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Background to the Dutch Health Care

According to the 2014 Euro Health Consumer Index (ECHI) the Netherlands is the best country in Europe to live for health care. In a ranking of 37 countries the Netherlands was top with a score of 898 out of 1000. Switzerland was second, followed by Norway, Finland and Denmark. The UK, excluding Scotland, landed in 14th place (718 points) with Spain 19th, Italy 22nd, and Germany in 9th place [1]. By 2014, the Commonwealth Fund placed Netherlands 5th (tied with Germany) out of 11 countries: ranked second in timeliness of care, but ranked 7th–8th in safety, efficiency and equity and 10th (before the USA) in per capita cost [2].

A survey from 2010 from the “Dutch Ministry of Health” comparing 125 performance indicators across several countries, drew a more precise picture of “getting access, varying quality, and rising costs” [3]. Challenges that were revealed, dealt with timely access to ambulatory and hospi-

tal care, varying quality of care between providers, “value for the money,” with rising expenditures and an ageing society. Health expenditures reportedly grew by 6–7 % per year 2007–2009, with data from the Organisation for Economic Co-operation and Development (OECD) demonstrating that the growth in health expenditure was above the OECD average. Their analysis indicated that this growth was due to increasing volumes of care. Whereas prices increased on average by 1.6 % per year, the volume of services from Dutch hospitals grew by 4.2 % per year, inpatient admissions by 3 % annually and day-patient admissions by 10 %. In order to get a more complete picture they stated that the volumes for outpatient care grew substantially (5.5 % on average per year), while the price of medicines had fallen significantly even though the number of prescriptions had increased (about 15 % in 2008) [3].

The Netherlands has the highest per capita spending in Europe [1]. In order to evaluate the affordability of health-care financing, expenditures are set in relation to the economic performance of the national economy – the Gross Domestic Product (GDP). Health expenditure, as a percentage of GDP, increased from 7.4 % in 1980 to 11.9 % in 2011 [4, 5]: a share which is higher only in the US health-care system (18 % of GDP). In the Netherlands, 1.7 % of the expenditures are privately, and 10.2 % publicly, financed in 2011. In the US the corresponding numbers are 8–9.1 % [4]. Experts expect a dramatic

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increase in expenditure so that by 2040, one quarter of GDP will be needed to provide care [6]. Ageing of the population, medical and therapeutic progress and global economic distortions have made it necessary to assess whether the Dutch health system organisational principles will be able to meet future challenges.

Growing Burden of Diabetes

Diabetes prevalence in 2014 was about 7.24 % [7] and it is expected to increase to 9.5 % by the year 2035 [8]. Diabetes is an expensive disease, for example, the American Diabetes Association observed that the medical expenditures of people with diabetes, on average, are “approximately 2.3 times higher than what expenditures would be in the absence of diabetes” [9] (p1). In a disease model Zhang et al. [10] calculated the burden of disease. They reported that globally, 12 % of health expenditures and USD 1330 (Diabetes induced expenditures (ID) 1478) per person were spent on diabetes in 2010. The expenditure varies by region, age group, gender, and country’s income level. Looking at Europe, the Netherlands was in the top 7 countries with expenditures of 3,793,953,000 USD (the underlying assumption in these analyses was that a patient with diabetes is twice as expensive as a comparable person without diabetes: this is conservative). Furthermore, IDF estimates expenditure of about 4113 USD per person with diabetes (Fig. 11.1), and this was expected to rise to 6943.11 USD by 2014 [7]. This would mean that the Dutch performance is within the ten most expensive countries with health expenditure rising to 4,311,488 USD by 2035 [10].

Basic Principles of the Dutch System

Prior to the health-care reforms of 2006, Dutch health care was characterised by extensive government regulation and a dual insurance system of public and private insurance, which had been perceived to be inefficient. By 2005, roughly two-thirds of the Dutch population had entered

the public programme (known as the “fund for the sick”) and stronger expenditure control was required [12]. The reform that was introduced was in response to a number of problems: a two-tier system of private health insurance for the people with a good income – (approximately one third of the population at that time) and state coverage for the rest; an inefficient and complex bureaucracy; lengthy waiting lists and a lack of patient-focus [13]. The Dutch health-care system was, and still is, made up of three branches, so-called compartments. The “*first compartment of care*” emphasises care and support for those people who have to cope with irreversible damage to physical or mental integrity [12]; the “*second compartment of care*” focuses on recovery and includes hospital care and visits to a primary care physician. The “*third compartment of care*” is defined as “*luxury care*,” such as “cosmetic surgery” [13]. Care for conditions covered by the first compartment is given regardless of an individual’s financial situation and is regulated by the “Algemene Wet Bijzondere Ziektekosten (AWBZ),” or “Exceptional Medical Expenses Act.” Both before and after the reforms, contributions to this fund were taken from income-related salary deductions, supplemented by a general government revenue grant [13]. The AWBZ was and continues to be applicable to all Dutch citizens. Before 2006, the provision and funding of insurance for second and third compartment care were determined by an individual’s total income. In 2005, the wage ceiling was set at a gross annual income of €33,000 (\$40,600) for employees and €21,050 (\$25,900) for the self-employed. Those people earning less were determined eligible for the public system. Those who did not qualify for the public system, could purchase private insurance to cover potential short-term medical needs in the second compartment and – in some cases – also for “luxury care” in the third compartment [12]. However, the way in which the provision and financing of the first and third compartment were organised did not change. The main changes occurred to care covered by the second compartment.

Preceding the 2006 reforms, the second compartment combined Social Health Insurance

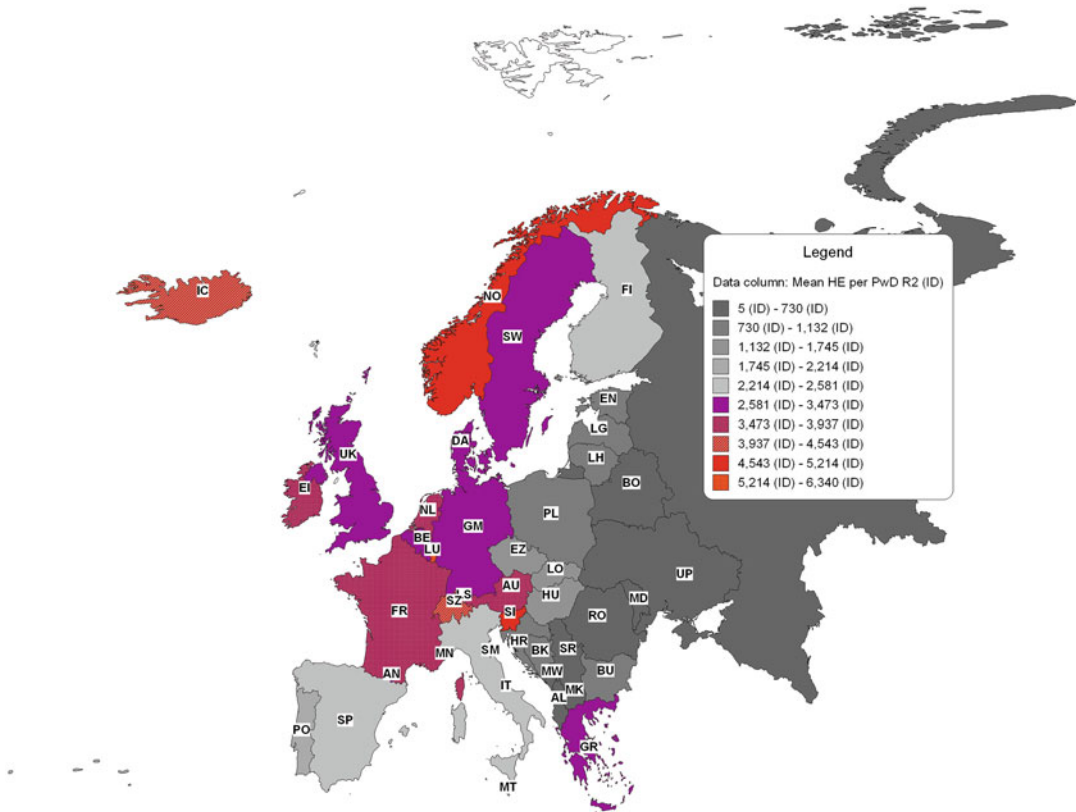


Fig. 11.1 Diabetes induced expenditures [ID] per person and year in Europe (Data are from [10], the classification limits are based on [11])

(SHI) – the so-called Fund for the sick (ZFW) – with a Private Health Insurance (PHI) scheme. SHI was compulsory for people below a certain income, funded through payroll contributions and managed by the government. The amount paid by each individual was unaffected by their medical situation. Resources were paid into a “Central Sickness Fund” which provided a mechanism for redistributing funds to compensate insurers for those considered “high risk.” Along with the ABZW, the Fund allowed universal medical coverage. PHI was funded by employers or individuals with higher incomes and insurers were allowed to take the risk of an individual into account, meaning that premiums varied widely. The 2006 *Dutch Healthcare Act* (ZvW) overturned the division between SHI and PHI in the second compartment, thus creating a universally compulsory Social health Insurance scheme. Instead of being managed primarily by the gov-

ernment, it is now the *private health insurance market* which is responsible for providing the basic package of health insurance to all Dutch citizens. Extra government finance schemes ensure that universality of care is maintained, no matter what your income, as well as providing a safety net for illegal immigrants [13].

The original idea was to limit costs by stimulating competition between the rival insurance companies. But with ongoing mergers of companies, there seems to be limited competition. However, critics point out that large health insurance companies are said to squeeze health providers in order to lower their expenditures [14]. Adjustments to the Health Insurance Act currently being promoted will prevent patients from choosing their own medical specialist. Presently insurers have to reimburse a certain amount to patients who go to a specialist or facility that is not partnered with the insurance company,

offsetting at least part of the cost of treatment for the patient [15]. Furthermore, the monthly premium for Dutch health insurance will rise by around €9.5 in 2015. This means people will spend roughly € 114 extra per year, taking the annual cost of basic health insurance to € 1215 in 2015 [16]. Moreover, the amount of money for mandatory excess deductibles (*eigen risico*) increased from € 360 to € 385 per year in 2016 [17]. The “*eigen risico zorgverzekering*” or “own risk insurance” is the amount which an individual has to pay out of pocket before health insurance coverage sets in [16]. Some insurance companies offer larger excess deductibles (up to € 900) combined with a lower annual standard price. You are better off when you do not need your deductible but when you do, you are worse off financially. This depends on your own calculation of personal risk.

The *Primary Care Provider* (PCP) plays the leading role in providing care, acting as gatekeeper and the first point of contact (except in emergencies). Every Dutch person has to register with a primary care provider (PCP) [4]. Patients must obtain a PCP referral prior to a specialist visit, except for acute conditions such as trauma or acute myocardial infarction. Nevertheless, this also depends on the insurance package; with more expensive policies, no referral is needed. Nurse practitioners are employed to perform check-ups on the chronically ill. PCPs can deal with routine health issues, perform standard gynaecological and paediatric examinations, and refer onto other services [13]. Most *specialists* work within a hospital setting.

Managed Care in the Netherlands: Integrated Chronic Care and Bundled Payments

The reform of the Dutch health-care system has been characterised as managed competition, or as “...an experiment in how far you can get with a system in which there is almost no direct government involvement” [18]. The Government executes its responsibility indirectly, only. The leading principle of this reform (theory) was that

the government should stimulate competition rather than regulate the supply of health care: making the Dutch system the most extreme application of market mechanisms to stimulate efficiency in a European health-care system.

In order to achieve this, the Dutch came up with a system of “managed competition” that included a statutory general insurance provision [12]. The basic concept demands that every Dutch citizen has to buy health-care and pharmaceutical insurance from one of several private providers [19]. The extent of coverage under these policies is government-mandated and identical, including a deductible, depending on the specific insurance policy. This means that the insured patient has to pay additional expenses, ranging from the governmental fixed mandatory amount of € 385 in 2016 per year [17] to any reasonably calculated amount balancing the contribution fee against the expected expenses [20]. Insurers must also charge the same premium to all, including those with pre-existing conditions. The only exception is that group discounts (e.g., for an employer) are permitted [18] where persons are collectively insured. This could mean that the insured person of such a group can profit from a broader package at lower premium and at lower own risk. A special payroll tax also funds the government’s health regulator, which provides insurers with payments to help pay expenses related to high cost policy holders. Basically, health care embraces three overlapping markets as Fig. 11.2 shows: the acquisition of insurance contracts between individuals and insurers; the provision of health-care services between individuals and providers and between insurers and providers for the pricing of those services [18].

Over the years many approaches were introduced to improve the quality and continuity of care for chronic diseases. However, fragmented funding made it difficult to establish long-term programmes [21]. Therefore, the Dutch minister of health approved, in 2007, the introduction of bundled-care (known in the Netherlands as a ‘chain-of-care’) approach for integrated chronic care, with special attention to diabetes. This bundled-payment approach was firstly introduced on an experimental basis, accepted in 2010 and

Purchasing market superseded by two markets

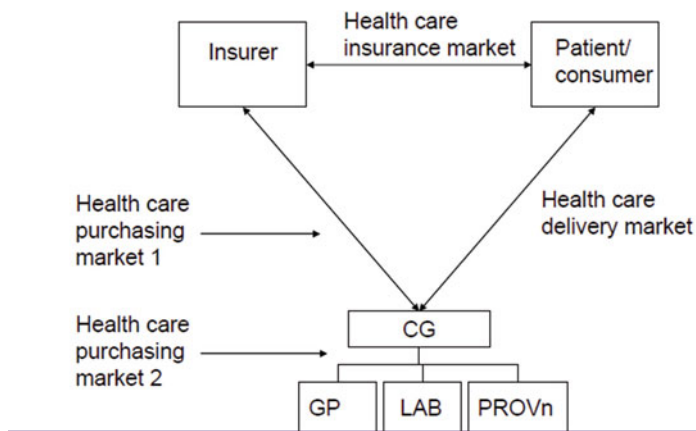


Fig. 11.2 Medical specialist are rarely part of the Care Group and only provide treatment advices or suggestions without actually treating the patients themselves. Dutch

health-care market. *CG* Care Group, *GP* General Practitioner, *ProVn* Health-Care Provider, *LAB* Laboratory (From Struijs [23])

subsequently implemented nationwide for diabetes, chronic obstructive pulmonary disease (COPD), and cardiovascular risk management [21]. Insurers negotiate and pay a single remuneration [21] (lump sum) to a principal contractor (the “care group”) to cover a full range of care services for specific chronic diseases, like diabetes, COPD, or vascular diseases for a fixed period. Care groups (CG) are new legal entities which are formed by health-care providers at local levels on a regional scale [22]. Very often they are general practitioners (GPs). As a principal contractor they negotiate with the insurers on price and products. Finally, the care group takes on both clinical and financial responsibility for all assigned patients in the particular diabetes care programme. The care group either delivers services itself or subcontracts to other care providers [21].

With the bundled-payment approach, the market is divided into two segments: one in which health insurance companies contract care from the principal contractors (i.e., care groups) and one in which care groups conclude service contracts from individual providers [23]. These providers could be general practitioners, specialists, dietitians, or laboratories. Both, the price for the bundle of services by insurers and care groups, and the fees for the subcontracted care providers

by the care group and providers, are freely negotiated [21]. As Struijs et al. [21] point out, the aims of these care groups are similar to those of “Accountable Care Organizations” (ACOs), as currently designed in the United States or “Clinical Commissioning Groups” in the UK [24]. However, there are some essential differences: first, care groups (as with clinical commissioning groups) are dominated by GPs, whereas ACOs may comprise a wide range of providers, at least primary care physicians, specialists, and one or more hospitals; second, patients are to be assigned to ACOs on the basis of their patterns of service use, whereas patients here are assigned to a care group on the basis of their disease (e.g., onset of diabetes). Moreover, the care groups bear the full financial risk for the expenditures of care [21], whereas ACOs will not take over the risk of higher expenditures than expected [25].

Integrated Diabetes Care

With a bundled payment approach – or episode-based payment – multiple providers are reimbursed a single sum of money for all services related to an episode of care (e.g., hospitalisation, including a period of post-acute care). This

is in contrast to a reimbursement for each individual service (fee-for-service), and it is expected that this will reduce the volume of services provided and consequently lead to a reduction in spending. Since in a fee-for-service system the reimbursement is directly related to the volume of services provided, there is little incentive to reduce unnecessary care. The bundled payment approach promotes a more efficient use of services [26].

For example, the Washington State Hospital Association [27] identified three areas where bundled payments should show progress: (1) Quality improvement and cost reduction by reducing administrative/overhead costs, sharing risk, eliminating cost-shifting, outcomes management and continuous quality improvement, reducing inappropriate and unnecessary resource use, efficient use of capital and technology; (2) consumer responsiveness, i.e., seamless continuum of care and focus on the health of enrollees; (3) community benefit by improving community health status, and addressing the prevention of social issues which affect community health. Most integrated networks include a team-based approach, as well as an emphasis on patient participation.

Furthermore, with the set-up of a bundled payment model, it is reasonable to expect that multi-disciplinary cooperation between health-care providers will be facilitated insofar as existing financial barriers between care sectors and disciplines will be eliminated [28]. Under this condition so-called 'standard' diabetes care can be offered, i.e., purchased, delivered and billed as a single product [29]. From the point of view of the Dutch Diabetes Federation (NDF) this scheme mainly serves people who have recently been diagnosed with diabetes, people whose condition is well controlled and those who have no serious complications [30, 31]. Bundled payment contracts also cover consultations with secondary care specialists. However, this consultation opportunity does not include referral to and treatment by those specialists. Accruing expenditures (overhead costs) which are caused by the coordination and interaction of the integrated care processes such as management, coordination and

office space may also be included; nevertheless, these are difficult to budget under the existing bundled health-care model [28].

Organisation and Coverage of Care

Care groups are a core element of the bundled payment approach. Struijs et al. [28] outline the role of the principal contractor of the bundled payment scheme in such a way that the groups are legally or contractually responsible for the coordination, consistency and quality of the diabetes care. In compliance with this role they can either contract or coordinate health-care providers for the actual provision of the specified health-care services or they even provide certain or all of the care components themselves. To ensure the required quality and efficiency of care they have the option to selectively contract health-care providers.

The coverage of care offered by groups based on a bundled payment scheme is based on standards of care (CS). These standards are defined by the Dutch Diabetes Federation (NDF), build on evidence-based guidelines and are updated regularly [32]. However, a care group may have a specialist for internal medicine under contract for consultations. If such a specialist is consulted, an outpatient hospital treatment bundle for "diabetes mellitus without secondary complications" may not be claimed. As soon as the treatment responsibility for a patient is transferred from the PCP to a specialist, a patient is no longer "under the care" of the care group; this means that the bundled payment for this patient is terminated. The specialist then bills the health insurer directly for that patient. During that time, when the specialist activates the hospital payment scheme, the care group cannot claim a bundled fee for that patient [28].

Care Based on Bundled Payment Contracts

The extent to which care is provided to a diabetic patient is defined in the NDF care standard and is approved by all national providers and patient

organisations [21, 33]. However, it sets in only from the moment a diagnosis of diabetes mellitus is made [30]. Any activity which is needed to diagnose diabetes falls outside a bundled payment system. Struijs et al. [28] therefore stated that in their study of “tangible effects of bundled payment” formal diagnosis was not included in any of the contracts they reviewed. Initial risk assessments, even if part of the diagnostic phase, were included in all the contracts. Table 11.1 gives an overview of the performance of the group contracts with respect to the NDF standards.

In the contracts they reviewed, they found that periodic check-ups as well as specialist consultation were included in all bundled payment con-

tracts. Laboratory testing was also included by nine care groups. Nevertheless, group nine, which was the exception, had a separate contract with a medical laboratory. Support in smoking reduction or cessation was not included in the payment in five groups. Exercise counselling was included in all contracts, but supervised exercise counselling was mentioned in the bundled payment contracts of group nine. Because the patient had to pay €5 per year, it is unclear whether this claim is part of the bundled payment. Medication and psychosocial care were not included in any of the bundled payment contracts. These services were not mentioned in the NDF standards either.

Table 11.1 Content of the bundled payment contracts by diabetes care group

	Diabetes care group									
	Required by NDF Health-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-monthly check-ups	Yes	+	+	+	+	+	+	+	+	+
3-monthly check-ups	Yes	+	+	+	+	+	+	+	+	+
Eye examinations	Yes	+	+	+	+	+	+	+	+	+
Foot examinations	Yes	+	+	+	+	+	+	+	+	+
Supplementary foot exams	Unclear	–	+	+	–	+	–	–	+	–
Foot treatment	No	–	–	+	–	–	–	–	–	–
Laboratory testing	Yes	+	+	+	+	+	+	–	+ ^b	+
Smoking cessation support	Yes	–	+	–	–	+	–	+	+	–
Exercise counselling	Yes	+	+	+	+	+	+	+	+	+
Supervised exercise	No	–	–	–	–	–	–	–	+ ^c	–
Dietary counselling	Yes	+	+	+	+	+	+	+	+	+/ ^d
Medication	No	–	–	–	–	–	–	–	–	–
Psychosocial care	No	–	–	–	–	–	–	–	–	–
Medical aids	No	– ^a	–	–	–	–	–	–	– ^a	–
Additional GP consultations (diabetes-related)	Unclear	–	+/-	+/-	+/-	–	+/-	+/-	+/-	+/-
Additional GP consultations (non-related)	No	+/-	–	–	–	–	–	–	–	–
Specialist consultations	Yes	+	+	+	+	+	+	+	+	+

From Struijs [28]

^aMedical aids limited to blood glucose strips and billed at a maximum additional fee of €4.50 per patient per year

^bSupplementary fee paid for laboratory testing (€27 per patient per year) via a module additional to the bundled fee

^cExercise programme mentioned in contract at additional fee of €5 per patient per year

^dDietary counselling contracted for new patients only (module 1) and for those in insulin adjustment phases (module 3) but available to other patients on specific GP referral

A supplementary foot examination was covered in four contracts.

It was also not clear whether any extra GP consultations were covered by the bundled payment contracts. Even when distinguishing between “diabetes-related” and “non-diabetes-related” visits there was no consistent picture. As Struijs et al. [28] show, the interviews indicated that some insurance companies interpreted the coverage more broadly than the care groups.

Provision of Care

Type of diabetes, and associated treatment requirements, decide the place where care is given and by whom. Care usually comprises all aspects of diabetes care. In some cases, patients are for example referred temporarily or permanently for podiatric care to the hospital while the usual diabetes care remains provided in community care. Table 11.2 summarises the location of care.

Table 11.2 Location of care

Type 2 diabetes mellitus:
Community care (1st line in our terms)
Specialised care
General hospitals (2nd line in our terms)
University care (3rd line in our terms)
Type 1 diabetes mellitus
Specialised care
General hospitals
University care
Diabetes and pregnancy (including GDM)
Specialised care
General hospitals
University care
Secondary diabetes
Community care (selected individuals with stable diabetic disease and primary morbidity (like renal transplant, steroid related disease)
Specialised care (genetic cases, syndromes, drug-related, HIV-(drug)- related)
General hospitals
University care
Specific centres for CFRD and lung transplant, other solid organ transplant, bone marrow/stem cell transplants)

Management of Type 2 Diabetes

The great majority of patients have type 2 diabetes. All professionals agree that many patients with type 2 diabetes can be treated well enough under community care (Dutch estimation: 80 %). The Netherlands is a small country and generally distances are no issue (except for traffic jams and, for some, public transport fares). There is a national consensus (LTA: national transmural agreement [34] – between 1st and 2nd/3rd line) that describes which patients would logically be treated in the community care and which ones in specialised care. In general terms, many patients are therefore treated under community care, the GPs can consult the hospital-based specialist and others are referred temporarily for a specific problem (some of them stay under hospital specialist care however) or are referred permanently. Referral back to the GP is guided by the nature and severity of the diabetic condition, nondiabetic morbidity and the wish of the patient. In modern terms “shared decision-making.” Very generally outlined indications for (permanent) referrals are:

- Intensive insulin therapy or those having trouble achieving adequate control
- Insulin treatment and (recurrent) hypoglycaemia
- Severe hypoglycaemia in any patient
- Difficult hyperlipidemia
- Difficult hypertension
- Severe obesity
- Renal impairment (eGFR <45 in patients <60 years, <30 in those >60 years) and/or macroalbuminuria/proteinuria
- Difficult neuropathy
- Complicated diabetic foot
- Pregnancy-related issues

The LTA is then translated into a RTA (regional transmural agreement) with local adaptations. Good implementation requires good communication and human relations. The personal factor(s) is/are essential to make this scheme work. The essential issue for the government is to provide the best care near the patient, but basically they

appear to be seeking the cheapest care by health-care professionals with the minimally-required level of expertise (in theory).

There are some important issues diabetes professionals are confronted with:

- There is little room for innovation (costs money)
- Restricted access to new medications
- Safeguarding adequate referral to secondary care.

Evaluation of the Bundled Payments Approach

As mentioned above, changes or improvements should occur most likely in three areas: (1) Quality improvement and cost reduction by reducing administrative/overhead costs, sharing risk, eliminating cost-shifting, outcomes management and continuous quality improvement, reducing inappropriate and unnecessary resource use, efficient use of capital and technology; (2) consumer responsiveness, i.e., seamless continuum of care and focus on the health of enrollees; (3) community (e.g., whole village/town) benefit by improving community health status, and addressing the prevention of social issues which affect community health. As the RAND Corporation states, the evaluation should cover at least: changes in consumer financial risk, waste reduction (as a consequence of reduced (unnecessary) services), reliability through focus on key processes and improved coordination, patient experience, health, coverage, capacity, operational feasibility [26].

Dutch integrated diabetes care, induced by the bundled payment approach, affects both horizontal and vertical integration of providers. So far, goals like multidisciplinary care and seamless care (especially seen from the patient's viewpoint) seems to have been reached. In a recent study de Baker et al. came to the conclusion that "the bundled payment led to important changes in the financing and delivery of chronic care in the Dutch health-care system. In a relatively short period of time, care groups were created throughout the country, providing integrated, multidisciplinary care for patients with diabetes" [35] (p430). They also identified improved organisa-

tion and coordination, better collaboration among the providers and better adherence to care protocols. On the other hand they also recognised a dominance of the Care Groups by GPs. Furthermore, prices varied to a large extent among the care groups, and, as they state, "this could not be fully explained by differences in the services offered. Moreover, outdated information and information technologies led to an increased administrative burden. Nevertheless, the introduction of bundled payments might turn out to be a useful step in the direction of risk-adjusted integrated capitation payments for multidisciplinary provider groups offering primary and specialty care to a defined group of patients" [35].

As far as efficiency of care is concerned, after 3 years of evaluation, several changes in care processes have been observed, including task substitution from GPs to practice nurses and increased coordination of care [31, 36], thus improving process costs. However, Elissen et al. [31] concluded that the evidence relating to changes in process and outcome indicators, remains open to doubt, and only modest improvements were shown in most indicators. Struijs et al. [36] present a more differentiated picture. Process indicators like measurement of HbA1c, body mass index, blood pressure, cholesterol, kidney tests and foot examination have shown improvements. On the other hand, this improvement was accompanied by a decrease in annual eye testing. Some intermediate outcome measures like blood pressure and cholesterol level have improved slightly as well. Body mass index remained unchanged, and the average HbA1c has increased. Struijs et al. found that patients in a bundled payment diabetes care programme, used less specialist care than patients receiving usual care [37]. However, there has been no improvement in outcome parameters like efficiency outcomes to date.

During the first year, the expenditure per patient was actually higher than for patients receiving usual care. In their comparison of integrated care outcomes in three countries, Busse et al. identified an increased annual cost of \$388 per patient in the Dutch model. This was associated with mixed clinical outcomes but better experiences for patients and providers (Tables 11.3 and 11.4) [38]. More than 90 % of the

Table 11.3 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		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	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*	–	38.1	–	–	–	–	–	–	–	–	–	54.5	66.3*
Eye examination in past 12 months	–	38.4	32.6	31.3	60.1	69.1*	45.5	41.4*	–	27.1	–	52	42.8*	–	63.6	42.8	54.2*	77.3	73.5*	48.1	44.6*
Eye examination in past 24 months	–	–	–	44.8	–	88.0	–	54.5	–	–	–	–	72.7	–	–	–	71.6	–	92.4	–	63.0
Foot examination	–	63.7	68	79.2*	67.2	84.4*	92.9	91.7*	–	58.9	–	65.1	70.8*	–	73	76.3	77.8	88	84.8*	78.4	82.4*
HbA1c test	74.2	97.0*	89.7	93.2*	93.6	94.3	94.9	94.8	–	89.2	–	82.6	81.3*	–	77.6	93.9	95.2	99.3	99.0	90.8	91.4*
Blood pressure measurement	98.5	97.3	91.1	91.8	96.7	96.9	99.2	99.2	–	89.9	–	86.8	85.4*	–	94.5	88.8	82.2*	98.7	98.2	93.9	93.4*
BMI measurement																					
Creatinine clearance calculation or test	99.4	97.3*	92.1	92.1	96.6	96.9	99.1	99.1	–	90.6	–	79.9	83.1*	–	94.3	86.9	81.4*	91.6	91.5	91.7	92.3*
	71.8	80.8*	91.2	94.2*	60.8	75.0*	86.5	86.8	–	83.6	–	75.9	73.0*	–	60	90.8	91.2	92.5	92.1	83.8	84.6*

Urine test (spot sample) for albumin or albumin-creatinine ratio	69.1	46.8*	63.8	74.7*	55.2	69.1*	-	-	68.6	65.6	68.9*	-	45.8	86.8	88.4	74.2	72.6	66.6	71.8*
LDL test	71.5	78.7*	83.7	87.6*	66.2	83.0*	88	88.5	81.5	75.2	71.8*	-	63.1	90	93.0*	96.3	95.7	83.3	84.4*
HDL test	72.1	79.0*	86.5	90.6*	66.8	84.2*	-	-	83.8	77.7	73.9*	-	66.1	92.5	94.4	96.5	94.3	82.7	83.9*
Total cholesterol	72.7	80.5*	87.3	91.3*	66.8	84.1*	89.7	90.2	83.9	77.7	74.0*	-	65.9	92.7	94.4	96.6	96.8	85.4	86.6*
Triglyceride test	72.4	80.5*	87.2	91.2*	66.7	84.1*	88.5	88.3	83.7	77.5	73.7*	-	65.9	92.5	94.4	96.5	93.7*	84.9	85.5*
Smoking status know	-	100	-	100	-	96.1	-	78.8	100	-	93.7	100	-	98	-	68.5	-	88.5	-
Dietician consultation	-	21.6	21	16.1*	-	-	5.9	3.4*	2.8	0.1	5.2*	-	-	-	-	-	-	7.7	7.4*
Composite indicators																			
Tested/know: HbA1c, blood pressure, BMI, total cholesterol, creatinine clearance, foot exams	-	58.3	57.8	72.9*	60.7	74.9*	83.8	84.3	51.1	52.5	60.5*	-	46.4	64.6	60.4	77.4	74.2	68.1	73.7*
Lipid profiling (total cholesterol, triglycerides, HDL, LDL)	71.2	78.7*	83.7	87.5*	66	82.8*	-	-	81.5	74.8	71.6*	-	62.7	89.9	93.0*	96	90.3*	80.3	81.3*

From Struijs et al. [36]

*Significant (P < .05)

Table 11.4 Quality of care in terms of outcome indicators, at T1 (first value in second year after bundled payment implementation) and T3 (final value in third year after implementation), by care group and for total sample

Care group	1		2		3		4		6		7		8		9		10		Total		
	T1/T2 ^a	T3	T1	T3	T1	T3	T1	T3	T2 ^a	T3	T2 ^a	T3	T2 ^a	T3	T2 ^a	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*	51.2	55.0*	49.8	49.9	49.9	49	50.4*	51.6*	50.1	49.3*	50.5	51.0*	
% of patients <53 mmol/mol	76.6	74.9	42.3	50.2*	76.4	66.9*	73.0	66.7*	65.2	50.7*	70.1	69.1	69.1	72.8	71.9	61.7	69.9	66.8*	66	63.2*	
% of patients >69 mmol/mol	0.8	1.7	14.3	11.7*	1.2	1.8	2.5	2.8	5.5	10.1*	2.3	2.4	2.4	0.9	4.4	6.8	4.8	3.1*	5.3	4.7*	
Systolic blood pressure																					
Mean (mmHg)	140	139	140	137*	139	139	141	140*	137	136	141	140*	140*	138	139	144	140	137*	141	139*	
% of patients <140 mmHg	47.4	52.0	47.6	58.2*	52.6	52.5	42.9	46.0*	54.1	56.2	44.9	46.6*	54.3	50.4	52.2*	48.3	48.3	61.7*	45.2	51.3*	
BMI																					
Mean (kg/m ²)	29.71	29.73	29.32	29.26	29.48	29.35*	30.21	30.15*	29.29	29.17	29.61	29.53*	28.98	28.97	30.02	29.69*	30.09	30.04	29.93	29.86*	
% of patients <25 Kg/m ²	15.2	15.9	18.9	20.6*	16.4	18.0	14.3	15.7*	19.3	20.0	17.5	18.0	19.7	18.6	12.7	14.2	13.0	14.3	15.3	16.8*	
% of patients >30 Kg/m ²	42.4	43.9	37.6	37.3	40.9	39.4	45.9	45.2	37.7	37.8	40.4	40.0	34.1	34.8	43.8	41.5	45.0	43.7	43.5	42.7*	
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*	2.7	2.5*	2.6	2.5*	2.7	2.6	2.5	2.5	2.6	2.1*	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*	43.6	48.9*	50.3	53.4*	42.0	42.0	52.4	51	49.2	71.5*	48.2	58.6*	

patients interviewed judged the cooperation and coordination to be either good or excellent. The providers perceived improved quality and more patient-centredness [38]. The adherence to care standards (CS) improved from 79 % to 89.2 % during the period 2010–2013 [34]. This positive trend was transferred into high levels of patient satisfaction and their involvement in treatment [34].

Conclusions

The limited evidence for a positive impact of bundled payments under the Dutch health system has led to discussions over whether the current methodological approaches are sophisticated enough to differentiate between differences due to bundled payments compared with other influences of health-care reform that could be superimposed [39]. Moreover, interactions of other secular factors (e.g., regional, national or local trends and characteristics) make it difficult to assign outcomes to the influence of bundled payments alone. As Struijs et al. [39] point out, new methods are needed to distinguish between the effects of the core elements of the payment reform, the core elements of the provider-led entities and the core elements of the health-care delivery transformations. Such analyses could inform the global debate over how to implement integrated care. For example, Busetto et al. [40] argue in favour of mixed methods studies. Overall, while the Dutch approach to integrated care, using a bundled payment system with a mixed payer approach, has created a limited improvement in integration, there is no evidence that the approach has reduced morbidity and premature mortality; and it has come at an increased cost.

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