Development and implementation of Clinical Practice Guidelines in physical therapy

Introduction to the method of guideline implementation

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Summary

Quality assurance and cost-effectiveness are important issues in modern-day healthcare. They are of great concern to the Royal Dutch Society for Physical Therapy (KNGF). One strategy for improving the quality of physical therapy (physiotherapy) is to minimize undesirable variability in clinical practice by developing and implementing evidence-based clinical practice guidelines. However, even well-established guidelines will not contribute to improving quality unless they are imbedded in effective implementation programs.

This review article outlines current knowledge about clinical practice guidelines. It deals with guideline effectiveness and, importantly, with the strategies required for implementing clinical practice guidelines in physical therapy clinical practice. In general, we can conclude that the provision of explicit clinical practice guidelines supported by reinforcement strategies will improve practitioners' performance and, in certain situations, also patients' health outcomes. A vital element of successful guideline implementation is changing the individual practitioner's behavior – a process that must take place in the constantly changing environment of evidence-based practice. This review article discusses the key components of the development of a strategy for implementing clinical practice guidelines in physical therapy.

Introduction

Over the last few decades, a major trend in healthcare has been the development of guidelines, standards and protocols. This trend has been evident both nationally and internationally, initially within medicine but later also within the allied health professions[1]. Governments and other third-party healthcare funders have also become increasingly interested in the idea of structuring and managing the interventions offered by various healthcare providers. As a consequence, the development of medical and allied health clinical practice guidelines is now generally considered important for improving and managing the care process.[1,2] Higher quality and improved cost-effectiveness are important goals in guideline development. In addition, however, the process of guideline development must also take into account the trend towards increased professionalization, the need to decrease variability in clinical practice, and practitioners' desire to legitimize their profession in the eyes of external stakeholders.[1–6]

Quality control systems and guidelines

A position paper issued by the Dutch government, entitled "Quality of care", proposed that the quality of healthcare provision would be improved if the efforts of both government agencies and other stakeholders were directed at implementing comprehensive quality control systems in the healthcare sector.[7] Another document, a report entitled "Developing quality control systems", provided an overview of factors affecting the methods of quality control used by professionals.[8] These factors were classified as either facilitatory

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activities or quality control (sub)systems. In this classification, the development and implementation of clinical practice guidelines can be considered as facilitatory activities for two separate quality control subsystems, namely[9]:

1. evaluation systems; and
2. entry-level and postgraduate education.

Within the context of the above-mentioned position paper, entitled "Quality of care", clinical practice guidelines in physical therapy facilitate the development of quality control subsystems and of a quality control system for physical therapy as a whole.[9] Moreover, these guidelines on physical therapy clinical practice provide up-to-date information on diagnosis, therapy, consultation and education in specific health problems – information that the profession generally accepts as representing the state of the art.[9–12] Clinical practice guideline can also serve as a frame of reference for physical therapists that enables them to evaluate their own clinical practice, that provides a basis for discussion with colleagues, and that is useful in evaluation and education. In addition, clinical practice guidelines can play a role in the development of local guidelines and protocols, such as those used in private practice, in individual healthcare institutions, or throughout a region. The result is that physical therapy practice is more transparent, not just for the professionals involved but also for patients, government agencies and third-party healthcare funders, and that the "quality" of physical therapy care can be evaluated and improved.

Guidelines in physical therapy

Existing[11–13] and planned clinical practice guidelines form part of the current trend towards evidence-based medicine. In practice, evidence-based medicine involves finding evidence from relevant research, critically evaluating that evidence, and integrating conclusions derived from the evidence into medical and allied health clinical practice.[14] Sackett et al.[14] noted that it is a challenge for professionals to keep their professional knowledge up to date because of the speed with which new developments occur. They concluded that the implementation of evidence-based clinical guidelines, which have been developed by others, might be one way of doing so. The question remains of whether it is possible in practice to develop physical therapy guidelines that are based on scientific and clinical evidence. Nevertheless, it is important to determine the degree to which physical therapy clinical practice can be substantiated by the available evidence and the degree to which it is possible to describe the current state of the art.[9,10]

The physical therapy evidence base is continuously increasing, as is the need for ongoing education of physical therapy professionals. In general, one can state that guidelines are important tools for improving quality of care and for more clearly defining the product of 'physical therapy'.[10,16,17] It is also clear that just developing guidelines is not sufficient: activities geared towards implementation are also needed to ensure that guidelines achieve the desired results.[1, 2,10,11,15–17] Implementation implies the introduction of a change or innovation such that it becomes a normal component of clinical practice for individual professionals or organizations and such that it is no longer considered new.[1] Guideline implementation is often laborious and has proven to be the weakest link in the whole clinical guideline process.[1,10,15–17]

A central question in carrying out a literature review is how to introduce newly developed guidelines into the field of physical therapy. No literature specific to physical therapy is currently available on this subject. Consequently, this article makes use of the medical literature to describe the effects of introducing guidelines and to derive the implications for the introduction of guidelines into physical therapy. The goal of this literature review is to arrive at a successful strategy for guideline implementation in physical therapy that is based on the available scientific evidence.

Effects of guideline implementation

Research into the effects of guideline implementation takes place at two different levels:

1. at the level of the healthcare professional (i.e., Is the professional following the guidelines?); and
2. at the level of the patient (i.e., Do patient outcomes improve when guidelines are followed?).

Research into the effects of guideline implementation at either of these two level has yet to be performed in the field of physical therapy. However, this type of research has been carried out for a few evidence-based guidelines in medical specialty areas, in particular in the United States and Great Britain. Most research was carried out to determine whether and when professionals actually adhered to the guidelines. Few studies have dealt with guideline effects at the patient level.

The effects of guidelines have been described and summarized in a number of review articles.[5,18–21] In their review of 59 studies, Grimshaw and Russell[18] reported that 55 of them found improvements in terms of the behavior of healthcare professionals. Of 11 studies into effects at the patient level, nine showed positive effects on patient outcomes. The most recent review by Grimshaw et al. [5] describes 91 studies. Again, most dealt with determining the degree to which guidelines affected the clinical care administered by healthcare providers. Only a few studies dealt with possible positive effects on patient outcome. This most recent review showed that the effect of introducing guidelines, especially in terms of their impact on clinical practice, is greater than had been previously assumed.

A systematic review by Davis et al.[21] summarized 50 randomized clinical trials on the effect of continuing physician education. The authors noted that there were clear indications that some types of continuing education influenced the level of physicians' expertise: 12 out of 16 trials included studies that revealed a positive effect, two showed no effect, and two showed a negative effect.[21] The effect that a change in physicians' clinical practice has on patients' outcomes was less evident: eight of 18 studies showed a positive result, but 10 revealed no difference or a negative result.

On the basis of the studies carried out by both Grimshaw et al.[4,5,18,19] and Davis et al.,[21] we can conclude that thoroughly developed guidelines can alter clinical practice patterns and can lead to positive changes in patient outcomes. However, the acceptance and use of guidelines are closely connected with the way in which they are developed and introduced.[4,5,19–21] It is recommended that guidelines should be developed by an independent multidisciplinary group of experts that represents all concerned professional organizations. In addition, it is important that guidelines are based on the results of systematic reviews or meta-analyses because guidelines should provide clear clinical recommendations based on scientific and clinical evidence. A review article entitled "Implementing clinical practice guidelines. Can guidelines be used to improve clinical practice?"[20] confirmed these findings.

The findings of a study carried out by James[22] complemented those of the above-mentioned review articles. James also showed that implementing guidelines alters the daily clinical practice of healthcare providers. Yet, despite the fact that ideal guidelines had been developed on the basis of a combination of scientific knowledge and expert consensus, professionals proved incapable of following the guidelines exactly in as much as one patient. James[22] noted: "… it is remarkable that no one ever succeeded, despite continuous efforts by the team to control and improve upon deviating decisions, to completely follow the guidelines, not even for a single patient…".

Interventions for implementing guidelines

In addition to determining the actual effects of implementing guidelines, it is also important to understand which interventions are most effective in bringing about implementation and, thus, inducing the desired change in clinical practice. Wensing and Grol[23] studied how changes were implemented in primary healthcare in general. They reviewed 75 studies on the effectiveness of different implementation strategies in primary healthcare and determined which strategies, or combinations of strategies, were most effective in improving the care provided by general practitioners. The study found that the most effective single interventions were one-on-one instruction, feedback, and using reminders. The most effective combinations of interventions were reviewing with and providing feedback to colleagues and any combination that included one-

on-one instruction. Another review, by Davis et al.,[24] showed that the teaching sessions that most closely resembled day-to-day clinical practice had the greatest impact; for example, practical workshops, and providing feedback and reminders during actual day-to-day clinical practice. Combinations of these teaching options seemed to be the most effective.

Wensing[25] noted that certain barriers must be overcome if change is to result. There are many different types of barrier, including: insufficient knowledge of the guidelines, a lack of motivation to follow the guidelines or a lack of respect for them, a lack of time or means, resistance by third parties, and organizational impediments. Each type of barrier requires a specific intervention. Wensing and Grol[23] and Duff et al.[26] distinguished between interventions intended to increase expertise (i.e., providing information, education, educational material or one-on-one instruction) and interventions intended to improve upon existing practice (i.e., providing feedback, carrying out reviews with colleagues, and providing reminders). Although an intervention such as one-on-one instruction is primarily intended to increase expertise, it also involves a social component, which strengthens the primary effect. The model for developing expertise introduced by Grol at al.[1] details the steps that have to be taken and the corresponding barriers that have to be overcome in affecting a change in behavior. The sequential steps in this model are summarized in Table 1.

When implementing guidelines and introducing other changes or innovations, it is important to bear the above steps in mind and to adjust interventions to take these steps into account. The greatest effects occur when interventions help in overcoming a variety of barriers. Generally, this implies the use of a combination of interventions, as recommended by a number of studies.[1,18–26] However, some studies covered by the review also contained contradictions. In a few cases, simply mailing the guidelines proved sufficient to bring about behavioral change and compliance with the guidelines.[19,26,27] However, in most, this simple form of implementation was insufficient.[18–28]

Implementation strategies

In addition to carrying out research into interventions, Barnhoorn and Walda[27] used Delphi analysis to come up with new ways of introducing innovation into primary care. They noted that primary care providers prefer to function autonomously because of their expertise, experience and knowledge. Providers prefer to take the responsibility for implementing innovations themselves. Although Barnhoorn and Walda's research specifically concerned primary care practitioners, it is also applicable to other sectors in which professionals mainly function autonomously. Based on their research on well-educated professionals, Barnhoorn and Walda[28] describe four modes by which innovation can be implemented. See Table 2. On the basis of these modes of implementation, various implementation strategies can be devised.

Table 1. Sequential steps in Grol at al.'s model for developing expertise.[1]

Orientation	• Being knowledgeable • Becoming interested
Understanding	• Understanding content • Developing an insight into one's own pattern of practice
Acceptance	• Developing a positive attitude • Accepting change
Change	• Introducing change into clinical practice • Maintaining change

Table 2. Barnhoorn and Walda's four modes by which innovation is implemented.[27,28]

Technological mode	Innovation occurs and permeates the field by virtue of its attractiveness to those involved
Power mode	Innovation occurs and is introduced by any means necessary (by compulsion or coercion if need be)
Politico-cultural mode	Innovation occurs as a result of the interaction between innovators and those working in the field involved (those working in the field provide a major contribution)
Evolutionary mode	Professionals working in the field have to learn to introduce innovations using the means supplied by professional organizations

The oldest and, so far, most commonly used mode of implementation is the technological mode: innovation occurs, spreads to those involved, and is expected to permeate the field by virtue of its attractiveness to those involved. This mode of implementation has proven to be effective in only a few cases and is now considered redundant.

The power mode of implementation is an extension of the technological mode: innovation has occurred and must be introduced into the field. Any means necessary, including compulsion and coercion, are used to steer the field in the desired direction.

A third mode of implementation is the politico-cultural mode. Here, innovation occurs as a result of interactions between innovators and those working in the field. The goal is still the introduction of the innovation but the target audience can itself determine the nature of the innovation and how it is implemented. In order to increase the involvement of practitioners in introducing an innovation, they should play a greater role in the development of the innovation and in the process of implementation itself.

The final mode of implementation is the evolutionary mode. Here, only the direction of the desired innovation is indicated. Professionals working in the field must themselves learn to introduce the innovation using the means provided by professional organizations.

The biggest difference between these four modes of implementation is that, in the latter two, responsibility for the introduction of an innovation lies with the healthcare providers themselves, whereas, in the first two, healthcare providers can be thought of as being subject to the innovation.

The politico-cultural mode of implementation is considered the most appropriate for the implementation of guidelines and the introduction of changes among healthcare professionals, including allied healthcare professionals. The politico-cultural approach recognizes that professionals cannot be expected simply to implement policies that were developed elsewhere. Professionals are active partners in the shaping and reshaping of their professional field. This mode of implementation is appropriate for situations involving individuals who are highly autonomous in terms of interpreting and carrying out their professional roles. In addition, it is suited to situations in which innovation cannot be implemented across the board without some individual adaptation having to take place. It is a mode of implementation in which interactive methods play an important role: learning from experience and from introspection are both important.[27,28] Schön's concepts fit well with this approach.[29] Schön hypothesized that professionals deal with complex situations and innovations by way of three distinct processes:

- Knowing in action (i.e., subconsciously knowing how to act);
- Reflection in action (i.e., thinking while acting, and improvising during the action);
- Reflection on reflection in action (i.e., reflecting

on one's own professional actions, knowing why and what one is thinking, and knowing why and what one is doing. How does one define problems? Which modes of thinking can one develop and apply? How does one view things? How does one work? Is there a different approach?).

The transfer of knowledge from others and the practice of techniques and skills handed down by others is not sufficient for the functioning of this last process. It concerns the professional's own knowledge base and involves him or her using himself or herself as an instrument. In Schön's view,[29] learning to apply this last process depends on having a genuine interest in and openness to innovation, on learning through action, on reflection, and on interactions with mentors, teachers and colleagues. Learning how to learn is important in today's fast-paced environment, if only to be able to keep up with constant innovation and to be able to introduce the desired changes into clinical practice.

Discussion

We often attempt to implement innovation and introduce change into professionals' clinical practice by using guidelines based on new scientific developments. However, despite the fact that interest in guidelines is at an all-time high and despite the fact that the importance of evidence-based practice is generally accepted, we have insufficient understanding of the extent to which guidelines actually produce the results desired.[18–25] Research involving general practitioners has shown that, in a number of cases, practitioners were already working according to guideline recommendations before the guidelines were developed and published. However, in other cases, guidelines were not consistent with current clinical practice among general practitioners.[30] Clearly, introducing change into the clinical practice of highly educated professionals can be troublesome.[25,26]

We can conclude that getting professionals for whom guidelines are intended to cooperate in guideline development has a positive influence on their use. In fact, guidelines may only be accepted under these conditions.[4,5,19,26] For this reason, it is has been suggested that local guidelines are easier to implement than guidelines developed by a central organization.[1] However, this is not always supported by fact. It turns out that local guidelines are often seen as lacking credibility and that this has a negative impact on implementation.[4,17] On the basis of a review of the literature, it is recommended that future guideline users are involved as much as possible in the developmental process[1,4,17] and that professionals are able to exert a great deal of influence on guideline implementation. The use of a top-down approach will engender resistance and, thus, have an adverse effect. However, adopting a bottom-up approach is often inefficient in terms of making the best use of the time invested and of avoiding ambiguity. In order to increase the acceptance and use of guidelines it might, therefore, be helpful to adapt centrally produced guidelines, with the help of a local team, so that they deal specifically with the local situation or so that a number of complimentary agreements or criteria can be added. Guideline implementation requires a multitude of different activities. The literature shows that simply distributing guidelines is insufficient to promote their use by the professionals concerned.

Implications for physical therapy

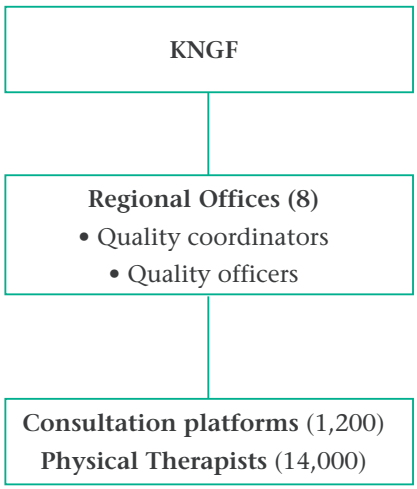
A preliminary literature review provided the starting point for considering the implementation of centrally produced guidelines in physical therapy. In implementation, theoretical arguments have to be weighed against feasibility. We sought the best possible approach. However, it soon became clear that evidence defining the best possible approach does not yet exist. Moreover, what is best may depend on the target audience. Probably, there is no single best way. There are numerous avenues, all of which ultimately lead to guideline implementation.

What conclusions can be drawn? What are the consequences? Certainly, physical therapy will, and in fact will have to, follow the current trend towards evidence-based practice. The clinical practice guidelines currently under development are testimony to this. In comparison to the medical professions, physical therapy still lags behind. However, even in the medical professions, only a fraction of all published guidelines, consensus

documents and standards are based on scientific evidence. To date, there has been hardly any research on guideline implementation in physical therapy, with the exception of some studies in Great Britain and the United States. But these studies have usually concerned guidelines on interventions for specific diagnoses. On the other hand, most clinical practice guidelines are not specific to a particular discipline and have been developed in a multidisciplinary context.[3–5,14,18–26] It seems plausible that what applies to other independent professionals will also apply to physical therapists. The main difference might be that physical therapists in the Netherlands are dependent on physician referrals. As physical therapists can generally be considered to be well-educated professionals, the politico-cultural mode of implementation is likely to be the most relevant.

For various reasons, it is important that professionals working in the field are involved in the development of clinical practice guidelines. This involvement is necessary for evaluating the guidelines, or parts of the guidelines, in terms of their content, scientific validity, usefulness, and acceptability, and for obtaining knowledge about any discrepancies between current clinical practice and that advocated by the guidelines. Having a good overview of problem areas is important as it provides useful data for the implementation strategy. There is, then, no blueprint for guideline implementation. In addition to publishing guidelines in the appropriate physical therapy professional journals, a multitude of methods of implementing guidelines will have to be developed. These will depend on the guidelines' topic and take into account the steps that have to be taken and the barriers that have to be overcome, as described in Grol et al.'s[1] model for developing expertise. The actual choice of activity is left to the discretion of the professionals involved. Individual physical therapists can also become involved in initiatives on guideline implementation. In the Netherlands, consultation platforms *(IOF: Intercollegiaal Overleg Fysiotherapie)*, a network of local physical therapist discussion and work groups instituted as part of a national quality improvement program by the Royal Dutch Society for Physical Therapy (KNGF), provides a logical setting for these initiatives. Figure 1 shows the infrastructure in the Netherlands to facilitate the consultation platforms and support their activities.

Figure 1. The KNGF infrastructure of consultation platforms



To assist in implementing clinical practice guidelines, a number of methods have been developed to help individuals take the steps mentioned in Grol at al.'s model for developing expertise.[1] Table 3 provides an overview of these methods.

Table 3. Overview of the methods used for implementing centrally produced guidelines.

Orientation	• Publications • Educational meetings
Understanding	• Evaluation documents • Educational meetings
Acceptance	• Propositions
Change	• Evaluation documents • Discussion documents • Information about or manuals on measurement instruments

Evaluation documents will be developed to enable the physical therapist to determine whether his or her practice complies with the main guideline criteria (i.e., understanding of the physical therapist's own practice). These evaluations documents can also serve to introduce new types of practice (i.e., change). In addition, other documents will also be developed. For example, these may include propositions that can guide discussion about guidelines between colleagues (i.e., acceptance). Alternatively, manuals that describe the use of measurements or how to use the measurement instruments recommended by guidelines (i.e., change) will be developed. Regional educational meetings will also be set up to enable physical therapists to develop quickly a working knowledge of the main parts of the guidelines (i.e., orientation/understanding).

Although guidelines can immediately be put into practice, they may also be adapted to individual situations. Converting guidelines into a locally used protocol is possible and, at times, desirable. The conversion of centrally produced guidelines into a local protocol ensures that there is a local investment in, or 'buying into', the guidelines. This will speed up acceptance and, thus, implementation of the guidelines.

In conclusion, evaluation of the effect of the guideline implementation process is necessary so that conclusions can be drawn about how future clinical practice guidelines in physical therapy can be effectively and efficiently implemented. It is only by carefully evaluating the effect of developing and implementing centrally produced guidelines that we can identify the specific barriers and impediments that need to be overcome in the successful implementation of guidelines, and other innovations.

> "Implementing guidelines as a practice policy deserves whatever effort is required to ensure that all the work that preceded it is put to the best use." David Eddy, 1990.[3]

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