Disease Management Programs in The Netherlands; Do They Really Work?

72

Using the Chronic Care Model to Thoroughly Evaluate the Long-Term Effects of Dutch Disease Management Programs

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72.1 Using the Chronic Care Model to Evaluate the Long-Term Effects of Disease Management Programs in The Netherlands

Healthcare systems and providers are currently not equipped to deal with the complexities of aging populations and the high prevalence of chronic diseases that come with it. Clearly, rapid increase of people with chronic diseases is expected to lead to increased healthcare, social care and social security costs. However, evidence also indicates that carefully planning ahead and making evidence-based choices will enable countries and their primary care systems to successfully manage the situation. According to Ed Wagner, care processes must be redesigned and supportive of productive patient–professional interactions, which in turn leads to better outcomes (Wagner et al. 1996a, b, 2001; Coleman et al. 2009) which resulted in the chronic care model (Fig. 72.1). This model provides a multidimensional framework guiding disease management programs (DMPs) aiming to replace their current system which are usually based on acute and reactive care, with planned, population-based care delivery to patients with chronic diseases (Wagner et al. 2001; Coleman et al. 2009; Norris et al. 2003).

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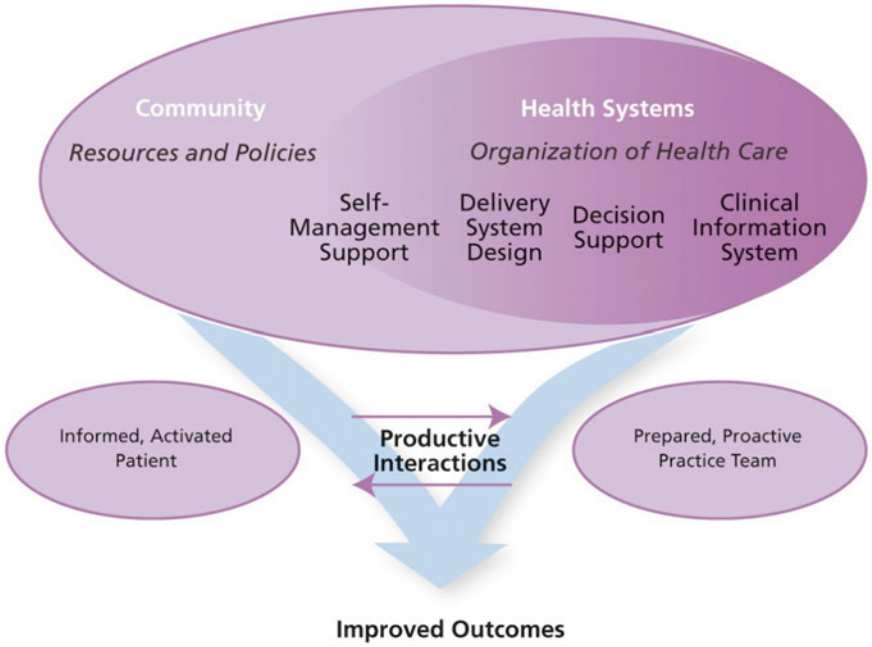


Fig. 72.1 Chronic care model developed by Ed Wagner

The CCM includes six interrelated components of the quality of care for the chronically ill:

1. Self-management support (i.e., empowering patients to self-manage their own care through education, lifestyle programs, skills building, planning, goal setting and problem solving);
2. Delivery system design (i.e., redesign the way that care is delivered to chronically ill patients by redefining healthcare team members' roles);
3. Decision support (i.e., implement and use of care standards and clinical guidelines, use the latest evidence when decisions are made with patients);
4. Clinical information systems (i.e., implement information systems, providing timely reminders and feedback for patients and health professionals, planning and coordinating care for individual patients, monitoring healthcare team performance and effectiveness of individual care);
5. Healthcare systems (i.e., promoting effective strategies at all levels to comprehensively change the care system, developing agreements to coordinate care and address quality issues, provide (financial) incentives to improve the quality of chronic care delivery); and
6. Community linkages (i.e., developing partnerships with community organizations to support interventions that complement health services, advocating for policy changes that improve patient care) (Cramm and Nieboer 2015a, b, c; Wagner et al. 1996a, b, 2001; Coleman et al. 2009).

Although it is known that DMPs based on the chronic care model prevent disease complications among patients with chronic obstructive pulmonary disease (COPD) (Adams et al. 2007) and are related to better outcomes indicated by measures of care processes and clinical outcomes (Tsai et al. 2005) and their *long-term* benefits have not been established thoroughly. Furthermore, the Chronic Care Model is not static but incorporates flexibility in the implementation of interventions, resulting in a mixture of DMPs (Cramm et al. 2013). Thus, different DMPs may incorporate the six components of the Chronic Care Model to various extents using diverse constellations of interventions. To understand the design and effects of DMPs based on the Chronic Care Model, it is important to (1) know which interventions were actually implemented within the Dutch DMPs, (2) assess if implementation of interventions led to better quality of chronic care, (3) investigate if (improvements in) quality of chronic care resulted in more productive patient–professional interactions and (4) assess long-term effects on patient outcomes (healthier lifestyles, better self-management abilities, quality of life). These four questions will be answered in this chapter.

This study included patients and professionals participating in 18/22 disease management programs based on the Chronic Care Model that were implemented in various regions of the Netherlands that were followed for at least two years (Lemmens et al. 2011; Cramm et al. 2014a, b). For this chapter, four DMPs were excluded due to (i) a sample size smaller than 15 patients; (ii) incomplete data availability caused by delayed questionnaire distribution; (iii) DMPs aimed at hospitalized patients instead of those still living on their own and (iv) slightly different questionnaire content to address a specific mental health condition (e.g., eating disorders and depression). The 18 included DMPs were aimed at patients with CVDs (n = 9), COPD (n = 4), heart failure (n = 1), comorbidity (n = 1) and diabetes (n = 3) (Cramm et al. 2014a, b).

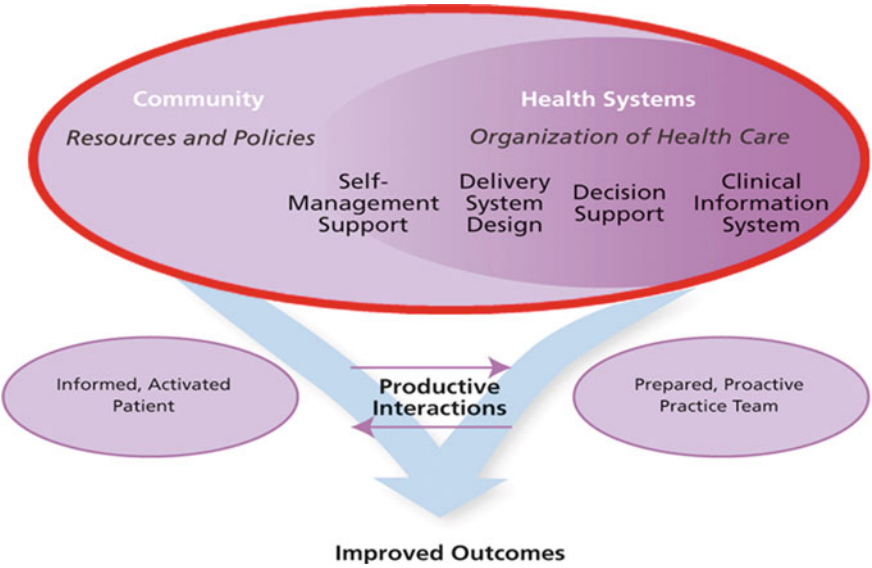
72.2 Question 1: Which Interventions Mapped to the Chronic Care Model Were Actually Implemented Within the Dutch DMPs?

In order to answer this research question, we developed a template based on the Chronic Care Model. All project leaders of the 18 DMPs were asked about the implementation of all interventions within their DMP. After finalizing, the template was sent back to the project leaders for final corrections (Cramm and Nieboer 2015a, b, c).

Each disease management program successfully implemented a constellation of interventions within each of the six dimensions of the Chronic Care Model (see Table 72.1). Care standards/clinical guidelines, training and independence of practice assistants, professional education and training for care providers and hospital or practice information system were implemented within all the DMPs, whereas organizing a health market, use of cognitive behavioral therapy, use of care

protocols for immigrants specifically and having an electronic patient records system with a working patient portal were implemented in a single DMP only. DMPs clearly vary in the interventions they implemented within each DMP.

72.3 Question 2: Did the Quality of Chronic Care Delivery Measured with the CCM Dimensions Improve Over Time?



An important question is the implementation of the interventions listed in Table 72.1 resulted in better quality of chronic care. Looking at the results of professionals' experiences with quality of chronic care delivery over a two-year time frame, all six dimensions of the CCM as well as the overall score improved significantly (Table 72.2). Two years after implementation of the DMPs, all CCM areas were indicated as advanced support for chronic illness care (Bonomi et al. 2002; Cramm and Nieboer 2014; Cramm et al. 2014a, b).

In addition to investigating quality of care as experienced by professionals, we were also interested in assessing patients' experiences. These results indicated DMPs implementation which also led to more positive experiences among chronically ill patients (Cramm and Nieboer 2013a, b).

Furthermore, results clearly showed that quality of chronic care delivery at *T*0 ($p < 0.001$) and quality changes in the first ($p < 0.001$) and second ($p < 0.01$) years predicted program sustainability (Cramm and Nieboer 2014).

Table 72.1 Overview of interventions implemented within DMPs in The Netherlands

CCM dimension	Intervention	Number of programs	%
Healthcare organization	Integrated financing of disease management	9	50
	Specific policies and subsidies for immigrant population	5	28
	Sustainable DMP financing agreements with health insurers	10	56
Community	Communication platform between stakeholders about patients	2	11
	Health market	1	6
	Cooperation with external community partners	15	83
	Multidisciplinary and transmural collaboration	14	78
	Role model in the area	8	44
	Regional collaboration for DMP expansion	8	44
	Treatment and care pathways in out and inpatient care	15	83
	Involvement of patient groups and panels in care design	9	50
	Regional training course	13	72
	Family participation	3	17
Self-management	Promotion of disease-specific information	14	78
	Individual care plan	13	72
	Lifestyle interventions (e.g., physical activity, diet, smoking)	16	89
	Support of self-management (e.g., Internet, email, SMS)	2	11
	Tele-monitoring	0	0
	Personal coaching	15	83
	Motivational interviewing	16	89
	Informational meetings	6	33
	Diagnosis and treatment of mental health issues	7	39
	Reflection interviews	0	0
	Group sessions for patient and family	5	28
	Cognitive behavioral therapy	1	6
Decision support	Care standards/clinical guidelines	18	100
	Uniform treatment protocol in out and inpatient care	10	56
	Training and independence of practice assistants	18	100
	Professional education and training for care providers	18	100

(continued)

Table 72.1 (continued)

CCM dimension	Intervention	Number of programs	%
	Automatic measurement of process/outcome indicators	16	89
	Use of care protocols for immigrants	1	6
	Audit and feedback	10	56
	Periodic evaluation of interventions and goal achievement	6	33
	Structural participation in knowledge exchange/best practices	11	61
	Quality of life questionnaire	7	39
	Evaluation of health care via focus groups with patients	4	22
	Measurement of patient satisfaction	9	50
Delivery system design	Delegation of care from specialist to nurse/care practitioner	16	89
	Substitution of inpatient with outpatient care	11	61
	Systematic follow-up of patients	16	89
	One-stop outpatient clinic	3	17
	Specific plan for immigrant population	3	17
	Expansion of chain of care to the secondary care setting	6	33
	Joint consultation hours	3	17
	Meetings of different disciplines for exchanging information	17	94
	Monitoring of high-risk patients	13	72
	Board of clients	4	22
	Periodic discussions between care professionals (and patients)	11	61
	Stepped care method	6	33
Clinical information systems	Electronic patient records system with patient portal	1	6
	Hospital or practice information system	18	100
	Integrated chain information system	10	56
	Use of ICT for internal and/or regional benchmarking	14	78
	Creation of a safe environment for data exchange	8	44
	Systematic registration by every caregiver	15	83
	Exchange of information among care disciplines	12	67

CCM chronic care model, *DMP* disease management program, *SMS* short message service, *ICT* information and communication technologies. Ref Population Health Management. Table was published in Cramm and Nieboer (2015a, b, c)

Table 72.2 Two-year changes in the quality of chronic care delivery, as measured by Assessment of Chronic Illness Care Short Version (ACIC-S) Scores

	Baseline (T0) assessment	Follow-up (T2) assessment	Change
	M(sd)	M(sd)	*p*
Organization of health care	7.11 (1.20)	7.72 (1.84)	<0.001
Community linkages	6.51 (1.78)	7.54 (1.69)	<0.001
Self-management support	6.10 (2.19)	7.19 (1.86)	<0.001
Decision support	6.73 (1.76)	7.50 (1.51)	<0.001
Delivery system design	7.36 (1.57)	8.67 (1.38)	<0.001
Clinical information systems	6.16 (1.93)	7.34 (1.64)	<0.001
Overall score	6.66 (1.50)	7.66 (1.29)	<0.001

M mean, *SD* standard deviation. Results are based on paired *t*-test, *T*0 versus *T*2. Scores indicate 0–2 (little or no support for chronic illness care), 3–5 (basic or intermediate support), 6–8 (advanced support) and 9–11 (optimal or comprehensive integrated care for chronic illness). These analyses included respondents who completed questionnaires at measurement points *T*1 and *T*2 only (n = 170). Results are published in Cramm and Nieboer (2013a, b)

72.4 Question 3: Did Quality of Chronic Care Delivery Result in Productive Interactions Between Patients and Healthcare Professionals?

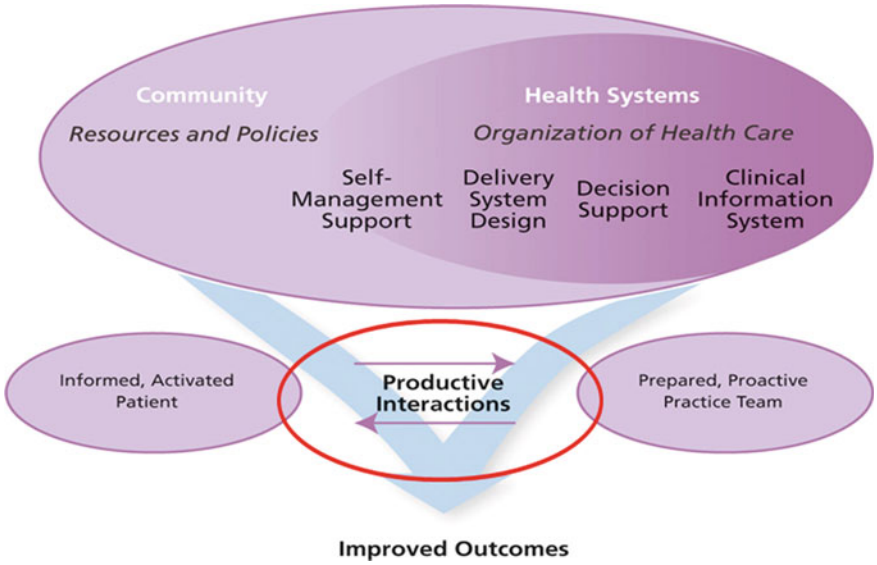


Table 72.3 Predictors of productive interactions between patients and (teams of) healthcare professionals as assessed by multilevel regression analyses (random intercepts model)

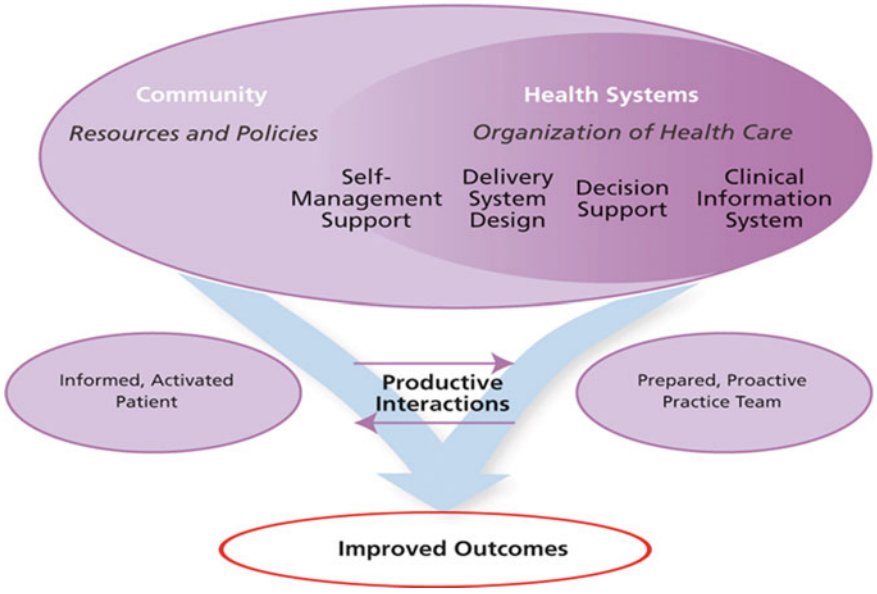
	β	SE
Constant	2.90***	0.03
Age (*T*0)	−0.00	0.03
Marital status (single) (*T*0)	−0.01	0.02
Low educational level (*T*0)	−0.06*	0.03
Gender (female) (*T*0)	−0.02	0.03
Quality of chronic care (*T*0)	0.38***	0.03
First-year changes in quality of chronic care (*T*1–*T*0)	0.30***	0.04
Second-year changes in quality of chronic care (*T*2–*T*1)[a]	0.25***	0.03

***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$ (two-tailed)

[a]Based on implemented interventions in the disease management programs. Multilevel analyses included only respondents who filled in questionnaires at all three time points ($n = 981$; $n = 716$ after list wise deletion of missing cases). [Table published in Cramm and Nieboer (2014)]

While theoretically it is expected that improvement in the six components of the Chronic Care Model increases productive patient–professional interaction, empirical evidence is lacking. We, therefore, aimed to assess the influence of (improvement in) the six components of the Chronic Care Model on productive patient–professional interaction. The results presented in Table 72.3 clearly show that after controlling for main characteristics of patients, quality of care delivery at baseline, as well as first- and second-year changes therein predicted productive interactions between patients and professionals (Cramm and Nieboer 2013a, b).

72.5 Question 4: Did DMP Implementation Lead to Better Patient Outcomes?



Finally, we aimed to determine experiences of DMPs and their long-term effects on the following outcomes (i) health behaviors (smoking and physical exercise), (ii) self-management abilities (self-efficacy, investment behavior, and initiative taking), and (iii) physical and mental quality of life among chronically ill patients. Analyses showed DMP implementation improved patients' physical quality of life and their health behaviors; they smoked less and are more physically active (Cramm and Nieboer 2015a, b, c). However, they struggled with patients' mental quality of life and their self-management abilities to maintain well-being (Cramm and Nieboer 2015a, b, c). Self-management abilities to maintain well-being as well as mental quality of life decreased over time, despite improvements in quality of care and more productive patient–professional interactions. These findings suggest that the Chronic Care Model and DMPs based on it focus primarily on clinical and functional outcomes rather than overall quality of life and well-being (Barr et al. 2003; Cramm and Nieboer 2015a, b, c; Cramm and Nieboer 2012).

72.6 Conclusion

The long-term benefits of DMPs based on the Chronic Care Model in the Netherlands resulted in (i) the successful improvement of quality of chronic care as perceived by chronically ill patients and professionals, (ii) more productive interaction between chronically ill patients and their healthcare professionals (iii) and improvements in chronically ill patients' health behaviors and physical quality of life. However, these programs did not successfully improve or even maintain broader self-management abilities or mental quality of life, which declined over time. These findings highlight the need to broaden the scope of DMPs not aimed at functional health and self-management of a chronic disease only but also at broader self-management abilities and overall well-being. DMPs have failed to address important difficulties chronically patients are dealing with such as the effects of pain and fatigue on the ability to maintain a job, hobby and social life. Patients' ability to maintain engagement in stimulating activities related to work and one's social life may be even more important than aspects of disease self-management such as glycemic control or blood pressure. This calls for a person-centered approach aimed at their physical, social and mental well-being (Cramm and Nieboer 2012).

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