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ParkinsonNet: A Low-Cost Health Care Innovation With A Systems Approach From The Netherlands

DOI: 10.1377/hlthaff.2017.0832
HEALTH AFFAIRS 36,
NO. 11 (2017): 1987–1996
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ABSTRACT ParkinsonNet, a low-cost innovation to optimize care for patients with Parkinson disease, was developed in 2004 as a network of physical therapists in several regions in the Netherlands. Since that time, the network has achieved full national reach, with 70 regional networks and around 3,000 specifically trained professionals from 12 disciplines. Key elements include the empowerment of professionals who are highly trained and specialized in Parkinson disease, the empowerment of patients by education and consultation, and the empowerment of integrated multidisciplinary teams to better address and manage the disease. Studies have found that the ParkinsonNet approach leads to outcomes that are at least as good as, if not better than, outcomes from usual care. One study found a 50 percent reduction in hip fractures and fewer inpatient admissions. Other studies suggest that ParkinsonNet leads to modest but important cost savings (at least US\$439 per patient annually). These cost savings outweigh the costs of building and maintaining the network. Because of ParkinsonNet's success, the program has now spread to several other countries and serves as a model of a successful and scalable frugal innovation.

Policy makers throughout the world are eager to implement and spread low-cost innovations to bend the cost curve and to improve the quality of care. In this article we discuss the merits of one low-cost innovation—called ParkinsonNet—which was developed to optimize care for patients with Parkinson disease, a complex, progressive, and highly disabling neurodegenerative disorder.

Parkinson disease is a complex and costly chronic disease; it has a reported prevalence of around 0.3 percent in the US population.¹ This number is expected to double in the coming decades because of aging.² In the Netherlands, where 40,000 people have the disease (around 0.24 percent of the Dutch population), total costs were estimated to be around US\$253 million in 2011 (euros-to-dollars conversion as of

July 19, 2017).³ Hospitalization, such as from hip fractures or aspiration pneumonia, represents the largest contributor to annual costs. Growing evidence exists for the benefits of (cheaper) allied health treatments, such as physical therapy or occupational therapy,^{4–6} which can improve patients' health, help them avoid complications (such as falls), and thereby reduce costs. However, low-cost treatments such as physical therapy are often inappropriately allocated. This context creates an excellent opportunity to implement low-cost innovations that might spur the efficiency and efficacy of treatment for Parkinson disease.

ParkinsonNet was introduced in the Netherlands based on these considerations. We first describe the rationale and key components of the ParkinsonNet model. Then we present the current evidence on the impact on quality of care

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and health care costs of implementing ParkinsonNet, set against initial startup and maintenance costs. Finally, we discuss the implications of these findings for further implementation, including the potential for transferring it to other countries and instances where this has been done successfully.

ParkinsonNet

ParkinsonNet was founded in 2004 as a multidisciplinary network of specialized physical therapists in one region in the Netherlands. The decision to start a specialized network was motivated by the fact that physical therapy is the service most widely used by patients with Parkinson disease, and also bears the highest level of supporting evidence for its benefits.⁷ The evidence suggests that physical therapy is considered a low-cost treatment that can improve daily functioning and quality of life and can potentially avoid or delay complications needing high-cost treatments (for example, hip fractures because of falls). As part of a cluster-randomized trial in 2010,⁸ eight additional regional networks were added. Following the positive outcomes of this trial (showing cost savings), the network was scaled up to include more regions as well as other health care providers. To date, ParkinsonNet consists of 70 regional networks around the country and around 3,000 health care professionals in 12 disciplines, all specifically trained in treating patients with Parkinson disease (occupational therapists, speech-language therapists, psychologists, social workers, Parkinson nurses, and neurologists).

In its current form, ParkinsonNet is mainly used among community-based therapists and specialist care in hospitals. However, nursing homes also incur substantial costs in treating patients with the disease.⁹ To improve quality of care in these institutions, and to help reduce costs, ParkinsonNet has recently begun a program to also include nursing home care.¹⁰

Health care professionals exhibit high overall satisfaction with ParkinsonNet. Accompanying this satisfaction is greater Parkinson disease-specific knowledge and a steady increase in patient volume among individual therapists.¹¹ Also, a recent evaluation of the multidisciplinary collaboration within ParkinsonNet showed that professionals from different disciplines in a specific region have more contact with each other to align aspects of patients' treatment. This is especially the case when neurologists and Parkinson nurse specialists are active participants in a regional network.¹²

ParkinsonNet's key components are as follows: concentrating care among specifically

trained expert professionals and supporting them (*professional empowerment*); informing and engaging patients as partners in health care (*patient empowerment*); and organizing professionals in regional networks and supporting these networks to deliver integrated care (*team empowerment*). (Online Appendix 1 provides further details about these components.)¹³

PROFESSIONAL EMPOWERMENT ParkinsonNet facilitates Parkinson disease-specific specialization by building evidence-based guidelines and by offering professional teaching courses. All participating professionals are obliged to obtain baseline training, except for neurologists, who receive their disease-specific training during residency. The network maintains professional expertise by mandating high caseloads, by requiring additional trainings within regional networks, and by encouraging attendance at national educational conferences. ParkinsonNet requires that participating professionals treat a minimum number of Parkinson patients each year; participants who fail to meet these targets can be removed from the network. Every two years we assess whether all participants continue to meet the inclusion criteria. The main reason for removal from the network has, thus far, been inability to fulfill the criterion of attending regional or national educational activities. ParkinsonNet professionals can also exchange experiences and enter discussions about complex cases using specifically designed web-based communities. We post monthly on these communities' blogs about important scientific developments.

PATIENT EMPOWERMENT ParkinsonNet collaborates closely with the Dutch Parkinson Patient Association. Patients are always represented as speakers and delegates during regional and national training courses and conferences. Moreover, ParkinsonNet aims to educate patients. One example is ParkinsonTV, a web-based educational television program in which patients actively participate, both by setting the agenda of topics to be discussed and by participating as guests on the program itself. There is also a web-based community for patients. At the regional level, ParkinsonNet teams collaborate with local branches of the Parkinson Patient Association. Finally, a panel of one hundred patients is actively involved in both health care innovation and research. The panel is consulted regularly (by e-mail or telephone or in person during focus-group meetings or interviews) to help professionals choose optimal study designs for research, assess the user-friendliness of technology, and discuss implementation strategies and other topics.

TEAM EMPOWERMENT ParkinsonNet brings professionals together so that experts working

in the same area meet their colleagues in person regularly and can discuss complex cases. Regional collaboration has improved team empowerment.^{12,14}

To facilitate the ParkinsonNet regional networks, a national coordination center, located at Radboud University Medical Center in Nijmegen, provides ongoing support. This center offers professional trainings, oversees whether members annually comply with membership criteria (such as minimal caseloads), develops and maintains evidence-based guidelines, educates and empowers patients, maintains the supportive information technology (IT) facilities, enables research, and connects patients and professionals.

Value Of ParkinsonNet

A series of studies of varying size and power have evaluated ParkinsonNet; the studies are listed in Appendix 2.¹³ Taken together, the evaluation findings confirm that the ParkinsonNet approach leads to improved quality of care, better adherence to professional guidelines, greater concentration of care among ParkinsonNet professionals, and better awareness of fellow professionals in a regional network.¹⁵ The patient volume for participating ParkinsonNet professionals has increased from three Parkinson patients per physical therapist in 2003 to approximately fifteen in 2016.^{11,16} “Softer” outcomes point to greater job satisfaction among professionals and enhanced feelings of security among patients.¹⁷

Health outcomes at the patient level improved in one observational study (based on an analysis of a national medical claims database), which found a 50 percent reduction in annual rate of hip fractures and fewer inpatient admissions.¹⁸ Another study—this one a randomized controlled trial comparing specialized ParkinsonNet occupational therapy to usual care—showed significant improvements in the primary outcome (better self-perceived performance in daily activities), including a higher proportion of patients who achieved a clinically meaningful improvement.⁶ Yet another study did not find a significant difference between ParkinsonNet and usual care at the patient level.⁸ However, this study evaluated a newly installed and therefore—at the time—still inexperienced network, which may explain the absence of effects at the patient level. It did show substantial cost savings: The same health outcomes as achieved with usual care were achieved by ParkinsonNet at a lower cost. In contrast, the two trials that did show improvements at the patient level evaluated more seasoned networks that had been opera-

tional for several years. This is relevant, because we have also shown that concentration of care among the specialized therapists—one of the goals of ParkinsonNet to improve care—steadily increases over time,¹¹ and it is reasonable to assume that more experienced therapists also achieve better outcomes. We also suspect that the positive health outcomes seen in the medical claims analysis could be explained by the longer follow-up period of two years, as opposed to only six months in the cluster-controlled trial, since longer evaluation periods may be needed to demonstrate the impact on relatively infrequent outcomes such as hip fractures or hospital admissions.¹⁸ Finally, a recent observational study retrospectively analyzed an insurance claims database that included a representative population of 4,381 Dutch patients with Parkinson disease, of whom 2,129 patients received specialized physiotherapy via ParkinsonNet and 2,252 patients received usual care.¹⁹ The results showed that significantly fewer patients treated by a specialized physiotherapist had a Parkinson disease-related complication ($n = 368$; 17.3 percent) compared to patients treated by a usual care physiotherapist ($n = 480$; 21.3 percent). Additionally, mortality risk tended to be lower for patients receiving specialized ParkinsonNet physiotherapy ($n = 134$; 6.1 percent) compared to patients receiving usual care physiotherapy ($n = 205$; 9.0 percent).

Worthy of mention is the randomized controlled trial by Marjolein Van der Marck and colleagues,²⁰ who studied a complex intervention that also partially involved ParkinsonNet. The intervention consisted of a multidisciplinary evaluation in a Parkinson center of excellence, with deferral of the actual treatment advice to the referring neurologist in a community hospital, who was then asked to implement the treatment in the surrounding ParkinsonNet network. There were only small (albeit significant) improvements in health outcomes for the intervention patients (as compared to usual care), but a post hoc analysis showed that these differences disappeared after correction for baseline differences. In this study the absence of major health benefits could have been explained by the fact that the intervention had not been delivered properly. First, 33 percent of the eligible patients never visited the center of excellence for advice, and this diluted the contrast between the intervention and usual care in the intention-to-treat analysis. Second, for patients who did receive the multidisciplinary screening, most were never referred to ParkinsonNet therapists after the initial expert screening. If anything, this study emphasized the need to optimize the referral process and to organize care integrally, allowing patients

to receive the actual care they are deemed to deserve.²¹

Overall, we conclude from these studies that ParkinsonNet care leads to outcomes at the patient level that are at least comparable to those of usual care (for newly installed networks), and potentially even better (for more experienced networks). This means that when cost-effectiveness is assumed to include either equal costs plus better health outcomes, or equal health outcomes plus reduced costs (as we discuss below), then any cost reduction will yield a cost-effectiveness ratio in favor of ParkinsonNet.

Savings And Costs Of ParkinsonNet

COST SAVINGS ParkinsonNet has been associated with modest but important cost savings, achieved through greater efficiency of care (because ParkinsonNet therapists provide substantially fewer treatment sessions), a reduction in disease complications (fewer inpatient admissions), and emphasis on patient self-management (which reduces dependence on medical care). In the Netherlands, the total annual costs per year per patient with Parkinson disease were estimated to be US\$6,335 in 2011.³

Of the nine studies listed in Appendix 2,¹³ one cluster-controlled clinical trial⁸ and one large observational study (based on a national medical claims database)¹⁸ offered evidence that the ParkinsonNet approach leads to modest but important cost savings. In the cluster-controlled trial, annual cost savings during 2007–09 were around US\$1,613 per patient,⁸ while the medical claims analysis showed cost savings of \$737 per patient in 2008 and cost savings of around \$439 in 2009.¹⁸ A more recent analysis of the medical claims database of one of the largest Dutch insurers again demonstrated annual cost savings of around \$612 for patients receiving ParkinsonNet physical therapy compared to patients receiving usual care.¹⁹ These results point toward cost savings in favor of ParkinsonNet care. The magnitude of these cost savings differed slightly across studies, which can be readily explained by differences in study designs and procedures.

Two other studies did not show significant cost savings in favor of ParkinsonNet care. As we mentioned earlier, one of these²⁰ was hampered by the fact that the multidisciplinary advice (given by the expert center) was not referred adequately to the ParkinsonNet therapists, which explains both the lack of efficacy and the absence of cost reductions. Finally, a more recent study by Ingrid Sturkenboom and colleagues²² compared costs between care delivered by specialized ParkinsonNet occupational therapists (plus usual care) versus usual care alone. Despite the pos-

itive patient outcomes,⁶ addition of occupational therapy to usual care did not reduce total health care costs, which might be explained in part by the fact that this design did not allow for a possible decline in the receipt of usual care. Also, it may take time for greater patient independence (as a result of specialized occupational therapy) to translate into tangible cost reductions. However, we did see significant cost-effectiveness of the ParkinsonNet intervention for caregivers, which means that caregivers potentially had fewer days of absence from work because of their caregiving or had decreased medical costs for their own care.

In conclusion, the overall potential cost savings appears to be modest but important. The most conservative cost savings of \$439, based on the study that yielded the lowest per capita amount of savings¹⁸ in a live treatment setting, equating to around 5 percent of the expenditure on chronic Parkinson care in the Netherlands in a single year.

COSTS OF BUILDING AND MAINTAINING NETWORKS The initial cost of building the nationwide ParkinsonNet infrastructure was around US\$3.45 million, spread over five years (Exhibit 1). Annual costs to support the national coordination center are about US\$1.15 million (Exhibit 2). In the Dutch context (with around 3,000 trained professionals, who collectively serve a total potential volume of 40,000 Parkinson patients), these annual maintenance costs are around US\$29 per patient per year (data not shown). The true annual savings of ParkinsonNet substantially outweigh these up-front investments and maintenance costs. Exhibit 3 provides an overview of expected total savings in the Netherlands based on the previously discussed studies.

Cost savings were detectable shortly after the network began operating.⁸ It is conceivable that these savings will increase as regional networks become more “mature”—that is, when participating professionals have accrued further expertise, because of their higher caseloads in daily clinical practice¹¹ or their annual follow-up trainings. Based on these observations, we expect the savings to accrue over the coming years as younger networks start to mature. Another reason for additional economic benefit as the networks grow and mature is that the maintenance costs increase only marginally when more professionals are added, because of efficiency of scale, so the increase in health care use (because ParkinsonNet experts treat a greater number of patients) will lead to greater cost-effectiveness. The reason for this is that early-stage treatment by well-trained professionals who use evidence-based guidelines and who have ample experience

EXHIBIT 1
Startup costs for the first 5 years of building ParkinsonNet nationwide in the Netherlands

Category	Explanation	Costs for first 5 years
Personnel	The ParkinsonNet startup team for building a sustainable network should consist of at least: Project lead(s) ParkinsonNet ambassador IT lead Expert, speech therapy Expert, physical therapy Expert, occupational therapy Care coordinator Support Total: 2.2 FTE annually, \$75K per FTE per year, for duration of 5 years	\$950,000
Building evidence-based practice guidelines	(External) expert personnel, consensus meetings, literature review, writing process (\$75K per guideline, nine completed so far).	\$777,000
Training and education	Costs for venues and other expenses involved in training and education of providers who join the ParkinsonNet network.	\$576,000
Promotion	The network functions well only when there is good awareness among referring physicians and patients; therefore, promotion of the network to all different stakeholders involved is critical. This is among others done through patient and provider education and promotion activities. In the startup phase, these costs are approximately \$30K per year.	\$173,000
Regional support	Ascertaining adequate multidisciplinary collaboration within networks requires active guidance and delivery of tools to facilitate collaboration and communication (see the online Appendix, Note 13 in text).	\$58,000
Selection and certification (quality control)	Ongoing quality control is important to guarantee a high-quality expert network. These costs mainly consist of audit costs and costs to study the quality of care provided. Moreover, during startup, setting quality standards is also one cost driver, yet an essential step.	\$115,000
IT costs	ParkinsonNet uses various IT systems to support the functioning of the network (Appendix 1, Note 13 in text). The basic networks use at least the following IT platforms: Member management system Health care finder Online community platform Content management system Patient registry/measurement of quality of care	\$346,000
Office costs	Costs for housing and hosting the coordination team. Consisting of housing, computers, and other overhead.	\$461,000
Total start-up costs for first 5 years of implementation		\$3.45 million

SOURCE Authors' analysis of information from the ParkinsonNet annual financial statement (report in Dutch), based on the Dutch economic situation. **NOTES** The annual financial statement reports higher costs than displayed here, because the Dutch national ParkinsonNet also deploys a number of other activities that are not part of the organization of the standing network (for example, research projects and innovation). These costs are not included in this exhibit (and are also not required for similar programs in other countries). Dollar amounts are in US dollars, converted from euros using the exchange rate applicable on July 19, 2017. IT is information technology. FTE is full-time equivalent.

with this specific population (because of their high case load) is expected to further reduce complications (such as falls, hip fractures, and hospital admissions) and thereby reduce the high costs associated with these complications.

The total savings per patient could be even larger in countries or health care systems where

hospitalization rates are higher than those in the Netherlands. For example, up to 40 percent of Parkinson patients in the United States have no access to a neurologist (based on data from 2002–05), and those who do not receive neurologist care are more likely to fracture a hip, be placed in a nursing home, and die.^{23,24} Hence, the

EXHIBIT 2

Maintenance costs per year for maintaining ParkinsonNet

Category	Explanation	Cost per year
Personnel	The ParkinsonNet coordination center consists of at least the following personnel: Project lead(s): 1,800 hours/year ParkinsonNet ambassador: 350 hours/year IT lead: 350 hours/year Expert, speech therapy: 700 hours/year Expert, physical therapy: 700 hours/year Expert, occupational therapy: 700 hours/year Care coordinator: 700 hours/year Support: 200 hours/year	\$265,000
Building evidence-based practice guidelines	(External) expert personnel, consensus meetings, literature review, writing process (\$75K per guideline, two guidelines per year).	\$173,000
Training and education	Costs for venues and other expenses involved in training and education of providers who join ParkinsonNet network, plus continuing education of trained providers.	\$273,000
Promotion	The network functions well only when there is good awareness among referring physicians and patients; therefore, promotion of the network to all different stakeholders involved is critical. This is done through patient and provider education and promotion activities, among others.	\$52,000
Regional support	Ascertaining adequate multidisciplinary collaboration within networks requires active guidance and delivery of tools to facilitate collaboration and communication (see the online Appendix 1, Note 13 in text). This also includes financing regional meetings and regional collaboration for existing regional networks, which is not budgeted for the startup phase since this counts for mature networks only.	\$86,000
Selection and certification (quality control)	Ongoing quality control is important to guarantee a high-quality expert network. These costs mainly consist of audit costs and costs to study the quality of care provided.	\$58,000
IT costs	ParkinsonNet uses various IT systems to support the functioning of the network (Appendix 1, Note 13 in text). The basic networks use at least the following IT platforms: Member management system Health care finder Online community platform Content management system Patient registry These costs will be higher in the maintenance phase compared to the startup phase since most IT systems are in place and used by the networks. Hence, costs are higher.	\$173,000
Office costs	Costs for housing and hosting the coordination team. Consisting of housing, computers and other overhead.	\$115,000
Estimated maintenance costs		\$1.15 million

SOURCE Authors' analysis of information from the ParkinsonNet annual financial statement (report in Dutch), based on the Dutch economic situation. **NOTES** Dollar amounts are in US dollars, converted from euros using the exchange rate applicable on July 19, 2017. IT is information technology. FTE is full-time equivalent.

potential gains of a professional allied health network in the United States are probably substantially higher than those we observed in the Netherlands.

Implementation Challenges

Our findings show ParkinsonNet to be an interesting, low-cost innovation, creating spillovers that lead to better quality of care, potentially

better health outcomes, and lower per capita costs for patients in the network. Policy makers could stimulate further dissemination of this whole-system approach for other high-need, high-cost patients with other complex diseases. But they are likely to encounter substantial hurdles in the areas of reimbursement and contracting strategies. The ParkinsonNet network is now financed from two sources: funding from temporary health care innovation grants and a small

EXHIBIT 3
Cost savings of ParkinsonNet based on existing literature

Study	Total cost savings per patient per year	Potential cost savings per year (based on 40,000 patients in the Netherlands)	Additional information
Munneke et al. (Note 8)	\$837 in 24 weeks = approximately \$1,675 per year	\$66.8 million	RCT on a monodisciplinary intervention (physical therapy)
Beersen et al. (Note 18)	\$737 (2008) \$439 (2009)	\$28.8 million \$17.3 million	Analyses of medical claims database with large population and long-term follow-up
van der Marck et al. (Note 20)	None	None	RCT on multidisciplinary intervention; the multidisciplinary intervention was not executed as expected, and a patient population with a low disease burden was included that might not optimally benefit from multidisciplinary care
Sturkenboom et al. (Notes 6, 22)	None	None	RCT on monodisciplinary intervention (occupational therapy); both intervention and control condition were part of ParkinsonNet, so only the additional value of occupational therapy was studied and not the costs of ParkinsonNet
Ypinga et al. (Note 19)	\$612 (2013, 2014, 2015)	\$24.5 million	Analyses of medical claims database with large population (4,381 Parkinson disease patients) and long-term follow-up (three years)

SOURCES See individual citations as noted in the endnotes in text. **NOTES** Dollar amounts are in US dollars, converted from euros using the exchange rate applicable on July 19, 2017. RCT is randomized controlled trial.

annual membership fee paid by participating health care professionals.

Structural funding is not yet available because Dutch health insurers find it difficult to collectively finance ParkinsonNet as part of regular care, for various reasons. First, the ParkinsonNet coordination center is not directly involved in patient care. However, under Dutch law, insurers may only reimburse expenses for actual care. Second, ParkinsonNet organizes integrated care across traditional disciplines, which are all part of segregated cost centers and funding systems. This makes it difficult to determine which cost center, if any, should pay the overall costs of a network that supports quality of care across all fragmented segments of the system. Third, some of the cost savings such as those resulting from fewer hip fractures are offset by a compensatory increase in costs elsewhere, within hospitals. Dutch hospital costs are in essence under a global budget, and because suppliers do not want to lose revenues, savings made in Parkinson disease care may be offset by other provisions and priorities. Thus, a hospital may compensate for savings accruing from prevented hip fractures by filling its unused operating theater with other (low-value) orthopedic procedures. Therefore, cost savings from ParkinsonNet do not automatically accrue to health insurers' total bill. Payers might therefore hesitate to underwrite the network costs, thereby hampering a wider dissemination of this model. Finally, ParkinsonNet is available to all patients

regardless of their insurance policy, but costs might be shouldered by a subcategory of insurers. If trust and close cooperation are lacking between innovative providers and payers, and without tailored contracting strategies, this creates a serious obstacle for scaling up successful innovations.

One way of addressing these dilemmas is to develop payment and contracting models that reimburse the entire network based on its assumed cost-effectiveness. Some examples include value-based funding with special appropriations; a plan whereby insurers pay for their market share within the network; or a payment model in which network overhead becomes an integral part of a bundled annual reimbursement fee for Parkinson patients that includes all specialist and allied health interventions. However, bundled payment has its own dilemmas—for example, the risk of overinclusion (the more patients included in the network, the more money comes in). Thus, adequate monitoring remains important. Finally, in a system where multiple payers have to compete for clients (such that in the Netherlands, but also in parts of the United States), payers might have difficulty agreeing on how to implement approaches like ParkinsonNet—for example, because specific payers might claim selective ownership of this concept, allowing them to differentiate themselves from their competitors.

Potential Use In Other Countries

INTERNATIONAL EXPERIENCE Other countries are beginning to recognize the possible merits of ParkinsonNet.²⁵ Stimulated by the positive study outcomes we have reported here, several countries have begun to implement the concept. The first network in another country was initiated in Germany (in the Niederrhein region), and this was followed by a stepped implementation by Kaiser Permanente (KP) in California.²⁶ Implementation has just begun in Norway,^{27,28} and advanced discussions are ongoing in Luxembourg²⁹ and the state of Michigan,³⁰ among others.

The introduction of ParkinsonNet in other countries has offered several useful insights, many of which align with recommendations made by David Bates and colleagues about how to create innovative environments.³¹ First, the needs of stakeholders in the different countries proved to be identical to those identified in the Netherlands. Providers were eager to acquire more Parkinson-specific expertise and were hoping to attract more patients, while patients expressed a clear desire to be educated and be treated by expert teams.

Second, it proved neither possible nor necessary to “copy and paste” the Dutch approach to the specific context in other countries. For example, ParkinsonNet is largely a community-based network in the Netherlands, but in the United States, Kaiser Permanente is largely a chain of well-organized hospitals, with less prominent presence in the community. Yet many of the effective “ingredients” of ParkinsonNet could be installed in the KP systematics: the professional training programs, the implementation of professional guidelines, and the patient education programs. However, not all ParkinsonNet elements were introduced. For example, there was no desire to introduce all of the IT solutions because KP’s existing technology already possessed the necessary capability. An important lesson learned here was the need to first take stock of what is already available and to add only the basic building blocks of ParkinsonNet that fill existing gaps and that are complementary to existing resources. International implementation should thus follow a custom-made approach that matches each country’s health care system and culture.

A third lesson was the concept of “learning from differences.” ParkinsonNet brought useful elements to California but also acquired attractive elements developed by Kaiser Permanente. For example, KP uses a deep interviewing method known as “the voice of the customer,” to gain deep understanding of its members’ wishes and needs. This concept has been introduced back

to the Netherlands, thus leading to further improvement of the overall ParkinsonNet approach.

Finally, a successful introduction in other countries requires a “train-the-trainer” program, so that knowledge of how to initiate and maintain a multidisciplinary network becomes embedded within the hosting health care system. We neglected this factor when we introduced the first network in Germany. The initial training program was very successful, but further scaling did not occur because there were no trainers within the German network to organize wider dissemination.²⁶ In contrast, we did invest in training super-experts in Kaiser Permanente, and both the initial introduction (two counties in the Los Angeles area) and subsequent scaling to other parts of California were successful.³²

OTHER HEALTH CONDITIONS The ParkinsonNet concept also holds promise as a possible solution to improve care for patients with other chronic disorders.²⁴ Parkinson disease can be regarded as a “model disease” on which to field-test the concept of integrated network care. Its management requires a multidisciplinary approach, involving a broad spectrum of professionals.³³ Many of the ParkinsonNet “building blocks” (professional training, patient education, building guidelines, and advanced technological solutions) would be welcome solutions for improving the complex care for other chronic disorders, where issues such as insufficient disease-specific expertise, poor interdisciplinary collaboration, fragmentation of care, and lack of patient involvement are also at play.

Conclusion

The key determinant of the ParkinsonNet success lies in a rigorous alignment with its three basic network components: professional empowerment, patient empowerment, and team empowerment. Various studies have shown modest but important annual cost savings ranging from US\$439 to US\$1,675 per patient in the Netherlands. These savings clearly outweigh the costs to structurally maintain this low-cost innovation (the “network” overhead). As a low-cost innovation, ParkinsonNet has the potential to contribute to more value for patients, professionals, and payers alike. The approach has proved to be transferable to other countries, and it holds promise as an efficient solution that could apply well to the treatment of other chronic diseases. However, in order to optimally reap the benefits, new financial reimbursement systems must be developed that allow for funding of integrated network approaches like ParkinsonNet, including reimbursement of the coordina-

tion center that helps maintain high-quality care within the network. The resulting savings can be capitalized by lowering other reimbursement mechanisms or the global budget. ■

Bas R. Bloem was supported by a research grant of the National Parkinson Foundation.

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