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of bundled
payment
for diabetes
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Impact on health care delivery process and the quality of care

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Contents

Abstract

Since 2007 it is possible to purchase chronic diabetes care by bundled payments. The effects of this payment reform on the health care delivery process and quality of care are described in this report.

Several changes in the health care delivery process were observed. For instance, many tasks of GPs were delegated to practice nurses. Eye examinations were more often performed by optometrists than by ophthalmologists. Patient involvement in the health care delivery process is limited. In addition, patients were not always informed about their participation in a care program delivered by a care group. Also self-management support provided by healthcare providers is still underdeveloped.

The effects of bundled payments on the quality of care are not easy to interpret. After a three-year follow-up period, a modest improvement is visible on most process indicators. Most outcome indicators improved as well. For instance, the percentage of patients whose blood pressure or cholesterol level was conform the standards improved by 6 and 10 percentage points respectively. It is unclear whether these changes are clinically relevant. Long-term effects of bundled payments such as the prevention of complications cannot be determined.

The transparency of care delivered increased but is still suboptimal. Current IT-systems do not fulfill the increasing information needs of stakeholders, which is partly due to a lack of uniformity how to register health care quality information. Insight in the long-term effects of bundled payments is important to estimate the potentials of bundled payments on its true value.

Key words: Bundled payments – care groups – diabetes – health care- payment reform

Rapport in het kort

Sinds 2007 is het mogelijk om standaard diabeteszorg door middel van een keten-dbc diabetes via zorggroepen te bekostigen. In dit rapport worden de effecten van dit nieuwe bekostigingsmodel (integrale bekostiging (IB)) op het zorgproces en de kwaliteit van de diabeteszorg beschreven.
Er zijn diverse veranderingen in het zorgproces zichtbaar. Zo zijn veel taken van de huisarts gedelegeerd naar de praktijkondersteuner en worden oogcontroles vaker uitgevoerd door een optometrist in plaats van de oogarts. De patiënt wordt nog te weinig betrokken bij het zorgproces.
Zelfmanagementondersteuning is nog niet goed ontwikkeld. Ook wordt de patiënt niet altijd geïnformeerd over het feit dat hij voor de diabeteszorg is aangesloten bij een zorggroep.

Het effect van IB op de kwaliteit van zorg is niet eenduidig te interpreteren. Er zijn (kleine) verbeteringen in proces- en uitkomstindicatoren te zien. Deels door kwaliteitsverbetering en deels door verbetering in het registratieproces. Zo is het percentage patiënten met een systolische bloeddruk of cholesterolgehalte onder de streefwaarde toegenomen met respectievelijk 6 en 10 procentpunten. De klinische relevantie van de verbeteringen zijn onduidelijk. Langetermijneffecten, zoals het voorkomen of uitstellen van complicaties, zijn nog niet aan te tonen.
De transparantie van de kwaliteit van de zorg is toegenomen maar nog steeds onvoldoende. ICT-systemen voldoen nog niet aan de toenemende informatiebehoefte van alle betrokkenen en er is ook te weinig eenheid in het registeren van zorggegevens. Inzicht in effecten van IB op de lange termijn is belangrijk om IB op zijn waarde te kunnen schatten.

Trefwoorden: Integrale bekostiging – zorggroepen – diabetes – zorg – keten-dbc

Summary

Evaluation of three years of bundled payments for diabetes care
In recent years, a range of developments have been initiated in the care of Dutch patients with chronic illnesses. The aim of such changes, which included the launch of disease management programmes based on multidisciplinary cooperation, was to improve the effectiveness and quality of care and to ensure affordable costs. To expedite the implementation of programmes such as these, the Netherlands Ministry of Health, Welfare and Sport developed a new pricing model for long-term disease management known as bundled payment (Dutch abbreviation keten-dbc). It enables all the necessary services for a disease management programme to be contracted as a single package or product. In 2007, groups of affiliated health care providers known as care groups began working with bundled payment arrangements for diabetes, initially on an experimental basis. In 2010, bundled payment for the management of diabetes, COPD (Chronic Obstructive Pulmonary Diseses) and vascular risk management was introduced on a more permanent basis, although contracting under the old pricing system was also still allowed. By that year, there were about one hundred care groups operating diabetes management programmes. Some had also contracted programmes for other chronic conditions, or were preparing to do so. The experiences of nine such care groups have now been evaluated under the Integrated Diabetes Care Programme, a research initiative of the Netherlands Organisation for Health Research and Development (ZonMw). Findings of the preliminary first-year evaluation of the diabetes programmes were published in an earlier RIVM report. In the current report, Evaluation 2, we make known the findings based on the second and third years after the implementation of the bundled payments. Our results are derived from the patient record systems of the care groups, from interviews with health care providers and care group managers, and from patient questionnaires. The evaluation sheds light on the effects of bundled payment on the quality of the care, but not on health care costs.

Organisational structures of care groups remained virtually unchanged; differences between bundled payment contracts narrowed
In the interval between Evaluations 1 and 2, no major organisational changes occurred within the care groups we studied. At the time of Evaluation 2, they were still largely monodisciplinary cooperative arrangements between general practitioners (GPs). The numbers of GPs per care group (and accordingly the numbers of patients) increased sharply between the two evaluations. Just as at the time of Evaluation 1, the governance and oversight of the care groups had not yet been organised in compliance with the basic rules laid down by the Dutch Care Governance Code (ZGC). Half of the care groups we studied did not have their own supervisory body.

Differences between care groups in terms of the health care services covered by their bundled payment contracts and the fees agreed for them became smaller from Evaluation 1 to 2. This is probably explained in large part by the accumulated experience both of care groups and of health insurance companies. Despite the growing expertise on both sides, negotiations about contract renewal tended to be long and drawn out.

Effects on quality of care not clearly interpretable
On the whole, findings based on our process indicators suggested mild to moderate improvements in health care delivery. Results on some process indicators were already high in the second year of our

evaluation. HbA1c, body mass index (BMI) and blood pressure were checked in more than 90% of patients in both year 2 and year 3. On the process indicators for foot examinations, kidney function testing and cholesterol testing, improvements were observable between years 2 and 3. Though the 12-month eye examination rate slightly declined (by 3.5 percentage points), that indicator is difficult to interpret, partly due to record-keeping problems and partly because eye examinations were increasingly contracted at two-year rather than one-year intervals. In terms of the composite process indicator showing the percentage of patients with HbA1c, BMI, LDL (Low-Density Lipoproteins), kidney and foot checks, there was still considerable variation between care groups. The improvements on process indicators were attributable in part to better record-keeping discipline. Improvements were also reported by care group managers, health care providers and insurance officials.

Several outcome indicators also showed light to moderate improvements. The percentage of patients with systolic blood pressure below the 140 mmHg target value increased by over 6 percentage points, and more patients were also meeting target cholesterol values, a gain of 10 points. The average HbA1c level increased slightly (by 0.5 mmol/mol); BMI was virtually unchanged. It is unclear what the clinical relevance of such patient outcome improvements might be, or what impact they may have on ‘hard’ medical outcome measures like cardiovascular illness and mortality.

Patients expressed positive judgments about the cooperation and coordination between their various health care providers. More than 90% rated those qualities as good or excellent, a percentage that remained stable in recent years.

Widespread reallocation and delegation of tasks calls for more quality assurance measures

On a considerable scale, health care tasks in care groups were being delegated or reassigned to other disciplines, both within the primary care sector and between the secondary and primary care sectors. In all groups we studied, practice nurses now played pivotal roles in the diabetes management programmes and carried out most of the standard check-ups. With respect to eye examinations, many tasks previously carried out by ophthalmologists had now been reallocated to optometrists, retinal graders, specialised nurses or general practitioners. Insulin-dependent patients without complications were increasingly managed within GP practices rather than by secondary care providers. Practice nurses were said to be able to devote more time and attention to each patient than a GP, and patient care was said to be better structured and delivered according to protocol. GPs were acquiring a more supervisory role, freeing up more time for their other patients.

Some health care providers also expressed criticisms. They cautioned of deteriorating health care quality in general practice, in particular because the reduced contacts with diabetes patients might lead to a loss of knowledge in GPs. Moreover, practice nurses were thought to be insufficiently trained for some of the duties they were being assigned, such as dietary counselling or dosage recommendations. Some secondary care providers pointed to the risks of transferring responsibilities from secondary to GP care, such as delays in prompt referral to specialist care when patients develop complications. The growing awareness of the potential risks involved in task reallocation and delegation had put quality assurance higher on the agendas of several care groups. Some issues were how GPs should fulfil their supervisory role and what role the care groups and health insurers should play in the quality assurance efforts.

Comorbidity and polypharmacy not high on care group agendas

Since many patients with diabetes also have other chronic health conditions, coordination is necessary between the management programmes and medication regimens for diabetes and those for other illnesses. Health care providers we interviewed had apparently not yet perceived or experienced any major problems in this regard. Providers working in GP practices argued they had always been accustomed to addressing the entire range of a patient's care needs and were fully prepared to do so. One reason why comorbidity was not yet a major issue in care groups was that most groups were still contracting only one or two disease management programmes, with care for other conditions still claimed under the older pricing system. Four of the nine care groups we studied had bundled fees for COPD and/or cardiovascular risk management (CVRM) in 2011 alongside their diabetes contract.

Little attention was devoted to polypharmacy as of yet, though it is common in diabetes patients with multiple chronic conditions. No procedures for polypharmacy were mentioned in the multidisciplinary protocols of the care groups we studied. The role of pharmacists in care groups was also limited; most groups had no routine consultations with pharmacists in their region.

Patient participation still in rudimentary stages

On the topic of how patients participate in diabetes care, we distinguish between their involvement in the patient care process (self-management) and their input into organisational decision making. Care groups were still developing ways to facilitate patient self-management and did not yet normally provide systematic and integrated support for it. Only one care group arranged group education sessions. Two care groups had electronic patient portals that enabled patients to log into their patient files from home and enter information of their own; three groups had such portals in development. Several health care providers argued that resources for supporting self-management were lacking, that some providers had insufficient knowledge to do so, and that many patients had little or no interest in such support or in managing their own illness.

With respect to patient participation at the organisational level, we found that not all care groups had even informed patients that they were part of a disease management programme run by a care group. Care groups differed in their ways of informing patients and in the information they gave them. Many patients were not aware that their involvement in a disease management programme made them clients of a care group in addition to their GP-patient relationship. The role of patients in the organisational decision-making processes in care groups was very limited in most groups. Such involvement is essential if care is to be organised in ways that respond properly to patient needs and that do not lose sight of the ultimate goal of health care innovation – to provide good care to patients.

Information technology does not meet all parties' data needs

Care groups were making increasing use of integrated health care information systems (IISs). Several care group managers who had recently switched to an IIS saw potentials for improving both the patient care process and the management of the care group. Care group IISs could still not be accessed by all associated health care providers, however. Nor was the integration between the IISs and the GP information systems (GISs) anywhere near satisfactory; as a consequence, many data had to be entered twice: once into the IIS and once into the providers' own systems. Providers found this extremely burdensome. Health insurance companies were also not always satisfied about the quality of the accountability information they received from care groups.

Insufficient transparency about quality of care

In the bundled payment model, insight into the quality of the care delivered is essential. An exchange of accountability information between care groups and insurance companies is important because it enables the insurers to judge the quality of the care they are paying for. The provision of reflective information to health care providers is another important instrument, enabling care groups to improve the quality of their care. The Health Care Standard developed by the Dutch Diabetes Federation (NDF) specifies indicators for creating a comprehensive picture of the quality of care. The ways these indicators were being calculated in care groups, however, provided insufficient clarity, were not standardised nationwide and differed between care groups. This made it difficult or impossible to compare the various care groups using the indicators published in their annual reports. Another concern was that much of the accountability and reflective information was produced by the care groups themselves, raising questions about impartiality.

No longitudinal quality monitoring

Care groups not only need quality-of-care data on a particular point in time, but also on how diabetes management is developing over a longer period. Effective long-term treatment and monitoring of patients within care groups could prevent or delay health complications, thus producing cost savings. Evaluation of long-term effects of bundled payment arrangements and disease management programmes would require analysing not only the performance in a single year, but also how the quality evolves over time. With the patient record systems now in use by the care groups we studied, such longitudinal analysis was not really feasible. Accurate data would be required on factors such as patient turnover. The current yearly data suggested considerable ‘patient attrition’ from care groups. Some groups were not immediately able to calculate such rates and had to make special efforts to do so. Insufficient information was also available about patients that were transferred to or from secondary care.

In summary

Three years after the introduction of the Dutch bundled payment arrangements for the management of diabetes mellitus, the responsible care groups remained largely monodisciplinary groupings of general practitioners. The care services they offered and the fees agreed in their bundled payment contracts had grown increasingly similar, and provision was largely in line with the NDF Health Care Standard. A large-scale reallocation and delegation of health care tasks had taken place. The effects of bundled payments on the quality of diabetes care could not yet be clearly interpreted, partly due to a lack of transparency about the quality of the care delivered.

Mild to moderate improvements were observed on both process and outcome indicators. It was not yet possible to identify long-term effects, such as the prevention or delay of disease complications. Patient participation, in the form of either self-management or organisational involvement, was receiving increasing attention within the care groups, but it was still inadequately developed. IT did not yet satisfy the growing needs for data by all parties, and care groups did not yet employ uniform methods of record keeping and indicator calculation.

Knowledge of the effects of bundled payment on the long-term quality of care with disease management programmes will be needed to weigh the value of the new model. For a better understanding of the cost-effectiveness of bundled payment arrangements, the effects on the quality of care as reported here will also have to be considered in relation to the effects on total health care costs.

1

Introduction

1.1 Background

Four per cent of Dutch population now known to have diabetes, with sharp increases expected
Diabetes is a widely prevalent disease that can lead to increasing complications in the course of time, including cardiovascular illness, blindness, and damage to kidneys or the nervous system. On 1 January 2007, some 670,000 people in the Netherlands were known to their GPs to have diabetes; a further 71,000 new cases were recorded in the course of that year. Besides the known patients, an estimated 250,000 or more people have diabetes without being aware of it (Baan et al., 2009a). The number of people with diabetes worldwide has mounted sharply in recent decades (Danaei et al., 2011), and the same is true of the Netherlands. The Dutch one-year prevalence of diabetes rose by 55% from 2000 to 2007 (Baan et al., 2009a). The upward trend is set to continue in the years to come. By 2025, the number of people diagnosed with diabetes is expected to reach 1.3 million, or about 8% of the Dutch population at that time (Baan et al., 2009b). This will have considerable ramifications for the provision of care and treatment and for the burdens and costs of health care.

Numerous initiatives to improve the quality of disease management
In the field of diabetes treatment, many initiatives have been undertaken in recent years to improve the effectiveness and quality of care, often involving multidisciplinary cooperation in disease management programmes. A major step forward was the development of the Diabetes Health Care Standard for diabetes mellitus type 2 by the Dutch Diabetes Federation (NDF, 2007). The aim of the Health Care Standard is to optimise the quality of care for people with diabetes. It sets out the principal requirements of good diabetes care in terms of the services and organisational structures necessary for long-term disease management (Coördinatieplatform Zorgstandaarden, 2010; Struijs et al., 2010b). Yet experience in practice showed that the creation of health care standards alone was insufficient to bring about the sustainable cooperation between health care providers that was needed to secure quality improvements. One major barrier, according to practitioners, was the fragmentary funding and pricing of the various components of disease management (Taakgroep, 2005). To address this problem, the Dutch Ministry of Health, Welfare and Sport created opportunities in 2007 for experimentation with a new pricing system for generic diabetes care.

Experiments with a new funding and pricing mechanism to facilitate sustainable disease management programmes

The new payment mechanism, known as bundled payment, entailed integrated arrangements for treatment and care whereby all the different components needed for the long-term management of a particular health condition would be purchased by health insurers as a single service or product. Insurance companies would thus be enabled to purchase good care at acceptable prices from 'care groups', groups of associated health care providers organised on a multidisciplinary basis and providing care in conformity with the Health Care Standard Diabetes. From 2007 to 2009, the RIVM carried out an evaluation, funded by the Netherlands Organisation for Health Research and Development (ZonMw), in which the experiences of ten such care groups were analysed as they implemented the diabetes bundled payment strategy (Struijs et al., 2010a).

Initial evaluation shed light on developments, but left many questions unresolved

Our first evaluation showed that the bundled payment approach had shifted responsibility for the quality of the provision and organisation of diabetes care to the care groups and had made them the contact point for insurance companies. This was an enhancement of the health care delivery process, partly because the cooperation between health care providers was formalised in contracts and subcontracts that stipulated which services were to be provided by whom and at what price. An additional benefit was that care groups set requirements for the providers they contracted in terms of continuing professional development, attendance at multidisciplinary consultations and periodic audits in GP practices. Requirements were also set for record keeping and the reporting of care-related data, thus better enabling the care groups to produce reflective information on the quality of the care delivered. In most of the care groups we studied, however, the IT was not yet adequate to meet the data needs either of the health care providers and care groups or of the insurance companies.

Some drawbacks of the bundled care model were that the care groups had acquired an overly strong negotiating position vis-à-vis the individual care providers and that they possibly constrained the patients' freedom of choice by contracting preferential providers. Moreover, patients were often unclear about where to turn if they had complaints about the quality of the care provided by a care group.

The new form of collaboration had not yet produced any discernible improvements in patient outcomes. In part that may have been because Dutch diabetes care was already good before the bundled payment scheme was introduced. Another possible reason was that, as a consequence of IT problems, the quality of the recorded patient data was not yet sufficient for effects to be ascertained. The one-year period studied might also have been too short to detect changes in process indicators.

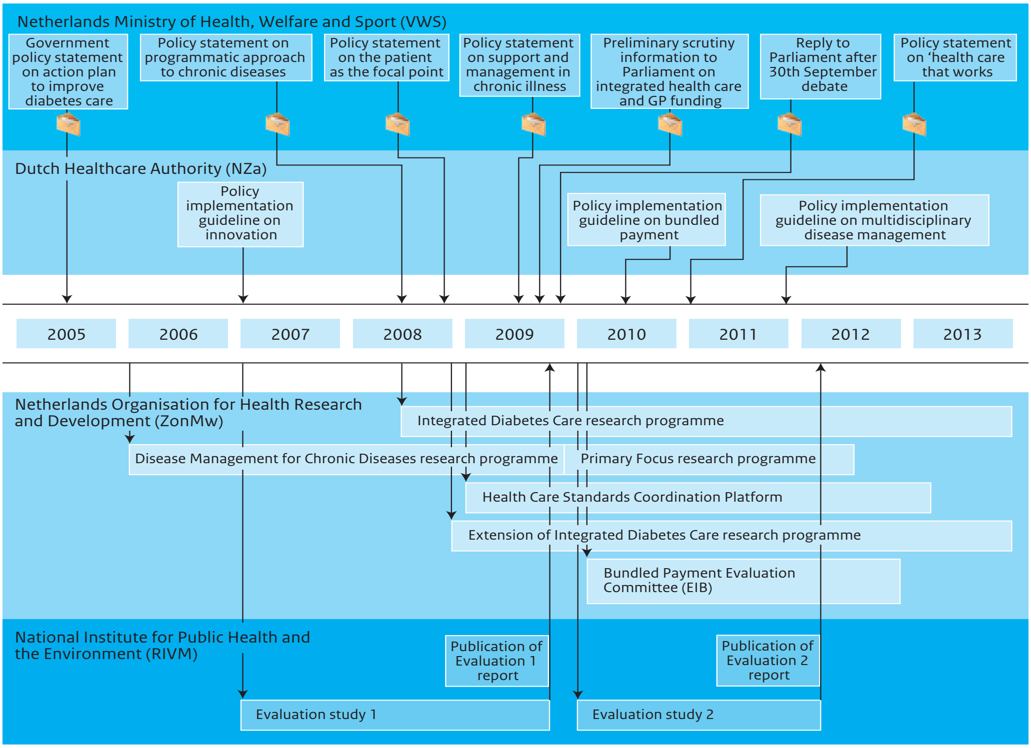
Many issues thus remained unaddressed in our initial evaluation. These included the effects of bundled payment arrangements on the macro costs of care and whether the disease-specific organisation of such management programmes was appropriate for the needs of patients with more than one medical disorder.

More clarity needed about long-term effects of bundled payments on the effectiveness and quality of care
To gain a better understanding of the long-term effects of the bundled payment approach on the quality of care, and to seek answers to some of the unresolved issues, the health ministry requested ZonMw to extend its Integrated Diabetes Care Programme by two years. During that period, the RIVM conducted a follow-up evaluation of the functioning of disease management programmes paid via bundled payments. The ten care groups that were studied in the initial evaluation were asked to participate in the second evaluation study as well. Nine groups agreed to take part.

1.2 Follow-up evaluation of the bundled payment scheme in the ZonMw Integrated Diabetes Care Programme

The follow-up study expanded on the previous RIVM study and was designed to shed light on how the bundled payment scheme worked, what effects it had achieved after two and three years in terms of biomedical measures, and what experiences the patients, health care providers and other stakeholders had.

Figure 1.1 Time line of developments relating to bundled payment arrangements.



The research questions were as follow:

1. How are health care services in care groups organised at the end of three years of bundled payments?
2. What is the quality of the services provided by care groups at two years and three years after bundled payment implementation?
3. Does bundled payment create incentives to reallocate and delegate tasks?
4. How do care groups manage patients with comorbid diseases?
5. To what extent has patient participation been achieved within care groups?
6. What were the experiences of stakeholders in three years of bundled payments?

Although the research questions of the present evaluation partially overlap with those of Evaluation 1, the findings of Evaluation 1 also raised new questions, which we have formulated here. The new evaluation can still provide no insights into the effects of bundled payments on health care expenditures. The RIVM has recently begun a separate study, commissioned by the Netherlands Ministry of Health, Welfare and Sport and the Bundled Payment Evaluation Committee (EIB), on the effects of the bundled payment approach on the health care expenditures. It analyses claim data collected by the Vektis health care information centre.

1.3 Broader context

Without awaiting the findings of the evaluation, the Dutch Parliament voted in September 2009 to implement bundled payment schemes for both diabetes type 2 and vascular risk management (VRM) on an ongoing basis starting 1 January 2010 (VWS, 2009). A further ongoing scheme for COPD was implemented as of 1 July 2010, after authorisation of the Health Care Standard COPD. In this connection, the Dutch Healthcare Authority (NZa) issued a policy implementation guideline entitled *Prestatiebekostiging multidisciplinaire zorgverlening chronische aandoeningen (DM type 2, VRM, COPD)* (Bundled payments for multidisciplinary health care provision for the chronic conditions type 2 DM, VRM and COPD; NZa, 2010a), superseded on 1 January 2011 by the guideline *Ketenzorg: Integrale bekostiging multidisciplinaire zorgverlening chronische aandoeningen (DM type 2, VRM, COPD)* (Integrated health care: bundled payments for multidisciplinary health care provision for the chronic conditions type 2 DM, VRM and COPD; NZa, 2011). Some parties in the parliament voiced concerns about whether the necessary operating conditions were in place or sufficiently functional for bundled payment to be implemented. In response to a parliamentary request, the health minister therefore created the EIB in 2010 for a period of three years (VWS, 2010a) to monitor developments and report periodically to the minister on progress in securing the operating conditions for bundled payments and on whether the intended effects have become evident. At the end of that period, the EIB will advise the minister on whether the transitional period can be ended. The EIB reported its initial findings in March 2011 (EIB, 2011a; EIB, 2011b).

In 2009, the Health Care Standards Coordination Platform was set up to advise the Dutch government on the development of health care standards and to promote consistency of content in the standards (VWS, 2010b; Coördinatieplatform Zorgstandaarden, 2010). In addition, the health ministry announced in its *Voorhangbrief keten-dbc's en huisartsenbekostiging* (Preliminary parliamentary scrutiny information on integrated health care schemes and general practice funding; VWS, 2009) that it was commissioning the NZa to produce a monitoring report by late 2011 on the effects of bundled payments. It was to devote particular attention to potential competition problems arising in care groups as a consequence of bundled payments and to the issue of whether such problems jeopardised public interests (quality, accessibility and affordability in the health care system).

Beyond these administrative efforts, a number of research and implementation programmes have been initiated to help improve quality and organisational structures in health care. These programmes share some common ground with bundled payment schemes. One such programme is entitled Disease Management for Chronic Diseases (ZonMw, 2007), commissioned by the health ministry. It has three main aims: (1) to initiate local and regional experiments in disease management, (2) to promote research on disease management applications and (3) to further the utilisation of the knowledge and insights already gained in successfully completed projects in health care practice. This programme targets people who have diabetes, cardiovascular diseases, cancer, musculoskeletal disorders, COPD or mental illness or who have an elevated risk for one or more of those illnesses. The programme ran for four years.

Another ZonMw research programme is Primary Focus (*Op één Lijn*; ZonMw, 2010). It promotes organised multidisciplinary cooperation in primary care, with particular attention to health care for older people and for people in six 'diagnosis groups': diabetes, congestive heart failure, cardiovascular disease, COPD, mental disorders and musculoskeletal problems. The aims are (1) to provide incentives for developing cooperative arrangements in close-to-home care, (2) to expand and consolidate knowledge on variants in such arrangements, (3) to translate such practice-based knowledge into accessible and viable information and implementation tools for existing or start-up arrangements and (4) to share findings and experiences gained in the programme with policymakers and other stakeholders. This programme was to run from 2009 to 2013.

1.4 Structure of this report

We report here the findings of our evaluation study on developments in care groups involved in diabetes management and on the quality of the health care they delivered in a three-year period from 2007 to 2011. Our most important conclusions and recommendations are summarised above in the Key Findings section, which also serves as an executive summary.

Chapter 2 reports the results of the evaluation in terms of the six research questions set out above. Our conclusions are discussed in chapter 3, followed by recommendations for policy making and for future research.

Appendix 1 lists the members of the ZonMw steering group and the RIVM staff who have helped make this report possible. Appendix 2 describes in detail the design of the evaluation study and research methods employed. Appendix 3 reports our findings on the quality of care based on patient record data. Appendix 4 shows the structure of each care group in organisational charts. The final Appendix 5 gives a short description of the Dutch health care system.

2

Findings on key questions

2.1 Organisation of the health care services in care groups after three years of bundled payments

Outline

The introduction of bundled payments and the associated creation of care groups signalled a change in the Dutch health care system. Box 2.2 summarises the basic principles of the bundled payment model. A detailed description of the model is given in our previous report entitled *Experimenting with a Bundled Payment System for Diabetes Care in the Netherlands: The First Tangible Effects* (Struijs et al., 2010a). In section 2.1.1 below, we describe on the basis of general characteristics how the care groups were structured at the time of our follow-up evaluation. Section 2.1.2 analyses in more detail the bundled payment contracts that had been negotiated between care groups and health insurance companies, with a focus on the types of services included and the price trends in the bundled fees.

2.1.1 General characteristics of care groups

We first examine the organisational structures of care groups, noting for each care group the type of legal entity chosen, the legal format, the ownership, the types of individual health care providers and agencies contracted, the kinds of IT employed and the type of oversight. Appendix 4 contains organisational charts for each of the care groups studied.

General characteristics

No changes in the legal formats of care groups

Care groups had chosen different types of legal entities as their organisational form (Table 2.1): private limited liability companies (BVs; n=3), foundations (n=3), cooperatives (n=2) and a limited partnership (CV; n=1). None of the care groups we studied had changed its legal format since its inception. Initial decisions on which format was appropriate were based mainly on previously existing organisational

Box 2.1 Research methods

Data for this evaluation study were collected in three ways: (1) from patient record systems of health care providers, (2) from patient questionnaires and (3) from semi-structured interviews with stakeholders. Appendix 2 gives a detailed description of the methods employed.

1. Patient record systems of health care providers

Content The record systems contained information on patient characteristics (such as age and gender), check-ups and tests performed (such as the yearly HbA1c tests) and clinical outcome measures (such as blood pressure). The care groups provided these data to the RIVM at the level of individual patients in pseudonymised form.

Time line Patient data were extracted from the record systems for the period from 1 January 2008 to 1 July 2010 (in the second and third years after bundled payment implementation). All patients who were 'under the care' of the care group for the entire study period and who received at least one standard check-up between 1 January 2008 and 30 April 2008 were included. Each patient had a study time frame of two years, with one month's leeway per year. Three care groups (6, 7 and 8) had different study periods.

Analyses McNemar and chi-square tests were employed to make comparisons between the process indicators in the second and third years after bundled payment implementation. The outcome indicators were assessed at three different time points: at the outset of the second year after bundled payment introduction (T1); at the end of the second year after introduction (T2); and at the end of the third year after introduction (T3). Outcomes at T1 and T3 were compared using McNemar and paired t-tests.

2. Patient questionnaires

Content The patient questionnaire was composed of existing, validated scales designed to assess the coordination of the care delivered and patient health, quality of life and lifestyle. Questionnaire content corresponded largely to that in Evaluation 1, but was expanded to include the Patient Assessment of Chronic Illness Care (PACIC), which measures patient experiences with integrated care. Further questions were added about patient health skills, health care services received and medicines taken.

Selection of patients We first took a random sample of fifteen GP practices in each care group and then distributed five hundred questionnaires to patients in the selected practices. No questionnaires were distributed in care groups 7 and 8. We additionally sent questionnaires to the patients who had taken part in the patient survey in Evaluation 1.

Time line The questionnaires were administered in May and June of 2010.

Analyses Descriptive statistics are used to report the results of the patient survey. Wherever possible, we have made comparisons with results from Evaluation 1.

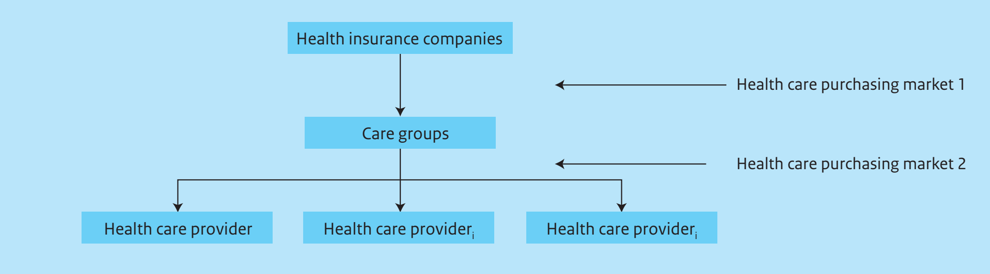
3. Semi-structured interviews with care group managers, health care providers and insurance officials

Content We held semi-structured interviews with managers, health care providers and officials of health insurance companies associated with the participating care groups. For the interviews we used predetermined topics lists that addressed the following subjects: content of the bundled payment contracts for 2010, infrastructural elements (such as continuing professional development training and IT), governance, patient participation, task substitution, coordination within the field of diabetes care, patient comorbidity, and success factors and pitfalls in implementing bundled payment arrangements. A total of 68 interviews were conducted. Health care providers were stratified by type of provider and selected randomly; additional providers were selected according to the size of the care group. A total of ten managers were interviewed (two from one of the care groups), twelve GPs, six practice nurses, seven diabetes nurse specialists (five working in primary care and two in secondary care), eight internal medicine specialists (internists), two ophthalmologists, two dieticians, two physiotherapists, one pharmacist, one podiatrist, two optometrists, two general practice laboratory workers and four health insurance officials. All nine of the care group project leaders were interviewed; in several groups, the manager was also the project leader, and these persons were therefore interviewed twice.

Time line The interviews were conducted from October 2010 to April 2011.

Analyses All interview transcripts were anonymised and coded inductively. All analyses were performed in MAXQDA.

Box 2.2 Basic premises of the bundled payment model and of care groups



Bundled payment makes it possible to receive lump-sum payments that cover all health care services rendered to each patient in a disease management programme as well as all other activities necessary to ensure cooperation and coordination between the health care providers. Health insurance companies negotiate a single contract with each care group to cover the entire set of agreed services for that disease (see above diagram). Such contracts between care groups and health insurers are called bundled payment contracts. The term ‘care group’ denotes the legal entity that is the prime contractor in a bundled payment contract; it does not refer to the team of health care providers that deliver the actual services. As the principal contractor, the care group ensures that the integrated programme of health care is carried out. A care group subcontracts most services to individual providers or agencies, but sometimes delivers certain services itself by hiring its own providers. It determines which services the associated providers are to deliver, and it sets other requirements such as when they are to refer patients, what records they are to keep and what professional development training they need. The specific services to be provided by the integrated disease management programme and contracted under the bundled payment arrangements are laid down in disease-specific health care standards, which are agreed upon by all relevant professional disciplines and patient associations. From 2007 to 2009, bundled payment was possible in the Netherlands only in small-scale projects and on an experimental basis. From 1 January 2010, bundled payment arrangements for standard diabetes care and vascular risk management (VRM) have been implemented as ongoing schemes. Standard diabetes care involves services for people who have recently been diagnosed with diabetes, those whose diabetes is well-controlled and those who have no serious complications (NDF, 2007). On 1 July 2010, a bundled payment scheme for the care of COPD patients was also implemented on an ongoing basis.

structures and on legal considerations such as VAT exemptions, responsibilities or liabilities. Four care groups had chosen for a combination of the operating company and holding company formats. Examples of operating companies within a holding company structure were an out-of-hours medical service and a primary care lab. Care group 1 had merged into a larger care group made up of eleven general practice cooperatives and one foundation. Technically, then, care group 1 no longer existed; continuation had no longer been feasible owing to its low number of seven associated GPs.

Care groups continued to be cooperative arrangements consisting mainly of GPs

Ownership arrangements in the care groups also remained unchanged in the three-year period. All care groups were owned or co-owned by GPs (Table 2.1). Care groups 3 and 7 were also co-owned by health care providers from other disciplines. As Evaluation 1 showed, the monodisciplinary prime contractorship of care groups impeded the health care providers in collaborating on equal terms. Monodisciplinary prime contractorship is also at odds with the NDF Diabetes Health Care Standard, which emphasise the need for multidisciplinary care groups in which all the core disciplines of diabetes management are represented. It designates general practitioners, practice nurses, diabetes nurse specialists, GP assistants and dieticians as representing the core disciplines.

Sharp increases in numbers of associated GPs

The numbers of GPs associated with care groups increased substantially in the 2007-2010 period. In 2010, the numbers of GPs per care group ranged from 35 to 130 (versus 7 to 111 in 2007). Five of the nine groups had more than a hundred associated GPs.

Much of actual provision subcontracted to individual providers or agencies

Bundled payment arrangements give care groups the options of hiring their own health care providers or subcontracting individual providers or agencies to provide the services in the package. As Table 2.2 shows, all groups except number 9 purchased most health care services from individual providers or agencies and did not employ their own staff for the actual delivery. Though care groups 4 and 6 did employ some staff, these did not directly provide health care to patients. The diabetes nurse specialist in care group 6, for instance, supported the practice nurses when patients had complex care needs. Care group 9 employed GPs, practice nurses, practice assistants and dieticians; that was because the health care agency that now serves as the prime contractor in the bundled payment contract was already employing those staff members before the inception of bundled payment.

Table 2.1 General characteristics of the care groups studied.

Care group	Type of legal entity		Holding company?		Ownership		Number of GPs	
	2007	2010	2007	2010	2007	2010	2007	2010
1	Cooperative association	Cooperative association*	No	No*	GPs	GPs*	7	105 GP practices*
2	Foundation	Foundation	No	No	Foundation	n.a.	7	130
3	Private limited liability company	Private limited liability company	Yes	Yes	GPs + care consortium (H+HC+N&C)	GPs + care consortium (H+HC+N&C)	29	62
4	Private limited liability company	Private limited liability company	Yes	Yes	GPs	GPs	111	113
6	n.a.	Limited partnership	n.a.	No	n.a.	Managing partner: GP lab Partners: 150 GPs	n.a.	85
7	Foundation	Foundation	No	No	Foundation	n.a.	7	110
8	Cooperative association	Cooperative association	No	No	GPs	GPs	29	35
9	Foundation	Foundation	Yes	Yes	Foundation	n.a.	39	130
10	Private limited liability company	Private limited liability company	No	No	GPs	GPs	31	40

n.a. = not applicable; H = hospital; HC = home care; N&C = nursing and care.
* = applies to legal entity into which the care group had merged.

Table 2.2 The contracted service providers and their types of contracts, as included in the care group bundled payment contracts in 2010.

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

C = contracted; S = salaried staff of care group; ^ = contracted via a health care agency or GP and hence not employed by care group; # = e-mail or telephone consultations; ◊ = limited to new patients or those in insulin initiation phase; * = grader under ophthalmologist supervision; β = advisory arrangements with internist, non-remunerated due to small numbers of patients.

	6		7		8		9		10	
	+	(C)	+	(C)	+	(C)	+	(W)	+	(C)
	+	(C/C^)	+	(C^)	+	(C^)	+	(W)	+	(C^)
	+	(W)	+	(C^)	+	(C^)	-		+	(C^)
	+	(C^)	+	(C^)	+	(C^)	+	(W)	-	(C^)
	+	(C)	+	(C)	+	(C^)	+	(W)	+[◊]	(C)
	-	-	+	(C^)	+	(C)	+	(C^)	+	(C)
	+[#]	n.v.t[β]	+[#]	(C)	+[#]	(C)	+[#]	(C)	+	(C)
	-		-		-		-		-	
	-		-		-		-		-	
	-		-		-		-		-	
	-		-		-		-		-	
	+	(C)	+	(C)	-		-		+	(C)
	-		-		-		-		-	
	-		-		-		-		-	
	-		-		-		-		-	
	-		-		-		-		-	
	+	(C)	-		+	(C)	+	(C)	-	
	+	(C^)	-		+	(C^)	+	(C)	-	
	+	(C^)	-		-		+	(C^*)	+	(C^)

Information technology and the transparency of care

Five of nine care groups had integrated information systems

Table 2.3 shows the methods used by each care group to collect data. Five groups were using integrated information systems (IISs), one group used a separate system alongside the GPs' information systems (GISs) and the three other groups extracted data from the individual GISs.

Not all subcontracted providers had access to care group information systems

As Table 2.3 shows, not all subcontracted providers were given access to care group record systems or recorded data in them properly. This was true in particular of providers not working in GP practices. As a consequence, the care group information systems may have supplied inadequate information on tests and check-ups. Generally it appeared that more providers had system access in care groups with an IIS than in those without one.

Table 2.3 Information systems used by the care groups, and providers having access.

Care group	Patient record system	Access to system by:		
		Health care providers in GP practices	Contracted providers outside GP practices†	Non-contracted providers
1	IIS	Yes	Yes (dieticians, internists, ophthalmologists, labs, optometrists)	No
2	IIS	Yes	Yes (dieticians, internists, nephrologists, ophthalmologists, podiatrists)	Leg ulcer nurses, medical psychologists, vascular surgeons, rehabilitation doctors
3	IIS	Yes	Some (dieticians, internists, ophthalmologists, labs, podiatrists, optometrists, diabetes nurses)	No
4	Separate system alongside GISs	Yes	Some (dieticians, labs, optometrists, podiatrists)	No
6	IIS	Yes	Yes (dieticians, internists, labs, podiatrists, optometrists, diabetes nurses)	No
7	Data extraction from GISs	Yes	No	No
8	IIS	Yes	Some (dieticians, internists, ophthalmologists, podiatrists, optometrists)	No
9	Data extraction from GISs	Yes	No	No
10	Data extraction from GISs	Yes	Labs only	No

† See Table 2.2 for the types of health care providers contracted by each care group.

No information system access for providers without care group contracts
Care group 2 was the only one that gave non-contracted care providers access to its information system, and that applied only to staff of secondary care institutions. Other care groups had other ways of transmitting medical data to and from non-contracted service providers, such as by fax, telephone or e-mail; those providers were hence unable to enter data about the services they themselves had provided. Because eye examinations, in particular, were also carried out by people outside GP practices, such information was insufficiently available at the care group level (see also section 2.2 and Figure A4.3).

All care groups supplied reflective and accountability information to their care providers and health insurers
Considerable time and energy had been devoted in all care groups in the two years studied to gaining more clarity about the quality of the care delivered. All groups therefore formulated reflective information for their health care providers. Care groups 6 and 7 had their reflective and accountability information collated by an external company, as was stipulated in their bundled payment contract with the preferential insurance company. The other seven groups collected their reflective and accountability data themselves. Although the managers of all nine groups reported supplying reflective information, some of the associated providers denied having received any.

Form and frequency of reflective information varied between care groups
The frequency with which reflective feedback was provided differed from group to group. Seven care groups provided it once a year, one group twice a year and one group four times a year. The ways the information was supplied also differed: during professional development sessions, in printed reports, in on-site sessions with members of expert teams (diabetes nurse specialists, internists or GPs specialised in diabetes) or via the IIS. Not all providers found the IIS method informative; some reported needing help to interpret the information and use it to improve their work.

> *They can consult it, as it's updated every month and you can always retrieve previous months as well.... So far they've been invited in once a year for a feedback and benchmarking session, and on that occasion we supply them with a written report, because we collate the information slightly differently.*
> Care group manager

Quality control of record keeping varied between care groups
Care groups differed widely in the efforts they made to ensure the quality of data recording. One care group provided financial incentives for adequate record keeping. Another provided reflective feedback on the quality of the data recorded, including comparisons of the different GP practices. The other seven groups had not developed specific policies for improving the record-keeping discipline of the health care providers. Although groups that had switched to new IT packages did indicate that all their providers had received training to work with the new system, no subsequent attempts had been made to improve record-keeping quality.

Stricter requirements have been introduced for record keeping by GPs and practice nurses to improve consistency, and also for filing more reports. That has made more data available and it is more reliable.
Care group annual report

The dietician shall use [name of information system] in the delivery and reporting of services, complying with all system requirements. In the event of problems, the dietician shall have free access to the helpdesk of [name of care group].
Model contract between care groups and dieticians

10% of the GP practice's annual fee per patient (the remuneration for GPs, practice nurses and practice assistants) is reserved for the incentive payment. A GP practice receives it if it has kept full records for more than 90% of its patients (in conformity with the sets of indicators specified by the manuals of the respective disease management programmes).
Contract between care group and GP

Oversight and governance

The Dutch health care sector has established a Health Care Governance Code that sets ground rules and standards of conduct for good governance, effective oversight, and accountability reporting on governance and oversight (BoZ, 2009). The code recommends avoiding conflicts of interest at all times. For example, 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 care groups to nominate new board members (RVZ, 2009), as their independence would not be fully guaranteed.

Five care groups had a supervisory board

Five of the nine care groups (2, 3, 4, 6 and 9) had supervisory boards (Table 2.4), consistent with the findings of the initial evaluation. In care group 2 in particular, the way the members were selected for the board did not appear to conform to the terms of reference set out in the Health Care Governance Code. One of its three members belonged to the management board of a hospital that was engaged by the care group as a subcontractor, and another was a GP who also was a shareholder of the care group and simultaneously was also one of its subcontractors.

In the other four groups with supervisory boards (3, 4, 6 and 9), the selection of board members did appear consistent with the governance code, but two such groups (3 and 4) were owned by a holding company that also owned the general practice laboratory that was contracted by the care group as a subcontractor. This meant that the care group had to negotiate with a subcontractor that could also be seen as its 'employer'; such an oversight arrangement also seems questionable.

Table 2.4 Care groups with and without supervisory boards.

Care group	Board of supervision	Board composition
1	No	-
2	Yes	Members were one patient not under treatment in group 2, one hospital management board member and one GP working in the same catchment area.
3	Yes	Care group was an operating company in a limited liability holding company and was accountable to the supervisory board of the holding company.
4	Yes	Supervisory board comprised of the director of a regional bank, the director/occupational health doctor of an occupational health and safety service, the director of a reintegration agency and the retired director of a project management and consultancy agency.
6	Yes	Care group was an operating company in a limited liability holding company and was accountable to the supervisory board of the holding company.
7	No	Members were an interim manager (with finance and housing sector expertise), a business owner (with IT expertise) and a professor who was also a practising GP in another region.
8	No	-
9	Yes	Members were the chair of the executive committee of a national organisation, two independent consultants, the director of a management consultancy firm, the chair of a hospital management board and the director of a national organisation.
10	No	-

2.1.2 Bundled payment contracts

This subsection examines the bundled payment contracts for diabetes that had been formalised between care groups and health insurance companies. We discuss both the health care services covered and the ways the fees evolved in the 2007-2011 period.

Health care components covered by the contracts

The basic precept of the bundled payment approach is that the content of the bundled payment contracts should conform to the requirements set by the NDF Health Care Standard. Table 2.5 shows the health care services covered by the contracts in each of the care groups and indicates whether they were in keeping with the NDF Health Care standard.

Differences in contract content narrowed in the 2007–2011 period
As Table 2.5 demonstrates, there were no substantial differences between the various bundled payment contracts in terms of the health care components they covered. They were much the same in the diagnostic phase, not covering the formal diagnosis but covering an in-depth risk assessment. They also corresponded in terms of the standard periodic check-ups (three-monthly check-ups and full annual check-up) and the yearly eye and foot examinations.

All contracts also included arrangements for supplementary foot exams, dietary counselling, additional diabetes-related GP consultations, and certain advisory services by internal medicine specialists (internists). The latter were specified as teleconsultations via the IIS or the telephone; face-to-face consultations with internists were not contracted in any of the bundled payment agreements, with the exception of the contract in care group 4, which stipulated that an internist perform a limited number of consultations per year in GP practices. There were great similarities between all bundled payment contracts in terms of the services they excluded. No cover for supervised exercising, psychosocial care, foot care, medical aids or non-diabetes-related GP consultations was included in any contract, even though several such services are specified in the NDF Health Care Standard.

More differences in contract content had existed in 2007, including whether additional GP consultations, supplementary foot exams, foot care, dietary counselling for existing patients and supervised exercising were covered. Such differences had diminished by 2010 (see also Table 2.5).

Cover reduced for some services

Although dietary counselling was included in all bundled payment contracts, in some care groups it was maximised to an average of one hour per patient per year. In care group 10, it was covered only for ‘new’ patients or those in insulin initiation. During our first evaluation it had still been unclear whether dietary advice to ‘existing’ patients should or should not be part of the bundled payment contracts.

In the present study, fewer eye examinations were being contracted than at the time of Evaluation 1. The contract employed by care group 4 since 2010, for instance, only allowed for biannual, rather than annual, eye exams. The terms of that bundled payment contract thus failed to comply with the NDF Standards of Care in terms of frequency, although they did conform to the guidelines for type 2 diabetes issued by the Dutch College of General Practitioners (NHG; Bouma et al., 2006).

Smoking cessation not contracted

Although helping patients to stop smoking is specified by the NDF Care Standards, none of the care groups we studied now included it in their bundled payment contracts (Table 2.5); four of them had covered it at the time of Evaluation 1. This does not mean that patients now no longer received support in smoking cessation. It was paid for through other sources, such as supplementary health insurance, and was thereby outside the remit of the care groups.

Lab testing not included in three contracts but covered separately

The bundled payment contracts of care groups 2, 8 and 9 did not cover laboratory testing (Table 2.5). It was unclear why the insurance companies in question did not contract lab exams.

Almost half of the care groups had more than one bundled payment contract

As Table 2.6 shows, two of the nine care groups had bundled payment contracts in 2011 for the integrated programme for CVRM. Four groups had contracts for COPD, as compared to two in 2010. Several other groups had these programmes in the planning stage.

Table 2.5 Content of the diabetes bundled payment contracts by care group in 2010.

		Care group								
	Required by NDF Care Standard	1	2	3	4	6	7	8	9	10
Diagnostic phase										
Formal diagnosis	No	-	-	-	-	-	-	-	-	-
Initial risk assessment	Yes	+	+	+	+	+	+	+	+	+
Treatment and standard check-ups										
12-month check-ups	Yes	+	+	+	+	+	+	+	+	+
3-month check-ups	Yes	+	+	+	+	+	+	+	+	+
Obtaining fundus images	Yes	+	+	+	+	+	+	+	+	+
Evaluating fundus images	Yes	+	+	+	+	+	+	+	+	+
Foot examinations	Yes	+	+	+	+	+	+	+	+	+
Supplementary foot exams	Unclear	+	+	+	+	+	+	+	+	+
Foot care	No	-	-	-	-	-	-	-	-	-
Laboratory testing	Yes	+	-	+	+	+	+	-	-	+
Smoking cessation support	Yes	-	-	-	-	-	-	-	-	-
Exercise counselling	Yes	+	+	+	+	+	+	+	+	+
Supervised exercising	No	-	-	-	-	-	-	-	-	-
Dietary counselling	Yes	+	+	+	+	+	+	+	+	+[#]
Prescribing medicines	No	-	-	-	+	+	+			
Insulin initiation	No	+	+/-[Ω]	+	+	+	+	+	+	+
Insulin adjustment	No	+	+	+	+	+	+	+	+	+
Psychosocial care	No	-	-	-	-	-	-	-	-	-
Medical aids	No	-	-	-	-	-	-	-	-	-
Additional GP consultations (diabetes-related)	Unclear	+	+	+	+	+	+/-	+	+	+
Additional GP consultations (non-related)	No	-	-	-	-	-	-	-	-	-
Specialist advice	Yes	+	+	+	+	+	+	+	+	+

= Dietary counselling contracted for new patients only (module 1) and for those in insulin initiation phase (module 3), but available to other patients on specific GP referral; Ω = Only for patients injecting insulin twice a day.

Table 2.6 Bundled payment contracts for the management of chronic diseases other than diabetes, by care group, 2010 and 2011.

Care group	Bundled payment contract for:			
	VRM		COPD	
	2010	2011	2010	2011
1	No	In preparation	No	In preparation
2	No	No	In preparation, pilot	Yes
3	No	In preparation	No	Yes
4	In preparation	Yes	Yes	Yes
6	No	No	In preparation	No
7	No	No	No	No
8	No	No	No	No
9	No	No	In preparation	In preparation
10	Yes	Yes	Yes	Yes

Fees for bundled payment contracts

Differences in fees paid for bundled payment contracts narrowed in the 2007-2011 period

Although differences between care groups still existed in 2011 in terms of the fees agreed for bundled payment contracts, the differentials had diminished during the 2007-2011 period (Figure 2.1). Fees in 2011 ranged from € 381 to € 459, compared to a range of € 258 to € 474 at the time of Evaluation 1. The mean fee paid by the nine care groups remained virtually stable over that period. No allowance is made here for differences and modifications in the contracted services between and within care groups (Table 2.5), nor for the variations between the characteristics or disease severity of their patient populations.

One reason for the currently narrower spread in pricing may be that both care groups and insurance companies had gained expertise in the intervening years with regard to fee determination. Both had become more adept in negotiating competitive fees.

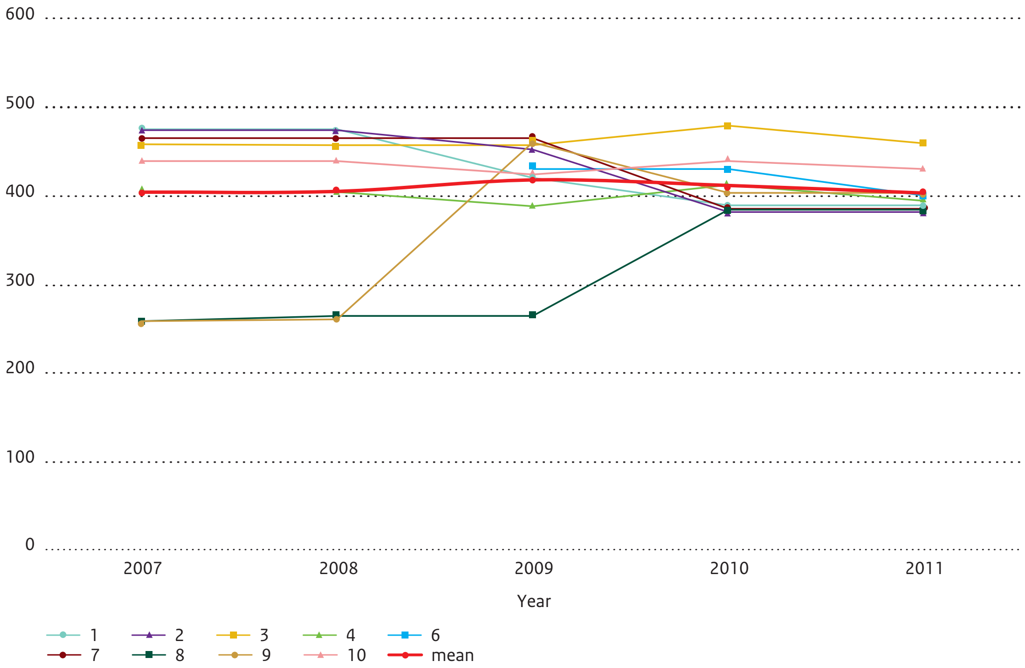
Performance-based remuneration not included in contracts

None of the contracts with insurance companies now allowed for performance-based remuneration. In Evaluation 1 we had encountered one contract that included a 10% bonus for the care group if it scored well on the patient experience survey and delivered accountability data on all required quality indicators. In the contracts signed between care groups and individual or institutional service providers, only care group 3 now included provisions for performance-based remuneration. The contracted GPs received the final 10% of their fee only if they had kept complete records for more than 90% of their patients.

No information available on ratio between contracted fees and care group costs

As in Evaluation 1, most care groups were unwilling to provide information about fees they paid for the services of individual health care providers and agencies, citing the need for trade secrecy in the new market environment. We can therefore provide no indication of the actual costs incurred by the care groups in purchasing the required services.

Figure 2.1 Pricing trends in contracts for bundled payment (in € per patient per year)



Lack of clarity about additional streams of care group funding

The present evaluation was confined to the bundled payment contracts and could therefore shed no light on whether care groups generated income from other sources or how bundled contracts might have been synchronised with other funding and pricing systems. Interviewees reported that there was considerable discussion in particular about how the separate existing funding schemes for practice nurses should be adapted to the services they render under the bundled payment contracts. This was important in order to avoid double payment.

2.2 Quality of the services provided by care groups at two years and three years after bundled payment implementation

Outline

Our findings on the quality of the services rendered by the care groups are highlighted below in terms of the process and outcome indicators defined in the NDF Health Care Standard (NDF, 2007) and the NDF diabetes management quality indicator set (NDF, 2011a). The results are based on the patient data recorded by the care groups and reported to the RIVM. Before we summarise the results in section 2.2.2, we briefly discuss the sample selection and some methodological issues that are important for interpreting the results (section 2.2.1). A detailed description of the methods and results can be found in Appendices 2 and 3.

2.2.1 Some brief comments on the results

Not all of the nine care groups could furnish data for every year

The central issue in Evaluation 2 was whether changes in process and outcome indicators could be observed two years and three years after the introduction of bundled payment. For various reasons explained in Appendix 2, care groups 6 and 8 were unable to provide reliable patient record data after two years. For them we therefore include only the third-year data.

Current sample not comparable to sample in Evaluation 1

For a number of reasons, the sample studied in the current evaluation is not comparable to that in our previous evaluation. First, there were different numbers of care groups included. Care group 5 did not take part in Evaluation 2, and care groups 6 and 7 had delivered no patient data for Evaluation 1. Second, the numbers of participating GPs, and hence the numbers of new patients, had sharply increased by the time of Evaluation 2. Third, many patients from Evaluation 1 were no longer present in the second sample. Some had died or relocated, but for the large majority the reason for loss to follow-up is unknown.

Longitudinal design of data collection

The primary focus of the evaluation is on the longer-term effects of the implementation of bundled payments on the quality of diabetes care. This required a longitudinal design, to enable patients to be tracked over time. One drawback to a longitudinal approach is that individuals who are lost to follow-up or who enter the programmes later cannot be included in the analyses.

No results available for several indicators owing to format of data delivery

All care groups opted to continue supplying the RIVM with the patient record data in the same format used in Evaluation 1 (see Appendix 2), rather than that of the newer provisional Minimal Dataset introduced by the Health Care Transparency Programme (Zichtbare Zorg, 2009a). This was partly for practical reasons and partly because software suppliers would have charged extra for reporting the data in the latter format. In the Evaluation 1 format, the indicators for percentages of patients with any complications, with foot problems and with eye problems were not uniformly recorded. Some care groups said they had these indicator data available, but did not deliver them because of the chosen format. We are therefore unable to report results for these indicators.

Box 2.3 Inclusion criteria for the sample

Patients satisfying the following criteria were included in the study sample:

1) The care group was claiming a bundled fee for the patient at the start of Evaluation 2 (first quarter of 2008).
2) The patient remained under the care of the care group during the entire time frame of the study (1 January 2008 to 30 June 2010).
3) The patient had at least one standard diabetes check-up during the sample selection period (1 January 2008 to 30 April 2008).

Table 2.7 Patient characteristics on 1 June 2010, by care group and for total sample.

Characteristics	Care group									
	1	2	3	4	6	7	8	9	10	Total
N	333	4495	1274	8358	1651	5824	563	838	1966	25,302
Mean age	69.5	67.5	69.3	69.2	67.7	67.7	70.3	67.1	69.0	68.4*
Gender (% female)	53.2	51.0	50.0	51.3	54.9	49.8	52.0	58.8	49.6	51.2
Mean diabetes duration (years)	8.1	11.4	7.9	8.0	7.7	6.5	8.0	8.2	7.4	8.3*
Type 2 diabetes mellitus (%)	100.0	93.4	100.0	94.2	99.8	99.6	-	80.9	96.4	95.7*
Type 1 diabetes mellitus (%)	0.0	6.6	0.0	5.8	0.2	0.4	-	19.1	3.6	4.3*

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

2.2.2 Determining the sample on the basis of the inclusion criteria

Less than half of the patients met inclusion criteria

Only those patients that satisfied the predefined selection criteria (Box 2.3) were included in our analyses. Data were supplied for 53,024 patients. At the start of the study, bundled fees had been invoiced (inclusion criterion 1) for 72% (n= 38,231) of them. Of these, 86% (n= 32,754) remained under the care of their care group for the entire period of the study (criterion 2); and 77% (n= 25,302) of the latter received at least one standard check-up during the sample selection period (criterion 3). A total of 25,302 patients thus met all three criteria and were included in the analyses.

2.2.3 Description of the sample

Heterogeneity across care groups in both numbers and characteristics of patients

The numbers of patients per care group that were included in the sample ranged from 333 in care group 1 to 8,358 in care group 4 (see Table 2.7). The nine care groups differed significantly in terms of age and diabetes duration of their patients. The mean age in the entire study population was 68.4 (with care group means ranging from 67.1 to 70.3) and the mean duration of diabetes was 8.3 years (range of group means 6.5 to 11.4). Some 4.3% of the total sample had type 1 diabetes and some 51.2% were female. Care groups 1, 3 and 8 had no type-1 patients under their care.

2.2.4 Quality of care in terms of process indicators

Table 2.8 summarises the results on the process indicators at two and three years following the implementation of bundled payments. A more detailed description is given in Appendix A3.3.

Small increase in numbers of patients receiving four check-ups per year

The NDF Health Care Standard requires that diabetes patients receive check-ups four times a year (NDF, 2007). Four care groups supplied information on this for both the second and third year after implemen-

Table 2.8 Quality of diabetes care in terms of process indicators in second and third years after bundled payment implementation, percentages by care group and for total sample.

Care group	1		2		3		4	
	year 2	year 3	year 2	year 3	year 2	year 3	year 2	year 3
Patients with:								
At least 4 check-ups	58.3	70.3*	45.2	57.4*	52.9	68.7*	59.7	70.7*
Eye examination in past 12 months	-	38.4	32.6	31.3	60.1	69.1*	45.5	41.4*
Eye examination in past 24 months	-	-	-	44.8	-	88.0	-	54.5
Foot examination	-	63.7	68	79.2*	67.2	84.4*	92.9	91.7*
HbA1c test	74.2	97.0*	89.7	93.2*	93.6	94.3	94.9	94.8
Blood pressure measurement	98.5	97.3	91.1	91.8	96.7	96.9	99.2	99.2
BMI measurement	99.4	97.3*	92.1	92.1	96.6	96.9	99.1	99.1
Creatinine clearance calculation or test	71.8	80.8*	91.2	94.2*	60.8	75.0*	86.5	86.8
Urine test (spot sample) for albumin or albumin- creatinine ratio	69.1	46.8*	63.8	74.7*	55.2	69.1*	-	-
LDL test	71.5	78.7*	83.7	87.6*	66.2	83.0*	88	88.5
HDL test	72.1	79.0*	86.5	90.6*	66.8	84.2*	-	-
Total cholesterol	72.7	80.5*	87.3	91.3*	66.8	84.1*	89.7	90.2
Triglyceride test	72.4	80.5*	87.2	91.2*	66.7	84.1*	88.5	88.3
Smoking status known		100		100		96.1		78.8
Dietician consultation	-	21.6	21	16.1*	-	-	5.9	3.4*
Composite indicators								
Tested/known: HbA1c, blood pressure, BMI, total cholesterol, creatinine clearance, foot exams	-	58.3	57.8	72.9*	60.7	74.9*	83.8	84.3
Lipid profiling (total cholesterol, triglycerides, HDL, LDL)	71,2	78,7*	83,7	87,5*	66	82,8*	-	-

* = significant (P < .05)

	6		7		8		9		10		Total	
	year 2	year 3	year 2	year 3	year 2	year 3	year 2	year 3	year 2	year 3	year 2	year 3
	-	38.1	-	-	-	66.1	-	-	-	-	54.5	66.3*
	-	27.1	52	42.8*	-	63.6	42.8	54.2*	77.3	73.5*	48.1	44.6*
	-	-	-	72.7	-	-	-	71.6		92.4		63.0
	-	58.9	65.1	70.8*	-	73	76.3	77.8	88	84.8*	78.4	82.4*
	-	89.2	82.6	81.3*	-	77.6	93.9	95.2	99.3	99.0	90.8	91.4*
	-	89.9	86.8	85.4*	-	94.5	88.8	82.2*	98.7	98.2	93.9	93.4*
	-	90.6	79.9	83.1*	-	94.3	86.9	81.4*	91.6	91.5	91.7	92.3*
	-	83.6	75.9	73.0*	-	60	90.8	91.2	92.5	92.1	83.8	84.6*
	-	68.6	65.6	68.9*	-	45.8	86.8	88.4	74.2	72.6	66.6	71.8*
	-	81.5	75.2	71.8*	-	63.1	90	93.0*	96.3	95.7	83.3	84.4*
	-	83.8	77.7	73.9*	-	66.1	92.5	94.4	96.5	94.3	82.7	83.9*
	-	83.9	77.7	74.0*	-	65.9	92.7	94.4	96.6	96.8	85.4	86.6*
	-	83.7	77.5	73.7*	-	65.9	92.5	94.4	96.5	93.7*	84.9	85.5*
		100		93.7	100		98		68.5		88.5	
	-	2.8	0.1	5.2*	-	-	-	-	-	-	7.7	7.4*
	-	51.1	52.5	60.5*	-	46.4	64.6	60.4*	77.4	74.2*	68.1	73.7*
	-	81.5	74.8	71.6*	-	62.7	89.9	93.0*	96	90.3*	80.3	81.3*

Box 2.4 Average HbA1c values per care group by medication use

Most care groups did not supply patient record data on the use of medication by their patients. To meaningfully compare patients' HbA1c values, one needs to take therapeutic interventions (diet, tablets and/or insulin) into account. We therefore queried patients on medicine use in our patient survey. The table below compares care groups in terms of mean HbA1c values broken down by type of therapy. Patients reporting insulin use had higher average values than those taking no tablets or insulin.

Mean HbA1c (mmol/mol) per care group by type of therapy at T3

	Care group					
	1	**2**	**4**	**6**	**9**	**10**
n	187	235	216	86	200	192
No tablets or insulin	45.8	44.7	47.4	46.0	42.9	43.1
Tablets	48.6	49.1	51.3	51.2	48.4	48.2
Insulin (with or without tablets)	54.7	57.8	55.8	63.3	57.0	52.2

ting bundled payment. In these groups, a total of 54.5% patients received four check-ups in year 2 and 66.3% in year 3 (Table 2.8).

Although we cannot judge the clinical relevance of this process indicator, it does shed light on the care delivered by the care groups in question. The real purpose of diabetes care is not, of course, to provide four check-ups a year, but to ensure that the patients' diabetes is under control. More and more care groups were abandoning the periodic three-monthly check-ups for well-controlled patients (see also sections 2.6 and 3.2 below). Several groups were hence not requiring their health care providers to keep records on the numbers of check-ups given.

Process indicators HbA1c, blood pressure and BMI above 90% in years 2 and 3
In both the second and the third year after bundled payment implementation, the process indicators based on percentages of patients receiving a HbA1c test, a blood pressure check and a BMI measurement all scored above 90% (Table 2.8), and there were only minor differences between the two years. An optimum attainable testing rate appears to exist; care groups that surpassed 90% in year 2 proved unable to improve their scores in year 3.

Rates for eye testing lower than those for other procedures
Eye examinations were recorded for 48.1% of patients in year 2, and the rate declined to 44.6% in year 3 (Table 2.8). There were wide differences between care groups, ranging in year 3 from 27.1% in group 6 to 73.5% in group 10. It should be pointed out that such figures are underestimates of the actual percentages of yearly eye examinations. For one thing, some patients were examined by secondary care ophthalmologists, and in some care groups these were not covered by the bundled payment contracts and were

not reported to the care group. For another thing, not all ophthalmologists had access to the care group record systems, and examinations may not have been reported for that reason (see also section A3.1). Moreover, in some care groups the insurance companies no longer contracted eye examinations on an annual, but on a biannual basis. That was because the NHG guideline allows biannual eye check-ups under certain conditions (Bouma et al., 2006), as do the guidelines issued by the Dutch Institute for Healthcare Improvement (CBO, 2006a).

Rates for foot examinations increased from year 2 to year 3
In the second year after bundled payment implementation, 78.4% of patients received foot examinations, and the figure increased to 82.4% in year 3 (Table 2.8). The increase was significant in care groups 2, 3 and 7.

Rates of yearly LDL cholesterol testing increased in most care groups
Five of the nine care groups reported increases in the percentages of patients whose LDL was tested, and the increase was significant in four of them (Table 2.8). In the total sample, 83.3% of patients were tested in year 2, rising to 84.4% in year 3.

Composite indicators

In addition to the single indicators reported so far, we assessed two composite process indicators.

Increase in percentage of patients tested for all indicator components
In the third year of bundled payment, 73.7% of the patients were examined for HbA1c, blood pressure, BMI, total cholesterol, renal clearance and foot complications, up significantly from the 68.1% in year 2. Considerable variation was seen between care groups, from 46.4% in group 8 to 84.3% in group 4 (year 3).

Slight increase in rate of yearly lipid profiling
Lipid profiles consist of total cholesterol, triglycerides, HDL and LDL readings. In year 2, 80.3% of patients underwent full lipid profile testing, and this increased significantly to 81.3% in year 3 (Table 2.8).

2.2.5 Quality of care in terms of outcome indicators

Patient outcome indicators were assessed at three points in time: at the beginning of the second year after the implementation of the bundled payment arrangement in their care group (baseline assessment, T1); at the end of the second year (T2); and at the end of the third year (T3). We summarise here the results of the various outcome indicators. Appendix 3.4 reports the results in more detail by presenting additional figures and tables.

Changes in mean HbA1c values varied between care groups
The average HbA1c value in the entire patient sample increased slightly from 50.5 mmol/mol at T1 to 51.0 mmol/mol at T3 (Table 2.9). Significant rises occurred in five care groups, and significant declines in three others; two of the three latter groups had reported high average HbA1c values at T1. The levels we found may be considered good in comparison with those reported in Dutch and international literature (Sönnichsen et al., 2010; Schäfer et al., 2010a; ERFC, 2011; ACCORD, 2011). The percentage of patients with HbA1c values below 53 mmol/mol at T1 was 66.0%, but it decreased significantly to 63.2% at T3; in the

Table 2.9 Quality of care in terms of outcome indicators, at T1 (first value in second year after bundled payment

Care group	**1**		**2**		**3**		**4**	
Assessment	**T1/T2#**	**T3**	**T1**	**T3**	**T1**	**T3**	**T1**	**T3**
Outcome indicator								
HbA1c								
Mean (mmol/mol)	48.3	49.4*	56.2	54.7*	48.3	50.2*	48.5	50.1*
% of patients <53 mmol/mol	76.6	74.9	42.3	50.2*	76.4	66.9*	73.0	66.7*
% of patients >69 mmol/mol	0.8	1.7	14.3	11.7*	1.2	1.8	2.5	2.8
Systolic blood pressure								
Mean (mmHg)	140	139	140	137*	139	139	141	140*
% of patients <140 mmHg	47.4	52.0	47.6	58.2*	52.6	52.5	42.9	46.0*
BMI								
Mean (kg/m^2)	29.71	29.73	29.32	29.26	29.48	29.35*	30.21	30.15*
% of patients <25 kg/m^2	15.2	15.9	18.9	20.6*	16.4	18.0	14.3	15.7*
% of patients >30 kg/m^2	42.4	43.9	37.6	37.3	40.9	39.4	45.9	45.2
Kidney function								
% of patients with clearance >60 ml/min (MDRD)	-	-	-	-	-	-	-	-
% of patients with microalbuminuria	-	-	-	-	-	-	-	-
% of patients with proteinuria	-	-	-	-	-	-	-	-
Lipid profile								
Mean LDL (mmol/l)	2.6	2.5*	2.6	2.4*	2.3	2.3	2.6	2.4*
% of patients with LDL <2.5 mmol/l	49.0	57.8*	47.8	60.0*	59.9	62.2	46.4	55.8*
Mean HDL (mmol/l)	1.3	1.3	1.2	1.3*	1.2	1.3*	-	-
Mean triglycerides (mmol/l)	1.6	1.5*	1.7	1.6*	1.8	1.8	1.9	1.8*
Mean total cholesterol (mmol/l)	4.6	4.5*	4.6	4.4*	4.4	4.4	4.7	4.5*
% of patients with total cholesterol <4.5 mmol/l	48.0	55.6	47.6	57.2*	57.7	57.5	42.9	53.0*
Smoking								
% of smokers among patients with known smoking behaviour	-	10.5	-	14.7	-	14.7	-	18.6
% of quitters	-	-	-	-	-	-	-	-
Complications								
% of patients with foot problems	-	-	-	-	-	-	-	-
% of patients with eye problems	-	-	-	-	-	-	-	-
% of patients with any complications	-	-	-	-	-	-	-	-

= T1 values not known for care groups 1, 6, 7 and 8 (except blood pressure and BMI for group 1), hence T2 values
* = significant (P < .05).

implementation) and T3 (final value in third year after implementation), by care group and for total sample.

	6		7		8		9		10		Total	
	T2#	T3	T2#	T3	T2#	T3	T1	T3	T1	T3	T1	T3
	51.2	55.0*	49.8	49.9	49	50.4*	53.0	51.6*	50.1	49.3*	50.5	51.0*
	65.2	50.7*	70.1	69.1	72.8	71.9	56.2	61.7	69.9	66.8*	66	63.2*
	5.5	10.1*	2.3	2.4	0.9	4.4	8.7	6.8	4.8	3.1*	5.3	4.7*
	137	136	141	140*	138	139	144	140*	140	137*	141	139*
	54.1	56.2	44.9	46.6*	54.3	50.4	39.3	52.2*	48.3	61.7*	45.2	51.3*
	29.29	29.17	29.61	29.53*	28.98	28.97	30.02	29.69*	30.09	30.04	29.93	29.86*
	19.3	20.0	17.5	18.0	19.7	18.6	12.7	14.2	13.0	14.3	15.3	16.8*
	37.7	37.8	40.4	40.0	34.1	34.8	43.8	41.5	45.0	43.7	43.5	42.7*
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	2.7	2.5*	2.6	2.5*	2.7	2.6	2.5	2.5	2.6	2.1*	2.6	2.4*
	43.6	48.9*	50.3	53.4*	42.0	42.0	52.4	51	49.2	71.5*	48.2	58.6*
	1.2	1.2	1.4	1.4	1.3	1.3	1.3	1.3	1.1	1.2*	1.2	1.3*
	2.0	1.9	1.7	1.7*	1.7	1.7	1.7	1.6	1.6	1.5*	1.8	1.7*
	4.8	4.6*	4.7	4.6*	4.8	4.8	4.5	4.5	4.3	4.0*	4.6	4.4*
	41.0	44.7*	45.6	49.6*	41.4	35.7	50.8	51.4	57.4	73.1*	46.8	56.2*
	-	14.5	-	15.6	-	23.8	-	13.5	-	18.2	-	16.4
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-

reported (final value in second year after implementation) and differences with T3 assessed; not included in totals.

Box 2.5 Findings not readily comparable to Dutch or international literature

A considerable amount of data on the quality of diabetes care has been reported in Dutch and international literature (Gnavi et al., 2009; Janssen et al., 2009; Zoungas et al., 2009; Calvert et al., 2009; Cooper et al., 2009; Holbrook et al., 2009; Cleveringa et al., 2008; Rutten, 2008; Sönnichsen et al., 2010; Schäfer et al., 2010a; ERFC, 2011; ACCORD, 2011). Comparisons of those results with our evaluation are constrained by possible differences in patient populations (including variations in patient characteristics such as socioeconomic status, age and ethnicity) and by incompatible or missing data on multimorbidity or medicine use. Often it is also unclear what percentages of patients are in specialist treatment or what treatments patients are receiving. More clarity is needed about such matters before reliable comparisons can be made.

same period, though, the percentage with levels higher than 69 mmol/mol decreased significantly from 5.3% to 4.7%. Care groups thus apparently succeeded in improving the glycaemic control of patients who were poorly controlled at the start of the evaluation, but they appeared less successful in maintaining good glycaemic control in patients that were initially well controlled. A recent study in England found that patients with poor glycaemic control who progressed to moderate control had lower rates of emergency hospital admissions (Dusheiko et al., 2011).

Mild reduction in mean systolic blood pressure

A small but significant decrease occurred in the average systolic blood pressure of the total sample, from 141 mmHg at T1 to 139 mmHg at T3 (Table 2.9), and the percentage of patients measuring below 140 mmHg (the target level) increased from 45.2% to 51.3%. Five care groups (2, 4, 7, 9 and 10) showed significant rises in the percentages of patients remaining below the target level. Care groups thus seemed increasingly able to meet the systolic blood pressure targets.

BMI levels little changed

Four of the nine care groups showed significant reductions in the average BMI levels of their patients (Table 2.9), and mean levels did not increase in any group. The sample as a whole showed a slight but significant decrease from 29.93 kg/m^2 to 29.86 kg/m^2 from T1 to T3. The percentage of patients with BMI measurements below 25 kg/m^2 increased by 1.5 points from 15.3% to 16.8%; the increase was significant in two care groups (2 and 4). The percentage measuring above 30 kg/m^2 did not change significantly in any group.

Higher percentages with LDL below 2.5 mmol/l

Average LDL cholesterol levels dropped significantly over the entire sample, from 2.6 mmol/l at T1 to 2.4 mmol/l at T3 (Table 2.9). Levels did not increase in any care group. Overall, the percentage of patients measuring below 2.5 mmol/l increased between T1 and T3 from 48.2% to 58.6%, with significant rises in six groups (1, 2, 4, 6, 7 and 10).

2.3 Incentives for task reallocation and delegation

Outline

This section focuses on the reallocation and delegation of professional tasks within care groups and on the role that bundled payment arrangements may have played in that process. Box 2.6 defines what we mean by task reallocation and delegation. The text below discusses the various forms of reallocation and delegation that we observed in the course of our evaluation.

Various forms of task reallocation and task delegation were observed

Within the GP practices in all care groups, practice nurses played the pivotal role in diabetes care. They perform the three-monthly check-ups, the annual check-ups or parts of them, and the foot examinations, as well as giving general dietary recommendations. Some GPs and one insurance company reported that the delegation of tasks to practice nurses had already begun before the implementation of bundled payments.

The yearly eye examinations were previously done by ophthalmologists. In six care groups, they were now performed by optometrists, in two care groups sometimes by general practice laboratories and in two groups by retinal graders in hospitals. A grader is a nurse or other professional who has been accredited to evaluate fundus images under supervision of an ophthalmologist (NOG, 2006). In one care group, several GPs had obtained certifications to perform and assess eye examinations themselves (see also Figure A3.4). Eye examinations by graders were delegated tasks, and those by other types of practitioners were reallocated tasks.

Task reallocation was taking place not only within primary care, but also from secondary to primary care. Increasingly, insulin-dependent patients without complications were being treated in GP practices, whereas prior to bundled payment implementation they were often referred to specialist care (see also the adjacent quote). One reason why such reallocation was now possible was that more and more care groups were now requiring health care practitioners to take the basic primary care insulin therapy course taught by the Langerhans School of Diabetes. It has enabled many GPs and practice nurses to initiate and adjust insulin therapy. Three of our four interview contacts in health insurance companies also reported seeing a transfer of diabetes patients from secondary to primary care.

Box 2.6 The notions of task reallocation and delegation

In discussions about the effects that bundled payment arrangements could have on the shifting of tasks and the introduction of new professional disciplines in diabetes care, a number of concepts are used which are not always interpreted in the same ways. In this report we employ the terms *task reallocation* and *task delegation*. We describe here what we understand by these two concepts in this report.

Task reallocation is a structural reordering of tasks and transfer of responsibilities from one discipline to another (RVZ, 2002).

In **task delegation**, tasks are also structurally reordered, but the responsibilities for the tasks are not transferred to another health care provider. The new provider performs the tasks under the supervision of another, more highly qualified provider.

> *It's now the case that insulin start-up no longer means referral to secondary care. GPs initiate it themselves. They now come to us if the insulin therapy doesn't work after two tries.... My surgeries are constantly jam-packed, so every patient I treat goes back to primary care if at all possible.*
> Internal medicine specialist

Reshuffling of tasks and patients altered duties of health care providers
Through the reallocation and delegation of tasks, general practitioners had come to resemble supervisors rather than treatment providers. Specialists in internal medicine (internists) were playing increasingly advisory roles. Ophthalmologists had taken on more supervisory roles, and in some care groups they served merely as one party to a contract. In three care groups, they were contracted to carry out the yearly eye examinations, but they subcontracted the delivery of that task to a third party (see also the care group organisational diagrams in Appendix 4). The duties of diabetes nurse specialists had also changed. They were now more engaged with the supervision and training of practice nurses and the periodic inspection of GP practices than with the direct provision of health care to patients with diabetes. Some nurse specialists reported that they experienced this task differentiation as an impoverishment of their jobs.

> *It's a pity. It has completely removed every challenge from my line of work. If the practice nurses throughout the country are really going to take over all our tasks, then diabetes nurse specialists in primary care won't amount to anything any more.*
> Primary care diabetes nurse specialist

Not only tasks were reallocated, but also patients
All the internists we interviewed (n=8) reported a drop in the number of patients with type 2 diabetes in secondary care, because fewer patients were being referred from GP practices. They disagreed as to whether this had resulted from bundled payments. Several internists believed the shift had already begun beforehand, and that bundled payment arrangements had accelerated the changes at most. Others argued that it was definitely a direct consequence of bundled payments. To enable the reallocation of patients, care groups and internal medicine departments had laid down clear agreements about referral criteria to and from internal medicine. Many such arrangements were documented in the multidisciplinary protocols established by the care groups, and some had been incorporated into their integrated information systems.

Task reallocation could spawn conflicts of interest
Certain types of task reallocation could possibly lead to conflicts of interest. Some optometrists, for example, are also commercial opticians, and that could compromise the dividing line between health care and commercial marketing. The distinction between patients and consumers could become blurred in certain situations, with patients enticed into buying commercial products (see adjacent quote).

> *You can't earn a living from being an optometrist. The only way I pay my way is to sell eyeglasses and contact lenses, and that can create awkward situations at times. It's awkward for GPs, too. You have to work hard on this, and I'm always on my guard and try to convince them I'm not trying to sell glasses to someone they send for an eye exam. Yes, I'm very careful about that. But it's still difficult, because of course there's also optometrists that do it anyway. I notice that can be a bit of a sensitive matter sometimes. Yeah, yeah, I know I should send them on to a shop. It's difficult. It's a disadvantage. On the other hand, we've got no alternative. I can't keep a practice running for that 22 euros.*
> Optometrist

Awareness of risks to health care quality from task reallocation and delegation
Both health care providers and care group managers we interviewed expressed some critical reservations about the extensive reallocation of tasks. They especially pointed to the risk of deteriorating quality in GP care. Because practice nurses were focusing too narrowly on diabetes treatment, they were seen to be in less of a position to understand a patient's overall health needs. Moreover, some nurses were being assigned (or were assuming) too many responsibilities for which they were insufficiently trained, such as dietary or dosage recommendations. Informants also feared adverse effects on the knowledge levels of GPs because of their reduced contacts with their diabetes patients. As practice nurses took a large part of the care into their own hands, GPs risked losing touch with their patients.

Positive effects of task reallocation also acknowledged
Interviewees also identified some important advantages to the delegation of tasks from GPs to practice nurses. Nurses could devote more time and attention to the diabetes patients, leaving the GPs more time for other patients. Delivery of a large part of the diabetes care by practice nurses also brought about more structured and protocol-driven health care provision.

> *Just this morning I received an accountability report from a small group of GPs, which they have to draw up for the preferential health insurer to justify the work of the practice nurses.*
> *I was reading through it and it said literally: Our patients are more satisfied, they receive more attention, they receive more systematic treatment, we work more consistently through the IIS. Then I thought: funny to read that here, because I think it really does work like that.*
> Care group manager

Care groups seek a facilitating framework for task allocation and delegation
To avoid any deterioration of quality due to task allocation and delegation, some care groups had begun drawing up terms and conditions, including training requirements for practice nurses such as a basic course in primary care insulin therapy. Another example was a contractual requirement that GPs themselves perform at least one standard check-up per year on every diabetes patient; in practice that usually meant they conducted part of the yearly check-up. A further method of quality assurance was periodic inspection visits to GP practices by their care groups. During such visits, diabetes nurse specialists or specialised GPs discussed reflective feedback information and difficult-to-adjust patients with the practice nurses, agreeing on plans for any needed improvements. Care groups differed as to the form and frequency of inspection visits. One group visited only those GP practices that had scored poorly on process or outcome measures in

the yearly progress report; other groups visited each and every GP practice once a year. Some health insurance companies also set requirements as to the qualifications of providers specified in bundled payment contracts, for instance by requiring at least one practice nurse per GP practice.

> *We had to do the Langerhans insulin course, for example. That was more or less mandatory, and both the practice nurses and the GPs here did it. That's something that's more or less determined from above, as a contract provision.*
> General practitioner
>
> *So they get a progress report from the care group, saying how they score on certain processes, and how they score in terms of outcomes; and those progress reports are checked through and discussed in the care group. And, indeed, GP practices that are not up to par ... well, they get a talking-to, if I can put it that graphically.*
> Care group manager

2.4 Management of patients with comorbid diseases

Outline
This section investigates the effects of bundled payment schemes for people with comorbid conditions. Disease-specific management programmes could potentially obscure the full spectrum of care and treatment needs in diabetes patients who have more than one long-term condition. This raises the question of how care groups address the complex needs of patients with comorbid conditions within the context of a disease-specific programme. We therefore presented our interviewees with a case example from practice – a patient with both diabetes and COPD who was in treatment in two disease-specific programmes – to explore how health care would be delivered to such patients.

Comorbidity not necessarily seen as a problem
In the experiences of health care providers thus far, the management of diabetes patients who were also being treated in other programmes had not yet presented any major problems. At the same time, it also emerged that many providers had given only limited consideration to this issue. Some practice nurses indicated that they often consulted with a GP about patients with comorbidity, or referred them to a GP. The interviewed GPs argued that the generalist nature of their discipline made them highly suited to provide integrated care. Some interviewees suggested that the more frequent check-ups required of patients with multiple chronic conditions might put too much strain on them.

Varied efforts by care group managers to coordinate disease management for comorbid cases
Care group managers reported that they were working to arrange for the care of patients who were being treated in more than one disease-specific programme. Some groups were still in the agenda-setting and support-building stage, whilst others had already configured their integrated information systems to accommodate patients in multiple programmes. In the latter case, the IIS then enabled data to be transferred between the generic modules applying to the separate diseases. Care groups also reported having established inclusion criteria for the various disease management programmes. Managers said such criteria were particularly necessary in care groups contracting both diabetes and VRM programmes, as the NZa policy implementation guidelines preclude patients from taking part in both at once.

Care groups employed either generalist or specialised practice nurses

As emerged from the interviews, care groups engaged either generalist practice nurses who could address more than one chronic condition or specialised nurses who were qualified for a single disorder. This means that some patients with comorbid conditions had contact with a single nurse whilst others saw different nurses. Opinions of health care providers were divided as to which type was preferable to ensure quality in the management of comorbid conditions. Advantages cited for generalists were their ability to treat multiple illnesses in each individual and to stand in for absent colleagues. A reported advantage for patients visiting two or more specialised nurses was that the same information was explained from different perspectives; a perceived disadvantage was that a nurse could develop tunnel vision by focusing solely on one disorder. Some care groups reported having no specific policy on whether to hire generalised or specialised nurses and that the decision was up to each participating GP practice.

> *We've divided it up. For instance, I've got one nurse for COPD and one for diabetes.*
> General practitioner
>
> *We've got two practice nurses and we're hiring a third one soon. We want them to be versatile, and so do they. If one nurse is off work, then the other can do things.*
> General practitioner

Varied experiences with synchronising appointments for people with comorbid conditions

Generally speaking, patients involved in more than one disease management programme needed only one appointment if they were under the supervision of a generalist practice nurse. The check-ups were combined into a longer or double appointment. Some health care providers disapproved of such combined consultations, arguing that it was better for a patient to hear the information more than once (see second quote below).

> *What happens now when people have something like COPD and diabetes is that the practice nurses plan in extra time, say an hour, and they first do the diabetes and then the COPD. They have less to explain, of course, because, like you said, that lifestyle is the same.*
> General practitioner
>
> *I have two separate practice nurses, and the advantage is that it enables patients to get information from different sources, and that can only reinforce the effect. The drawback is that it can be a bit disjointed when someone gets the same story dished up twice; but still, if you assume that a lot of information doesn't really register during consultations, then that still gives added benefit.*
> General practitioner

Disagreement on whether health care to people with comorbid conditions had improved

Varied answers were received to the question of whether bundled payment had strengthened or weakened the care of people with comorbid conditions. Particularly the GPs, practice nurses and care group managers saw improvements, which were mainly attributed to the more systematic delivery of diabetes care. Some of the interviewed diabetes nurse specialists and internal medicine specialists found it difficult to judge whether the care had improved or deteriorated. There were also interviewees that felt the care was unaffected. One care group manager and a small number of care providers believed the quality of care had been eroded by the stronger focus on disease-specific care at the expense of an all-embracing notion of health care.

Role of pharmacists in managing polypharmacy still limited within care groups
Polypharmacy, the use of multiple types of medicines by a single patient, is highly common in patients with comorbid conditions. As care group managers reported, no arrangements about polypharmacy had usually been made in the multidisciplinary protocols. The role of pharmacists in care group polypharmacy strategies was hence also limited. Many care groups did not yet hold routine consultations with pharmacists at the regional level. Some care groups did take part in pilot projects with pharmacists, such as the Diabetes Dialogue (CZ, 2011), which included care groups 4 and 10 from our evaluation. Some GPs we interviewed also reported that agreements between GPs and pharmacists on polypharmacy had often been made in their regular local meetings, but that the role of the broader care groups in this was limited.

No supplementary agreements with insurance companies about treating comorbidity
Four insurance officials reported in the interviews that no additional arrangements had been made with care groups about patients with comorbid conditions, although some did indicate that the issue and its pricing implications were currently under consideration. One company had recently begun the rollout of a module designated as ‘frail elderly’. It was to be superimposed on the bundled payment arrangement for diabetes, covering additional costs involved in health care to frail older people with diabetes.

2.5 Patient participation in care groups

Outline
This section examines the arrangements made by care groups to enable patient participation in their own care process and in care group organisation. Our findings derive mostly from the interviews. With the permission of the care groups, we have also obtained data from a recent RIVM study on the organisational structures of care groups (Van Til et al., 2010). We distinguish between input into the patient care process and into organisational decision-making processes.

Participation in the patient care process refers to the role of patients in their own treatment. Other commonly used terms are ‘self-management’ and ‘shared decision-making’. To genuinely give patients an active role in their treatment, care groups need to ensure that the care providers involved in the care process sufficiently support that aim. They can provide patient education about the disease in question and about lifestyle, and they can inform the patient about different treatment options. This improves the patient’s ability to cope with the illness and to help decide on treatment strategies.

Participation at the organisational level refers to patient involvement in decision-making processes about how the health care to patients is organised. Ensuring patient input in such processes is important so as not to lose sight of the ultimate aim of health care innovation, the provision of good care to patients. It is also important in order to make sure that provision is organised in ways that are responsive to the wishes and needs of patients. This type of participation may involve individual patients as well as representatives of advocacy organisations such as regional or national patient associations.

Participation during the patient care process

Effective support for patient self-management was yet to take shape

Generally speaking, systematic and integrated support for patient self-management was not yet being provided in the diabetes programmes. Most care groups had not developed concrete facilitation strategies, and few instruments or interventions designed to encourage self-management were available. Only one care group offered group patient education. Two care groups had portals where patients could log into their electronic patient files from home and could enter their own information. In another group, patients could access their files with the assistance of a health care provider. In three further groups, preparations to enable patient access were underway. Yet it also emerged from the interviews that it was not easy to motivate patients to actually use the portals. One group reported that only 20% to 25% of their patients had validated their log-in; it was about to launch a campaign to encourage uptake.

> *I mean, we don't even have any courses, training sessions or referral options to get people to improve their self-management.*
> Practice nurse
>
> *Well, we have ..., our patients are involved in their health care by being able to log into their patient file. So in that sense they're involved in their health care, if they so wish, that is, via a patient portal.*
> Care group manager

Managers and health care providers differed in views about supporting self-management

Managers indicated in the interviews that they would prefer the most extensive possible form of self-management support. That wish was expressed both in care groups with limited access to self-management support interventions and in those with more interventions available. Health care providers, on the other hand, argued that the abilities and potentials of the patient population needed to be taken into account. They adapted their wishes for self-management improvement to this concern, seeking forms of self-management support that seemed feasible within the potentials of the individual patient.

Lack of resources to support self-management

Health care providers also argued that insufficient time, money and IT resources were available to effectively support patient self-management. In terms of IT, there was no way to systematically record information such as patients' self-management goals in care group information systems. Target body weight, for example, could now be entered into the systems, but not the ways that patients planned to reach that target. In many cases, such self-management goals could be entered only as 'free text' in a GIS or an IIS, making them more difficult to retrieve during a subsequent check-up. Nor did all providers, in particular the non-medical practitioners, have full access to the patients' electronic files.

> *We have to fill everything into a fixed protocol, and it shows all these patient readings and those patient levels. It also includes check-up data, but there's no good way to record agreements about self-management.*
> Practice nurse

Some health care providers seem to have insufficient knowledge to support self-management

In some cases, health care providers as well as care group managers felt that the knowledge levels of practice nurses were too low for them to provide effective support for patient self-management. Other types of practitioners were thought to have inadequate knowledge as well. A dietician, for example, argued that GPs knew too little about nutrition.

> *What's difficult is to get everyone across the whole care group up to the same level. You see big individual differences, especially between the practice nurses, as to whether they're good at [self-management support]. What I also see, especially with practice nurses that have a longer nursing background, is that they do a much better job of it than practice nurses that used to be GP assistants. The latter are more inclined just to follow the protocol and much less likely to zoom in on a patient's individual needs.*
> Care group manager

Care providers sceptical about patient interest in self-management

Some care providers were convinced that patients themselves were an inhibiting factor in achieving self-management. For one thing, many patients were incapable, due to old age or low education, of managing a chronic medical condition by themselves. For another thing, patients were thought to be insufficiently motivated.

> *Dieticians run into that, and GPs too sometimes, and so do we as diabetes nurses or practice nurses. There's simply some people that are difficult to motivate. So how do you go about counselling them...? Yeah, I'm also thinking of ethnic minorities, for instance. That's also one such group. The language barrier.*
> Diabetes nurse specialist
>
> *Frankly, there's practically no self-management here, or none at all, because.... That also has to do with the patient population. Patients say things like 'Just give me a shot' or 'Just check to see what's wrong, tell me what to do and I'll do it'. An aspirin will be fine. They're not interested in self-management at all.*
> Practice nurse
>
> *My predecessor, the house dietician, tried to set up group-based treatment sessions for the diabetics, just for the diet part. Other people have tried that too. And it always comes to nothing, those group interventions, because patients don't show up and are impossible to motivate.*
> Dietician

Participation at the organisational level

Care group unknown to many patients

As emerged in the interviews with care group managers, patients were not always informed that they were part of a disease management programme under the auspices of a care group. Many patients also did not realise that, as a result, they had a client relationship with the care group in addition to that with their general practitioner. Several managers also felt it was unnecessary to inform patients, given that care groups did not come under the Health Care Institutions Act (Wtzi). Some care groups did inform their patients as they entered the disease management programme; often this was not done directly by the care group, but by the individual GP practices.

Patients not always explicitly informed about the selective contracting of health care providers

Most care groups had dealings with preferential health care providers. This meant they selectively contracted specified providers. From the interviews we learned that many such care groups did not explicitly inform their patients that this precluded them from receiving health care from any provider in their region. Managers did indicate that this was stated on the care group's website or in an information leaflet. They reported that the use of preferential providers had not yet caused any problems in practice. One manager said that the care group would like to inform the patients of this, but was still hesitant to do so in light of the uncertainties about the longer-term existence of bundled payment arrangements (see adjacent quote). We do not know whether and how such information was communicated to patients in GP surgeries, nor to what extent patients perceived this constraint on their freedom of choice as a problem.

> *No, we don't communicate the name of the care group to the patients. If we exclusively have bundled payment arrangements in the future, then we will let them know, because we shall then qualify as a health care institution and that requires us to do all kinds of things. If the health insurance companies get their way and just pay us a case management fee per patient, then we'll remain an ancillary firm, and then we won't communicate anything at all to the patients, but merely support the health care providers in delivering a good range of services.*
> Care group manager

Patients rarely consulted about organisational decisions

In all care groups, patient input with respect to organisational decision-making processes was limited. Some groups reported conferring regularly with their regional branch of the Netherlands Diabetes Association (DVN) or other patient advocates. It remained unclear, though, what role patient representatives played in such consultations. Their involvement in decision-making processes appeared extremely limited. Only one care group had a patient on its supervisory board (see also section 2.1.1).

> *Regional diabetes associations are involved, especially if we want to amend the protocol or that kind of thing, or when we evaluate how things are going. Those are the two elements that we involve the diabetes association in. And at the national level, we also have good contacts with the DVN, partly to discuss things like the ways we think this diabetes care could improve, in a general sense, and what our goals should then be.*
> Care group manager

Four care groups had a client council and/or complaints procedure
Care groups 3, 4, 9 and 10 had client councils, but in the former three groups these were not linked to the care group itself, but to subcontractors of the care group, such as its holding company or an out-of-hours medical service. Only the client council of group 10 was truly part of the care group. The subject of creating a client council was related to the debate about whether a care group qualified as a health care institution, thereby requiring it to conform to the Health Care Institutions Act (Wtzi).

Care groups 2, 4 and 9 had complaints procedures or complaints committees in place. Those care groups that had not established complaints procedures indicated that all of their contracted health care providers had their own complaints procedures or committees to which patients could turn.

All care groups conducted periodic surveys on patient experiences
Regular surveys were held in all care groups on the experiences of their patients. Every bundled payment contract required such periodic research. Many such surveys were based on the Dutch Consumer Quality (CQ) Index, commissioned by the health insurance companies and administered by the Miletus Foundation. Care groups 3, 4 and 10 surveyed patient experiences themselves, either annually or biannually.

Health insurance companies believed bundled payment schemes had not actively promoted a central role for patients
The four insurance officials we interviewed all agreed that the bundled payment approach had not yet made a proactive contribution to establishing a central role for patients. Three of the four wondered whether the patients indeed even knew they were part of a bundled payment scheme or a disease management programme. They felt the patients had been insufficiently informed by the care groups or by their main treatment provider.

2.6 Experiences of stakeholders in three years of bundled payments

Outline
This section assesses whether the various stakeholders were satisfied with the disease management programmes after three years of bundled payments. We distinguish between patients, care groups, health care providers and insurance companies. The results are based on our survey of patients and on the interviews we held with care group representatives, health care providers and insurance officials. Appendices 2 and 4 describe the methods and results in more detail.

Box 2.7 What is the PACIC (Patient Assessment of Chronic Illness Care)?

The PACIC is a survey questionnaire that helps to evaluate how well the elements of the Chronic Care Model (CCM; Wagner et al., 1996; Wagner et al., 2005) have been implemented. A Dutch study (Vrijhoef et al., 2009) has identified the PACIC as the most appropriate instrument to assess patient experiences in integrated long-term health care. The PACIC contains twenty statements that are rated by patients on a five-point scale ranging from ‘almost never’ to ‘almost always’. The higher the score, the more the care is perceived as conforming to the principles of the CCM. The PACIC, developed in the United States, assumes that the care components described in the statements contribute to patient perceptions of good long-term care. Although the PACIC has been validated for the Netherlands (Vrijhoef et al., 2009; Wensing et al., 2008), six of its items seem less relevant to the Dutch situation. In this chapter, we compare the average scores on the twenty items (PACIC-20) with those on the fourteen items that appear most relevant to the Netherlands (PACIC-14).

Opinions of patients

We evaluated the patients’ experiences using the Patient Assessment of Chronic Illness Care (PACIC; Glasgow et al., 2005a; Vrijhoef et al., 2009; see Box 2.7), adding questions on care coordination taken from surveys of the Dutch National Panel of the Chronically Ill and Disabled (NPCG; Heijmans et al., 2010). We first summarise the results of the patient survey.

Patient experiences based on the Patient Assessment of Chronic Illness Care (PACIC)

No significant differences between care groups in terms of patient experiences
The average patient score on the PACIC items was 2.8 (see Table 2.10). This indicates that patients ‘sometimes’ experienced integrated care delivery; when items less relevant to the Dutch situation were omitted, the average score rose to 3.2. No significant differences appeared between care groups on the overall PACIC scores; there was room for improvement in all groups.

Patients were mostly satisfied about the organisational aspects of the care received (mean score 4.2; not shown in figure or table). Many had been given explanations about the relationship between their behaviour and their health (mean 3.7) and about the importance of seeing specialists such as ophthalmologists or

Table 2.10 Mean scores (and SD) on the PACIC, by care group and for total sample.

	Care group							
	1	2	3	4	6	9	10	Total
PACIC-20 (n = 1168)	3.1 (0.8)	2.7 (0.8)	2.9 (0.9)	2.9 (0.8)	2. (0.8)	2.8 (0.8)	2.8 (0.8)	2.8 (0.8)
PACIC-14† (n = 1197)	3.4 (0.9)	3.0 (0.9)	3.2 (1.1)	3.2 (0.9)	2.9 (0.9)	3.2 (0.8)	3.2 (0.9)	3.2 (0.9)

† PACIC-14 is the PACIC scale excluding six items less relevant to the Dutch situation.

neurologists (mean 3.7). Some had received help with advance planning about how to manage their diabetes during periods of illness (mean 2.5). Some had been asked to explain how diabetes had influenced their lives (mean 2.6) or how satisfied they were with consultations with other doctors (mean 2.7).

PACIC scores comparable to those reported in Dutch and international literature

The patient scores on our PACIC questionnaire were comparable to those obtained in other studies in the Netherlands and abroad. A Dutch study of diabetes patients in 2005 reported a score of 3.2 (Wensing et al., 2008), albeit in a sample of limited size (N = 88). A 2008 study of German diabetes management programmes reported an average score of 3.3 (N = 1399; Szecsenyi et al., 2008). A study of patients in the Kaiser Permanente Medical Care Program in the USA, which included patients with diabetes or other chronic conditions, found an average score of 2.7 (N = 2917; Schmittdiel et al., 2007).

The Netherlands Institute for Health Services Research (NIVEL) also used the PACIC in a 2009 study in the National Panel of the Chronically Ill and Disabled (NPCG; Heijmans et al., 2010). Because they rescaled the original five-point PACIC items to a four-point scale and added a ‘not applicable’ category, the results of the NIVEL study could not be compared to those of the present evaluation.

Patient experiences based on questions from the National Panel of the Chronically Ill and Disabled

Continued high satisfaction with health care cooperation and coordination

Patients judged the cooperation and coordination between their various diabetes care providers as positive. More than 90% rated these qualities as good or excellent (Table 2.11). Percentages remained more or less unchanged over the years (94% and 93% in the two assessments in our Evaluation 1). In the current evaluation, only 1.0% of respondents rated the qualities as poor, also consistent with previous assessments (0.5% and 1.7%).

Respondents with comorbidity did not rate cooperation and coordination differently from others

No significant differences were found between patients with and without comorbid chronic conditions in terms of how they rated the coordination and cooperation in health care delivery (Table 2.12). The qualities were rated as good or excellent by high percentages in both groups (94% and 92%). Nor did any significant differences appear on the more specific perceptions of whether providers made good arrangements with one another, whether appointments could be combined on the same day, whether

Table 2.11 Patient ratings of the cooperation and coordination between the various health care providers, percentages by care group and for total sample (N=1231)*.

	Care group							
	1	2	3	4	6	9	10	Total
Excellent	20.8	25.9	40.0	29.0	24.3	20.7	26.5	25.1
Good	73.8	64.7	48.6	66.5	65.0	70.3	67.8	67.6
Moderate	4.4	8.5	11.4	3.0	10.7	8.1	4.5	6.3
Poor	1.1	0.9	0.0	1.5	0.0	0.9	1.1	1.0

* Patients who reported having only one diabetes health care provider were omitted from the calculations, as they were not able to judge cooperation and coordination.

Table 2.12 Ratings of the cooperation and coordination between the various health care providers by patients with and without comorbid chronic conditions (N=1231)#.

	Patients with comorbidity (n=493)	Patients without comorbidity (n=738)
Excellent	25.2	25.1
Good	69.0	66.7
Moderate	5.1	7.2
Poor	0.8	1.1

Patients who reported having only one diabetes health care provider were omitted from the calculations, as they were not able to judge cooperation and coordination.

providers gave conflicting recommendations, and whether providers were well informed about arrangements made with other providers (not shown in figure or table).

Opinions of care group managers

Managers perceived quality improvements in process of patient care

Care group managers believed that the quality of the patient care process had improved on several fronts since the introduction of bundled payment schemes. Protocols for diabetes care were now more likely to be followed, and the care was better structured as a result of the systematic approach (periodic check-ups and testing) and the disease management programme. Clearly defined agreements for collaborative care had been formalised. A few care groups also worked with a cyclical quality assurance approach (plan-do-check-act or PDCA), whereby care providers were regularly assessed in terms of the quality of care delivered; improvement plans could then be implemented if necessary.

Managers believed individual care needs of patients were now better understood

The NDF Health Care Standard prescribes check-ups for all diabetes patients every three months. A number of care group managers reported in the interviews that the insistence on four check-ups per year has led to more clarity about the subpopulation of patients that need fewer check-ups. Some care groups had thereupon adjusted the frequency of check-ups to the individual needs of patients. They argued that this enabled better tailored care, thereby improving efficiency. Some care groups endeavoured to have at least one annual check-up carried out partially or entirely by the patient's GP; other check-ups, depending on individual care needs, would be performed by a practice nurse.

> *The greatest benefit is really the patient-tailored care. This enables us to devote more attention to a patient's needs for support in various areas. That's really a big difference if I think back to how things were done five years back.*
> Care group manager
>
> *I think we profited in the first place from that programmatic approach; it provides patients with the care they need. The next step, which we're in the middle of now, is that patients will have more individually tailored care and more group-based activities. Those group consultations, those information evenings, have really been successful, and the health care providers also start reflecting more about what the patients want from them.*
> Care group manager

More transparency in care as a result of reflective feedback data
Managers felt that the introduction of bundled payments had enabled more transparency about the quality of the care being delivered. By the time our study was carried out, all care groups were providing their individual health care providers with periodic reflective information about their work. It contained a number of quality indicators to help gauge their performance. Several care groups formulated improvement targets and plans on the basis of such information. When necessary, they gave providers individual support in achieving the targets, for instance by offering a practice nurse additional training or support from a diabetes nurse specialist.

> *The availability of reflective feedback is a real success and so are the insights into what's happening, the reports that are now available. So much knowledge to aid in effective management has never been documented before.*
> Care group manager

Negotiations with both preferential and other health insurance companies still difficult
Negotiations between care groups and insurance companies (both the regional market leaders and those less active in the region) remained arduous. In many cases, managers expressed satisfaction with the end result, but not with the negotiations that preceded it. The sticking point reported most often involved which aspects of diabetes care were to be covered by the bundled payment contract; this applied not only to possible components of patient care such as blood glucose strips or dietician counselling, but also to overhead costs and financial provisions for innovations. Another oft-mentioned problem arose when non-preferential insurers refused to automatically 'follow' the bundled payment contracts agreed with the regional market leaders, insisting instead on negotiating their own contracts. All Dutch insurance companies had meanwhile developed their own contracting strategies and purchasing terms. As a consequence, care groups were now having to negotiate with more insurance companies, thus generating greater administrative burdens and more bureaucracy.

> *Perhaps the biggest obstacle, I find, is the negotiating process with insurance companies. I think that's by far the worst snag that's arisen so far. I mean, on the one hand I do understand those constant discussions with insurers, but you get fed up with it at times. About what's been contracted and what hasn't, what's paid for and what isn't. That constant conflict, and the bureaucracy that's arisen on top of it all, I find it a big drawback to this system. And then I think, 'Couldn't we do that differently?' Because what you're seeing right across the country, of course, is that everyone is performing just about the same ritual dance with approximately the same outcomes. I mean, couldn't this be done more efficiently?*
> Care group manager
>
> *Instead of saying that the non-market leaders in the region are 'mandatory followers' – that every care group has a preferential insurance company that they reach agreement with and the rest automatically have to follow – they say you've got to negotiate separately with everyone, sit down at the table ten times, send around documentation... it costs you handfuls of money. Every hour we sit there is money. It's such a waste.*
> Care group manager

Much discontent with IT
Managers reported that they were still experiencing problems with their information systems. The systems might still be inaccessible to some health care providers (see also section 2.1) or there might still be no patient portal available. There were also linkage problems between GISs and IISs, preventing the transfer of data and forcing providers to record their information twice (see also section 3.2 and 'Opinions of Individual Health Care Providers' below).

Opinions of individual health care providers

Health care providers likewise perceived quality improvement in patient care process
Individual providers similarly felt that the bundled payment arrangements had improved the quality of patient care processes. They reported that protocols were now being used and adhered to more extensively. They also perceived an improvement in the continuity of care, in that patients were now given periodic tests and check-ups. Several providers pointed to the ease of identifying and proactively contacting patients who failed to turn up for check-ups. Eye and foot examinations were also delivered more consistently.

> *The real strong point is especially the quality gains you achieve, that facet of care. The care you provide is more systematic and less time-consuming for patients. It's a more proactive approach.*
> General practitioner
>
> *I trained in a practice where lots of things were basically done ad hoc. Although you did plan for the diabetes patients, something like foot examinations or fundus images were often forgotten or not consistently done. Now it's structured a lot better.*
> General practitioner
>
> *I think it's especially the systematic nature of those tests and check-ups, the fact that people get the monitoring they need, and that you can also see who drops out of the programme or avoids treatment. You get a better overall view of the patients' health care. I think that's a good thing.*
> Diabetes nurse specialist

Availability of reflective information seen as success factor
Health care providers felt the bundled payment arrangements had enabled more clarity about the quality of the care delivered. Some also felt it gave more incentives for improvement. Because they periodically received feedback, they worked more consciously to improve the quality of their services (see also 'Opinions of Care Group Managers' above).

> *The patient care is more transparent now, more quantifiable, and the quality has improved.*
> General practitioner
>
> *The most successful thing in my opinion is that, for the first time in history I think, general practitioners, primary care providers, are being encouraged, if I can put it like that, to monitor the results of their work, in terms of both work processes and health outcomes, and to justify and improve them. That's the real revolution.*
> Director of a general practice laboratory
>
> *Yes, it's more structured, and I also find the feedback information a real boon.... Yes, I'm quite satisfied with that. It keeps you more on the ball about the care you're providing.*
> Practice nurse

Some health care providers perceived bundled payments as an obstacle to patient-centredness
Some of the providers we interviewed had the impression that financial interests sometimes prevailed above the quality of health care. One example was waiting until the end of a quarter before referring a patient for secondary care, in order to claim an additional bundled payment fee. Reservations were also expressed about the disparities between the protocol-driven treatment procedures and the individual care needs of patients. It was pointed out, for instance, that some patients wanted or needed fewer consultations. Some care groups were already employing such a patient-tailored approach (see also 'Opinions of Care Group Managers' above).

Sometimes you get the idea that there's GPs who are actually driven by money in such cases and that that's not conducive to quality.
Diabetes nurse specialist

I still think the worst shortcoming is the financial issue, which is almost more important than the patients. Or at least that's my experience.
Practice nurse

Administrative burden considered heavy, partly due to IT constraints

Some providers were experiencing a heavier burden of administrative work since bundled payment implementation. The increase was said to be caused by the larger amounts of patient information that had to be recorded, both for the data transfers needed for the patient care process and for the reflective feedback and accountability procedures. Many providers even had to keep double records in the GIS and the IIS (see also 'Opinions of Care Group Managers' above).

I think what we're running up against now is the linkage between the GIS and the IIS, that that's causing problems. And what's also a problem, of course, is that you're now working with a lot more people, so you have to record a lot more information, and that's a lot of clerical work.
General practitioner

The way it is now, what we're running into now, and what's hopefully about to change, is the record keeping, the journal keeping, so we won't have to do double work anymore, so it'll take up less time, so it'll be more efficient.
Diabetes nurse specialist

Some health care providers said communication and coordination with GP practices needs improvement

Diabetes nurse specialists in all care groups reported that there was room for improvement in the communication and cooperation with the associated GP practices. They would have preferred to confer directly with GPs on a more regular basis to evaluate care delivery and set improvement targets. Other providers, including dieticians, also spoke of flawed coordination with GP practices; dieticians mainly seemed to experience a lack of feedback from GPs about the services they had provided.

Because actually you don't talk to GPs very much, or hardly at all in fact. And that's fine too, of course, but sometimes I'd still like to talk to a GP.
Diabetes nurse specialist

Risks of negative consequences from task reallocation pointed out

A number of health care providers believed that the reallocation of tasks, which gained momentum after bundled payment implementation, had potentially negative ramifications for the quality of diabetes care. They were mainly pointing to the shifting of responsibilities from GPs to practice nurses. For one thing, practice nurses were thought to not always be adequately trained for providing good diabetes care; at the same time, GPs were said to be neglecting their clinical knowledge through the reduced contacts with diabetes patients. Interviewees from several disciplines, in particular internal medicine and diabetes nursing, pointed out this concern, and GPs also mentioned it. Notwithstanding these risks, providers also saw positive effects from task reallocation and delegation (see section 2.3).

> *I think it's a bit of a risk they're running, with that focus on putting everything into primary care, and where GPs are subcontracting everything out and in fact have nothing to do with it any more – I think that's essentially a bad development. And I think it's also a risk because, in other words, it means the GPs have too little knowledge and experience, in my view, to serve as a source of information if needed. Time will have to tell how that's going to work.*
> Internal medicine specialist

Opinions of health insurance officials

Health insurance companies positive about quality of care
Like the managers and the health care providers in the care groups, the officials we interviewed from health insurance companies also felt that the quality of care had improved in a number of respects, including the more uniform and protocol-based delivery. They also believed that patients with chronic illnesses were receiving more attention than previously. One official pointed out that the continuing professional development arranged by the care groups also enhanced the quality of the care.

Increased transparency about quality of care
Several health care purchasing officials from the insurance companies deemed the increased transparency about the quality of care to be a success factor from the introduction of bundled payments. The improvement was attributable to contract provisions requiring accountability information to be supplied, thus giving insurers more insight into the quality of the care. Not all purchasers were satisfied, though, with the quality of the data itself.

Insurance companies felt diabetes care was still too monodisciplinary
All interviewed health care purchasers believed that the organisation of diabetes care was still excessively monodisciplinary, being largely delivered inside GP practices. One purchaser even referred to ‘glorified GP care’, and another to ‘GP care-plus’. Insurers felt that GPs needed to work together more with other disciplines such as dietetics.

Insurers saw rising costs but lagging quality improvements
Two insurance company contacts observed that the cost of care was increasing but that this had not been immediately reflected in the quality of the care. One official added that not enough reliable data was available yet to evaluate the quality of care delivered. Neither was convinced that the advent of care groups as new players on the health care market had produced any added value for the quality of the care, while they did receive part of the money. A third insurance official cited double payment, and especially the lack of insight into it, as a serious problem. Double payment occurs when insurers reimburse components of diabetes care twice: once to a care group via a bundled payment contract and

once directly to an individual provider who delivers it. One purchaser pointed out the shortcoming of the cross-sectional nature of the accountability data (see first quote below).

> *Yeah, if you do it at the group level, you get averages and then you can't really draw any reliable conclusions.... Nor do you know ... I mean, you've got an average, and then there's a new influx of patients. So you've got new patients coming in, and they contaminate the average, to overstate it slightly. So then you can't really tell what's happening.*
> Insurance company health care purchaser
>
> *Another tricky issue is that you've actually set up a new kind of organisation, care groups, for which we still can't really tell whether it provides any added benefit in a qualitative sense. This way of using primary care to manage people with chronic illnesses, or let's say this combination of quality and price.... I just don't see the results yet.*
> Insurance company health care purchaser
>
> *All in all, the cost of health care is mounting steeply at the moment, whereas we're still not seeing any real improvement in quality. I think that's the biggest challenge!*
> Insurance company health care purchaser

3
Discussion

Outline
In section 3.1 of this chapter, we briefly summarise our findings on each of the research questions, and in section 3.2 we place them in a broader perspective. We then comment in section 3.3 on some of the strengths and limitations of our research methods. Section 3.4 makes recommendations for policy and future research.

3.1 Findings in summary

This follow-up evaluation of Dutch bundled payment schemes for diabetes care had two aims: (1) to clarify how the diabetes care was organised within care groups and (2) to assess what effects bundled payments had produced at two and three years after its implementation in terms of (a) the process and biomedical outcome measures and (b) the experiences of patients, health care providers and other stakeholders. Six research questions were formulated to address these issues. We shall first briefly summarise the findings we made on each question.

Question 1: How were health care services in care groups organised at the end of three years of bundled payments?

No major organisational changes occurred in care groups between our preliminary Evaluation 1 and our present study, Evaluation 2. Care groups still remained largely monodisciplinary cooperative arrangements involving general practitioners (GPs). The numbers of GPs associated with each care group (and by extension the numbers of patients involved) increased sharply between the two evaluations. This enabled economies of scale, such as joint ancillary services, medical equipment purchases or software licences.

As at the time of Evaluation 1, the independent oversight arrangements for most care groups failed to conform to the Health Care Governance Code (ZGC; BoZ, 2009). Half of the groups had no supervisory body. In groups that did have such a body, questions arose in several cases about whether every form or appearance of conflicting interests had been avoided.

Integrated information systems were increasingly being implemented; five of the nine care groups we studied now had IISs and another had one in preparation.

Differences across care groups narrowed during the evaluation period in terms of the health care services covered by their bundled payment contracts and the fees charged for them. The closer similarities in the packages can probably be explained in large part by the increasing expertise of health care insurance companies and by the purchasing guidelines they had developed, as well as by the growing expertise on the part of the care groups. By 2011, four groups had bundled payment contracts for COPD and/or VRM in addition to the one for diabetes.

Question 2: What was the quality of the services provided by care groups at two years and three years after bundled payment implementation?

Most of the results on process indicators suggested improvements in health care delivery. Some process scores were already high at the end of the second year. More than 90% of patients, for instance, had had their HbA1c, body mass index (BMI) and blood pressure checked both in year 2 and in year 3. On the process indicators for foot examinations and for kidney function and cholesterol tests, improvements were seen from years 2 to 3. Composite process indicators showed improvements too, albeit with considerable variations between care groups. On the down side, the rate of yearly eye testing declined by 3.5 percentage points, apparently reflecting changes in insurance company purchasing policies whereby eye examinations were increasingly contracted on a biannual rather than annual basis.

Most but not all of our patient outcome indicators showed mild improvements as well. The proportion of patients with systolic blood pressure under the target of 140 mmHg grew by more than 6 percentage points and the proportion meeting target cholesterol values by 10 points. Average HbA1c values, on the other hand, increased slightly by 0.5 mmol/mol, partly due to the rising average diabetes duration in the sample. BMI remained virtually unchanged. It is unclear what clinical relevance and impact any such patient outcome improvements might have in terms of ‘hard’ medical outcome measures such as cardiovascular illness and mortality.

Question 3: Did bundled payment create incentives to reallocate and delegate tasks?

The introduction of payment bundling led to various forms of task reallocation and delegation, both between primary care disciplines and from the secondary to the primary care sector. By and large, practice nurses were now playing the pivotal role in diabetes management within GP practices and were performing most if not all of the regular check-ups. (Some of our interviewees reported that the task delegation to practice nurses had already been underway before payment bundling was implemented.) More insulin-dependent patients without complications were also now being treated in general practices. Eye examinations, previously conducted mostly by ophthalmologists, were increasingly being performed by optometrists, general practice laboratories, retinal graders or, in one care group, by GPs. Both health care providers and care group managers we interviewed voiced some criticisms of the extensive task reallocation and delegation, citing primarily the risk of quality deterioration in GP practices due to the transfer of services to practice nurses. Just as in Evaluation 1, they feared that the GPs’ knowledge of diabetes would suffer from their reduced contacts with their patients, and that the GPs could even lose their grasp on their patients. It was also feared that practice nurses might be assigned, or be taking on, too much responsibility for tasks they were insufficiently trained for, such as dosage or diet recommendations. Task reallocation from secondary to primary care was criticised because of the risk that patients with complications might not be referred promptly to secondary care.

Positive aspects of task delegation from GPs to practice nurses were highlighted too. Practice nurses were said to devote more time and attention to patients, and the delivery of care was also more structured and protocol-driven. GPs, for their part, now had more time for their other patients. Advantages of task reallocations were also cited, among them that patients could have their eyes examined closer to home after being transferred to optometrists.

Question 4: How did care groups manage patients with comorbid diseases?

Health care providers seemed to have not perceived or encountered any major problems for diabetes patients who were also being treated in programmes for other diseases. Varied answers were given, however, to the question of whether health care for people with comorbid disorders had improved or worsened under the bundled payment arrangements. GPs, practice nurses and care group managers, in particular, tended to see improvements, attributable mainly to the more systematic delivery of the diabetes care. Some diabetes nurse specialists and internal medicine specialists found it hard to judge whether the care had improved or deteriorated, whereas others believed the quality of the care was unaltered. One care group manager and a small number of health care providers felt that the quality of care had suffered from the increased focus on disease-specific care needs, to the detriment of a comprehensive approach to patient care.

Although polypharmacy is quite common in patients with more than one long-term condition, care group managers reported that no provisions for it had been made in most of the multidisciplinary diabetes protocols. Pharmacists played only limited roles in the approaches to polypharmacy taken by most care groups, and many care groups held no routine consultations with pharmacists in their region.

Question 5: To what extent was patient participation achieved within care groups?

Assistance in disease self-management was usually not provided in care groups in any systematic or integrated way. They had not developed any concrete strategies in this regard, and few instruments or interventions were made available to support patients in self-management. Almost no care groups arranged groupwise patient education. Two care groups had electronic patient portals where their patients could view and add to their medical information.

Only a few care groups routinely informed their patients that they were being treated in a disease management programme under auspices of a care group. Care groups differed in what they communicated to their patients and how. Some had put together an information packet that GPs presented to patients as they entered the diabetes management programme. GPs in other care groups informed patients verbally. Many patients did not realise that their involvement in a disease management programme meant that they had a client relationship with a care group as well as with their GP, or what consequences that could have.

Patient involvement in care group decision-making processes appeared minimal in most groups. It seemed mostly limited to periodic consultations with regional patient associations, whereby the care group informed the patient association of decisions it had taken.

Question 6: What were the experiences of stakeholders in three years of bundled payments?

Patients offered positive judgments about the cooperation and coordination between the various health care providers. Care group managers, health care providers and health insurance officials all perceived an improvement in the quality of the patient care processes, citing in particular the better-structured working arrangements, the more protocol-based health care delivery and the increased clarity about the quality of the services provided. They differed in the problems and constraints they mentioned. Managers complained particularly about the negotiation process between care groups and both the regional market-leading insurance companies and the more peripheral insurers, as well as about the limitations of the IT systems. Health care providers criticised mainly the heavy administrative burdens. Insurance officials reported that no quality improvement could be discerned from the accountability information provided by the care groups, although the costs of diabetes care had risen.

3.2 Findings in perspective

The research findings we have summarised in section 3.1 will now be examined from various perspectives.

Bundled payment model gains impetus abroad

The Dutch bundled payment model based on care groups is similar to health care pricing models being introduced in the United States and in England. In the United States, ‘accountable care organizations’ (Berwick, 2011; Rosenthal et al., 2011) are launched in 2012, and England is introducing ‘clinical commissioning groups’ (Department of Health, 2010). Both the ACOs and the CCGs are new legal entities that serve as prime contractors in charge of coordinating and delivering chronic disease management services. Both are led by health care providers. In addition to the conceptual similarities between ACOs, CCGs and the Dutch care groups, there are also major differences. ACOs are not fully accountable financially, for instance, whereas care groups and CCGs are fully accountable (Berwick, 2011; Rosenthal et al., 2011). Patients are selected for care groups on the basis of their diagnosis, whereas patient selection for ACOs and CCGs is based on their patterns of health service utilisation. Because ACOs and CCGs have not yet been implemented, it is still unclear what effects those models will have on the quality and costs of health care.

Although the present evaluation of the Dutch care groups and the bundled payment model does clarify several aspects of the system in terms of the research questions we formulated, it has also raised new issues that need to be addressed in relation to care groups and their organisational characteristics, the transparency and quality of care, the roles and duties of the various stakeholders, and the consequences of persisting uncertainties about the permanency of the bundled payment approach. We shall now briefly examine these concerns.

Organisational characteristics of care groups

Optimal size of care groups

As this evaluation has shown, there have been strong increases in the past few years in the numbers of GPs affiliated with care groups; five of the nine groups we studied were now composed of over one hundred GPs. As care group size increases, so does the risk that the associated health care providers will identify less strongly with their care group, making it harder for the care group to influence their behaviour. It is not yet known where an optimum economy of scale would be reached that would still allow improvement in the quality of care to continue. The expanding sizes of the care groups have also prompted debates about whether care groups have acquired excessively strong negotiating positions (Varkevisser et al., 2009). Another issue related to these debates is the monodisciplinary prime contractorship of the care groups, which makes for an increasingly uneasy relationship between collaborative care arrangements and market competition. The coming years will tell whether these identified risks lead to problems in the long term.

New forms of task delegation and reallocation raise quality assurance issues

The condition-focused nature of the Health Care Strand Diabetes established by the Dutch Diabetes Federation (NDF) has given a strong impetus to the reallocation and delegation of health care tasks. The ensuing debates have particularly highlighted the risks of deteriorating quality of care in GP practices, attributable to the limited expertise of the practice nurses and to a loss of knowledge by GPs. The reduced contacts with diabetes patients could not only undermine the GPs' expertise about diabetes, but also their grasp of their patients' situations and overall care needs and demands. Theoretically, even an extensive delegation of tasks should not affect the GPs' knowledge levels, since their expertise is still required in their supervisory duties (such as regular conferences with practice nurses about complex patients), in professional development courses and in reflective feedback sessions. Yet questions have still arisen about how GPs should fulfil their supervisory role in practical terms after extensive task delegation to practice nurses, and about ways in which the care groups themselves should also be involved in such supervision, given their ultimate responsibility for diabetes management. Some possibilities might be the creation of a quality management system and the provision of specifically focused professional development courses for GPs. Owing to such concerns, quality assurance has risen higher on the agendas of many care groups. Health insurance companies, too, are currently considering the role they might play in care group quality assurance; they may start including provisos to this effect as they renew bundled payment contracts with care groups. It is unclear what consequences the present forms of task reallocation and delegation might have on the quality of care in the longer term.

Integrated information systems increasingly implemented

By 2010, about one third of the care groups had implemented their own IIS. The biggest drawback to operating an IIS is that the new system exists parallel to the health care providers' own record systems (such as the GISs of the GPs), thus requiring patient data to be entered twice in many cases. Thanks to the creation of care groups and the resulting pooling of GP resources, much effort is now being put into integrating these systems. Some IIS suppliers have recently announced that they have developed effective linkages between the two types of systems and are now implementing these. Single logins will become operational, for example, enabling practice nurses and GPs to consult the IIS directly from their GIS without having to log in separately. Several care group managers who had recently switched to an IIS were positive about the potentials of such linkages, both for the care delivery process and for the management of the care group.

Transparency about the quality of the care delivered

Inadequate or no assessment of patient attrition in many care groups

Several care groups had to make special efforts in order to supply us with data about patients they were no longer treating. Such data were not routinely collected. To safeguard continuity of care, care groups need to know how many patients exit the programme and why. When patients transfer from primary to secondary care and the care group is no longer responsible for them, it is important to still be able to trace them. Information on both the arrival and departure of patients should be part of the standard management data of care groups. Keeping patients in a disease management programme for an extended period and effectively monitoring their progression can help to prevent or delay complications (Jacobs-van der Bruggen et al., 2008). That, in turn, may also produce cost savings.

Standardisation of care is an essential step towards individually tailored care

The NDF Health Care Standard prescribes quarterly check-ups for all patients with diabetes. Some care groups, however, were adjusting the frequency of such check-ups to the individual care needs of patients, as an efficiency-boosting measure. Some care groups aimed for a minimum of one check-up per year, to be conducted at least in part by the patient's GP; other check-ups were to be performed by a practice nurse at intervals governed by the patient's needs. Some people we interviewed nonetheless emphasised that the starting requirement of four check-ups per year was a necessary intermediate step in identifying those patient subpopulations for which lower levels of monitoring appear to suffice.

Insufficient uniformity in record keeping

A number of software companies had recently developed IISs, but these were not adequately standardised. One reason for that was the absence of nationwide standardisation criteria for shared patient data. Although various attempts have been made to bring on such standardisation – including the e-Diabetes Dataset (NDF, 2008), the provisional Minimal Dataset from the Health Care Transparency Programme (Zichtbare Zorg, 2009a) and the recently released e-Diabetes Core Dataset (NDF, 2011b) – these have not, in practice, resulted in any uniform standard for the data that is to be recorded.

Current process and outcome indicators insufficiently suited to a patient-tailored approach

A recent literature study found that there is still insufficient evidence to assess the relationship between process indicators and patient outcomes (Sidorenkov et al., 2011). Many of the indicators now in use have been challenged in the literature (Voorham et al., 2008). A new type of indicators is currently being developed in which process and outcome indicators are combined or merged into 'linked indicators'. An example would be the percentage of patients having HbA1c levels above 69 mmol/mol (outcome variable) and having undergone fewer than four standard diabetes check-ups in the past 12 months (process variable). Linked indicators would shed light on specific aspects of the quality of care while still allowing for the current patient-tailored approach.

Stakeholders

Where does the role of health insurance companies end?

As the evaluation has shown, health insurance companies now draw up purchasing guidelines through which they try to secure uniformity in the health care services covered by their bundled payment contracts. Such guidelines include indicative reimbursement rates for direct medical services as well as specified requirements for organisational infrastructures and for qualifications of health care providers subcontracted by care groups (CZ, 2011). The creation of such purchasing guidelines is contrary to an important premise of the integrated care model and the NDF Health Care Standard – the organisational prerogatives of care groups in combination with the condition-focused delineation of the care services required. This raises the question of how far the role of insurance companies should actually extend when it comes to the setting of organisational and infrastructural requirements in bundled payment contracts. Should such requirements indeed be deemed essential, then measures will be needed to avoid creating a labyrinth of requirements that vary from one insurance company to the other.

Patients not consistently informed about existence and function of their care group

Not all care groups explain to their patients that they are being treated under the auspices of a care group. There is confusion about who should inform them and what information is necessary. Who should inform them, for instance, about their rights to receive the health care prescribed in the NDF Health Care Standard, or about the use of the Diabetes Care Guide (DVN, 2008) as a checklist for the care they are to receive? It is also unclear as yet whether patients need to be informed in advance about all aspects and consequences of their disease management programme, such as the client relationship they now have with the care group, the contracting of preferential health care providers, and the consequences those elements could have for their freedom of choice as patients (De Bruin and Struijs, 2008).

Care groups have yet to enable a proactive role for patients

Many care groups are still seeking ways to engage patients in the self-management of their illness and in the organisational decision-making process within the care group. Self-management is a broad notion that can be implemented in many ways. It is also largely unknown which self-management interventions may be effective for which subpopulations of patients. Experimentation, assessment and implementation involving such interventions therefore deserve higher priority in the years to come.

It is equally unclear how to best ensure patient involvement in organisational decision making. The RIVM, in cooperation with the National Association of Organised Primary Care (LVG), has initiated a project as part of the ZonMw research programme Patient Participation on how to promote patient involvement at the organisational level.

No apparent problems with comorbidity as of yet

In the perceptions of the interviewed health care providers, the disease-specific approach to diabetes management had not yet led to problems with diabetes patients who were also suffering other chronic conditions. An explanation often given was that health care providers have always been accustomed to responding to a patient's comprehensive care needs. A second reason why comorbidity does not yet seem to have caused problems in disease management is that many patients with extensive complications are being treated in secondary care settings, outside the bundled payment disease management programmes.

Recent literature has nevertheless highlighted some of the potential ramifications that disease-specific care programmes could have for patients with comorbid conditions (Van Dijk et al., 2009). Possibly the comorbidity issue has not yet made itself felt in care groups because most were still contracting only one or two disease management programmes. Treatment for other illnesses continued to be reimbursed via the old pricing system, and organisational problems were still manageable. However, once the care groups start to contract five or ten disease management programmes, that could give rise to organisational issues for care groups as well as to heavy clerical burdens for the health care providers.

Disease management rollout and the future of bundled pricing and care groups

Uncertainty about the permanence of bundled payment schemes fosters bureaucracy and constrains new developments

It emerged in many of our interviews that the 2010-2012 transitional period has formed a hindrance to the introduction of new disease management programmes. It was further pointed out that the parallel existence of two types of pricing systems generates additional red tape. This applies not only to the prolonged negotiations between care groups and insurance companies but also to the accountability reporting on the care that has been delivered. The uncertainties surrounding the bundled payment approach also hamper other activities, such as the informing of patients about the programmes; one care group had decided not to tell patients it existed because it did not know whether it would still be around in several years' time. Long-term investments in projects such as support for disease self-management or the development of e-health interventions are also being postponed due to the future uncertainties.

Removal of dietician consultations from the basic statutory insurance package creates inequities

As from 2012, the former four hours of specialised dietary counselling is no longer included in the Dutch basic health insurance package as detailed in the Health Insurance Act (Zvw; VWS, 2011a). An exception is made for dietician consultations covered by the disease management programmes for diabetes, COPD and VRM. The latter consultations, as well as the general dietary counselling and guidance on nutrition and eating habits as normally provided by GPs, continues to be covered by the basic package. In practice, this means that diabetes patients who are not included in a disease management programme are no longer covered for specialised dietary counselling under the basic package, whereas programme participants are still covered.

3.3 Research methods

We shall begin with some comments on the follow-up evaluation as a whole, and then include some methodological qualifications that pertain to the collection of the patient record data and to the patient survey.

Difficulty of distinguishing effects of bundled payments from effects of other interventions simultaneously implemented

The aim of the bundled payment model is to improve the quality of care by introducing a different way of determining fees for health care providers. At the same time this financial incentive was introduced, however, care groups were also implementing other types of interventions and initiatives aimed at quality enhancement. Examples are the multidisciplinary care protocols, professional development courses, new information technologies and inspection visits to GP practices. This raft of changes makes it difficult to distinguish any direct quality effects of bundled payments from the effects of other, simultaneously implemented changes. We therefore cannot with any certainty ascribe the variations we observed in process and outcome indicators to the modifications in the pricing system. Since bundled payment did *facilitate* several of the other quality enhancement interventions, however, the new pricing system may have also improved the quality of care indirectly.

Representative selection of care groups

The nine care groups that took part in the current evaluation were selected by ZonMw based on criteria of size and geographical spread (Struijs et al., 2010a). A number of care group characteristics were reasonably consistent with those of 55 care groups involved in another study in 2010 on the organisational characteristics of care groups (Van Til et al., 2010). Similarities between samples included the legal formats chosen by care groups, the average numbers of affiliated GPs, the proportions of monodisciplinary care groups and the average percentages of care groups that were planning additional disease management programmes. This suggests that the findings we have made in the current evaluation are generalisable to other Dutch care groups. Our evaluation study did not include control groups. We therefore cannot say to what extent our quality-of-care findings resulted from payment bundling or from other developments.

Patient inclusion criteria caused no major selection bias in most care groups

We employed three criteria in selecting patients for the study sample: (1) the care group was claiming a bundled fee for the patient as the evaluation began; (2) the patient remained under the care of the care group for the entire length of the study; (3) the patient underwent at least one standard diabetes check-up during the sample selection period. These criteria are explained in detail in Appendix 2. In section A3.2.1 we analyse whether the use of these criteria led to selection bias; we conclude that the sample was not biased. We also assess possible effects of the criteria on the process indicators and conclude that no substantial bias occurred there either, except in the application of criterion 3 in care group 9. That bias probably derived from the fact that this group did not require its health care providers to keep track of all standard diabetes check-ups; it seems probable that those providers who did record all check-ups also kept better records about other services.

Missing values in outcome indicators not always random
For each outcome indicator, we required that the patient records were to contain values for all three assessment occasions. Since not all tests were performed at every check-up (some were performed at different intervals, like once a year), the numbers of patients included vary from indicator to indicator. When we compared the characteristics of patients with and without missing HbA1c values, we found that, in some care groups, the patients with longer diabetes duration were more likely to have missing values than those with a shorter duration. This means that some of those missing values were attributable to chance, but that others were not. This affects the generalizability of the results.

Differences in patient population sizes across care groups caused variations in significance
The numbers of patients included in the sample ranged by care group from 333 to more than 8,000. This influences the likelihood of detecting statistically significant changes in process and outcome indicators. The more patients included, the greater the chance that any changes will be interpreted as significant (Zichtbare Zorg, 2009b). Moreover, a statistically significant change in a process or outcome indicator does not necessarily mean that the change is clinically relevant; the change could be so small as to have no substantive clinical meaning.

No comparisons possible between process and outcome indicators from Evaluations 1 and 2
The numbers of patients in treatment in disease management programmes has substantially increased in recent years. Our Evaluation 1 study population contained 14,156 disease management patients and our Evaluation 2 study population 25,302 patients. In two of the care groups studied, it was not possible to follow patients from one evaluation to the other because their patient identification numbers had been changed, precluding linkage between the two sets of data. Two other care groups had not been able to deliver patient data at the time of Evaluation 1. For this reason, we decided not to compare the process and outcome indicators from Evaluation 1 with those from Evaluation 2.

Patient survey response rate comparable to that in other studies
The response rate in our patient survey was 44%, broadly consistent with that in other recent studies. A study by Erasmus University Rotterdam, for example, reported response rates by care group ranging from 25% to 55% (Cramm et al., 2011). Low response raises the risk that those patients who complete questionnaires do not adequately reflect the entire patient population, thus compromising the reliability and generalizability of the survey results (Stoop, 2005). To assess whether the respondents in our survey sample were representative of our total study population, we compared them with those of the total sample in terms of gender, diabetes duration and age. As no major differences emerged, the survey respondents appeared to sufficiently correspond to the larger study population across care groups.

Using longitudinal data to determine quality-of-care effects over time
The indicators defined by the NDF Health Care Standard are calculated using a fraction, which has a numerator and a denominator. Had we determined the denominator using the numbers of patients as published in the annual reports of the care groups, we would have been basing our calculations on the total number of patients who happened to be under the care of that group on each chosen reference date (often the end of the calendar year in question). The yearly calculation of the process and outcome indicators would have then been based on different patient populations every year, hampering any comparison between indicators for different years. Any changes then found in outcome indicators might

have been partially (or even largely) attributable to changes in the patient populations. A large influx of new patients recently diagnosed with diabetes, for example, could induce spurious improvements in outcome indicators, because the new patients would predictably have better outcomes than those with longer diabetes duration. To enable conclusions about longer-term quality-of-care effects, we therefore chose to define the denominator differently for the current evaluation, employing the three inclusion criteria (see Appendix 2). This longitudinal manner of assigning patients to the denominator ensured that changes in indicators were free of statistical noise caused by new patients. One drawback to longitudinal research is that sample members can be lost to follow-up in the course of the study. Another is that patients who later enter a programme cannot be incorporated into the analyses.

3.4 Recommendations

Following on our discussion in sections 3.1 and 3.2, we will conclude now with some recommendations for future focus areas in policymaking and the field of practice.

Strengthening and expanding the role of the NDF Health Care Standard
The Health Care Standard established by the Dutch Diabetes Federation (NDF) has been assigned a pivotal role in improving the quality of diabetes management. In our previous evaluation (Struijs et al., 2010a), we made five recommendations for further reinforcing the central role of this health care standard:

- Indicated prevention interventions should be incorporated into the standards, analogous to the ones specified in the Dutch health care standards for vascular risk management and for obesity.
- A clear definition should be provided of the services to be covered by bundled pricing arrangements, whilst not interfering with the options of task delegation, substitution and reallocation.
- Specification should be provided as to which data are to be recorded and how they are to be operationally defined.
- The distinction between core disciplines and supporting disciplines in diabetes management should be eliminated.
- Tasks and activities should be specified which do not qualify as direct care provision but are nonetheless essential to the integrated delivery of diabetes care; these include information and communication technologies, coordination conferences, record keeping, and data and accountability reporting.

Based on the insights we have obtained in the follow-up evaluation, we now make three additional recommendations:

- The responsibilities and duties of the respective stakeholders – care groups, health care providers, health care insurance companies and patients – should be clearly articulated.
- A uniform set of inclusion and exclusion criteria for the patients assessed on the process and outcome indicators should be specified, in order to ensure consistency in the calculation of those indicators.
- Linked indicators should be developed that reflect the relationship between process and outcome indicators. Linked indicators are better suited to evaluating the patient-tailored approach adopted by care groups.

Monitoring the effects of introducing parallel disease management programmes
As our evaluation has shown, many care groups are planning additional disease management programmes for other illnesses or have already implemented them. It is unclear what effects this rollout of parallel programmes could have on the quality of the care delivered within those various programmes – or on the quality of the care delivered *outside* the programmes. To ensure the continuity of long-term care as several programmes operate alongside one another, and to avoid deterioration in the quality of other primary care provision, it seems advisable to monitor the quality of *all* of the health care delivered, both inside and outside disease management programmes.

Improving the transparency of quality assessments by ensuring a uniform record-keeping process
Under the bundled payment model, reliable information about the quality of the health care delivered is very important to insurance companies (in the form of accountability data), to health care providers (reflective feedback) and to care groups (management data). The NDF Health Care Standard includes indicators that aid in assessing care quality, but the ways these are to be calculated have not been standardised across the country. The calculations made by the care groups are also insufficiently transparent. Furthermore, many care groups prepare the accountability and reflective data themselves, raising questions about conflicts of interest. A uniform method of calculating indicators nationwide would enhance the comparability of effects. At the very least, the calculations should be transparent. It is also important not just to report on the functioning of care groups year by year, but to analyse quality trends in their health care services over longer periods. This would require a different method of calculating the indicators, in order to exclude the possibility that ostensible patient outcome effects are in fact caused by changes in patient populations.

Adapting the training curricula of health care providers to changing skills requirements
In view of the discussions about the reallocation and delegation of tasks in health care, it is important for training courses to devote attention to new skills that are currently expected of care providers. In GP training, more emphasis needs to be put on how to manage and supervise the work of practice nurses, as GP trainees may see too few diabetes patients to accrue sufficient knowledge of diabetes and its treatment. In dietician training, it would merit consideration to include negotiating and coaching skills as an integral part of the course. In the training of practice nurses, more attention could be focused on working according to protocol while allowing for individual patient needs, and in particular on how to put this into practice when patients have complex care needs.

Knowledge is needed of the quality-of-care effects of fee determination methods for subcontractors
The bulk of the care provided under bundled payment contracts is purchased by the care groups from individual health care providers or agencies. The ways these subcontractors get paid by the care groups – whether on a fee-for-service, fixed-rate, salaried or some other basis – may have influence on the ways the subcontractors deliver the services. Subcontractors paid per service rendered may be inclined to render more services, whereas those with fixed salaries may render fewer services (Robinson, 2001). Knowledge of which modes of fee determination are used would be helpful in ascertaining the effects of the bundled payment approach on the quality and efficiency of diabetes management.

Insight is needed into how care group size affects the quality and costs of care
As the evaluation has shown, the numbers of GPs per care group have increased. There is no firm

evidence from other health care sectors that large-scale operations have an adverse impact on the quality of care. In fact, they appear to have brought about quality improvements in some sectors (RVZ, 2008). Yet other research has shown that scale expansion may be cost effective to a certain point, after which diseconomies of scale gain the upper hand (Blank et al., 2008). Evidence is needed about the minimally and maximally desirable scale for care groups and the associated effects on the quality, affordability and accessibility of care.

Good governance is precondition for further quality-of-care improvement

Like Evaluation 1, the current study again found that the organisational frameworks of many care groups still do not conform to the ground rules contained in the Health Care Governance Code. Care groups have been particularly remiss in setting up supervisory bodies. The need for independent oversight is increasingly critical in the light of the increasing numbers of affiliated GPs and the continuing professionalization and growing budgets of care groups that have resulted from the rollout of new disease management programmes. The importance of oversight has been underlined by the Council for Public Health and Health Care in its report on governance and health care quality (RVZ, 2009). It would now seem advisable to start monitoring the progress of care groups in establishing independent supervision. In view of the specific characteristics of care groups, the creation of a Care Group Governance Code might also be considered. Health insurance companies might also consider including good-governance provisions in their bundled payment contracts.

Stronger focus on comorbidity needed during implementation of disease management programmes and transfer of patients with complex conditions

At present, health care providers appear not to experience or discern any major problems in relation to the care of patients who have diabetes as well as comorbid health conditions and who are involved in more than one disease management programme. It is nonetheless essential to monitor the consequences of the rollout of additional disease-specific programmes, in particular for patients with comorbid conditions who are being transferred from secondary care to GP care.

Experimentation is recommended with adding specialist care to bundled payment schemes and with introducing population-based payment schemes

Current bundled payment contracts confine themselves largely to services that derive from the diabetes management components as specified in the NDF Health Care Standard. Up to now, specialist care has remained outside the scope of the programmes, and insufficient efforts have been made to integrate primary and secondary care provision. Experimentation is needed to explore the feasibility and drawbacks of including specialist care in bundled payment arrangements; the resulting data would support policy makers in deciding whether such an extension of disease management programmes would be practicable and justified. A subsequent step might be to experiment with arrangements for specialist care on a *generic* basis, rather than on a disease-specific basis as is now the case; this would imply a single dedicated budget in each care group to cover secondary care services as needed. Such experiments could shed light on whether innovative pricing systems like these might help improve the effectiveness and efficiency of long-term disease management in the Dutch situation.

Literature

ACCORD Study Group, Gerstein HC, Miller ME et al. (2011) Long-term effects of intensive glucose lowering on cardiovascular outcomes. N Engl J Med 364(9), 818-828.

Achmea Avero (2012). Overzicht van ziekenhuizen en zelfstandige behandelcentra die niet- en wel gecontracteerd zijn. Available from: http://www.averoachmea.nl/Service/Pages/Zoekuwzorgverlener.aspx [accessed August 2012].

ACSM (1998) American College of Sports Medicine Position Stand. The recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness, and flexibility in healthy adults. Med Sci Sports Exerc 30, 975-91.

Aragones A, Schaefer EW, Stevens D et al. (2008) Validation of the Spanish translation of the Patient Assessment of Chronic Illness Care (PACIC) survey. Prev Chronic Dis 5(4), A113.

Baan CA, van Baal PHM, Jacobs-van der Bruggen MAM et al. (2009a) Diabetes mellitus in Nederland: schatting van de huidige ziektelast en prognose voor 2025. Ned Tijdschr Geneesk 153 (22), 1052-7.

Baan CA, Schoemaker CG, Jacobs-van der Bruggen MAM et al. (2009b) Diabetes tot 2025 preventie en zorg in samenhang. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu. RIVM Rapport 260322004.

Belastingdienst (2012). Maximumbedragen en aanslaggrenzen. Available from: http://www.belastingdienst.nl/wps/wcm/connect/bldcontentnl/belastingdienst/prive/werk_en_inkomen/sociale_verzekeringen/bijdrage_zorgverzekeringswet/hoe_wordt_de_bijdrage_zvw_berekend/maximumbedragen_en_aanslaggrenzen [accessed August 2012].

Berwick D (2011) Making good on ACOs' promise – The final rule for the Medicare Shared Savings Program. N Engl J Med 365, 1753-1756.

Bilo HJG, Wolffenbuttel BHR, Dikkeschei LD et al. (2007) Bepaling van de nierfunctie volgens de NHG-standaard 'Diabetes mellitus type 2': kans op overschatting van het aantal diabetespatiënten met nierfunctieproblemen. Ned Tijdschr Geneesk 151, 1024-8.

Blank J, Haelermans C, Koot P (2008) Een inventariserend onderzoek naar de relatie tussen schaal, bereikbaarheid, kwaliteit en doelmatigheid in de zorg. Delft: Instituut voor Publieke Sector Efficiëntie Studies.

Bonomi AE, Wagner EH, Glasgow RE, Von Korff M (2002) Assessment of chronic illness care (ACIC): a practical tool to measure quality improvement. Health Serv Res 37(3), 791-820.

Bouma M, Rutten GE, Wiersma T (2006) Samenvatting van de standaard ‘Diabetes mellitus type 2 (tweede herziening) van het Nederlands Huisartsen Genootschap. Ned Tijdschr Geneeskd 150, 2339-40.

BoZ (2009) Zorgbrede Governancecode 2010. Bunnik: Brancheorganisaties Zorg.

Calvert M, Shankar A, McManus RJ, Lester H, Freemantle N (2009) Effect of the quality and outcomes framework on diabetes care in the United Kingdom: retrospective cohort study. BMJ 338, b1870.

CBO (2006a) Diabetische retinopathie. Richtlijnen screening, diagnostiek en behandeling. Opgesteld door het Kwaliteitsinstituut voor de Gezondheidszorg CBO en Nederlands Oogheelkundig Gezelschap. Utrecht: Kwaliteitsinstituut voor de Gezondheidszorg CBO.

CBO (2006b) Richtlijn Diabetische voet 2006. Opgesteld door het Kwaliteitsinstituut voor de Gezondheidszorg CBO, de Nederlandsche Internisten Vereeniging en de Nederlandse Diabetes Federatie. Utrecht: Kwaliteitsinstituut voor de Gezondheidszorg CBO.

CBS (2010). Kerncijfers van de bevolkingsprognose. 2010-2060. [Last edited: 17 December 2010] Available from: http://statline.cbs.nl/StatWeb/publication/\?DM =SLNL&PA=37325&D1=0-2&D2=a&D3=0&D4=0&D5=0&D6=15-16&HDR=T&S TB=G1.G2.G3.G4.G5&VW=T [accessed 9 July 2012], The Hague/Heerlen: CBS; 2010.

CBS (2011). Health. lifestyle and health care; from 1900. Available from: http://statline.cbs.nl/StatWeb/publication/?DM=SLEN&PA=37852eng &D1=96.112-113.141-145&D2=0.10.20.30.40.50.60.70.80.90.100.109-110&LA=EN&VW=T

CBS (2012a). Bevolking; generatie, geslacht, leeftijd en herkomstgroepering, 1 januari. [Last edited: 27 June 2012]. Available from: http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=7461BEV&D1=0 &D2=a&D3=0,121-130&D4=l&VW=T [accessed August 2012], The Hague/Heerlen: Centraal Bureau voor de Statistiek; 2012

CBS (2012b). Population and population dynamics; month, quarter and year [last edited 6 July 2012]. Available from: http://statline.cbs.nl/StatWeb/publication/?DM=SLEN&PA=37943eng &D1=21-22&D2=(l-16)-l&LA=EN&VW=T [accessed 9 July 2012], The Hague/Heerlen: Centraal Bureau voor de Statistiek; 2012.

CBS (2012c). Geboorte naar diverse kenmerken. [Last edited: 22 June 2012]. Available from: http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=37422ned&D1=0.4-5.7.9.11.13.17.26.35.40-41&D2=l&HDR=G1&STB=T&VW=T [accessed 9 July 2012], The Hague/Heerlen: CBS; 2012.

CBS (2012d). Population and population dynamics; month, quarter and year. Available from: http://statline.cbs.nl/StatWeb/publication/?DM=SLEN&PA=37943eng&D1=21-46&D2=(l-16)-l&LA=EN&VW=T [accessed 9 July 2012], The Hague/Heerlen: CBS; 2012.

CBS (2012e). Bevolking; generatie, geslacht, leeftijd en herkomstgroepering. 1 januari. [Last edited: 27 June 2012]. Available from: http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA =37325&D1=1-2&D2=a&D3=0&D4=0&D5=137.220.237&D6=14-16&HDR=T&STB= G1.G2.G3.G4.G5&VW=T [accessed 9 July 2012], The Hague/Heerlen: CBS; 2012.

CBS (2012f). Uitgaven aan zorg met 3.2 procent gestegen. CBS Persbericht PB12-034. [Published 16 May 2012] Available from: http://www.cbs.nl/NR/rdonlyres/A3F2AAAE-38AC-4D39-941A-20EA5C5AFCF3/0/pb12n034.pdf, The Hague/Heerlen: CBS; 2012.

CBS (2012g). Zorgrekeningen; uitgaven (in lopende en constante prijzen) en financiering. [Last edited 16 May 2012]. Available from: http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLNL&PA=71914NED&D1=0-23,37-45&D2=9-l&HD=101210-0925&HDR=G1&STB=T.

Chew LD, Bradley KA, Boyko EJ (2004) Brief questions to identify patients with inadequate health literacy. Fam Med 36(8), 588-94.

Chew LD, Griffin JM, Partin MR et al. (2008) Validation of screening questions for limited health literacy in a large VA outpatient population. J Gen Intern Med 23(5), 561-6.

Cleveringa FG, Gorter KJ, Van den Donk M, Rutten GE (2008) Combined task delegation, computerized decision support, and feedback improve cardiovascular risk for type 2 diabetic patients: a cluster randomized trial in primary care. Diabetes Care 31, 2273-5.

Cooper JG, Claudi T, Jenum AK et al. (2009) Quality of care for patients with type 2 diabetes in primary care in Norway is improving: results of cross-sectional surveys of 33 general practices in 1995 and 2005. Diabetes Care 32, 81-3.

Coördinatieplatform Zorgstandaarden (2010) Bestuurlijke organisatie van zorgstandaarden. Advies aan de minister van VWS. Coördinatieplatform Zorgstandaarden. The Hague: ZonMw.

Cramm JM, Tsiachristas A, Walters-Hipple B (2011a) Evaluating cardiovascular disease management programmes. Preliminary results. Rotterdam: Institute of Health Policy and Management.

Cramm JM, Strating MM, Tsiachristas A, Nieboer AP (2011b) Development and validation of a short version of the Assessment of Chronic Illness Care (ACIC) in Dutch disease management programs. Health Qual Life Outcomes 9, 49.

CZ (2011) Het inkoopkader van CZ. Integrale zorgprogramma's 2012. Tilburg: CZ.

CZ (2012). Selectie op kwaliteit. Available from: http://www.cz.nl/consument/zorgadvies/kwaliteit/selectie-op-kwaliteit [accessed July 2012].

Danaei GMD, Finucane MD, Lu Y et al. (2011) National, regional, and global trends in fasting plasma glucose and diabetes prevalence since 1980: systematic analysis of health examination surveys and epidemiological studies with 370 country-years and 27 million participants. Lancet 378, 31-40.

De Bruin M, Struijs JN (2008) Keten-dbc's en zorggroepen onder de loep: waar liggen de verantwoordelijkheden en aansprakelijkheden? Juridische Geneesmiddelen Recht (JGR) plus 2008.

Department of Health (2010) Equity and excellence: Liberating the NHS. London: Department of Health.

Dusheiko M, Doran T, Gravelle H (2011) Does higher quality of diabetes management in family practice reduce unplanned hospital admissions? Health Serv Res 46(1), 27-46.

DVN (2008) Diabetes Zorgwijzer. Een overzicht van de zorg voor volwassenen met diabetes type 2. Amersfoort: Diabetesvereniging Nederland.

EIB (2011a) Monitoring Integrale Bekostiging. Zorg voor Chronisch Zieken. Evaluatiekader. The Hague: Evaluatiecommissie Integrale Bekostiging.

EIB (2011b) Monitoring Integrale Bekostiging. Zorg voor Chronisch Zieken. Eerste rapportage van de Evaluatiecommissie Integrale Bekostiging. The Hague: Evaluatiecommissie Integrale Bekostiging.

ERFC (2011) Diabetes Mellitus, Fasting Glucose, and Risk of Cause-Specific Death. The Emerging Risk Factors Collaboration. N Engl J Med 364, 829-841.

Fitzgerald JT, Funnell MM, Hess GE et al. (1998) The reliability and validity of a brief diabetes knowledge test. Diabetes Care 21, 706-10.

Gaede P, Vedel P, Larsen N et al. (2003) Multifactorial intervention and cardiovascular disease in patients with type 2 diabetes. N Engl J Med 348, 383-93.

Glasgow RE, Wagner EH, Schaefer J et al. (2005a) Development and validation of the Patient Assessment of Chronic Illness Care (PACIC). Med Care 43(5), 436-44.

Glasgow RE, Whitesides H, Nelson CC, King DK (2005b) Use of the Patient Assessment of

Chronic Illness Care (PACIC) with diabetic patients: relationship to patient characteristics, receipt of care, and self-management. Diabetes Care 28(11), 2655-61.

Gnavi R, Picariello R, Karaghiosoff L, Costa G, Giorda C (2009) Determinants of quality in diabetes care process: the population based torino study. Diabetes Care 23, 413-419.

Grauw WJC (2006) Nierfunctiebewaking: een taak voor de huisarts. DiabeteSpecialist 19.

Heijmans M, Spreeuwenberg P, Rijken M (2010) Ontwikkelingen in de zorg voor chronisch zieken. Rapportage 2010. Utrecht: NIVEL.

Holbrook A, Thabane L, Keshavjee K et al. (2009) Individualized electronic decision support and reminders to improve diabetes care in the community: COMPETE II randomized trial. CMAJ 181, 37-44.

Jacobs-van der Bruggen MA, Engelfriet P, Hoogenveen RT et al. (2008) Lipid lowering treatment for all could substantially reduce the burden of macrovascular complications of diabetes patients in the Netherlands. Eur J Cardio Prev and Rehab 15(5), 521-5.

Janssen PG, Gorter KJ, Stolk RP, Rutten GE (2009) Randomised controlled trial of intensive multifactorial treatment for cardiovascular risk in patients with screen-detected type 2 diabetes: 1-year data from the ADDITION Netherlands study. Br J Gen Pract 59, 43-8.

Limperg K (2009) Rookprevalentie 2004-2008. Continu onderzoek rookgewoonten. Amsterdam: TNS NIPO.

Lokale en Nationale Monitor Gezondheid. www.monitorgezondheid.nl.

Menzis (2012). Ziekenhuiszorg. Menzis kiest voor toegankelijke en betaalbare zorg. Available from:
http://www.menzis.nl/web/Consumenten/Zorgadvies/Ziekenhuiszorg.htm [accessed July 2012].

NDF (2007) NDF Zorgstandaard. Transparantie en kwaliteit van diabeteszorg voor mensen met diabetes type 2. Amersfoort: Nederlandse Diabetes Federatie.

NDF (2008) E-diabetes Dataset. Amersfoort: Nederlandse Diabetes Federatie.

NDF (2011a) Zorginhoudelijke indicatoren over de kwaliteit van de diabeteszorg voor patiënten met diabetes type 2. Amersfoort: Nederlandse Diabetes Federatie.

NDF (2011b) E-diabetes kernset. Amersfoort: Nederlandse Diabetes Federatie.

NMa (2012) Nederlandse Mededingings autoriteit. http://www.nma.nl/nederlands/home/index.asp. [Accessed September 2012].

NOG (2006) Richtlijn diabetische retinopathie. Screening, diagnostiek en behandeling. Nijmegen: Nederlands Oogheelkundig Gezelschap.

NZa (2010a) Beleidsregel CV-7000-5.0-2 Prestatiebekostiging multidisciplinaire zorg-verlening chronische aandoeningen (DM type 2, CVR, COPD). Utrecht: Nederlandse Zorgautoriteit.

NZa (2010b) Beleidsregel CU-7000-4.0.-4 / CA-415 Innovatie ten behoeve van nieuwe zorgprestaties. Utrecht: NZa.

NZa (2010c) Beleidsregel CV-7000-5.0.-1 Prestatiebekostiging multidisciplinaire zorgverlening chronische aandoeningen (DM type 21, CVR2). Utrecht: NZa.

NZa (2011) Beleidsregel BR/CU-7012 Ketenzorg - Integrale bekostiging multidisciplinaire zorgverlening chronische aandoeningen (DM type 2, VRM, COPD). Utrecht: Nederlandse Zorgautoriteit.

NZa (2012a) Beleidsregel AL/BR-0005 Innovatie ten behoeve van nieuwe zorgprestaties. Utrecht: NZa.
NZa (2012b). Marktscan Zorgverzekeringsmarkt. Weergave van de markt 2008-2012. Utrecht: NZa. 2012.

Polak BC, Hartstra WW, Ringens PJ et al. (2008) Richtlijn ‘Diabetische retinopathie: screening, diagnostiek en behandeling’ (herziening). Ned Tijdschr Geneeskd 152, 2406-13.

Ratzan SC (2001) Health literacy: communication for the public good. Health promot Int 16(2), 207-14.

Robinson JC (2001) Theory and practice in the design of physician payment incentives. Milbank Q 79(2), 149-77.

Rosenthal MB, Cutler DM, Feder J (2011) The ACO Rules – Striking the Balance between Participation and Transformative Potential. N Engl J Med 365(4).

Rutten GEHM (2008) Zorg voor patiënten met diabetes mellitus type 2 in de 1e lijn. Ned Tijdschr Geneeskd 152, 2389-94.

RVZ (2002) Taakherschikking in de gezondheidszorg. The Hague: Raad voor de Volksgezondheid & Zorg.

RVZ (2008) Schaal en Zorg. The Hague: Raad voor de Volksgezondheid & Zorg.

RVZ (2009) Governance en kwaliteit van zorg. The Hague: Raad voor de Volksgezondheid & Zorg.

Schäfer I, Küver C, Gedrose B et al. (2010a) Selection effects may account for better outcomes of the German Disease Management Program for type 2 diabetes. BMC Health Serv Res 10, 351.

Schäfer W, Kroneman M, Boerma W, Van den Berg M, Westert G, Devillé W, Van Ginneken E (2010b). The Netherlands: Health system review. Health Systems in Transition 2010; 12(1): 1-229

Schmittdiel J, Mosen DM, Glasgow RE et al. (2007) Patient Assessment of Chronic Illness Care (PACIC) and improved patient-centered outcomes for chronic conditions. Journal General Internal Medicine 23(1), 77-80.

Sidorenkov G, Haaijer-Ruskamp FM, De Zeeuw D et al. (2011) Review: relation between quality-of-care indicators for diabetes and patient outcomes: a systematic literature review. Med Care Res Rev 68(3), 263-89.

Sims DS Jr, Cavanagh PR, Ulbrecht JS (1988) Risk factors in the diabetic foot. Recognition and management. Phys Ther 68, 1887-902.

Sönnichsen AC, Winkler H, Flamm M et al. (2010) The effectiveness of the Austrian disease management programme for type 2 diabetes: a clusterrandomised controlled trial. BMC Family Practice 11, 86.

Stoop I (2005) The Hunt for the Last Respondent. The Hague: Sociaal en Cultureel Planbureau.

Struijs JN, Van Til JT, Baan CA (2010a) Experimenting with bundled payment in the Netherlands. The first tangable effects. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu. RIVM Rapport 260014001.

Struijs JN, De Bruin SR, Baan CA (2010b) Vijf vragen over zorgstandaarden. Model van Coördinatieplatform is nog niet eenduidig. Medisch Contact 65, 1902-5.

Szecsenyi J, Rosemann T, Joos S et al. (2008) German Diabetes Disease Management Programs are appropriate for restructuring care according to the Chronic Care Model an evaluation with the Patient Assessment of Chronic Illness Care Instrument. Diabetes Care 31(6), 1150-1154.

Taakgroep (2005) Diabeteszorg beter. Rapport van de Taakgroep Programma Diabeteszorg. The Hague: Ministerie van Volksgezondheid, Welzijn en Sport.

Taskforce (2012). Naar beter betaalbare zorg. Rapport Taskforce Beheersing Zorguitgaven. The Hague: Rijksoverheid, 2012.

UKPDS (1998a) Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. UK Prospective Diabetes Study Group. BMJ 317, 703-13.

UKPDS (1998b) Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). UK Prospective Diabetes Study (UKPDS) Group. Lancet 352, 837-53.

Van Dijk C, Rijken M, De Bakker D et al. (2009) Anders is niet per se beter: kanttekeningen bij functionele bekostiging. Medisch Contact 64, 973-6.

Van Sloten TT, Schaper NC, Huijberts MS, Friederichs SA (2008) Diabetische voet: nieuwe inzichten in pathofysiologie en behandeling. Ned Tijdschr Geneeskd 152, 2400-5.

Van Til JT, De Wildt JE, Struijs JN (2010) De organisatie van zorggroepen anno 2010: Huidige stand van zaken en de ontwikkelingen in de afgelopen jaren. Bilthoven: Rijksinstituut voor Volksgezondheid en Milieu. RIVM Rapport 260332001.

Varkevisser M, Van der Geest S, Appelmans M et al. (2009) Regionale machtspositie zorggroepen baart zorgen. ESB 94, 4572.

Vektis (2012). Zorgthermometer. Verzekerden in beweging 2012. Available from:
http://www.vektis.nl/downloads/Publicaties/2012/Zorgthermometer%20-%20Verzekerden%20in%20beweging/index.html. [Published on 17 April 2012].

VGZ (2011). Gecontracteerde ziekenhuizen. Available from:
http://www.vgz.nl/sitecollectiondocuments/2012/vgz-ziekenhuizen-nederland-2011.pdf [accessed July 2012].

Voorham J, Denig P, Wolffenbuttel BH, Haaijer-Ruskamp FM (2008) Cross-sectional versus sequential quality indicators of risk factor management in patients with type 2 diabetes. Med Care 46, 133-41.

Vrijhoef HJ, Berbee R, Wagner EH, Steuten LM (2009) Quality of integrated chronic care measured by patient survey: identification, selection and application of most appropriate instruments. Health Expect 12(4), 417-29.

VWS (2009) Voorhangbrief keten-DBC's en huisartsenbekostiging. Brief van dr. A. Klink aan de voorzitter van de Tweede Kamer der Staten-Generaal d.d. 13 juli 2009. The Hague: Ministerie van Volksgezondheid, Welzijn en Sport.

VWS (2010a) Instelling Evaluatie commissie Integrale Bekostiging. Brief van dr. A. Klink aan de voorzitter van de Tweede Kamer der Staten-Generaal d.d. 13 januari 2010. The Hague: Ministerie van Volksgezondheid, Welzijn en Sport.

VWS (2010b) Coördinatieplatform Zorgstandaarden. Brief van minister A. Klink aan bestuur
ZonMw d.d. 21 juli 2010. The Hague: Ministerie van Volksgezondheid, Welzijn en Sport.

VWS (2011a) Beantwoording vragen AO Zorgverzekeringswet/ Pakketadvies 2011 d.d. 22 juni 2011. The Hague: Ministerie van Volksgezondheid, Welzijn en Sport.

VWS (2011b). Programmabrief langdurige zorg. De staatssecretaris van Volksgezondheid, Welzijn en Sport, M. L. L. E. Veldhuijzen van Zanten-Hyllner [Published 1 June 2011]. Available from: http://www.rijksoverheid.nl/documenten-en-publicaties/kamerstukken/2011/06/01/programmabrief-langdurige-zorg.html. The Hague: VWS, 2011.

VWS (2012a). Welke prijzen mag de tandarts vragen voor behandelingen in 2012? Available from: http://www.rijksoverheid.nl/onderwerpen/zorgverzekering/vraag-en-antwoord/welke-prijzen-mag-de-tandarts-vragen-voor-behandelingen-in-2012.html.

VWS (2012b). Wat zit er in het basispakket van de zorgverzekering in 2012? Available from:
http://www.rijksoverheid.nl/onderwerpen/zorgverzekering/vraag-en-antwoord/wat-zit-er-in-het-basispakket-van-de-zorgverzekering-in-2012.html.

Wagner EH, Austin BT, Von Korff M (1996) Organizing care for patients with chronic illness. Milbank Q 74(4), 511-44.

Wagner EH, Bennet SM, Austin BT et al. (2005) Finding common ground: patient-centeredness and evidence-based chronic illness care. J Altern Complement Med 11 Suppl 1, S7-15.

Ware JE, Kosinski M, Keller SD (1996) A 12-Item Short-Form Health Survey: Construction of Scales and Preliminary Tests of Reliability and Validity. Med Care 34(3), 220–33.

Wendel-Vos GC, Frenken FJ (2008) Het beweeggedrag in Nederland 2001-2007. In: Hildebrandt VH, Ooijendijk WTM, Hopman-Rock M (red.). Trendrapport bewegen en gezondheid 2006/2007. Leiden: TNO.

Wensing M, Van Lieshout J, Peter Jung H et al. (2008) The Patients Assessment Chronic Illness Care (PACIC) questionnaire in The Netherlands: a validation study in rural general practice. BMC Health Serv Res 8, 182.

Zichtbare Zorg (2009a) Voorlopige minimale datasets voor diabetes type II, COPD en CVR. The Hague: Zichtbare Zorg.

Zichtbare Zorg (2009b) Betrouwbaar onderscheiden. Een achtergrondstudie naar de statistische betrouwbaarheid en steekproefomvang bij het vergelijken van zorgaanbieders. The Hague: Zichtbare Zorg.

Zichtbare Zorg (2011) Kwaliteitsindicatoren 2011. Verslagjaar 2010. Chronische Zorg Diabetes Mellitus. The Hague: Zichtbare Zorg.

ZonMw (2007) Programma Diseasemanagement Chronische Ziekten. http://www.zonmw.nl/nl/programmas/programma-detail/diseasemanagement-chronische-ziekten/algemeen/ (geraadpleegd op 17 november 2011).

ZonMw (2010) ZonMw programma Op één lijn. Factsheet. Den Haag: ZonMw. http://www.zonmw.nl/uploads/tx_vipublicaties/Factsheet_OpEenLijn_okt_2010_1_.pdf.

Zoungas S, De Galan BE, Ninomiya T et al. (2009) The combined effects of routine blood pressure lowering and intensive glucose control on macrovascular and microvascular outcomes in patients with type 2 diabetes; new results from ADVANCE. Diabetes Care 32(11), 2068-74.

Zvw (2012). Commissie Evaluatie Risicoverevening Zvw. Evaluatie risicoverevening Zorgverzekeringswet. [Published June 2012]. Available from: http://www.vektis.nl/downloads/Publicaties/2012/Zorgthermometer%20-%20Verzekerden %20in%20beweging/index.html.

Appendices

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Appendix 2 Method

Outline
A brief overview of our research methods was given in Box 2.1 above. We will now explain the methods in more detail. We first describe the study population (section A2.1), then the various means of data collection (A2.2) and finally our methods of analysis (A2.3).

A2.1 Study population

The study population comprised all persons with diabetes for whom a bundled payment for diabetes management was claimed by a care group.

Nine care groups included in Evaluation 2
Evaluation 2 was conducted in nine care groups (as was Evaluation 1), but the groups did not precisely coincide. Care group 5, which took part in the first evaluation, withdrew before Evaluation 2 and is therefore not considered in this report. Care group 6 took part in Evaluation 2 but had not yet been established at the time of Evaluation 1. Care group 1 had since merged with a larger, non-participating group; for the sake of consistent comparison, we included only the health care providers from the previous care group 1 in Evaluation 2.

A2.2 Methods of data collection

As in Evaluation 1, data were collected for Evaluation 2 from three different sources:
1 patient record systems;
2 patient survey questionnaires;
3 semi-structured interviews.

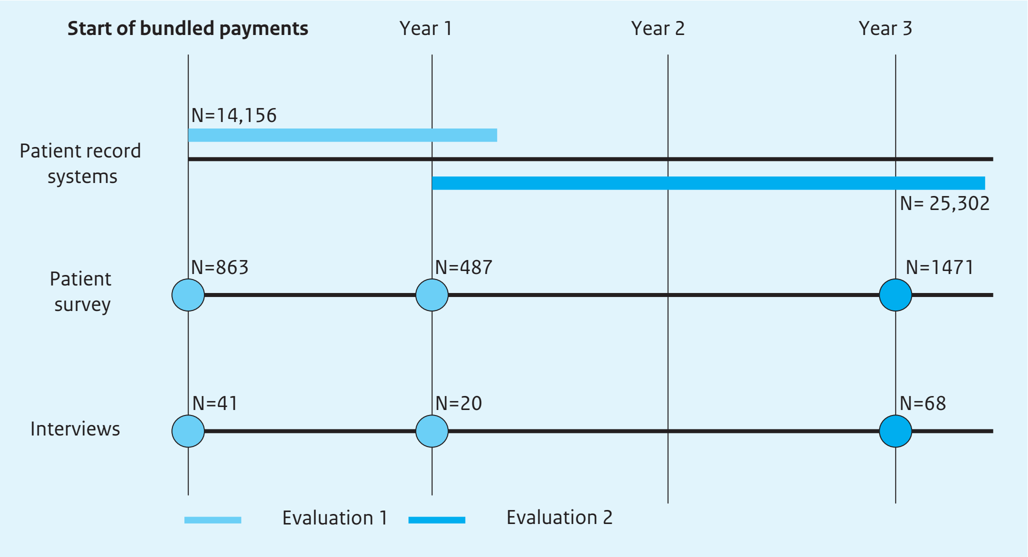
In all care groups, we obtained data from patient record systems and interviewed different types of stakeholders. In seven groups, we also distributed questionnaires to a patient survey subsample; no patient questionnaires were administered in care groups 7 and 8 (as explained in section A2.2.2 below).

We explain the three data collection methods in more detail in sections A2.2.2 to A2.2.4, after first describing the time frame of the study.

A2.2.1 Study period

The period for which data were gathered differed by the type of data collection (see Figure A2.1). Data from the patient record systems were gathered over a three-year period. Data on the first year after bundled payment implementation had already been obtained in Evaluation 1, and data for the second and third years were collected in Evaluation 2. The data in the patient survey and in the semi-structured interviews were obtained on three different occasions: (1) at the start of bundled payment implementation, (2) one year after implementation and (3) three years after implementation. The next three sections (A2.2.2 to A2.2.4) further clarify the time frames for Evaluation 2 in terms of the three data sources listed above.

Figure A2.1 Schematic representation of data collection for Evaluations 1 and 2.



A2.2.2 Patient record systems

Care group reporting procedure for patient record data similar to that for Evaluation 1

To report the data we required about their patients, the care groups followed the same procedure as in Evaluation 1. Data about the health care services delivered were retrieved by them from the patient record systems of their health care providers and were compiled and stored at a central point in each care group. The data were then relayed to a specially designed RIVM website. Both technical and content checks were performed there by a data manager, who sent an error report to the care group specifying, at the record level, what data, if any, had been incorrectly submitted. The care group then revised and resubmitted its data report.

All care groups used Evaluation 1 format in reporting patient data

The care groups were given the option of submitting their data using either the provisional Minimal Dataset newly introduced by the Health Care Transparency Programme (Zichtbare Zorg, 2009a) or the older format used in Evaluation 1. All groups chose the older format, partly for pragmatic reasons and partly because software suppliers would have charged extra for reporting data in the new format.

Data submission snags made known via data management report form

Because several problems with data submission had come to light during Evaluation 1, RIVM now developed a special form for data managers to report problems that could potentially affect data quality. Information thus obtained was taken into consideration in interpreting the data.

Three inclusion criteria applied in selecting patient sample

1. *A bundled payment claim was made for the patient for the first quarter of 2008.*
   Only those patients for whom a health insurance claim for bundled payment was made for the period 1 January 2008 to 30 April 2008 had their data included in the analysis.

2. Patient remained under care group treatment for the entire period of analysis
   Data was entered only for patients who remained under the care of the care group for the entire study period; that is, a bundled fee was claimed for them both for the first quarter of 2008 and the second quarter of 2010.
3. *Standard check-up in first quarter of 2008*
   Patients were included only if they had received at least one standard (quarterly or yearly) diabetes check-up between 1 January 2008 and 30 April 2008. The exact date of that check-up was the starting date of each patient's unique study time frame.

Patient data linkage not sufficiently feasible between Evaluations 1 and 2

In four of the nine care groups (1, 6, 7 and 8), it was not possible to link patient data from Evaluations 1 and 2. Groups 6 and 7 had not submitted data for the first evaluation, and groups 1 and 8 had submitted it using different patient ID numbers. In care groups where linkage was feasible, it could not be made for all patients. That was partly because the numbers of affiliated GPs (and hence the numbers of newly associated patients) had sharply increased (Table A2.1); the study population for care group 2, for instance, grew from 670 in the first evaluation to 4,495 in the second. Other patients from Evaluation 1 were no longer present in the systems for reasons such as death or relocation.

This report based solely on data from Evaluation 2

Given that data linkage between the two evaluations was not feasible in a large proportion of the care groups and in view of the considerable overlap between the two samples in the other groups (see Table A2.1), we report here only on the Evaluation-2 data.

Table A2.1 Numbers of patients studied in Evaluations 1 and 2 and the numbers included in both evaluations.

Numbers of patients in sample			
Care group	**Evaluation 1**	**Evaluation 2**	**Included in both evaluations**
1	362	333	unknown
2	670	4495	540
3	552	1274	427
4	5295	8358	3716
5	2635	-	0
6	-	1651	0
7	-	5824	0
8	1525	563	unknown
9	53	838	100
10	2565	1966	341
Total	14,156	25,302	5124

Evaluation 2 spanned two full years with one month's extra leeway per year

The present evaluation covered the second and third years after bundled payment implementation (see also Figure A2.1). Each patient's individual study time frame was two years, with one month's possible leeway per year, making the total study period per patient 26 months. Most process measures were calculated on a yearly basis, and we provided the leeway because check-ups did not always take place exactly within a year's time span.

Care group time frames synchronised as much as possible

In Evaluation 1, the study time frames differed by care group (see Table A2.2). For Evaluation 2 we planned to synchronise those periods. Owing to various causes arising in the course of the evaluation, this did not prove possible in care group 6 (due to new information technology), care group 7 (due to an external agency compiling reflective data) and care group 8 (due to a new software supplier). Because their study periods were different, so were the selection periods for the patient samples (see Table A2.2).

Quality of care assessment based on NDF Health Care Standard and NDF quality indicator set

In evaluating the quality of the care delivered, we employed the process and patient outcome indicators as described in the NDF Health Care Standard (NDF, 2007), in combination with the more recently established NDF diabetes management quality indicators (NDF, 2011a).

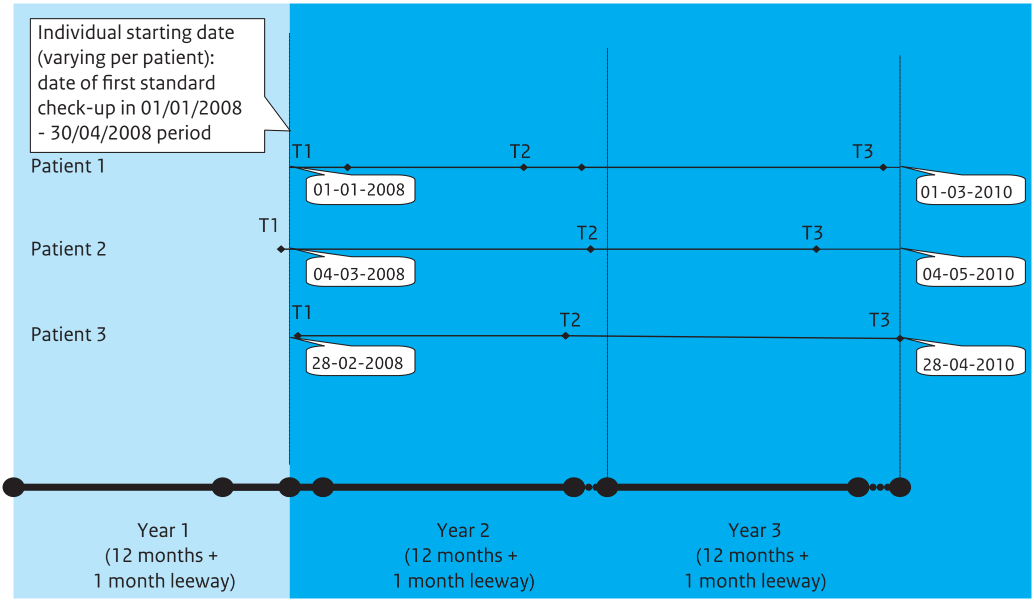
Process measures spanned two years, patient outcomes obtained three times

Figure A2.2 depicts the study time frames for three fictitious patients. Each has their own individual study period, beginning on the date of their first standard check-up during the sample selection period (see Table A2.2). Each patient was monitored for two years from that date (with a possible 13th month of leeway per year). Both in the second and third year after bundled payment implementation, we ascertained whether lab tests, standard and other check-ups (such as foot and eye exams), and measurements of body weight and blood pressure had been carried out.

Table A2.2 Study periods for Evaluations 1 and 2 and sample selection periods in Evaluation 2, by care group.

	Evaluation-1 study period	Evaluation-2 study period	Evaluation-2 sample selection period
1	1 January 2007 – 30 April 2008	1 January 2008 – 30 June 2010	1 January 2008 – 30 April 2008
2	1 January 2007 – 30 April 2008	1 January 2008– 30 June 2010	1 January 2008 – 30 April 2008
3	1 October 2007 – 31 January 2009	1 January 2008 – 30 June 2010	1 January 2008 – 30 April 2008
4	1 January 2007 – 30 April 2008	1 January 2008 – 30 June 2010	1 January 2008 – 30 April 2008
6	-	1 July 2009 – 30 November 2010	1 July 2009 – 31 October 2009
7	-	1 January 2009 – 31 December 2010	not possible
8	1 January 2007 – 30 April 2008	1 September 2008 – 31 October 2010	1 September 2008 – 31 December 2008
9	1 April 2007 – 30 July 2008	1 January 2008 – 30 June 2010	1 January 2008 – 30 April 2008
10	1 April 2007 – 30 July 2008	1 January 2008 – 30 June 2010	1 January 2008 – 30 April 2008

Figure A2.2 Study periods in Evaluation 2 for three fictitious patients Assessment (e.g. HbA1c test).



Patient outcomes on those tests were recorded at the end of both years, using the last assessment made in the previous 12-month period (T2, T3). The baseline assessment (T1) was the one obtained on the starting date of the patient's study period. Because lab tests and check-ups often did not take place on the same day, we also recorded any lab results obtained three months before to one month after the starting date.

A2.2.3 Patient survey

Seven of nine care groups took part

Patient questionnaires were distributed to subgroups of patients in care groups 1-4, 6, 9 and 10. Care groups 7 and 8 considered this too time-intensive. Care group 3 had recently surveyed all its patients (N = 1841) in a questionnaire development project for the Dutch Consumer Quality (CQ) Index, version 4.0, and the questions for the index partially matched those on our questionnaire. Where possible we report the CQ results for care group 3; in addition, we sent our RIVM questionnaire to all patients in that care group who had responded in both patient survey rounds in Evaluation 1 (n = 65).

Questionnaire content largely identical to that in Evaluation 1

The content of the patient survey questionnaire coincided in large part with that in our survey in Evaluation 1. All the retained questions derived from existing, validated questionnaires and concerned the following topics: (1) patient characteristics, including date of birth, gender, education and ethnicity (Dutch Local and National Public Health Monitor, LNM); (2) amount of physical exercise (Wendel-Vos and Frenken, 2008); (3) Fitnorm, the Dutch version of the physical activity guidelines of the American College of Sports Medicine (ACSM, 1998); (4) Diabetes Knowledge Test (Fitzgerald et al., 1998); (5) coordination of care (Heijmans et al., 2010); and (6) quality of life, assessed using the SF-12 questionnaire (Ware et al., 1996).

New survey questions added

We added new questions to the questionnaire for Evaluation 2. These included the Patient Assessment of Chronic Illness Care (PACIC), an instrument to measure the perceived quality of integrated care delivery in long-term illness (Glasgow et al., 2005a); we used the validated Dutch translation (Vrijhoef et al., 2009). The PACIC contains 20 questions designed to evaluate how well the elements of the Chronic Care Model (CCM; Wagner et al., 1996; Wagner et al., 2005) have been implemented.

We also added a short test to screen the health literacy of people with diabetes (Chew et al., 2004). Health literacy refers to skills people need to gain access to health information, to understand it and to apply it in making health-related decisions (Ratzan, 2001). International research has shown that low health literacy can be a major obstacle to the management and self-management of chronic health conditions. Further questions were appended about the use of the Diabetes Care Guide (DVN, 2008), the health care services received and the medicines taken.

Questionnaires were sent to patients' home addresses

In May and June 2010 (see also Figure A2.1), the questionnaires were send to the selected patients. Reminders were sent if questionnaires had not been returned within three weeks. The final deadline was 1 September 2010.

Random survey sample of five hundred patients in ten to fifteen random GP practices per care group

We asked the participating care groups to draw a random sample of ten to fifteen of its GP practices and then to randomly sample patients from that subpopulation. We manually deduplicated this survey sample to remove any people who had been part of the Evaluation-1 patient survey, so that they would not receive duplicate questionnaires (see next paragraph). Five hundred patients per care group were selected in this new patient sample.

Questionnaire additionally sent to survey respondents from Evaluation 1

The deduplicated sample of 500 patients per care group was then supplemented with all the patient survey respondents that had completed either the pen-and-paper questionnaire or its online electronic version in Evaluation 1. The online participants were now requested by e-mail to take part in the new survey. When possible, deceased respondents were removed beforehand from the address database from Evaluation 1.

A2.2.4 Semi-structured interviews with health care providers, care group managers and health insurance officials

68 interviews in all groups of stakeholders

In the period from October 2010 to April 2011, we conducted a total of 68 interviews with ten care group managers (two from one care group), twelve GPs, six practice nurses, seven diabetes nurse specialists (five working in primary care and two in secondary care), eight internal medicine specialists (internists), two ophthalmologists, two dieticians, two physiotherapists, one pharmacist, one podiatrist, two optometrists, two general practice laboratory workers and four health insurance officials. All nine of the care group project leaders were interviewed. In several groups where the manager was also the project leader, we interviewed that person twice, once in the autumn of 2010 and again in the spring of 2011. The managers also provided us with contact information for their liaison officer at the market-leading health care insurance company or companies in their region. Because several care groups referred us to the same persons, a total of four officials at four companies were interviewed.

Random sample of health care providers

Each care group sent the RIVM a list containing the names and addresses of all the health care providers they had under contract. We randomly selected a sample from these lists, stratified by type of provider to ensure that at least one provider was interviewed in each of the health care disciplines engaged in diabetes management. We also took the sizes of care groups into account, interviewing more providers per discipline in larger groups.

Care groups not informed which providers were interviewed

To ensure the privacy of interviewees, we contacted them without informing their care group. If a contacted health care provider declined to participate, another provider from the same discipline was selected at random, if possible from the same care group. As a rule, health care providers were interviewed at their place of work, but three were interviewed by telephone. All four insurance officials were interviewed by telephone.

Interview content based on predetermined topics lists

The interviews focused partly on the same topics as those in Evaluation 1. Key questions dealt with the content of the bundled payment contracts for 2010, elements of organisational infrastructure (such as professional development training and information and communication technologies), task reallocation and coordination in diabetes management, health care to patients with comorbid conditions, and success factors and hindrances in implementing integrated disease management. The topics list for managers additionally contained questions on care group governance and patient participation.

ACIC

In addition to the topics list, we used the Assessment of Chronic Illness Care (ACIC; Bonomi et al., 2002; Cramm et al., 2011b) to gauge the stakeholders' views on the quality of the integrated care. The ACIC is a validated questionnaire designed as a measuring tool for the improvement of health care for long-term illnesses. It is based on the Chronic Care Model (CCM; Wagner et al., 1996; Wagner et al., 2005), which consists of six closely related components: (1) the health care system, (2) the community, (3) self-management support, (4) decision support, (5) delivery system design and (6) clinical information systems. Full details can be found in the existing literature on the CCM. The ACIC contains an additional, seventh component: the degree of integration between the six CCM components. The Dutch translation of the ACIC was made available by the Erasmus University Institute of Health Policy and Management. The wordings of several items were adapted by the RIVM to apply to the diabetes management programmes as administered by the care groups. Prior to the interview, we e-mailed the ACIC to the interviewees, requesting them to complete and return it before the interview. They were then asked during the interview to elaborate on the lowest-scoring items in each component and to suggest any improvements they might wish to see on those specific items.

Interviews conducted by two researchers, transcribed and approved
The interviews were carried out by two RIVM researchers (HD and LL). They were tape-recorded with respondent consent and transcribed by an external agency. The quality of transcriptions was verified in spot checks by the two researchers. The transcribed interviews were then anonymised by removing the names of care groups, persons and places.

Managers' permission for the use of data from a previous organisational assessment
To make more productive use of interview time, we asked care group managers to allow us to make use of data from an earlier follow-up monitoring study on care group organisation (Van Til et al., 2010). All managers consented.

A2.3 Analyses

The data were analysed at both care group and aggregate levels. We shall now explain how the analyses were performed for each of the data collection sources (patient records, patient survey, interviews).

Patient record data
The analysis of patient record data was based on the process and patient outcome indicators described in the NDF Care Standards (NDF, 2007), in combination with the more recent NDF diabetes management quality indicators (NDF, 2011a). The process indicators were calculated using care group data from the second and third years after the start of Evaluation 1. For the patient outcome parameters, we compared the values from T1 (start of each patient's study time frame in Evaluation 2), T2 (last value in second year) and T3 (last value in third year) (see Figure A2.2); for each parameter, only those patients were included for whom outcome measures were available for T1, T2 and T3. We report the process and outcome indicators at care group level and, using weighted means, for the total sample.

To compare the process parameters for the second and third years after bundled payment implementation, we used chi-square tests and Fisher's exact tests. To compare the values of outcome parameters we used paired t-tests. On the clinical outcome indicators, we assessed not only the means but also the dichotomous outcomes (e.g. whether or not patients were well-controlled according to NDF target values). We used McNemar tests to compare patient percentages between T1 and T3, and linear regression to analyse continuous variables.

Patient survey
For the analysis of the patient survey data, we primarily used descriptive statistics, such as frequency tables. To analyse differences in care group characteristics, we applied McNemar tests for categorical variables and analysis of variance for continuous variables. To test for differences between the patient survey samples in Evaluations 1 and 2, we used chi-square tests and Fisher's exact tests.

Semi-structured interviews
All anonymised interview transcriptions were analysed using MaxQDA10. They were coded inductively by an initial coder. To verify the adequacy of codings, a second coder independently coded ten interviews. After comparison of the double-coded interviews, codes were adjusted, added or removed upon consensus between the two coders.

Appendix 3 Quality of care based on registration data

Outline

This appendix summarizes the characteristics of the study population, and describes the quality of care based on process and outcome indicators. This appendix only presents figures and tables. An interpretation of the results will not be given in this appendix. The main findings are discussed in the main text of the report.

A3.2.1 Definition and characteristics of study population

Figure A3.1 Applied inclusion criteria for selection of patients in study population based on registration data.

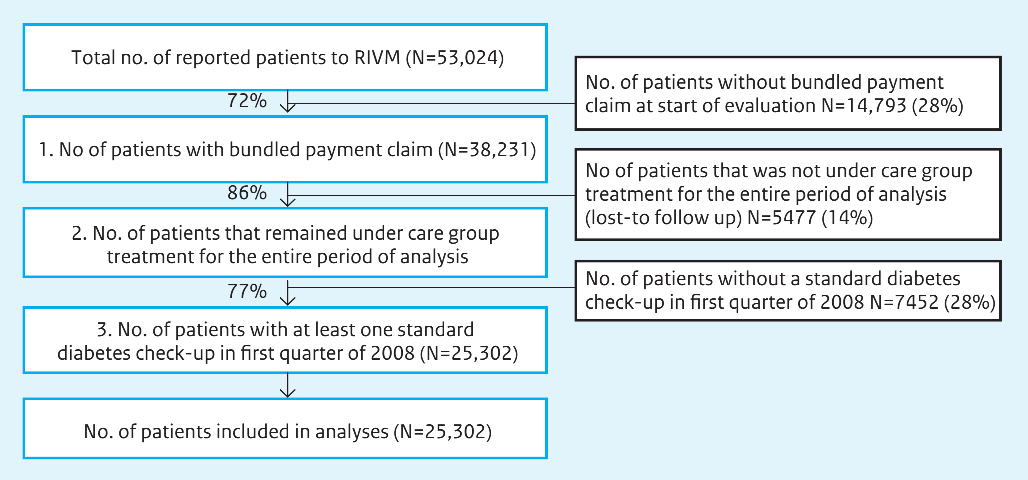


Table A3.1 Reasons for outflow patients by care group (%).

	Care group								
	1	2	3	4	6	7	8	9	10
Percentage outflow	10.4	17.7	8.6	19.5	17.6	-	12.8	27.1	12.6
Reason									
- Unknown	10.4	17.7	0.2	19.5	17.6	-	5.6	25.2	12.6
- Referral to secondary care	-	-	2.1	-	-	-	0.6	0.2	-
- Deceased	-	-	4.2	-	-	-	2.0	1.7	-
- Moved house	-	-	0.6	-	-	-	2.9	-	-
- Comorbidity	-	-	-	-	-	-	-	-	-
- Not able to operate/ Not willing to operate	-	-	-	-	-	-	1.0	-	-
- Other reason	-	-	1.5	-	-	-	0.8	-	-

Table A3.2 Number of patients that met inclusion criteria, by care group and total study population.

Care group	Total no. of patients	Inclusion criterion [1†*]	Inclusion criterion [2†*]	Inclusion criterion [3†*]
1	568	568	509	333
2	12,034	8020	6601	4495
3	1557	1423	1300	1274
4	16,181	10,386	8358	8358
6	3782	3442	2837	1651
7	7766	7766	7766	5824
8	2509	1586	1383	563
9	4988	2791	2034	838
10	3639	2249	1966	1966
Total	53,024	38,231	32,754	25,302

† = Inclusion criterion 1: the care group was claiming a bundled fee for the patient at the start of Evaluation 2 (first quarter of 2008), inclusion criterion 2: The patient remained under the care of the care group during the entire time frame of the study (1 January 2008 to 30 June 2010), inclusion criterion 3: the patient had at least one standard diabetes check-up during the sample selection period (1 January 2008 to 30 April 2008).

Table A3.3 Patient characteristics on 1 June 2010, by care group and in total study population.

Characteristics	Care group									
	1	2	3	4	6	7	8	9	10	Total
N	333	4495	1274	8358	1651	5824	563	838	1966	25,302
Age (in years)	69.5	67.5	69.3	69.2	67.7	67.7	70.3	67.1	69.0	68.4*
Gender (% female)	53.2	51.0	50.0	51.3	54.9	49.8	52.0	58.8	49.6	51.2
Mean diabetes duration (in years)	8.1	11.4	7.9	8.0	7.7	6.5	8.0	8.2	7.4	8.3*
Diabetes mellitus type 2 (%)	100	93.4	100	94.2	99.8	99.6	-	80.9	96.4	95.7*
Diabetes mellitus type 1 (%)	0	6.6	0	5.8	0.2	0.4	-	19.1	3.6	4.3*

N= No. of participating patients; * = significant (P<.05).

Table A3.4 Comparison of characteristics of patients who met inclusion criterion 2 (during entire period under care group treatment) and patients who did not met this inclusion criterion.

	Did patient meet inclusion criterion 2?	
	Yes (n=32,754)	No (n=5477) #
Patient characteristics		
Age (in years) (SD)	68.2 (12.2)	71.1 (14.1)*
Gender (% female)	51.4	52.4
Mean diabetes duration (in years) (SD)	8.8 (6.5)	9.1 (6.6)*
Mean HbA1c-value at baseline measurement, T1 (mmol/mol) (SD)	51.2 (10.9)	51.5 (12.6)

= patients of care group 7 were excluded by the description of the patient characteristics since this care group could not report whether patients were under care group treatment for the entire period of analysis.; * = Significant (P<.05); SD = Standard Deviation.

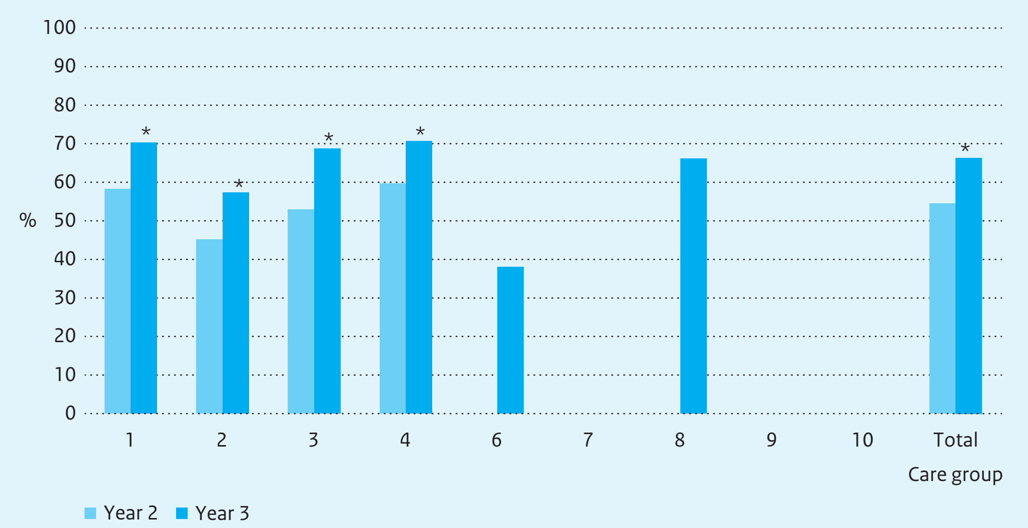
Table A3.5 Comparison of characteristics of patients who met inclusion criterion 3 (at least one standard diabetes check-up during the sample selection period) and patients who did not met this inclusion criterion.

	Did patient meet inclusion criterion 3?	
	Yes (n=25,302)	No (n=7452) #
Patient characteristics		
Age (in years) (SD)	68.4 (11.7)	66.5 (13.6)*
Gender (% female)	51.2	51.0
Mean diabetes duration (in years) (SD)	8.3 (6.1)	9.2 (7.1)*
Mean HbA1c-value at baseline measurement, T1 (mmol/mol) (SD)	50.5 (10.2)	56.6 (14.6)*

= patients of care group 7 were excluded by the description of the patient characteristics since this care group could not report whether patients were under care group treatment for the entire period of analysis.; * = Significant (P<.05); SD = standard deviation.

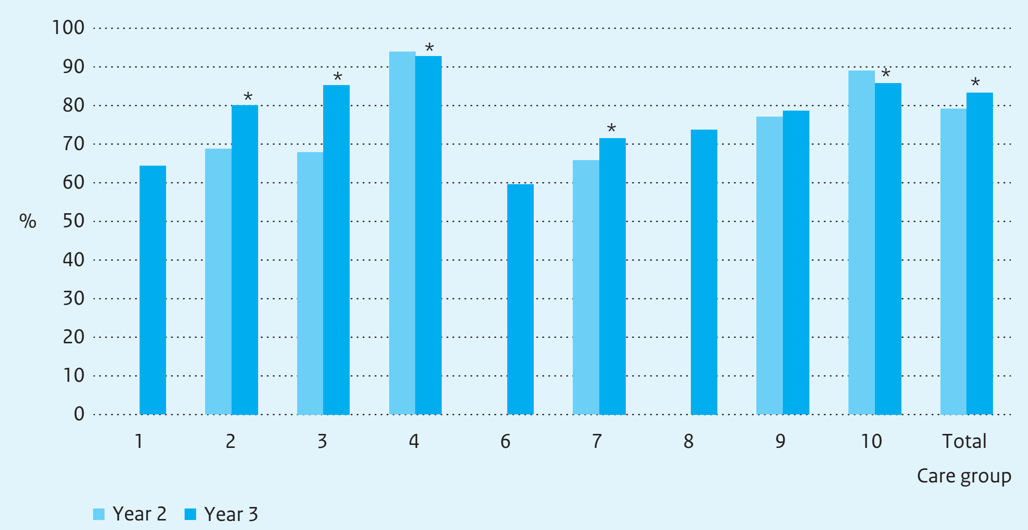
A3.3 Process indicators

Figure A3.2 Percentage of patients who had at least four standard diabetes check-ups in year 2 and year 3 after the introduction of the bundled payment, by care group and in total sample (n=14,460) #.



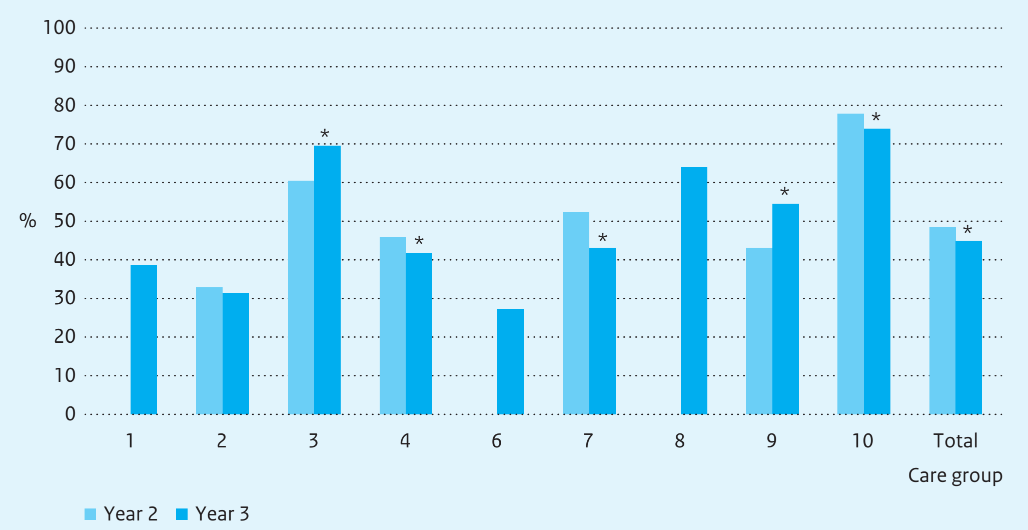
= Patients of care group 6, 7, 8, 9 and 10 are not included in Total; * = significant (P<.05).

Figure A3.3 Percentages of patients receiving foot examinations in year 2 and year 3, by care group and in total sample (n= 22,755) #.



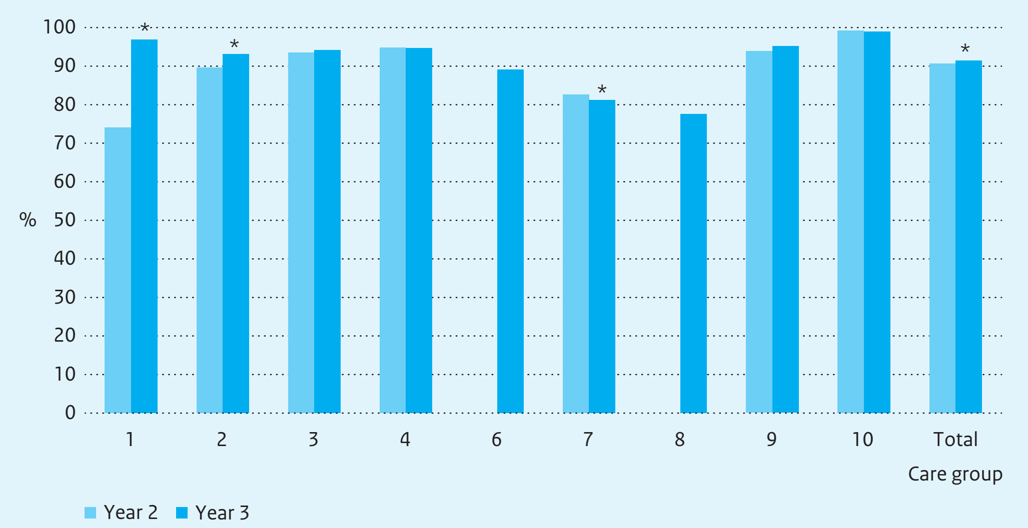
= patients of care group 1, 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.4 Percentages of patients reported as receiving eye examinations in year 2 and year 3, by care group and in total sample (n=22,755) #.



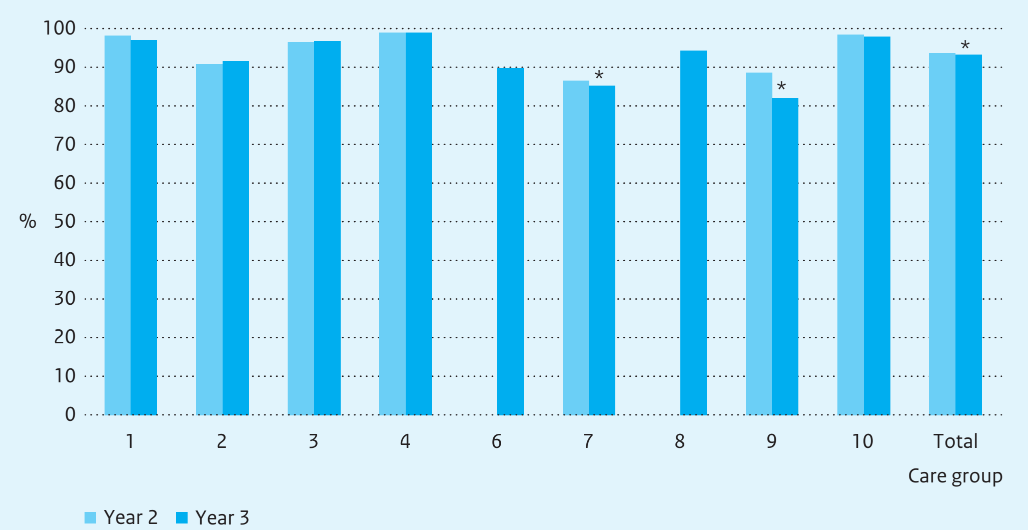
= patients of care group 1, 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.5 Percentages of patients tested at least once for HbA1c levels in year 2 and year 3, by care group and in total sample (n=23,088) #.



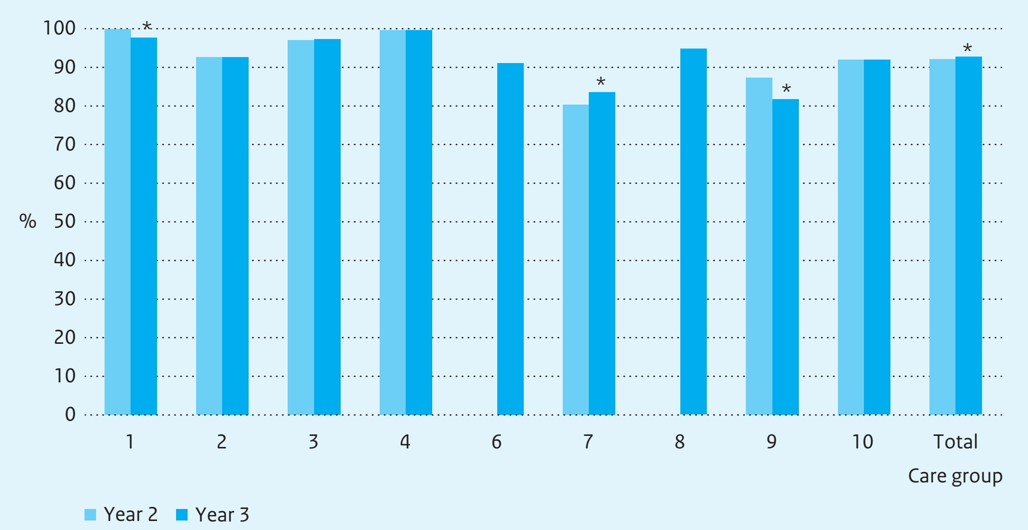
= patients of care group 1, 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.6 Percentages of patients whose blood pressure was tested at least once in year 2 and year 3, by care group and in total sample (n=23,088) #.



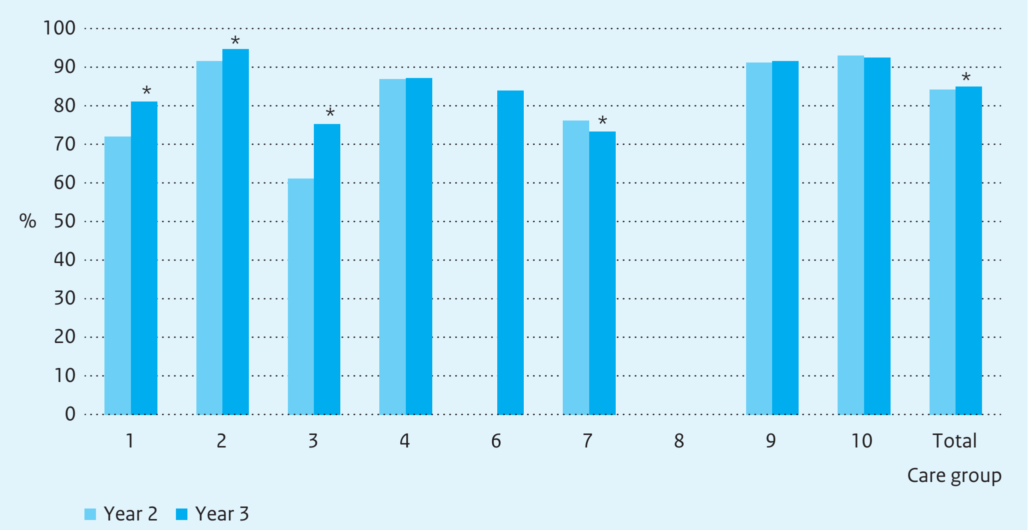
= patients of care group 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.7 Percentages of patients whose BMI was determined at least once in year 2 and year 3, by care group and in total sample (n= 23,088) #.



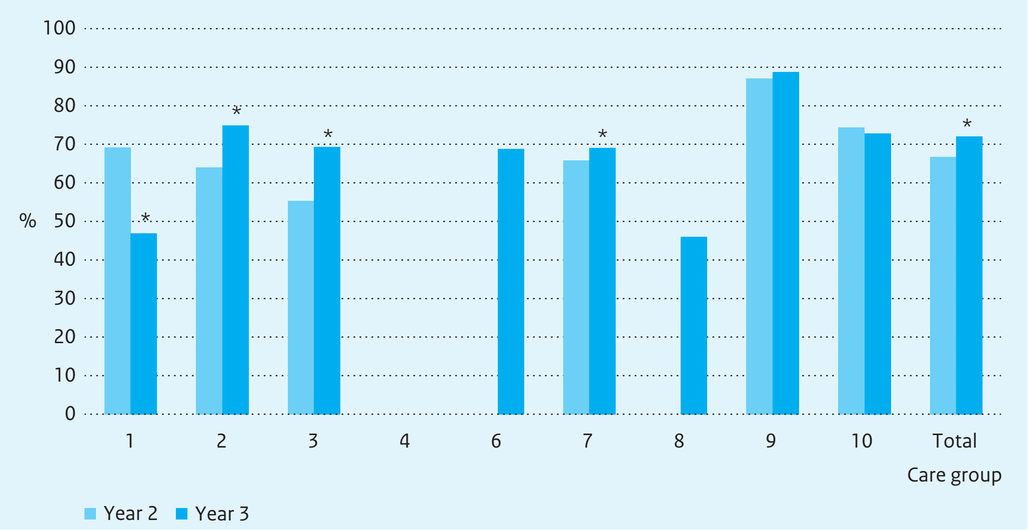
= patients of care group 1, 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.8 Percentages of patients whose renal clearance was determined at least once in year 2 and year 3, by care group and in total sample (n=23,088) #.



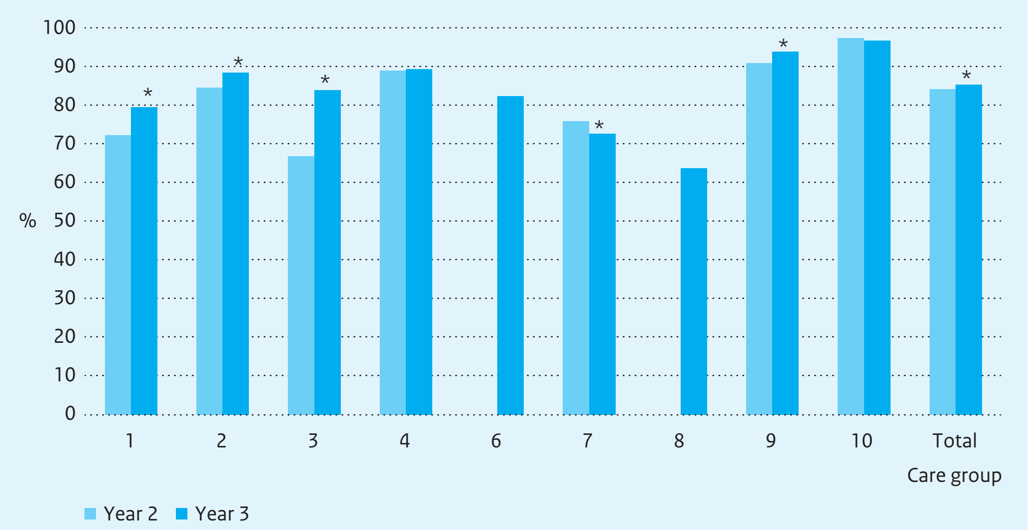
= patients of care group 1, 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.9 Percentage of patients whose albumine clearance was tested at least once in year 2 and year 3, by care group and in total sample (n=23,088) #.



= patients of care group 4,6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.10 Percentages of patients whose LDL cholesterol was measured at least once in year 2 and year 3, by care group and in total sample (n=23,088) #.



= patients of care group 6 and 8 are not included in Total ; * = significant (P<.05).

Figure A3.11 Percentages of patients whose smoking behaviour was recorded, by care group and in total study population (n=25.302).

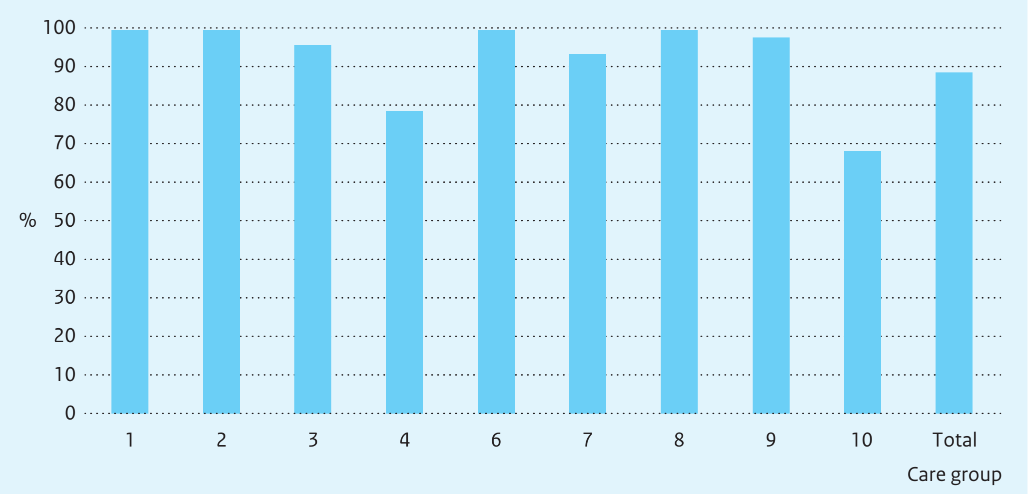
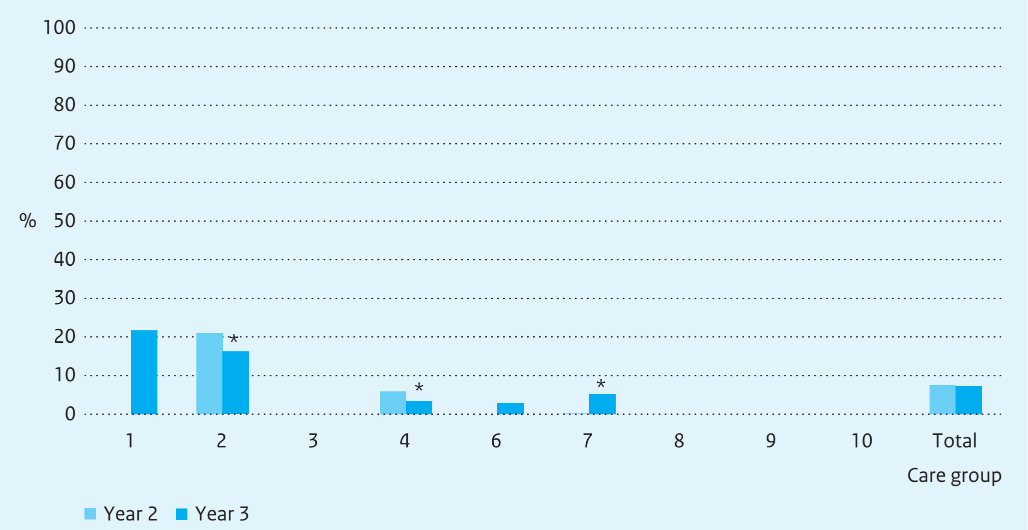
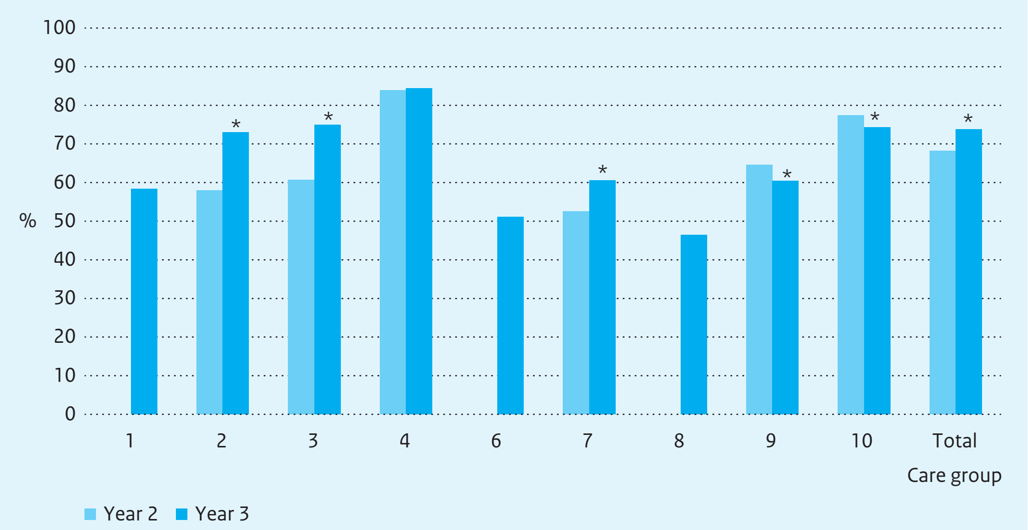


Figure A3.12 Percentage of patients seeing a dietician in year 2 and year 3, by care group and in total sample (n=19,010) #.



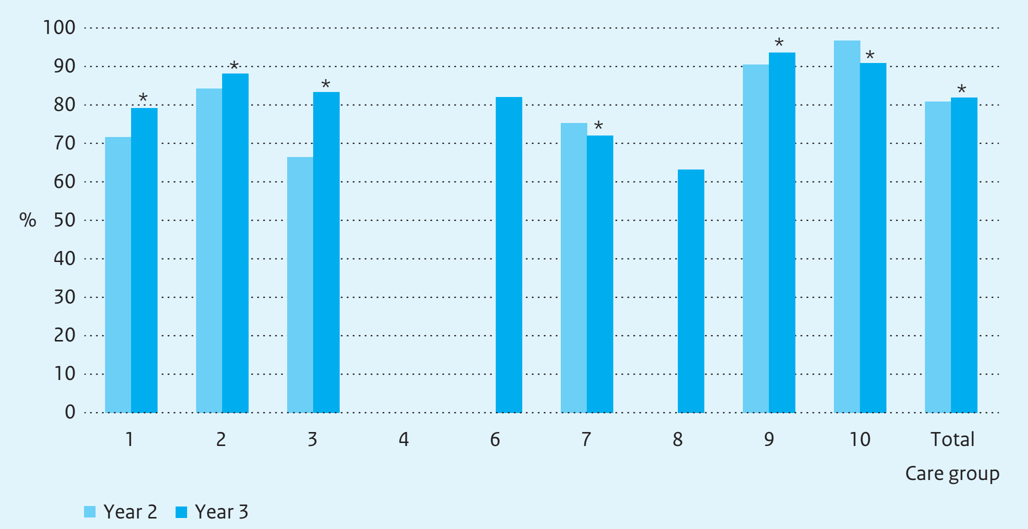
= patients of care group 3, 6, 8, 9 and 10 are not included in Total; * = significant (P<.05).

Figure A3.13 Percentage patients whose HbA1c, blood pressure, BMI, total cholesterol, creatinine clearance, foot exams was measurevd in year 2 and year 3, by care group and in total sample (n=22,755) #.



= patients of care group 1, 6 and 8 are not included in Total; * = significant

Figure A3.14 Percentages of patients whose lipid profile was measured in year 2 and year 3, by care group and in total sample (n=14,730) #.



= patients of care group 4, 6 and 8 are not included in Total; * = significant (P<.05).

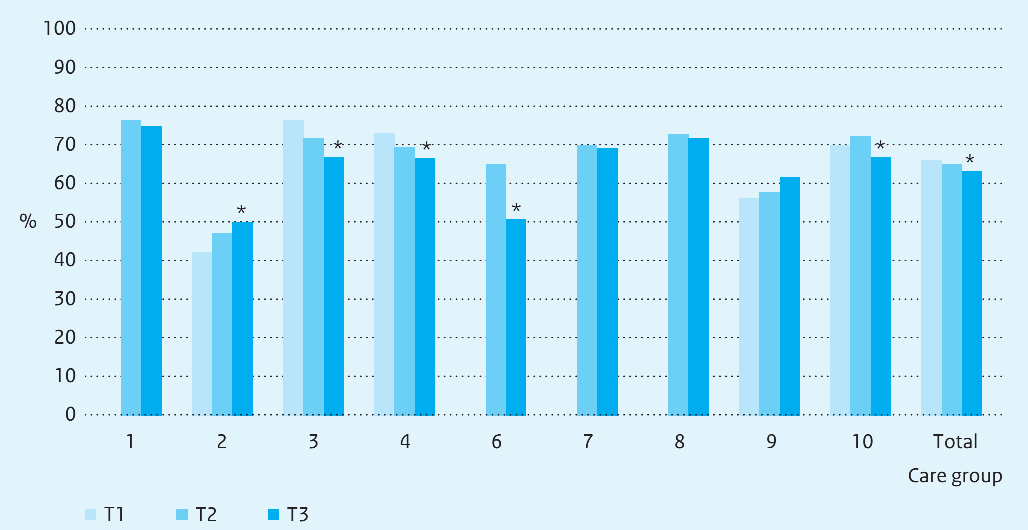
A3.4 Patient outcome indicators

Table A3.6 Mean HbA1c levels (mmol/mol) at baseline and T1, T2, T3, by care group and in total sample ($n_{\text{year 1}}$=11,104; $n_{\text{year 2 and 3}}$=16,144).

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	-	48.3 (6.6)	49.4 (6.6)	+1.1	(0.4 – 1.8)	*
2	56.2 (12.2)	55.1 (11.7)	54.7 (11.6)	-1.6	(-2 – -1.2)	*
3	48.3 (6.9)	49.1 (7)	50.2 (7.3)	+1.9	(1.5 – 2.3)	*
4	48.5 (8.3)	49.4 (7.8)	50.1 (8)	+1.6	(1.4 – 1.8)	*
6	-	51.2 (9.8)	55.0 (11.2)	+3.8	(3.1 - 4.4)	*
7	-	49.8 (7.3)	49.9 (7.5)	+0.1	(-0.1 – 0.3)	
8	-	49 (7.6)	50.4 (9.1)	+1.3	(0.2 – 2.5)	*
9	53 (12)	52 (9.6)	51.6 (9.8)	-1.4	(-2.7 – -0.2)	*
10	50.1 (10)	49.3 (8.9)	49.3 (9.7)	-0.8	(-1.2 – -0.3)	*
Total	50.5 (10)	50.6 (9.2)	51.0 (9.3)	+0.5	(0.3 – 0.7)	*

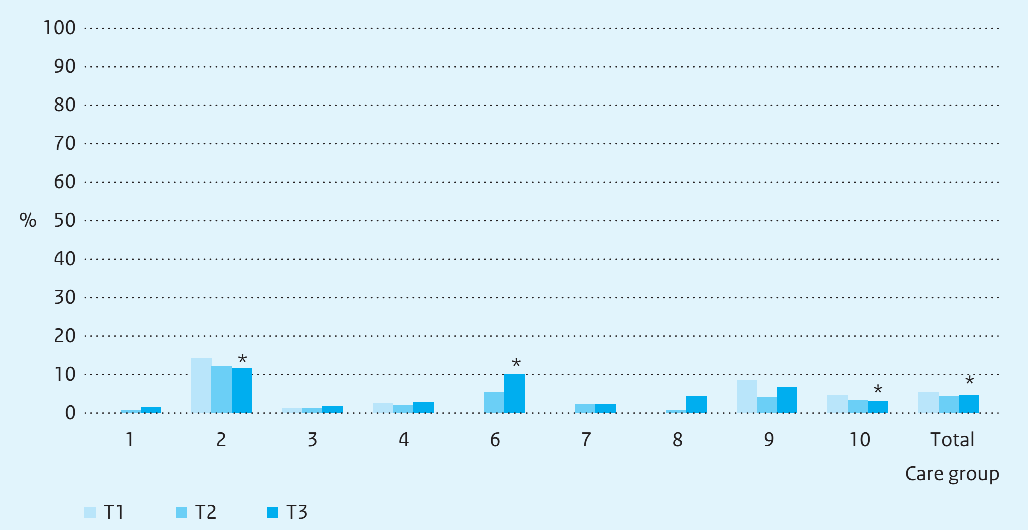
= HbA1c values at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in HbA1c value is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant (P < .05).

Figure A3.15 Percentages of patients with HbA1c <53 mmol/mol at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=11,104; $n_{\text{year 2 and 3}}$=16,450)$^{\#}$.



$^{\#}$ = HbA1c values at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in HbA1c value is calculated for only one year (difference T2-T3); significant (P< .05) only calculated for care groups with HbA1c values at T1 and T3.

Figure A3.16 Percentages of patients with HbA1c >69 mmol/mol at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=11,104; $n_{\text{year 2 and 3}}$=16,450)[#].



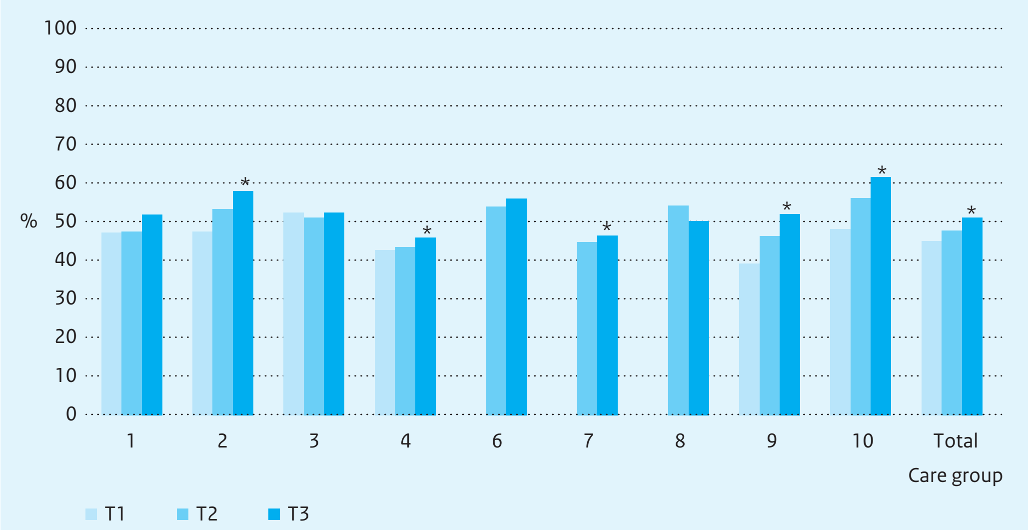
[#] = HbA1c values at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in HbA1c value is calculated for only one year (difference T2-T3); significant (P < .05) only calculated for care groups with HbA1c values at T1 and T3.

Table A3.7 Mean systolic blood pressure levels (in mmHg) at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=15,142; $n_{\text{year 2 and 3}}$=20,937)[#].

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	140 (17)	138 (16)	139 (17)	-1.2	(-3.1 – 0.8)	
2	140 (18)	139 (18)	137 (17)	-2.8	(-3.5 – -2.2)	*
3	139 (18)	139 (17)	139 (17)	+0.1	(-1 – 1.1)	
4	141 (18)	141 (18)	140 (18)	-1.1	(-1.5 – -0.7)	*
6	-	137 (19)	136 (18)	-0.4	(-1.4 - 0.6)	
7	-	141 (18)	140 (17)	-1.1	(-1.7 – -0.6)	*
8	-	138 (18)	139 (18)	+0.8	(-1.3 – 3.0)	
9	144 (20)	141 (18)	140 (18)	-4.0	(-5.6 – -2.4)	*
10	140 (18)	138 (16)	137 (16)	-3.3	(-4.1 – -2.5)	*
Total	141 (18)	140 (18)	139 (17)	-1.7	(-2 – -1.4)	*

[#] = Blood pressure measures at T1 were unknown for care group 6, 7 and 8. For these care groups the difference in blood pressure measures is calculated for only one year (difference T2-T3). Care groups 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant (P < .05).

Figure A3.17 Percentages of patients with systolic blood pressure <140mmHg at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=15,142; $n_{\text{year 2 and 3}}$=20,937)$^{\#}$.



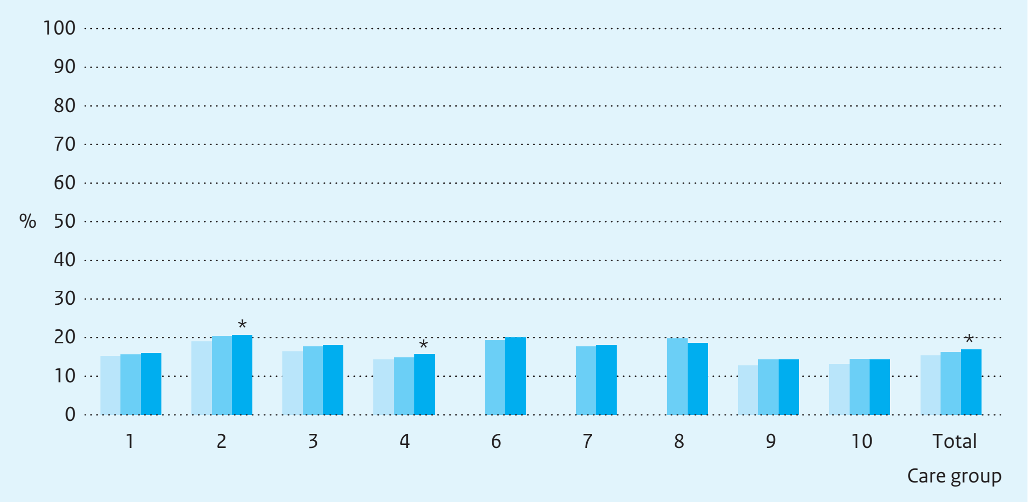
[#] = Blood pressure measures at T1 were unknown for care group 6, 7 and 8. For these care groups the difference in blood pressure measures is calculated for only one year (difference T2-T3). Care groups 6, 7 and 8 are not included in Total; * = significant (P < .05) only calculated for care groups with blood pressure measures at T1 and T3.

Table A3.8 Mean body mass index (kg/m^2) at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=14.738; $n_{\text{year 2 and 3}}$=20,033)$^{\#}$.

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	29.71 (4.8)	29.62 (4.8)	29.73 (4.8)	0.0	(-0.2 – 0.2)	
2	29.32 (5.2)	29.23 (5.3)	29.26 (5.3)	-0.1	(-0.1 – 0.0)	
3	29.48 (4.8)	29.36 (4.8)	29.35 (4.9)	-0.1	(-0.2 – -0.0)	*
4	30.21 (5.3)	30.22 (5.4)	30.15 (5.5)	-0.1	(-0.1 – -0.0)	*
6	-	29.29 (5.2)	29.17 (5.2)	-0.1	(-0.2 – 0)	
7	-	29.61 (5.3)	29.53 (5.3)	-0.1	(-0.1 – -0.0)	*
8	-	28.98 (5.2)	28.97 (5.3)	0.0	(-0.2 – 0.1)	
9	30.02 (4.9)	29.84 (5)	29.69 (4.9)	-0.3	(-0.5 – -0.1)	*
10	30.09 (5.2)	30.04 (5.3)	30.04 (5.4)	0.0	(-0.1 – 0.0)	
Total	29.93 (5.2)	29.89 (5.3)	29.86 (5.4)	-0.1	(-0.0 – -0.1)	*

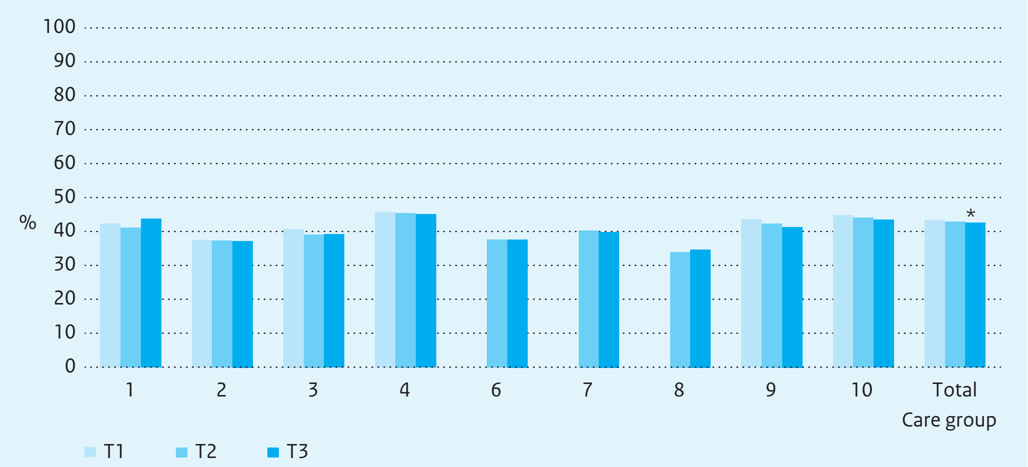
[#] = BMI calculations at T1 were unknown for care group 6, 7 and 8. For these care groups the difference in blood pressure measures is calculated for only one year (difference T2-T3). Care groups 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant (P < .05).

Figure A3.18 Percentage patients with BMI <25 kg/m^2 at T1, T2 and T3, per care group and for total sample (n $_{\text{year 1}}$=14,738; n $_{\text{year 2 and 3}}$=20,033)$^{\#}$.



$^{\#}$ = BMI at T1 were unknown for care group 6, 7 and 8. For these care groups the difference in blood pressure measures is calculated for only one year (difference T2-T3). Care groups 6, 7 and 8 are not included in Total; * = significant (P < .05) only calculated for care groups with blood pressure measures at T1 and T3.

Figure A3.19 Percentage patients with BMI <25 kg/m^2 at T1, T2 and T3, per care group and for total sample (n $_{\text{year 1}}$=14,738; n $_{\text{year 2 and 3}}$=20,033)$^{\#}$.



= BMI at T1 were unknown for care group 6, 7 and 8. For these care groups the difference in blood pressure measures is calculated for only one year (difference T2-T3). Care groups 6, 7 and 8 are not included in Total; * = significant (P < .05) only calculated for care groups with blood pressure measures at T1 and T3.

Table A3.9 Mean LDL cholesterol levels (mmol/l) at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=6136; $n_{\text{year 2 and 3}}$=10,163)$^{\#}$.

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	-	2.6 (0.8)	2.5 (0.8)	-0.2	(-0.2 – -0.0)	*
2	2.6 (0.9)	2.6 (0.9)	2.4 (0.8)	-0.2	(-0.3 – -0.2)	*
3	2.3 (0.8)	2.3 (0.8)	2.3 (0.8)	0.0	(-0.1 – 0.1)	
4	2.6 (0.9)	2.5 (0.8)	2.4 (0.8)	-0.3	(-0.2 – -0.2)	*
6	-	2.7 (0.9)	2.5 (0.9)	-0.2	(-0.2 – -0.1)	*
7	-	2.6 (0.9)	2.5 (0.8)	-0.1	(-0.1 – -0.0)	*
8	-	2.7 (0.9)	2.6 (0.8)	0.0	(-0.2 – 0.1)	
9	2.5 (0.9)	2.4 (0.8)	2.5 (0.9)	0.0	(-0.1 – 0.1)	
10	2.6 (0.8)	2.5 (0.8)	2.1 (0.8)	-0.4	(-0.5 – -0.4)	*
Total	2.6 (0.9)	2.5 (0.8)	2.4 (0.8)	-0.2	(-0.2 – -0.2)	*

$^{\#}$ = LDL cholesterol level at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in HbA1c value is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant ($P < .05$).

Table A3.10 Mean HDL cholesterol levels (mmol/l) at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=2911; $n_{\text{year 2 and 3}}$=7142)$^{\#}$.

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	-	1.3 (0.4)	1.3 (0.3)	0.0	(-0.0 – 0.0)	
2	1.2 (0.3)	1.2 (0.3)	1.3 (0.4)	+0.1	(0.1 – 0.1)	*
3	1.2 (0.4)	1.2 (0.4)	1.3 (0.4)	0.0	(0.0 – 0.1)	*
4	-	-	-			
6	-	1.2 (0.3)	1.2 (0.3)	0.0	(-0.0 – 0.0)	
7	-	1.4 (0.4)	1.4 (0.4)	0.0	(0.0 – 0.0)	
8	-	1.3 (0.4)	1.3 (0.4)	0.0	(-0.0 – 0.1)	
9	1.3 (0.4)	1.3 (0.4)	1.3 (0.3)	0.0	(-0.0 – 0.0)	
10	1.1 (0.3)	1.3 (0.4)	1.2 (0.4)	+0.1	(0.1 – 0.1)	*
Total	1.2 (0.3)	1.2 (0.3)	1.3 (0.4)	+0.1	(0.1 – 0.1)	*

$^{\#}$ = HDL cholesterol level at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in HDL cholesterol level is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant ($P < .05$).

Table A3.11 Mean triglycerides (mmol/l) at T1, T2 and T3, by care group and in total sample (n$_{\text{year 1}}$=6296; n$_{\text{year 2 and 3}}$=10,511)[#].

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	-	1.6 (0.8)	1.5 (0.7)	-0.1	(-0.2 – 0.0)	*
2	1.7 (1.1)	1.7 (1.1)	1.6 (1.0)	-0.1	(-0.1 – 0.0)	*
3	1.8 (1.1)	1.8 (0.9)	1.8 (0.9)	0.0	(-0.1 – 0.1)	
4	1.9 (1.1)	1.9 (1.0)	1.8 (1.0)	0.0	(-0.1 – 0.0)	*
6	-	2.0 (1.1)	1.9 (1.0)	-0.1	(-0.2 – 0.0)	
7	-	1.7 (1.0)	1.7 (0.9)	-0.1	(-0.1 – -0.0)	*
8	-	1.7 (0.9)	1.7 (1.0)	0.0	(-0.2 – 0.2)	
9	1.7 (1.1)	1.7 (0.8)	1.6 (0.8)	-0.1	(-0.2 – 0.0)	
10	1.6 (1)	1.5 (0.8)	1.5 (0.8)	-0.1	(-0.2 – -0.0)	*
Total	1.8 (1.1)	1.8 (1.0)	1.7 (1.0)	-0.1	(-0.1 – -0.0)	*

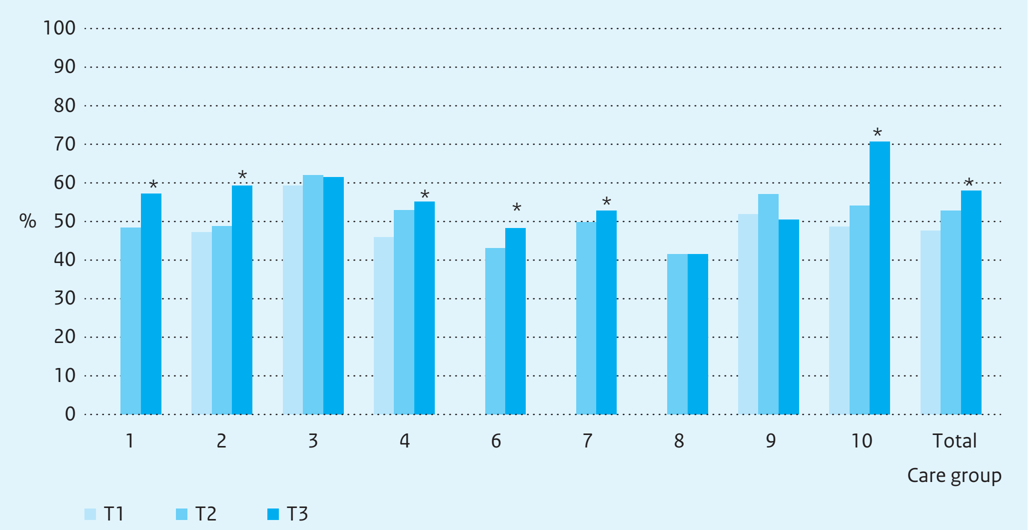
[#] =Triglyceride levels at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in triglycerides is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant (P < .05).

Table A3.12 Mean total cholesterol levels (mmol/l) at T1, T2 and T3, by care group and in total sample (n$_{\text{year 1}}$=6296; n$_{\text{year 2 and 3}}$=10,780)[#].

Care group	T1 (SD)	T2 (SD)	T3 (SD)	Difference T1-T3 (CI) #		
1	-	4.6 (1.0)	4.5 (0.9)	-0.2	(-0.3 – -0.1)	*
2	4.6 (1)	4.5 (1.0)	4.4 (1.0)	-0.2	(-0.3 – -0.2)	*
3	4.4 (1)	4.3 (0.9)	4.4 (0.9)	0.0	(-0.1 – 0.1)	
4	4.7 (1.1)	4.6 (1.0)	4.5 (1.0)	-0.3	(-0.3 – -0.2)	*
6	-	4.8 (1.1)	4.6 (1.1)	-0.2	(-0.3 - -0.1)	*
7	-	4.7 (1.0)	4.6 (1.0)	-0.1	(-0.1 – -0.1)	*
8	-	4.8 (1.1)	4.8 (1.0)	0.0	(-0.2 – 0.2)	
9	4.5 (1.1)	4.4 (1.0)	4.5 (1.0)	0.0	(-0.2 – 0.1)	
10	4.3 (1)	4.3 (0.9)	4 (0.9)	-0.4	(-0.4 – -0.3)	*
Total	4.6 (1.1)	4.5 (1.0)	4.4 (1.0)	-0.2	(-0.3 – -0.2)	*

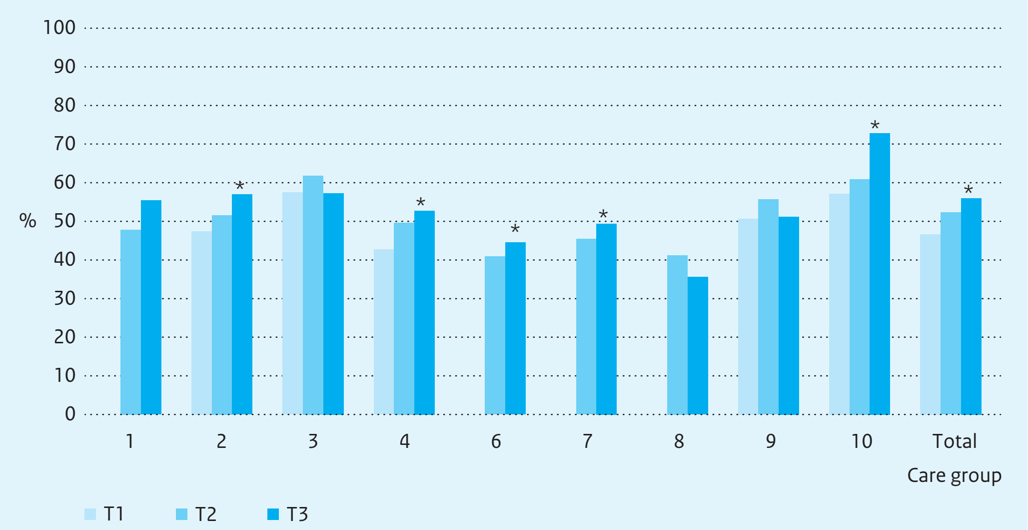
[#] = HDL cholesterol level at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in HDL cholesterol level is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; SD = standard deviation; CI = confidence interval; * = significant (P < .05).

Figure A3.20 Percentages of patients with LDL cholesterol < 2.5 mmol/l at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=6296; $n_{\text{year 2 and 3}}$=10,163) #.



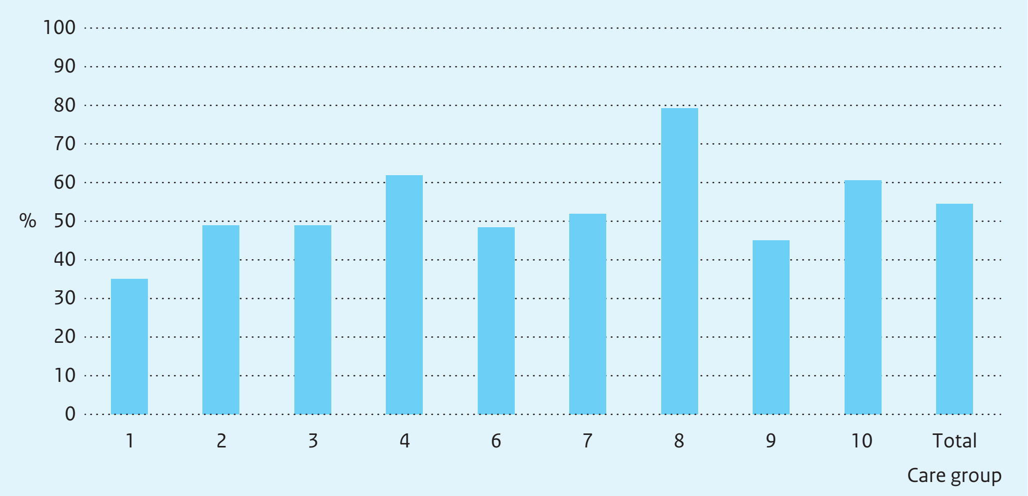
= LDL cholesterol levels at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in LDL cholesterol levels is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; * = significant ($P < .05$) only calculated for care groups with blood pressure measures at T1 and T3.

Figure A3.21 Percentages of patients with total cholesterol < 4.5 mmol/l at T1, T2 and T3, by care group and in total sample ($n_{\text{year 1}}$=6538; $n_{\text{year 2 and 3}}$=10,780) #.



= Total cholesterol levels at T1 were unknown for care group 1, 6, 7 and 8. For these care groups the difference in total cholesterol levels is calculated for only one year (difference T2-T3). Care groups 1, 6, 7 and 8 are not included in Total; * = significant ($P < .05$) only calculated for care groups with blood pressure measures at T1 and T3.

Figure A3.22 Percentages of smokers according to care group records during study period, by care group and in total sample (n=22,473).

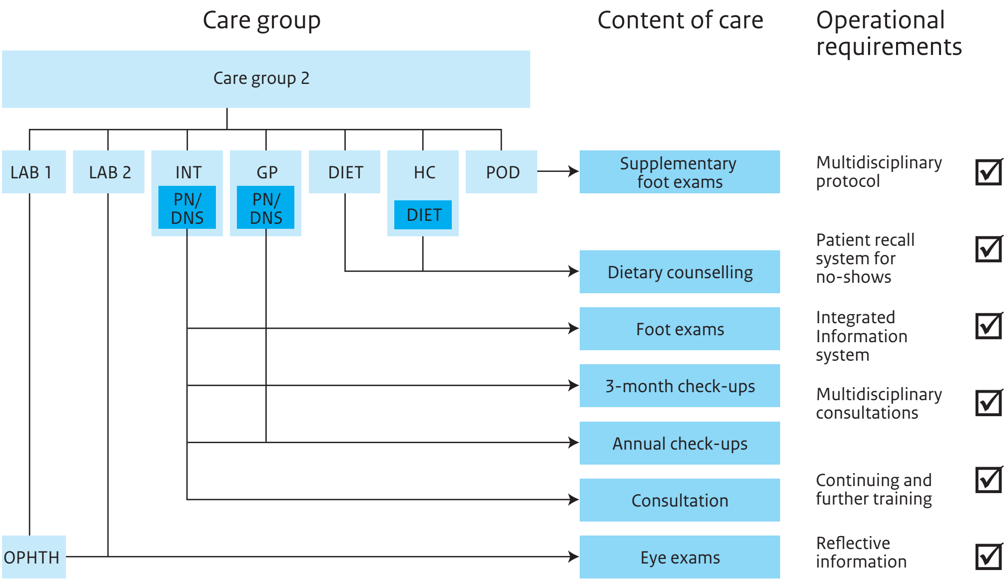


Appendix 4 Summary of care group characteristics

Outline

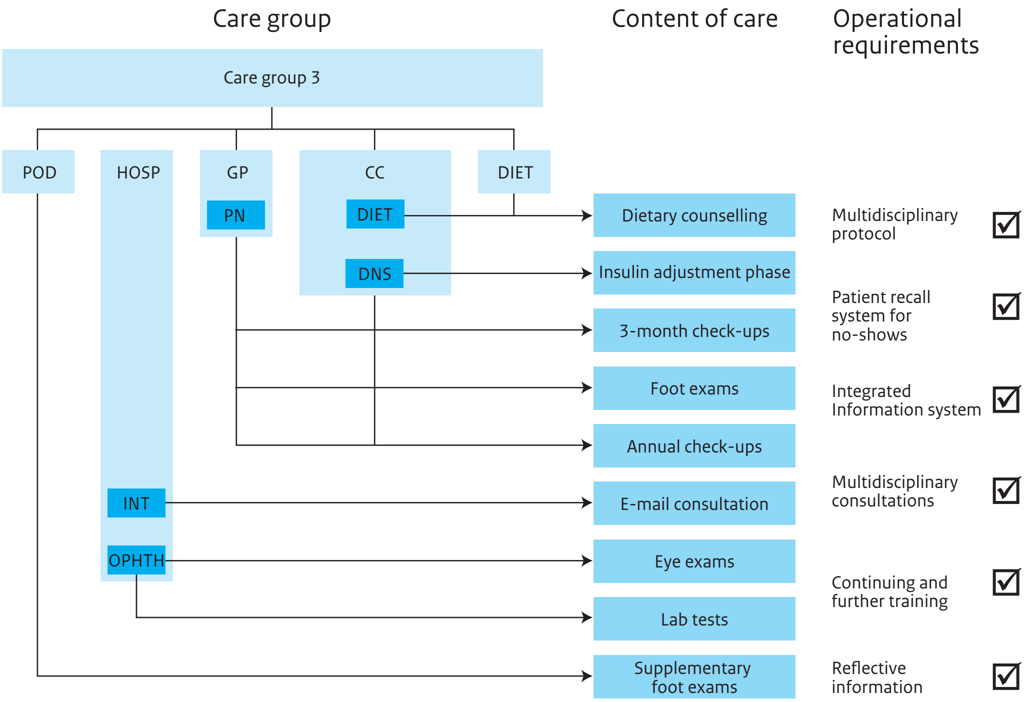
In section 2.1 we have given descriptions of the care groups that participated in this evaluation. Appendix 4 presents an organisational chart of each care group with the exception of care group 1 (see also sections 2.1 and A2.1). Each chart shows which health care disciplines worked together in that care group or were contracted by it, as well as which service they provided. It also shows which of the prerequisites for the effective organisation of diabetes care had been implemented. Four general characteristics of the care group are summarised at the bottom of each charts.

Figure A4.1 Care group 2.



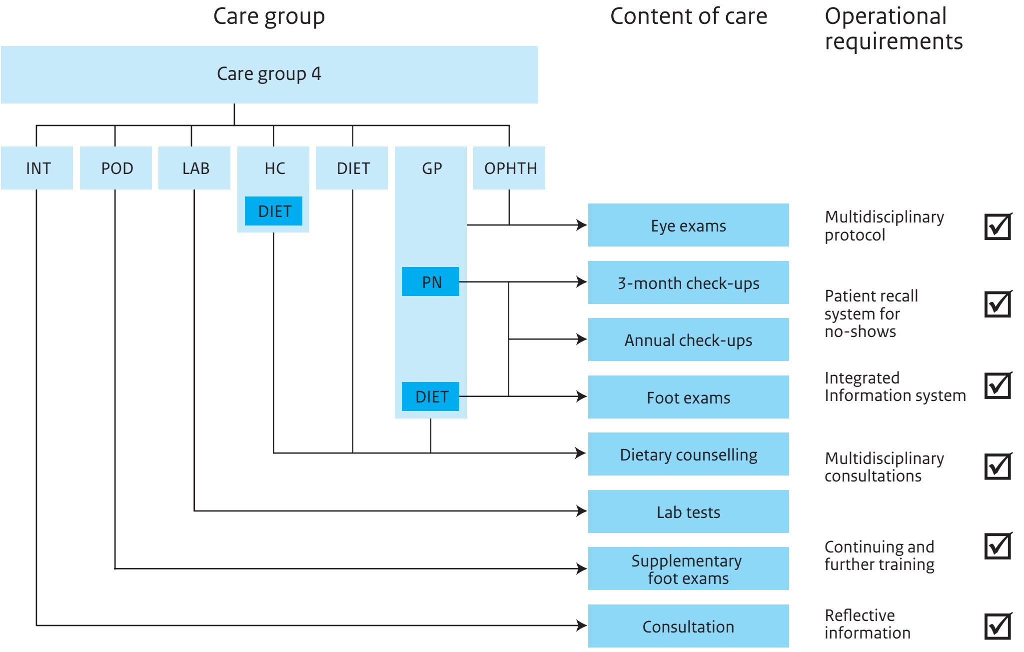
Legal form	Not applicable
Monodisciplinary vs. multidisciplinary ownership	Not applicable
Bundled fee per person per year (2010)	€ 381
Number of associated GPs	130

Figure A4.2 Care group 3.



Legal form	Private limited liability company (BV)
Monodisciplinary vs. multidisciplinary ownership	Multidisciplinary (GPs + CC [HOSP+HC+N&C])
Bundled fee per person per year (2010)	€ 479
Number of associated GPs	62

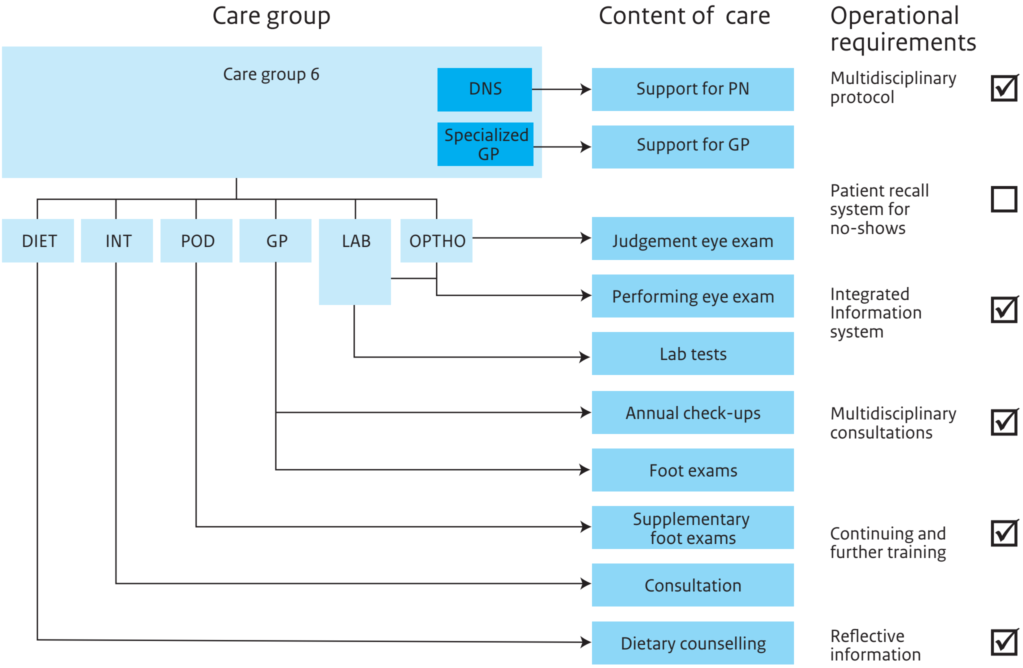
Figure A4.3 Care group 4.



– GPs were allowed to perform annual eye examinations after further training.

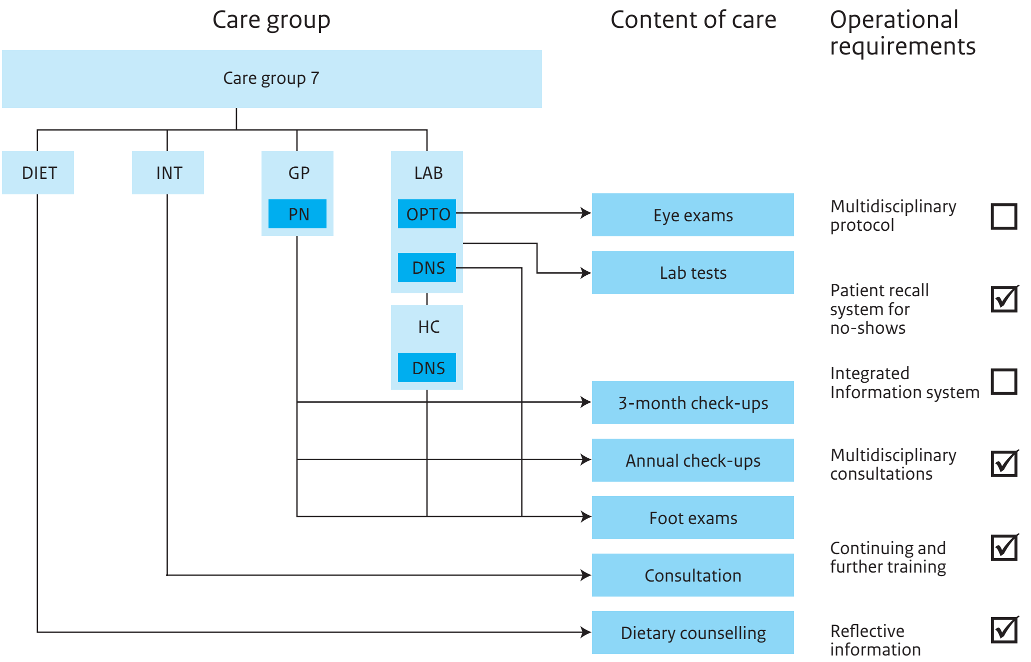
Legal form	Private limited liability company (BV)
Monodisciplinary vs. multidisciplinary ownership	Monodisciplinary (GPs)
Bundled fee per person per year (2010)	€ 411
Number of associated GPs	113

Figure A4.4 Care group 6.



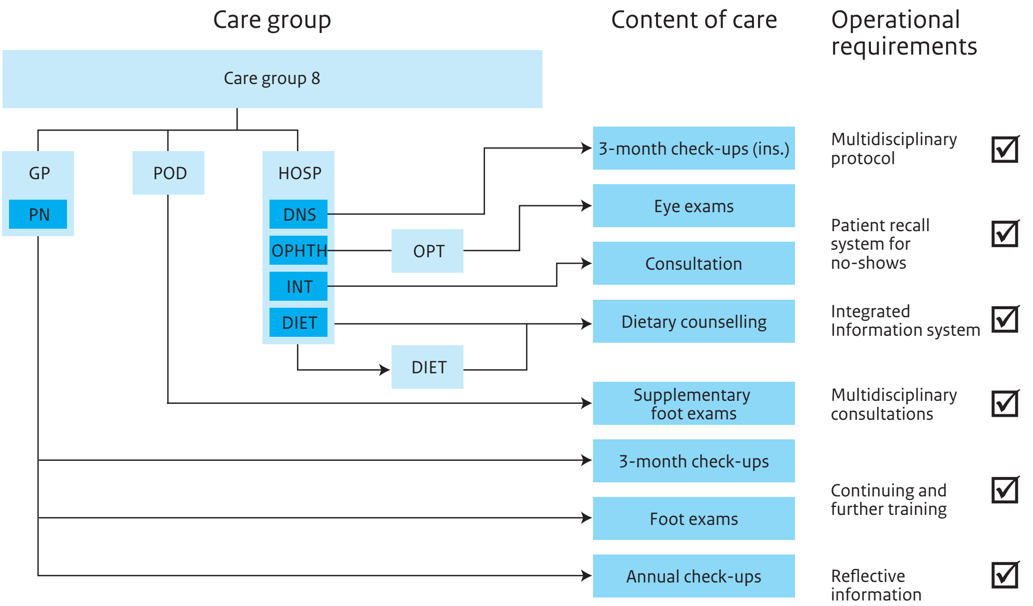
Legal form	Limited partnership (CV)
Monodisciplinary vs. multidisciplinary ownership	Multidisciplinary (GPs + LAB)
Bundled fee per person per year (2010)	€ 430
Number of associated GPs	85

Figure A4.5 Care group 7.



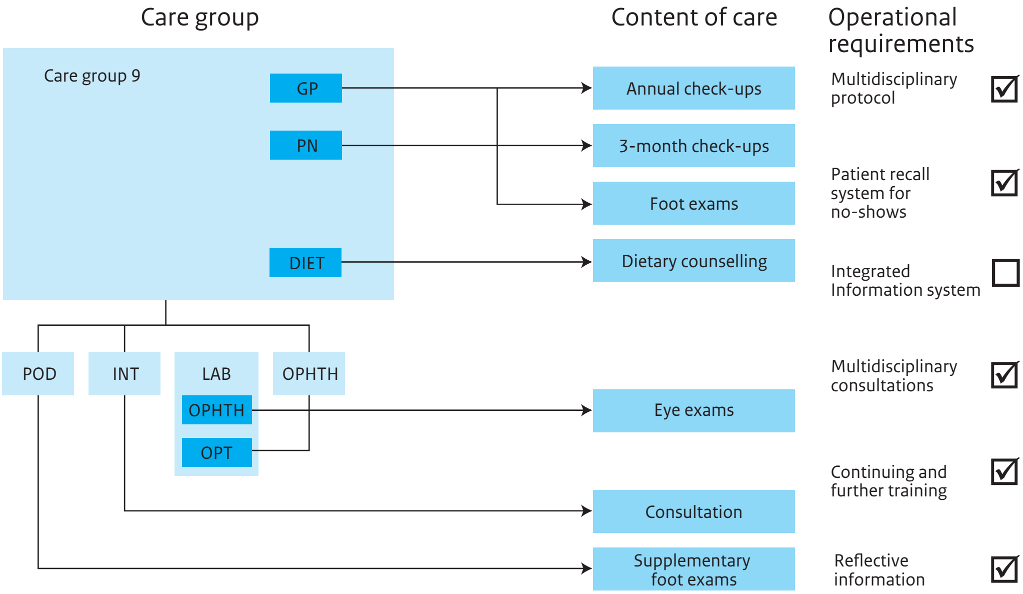
Legal form	Foundation
Monodisciplinary vs. multidisciplinary ownership	Not applicable
Bundled fee per person per year (2010)	€ 385
Number of associated GPs	110

Figure A4.6 Care group 8.



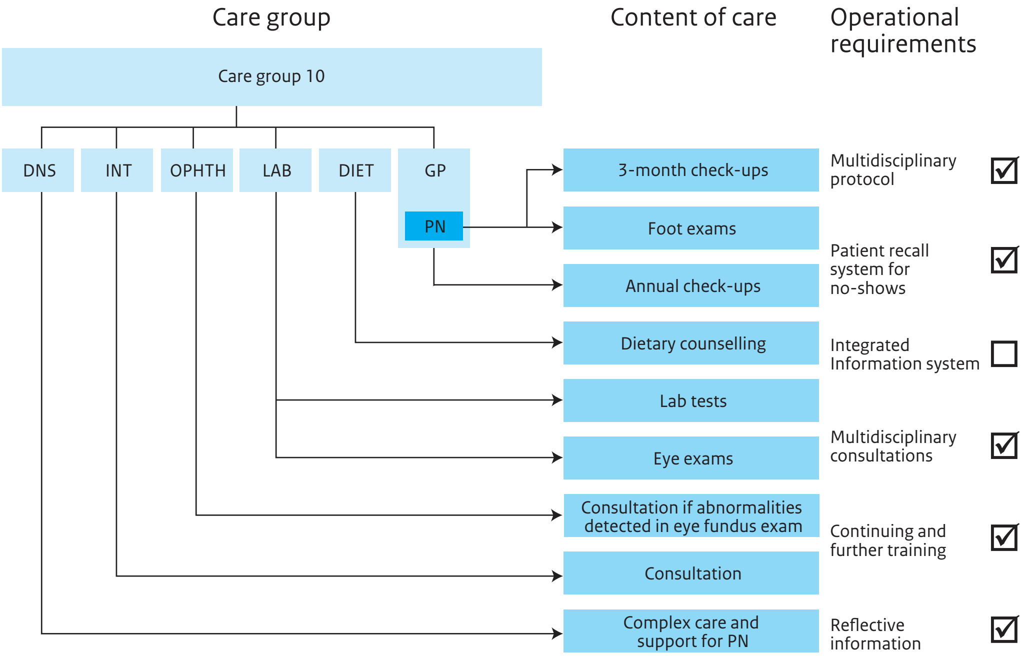
Legal form	Cooperative
Monodisciplinary vs. multidisciplinary ownership	Monodisciplinary (GPs)
Bundled fee per person per year (2010)	€ 384
Number of associated GPs	35

Figure A4.7 Care group 9.



Legal form	Foundation
Monodisciplinary vs. multidisciplinary ownership	Not applicable
Bundled fee per person per year (2010)	€ 405
Number of associated GPs	130

Figure A4.8 Care group 10.



Legal form	Private limited liability company (BV)
Monodisciplinary vs. multidisciplinary ownership	Monodisciplinary (GPs)
Bundled fee per person per year (2010)	€ 439
Number of associated GPs	40 GPs

Appendix 5 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 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 A5.1 Population and demographics

In 2012, 16,730,348 people are living in the Netherlands, 49.5% being male (CBS Statline, 2012a). In 2011, 180,060 children were born and 135,516 people died (CBS Statline, 2012b; CBS Statline, 2012c). Infant mortality was 3.8 per 1000 life born children (CBS Statline, 2011). Life expectancy at birth is 79.0 for males and 82.7 for females (CBS Statline, 2012d). Like other Western countries, the Dutch population is ageing. That process is expected to reach its peak at the end of 2040. The percentage of persons of 65 years and over in that year is estimated to be 25.9% as compared with 15.6% in 2011 (CBS Statline, 2010).

January 2012, 20.9% of the Dutch population has a foreign background: 11.5% non-Western (first and second generation) and 9.3% non-Dutch Western. The largest groups of people of non-Dutch Western origin are from Germany (376,606), Belgium (114,022) and Poland (100,775). The largest groups of people of non-Western origin are Turkish people (392,923), Moroccans (362,954) and people from Surinam, a former Dutch colony (342,016) (CBS Statline, 2012e).

Health system reforms

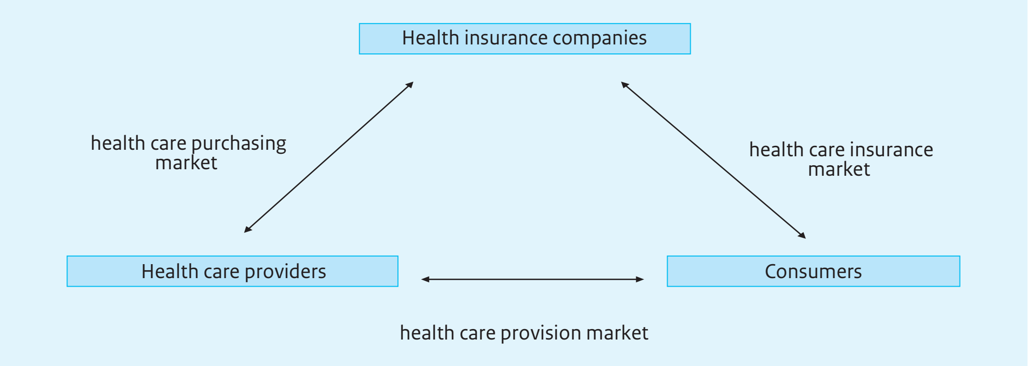
2006 was a landmark year for the Dutch health system. Minor changes to the health care system had been gradually introduced in previous decades, to culminate in the introduction of market forces and competition on a much wider scale in 2006. By opening up the health care market to more competition it was aimed to keep health care affordable while ensuring good quality care and accessibility for all. The health care market is not an entirely free market; it is 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, 2010b). To make the health care market work, the stakeholders in health care, i.e. 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 that covers essential medical care, mandatory acceptance for the ‘basic’ health insurance by the insurer, enrolees are allowed to switch insurer at the beginning of each year, there are in-kind and restitution policies, there is risk equalisation for insurers. Health insurers are private companies, although not all of them are profit-driven, price negotiations are limited, and there is selective contracting on certain conditions.

Health care market

The health system reforms introduced market forces into the health care market to a far wider extent than before. The three market players, i.e. 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).

Figure A5.1 The Dutch health care system and its three markets.



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 indicated, however, that quality of care played hardly any role in the purchase of care, because of a lack of relevant information (NZa, 2010b). Extensive efforts have been 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 indexes. Results, although still limited, are made accessible through websites like kiesBeter.nl and Consumentenbond.nl. As of January 2013, the Quality Institute in formation (Zorginstituut Nederland) is to support and coordinate these efforts to make the quality of care more transparent.

Slowly but gradually health insurers are starting to purchase care on the basis of quality. The four main health insurance companies, Achmea, UVIT/VGZ, CZ and Menzis (together about 15 million insured) have formulated quality standards for a number of surgical procedures. Hospitals that fail to meet these standards will not be contracted and/or will not get a favourable rating (Achmea, 2012; VGZ, 2011; CZ, 2012; Menzis, 2012). Selective contracting by health insurers is still limited, but it is expected to grow considerably in the near future (Evaluatie risicoverevening Zvw, 2012). For hospital care, selective contracting is the case with specific bundled payment schemes and independent treatment centres (Zelfstandige Behandel Centrum (ZBC)).

Competition on price is possible to a certain extent depending on the type of care. As to hospital care, a distinction is made between a regulated segment (formerly called A-segment) and a free segment (former B-segment). The rates for services provided in the free segment are the result of negotiations between providers and insurers, while the rates for services in the regulated segment are fixed. The size of the free segment has grown considerably; from 6% in 2006 to 30% in 2010 to be increased to about 70% as of 2012 (Taskforce, 2012). The rates for physiotherapy have been freely negotiable since 2008. Bundled payments for Diabetes type 2, COPD and VRM (vascular risk management) are negotiated between the care groups and the health insurers. The rate of GP care is negotiable for a small part only, i.e. a subsidy for Modernisation and Innovation (M&I) (Taskforce, 2012). At the beginning of 2012 the fixed fees for dental care were abolished. As this has led to an increase in costs, this decision is to be reversed as of January 2013 (VWS, 2012a). The influence of health insurers on the purchasing market has probably been most pronounced in relation to medicines, due to the introduction of the Medicine Reimbursement System (Geneesmiddelenvergoedingssysteem (GVS)). This system presents a 'preferred' medication list; unless medically indicated, only preferred medicines are reimbursed by the health insurer.

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 are allowed to make a profit and pay dividends to shareholders (Schäfer et al, 2010b). However, there are 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, and again in 2010 and 2011. Competition on coverage of the basic health insurance package is hardly possible, as under the Zvw coverage it is the same for all basic packages. It is allowed for insurers to offer a slightly extended basic package to their enrolees, but this is by no means common practice.

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 dropped to pre-Zvw levels of about 3.5% to steadily rise again during the last few years (see Table A5.1).

Table A5.1 Health insured mobility, (2005-2012) (Vektis, 2012)

	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Switchers total (%)	18.1	4.5	3.5	3.5	4.1	5.5	6

Under the Zvw, insurers have an obligation to accept all applicants living in the Netherlands or abroad who are compulsorily insured under the Zvw. 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 enables 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, although limited, between care providers. For a large number of care providers (some) quality data are still lacking. Performance qualifications are based on data from the programme Zichtbare Zorg and data from the providers themselves. The website Consumentenbond.nl allows consumers to select hospitals that offer the best treatment for 20 diagnoses, including diabetes and several forms of cancer. The qualifications are based on CQ indexes and the results of expert panels. Consumers with a pgb (personal care budget) or a VPZ-budget (Reimbursement scheme personal care) 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 these budgets.

Health insurance system

The Dutch health insurance system consists in three ‘compartments’ (Schäfer et al, 2010b). 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 Awbz premium paid by everybody is 12.5% of income before tax, to a maximum of € 4114 per year in 2012. 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, medical and residential care for the elderly, people with mental or physical disabilities and chronic psychiatric patients, support care people need to avoid neglect or to enable them to remain living in their own home, Government Vaccination Programme, and pgb. 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. The Ministry of Health, Welfare and Sport intends to abolish these offices and to have insurers take over their tasks as of January 2013, thus to improve the coordination of care between the first and second compartment, i.e. long-term care and cure (VWS, 2011b). It would also make the insurers carry the financial risk related to managing Awbz-care.
Applicants may opt for care in kind or, with some exceptions, for a pgb or a VPZ-budget. Care in kind is provided directly by regular care service providers and home care providers. A pgb and VPZ enable people themselves to organise and purchase the care they need with people or providers they want. The indication criteria for the pgb and VPZ differ. Because of the high and rising costs of Awbz care, the government is looking for ways to cut costs. Thus, as of 2012, for people to be eligible for a pgb they need a CIZ indication for residential care.

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 € 1094 in 2008 rising to € 1287 in 2012. Collective contracts and voluntary excess (€ 100 - € 500) are the exceptions to this rule, as they allow for a premium discount. Collective contracts are contracts between insurance companies and specific groups of people, like company employees or patient organisations. In 2012, 67.6% of all insured had a collective insurance with an average premium discount of 3.7%.

In an attempt to make people more aware of the costs of health care, a compulsory excess of € 150 for everybody was introduced in 2008. It has steadily increased and amounts to € 220 in 2012 (and € 350 in 2013). Excluded from compulsory excess are children up to the age of 18, GP-care, obstetrics and maternity care. Although growing, the proportion of insured with voluntary excess is small, 7% in 2012 (Vektis, 2012). 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)). The allowance depends on the number of persons per household and income.

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, to a maximum of € 3554 and € 2503 per year respectively in 2012 (Belastingdienst, 2012).

Coverage of the basic package includes care provided by GPs and medical specialists, hospital care, dental care up to the age of 18 and dentures, medicines (on prescription only and in accordance with the GVS), maternity care, secondary mental health care, patient transport, necessary medical care when abroad, and, to a limited extent, paramedical care and primary mental health care (VWS, 2012b). In an attempt to cut health care costs, a number of measures have been taken to reduce coverage for 2012. Such measures include increasing the number of physiotherapy and primary mental health care sessions people have to pay for themselves, introducing and increasing compulsory excess in secondary and primary mental health care, and excluding from coverage non-chronic use of antacids, stop-smoking-programmes and dietary counselling (with exception of bundled payment schemes).

Selective contracting by health insurers makes it increasingly important for the insured to be aware of which health care providers and services are contracted by insurers. Depending on the insurance policy, not-contracted care may not be reimbursed to the full extent and potentially contribute substantially to out-of-pockets payments. Health insurers are obliged to offer sufficient information to the insured to enable them to make an informed choice as to what policy suits them best (NZa, 2012a).

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 18 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 a 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 12% in 2012, mainly because of cost considerations (NZa, 2012b).

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

Four main organisations 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, Welfare and Sport 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, 2010c). 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, 2012).
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, 2012).
As supervisors of financial institutions, the Netherlands Authority for the Financial Markets (Autoriteit Financiële Markten (AFM)) and the Dutch Central Bank (De Nederlandsche Bank (DNB)) also watch over health insurers.

Health care expenditure

In 2011, health care expenditure amounted to € 90 billion, with hospital care and care for the elderly together accounting for over 44% of that amount (see Table A5.2) (CBS, 2012g). Costs of care have risen by 3.2% in 2011 compared to 2010. Over the last few years, growth in the volume of care has been the major determinant of the rise in costs.

Table A5.2 Health care expenditure (million €) by (groups of) providers (CBS, 2012g).

	2008	2009	2010*	2011*	2010-2011#
Providers of health care - Total	46,748	48,705	50,791	52,575	3.5
Hospitals and medical specialists	20,259	21,436	22,727	23,590	3.8
Mental health care providers	4899	5273	5401	5524	2.3
GP practices	2444	2470	2498	2701	8.1
Dentist practices	2518	2558	2637	2658	0.8
Allied health care providers and midwife practices	1702	1720	1810	1883	4.0
Municipal health care services	686	707	734	820	11.7
Occupational health care and safety agencies	1211	1260	1279	1266	-1.0
Providers of medicines and medical goods	6098	6204	6365	6470	1.6
Providers of therapeutic equipment	2929	2670	2727	2829	3.7
Providers of support services	1593	1786	1882	1973	4.8
Providers of other health care	2409	2620	2729	2861	4.8
Providers of social care - Total	30,255	32,195	33,399	34,407	3.0
Providers of long-term care for the elderly	14,775	15,211	15,712	16,084	2.4
Providers of care for the disabled	7138	7802	8061	8338	3.4
Providers of other social care	8312	9183	9626	9986	3.7
Administration and management organisations	3029	3001	2994	3022	0.9
Total health care expenditure	**80,000**	**83,901**	**87,183**	**90,005**	**3.2**

* provisional figures; # %-mutation

Health expenditure as a share of gross domestic product (GDP) rose from 13.4% in 2008 to 14.9% in 2011. This increase is mainly due to a drop in GDP due to the economic recession combined with a continued growth in healthcare spending. Expenditure per capita was € 5392 in 2011 versus € 4865 in 2008 (CBS, 2012f).

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