoking. It is therefore important for care groups to keep track of the smoking status of their patients (NDF, 2007).

Smoking status reported for 77.6% of patients
Care groups reported smoking behaviour for 77.6% of their diabetes patients in the previous year (*figure A4.9*). Care groups 2 and 3 had recorded the smoking status of all their patients. There was much room for improvement in care group 8, which knew the status of only 9.1% of its patients. In care groups 2, 5, 8 and 9, a smoking cessation support service was included in their bundled payment contracts, but all except group 2 had lower rates of recording their patients' smoking status than most other care groups.

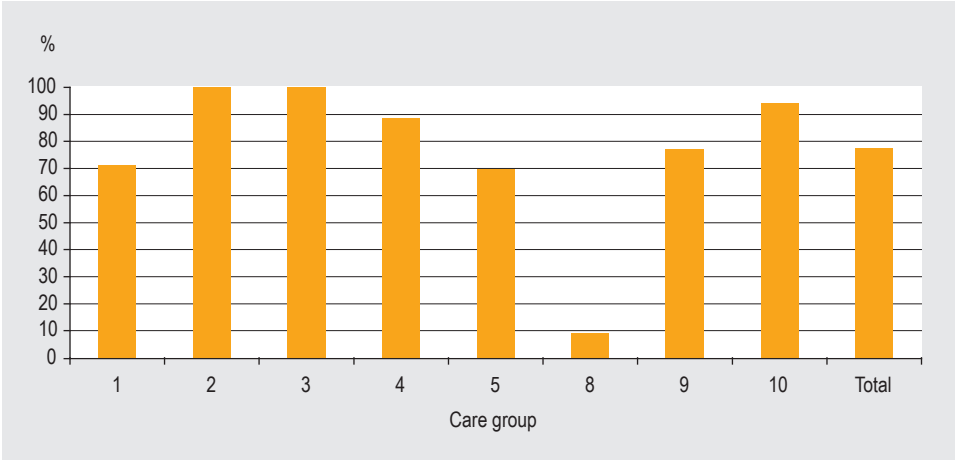

Figure A4.9: Percentages of patients whose smoking behaviour was documented in the past year, by care group and in total sample (N= 14,156).

A4.3.11 Percentages of patients seeing a dietician

Why this indicator is important
People with diabetes can improve their prognosis by ensuring good nutrition and by losing weight if necessary (Bouma et al., 2006). The NDF Health Care Standard recommends that every patient receive dietary counselling and support once a year in a consultation with a dietician (NDF, 2007).

All care groups included dietary counselling in their bundled payment contracts. None of the care groups consistently reported to RIVM the data on their patients' consultations with dieticians. Several reported no consultations at all and others only a few. As this gives an unreliable picture of the services actually delivered, we decided against reporting this process indicator.

A4.3.12 Percentages of patients receiving both four standard check-ups and eye and foot examinations in the past year

Why this indicator is important
This composite process indicator shows how many patients received all the required periodic check-ups (four physical check-ups plus eye and foot exams) in the past year. The indicator clarifies to what extent the care groups delivered services that formed the partial basis of the bundled payment fee.

48.3% of patients received four physical check-ups as well as eye and foot exams
On the basis of the process indicators we have reported in *sections A4.3.1* to *A4.3.3* (percentages of patients with four standard check-ups, foot exams and eye exams), we determined the percentages receiving all of the required periodic check-ups in the past year (*table A4.2*). Care groups 1, 4 and 10 were omitted from the analysis due to the record-keeping problems mentioned above. The percentages of patients receiving all periodic check-ups ranged from 2.9% (in care group 3) to 74.1% (in care group 8). Overall, an average of 48.3% of the patients received all check-ups. In interpreting this composite process indicator, one should bear in mind the comments we have made above about the separate indicators.

Table A4.2: Percentages of patients with four physical check-ups as well as foot and eye exams in the past year, by care group and in total sample (n= 5,935).

	Care group					
% of patients receiving:	**2**	**3**	**5**	**8**	**9**	**Total**
4 physical check-ups	96,6	36,2	80,9	91,1	36,7	79,5
Foot examinations	93,9	67,8	89,2	100,0	65,8	86,5
Eye examinations	36,3	4,3	71,3	78,5	47,2	52,0
4 check-ups + foot examinations + eye examinations	34,5	2,9	52,9	74,1	17,4	48,3

A4.3.13 Percentages of patients for whom HbA1c levels, blood pressure, BMI, LDL cholesterol levels, renal clearance, eye and foot examinations and smoking status were recorded in the past year

Why this indicator is important

This indicator is a composite of a number of previous indicators. It is used by many care groups to ascertain how many of their patients receive the full package of services recommended by the NDF Health Care Standard. Standard physical check-ups are not included in this indicator. Care groups argue that the number of check-ups is not clinically relevant and not an aim in itself.

HbA1c, blood pressure, BMI, LDL, renal clearance, albumin, eye and foot exams and smoking status were recorded for 27.8% of patients in the past year

HbA1c levels, blood pressure readings, BMI, LDL cholesterol, renal clearance functions, albumin and eye and foot condition were all determined and smoking status was known for 27.8% of the patients across the care groups (*figure A4.10*). Rates varied widely among groups. In group 8, all data were known for only 5.3% of its patients, but that was because smoking status was known for only 9.1%.

Care groups 1, 3 and 10 were omitted from this indicator. Group 3 was excluded due to its unreliable kidney function data. Groups 1 and 10 were excluded because the patient-level data files they submitted could not be linked.

Box A4.2: Unknown percentage of patients received full NDF Health Care Standard package

It would be difficult to ascertain at present what percentage of care group patients with diabetes are receiving the full package of services called for by the NDF Health Care Standard. For several components of diabetes care, the standards leave room for more than one interpretation. Moreover, different care groups employ different composite indicators (with considerable overlap) in verifying whether their patients are receiving the full package. Many groups do not include dietician consultations in their composite indicators and many do not use the process indicator for four periodic check-ups, arguing that the number of check-ups is not clinically relevant and not an aim in itself.

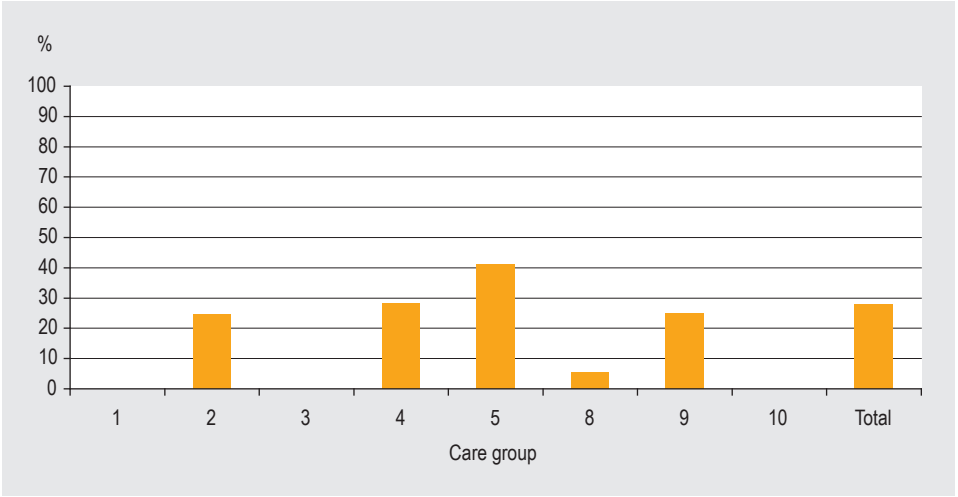

Figure A4.10: Percentages of patients for whom HbA1c, blood pressure, BMI, LDL cholesterol, renal clearance, eye and foot exams and smoking status were recorded in the past year, by care group and in total sample (n= 10,678).

A4.4 Patient outcome indicators

A4.4.1 Percentages of patients with HbA1c levels less than 7.0%

Why this indicator is important
HbA1c values are an indication of the average blood glucose levels in the six to eight weeks preceding the test. They play an important part in the management and treatment of diabetes. A sustained lowering of HbA1c levels can inhibit the development of macrovascular and microvascular complications (Bouma et al., 2006; UKPDS, 1998a). The target value for HbA1c is below 7.0%. The mean HbA1c value is not specified as an indicator by the NDF Health Care Standard but it is commonly used as such in the literature.

69.0% of diabetes patients had HbA1c levels below 7.0% at the 12-month assessment
The total percentage of patients with HbA1c values below the target level was 71.2% at baseline; it declined by 2.2 percentage points to 69.0% at the 12-month assessment (see *figure A4.11* and *table 2.8*). Mean HbA1c for the total sample increased slightly from 6.67% to 6.72% (*table A4.3*). The HbA1c values reported here are comparable to those in the Dutch and international literature (Janssen et al., 2009; Zoungas et al., 2009; Sequist et al., 2008; Calvert et al., 2009; Cooper et al., 2009; Bovier et al., 2007; Holbrook et al., 2009; Cleveringa et al., 2008; Rutten, 2008b).

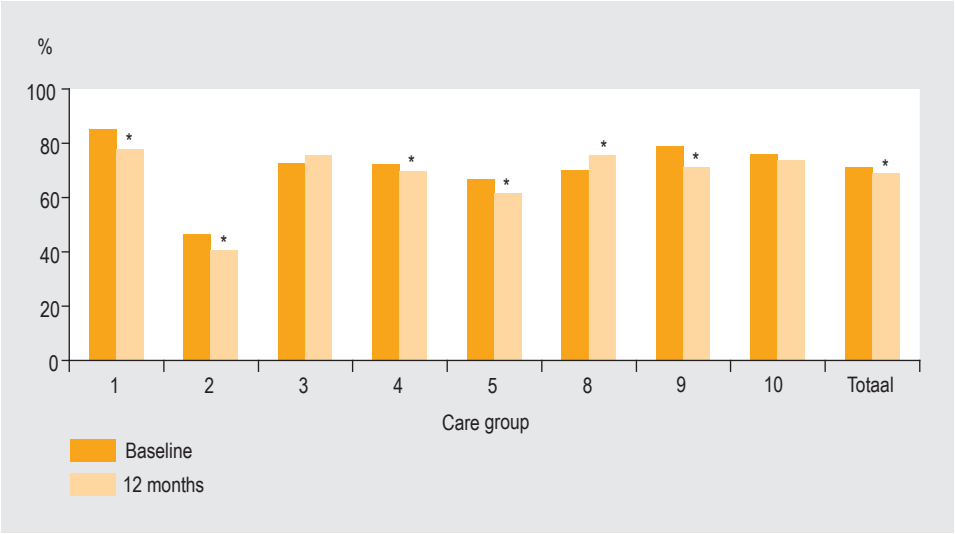

Figure A4.11: Percentages of patients with HbA1c <7.0% at baseline and 12 months, by care group and in total sample (n= 11,127).

** = significant (P < .05).*

In care group 2, the mean HbA1c at the 12-month assessment was considerably higher at 7.28% than the means of the other care groups (see *table A4.3* and *table 2.8*). As a consequence, this group also had a considerably lower rate of patients with HbA1c levels below 7.0%. The differences are explained by its atypical patient population as compared to the other care groups. Contrary to those groups, care group 2 included patients who were in treatment with an internist. In addition, average diabetes duration of its patients was 7.5 years, longer than that in other groups (see *table 2.6*). Interpreting such an outcome indicator in the absence of background information from the care group could result in erroneous conclusions about the quality of the care being provided. If downward substitution from the secondary care sector to care groups is carried out as expected in the coming years, it stands to reason that the mean HbA1c levels in other care groups will increase.

Table A4.3: Mean HbA1c levels (%) at baseline and 12 months, by care group and in total sample (n= 11,127)

Care group	Baseline values	(SD)	12-month values	(SD)	Change
1	6,39	(0,73)	6,52	(0,67)	0,12*
2	7,21	(1,10)	7,28	(1,01)	0,07
3	6,74	(0,99)	6,59	(0,67)	-0,13*
4	6,65	(1,06)	6,71	(0,98)	0,06*
5	6,72	(0,76)	6,83	(0,81)	0,11*
8	6,73	(0,81)	6,58	(0,82)	-0,14*
9	6,46	(0,91)	6,68	(0,94)	0,22*
10	6,55	(0,86)	6,65	(0,79)	0,10*
Total	6,67	(0,93)	6,72	(0,73)	0,05*

SD = standard deviation; * = significant (P < .05).

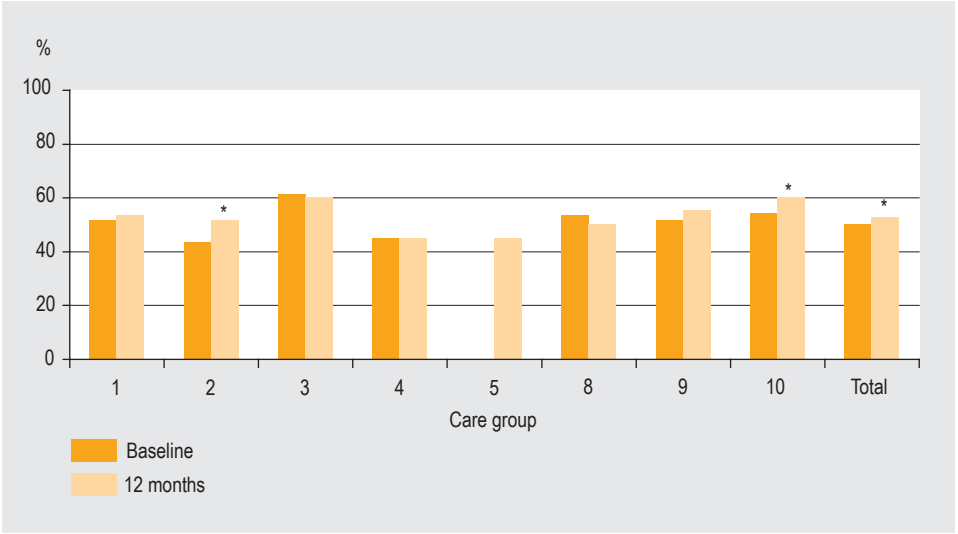

Figure A4.12: Percentages of patients with systolic blood pressure <140mmHg at baseline and 12 months, by care group and in total sample (n= 6,138).
** = significant (P < .05).*

A4.4.2 Percentages of patients with systolic blood pressure below 140mmHg

Why this indicator is important
High systolic blood-pressure is the most important risk factor for macrovascular complications. It also plays a significant role in the development of microvascular complications. Effective blood pressure management inhibits the onset of vascular complications. The target value for systolic blood pressure is less than 140 mmHg (Bouma et al., 2006). The mean systolic blood pressure is not specified as an indicator by the NDF Health Care Standard but it is commonly used as such in the literature.

Slight increase in percentage of patients with systolic blood pressure lower than 140 mmHg but more improvement possible
A slight rise was seen in the percentage of patients whose systolic blood pressure was lower than 140 mmHg (*figure A4.12*), from 50.4% at baseline to 53.0% twelve months later. This indicates that the care groups were better succeeding in attaining the target values. The percentages ranged from 44.9% in care group 4 to 60.3% and 60.5% in groups 10 and 3. There seems to be room for further improvement.

Box A4.3: Problems with blood pressure testing at baseline in care group 5

Systematic errors were made by care group 5 in carrying out the blood pressure testing at baseline, thereby rendering its data unreliable. As the problems had been corrected by the 12-month assessment, only the 12-month figure is reported here.

No change in mean systolic blood pressure

No significant change was observable in the average systolic blood pressure measured across the sample (*table A4.4*). A significant decrease (of 4 mmHg) was reported in care group 2 only, while the means in the other groups remained steady.

Table A4.4: Mean systolic blood pressure levels (in mmHg) at baseline and 12 months, by care group and in total sample (n= 6,138

Care group	Baseline values	(SD)	12-month values	(SD)	Change
1	136	(18)	136	(18)	0
2	142	(18)	138	(17)	-4*
3	136	(19)	137	(17)	+1
4	141	(19)	141	(19)	0
5			141	(19)	
8	140	(14)	142	(20)	1
9	139	(17)	138	(18)	-1
10	137	(19)	136	(17)	-1
Total	139	(18)	138	(18)	+1

SD = standard deviation; * = significant (P < .05).

A4.4.3 Percentages of patients with a BMI under 25, from 25 to 30 and over 30 kg/m²

Why this indicator is important

Body mass index (BMI) is a figure that expresses the relationship between body height and body weight. A healthy BMI lies between 20 and 25 kg/m². A BMI between 25 and 30 kg/m² signifies 'overweight' and a BMI greater than 30 kg/m² signifies 'obesity'. Excessive body weight is a major factor in the aetiology of type 2 diabetes mellitus. Weight reduction in diabetes patients can lead to lower blood glucose levels and lower blood pressure (Bouma et al., 2006). As well as reporting the three categories of BMI, we also report mean BMI values, an indicator commonly used in the literature.

Rates of obesity increased in nearly all care groups

In seven of the eight care groups studied, an increase occurred in the percentage of patients with a BMI greater than 30 (*table A4.5*). In groups 4, 9 and 10, as well as in the total sample, the increase was statistically significant. Only care group 1 showed a (non-significant) decrease in the percentage of obese patients.

Table A4.5: Percentages of patients in different BMI categories at baseline and 12 months, by care group and in total sample (n= 10,062)

	<25 kg/m²		25-30 kg/m²		>30 kg/m²	
Care group	**Baseline**	**12 months**	**Baseline**	**12 months**	**Baseline**	**12 months**
1	16,8	17,9	42,3	41,6	40,9	40,5
2	18,0	17,5	42,4	41,7	39,5	40,9
3	14,2	14,2	45,7	43,3	40,1	42,5
4	16,3	13,6 *	41,1	41,0	42,7	45,4 *
5	16,5	16,1	45,0	45,2	38,5	38,7
8	19,1	18,6	43,3	43,5	37,6	38,0
9	17,2	16,4	45,3	41,1	37,5	42,4 *
10	16,8	15,3	43,3	42,7	39,9	42,0 *
Total	16,9	15,7 *	43,2	42,9	39,9	41,4 *

* = significant (P < .05).

Mean BMI remained high

Four of the eight care groups saw a significant increase in the average BMI of their diabetes patients (*table A4.6*). The mean BMI in the overall sample was 29.62 kg/m² at baseline and 29.76 kg/m² at 12 months. The BMI of the patient population thus remained persistently high.

Table A4.6: Mean body mass index (kg/m²) at baseline and 12 months, by care group and in total sample (n= 10,062)

Care group	**Baseline values**	**(SD)**	**12-month values**	**(SD)**	**Change**
1	29,69	(5,28)	29,84	(5,43)	0,15*
2	29,72	(6,10)	29,80	(6,26)	0,09
3	29,72	(5,16)	29,93	(5,04)	0,21
4	29,94	(5,35)	30,42	(5,47)	0,48*
5	29,53	(4,75)	29,37	(4,80)	-0,16*
8	29,28	(5,25)	29,34	(5,27)	0,06
9	29,04	(4,59)	29,41	(4,72)	0,37*
10	29,64	(5,10)	29,73	(5,18)	0,09
Total	29,62	(5,14)	29,76	(5,21)	0,14

SD = standard deviation; * = significant (P < .05).

A4.4.4 Percentages of patients with renal clearance greater than 60, from 30 to 60 and less than 30 ml/min

Why this indicator is important
Kidney function monitoring is necessary for diabetes patients because of their increased risk of kidney failure, as well as to enable any needed dosage adjustments in medication or co-medication. It is also important because diabetes patients with impaired kidney functions have a strongly elevated risk of cardiovascular disease (Grauw, 2006). A renal clearance rate of less than 60 millilitres per minute indicates a clinically relevant deterioration in renal function and is referred to as impaired kidney function (Bouma et al., 2006).

Care groups determined kidney function in different ways
All care groups routinely assessed and recorded their patients' kidney function (see process indicator *section A4.3.7*) but different groups used different methods to do so (see *box A4.4*). This resulted in systematic discrepancies among groups in terms of the patient outcomes they reported. Indicators have to be uniformly recorded and reported. As the inconsistent kidney function data might have biased the results, we decided not to report this indicator.

Box A4.4: Different methods of assessing kidney function

The functioning of the kidneys can be tested in various ways. Glomerular filtration rate (GFR) testing is the most accurate method to judge the severity of any kidney damage that may be present. That method is very time-intensive, however, and it is not feasible to perform it on all patients. GFR can also be estimated by calculating the clearance rate of certain substances from the kidneys.

Two formulas exist for such calculations. The NDF Health Care standard recommends using the Cockcroft and Gault formula, which takes into account age, gender, body weight and serum creatinine. The other formula is the Modification of Diet in Renal Disease equation (MDRD), which takes no account of body weight. Kidney function may also be estimated using the serum creatinine concentration only but that measure is often too inaccurate for this purpose (Bilo et al., 2007).

A4.4.5 Percentages of patients with microalbuminuria

Why this indicator is important
Albumin in the urine is a sign of kidney damage. The level of microalbumin in the urine also gives an impression of any vascular damage. An albumin loss of 20 to 200 milligrams per 24 hours indicates microalbuminuria (Bouma et al., 2006).

The patient record data on this outcome indicator were of insufficient quality and we have therefore not reported them.

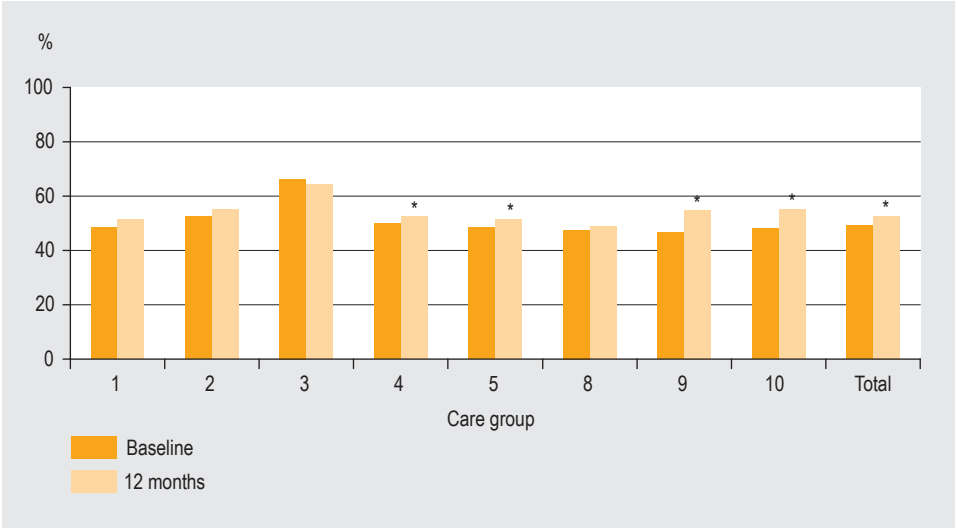

Figure A4.13: Percentages of patients with LDL cholesterol less than 2.5 mmol/l at baseline and 12 months, by care group and in total sample (n= 6,849).

** = significant (P < .05).*

A4.4.6 Percentages of patients with LDL cholesterol less than 2.5 mmol/l

Why this indicator is important

Elevated levels of LDL cholesterol bring with them a higher risk of cardiovascular complications. The target value is below 2.5 millimoles per litre (Bouma et al., 2006).

LDL cholesterol improved

The percentages of patients with LDL levels below 2.5 mmol/l grew slightly at the 12-month assessment as compared to baseline (*figure A4.13*); in four care groups, the improvement was significant. The percentage in the overall sample also improved significantly, with 52.6% satisfying the target value at 12 months as against 49.3% at baseline.

Reduction in mean LDL cholesterol in all care groups

Four of the eight care groups in this analysis saw significant decreases in the mean LDL cholesterol levels of their diabetes patients (*table A4.7*). Particularly notable was the decline in care group 9, from 2.60 mmol/l at baseline to 2.43 mmol/l twelve months later.

Table A4.7: Mean LDL cholesterol levels at baseline and 12 months, by care group and in total sample (n= 6,849)

Care group	Baseline values	(SD)	12-month values	(SD)	Change
1	2,67	(0,92)	2,60	(0,89)	-0,08
2	2,54	(0,94)	2,45	(0,87)	-0,09*
3	2,25	(0,94)	2,21	(0,79)	-0,04
4	2,56	(0,93)	2,50	(0,89)	-0,06*
5	2,55	(0,84)	2,54	(0,78)	0,00
8	2,56	(0,88)	2,53	(0,84)	-0,01
9	2,60	(0,85)	2,43	(0,79)	-0,17*
10	2,57	(0,89)	2,46	(0,79)	-0,11*
Total	2,55	(0,89)	2,50	(0,83)	-0,05*

SD = standard deviation; * = significant (P < .05).

A4.4.7 Percentages of smokers and quitters in the past year

Why this indicator is important

Smoking is a major cardiovascular risk factor for people with diabetes, just as for other people. They therefore urgently need to stop smoking. According to the NDF Health Care Standard, good diabetes care includes helping smokers to stop or cut back on smoking (NDF, 2007).

Percentages of smokers declined according to care group records

On the basis of the patient files from the care groups, a total of 16.9% of patients were smokers at baseline and 16.5% one year later (*figure A4.14*). These percentages were higher than the Dutch national average for the 65-to-74 age category (Limperg, 2009; see *box A4.5*). There were wide variations among care groups both at baseline (22.5% smokers in group 9 to 11.1% in group 3) and at 12 months (22.5% in group 9 to 10.1% in group 2). The percentage of smokers according to these patient record systems was 2 percentage points higher than the percentage according to self-reports (see *appendix 5*). A possible explanation for the difference is that some patients completing questionnaires may have given socially desirable answers.

Box A4.5: Facts and figures on smoking in the Netherlands

In 2008, 27% of all Dutch adults older than 15 smoked tobacco (Limperg, 2009), including 30% of the men and 24% of the women. The rates for people above age 65 were substantially lower: 14% in the 65-to-74 age category and 10% for those above 75.

Percentage of patients who quit smoking in the past year

Some 9.1% of the care group patients who were recorded as being smokers at baseline had stopped smoking by 12 months later (*table A4.8*). There were wide differences among the care groups in terms of the numbers of quitters. Care group 2 showed a particularly strong drop in the number of smokers.

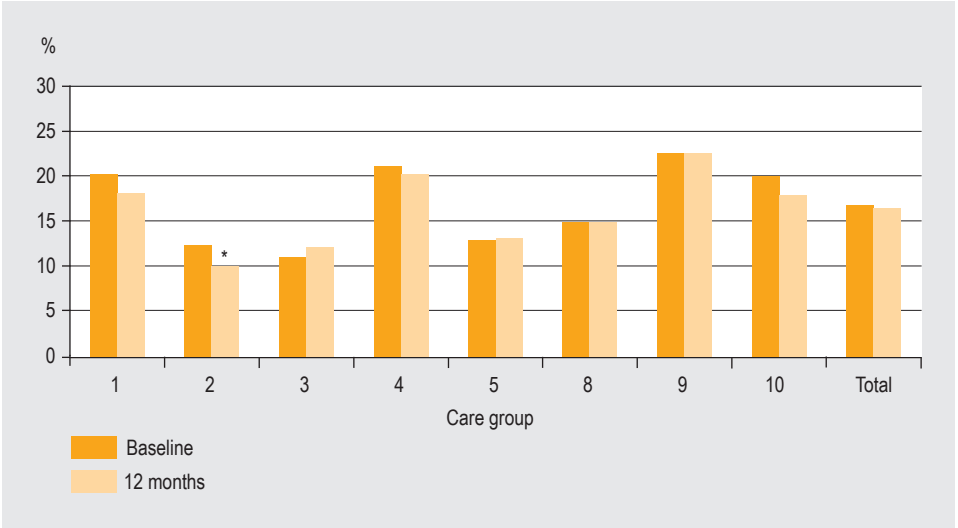

Figure A4.14: Percentages of smokers according to care group records at baseline and 12 months, by care group and in total sample (n= 5,463).

** = significant (P < .05).*

The number of patients who stopped smoking in the 12-month period was very low (*table A4.8*). In care groups 1, 3 and 9 there were only two, one and two quitters, respectively. In view of these tiny numbers, we omitted these data in the main body of the report but we report them here.

A4.8: Percentages of patients who stopped smoking in the past year, according to care group patient records, by care group and in total sample

	Care group								
	1	**2**	**3**	**4**	**5**	**8**	**9**	**10**	**Total**
Number of smokers at baseline	20	83	61	296	200	7	19	236	922
Number of quitters in 12 months	2	25	1	28	16	0	2	10	84
Percentage of quitters in 12 months	10,0	30,1	1,6	9,5	8,0	0,0	10,5	4,2	9,1

A4.4.8 Percentages of patients with foot abnormalities

Why this indicator is important
Diabetic foot is characterised by infection, ulceration and/or deterioration of deeper tissue structures. These are associated with neurological dysfunction and varying degrees of peripheral vascular disease in the lower extremities (Bouma et al., 2006). If a diabetic foot is left untreated, foot amputation may ultimately be required (Van Sloten et al., 2008). The NDF Health Care Standard specifies the following indicators for foot screening: percentage of diabetes patients with a registered Sims score, percentage of patients with foot ulcers and percentage with amputations (NDF, 2007).

Data collection during foot examinations was not uniform
The data that were recorded during foot examinations differed among care groups. Some groups merely recorded whether abnormalities were detected, whereas others recorded the Sims score. Those care groups recording more data reported higher percentages of patients with foot abnormalities than those keeping more limited records. The data cannot be used in assessing quality of care until they are recorded and reported in uniform formats. We have therefore not reported the data on this outcome indicator here.

Additional training for health care providers in performing foot examinations will boost the percentage of patients with known foot abnormalities in the coming years
In the course of the evaluation, some care groups made efforts to improve the quality of foot examinations. They arranged continuing and further training for their contracted service providers and put strong emphasis on a protocol-driven approach. They reported that the improved quality of the annual foot examinations enabled them to detect more foot abnormalities, thereby substantially increasing their percentages of patients with known foot problems.

A4.4.9 Percentages of patients with eye conditions

Why this indicator is important
Diabetic retinopathy is a degeneration of the capillaries in the retina of the eye. If left untreated, it may result in visual impairment or even blindness (Polak et al., 2008). The NDF Health Care Standard specifies the following indicators for eye screening: percentage of diabetes patients identified with any form of diabetic retinopathy, percentage of patients with visual impairment and percentage with blindness (NDF, 2007).

Insufficient quality of data on diabetic retinopathy
None of the care groups consistently recorded and reported their data on the diabetic retinopathy outcome indicator. As with the corresponding process indicator for retinopathy, there were several causes for the data reporting problems (see *section A4.3.3*). Many care groups have indicated that the record-keeping for this outcome indicator has since been improved.

A4.4.10 Percentages of patients with complications

Why this indicator is important
Diabetes can eventually lead to serious complications. If complications arise, it may be necessary to intensify the treatment, working with secondary care disciplines (NDF, 2007). The NDF Health Care Standard specifies the following outcome indicators for patient complications (in addition to the complications already discussed, such as eye and foot conditions): percentage of diabetes patients deceased (including age and cause of death), percentage of diabetes patients with new cardiovascular conditions and percentage with renal dialysis or kidney transplants (NDF, 2007).

Data collection on patient complications was not consistent
Complications were not being recorded uniformly by the care groups. This led to wide differences among groups. We therefore decided against reporting this patient outcome indicator.

APPENDIX 5 RESULTS OF THE PATIENT SURVEY

Outline

In this appendix, we first look at the response rate on our survey of a subsample of care group patients (*section A5.2*) and then discuss the patient characteristics and the non-response analysis (*section A5.3*). We next examine the perceptions reported by the patients with respect to the health care provider primarily responsible for their diabetes care and with respect to the coordination and cooperation within the care group (*section A5.4*). We then turn to the patients' lifestyles (*section A5.5*) and their co-morbid medical conditions, episodes of hypoglycaemia and general mental health (*section A5.6*). The final section (*A5.7*) focuses on patient education and on patients' knowledge about diabetes and healthy lifestyles.

A5.1 Introduction

The questionnaires we administered to the patients yielded information on patient satisfaction with the integrated health care provision and on lifestyles and health status.

A5.2 Response to patient survey questionnaires

Baseline assessment yielded 863 completed questionnaires

Of the 1,500 pen-and-paper questionnaires distributed to patients in the care groups, 646 were returned (a response rate of 43% for the paper questionnaires). An additional 217 questionnaires were completed via the Internet. This produced a total of 863 respondents for the baseline assessment (*figure A5.1*), of whom 79% (n= 682) consented to be surveyed again 12 months later. The percentage consenting to follow-up questioning was higher for the Internet variant (91%, n = 197) than for the pen-and-paper variant (75%, n= 485; *figure A5.1*).

Response rate at 12-month follow-up assessment was 73%

All respondents who had consented to be questioned again (n = 682) were sent a second questionnaire by post or e-mail for the 12-month assessment. A reminder was sent four weeks later to all who had not yet responded. The response rate was 73% (n = 500; *figure A5.2*). Thirteen pen-and-paper questionnaires were returned uncompleted due to relocation (n = 1), death (n = 6), wrong address supplied on consent form (n = 2) or unknown reasons (n = 4), making a total of 487 valid questionnaires for the 12-month assessment.

Higher response to pen-and-paper than to Internet questionnaires

The response rate to the pen-and-paper questionnaires (80%) was considerably higher than that to the Internet version (56%). Part of the difference can be explained by a high percentage of undeliverable e-mails; the cause for this was unclear, but possibly some respondents had changed their e-mail address during the year or had supplied incorrect addresses on the consent forms they filled in at baseline.

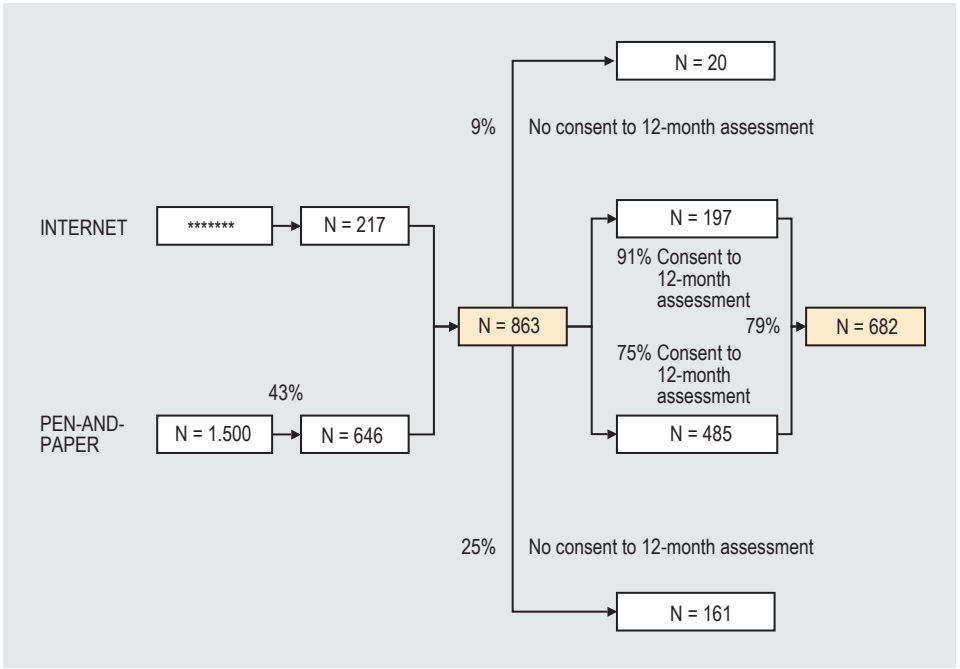

Figure A5.1: Response to baseline assessment.

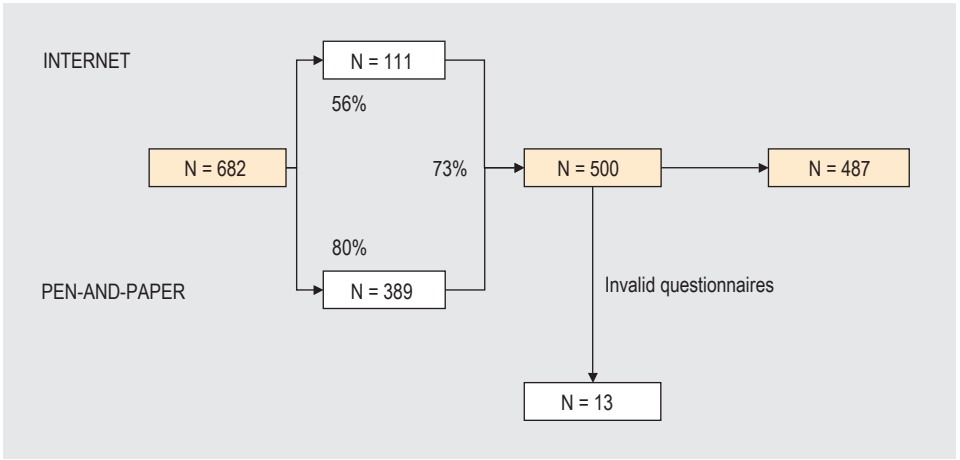

Figure A5.2: Response to 12-month assessment

Large variations in response among care groups

The numbers of returned survey questionnaires varied strongly from care group to care group. At baseline, 78 questionnaires were completed in care group 1 and more than 200 in groups 9 and 10 (*table A5.1*). At 12 months, response varied from 51.6% in group 9 to 62.8% in group 1 (*table A5.1*); this was mainly due to differing rates of response to the Internet questionnaires.

Table A5.1: Patient characteristics at baseline of the patient survey, by care group and in total survey subsample

	Care group						
	1	**2**	**3**	**4**	**9**	**10**	**Total**
Response at baseline (n)	78	108	108	129	215	225	863
Response at 12 months (n)	49	66	65	71	111	125	487
Response rate at 12 months (%)	62,8	61,1	60,2	55,0	51,6	55,6	56,4
Patient characteristics							
Age (years)	67,4	59,3	64,8	65,3	60,9	65,0	63,7*
Gender (% female)	50,7	34,3	50	50	56,5	39,8	47,1*
Mean diabetes duratiSon (%)							
- < 1 year	10,4	8,4	12,0	11,7	6,1	7,1	8,6*
- 1 year < 2 year	10,4	4,7	12,0	18,8	12,1	9,8	11,4*
- 2 year < 10 year	59,7	40,2	57,4	53,1	62,1	59,8	56,6*
- ≥ 10 year	16,9	46,7	16,7	14,8	18,2	21,4	21,8*
- not known	2,6	0,0	1,9	1,6	1,4	1,8	1,5
Education# (%)							
- Low	60,6	34,7	60,6	61,2	34,8	52,9	48,7*
- Middle	29,6	36,6	26,6	25,9	46,1	31,4	34,3*
- High	7,0	23,8	11,7	6,9	15,7	13,3	13,6*
- Other	2,8	5,0	1,1	6,0	3,4	2,4	3,4*
Ethnicity (% ethnic Dutch)	92,3	88,9	87,0	76,7	75,8	92,0	84,7*

= Low = lower vocational or less education; Middle = secondary education; High = higher education.

* = significant (P < .05).

A5.3 Characteristics of patients in the survey subsample

A5.3.1 Subsample for the patient survey questionnaire

Differences between care groups in terms of patient characteristics

There were significant differences among care groups in terms of all patient characteristics (age, gender, diabetes duration, education and ethnicity; *table A5.1*). Respondents in care groups 2 and 9 were younger. Those in care group 2 were also more likely to be male and to have more education, and a much larger proportion reported having diabetes for over 10 years as compared to the other groups. Care groups 4 and 9 had more patients with minority ethnic backgrounds. The between-group differences in terms of patient characteristics made it difficult to make comparisons between them. It could well be, for instance, that patients who have had diabetes longer would rate the care differently or would have more knowledge about diabetes than those who have recently been diagnosed.

A5.3.2 Non-response analysis

Discrepancies between patient survey data and patient record data in terms of diabetes duration but no major differences in terms of age and gender
To analyse whether the subsample of patients who received survey questionnaires was representative for the entire sample for whom we had patient record data, we compared their characteristics to those of the full sample.

In most care groups, no substantial baseline differences were evident in terms of age or gender between patients receiving the questionnaire and their total patient populations (*table A5.2*). Exceptions were care groups 2 and 10. In group 2, the survey respondents had younger average ages (59.3 versus 65.9) and were less likely to be female (34.3% versus 54.9%) than the patients registered with the care group. In group 10, survey respondents were less likely to be female (39.8% versus 48.6%).

Baseline differences across care groups were found in terms of average diabetes duration (*table A5.2*). Survey respondents had been diagnosed with diabetes longer than the total patient population of the care groups.

No differences in patient characteristics between responders and non-responders at 12 months
In the overall survey subsample, the characteristics of patients who responded to the questionnaire at 12 months did not differ significantly from non-responders (*table A5.3*); we did not test for differences within care groups. We concluded that the baseline and 12-month respondents were sufficiently comparable.

A5.4 Responsible health care provider and coordination of care

In this section we examine patient perceptions about how the introduction of bundled payment for diabetes care may have affected the cooperation and coordination between the various health care providers. We focus first on the health care provider primarily responsible for the patient's diabetes management and we then give a detailed discussion of the mutual cooperation and coordination in the care groups, as assessed by the patients.

A5.4.1 GP staff member primarily responsible for diabetes care

In the overall sample, 88.5% of the patients, identified a health care provider working in their GP practice as being primarily responsible for their diabetes care. For 47.8% that was a general practitioner, for 21.9% it was a practice nurse or general practice assistant and for 18.8% it was a diabetes nurse specialist working in the GP practice (*figure A5.3*). Considerable differences emerged among care groups in terms of which type of health care provider was seen by the patients as being primarily responsible. Care group 2 stood out as the most dissimilar; almost half of its patients identified an internist or a hospital nurse as their responsible health care provider. This was because many of its patients

Table A5.2: Patient characteristics at baseline, according to patient survey and care group patient records, by care group and in total survey subsample

	Care group													
	1		2		3		4		9		10		Total	
	PSQ	PRS	PSQ	PRS	PSQ	PRS	PSQ	PRS	PSQ	PRS	PSQ	PRS	PSQ	PRS
N	78	362	108	670	108	552	129	5.295	215	553	225	2.564	863	14.156
Patient characteristics														
Age (years)	67,4	67,0	59,3	65,9	64,8	67,7	65,3	67,0	60,9	63,7	65,0	66,2	63,7	67,1
Gender (% female)	50,7	51,4	34,3	54,9	50,0	50,7	50,0	52,5	56,5	48,1	39,8	48,6	47,1	51,7
Mean diabetes duration (%)														
- < 1 year	10,4	18,7	8,4	13,0	12,0	13,5	11,7	20,3	6,1	14,1	7,1	32,5	8,6	16,2
- 1-2 years	10,4	7,9	4,7	8,2	12,0	16,6	18,8	11,6	12,1	10,8	9,8	6,3	11,4	10,7
- 2-10 years	59,7	66,9	40,2	46,0	57,4	57,7	53,1	53,8	62,1	60,2	59,8	33,2	56,6	57,2
- ≥ 10 years	16,9	6,5	46,7	32,8	16,7	12,2	14,8	14,4	18,2	14,8	21,4	27,9	21,8	15,9
- not known	2,6		0		1,9		1,6		1,4		1,8		1,5	

N = numbers of diabetes patients; PSQ = data from patient survey questionnaires; PRS = data from care group patient record systems.

Table A5.3: Baseline characteristics of 12-month responders and non-responders, by care group and in total survey subsample

	Care group													
	1		2		3		4		9		10		Total	
	R	NR	R	NR	R	NR	R	NR	R	NR	R	NR	R	NR
N	49	29	66	42	65	43	71	58	111	104	125	100	487	376
Patient characteristics														
Age (years)	66,6	68,7	59,7	58,6	65,2	64,1	65,3	65,2	62,1	59,7	65,7	65,9	64,0	63,2
Gender (% female)	53,2	46,4	36,4	31,0	55,4	41,9	52,9	46,4	57,7	55,3	43,1	35,7	49,6	43,8
Mean diabetes duration (%)														
- < 1 year	12,2	7,1	7,7	9,5	7,7	18,6	9,9	14,0	7,3	4,8	7,3	7,0	8,3	9,1
- 1-2 years	12,2	7,1	7,7	0,0	6,2	20,9	19,7	17,5	11,8	12,5	6,5	14,0	10,3	12,8
- 2-10 years	57,1	64,3	35,4	47,6	64,6	46,5	54,9	50,9	61,8	62,5	64,5	54,0	57,9	55,1
- ≥ 10 years	16,3	17,9	49,2	42,9	18,5	14,0	14,1	15,8	18,2	18,3	21,8	21,0	22,5	20,9
- not known	2,0	3,6	0,0	0,0	3,1	0,0	1,4	1,8	0,9	1,9	0,0	4,0	1,0	2,1
Education# (%)														
- Low	56,8	66,7	30,0	41,5	62,5	57,9	54,8	68,5	36,6	33,0	53,4	52,2	48,1	52,2
- Middle	34,1	22,2	38,3	34,1	25,0	28,9	29,0	22,2	46,5	45,6	32,2	30,4	35,1	30,4
- High	9,0	3,7	26,7	19,5	10,7	13,2	9,7	3,7	15,8	15,5	13,6	13,0	14,5	13,0
- Other	0,0	7,4	5,0	4,9	1,8	0,0	6,5	5,6	1,0	5,8	0,8	4,3	2,3	4,3
Ethnicity (% ethnic Dutch)	89,8	96,6	89,4	88,1	90,8	81,4	74,6	79,3	81,1	70,2	92,8	91,0	86,4	82,4

N = numbers of questionnaires sent; R = responders at 12 months; NR = non-responders at 12 months; # = Low = lower vocational or less education; Middle = secondary education; High = higher education

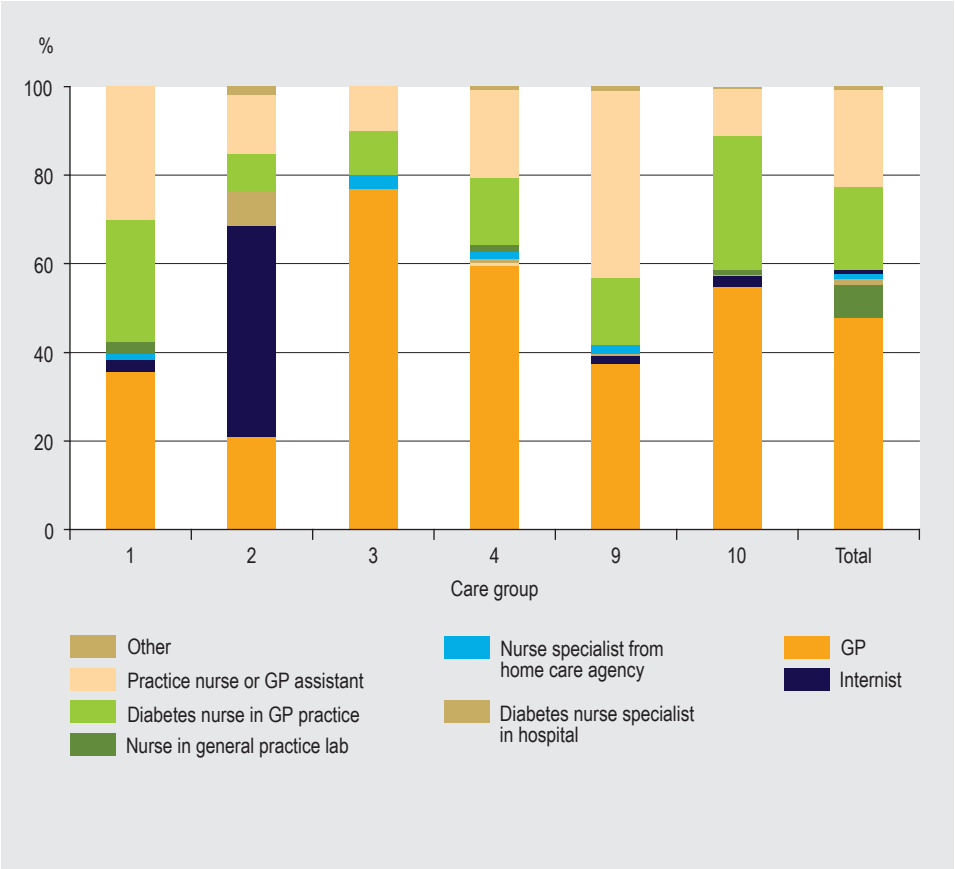

Figure A5.3: Health care providers with primary responsibility for patients' diabetes care (in percentages) according to baseline patient perceptions, by care group and in total subsample.

were in treatment with an internist practising at a hospital (see *section 2.6*). No real changes occurred between baseline and 12 months in terms of the responsible health care providers reported (not shown in *figure A5.3*). Answers to the question of who was responsible for coordinating the services of the various health providers largely matched those about the responsible health care provider; 41.8% of patients specified a GP, 22.7% a practice nurse or general practice assistant and 17.6% a diabetes nurse specialist in the GP practice. Interestingly, about 6% of patients indicated that no one took responsibility for coordinating the care and a further 6% indicated that the patients themselves were responsible. Here, too, virtually no changes occurred between the baseline and one-year assessments.

A5.4.2 Cooperation and coordination among health care providers

On our patient questionnaire, we first posed a general question about the cooperation and coordination among health care providers connected to the diabetes care groups. We

then listed a number of statements relating to patients' experiences with that cooperation and coordination, accompanied by a choice of answer categories ranging from 'almost never' to 'almost always'. In the figures presenting the results below, we depict only the category 'excellent' for the general question and the category 'almost always' for the more specific statements. *Table A5.4* gives an overall summary of all answer categories.

Box A5.1: About one in seven patients reported having only one diabetes care provider

At baseline, 14.4% of the patients reported having only one diabetes care provider; at 12 months, that figure was 12.8%. It is uncertain whether that was truly the case for many patients. Possibly some patients do not associate certain components of the care, such as the annual eye screening, with their diabetes care.

Question
'What overall rating would you give to the cooperation and coordination among the different health care providers?'

The patients gave positive judgments on the overall cooperation and coordination among the service providers. At baseline, 94.9% of patients rated it 'good' or 'excellent'; that percentage declined slightly to 92.9% one year later (*table A5.4*). The percentage ranking it as 'excellent' declined from 27.1% to 23.8% (*figure A5.4*). In care group 3, 'excellent' ratings jumped from 30.6% to 37.0%.

Specific aspects of cooperation and coordination

Statement
'The health care providers made good arrangements with one another.'

At baseline, an average of 85.2% of the patients indicated that the service providers 'almost always' or 'usually' made good arrangements with one another; this rose to 87.3% one year later. The percentages reporting that good arrangements were 'almost never' made were 3.8% at baseline and 3.3% a year later (*table A5.4*).

The group that felt that good arrangements were 'almost always' made shrank slightly (*figure A5.5*). Particularly sharp drops occurred in care groups 1 and 3 (*table A5.4*).

Statement
'When I had an appointment with a health care provider, I had to tell my story again.'

The average percentage of patients in the subsample that reported 'almost always' having to tell their story again dropped from 6.5% at baseline to 3.6% one year later (*figure A5.6*). The percentage saying that 'usually' happened also declined by 2.9 percentage points (*table A5.4*). No patients at all in care groups 1 and 2 said they 'almost always' had to tell their story again.

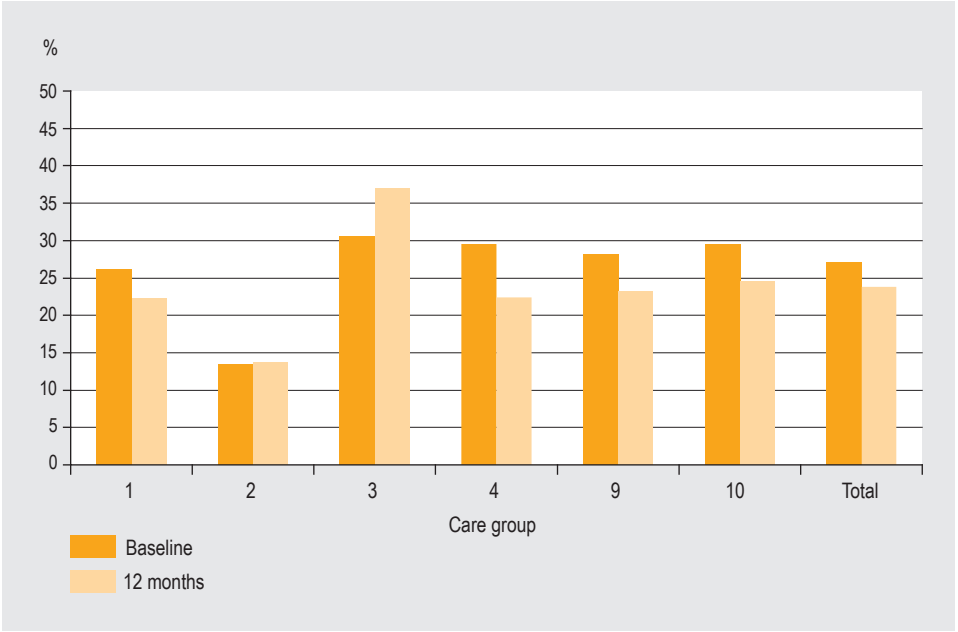

Figure A5.4: Percentages of patients rating cooperation and coordination between health care providers as 'excellent' at baseline and 12 months, by care group and in total subsample.

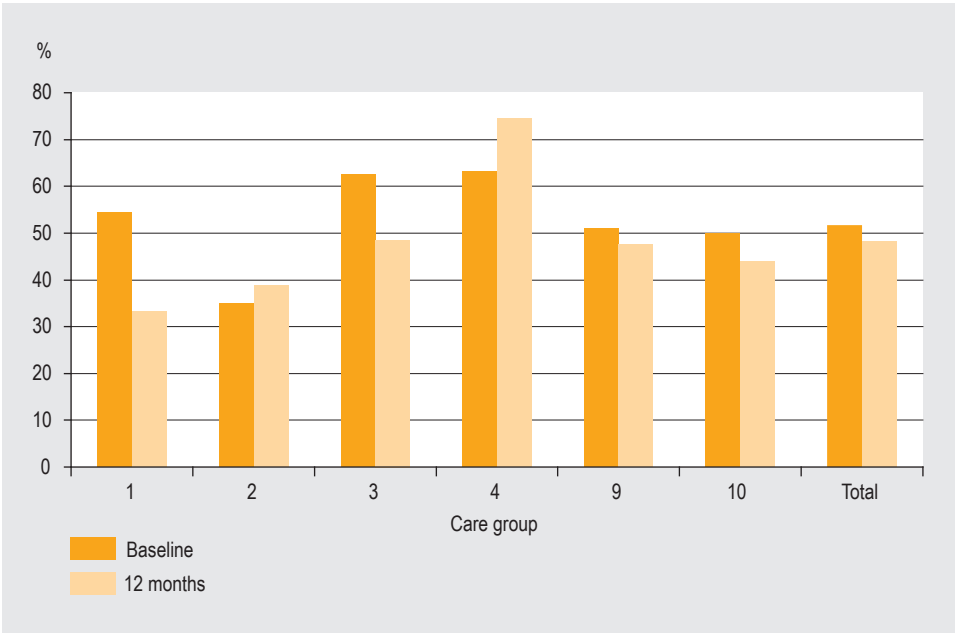

Figure A5.5: Percentages of patients reporting that health care providers 'almost always' made good arrangements with one another, at baseline and 12 months, by care group and in total subsample.

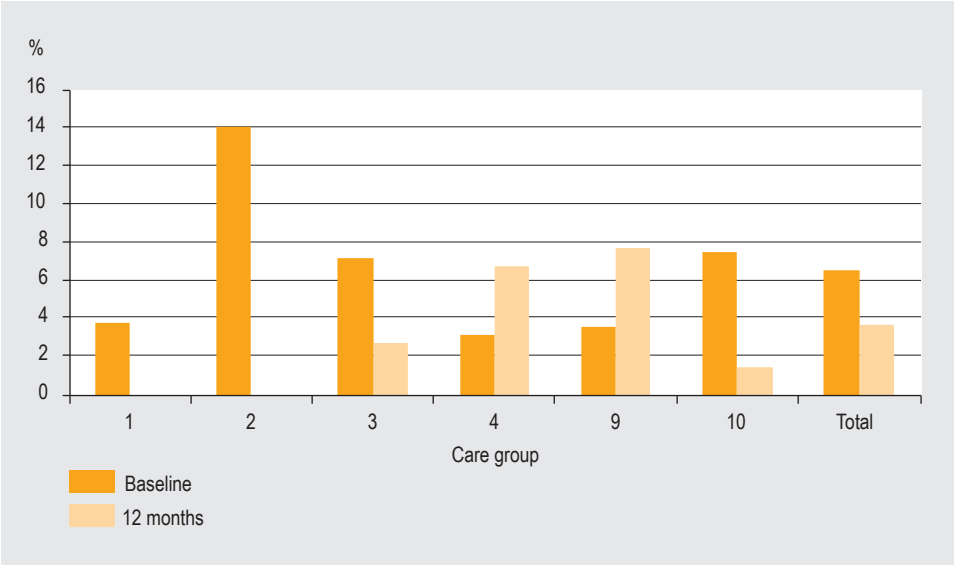

Figure A5.6: Percentages of patients reporting that they 'almost always' had to tell their story again, at baseline and 12 months, by care group and in total subsample.

The average percentage reporting that they 'almost never' had to tell their story again diminished by 1.1 percentage points at the 12-month follow-up (*table A5.4*). Differentiated by care group, the percentages increased in care groups 2, 3 and 9 (in group 2 by as much as 15.5 points), while it declined in care groups 1, 4 and 10 (by 10.6, 3.0, and 16.9 points respectively).

Statement
'I received conflicting recommendations from the different health care providers.'

In the overall subsample at baseline, 52.1% of patients reported 'almost never' having received conflicting advice from different health care providers. One year later, the percentages 'almost never' receiving conflicting advice had declined in four care groups (1, 2, 9 and 10; *figure A5.7*) and that decline was very sharp in groups 1 and 10 (by 31.4 and 20.7 percentage points, respectively).

The percentage of patients indicating that they 'almost never received' or 'generally did not receive' conflicting recommendations from different service providers increased overall from 84.2% at baseline to 88.3% a year later (*table A5.4*). At the same time, the percentage indicating that they 'almost always' received conflicting advice declined from 1.8% to 0.7%. In four care groups (1, 2, 3 and 4), not a single patient said they 'almost always' received conflicting advice.

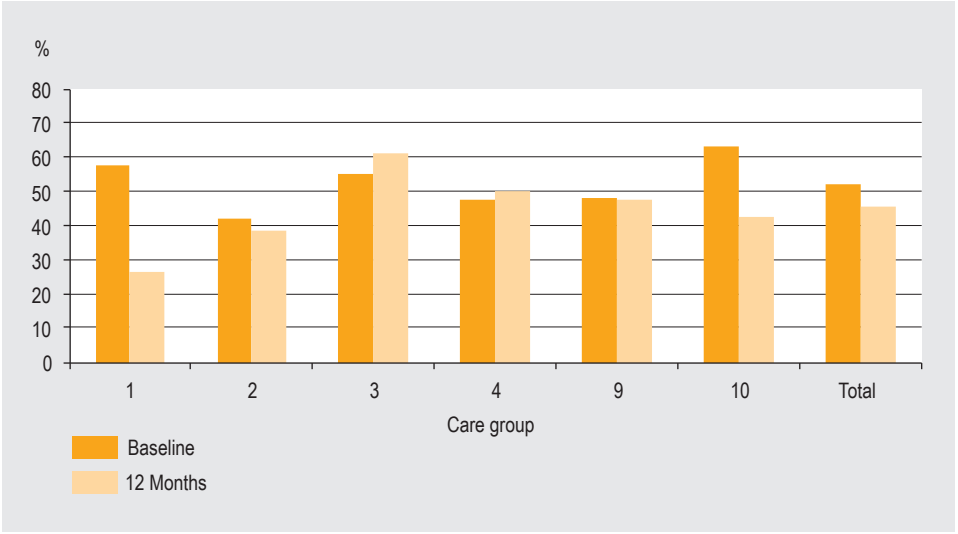

Figure A5.7: Percentages of patients reporting that they 'almost never' received conflicting advice from the different health care providers, at baseline and 12 months, by care group and in total subsample.

Statement
'If I had to see two different health care providers in the same agency, the appointments were arranged on the same day.'

About one in three patients reported that their appointments were 'almost always' combined on a single day; the percentage increased from 27.8% at baseline to 30.5% a year later. Improvement was noted in four of the six care groups analysed (*figure A5.8*).

The number indicating that appointments were 'almost never' combined on a single day declined to 0% in care group 1, and substantial improvements were also reported by patients in groups 9 and 10 (*table A5.4*).

Statement
'When I got a referral, I could quickly get an appointment with the other health care provider.'

Overall, 35.7% of the baseline respondents said they could 'almost always' get an appointment quickly when referred to another service provider. This had declined to 31.9% one year later (*figure A5.9*).

As *table A5.4* shows, the percentage reporting they could 'almost never' get a quick appointment declined in all care groups except group 4. The overall percentage dropped from 8.4% to 5.6% in the course of the year.

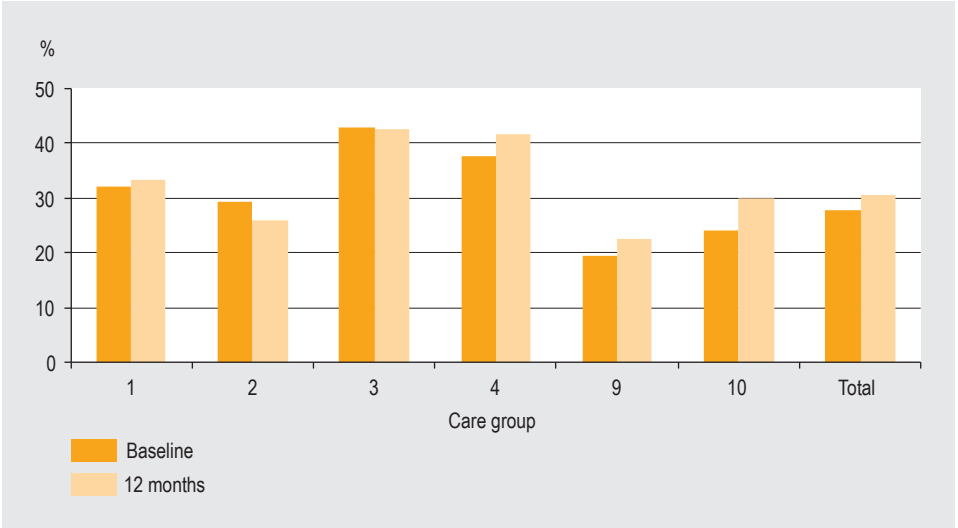

Figure A5.8: Percentages of patients reporting that appointments could 'almost always' be combined on the same day, at baseline and 12 months, by care group and in total subsample

Statement
'The health care providers were well informed about the arrangements made with other providers.'

The percentage of patients reporting that health care providers were 'almost always' aware of the arrangements made with other health care providers declined at the 12-month follow-up in relation to baseline (*figure A5.10*). The various care groups showed differing trends but percentages declined in four of the six groups (1, 3, 9 and 10).

The 'almost never' percentage improved in the course of the year (*figure A5.11*), which seems contrary to the weakening trend observed in *figure A5.10*. Such conflicting trends were not seen in all care groups. In care group 2, for example, the percentage reporting that the service providers were 'almost always' well informed grew (*figure A5.10*), whilst the percentage reporting 'almost never' fell. The sharp increase in 'almost never well informed' seen in care group 3 from 2.4% to 14.3% contrasted with trends in other groups but was consistent with the drop in the numbers answering 'almost always' in that group.

In care group 2, no patients at all reported at the 12-month follow-up that health care providers in their care group were 'almost never' well informed about the arrangements with other providers.

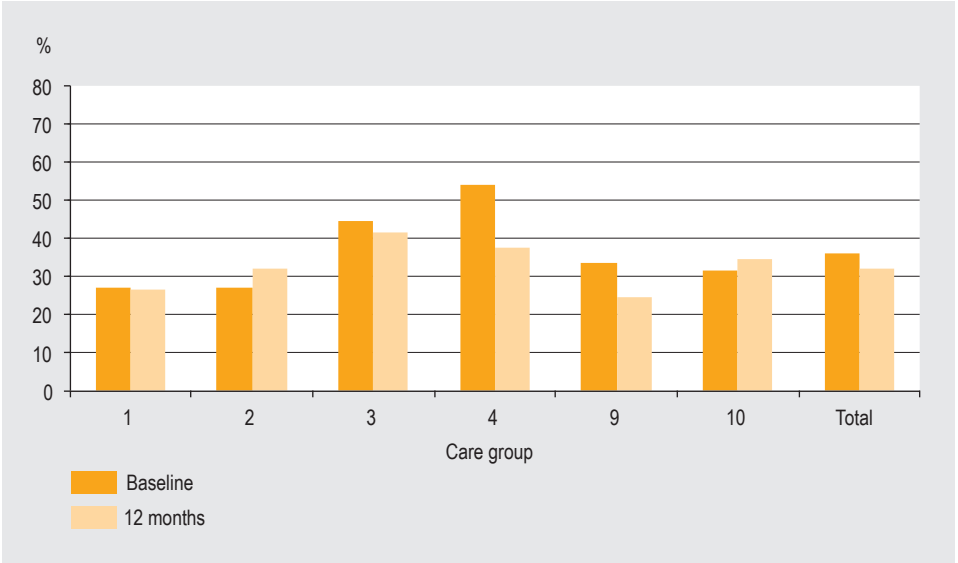

Figure A5.9: Percentages of patients reporting that appointments could 'almost always' quickly be made with another health care provider after referral, at baseline and 12 months, by care group and in total subsample

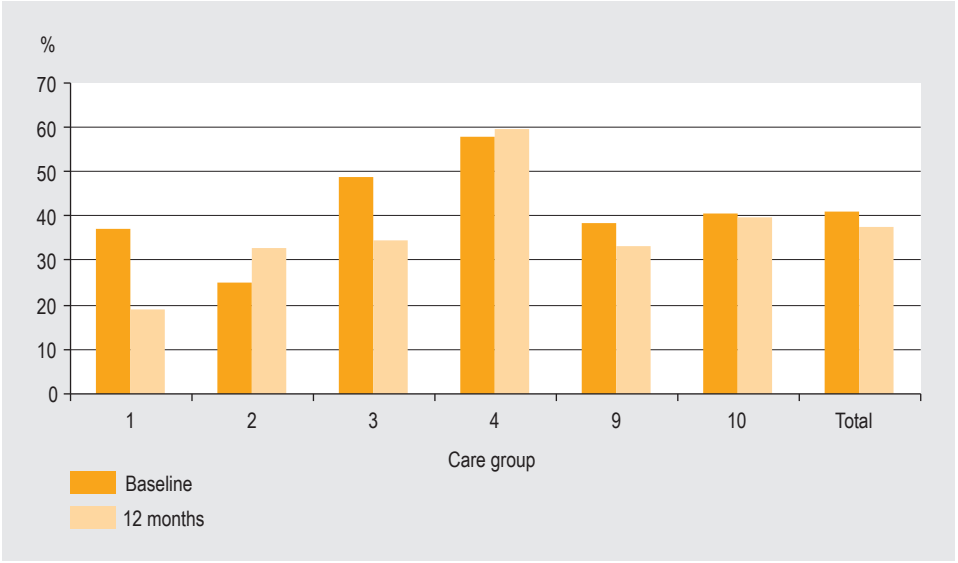

Figure A5.10: Percentages of patients reporting that health care providers were 'almost always' well informed about the arrangements made with other health care providers, at baseline and 12 months, by care group and in total subsample.

Table A5.4: Opinions of patients at baseline and 12-month follow-up (in percentages) on cooperation and coordination in diabetes care in the past year, by care group and in total survey subsample

	Care group													
	1		2		3		4		9		10		Total	
Assessment	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**
N	78	49	108	66	108	65	129	71	215	111	225	125	863	487
'What overall rating would you give to the cooperation and coordination among the different health care providers?'														
Poor	0,0	0,0	2,2	1,7	0,0	0,0	0,9	1,5	0,6	3,2	0,0	2,0	0,5	1,7
Mediocre	3,3	2,2	11,2	15,5	2,0	3,7	2,7	4,5	5,1	4,2	3,6	3,9	4,5	5,5
Good	70,5	75,6	73,0	69,0	67,3	59,3	67,0	71,6	66,1	69,5	66,8	69,6	67,8	69,1
Excellent	26,2	22,2	13,5	13,8	30,6	37,0	29,5	22,4	28,2	23,2	29,5	24,5	27,1	23,8
Specific aspects														
'The health care providers made good arrangements with one another.'														
Almost never	9,1	0,0	3,0	0,0	2,1	2,9	0,0	0,0	5,2	5,1	3,8	6,8	3,8	3,3
Generally not	3,0	0,0	9,1	8,2	2,1	5,7	1,5	2,3	0,9	2,6	3,8	0,0	3,8	3,0
Sometimes	3,0	9,5	18,2	10,2	4,2	2,9	2,9	2,3	6,9	3,8	7,2	9,6	7,2	6,4
Usually	30,3	57,1	34,8	42,9	29,2	40,0	32,4	20,9	36,2	41,0	33,5	39,7	33,5	39,1
Almost always	54,5	33,3	34,8	38,8	62,5	48,6	63,2	74,4	50,9	47,4	51,7	43,8	51,7	48,2
'When I had an appointment with a health care provider, I had to tell my story again.'														
Almost never	29,6	19,0	17,2	32,7	28,6	35,1	29,7	26,7	35,1	39,7	40,2	23,3	31,8	30,7
Generally not	40,7	38,1	20,3	24,5	33,3	35,1	42,2	48,9	25,4	29,5	27,1	30,1	29,4	33,0
Sometimes	14,8	28,6	21,9	26,5	16,7	16,2	14,1	13,3	22,8	12,8	15,0	32,9	18,2	21,5
Usually	11,1	14,3	26,6	16,3	14,3	10,8	10,9	4,4	13,2	10,3	10,3	12,3	14,1	11,2
Almost always	3,7	0,0	14,1	0,0	7,1	2,7	3,1	6,7	3,5	7,7	7,5	1,4	6,5	3,6
'I received conflicting recommendations from the different health care providers.'														
Almost never	57,7	26,3	41,9	38,3	55,0	61,1	47,6	50,0	48,2	47,4	63,3	42,6	52,1	45,5
Generally not	26,9	57,9	35,5	53,2	32,5	30,6	36,5	40,5	35,5	39,7	24,5	42,6	32,1	42,8
Sometimes	7,7	15,8	17,7	8,5	7,5	5,6	9,5	7,1	10,9	9,0	10,2	11,8	11,0	9,3
Usually	3,8	0,0	1,6	0,0	2,5	2,8	4,8	2,4	3,6	2,6	2,0	1,5	3,0	1,7
Almost always	3,8	0,0	3,2	0,0	2,5	0,0	1,6	0,0	1,8	1,3	0,0	1,5	1,8	0,7

Table A5.4 (continued)

	Care group													
	1		2		3		4		9		10		Total	
Assessment	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**
N	78	49	108	66	108	65	129	71	215	111	225	125	863	487
'If I had to see two different health care providers in the same agency, the appointments were arranged on the same day.'														
Almost never	20,0	0,0	16,9	16,0	8,6	12,1	13,1	12,2	19,5	5,3	25,0	14,9	18,5	10,9
Generally not	8,0	11,1	13,8	16,0	5,7	21,2	3,3	4,9	13,3	13,2	13,0	14,9	10,8	13,7
Sometimes	24,0	22,2	18,5	8,0	8,6	6,1	19,7	9,8	20,4	21,1	16,0	17,9	18,0	14,7
Usually	16,0	33,3	21,5	34,0	34,3	18,2	26,2	31,7	27,4	38,2	22,0	22,4	24,8	30,2
Almost always	32,0	33,3	29,2	26,0	42,9	42,4	37,7	41,5	19,5	22,4	24,0	29,9	27,8	30,5
'When I got a referral, I could quickly get an appointment with the other health care provider.'														
Almost never	11,5	10,5	4,8	2,1	8,3	2,9	4,6	5,0	8,1	6,4	12,7	7,1	8,4	5,6
Generally not	7,7	10,5	7,9	8,5	2,8	5,9	3,1	10,0	2,7	7,7	5,9	8,6	4,7	8,3
Sometimes	11,5	15,8	12,7	6,4	8,3	11,8	7,7	7,5	18,9	12,8	7,8	18,6	11,9	12,5
Usually	42,3	36,8	47,6	51,1	36,1	38,2	30,8	40,0	36,9	48,7	42,2	31,4	39,2	41,7
Almost always	26,9	26,3	27,0	31,9	44,4	41,2	53,8	37,5	33,3	24,4	31,4	34,3	35,7	31,9
'The health care providers were well informed about the arrangements made with other providers.'														
Almost never	18,5	9,5	6,3	0,0	2,4	14,3	3,1	4,8	5,4	1,3	10,9	8,8	7,1	5,5
Generally not	3,7	0,0	20,3	6,1	7,3	0,0	3,1	2,4	4,5	6,4	6,9	4,4	7,6	4,1
Sometimes	11,1	19,0	9,4	18,4	4,9	5,7	6,3	4,8	11,6	12,8	11,9	17,6	9,8	13,3
Usually	29,6	52,4	39,1	42,9	36,6	45,7	29,7	28,6	40,2	46,2	29,7	29,4	34,7	39,6
Almost always	37,0	19,0	25,0	32,7	48,8	34,3	57,8	59,5	38,4	33,3	40,6	39,7	40,8	37,5

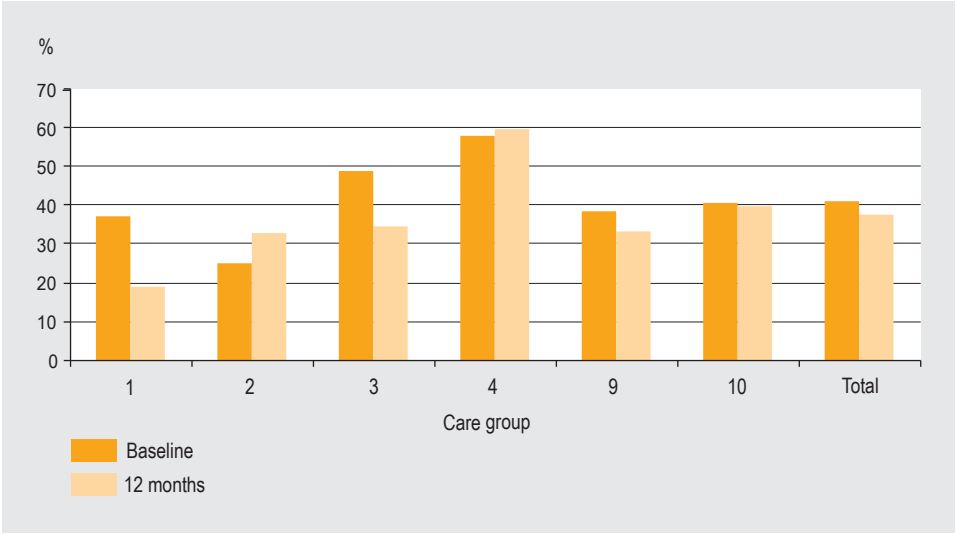

Figure A5.11: Percentages of patients reporting that health care providers were 'almost never' well informed about the arrangements made with other health care providers, at baseline and 12 months, by care group and in total subsample.

A5.5 Lifestyles of people with diabetes

We now turn to the lifestyles of the respondents to our patient survey, focusing on nutrition (*section A5.5.1*), physical activity (*section A5.5.2*) and smoking behaviour (*section A5.5.3*).

A5.5.1 Nutrition

Using three standard nutritional recommendations for vegetables and salads, fruits and juices and breakfasts (see *box A5.2*), we shed light on the eating habits of the diabetes patients in the care groups.

Box A5.2: Nutritional standards

Fruits and juices
To meet the nutritional requirement for fruits or fruit juices, people should consume at least two portions of fruit (or two glasses of fruit juice) per day.

Breakfast
To meet the requirement for breakfasts, people should have breakfast at least five days a week.

Vegetables and salads
To meet the requirement for raw or cooked vegetables, people should eat at least 200 grams per day.

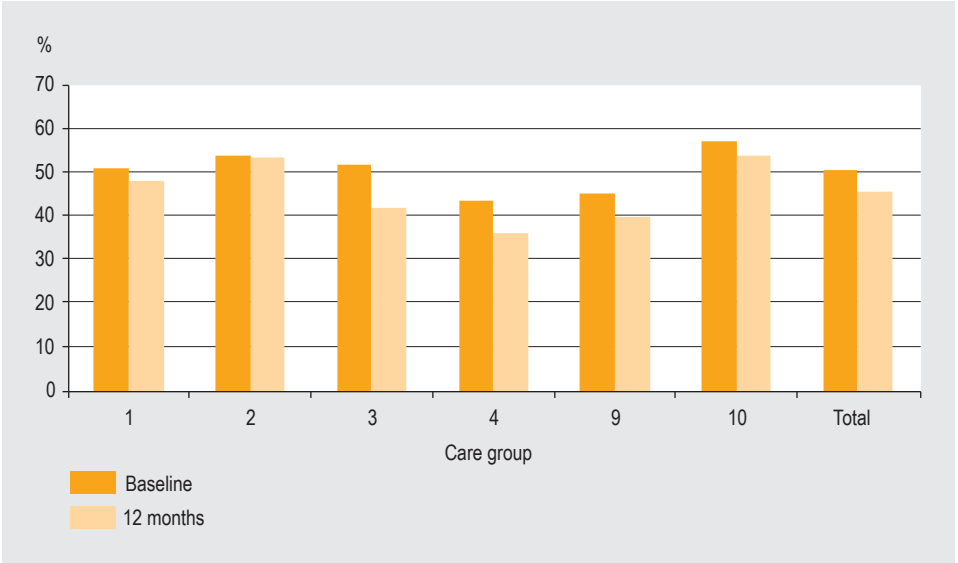

Figure A5.12: Percentages of patients meeting the nutritional requirement for fruits and juices at baseline and 12 months, by care group and in total subsample.

Only half of patients were consuming enough fruit at baseline and the number diminished further

All care groups saw a decline in the number of their patients meeting the requirement for fruits or juices as compared to baseline (*figure A5.12*). Care group 3 saw the sharpest drop (from 51.5% to 41.7% one year later), followed by group 4 (43.4% to 35.7%). In care group 2, the percentage remained about steady (53.8% versus 53.2%).

Nearly all patients had breakfast at least five times a week

More than 90% of all patients fulfilled the breakfast requirement at baseline and in the figure grew slightly in the course of the year (*figure A5.13*). Only care group, group 4, saw a decline (from 96.6% to 91.4%).

Only one third of patients met the requirement for vegetables and salads

Figure A5.14 depicts the percentages of patients per care group that were eating enough raw or cooked vegetables at baseline and 12 months. In the overall subsample, the percentage meeting the requirement declined slightly by 1.0 percentage points to 34.7%.

A5.5.2 Physical activity

We used two criteria to assess whether the diabetes patients in the care groups were getting enough physical exercise. We called these criteria the ‘exercise requirement’ (Dutch Standard for Healthy Exercise) and the ‘fitness requirement’ (American College of Sports Medicine physical activity guidelines; see *box A5.3*).

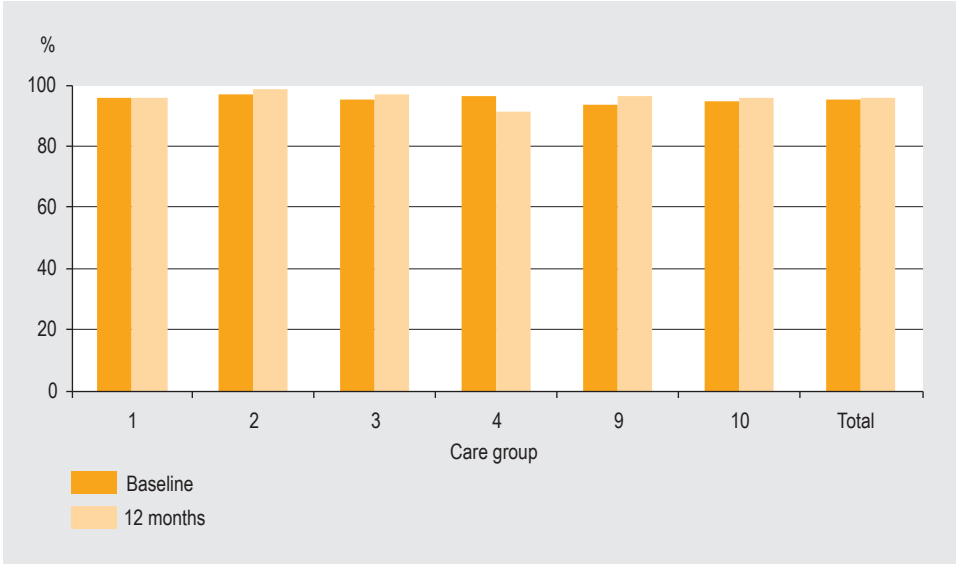

Figure A5.13: Percentages of patients meeting the nutritional requirement for breakfasts at baseline and 12 months, by care group and in total subsample.

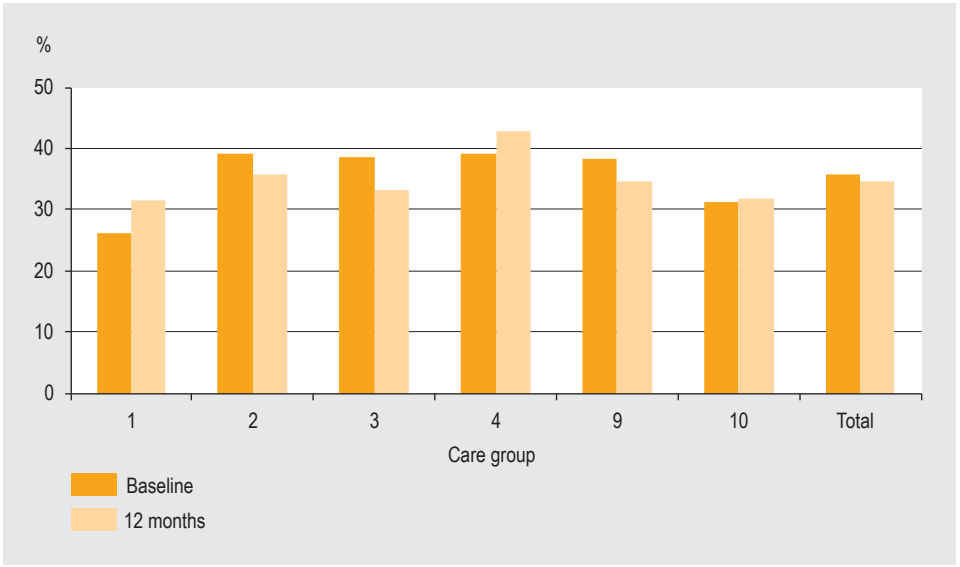

Figure A5.14: Percentages of patients meeting the nutritional requirement for vegetables and salads at baseline and 12 months, by care group and in total subsample.

80% of diabetes patients satisfied the exercise requirement at the 12-month assessment

The patient survey indicated that about 80% of the diabetes patients were fulfilling the exercise requirement (Dutch Standard for Healthy Exercise or NNGB) at both baseline and 12 months (*figure A5.15*). The pattern across care groups ranged from 73.0% in group 9 to 89.1% in group 3. We can conclude on the basis of the patient questionnaires that

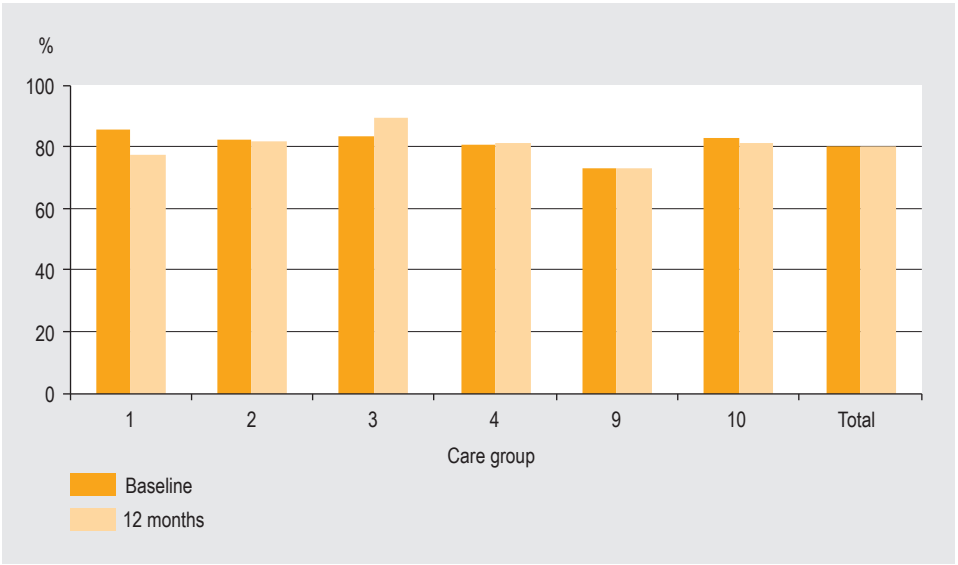

Figure A5.15: Percentages of patients satisfying the Dutch Standard for Healthy Exercise (NNGB) at baseline and 12 months, by care group and in total subsample

the diabetes patients were getting equal or higher average amounts of exercise than the Dutch general population.

Box A5.3: Physical activity requirements

Exercise requirement based on Dutch Standard for Healthy Exercise (NNGB)
To meet the exercise requirement, people should get at least 30 minutes of moderately intense exercise a day (e.g., cycling or brisk walking) on at least 5 days a week at all times of the year.

In the Dutch general population, 73% of the men and 76% of the women aged 55 to 65 satisfy the exercise requirement (Kemper, et al., 2000).

Fitness requirement based on physical activity guidelines of the American College of Sports Medicine:
To meet the fitness requirement, people should get at least 20 minutes of vigorously intense exercise a day (e.g., gym workouts) on at least 3 days a week, totalling at least 60 minutes a week.

In the Dutch general population, about 61% of the people aged 55 to 64 and 53% of those aged 65 to 74 satisfy the fitness requirement (Wendel-Vos and Frenken, 2008).

Substantial rise in percentage meeting the fitness requirement
From 51.5% at baseline, the percentage of diabetes patients satisfying the fitness requirement grew by more than 6 percentage points to 58.0% one year later. All care groups except group 9 saw an increase in those meeting the fitness requirement (*figure A5.16*). In care group 4, the percentage grew by half to 72.5%.

A5.5.3 Smoking

Smoking rate higher than national average for comparable age categories
According to the patient survey, 15.4% of the diabetes patients in the care groups were smoking at baseline and 14.5% one year later (*figure A5.17*). By comparison, the Dutch

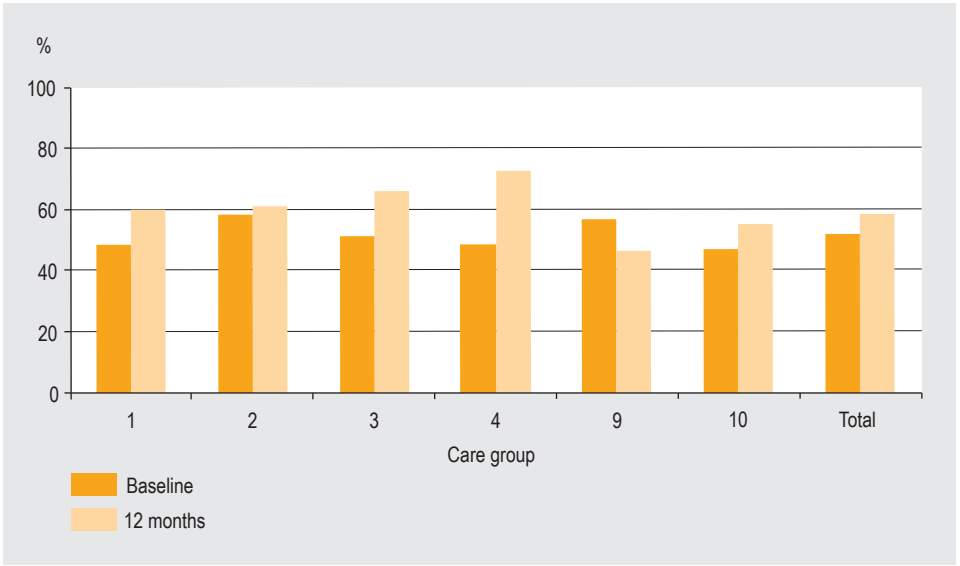

Figure A5.16: Percentages of patients satisfying the fitness requirement at baseline and 12 months, by care group and in total subsample

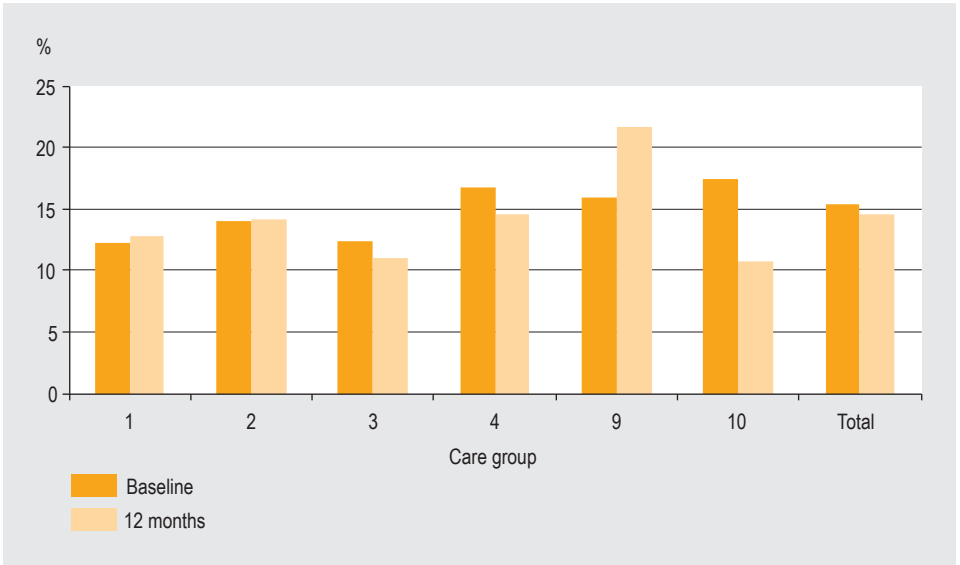

Figure A5.17: Percentages of smokers according to patient survey at baseline and 12 months, by care group and in total subsample.

national smoking prevalence for the 65-to-74 age category at the time was 14% (Limperg, 2009; see *box A4.5* in *section A4.4.7*). Some 13.0% of the smoking patients in the care groups reported not having been advised to stop smoking (not shown in figures or tables). Care group 9 saw a sharp increase in the percentage of smokers from 15.9% at baseline to 21.6% twelve months later, for unknown reasons. Care group 10 saw a sharp drop from 17.4% to 10.7%.

A5.6 Co-morbidity, hypoglycaemic episodes and mental health

A5.6.1 Co-morbidity

To query patients about doctor-diagnosed medical conditions they may have had in addition to diabetes (co-morbidity), we adopted standard questions from the Dutch Local and National Public Health Monitor (LNM). One of the co-morbid conditions covered by the LNM is high blood pressure. Since that also qualifies as a complication of diabetes, we report on it separately.

57.7% of the diabetes patients reported having a doctor-diagnosed co-morbid condition at the 12-month follow-up

Many diabetes patients indicated that they had one or more co-morbid medical conditions (*figure A5.18*). The percentage of our survey subsample reporting co-morbidity diagnosed by a doctor was 57.7% at the 12-month assessment. In four of the six care groups (2, 3, 4 and 9), the co-morbidity rates increased in relation to baseline.

Care groups 2 and 4 showed high baseline co-morbidity rates and additional increases at follow-up

The diabetes patients in care group 2 reported a high rate of co-morbidity (60.2%). This may have been due to the atypical patient population, as described above (see *section 2.6* and *appendix 4*). Care group 2 also showed the largest increase in co-morbidity, 11.0 percentage points in a year's time. Care group 4 also showed a considerable increase, from 62.8% at baseline to 70.4% a year later.

37.8% of patients reported high blood pressure at baseline

In the overall subsample, 37.8% of the respondents reported having high blood pressure at baseline; this figure had declined slightly a year later (*figure A5.19*). There were wide variations among care groups, with 52.1% of patients in care group 9 reporting high blood pressure at baseline and 25% in group 3.

Box A5.4: Discrepancies between high blood pressure rates in patient survey and those in patient record systems

The percentage of patients reporting high blood pressure in the patient survey (37.8% at the 12-month follow-up) was considerably lower than the rate of high blood pressure reflected in the patient record data supplied by the care groups (53.0% at 12 months; see *table 2.8*).

One possible explanation for the difference lies in what patients understand by high blood pressure. Of the patients who self-reported a systolic blood pressure of 140 or higher, 48.2% indicated that they found this an acceptable level.

Musculoskeletal symptoms were widely prevalent

Table A5.5 summarises the most common doctor-diagnosed co-morbid conditions reported by the diabetes patients at the one-year assessment. Most prevalent were issues of the musculoskeletal system: 24.2% of the patients reported having osteoarthritis, 13.2% had neck or shoulder complaints and 9.4% had inflammatory arthritis in addition to their diabetes. Intestinal disorders and pulmonary disorders were also frequently reported as co-morbid conditions.

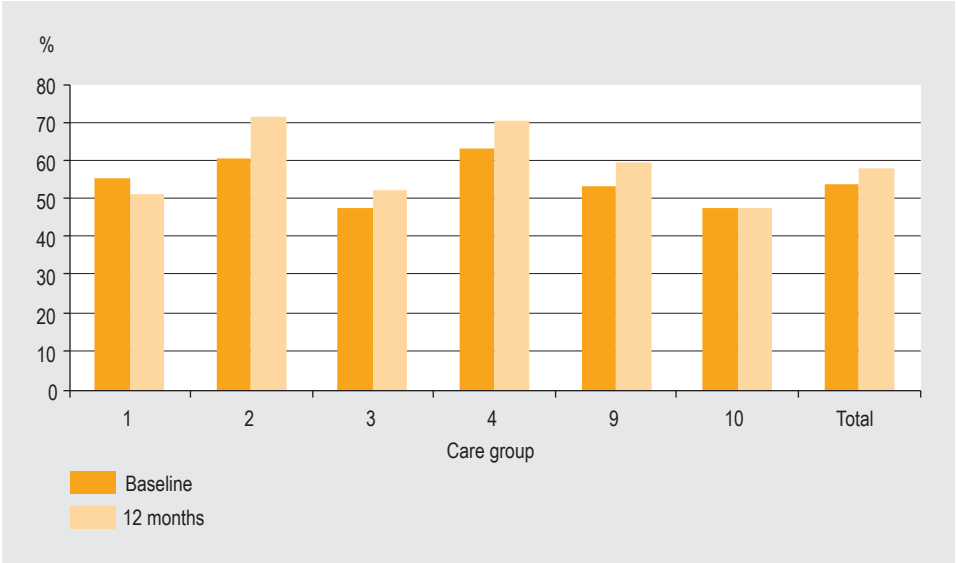

Figure A5.18: Percentages of patients reporting one or more doctor-diagnosed co-morbid medical conditions, at baseline and 12 months, by care group and in total subsample

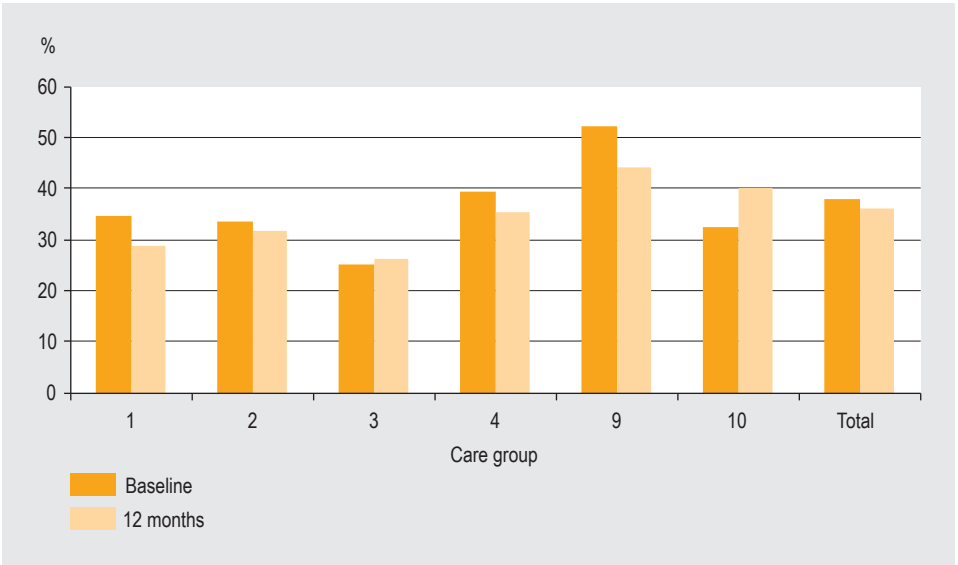

Figure A5.19: Percentages of patients reporting doctor-diagnosed high blood pressure, at baseline and 12 months, by care group and in total subsample

Estimated percentage of diabetes patients that would receive treatment under more than one bundled payment system

The ministerial intention to introduce bundled payment systems for several chronic diseases in 2010 has triggered considerable debate (Van Dijk et al., 2009; KNMP, 2009). One point of discussion involves the problems that might arise when patients with one or more co-morbid illnesses are being treated in more than one bundled payment scheme.

Table A5.5: Most prevalent doctor-diagnosed co-morbid medical conditions reported by diabetes patients at the 12-month assessment, by care group and in total survey subsample

	Care group						
	1	2	3	4	9	10	Total
Osteoarthritis of hips or knees	33,3	15,7	25,9	28,7	22,3	23,6	24,2
Other serious or persistent neck or shoulder problems	11,5	12,0	12,0	20,2	14,0	10,2	13,2
Serious or persistent intestinal disorders (>3 months)	10,3	9,3	3,7	18,6	18,6	9,8	12,5
Asthma, chronic bronchitis, emphysema or other COPD	15,4	13,0	7,4	10,9	18,1	8,0	12,2
Chronic inflammatory arthritis	16,7	5,6	10,2	13,2	10,2	5,3	9,4

To shed light on how many diabetes patients this would potentially involve, we highlight in *box A5.5* the percentages of patients in our survey who had both diabetes and COPD and/or heart failure. As those figures suggest, considerable numbers of patients would fall under more than one bundled payment scheme.

Box A5.5: Percentages of patients eligible for more than one bundled payment scheme

Patients with diabetes and COPD (including bronchitis and asthma)	12.2%
Patients with diabetes and heart failure (including angina pectoris)	5.9%
Patients with diabetes, COPD and heart failure	1.7%

Although bundled payment for vascular risk management was scheduled for implementation in 2010, vascular risk management is not discussed here because it cannot be claimed for insurance payment simultaneously with bundled payment for diabetes (VWS, 2009a). The reason is that it is considered to be an integral part of the diabetes care bundle.

A5.6.2 Occurrence of hypoglycaemic episodes

Percentage of diabetes patients who had one or more episodes of hypoglycaemia in the past year

The percentage of people who reported having experienced at least one hypoglycaemic episode (hypo) in the past year that was accompanied by loss of consciousness or coma was almost twice as high at our 12-month assessment as it was at baseline (6.0% versus 3.5%). The increase occurred in all care groups except group 1, where not a single patient reported a hypoglycaemic episode at 12 months (*figure A5.20*). The reason for the increases is not known.

A5.6.3 Mental health

More than 75% of patients in every care group were 'mentally healthy'

Figure A5.21 shows self-reported mental health in the care groups at baseline and 12 months. Over 75% of patients indicated they were free of serious mental health problems. On the whole, the percentage diminished slightly from baseline to 12 months.

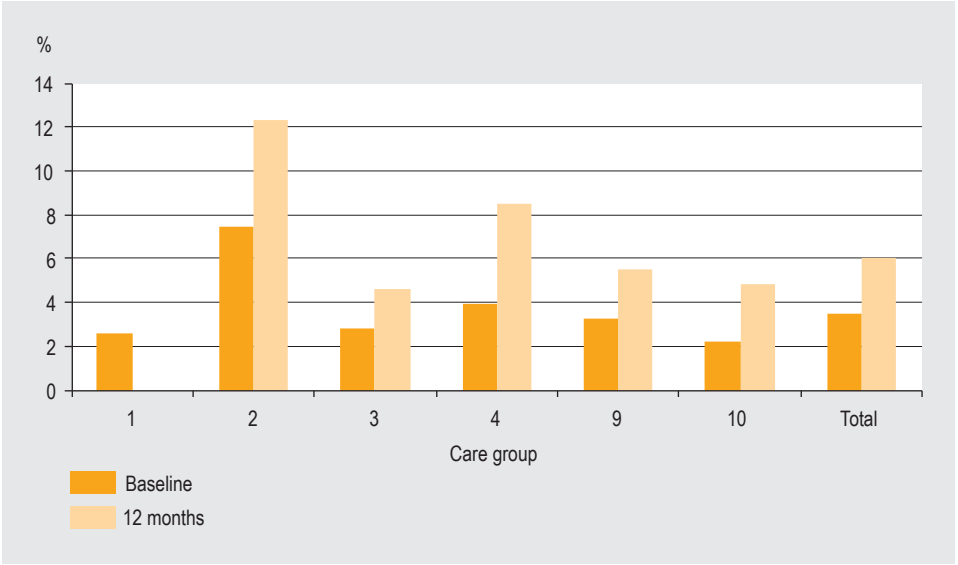

Figure A5.20: Percentages of patients that experienced one or more hypoglycaemic episodes in the past year, at baseline and 12 months, by care group and in total subsample

A5.7 Patient education and knowledge of healthy lifestyles and diabetes

A5.7.1 Patient education

Using questions about the educational activities and materials provided on diabetes by the care groups, we assessed the patient education efforts they undertook.

Face-to-face conversations were the diabetes education activity most commonly provided

The major proportion of the care group patients (69.7%) reported at baseline that they had mainly been offered patient education in one-to-one sessions (not shown in figures or tables). The next most frequent activities involved physical exercise programmes (14.6%) or educational group sessions (5.4%). No major changes were observed from baseline to 12 months. The vast majority of patients at both assessments, 87.8% and 83.2% respectively, reported having received informative leaflets as part of their diabetes education.

A5.7.2 Knowledge of healthy lifestyles and diabetes

Patients' knowledge of diabetes was assessed using our Dutch version of the validated Diabetes Knowledge Test (Fitzgerald et al., 1998). It consisted in fourteen general questions on diabetes and nine questions for patients taking insulin. Knowledge of diabetes was rated by summing the number of correctly answered general knowledge questions to a maximum of 14 points. The results reported below concern only the fourteen general

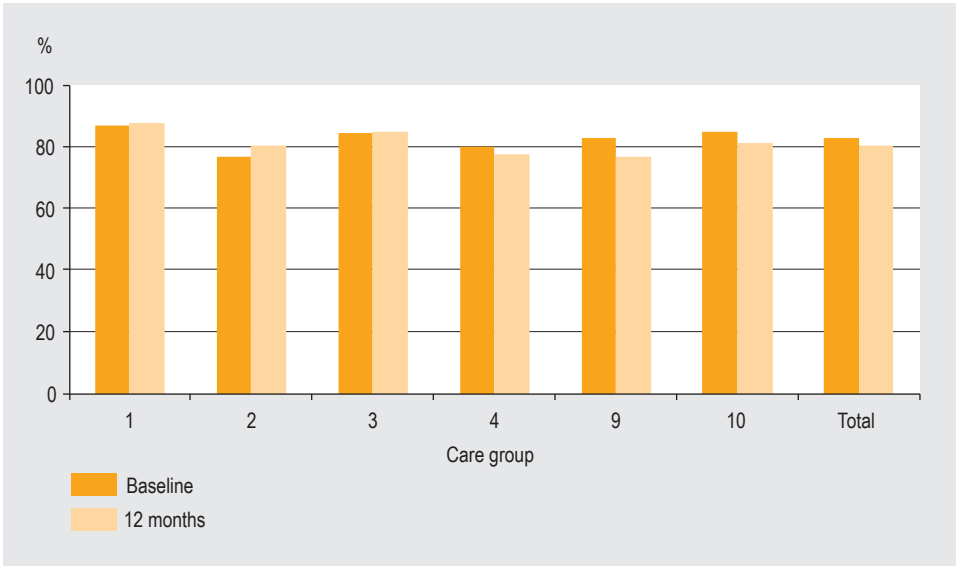

Figure A5.21: Percentages of patients that reported being free of serious mental health problems at baseline and 12 months, by care group and in total subsample.

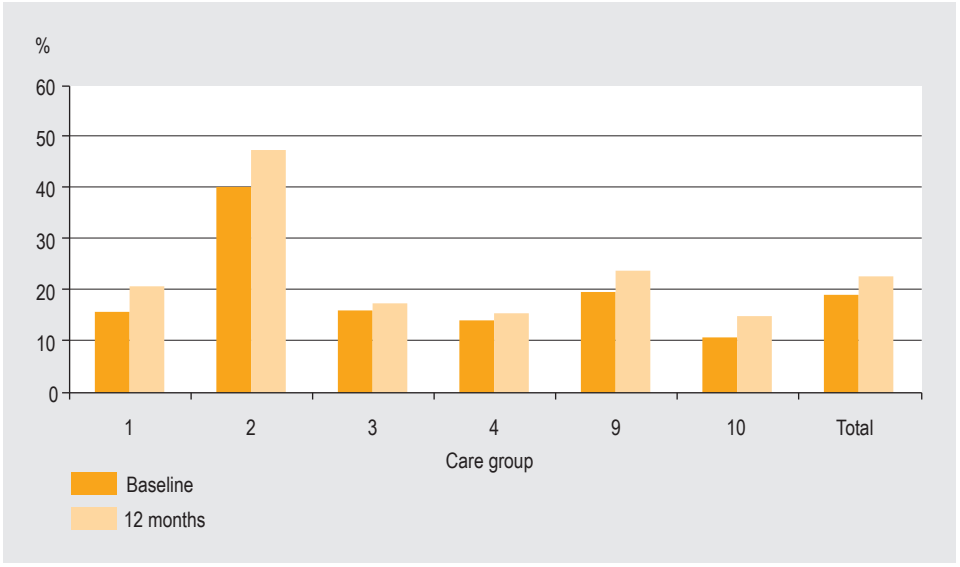

Figure A5.22: Percentages of patients scoring 12 or higher on the Diabetes Knowledge Test at baseline and 12 months, by care group and in total subsample.

knowledge questions; the questions on insulin are not reported due to the small numbers of respondents.

All care groups showed improvement according to the Diabetes Knowledge Test

Nearly all care groups had higher percentages of patients with good scores on the Diabetes Knowledge Test at the 12-month assessment than they had at baseline. *Figure A5.22*

shows the percentages of patients with twelve or more correct answers at baseline and 12 months. We chose this cut-off point to be consistent with the one used in the Dutch Consumer Quality Index for diabetes. In the overall patient survey subsample, an increase in knowledge was seen from 19.0% to 22.7%. Exceptionally high were the outcomes in care group 2, where 40.0% had good scores at baseline and 47.4% one year later. This may be because patients in group 2 had longer average diabetes durations than other patients.

APPENDIX 6 POTENTIAL CHANGES IN RESPONSIBILITIES AND LIABILITIES AFTER THE IMPLEMENTATION OF CARE GROUPS

Outline

As we saw in the interviews, shifts may occur in liabilities and responsibilities as bundled payment systems are implemented and care groups are set up (see *chapters 2* and *3*). This appendix examines this aspect of care groups in more detail. Possible changes are described in terms of different organisational forms that have been adopted by care groups. Recommendations are made on ways of responding to the changes.

This appendix may be read as an independent document. Its content derives from an article by De Bruin and Struijs (2008) entitled 'Keten-dbc's en zorggroepen onder de loep: waar liggen de verantwoordelijkheden en aansprakelijkheden?' (Bundled payment systems and care groups under the microscope: where do the responsibilities and liabilities lie?).

A6.1 Introduction

Diabetes management involves many different health care providers and disciplines. To improve coordination among them, multidisciplinary collaborative arrangements have been set up in recent years. The continuity of such arrangements is hampered by the fragmented pricing practices that apply to various components of diabetes care. To address such fragmentation, the Dutch Health Ministry has developed a new fee and payment system, with which the Integrated Diabetes Care research programme of the Netherlands Organisation for Health Research and Development (ZonMw) is now experimenting. It involves bundled payment arrangements for diabetes which enable most components of diabetes care to be purchased and invoiced as a single integrated product or service. One requirement is that the content of any arrangement must conform to the Health Care Standard of the Dutch Diabetes Federation (NDF, 2007). This standard defines diabetes care in terms of functions, and stipulates the criteria that 'good diabetes care' should meet. The statutory basis of the experiment derives from the policy provision called Innovation in Support of New Health Care Services, as applied by the Dutch Healthcare Authority (NZa, 2007).

A6.2 Principal features of bundled payment arrangements

Figures A6.1a and *A6.1b* give schematic representations of the Dutch health care system. They contrast the 'old situation' (the existing health care model without bundled payment) with the 'new situation' (diabetes care on the basis of bundled payment). In the traditional health care model, the various health care providers each make their own contracts with health insurance companies for the components of diabetes care they deliver. With respect to the patients, health care provision contracts are concluded between all the separate links in the patient care process; those contracts are based on the Medical Treatment

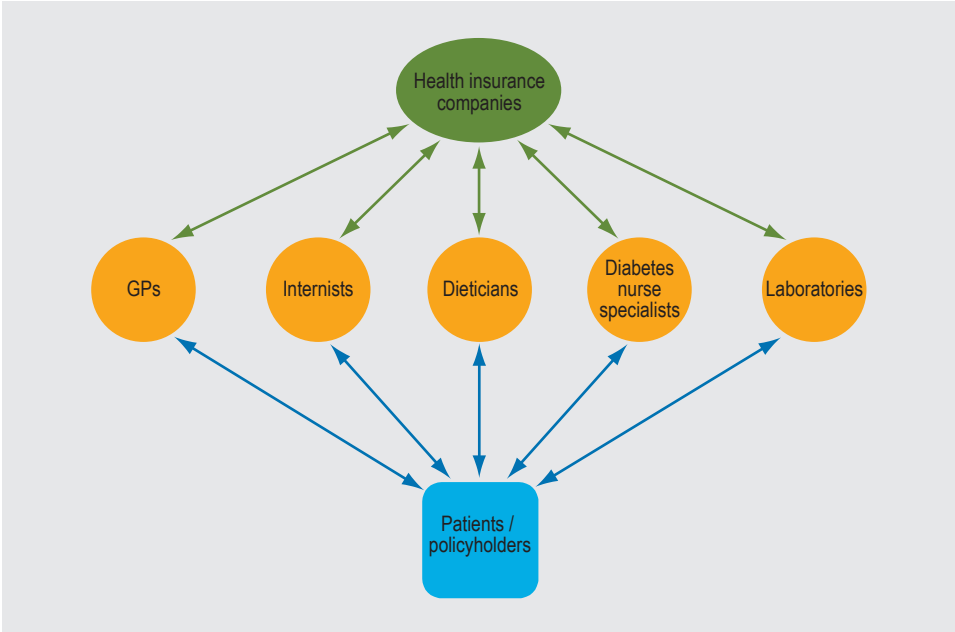

Figure A6.1a: Existing Dutch health care model.

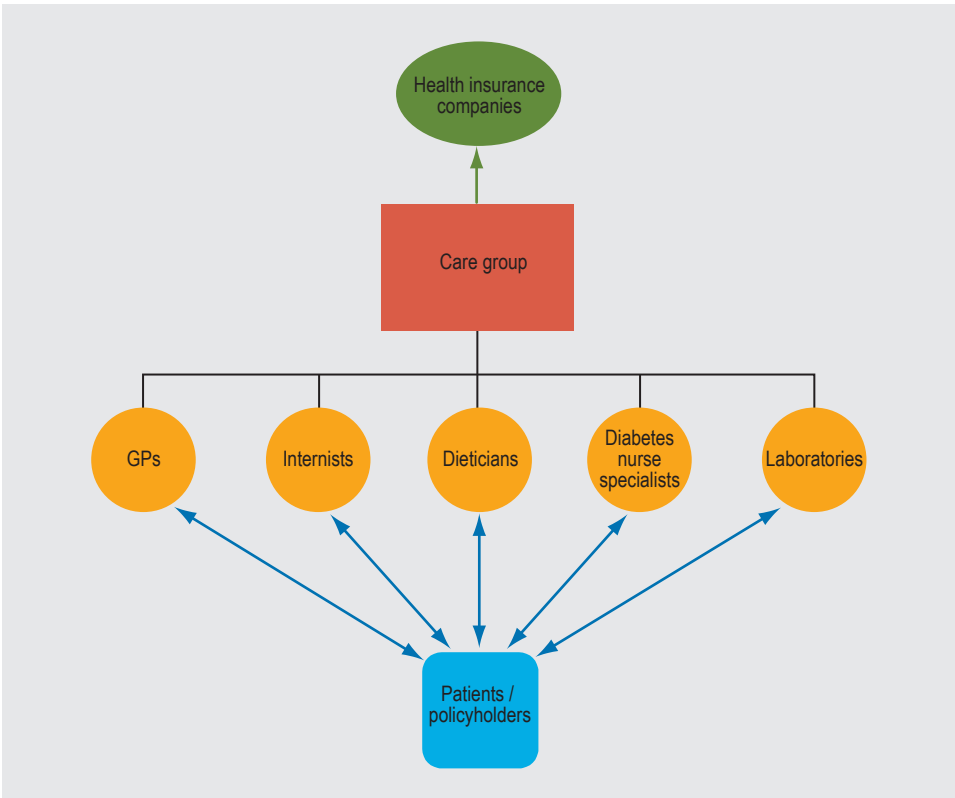

Figure A6.1b: Bundled payment model.

Agreement Act (Wgbo; see *figure A6.1a*). In the bundled payment model, an additional, often purpose-designed actor – the care group – enters the picture (*figure A6.1b*). The care group concludes contracts with health insurance companies for an integrated diabetes care package, thus eliminating the need for individual service provision contracts between health care providers and insurers. Depending on the organisational structure it chooses, certain changes may occur in the formal relationships between various stakeholders as these existed under the traditional health care model.

A6.3 Care groups in close-up

A newly created care group must be a legal entity in order to sign contracts with health insurance companies. We encountered several different legal formats in our evaluation: private limited liability companies (Dutch abbreviation: BVs), foundations, cooperatives and a limited partnership (Dutch abbreviation: CV).

Integrated diabetes care is orchestrated by care groups. Some obvious activities include selecting and contracting health care and service providers, drawing up multidisciplinary protocols based on the NDF Health Care Standard, coordinating the mutual cooperation between the various providers and coordinating the record-keeping and reporting of data.

The role a care group plays in the delivery of the diabetes care may be organised in various ways. In the first major variant, the care group employs its own staff to provide the actual care (*figure A6.2a*). A different variant is a care group that arranges all the actual care provision by signing contracts with independent health care and service providers or agencies (*figure A6.2b*). In the latter approach, there is often a considerable lack of clarity about the nature of the contractual relationships that the various parties have with one another. In most cases, care groups are referred to as ‘prime contractors’ that contract other providers as ‘subcontractors’ for specified parts of the required care activities. In a Dutch legal sense, however, the terms ‘prime contractor’ and ‘subcontractor’ do not seem appropriate here, as the contracts do not involve work of a material nature (in Dutch: stoffelijke aard) as implied for the contracting of work under the Netherlands Civil Code. The relationship would be more accurately described as a ‘contract for professional services’ (in Dutch: overeenkomst van opdracht). In practice, many care groups turn out to be a hybrid between variants 1 and 2 (*figure A6.2c*). This means that some health care providers are employees of the care group, whilst the delivery of other care components is contracted out to independent providers working in private practice.

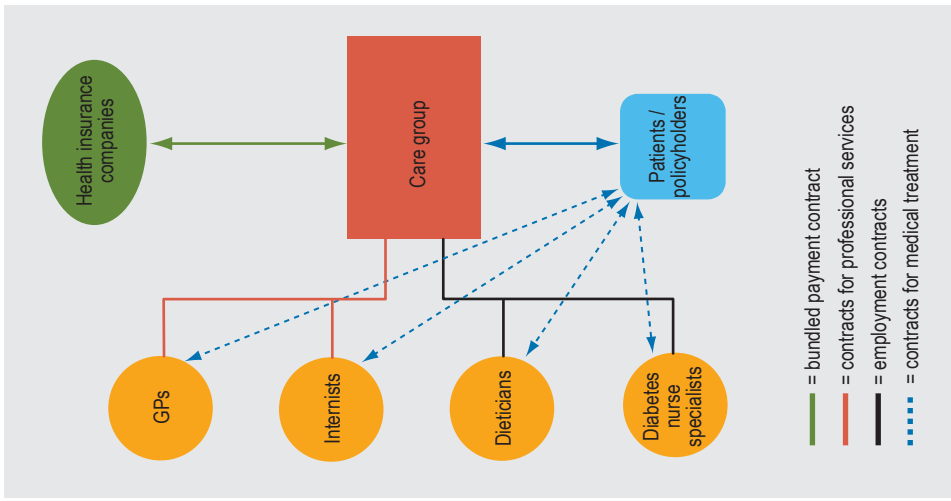

Figure A6.2c: Care group organisational structure, mixture of variants 1 and 2.

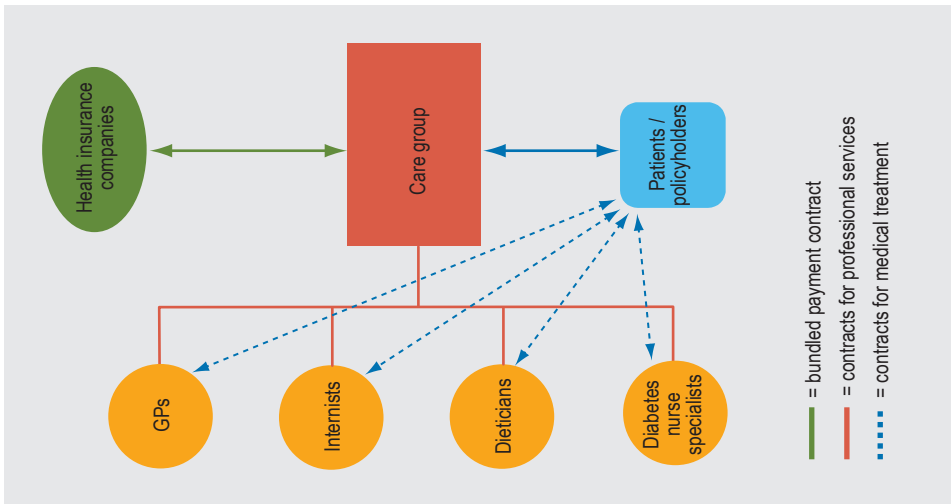

Figure A6.2b: Care group organisational structure, variant 2.

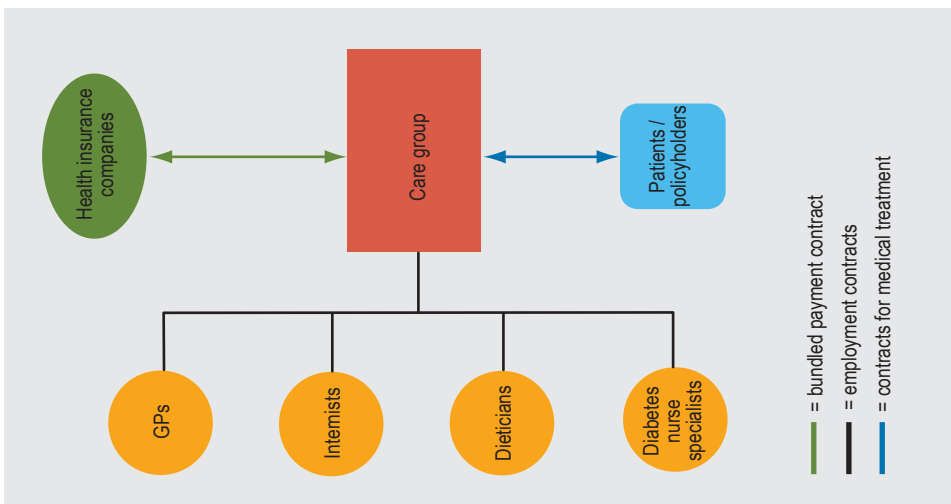

Figure A6.2a: Care group organisational structure, variant 1.

A6.4 Liability

Many care groups are faced with unanswered questions about their liabilities and, by extension, whether such liabilities can be insured. To gain more clarity, we distinguish between different types of liability that health care providers might encounter within care groups.

Liability at the level of individual providers
There are various ways in which health care and service providers may be affected by liabilities in practising their professions. First, the Wgbo requires them to provide responsible care. They are not allowed to exclude liability for inadvertent injury or damage arising from culpable shortcomings and civil actions may be brought against them to claim damages. Secondly, doctors, dieticians and nurses are also regulated by the Individual Healthcare Professions Act (Wet op de Beroepen in de Individuele Gezondheidszorg (Big)). If they breach the general disciplinary standards, as stipulated in article 47, they may be subject to sanctions. Both types of individual liability also apply to health care providers who work in integrated care continuums and/or care groups.

Liability at the level of care groups
Although individual health care providers in principle always remain liable for their own actions, in certain circumstances that liability may be partially transferred to their care group (strict liability). As an employer, a care group may be held liable in certain cases (under article 6:170 of the Civil Code) for damages caused to third parties due to errors made by its employees. This form of liability would apply in those care groups that employ staff who provide the actual care (as seen in *figures A6.2b* and *A6.2c*). Care groups that contract the actual care to independent professionals (as in *figures A6.2b* and *A6.2c*) may also be held jointly liable in certain circumstances (under article 6:171) for errors made by those professionals. For such cases it is important to include mutual indemnity clauses in contracts between care groups and health care providers or agencies. In addition, irrespective of their organisational structures, care groups may also be held liable in their own right; such might apply, for example, if injury or damage were to occur as a result of culpable shortcomings in the ways that the care is organised. For such eventualities, liability insurance is advisable for all care groups.

A6.5 Discussion

The advent of care groups as a new type of actor in the Dutch health care system has caused a shift in both organisational and health care provision structures. Depending on the organisational form chosen for a care group, changes also occur in terms of liabilities and responsibilities. Roughly speaking, three organisational forms may be distinguished: one in which health care providers are employees of the care group, one in which the care group purchases services from independently practising providers and a mixture of these two forms. Each form implies new forms of liability at the care group level. To be prepared for these in advance, it is important for care groups to accurately map out how the ‘lines of responsibility’ will run through the new structure before making any changes

to existing working arrangements. The first step is to make precise task descriptions and to clearly delimit the responsibilities of the various partners in the continuum. Well thought-out contracts, specifically designed for integrated health care arrangements, are a must. If services are contracted out (as in *figures A6.2b* and *A6.2c*), agreements should be reached about liability insurance policies and mutual indemnification. Whatever the organisational type, it seems advisable to make sure any risks are covered that arise from the independent role of the care group as organiser and coordinator of the health care delivery.

The vicarious liability that applies to hospitals under the Wgbo does not extend to care groups, because a care group does not conform to the definition of 'hospital' as given in article 7:462, section 2, of the Netherlands Civil Code. Vicarious liability was introduced in hospitals because it was difficult for patients to determine whether or not a particular health care provider was a hospital employee and hence, whether to make claims against the hospital or the individual provider. In the case of care groups, it is likewise often unclear to patients whether particular health care providers are care group employees or not. In the proposed rollout of bundled payment schemes for additional chronic illnesses, the organisational structures of care groups will increase in complexity, making it virtually impossible for patients to determine this. An extension of vicarious liability to care groups such as it now applies to hospitals ought to be considered, once the feasibility and difficulties of doing so are assessed.

APPENDIX 7 MARKET REGULATION AND CARE GROUPS

Outline
Chapters 2 and 3 have pointed out that the powerful negotiating position of care groups may form a potential threat to market integrity. This appendix further analyses the potential risks and consequences of this competition issue.

This appendix may be read as an independent document. It is derived from an article entitled 'Regionale machtsposities van zorggroepen baart zorgen' (Regional dominant positions of care groups cause anxiety) by M. Varkevisser et al. (2009).

A7.1 Introduction

In order to improve health care provision to patients with chronic conditions, the Dutch Health Minister Klink decided to promote bundled payment for several additional diseases as of 1 January 2010 (VWS, 2008a; VWS, 2009a). The new pricing approach was to provide an impetus to the various players in the health care system to improve quality and efficiency. To assess experiences with this new pricing system, we carried out an evaluation of ten 'care groups' nationwide that were working with integrated care for diabetes on an experimental basis. The study was part of the Integrated Diabetes Care research programme of the Netherlands Organisation for Health Research and Development (ZonMw). The experiment involved a bundled payment system for diabetes, which enabled different components of diabetes care to be contracted, delivered and invoiced as a single integrated package. In the interviews we carried out during the evaluation, we learned that the introduction of bundled payment and the associated creation of care groups do not just have potential benefits (better coordination and continuity of care, lower transaction costs and lower coordination costs for health insurers), but it also raises potential problems with competition. This appendix examines these problems in more detail.

A7.2 Principal features of the bundled payment model

In the existing fee and payment system, each health care provider makes contracts with each insurance company for the care components they deliver. In the bundled payment model, an additional, often newly created actor enters the process – the care group. A care group is an organisation in which health care providers, often exclusively GPs, have joined together to form a legal entity. It is responsible for coordinating and ensuring delivery of multidisciplinary health care and services to people with chronic illnesses, in the present case diabetes (De Bruin and Struijs, 2008). Care groups serve as the 'prime contractor' of the integrated care and as such, they make contracts with health insurance companies for payment of the care. For the various care components (which include periodic check-ups, laboratory services, eye fundus photography and dietary counselling),

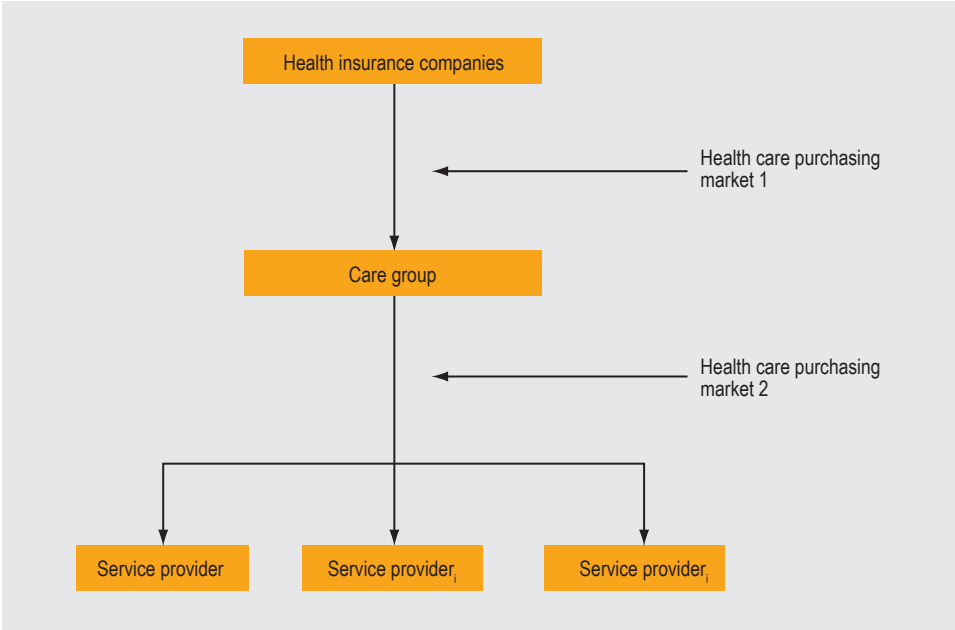

Figure A7.1: Simplified diagram of the bundled payment model

the care groups either contract other health care and service providers as subcontractors or deliver part of the care of themselves (*figure A7.1*).

Since the advent of care groups, two new health care purchasing markets can be distinguished within the broad purchasing market: purchasing market 1, in which health care insurance companies make contracts with care groups and purchasing market 2, in which care groups make contracts with individual health care providers or agencies.

Because care groups are able to selectively choose the providers from whom they purchase the care components in the bundled care system, this creates potentials for safeguarding and promoting the quality and efficiency of care. One requirement with respect to the care included in the bundled payment arrangements is that the contracts must conform to the Health Care Standard of the Dutch Diabetes Federation (NDF, 2007). These broadly define the necessary components of good diabetes care. The components in question apply to the care of patients whose diabetes is stable and without serious complications. Consultations by GPs with secondary care specialists are also included in bundled payment contracts. Overhead costs (management, coordination costs, office space) may also be structurally financed via the contracts. In the event that the ultimate medical responsibility is transferred to a secondary care specialist (as when complications arise), bundled payment for that patient is terminated. A new hospital bundled payment arrangement is then activated by the medical specialist. In the bundled payment contracts we evaluated, medication and medical aids were not yet included. That is expected to change in 2011 (VWS, 2009a).

A7.3 Essential conditions for a well-functioning health care purchasing market

In a general sense, a health care purchasing market must satisfy three basic prerequisites in order to function optimally (Schut and Varkevisser, 2009).

First, all health care products that are put on the market should be unambiguously identifiable. At present this is not the case for the bundled payment packages, as the underlying 'standards' are multi-interpretable. Clearly this is an area still 'under construction'. The development of performance indicators is still in progress (Health Care Transparency Programme ZiZo), as are the efforts to achieve uniformity in health care standards for various diseases (Health Care Standards Coordination Platform at ZonMw).

Second, the fees charged for the bundled packages should be based as closely as possible on the full absorption cost of these products. In this sense, the introduction of fee-for-condition payment is a major step forward because it enables important components of the care for a chronic disease to be comprehensively contracted. The integrated nature of the packages will improve further once the costs of medication and medical aids are added to the bundled payment schemes.

Third, none of the parties should hold a position of power on either the supply or the demand side of the market. In view of the powerful regional position now occupied by the care groups, this issue is especially relevant here. If the market parties prove to have inequitable bargaining positions, then competition problems may arise both in purchasing market 1 (where health insurers make contracts with care groups) and in purchasing market 2 (where care groups make contracts with individual providers). In a recent vision statement on condition-based payment, the Dutch Healthcare Authority (NZa, 2009b) has acknowledged this. 'It is important to ensure that care groups are not utilised to collectivise negotiations on price and performance.... One may conclude that GPs hold a highly powerful position within care groups and that this could potentially give them disproportionate power in relation to both insurance companies and other health care providers. The risk that such power will develop may increase as care groups grow and as more types of care are delivered via the care groups.' The vision paper provides no further analysis of the potential competition problems.

A7.3.1 Purchasing market 1: care groups versus health insurance companies

In the existing health care pricing system, negotiations on the primary care market take place between insurance companies and individual health care providers. Partly because the health insurance market is highly concentrated (regionally), primary care providers, such as pharmacists, physiotherapists and GPs, often fear they will carry little weight in negotiations with insurers. They may bolster their negotiating position by collaborating in care groups under the bundled payment model. This makes such cooperative arrangements potentially worthwhile for individual service providers. Up to now, it has mainly been GPs who were swift to organise into large-scale care groups,

some of which already exceed 150 associates. In conjunction with the generally low 'travel willingness' of patients with chronic illnesses, these regional consolidations of forces mean that health insurance companies have little else to choose from in contracting integrated treatment arrangements. The only potential pressure instrument the insurers have available is to decide not to contract any care group at all and to continue paying on the basis of non-integrated care. Threatening to do so would seem little effective, though, as patient associations, friends and relatives, the media and not least, the patients' own GPs will soon inform the patients of the quality advantages they may be missing by not being in a bundled payment plan. A further hindrance to the health insurers' negotiating power is the current lack of consistency in what is included in the integrated care packages, making it difficult for them to assess the performance of different care groups.

A7.3.2 Purchasing market 2: care groups versus individual health care providers

There are many organisational differences among care groups. Whilst some groups provide certain care components themselves and employ their own health care providers to deliver them, most groups contract out all the care components to 'subcontractors'. The same factors that give regionally-based care groups a powerful bargaining position vis-à-vis health insurers also give them a powerful position vis-à-vis their subcontractors. In many cases, only one care group exists per region; patients are not prepared to travel to other regions but they do attach great importance to the potential quality benefits of integrated primary care. This means that individual health care providers who wish to work for a care group do not have a strong negotiating position. Their position is further weakened by the fact that most regions have enough (or too many) physiotherapists and dieticians (see, e.g., NZa, 2009a).

A7.4 Risks attached to a powerful bargaining position of care groups

The powerful bargaining position that care groups tend to occupy in the two health care purchasing markets may have negative consequences for the health care system. In purchasing market 1, there is, first of all, the risk that health insurers and hence, their policyholders, will pay too much for the integrated care packages. In addition, the lack of competition pressure in the regions may mean that care groups have too little incentive to improve the quality of care. Here, too, patients may ultimately suffer the consequences in the form of substandard care.

In health care purchasing market 2, the chief danger is one of exploitation and exclusion of individual health care providers. One type of exploitation might occur if care groups misuse their regional power to impose unreasonable terms and conditions in contracts, such as fees that barely cover the providers' costs. Exclusion might occur if service providers not associated with the care group (such as independent laboratories) are not contracted due to preferential treatment for associated providers (such as a laboratory

run by the GPs). Exploitation and exclusion imply unfair competition and may adversely affect the price-quality balance in health care for chronic diseases.

Monitoring developments and possibly intervening

In the light of such risks, it seems wise to closely monitor the current developments involving care groups. Do problems indeed arise in the negotiations with health insurance companies and with non-integrated primary care providers or are the competition problems merely hypothetical? Is the powerful negotiating position of the care groups only a transitory issue or is it a structural problem? The task of investigating the former issue lie with both the Netherlands Competition Authority (NMa) and the Dutch Healthcare Authority (NZa). The NMa will need to assess whether care groups are violating the Competition Act (e.g., in terms of the bans on cartels and economic power abuses). The NZa, in its role of sectoral watchdog, has the key tasks of monitoring market developments and facilitating liberalised health care markets where necessary. In relation to fee-for-condition approaches, it has rightly emphasised improving transparency and lowering market entry barriers as two of its priority focuses (NZa, 2009a). These are particularly important because more clarity about health care performance and the entry of new care groups into the market could render the powerful position of current care groups into a temporary problem.

At the present juncture, however, the possibilities for lowering the market entry barriers for new care groups seem limited. The most serious barriers currently derive from the 'gatekeeper' function of GPs in the Dutch health system, whereby many other health care and service providers are accessible to patients only after GP referral. Moreover, not every kind of market entry is equally desirable. Physiotherapists and pharmacists, for example, are currently considering setting up their own new care groups in order to strengthen their bargaining positions vis-à-vis the currently existing groups, which predominantly consist in GPs (Bos, 2009). A development like this is more likely to exacerbate the problems than to solve them. It could result in several monodisciplinary power blocs within one region (GPs, physiotherapists, pharmacists) that 'fight' each other rather than develop the multidisciplinary cooperation that is needed to achieve the desired quality improvements. Nor does intraregional competition among different care groups seem realistic in our view, as GPs seem unlikely to encourage their patients to switch to a competing group.

It is too early at this point to draw any firm conclusions about the advisability of government intervention in the two health care purchasing markets, especially because premature intervention would risk throwing out the baby with the bathwater. Yet, one should still be keenly aware that the currently powerful negotiating position of the care groups may not disappear by itself. In that case, the NZa should take action. The Health Care Market Regulation Act (Wmg) provides several options for preventive measures. In the most drastic scenario, fee regulation could be instituted for the bundled payment systems and/or their separate health care products. It would be preferable, of course, in a demand-driven health care system to first try less far-reaching measures. In one such option, the 'significant market power intervention', the NZa is able to impose specific demands on care groups that occupy powerful regional positions. Under article 48 of the WMG, care groups that hold significant market power (SMP) may, for example, be

instructed to comply with any reasonable request made by a primary care provider that wishes to work as a subcontractor.

A7.5 Conclusions

An experiment with fee-for-condition payment is currently underway in Dutch diabetes care whereby health insurance companies contract an integrated package of care for a comprehensive fee from organisations called care groups, which serve as prime contractors for the care. In addition to all the benefits the creation of care groups brings with it, such as improved coordination and continuity of care, it can also give rise to competition problems, including the misuse of market power in relation to health insurers and/or non-affiliated health care providers. The coming years will show how real these potential dangers are. In the interest of the patients, both the Netherlands Competition Authority (NMa) and the Dutch Healthcare Authority (NZa) need to attentively monitor the present developments involving care groups and take timely action to intervene or regulate the market should it be necessary. Until it becomes clear whether current concerns about care group power are justified, caution is advised in introducing fee-for-condition payment on a wide scale. The health ministry's plans to permanently institute bundled payment for diabetes, COPD and vascular risk management may further boost the power of care groups. If the rollout of condition-based payment schemes throughout the Netherlands is to succeed, it will be essential to continually monitor developments in the different health care purchasing markets.

BIJLAGE 8 ABBREVIATIONS

ACSM	American College of Sports Medicine
AWBZ	Algemene Wet Bijzondere Ziektekosten (Exceptional Medical Expenses Act)
BIG	Wet op de Beroepen in de Individuele Gezondheidszorg (Health Care Professions Act)
BMI	body mass index
BV	besloten vennootschap (private limited liability company)
BW	Burgerlijk Wetboek (Netherlands Civil Code)
CARD	cardiologist
CBO	CBO Kwaliteitsinstituut voor de Gezondheidszorg (Dutch Institute for Healthcare Improvement)
CC	care consortium (zorgcombinatie)
COPD	chronic obstructive pulmonary disease
CPB	Centraal Planbureau (Netherlands Bureau for Economic Policy Analysis)
CV	commanditaire vennootschap (limited partnership)
CVRM	cardiovascular risk management
CVZ	College voor Zorgverzekeringen (Health Care Insurance Board)
DBC	diagnosebehandelingcombinatie (diagnosis and treatment combination or bundled payment arrangement)
DIET	dietician
DNS	diabetes nurse specialist
DVN	Diabetes Vereniging Nederland (Netherlands Diabetes Association)
EPR	electronic patient record
FAQ	frequently asked questions
FTE	full-time equivalent
GFR	glomerular filtration rate
GIS	GP information system
GP	general practitioner, general practice
HbA1c	haemoglobin A1c
HC	home care
HOSP	hospital
ICDF	International Consensus on the Diabetic Foot
IGZ	Inspectie voor de Gezondheidszorg (Health Care Inspectorate)
IIS	integrated information system
INT	internist
INTERV	stakeholder interview
IT	information (and communication) technology
KNMP	Koninklijke Nederlandse Maatschappij ter Bevordering der Pharmacie (Royal Dutch Association for Advancement of Pharmacy)
KZI	Kwaliteitswet Zorginstellingen (Quality of Care Institutions Act)
LAB	general practice (or other) laboratory
LDL	low-density lipoprotein

LHV	Landelijke Huisartsen Vereniging (National Association of General Practitioners)
LNM	Lokale en Nationale Monitor Gezondheid (Local and National Public Health Monitor)
LVG	Landelijke Vereniging Georganiseerde Eerste Lijn (National Association of Organised Primary Care)
MDRD	Modification of Diet in Renal Disease
MHI-5	5-item Mental Health Inventory
mmHg	millimetres of mercury
mmol/l	millimoles per litre
N&C	nursing and care
n.a.	not applicable
NAD	Nationaal Actieprogramma Diabetes (National Diabetes Action Programme)
NDF	Nederlandse Diabetes Federatie (Dutch Diabetes Federation)
NEPH	nephrologist
NEUR	neurologist
NHG	Nederlands Huisartsen Genootschap (Dutch College of General Practitioners)
Nictiz	Nationaal ICT Instituut in de Zorg (National IT Institute for Healthcare)
NIGZ	Nationaal Instituut voor Gezondheidsbevordering en Ziektepreventie (Netherlands Institute for Health Promotion)
NIVEL	Nederlands Instituut voor Onderzoek van de Gezondheidszorg (Netherlands Institute for Health Services Research)
NMa	Nederlandse Mededingingsautoriteit (Netherlands Competition Authority)
NNGB	Nederlandse Norm Gezond Bewegen (Dutch Standard for Healthy Exercise)
NPCG	Nationaal Panel Chronisch Zieken en Gehandicapten (National Panel of the Chronically Ill and Disabled)
NVD	Nederlandse Vereniging van Diëtisten (Dutch Association of Dieticians)
NZa	Nederlandse Zorgautoriteit (Dutch Healthcare Authority)
OPHTH	ophthalmologist
p.p.p.y.	per person per year
PN	practice nurse (praktijkondersteuner huisarts, praktijkverpleegkundige)
POD	podiatrist
PON	Partnerschap Overgewicht Nederland
PRS	patient record system
PSQ	patient survey questionnaire
RIVM	Rijksinstituut voor Volksgezondheid en Milieu (National Institute of Public Health and the Environment)
RVZ	Raad voor de Volksgezondheid en Zorg (Council for Public Health and Health Care)
SD	standard deviation
SF-36	36-Item Short Form Health Survey

SFK	Stichting Farmaceutische Kengetallen (Foundation for Pharmaceutical Statistics)
SMP	significant market power
T0	baseline assessment
T1	12-month assessment
UKPDS	United Kingdom Prospective Diabetes Study
VASC	vascular surgeon
VAT	value-added tax
VRM	vascular risk management
VWS	Ministerie van Volksgezondheid, Welzijn en Sport (Ministry of Health, Welfare and Sport)
WGBO	Wet op de Geneeskundige Behandelingsovereenkomst (Medical Treatment Agreement Act)
WKCZ	Wet Klachtrecht Cliënten Zorgsector (Clients' Right of Complaint [Care Sector] Act)
WMCZ	Wet Medezeggenschap Cliënten Zorginstellingen (Participation [Clients of Care Institutions] Act)
WMG	Wet Marktordening Gezondheidszorg (Health Care Market Regulation Act)
WTZI	Wet Toelating Zorginstellingen (Health Care Institutions Act)
ZGC	Zorgbrede Governancecode (Health Care Governance Code)
ZiZo	Zichtbare Zorg (Health Care Transparency Programme)
ZN	Zorgverzekeraars Nederland (Association of Dutch Health Insurers)
ZonMw	Zorgonderzoek Nederland en Medische Wetenschappen van de Nederlandse Organisatie voor Wetenschappelijk Onderzoek (Netherlands Organisation for Health Research and Development)
ZVW	Zorgverzekeringswet (Health Care Insurance Act)

Diabetes is a rapidly growing problem in society. More and more people are developing type 2 diabetes. This has serious implications for the burdens and costs of health care. As a result, diabetes is a priority focus in the public health and disease prevention policies of the Dutch Ministry of Health, Welfare and Sport.

Numerous initiatives to enhance the effectiveness and quality of diabetes management in the Netherlands have been developed in recent years. Many of these focus on multidisciplinary cooperation. Some major stumbling blocks in the creation of collaborative arrangements in health care are the fragmented fees and payments for the various components of diabetes care and the inadequate financing of support activities, such as coordination consultations and IT services. The Health Ministry has therefore launched a plan for a comprehensive pricing system for diabetes care.

Under the Integrated Diabetes Care research programme of the Netherlands Organisation for Health Research and Development (ZonMw), ten regional 'care groups' began experimenting with a bundled payment system for diabetes management. RIVM has conducted an evaluation study to shed light on the process of organising diabetes care in care groups and working with bundled fees, as well as to assess the satisfaction of all stakeholders and the quality of the care.

This report contains the results of that evaluation.

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