

Physical Therapy

Journal of the American Physical Therapy Association



The Hypothesis-Oriented Pediatric Focused Algorithm: A Framework for Clinical Reasoning in Pediatric Physical Therapist Practice

Lisa K. Kenyon

PHYS THER. 2013; 93:413-420.

Originally published online October 19, 2012

doi: 10.2522/ptj.20120080

The online version of this article, along with updated information and services, can be found online at: <http://ptjournal.apta.org/content/93/3/413>

Online-Only Material

<http://ptjournal.apta.org/content/suppl/2013/02/25/ptj.20120080.DC1.html>

Collections

This article, along with others on similar topics, appears in the following collection(s):

[Clinical Decision Making](#)
[Diagnosis/Prognosis: Other](#)
[Pediatrics: Other](#)
[Perspectives](#)

e-Letters

To submit an e-Letter on this article, click [here](#) or click on "Submit a response" in the right-hand menu under "Responses" in the online version of this article.

E-mail alerts

Sign up [here](#) to receive free e-mail alerts

The Hypothesis-Oriented Pediatric Focused Algorithm: A Framework for Clinical Reasoning in Pediatric Physical Therapist Practice

Lisa K. Kenyon

Pediatric physical therapist practice presents unique challenges to the clinical reasoning processes of novice clinicians and physical therapist students. The purpose of this article is to present the Hypothesis-Oriented Pediatric Focused Algorithm (HOP-FA), a clinical framework designed to guide the clinical reasoning process in pediatric physical therapist practice. The HOP-FA provides a systematic, stepwise guide to the patient/client management process wherein the therapist is asked to consider various factors and issues that may affect the clinical reasoning process for a particular child and family. The framework provided by the HOP-FA is not built upon a specific therapeutic philosophy and may be useful as a tool in clinical education, in the classroom, and for clinicians who are new to or re-entering pediatric practice.

L.K. Kenyon, PT, PhD, PCS, Department of Physical Therapy, Grand Valley State University, Grand Rapids, Michigan. Mailing address: Department of Physical Therapy, Grand Valley State University, 301 Michigan St NE, Suite 200, Grand Rapids, MI 49503 (USA). Address all correspondence to: kenyonli@gvsu.edu.

[Kenyon LK. The Hypothesis-Oriented Pediatric Focused Algorithm: a framework for clinical reasoning in pediatric physical therapist practice. *Phys Ther.* 2013;93:413–420.]

© 2013 American Physical Therapy Association

Published Ahead of Print:

October 19, 2012

Accepted: October 9, 2012

Submitted: February 29, 2012



Post a Rapid Response to
this article at:
ptjournal.apta.org

Pediatric physical therapist practice presents unique challenges to the clinical reasoning processes of novice clinicians and physical therapist students. In pediatrics, physical therapists must learn to consider the potential impact of multiple factors such as the child's family, age, developmental level, and environment in order to appropriately execute elements of the patient/client management model. The demands of today's fast-paced health care environment further require inexperienced therapists to take into account such factors in a judicious and effective manner, with little time for acclimation to pediatric physical therapist practice.

The clinical reasoning processes used by novice clinicians have been found to differ from the processes used by experienced or expert clinicians.¹⁻⁴ Expert clinicians have been shown to use pattern recognition and forward reasoning methods to facilitate decision-making efforts in a collaborative, patient-centered model.¹⁻⁴ Expert clinicians also are more likely to utilize metacognitive processes such as reflection-in-action to respond to clinical situations and problems as they unfold.² In contrast, novice clinicians are more likely to use therapist-centered approaches within hypothetico-deductive reasoning processes in which hypotheses are generated from initial cues or information

from the patient.¹⁻⁴ The novice then uses these hypotheses to direct additional data collection and interpretation. This process of hypothesis generation and data interpretation continues as the novice confirms or refutes various hypotheses as part of the examination and evaluation processes.

Clinical algorithms provide a systematic approach to patient care and, therefore, may help to guide the novice clinician through the clinical reasoning process. Examples of such algorithms include the Hypothesis-Oriented Algorithm for Clinicians (HOAC)⁵ and the HOAC II.⁶ Both the HOAC⁵ and the HOAC II⁶ are independent of any particular theoretical approach and were designed to assist clinicians in any clinical setting in addressing the physical therapy needs of their patients and clients. Both the HOAC⁵ and the HOAC II⁶ have been applied to pediatric physical therapist practice.⁷ The novice clinician or student, however, may require greater prompting and assistance to methodically work through situations and scenarios commonly presented in pediatric physical therapist practice such as the need to consider a child's developmental abilities across all domains of function and the potential for a developmental condition to negatively affect growth and maturation in various body structures and systems.

The purpose of this article is to present the Hypothesis-Oriented Pediatric Focused Algorithm (HOP-FA),⁸⁻¹⁰ a clinical framework designed to guide students and novice clinicians through the clinical reasoning process in pediatric physical therapist practice. As with the HOAC models,^{5,6} the HOP-FA is not intended to provide specific guidelines for pediatric physical therapist practice and is not built upon a specific therapeutic examination or intervention philosophy. Instead, the HOP-FA pro-

vides a systematic, stepwise guide to the patient/client management process as outlined in the *Guide to Physical Therapist Practice*¹¹ and promotes a child- and family-centered approach to pediatric physical therapist practice.

The HOP-FA originally began as a clinical education tool to assist clinical instructors in guiding and teaching physical therapist students in a pediatric practice setting. The HOP-FA was later refined and adapted for use in the classroom as a way to assist physical therapist students in developing pediatric clinical reasoning skills. The framework subsequently has been modified to reflect current trends and concepts in pediatric practice. Given that the HOP-FA provides a guide to clinical reasoning processes in pediatric physical therapist practice, it also may lend itself to use by clinicians who are new to or re-entering pediatric practice.

Using the HOP-FA: Steps in the Framework

Step 1: Initial Hypotheses

The initial steps in the HOP-FA occur prior to performing the physical therapist examination. In Step 1a, the therapist considers the child's chronological age and begins to form the initial hypotheses and mental images that will help to guide subsequent steps in the HOP-FA. In considering the child's age, the therapist is directed to consider not only the anticipated gross motor function at a specific age but also the social, educational, and family activities typically engaged in by children in this age group. These social roles and functions are usually at the level of participation described in the *International Classification of Functioning, Disability and Health* (ICF)¹² model and serve to remind therapists to incorporate participation into both examination and intervention planning. For example, children in



Available With
This Article at
ptjournal.apta.org

- [eAppendix 1](#): Hypothesis-Oriented Pediatric Focused Algorithm (HOP-FA) Forms for Classroom Use
- [eAppendix 2](#): Hypothesis-Oriented Pediatric Focused Algorithm (HOP-FA) Form for Clinic Use

later preschool and early elementary school typically partake in play dates at other children's homes. Organized team sports such as soccer and T-ball become typical extracurricular activities at certain ages, and children of other ages may become involved in organized groups such as Cub Scouts or Brownies. Reflecting on these typical childhood activities allows the therapist to create and store a mental image of the age-appropriate social roles and functions of children in the patient's peer group.

Similar to steps in the HOAC⁵ and HOAC II⁶ models, Step 1b in the HOP-FA involves anticipating primary and secondary impairments that may be associated with the child's medical diagnosis. For instance, a child with a diagnosis of spina bifida may be at risk for integumentary issues because of decreased or absent sensation. A child with a diagnosis of Down syndrome may be at risk for cardiac anomalies, experience problems related to hypotonia, or present a specific cluster of musculoskeletal and biomechanical concerns. A child with spastic quadriplegic cerebral palsy may be at risk for range of motion deficits at certain joints or may have other problems such as feeding issues or seizures. Anticipating such problem areas assists the therapist in not only planning the foundational aspects of the examination process but also in beginning to develop a mental image of the child.

Step 2: Initial Data Collection

In Step 2, the therapist performs initial data collection procedures within the examination process, including a review of available medical and educational records and the patient/family interview. To facilitate this process, the therapist draws upon the developing mental image of the child and gathers specific information that is pertinent to the child's specific medical diagnosis

and past medical history. The therapist also is encouraged to observe the child and family during the interview process and to use this information to assist in further building the mental image of the child and the child's functional abilities. Based on the information gathered in this step, the therapist further develops an initial impression of the child's functional capabilities and status.

Through the family interview, the therapist seeks to understand the lived reality and the environment of the child and the family, as well as the reasons why the family and child are seeking physical therapy services.¹³ This information-gathering process includes the child's and the family's goals and desired functional therapeutic outcomes. Tools such as Canadian Occupational Performance Measure¹⁴ or the Perceived Efficacy and Goal Setting System¹⁵ may be helpful at this step to gain greater insight into the patient's and family's desired goals and expected outcomes. Using the information gathered during these initial data collection procedures, the therapist further refines the mental image of the child and uses this image to begin hypothesizing potential problem areas to be investigated through the administration of tests and measures during the hands-on examination process.

Step 3: Problem Statement

In Step 3, a problem statement is generated that specifically addresses the reasons why the family is seeking services for their child. By completing the statement "This family/child is seeking physical therapy to be able to . . .," the therapist can ensure that the child's and family's goals and expected outcomes are well understood and delineated prior to the initiation of the hands-on examination procedures.

Step 4: Hypothesize Goals

Based on the problem statement, in Step 4, the therapist hypothesizes functional short-term and long-term goals that will drive the remaining examination processes. These hypothesized goals should relate to the family's desired goals and expected outcomes and are used only to guide and direct the examination process. By using hypothesized goals to focus the examination procedures, the therapist ensures that the family's concerns, goals, and expected outcomes are adequately addressed during the examination process. This process helps to ensure that the examination will focus on issues important to the child and the family. Acknowledging and encouraging family involvement in the decision-making process also may assist the therapist to develop a rapport with the child and family.

Therapists often feel challenged by this aspect of the algorithm and might even feel that it is akin to guessing about a child's function and abilities. It may help the therapist to recognize that hypothesized goals are not necessarily the goals that ultimately will be written into a plan of care. The hypothesized goals are merely a tool by which to help prioritize the tests and measures used in the hands-on examination process and to ensure that examination procedures are focused on the family's goals and outcomes. As an extreme example, if the family of a teen with spastic quadriplegic cerebral palsy who functions at a Gross Motor Function Classification System (GMFCS)¹⁶ level V states that they want their child to walk, that family's desired outcome can be used to make certain that the examination procedures encompass the child's ability to weight bear and perhaps initiate steps in supported standing. It does not mean that the goals on the actual physical therapy plan of care will be related to ambulation.

The Hypothesis-Oriented Pediatric Focused Algorithm

• What are this child's specific strengths?
• What are the physical therapy problem areas (impairments, functional limitations, and activity or participation restrictions), and how do these problem areas impact this child's function?
• In what ways do the identified physical therapy problem areas restrict the child's ability to fully participate in activities that are appropriate for the child's age?
• Do any of the identified physical therapy problem areas have the potential to lead to the development of further problem areas? Can these future problems be prevented? How?
• Are there any changes coming up for this child and family in the next year? How might these anticipated changes affect the child and the family?
• What is this child's anticipated level of function in 1 year? In 5 years? What needs to be done now to maximize the child's future independence and function?

Figure 1.

Questions related to Step 7: evaluation.

Step 5: Examination Planning

In Step 5, the therapist plans the hands-on aspects of the physical therapist examination. This planning is based on the therapist's developing mental image of the child as formed in Steps 1 and 2, the problem statement and hypothesized goals, the information gathered through the initial data collection process, and the therapist's knowledge of available tests and measures. The therapist is directed to plan all aspects of the physical therapist examination as indicated, including the review of systems, use of standardized testing procedures and outcome measures, specific functional skills to be observed (including gait analysis, if appropriate), skeletal alignment, range of motion, balance/postural control, muscle strength, and various aspects of quality of movement.

When determining the specific tests and measures to be used, the ICF¹² and the ICF Checklists^{17,18} often are helpful in directing therapists to consider tools that will assess all aspects of the child's environment and function, including function in the activity and participation domains, during the examination procedures. Although studies indicate that outcome measures in the activity and participation domains are not always routinely used in physical therapist practice,^{19,20} such measures provide

therapists with the means to track changes over time in a patient's performance or health status.¹⁹ Administration of outcome measures at the beginning and end of an episode of care also may help in determining the effectiveness of intervention, and periodic readministration of such measures may assist the therapist in modifying the intervention plan.^{19,21} To be effectively used in practice, outcome measures must be valid, reliable, feasible, and able to detect clinically relevant changes in patient status. Outcome measures may be designed to gather information through either direct therapist observation of patient performance (for example, the Gross Motor Function Measure²² in the activity domain) or caregiver/patient report (such as the Children's Assessment of Participation and Enjoyment & Preference for Activities in Children²³ in the participation domain). Outcome measures also can be categorized as generic or condition specific. Generic outcome measures are intended for use across a wide variety of patient groups, whereas condition-specific measures are those developed for patients with a specific medical diagnosis such as cerebral palsy. When possible, outcome measures should be chosen to align with the family's desired goals and expected outcomes.^{19,21}

Step 6: Examination

In Step 6, the therapist completes the actual hands-on examination procedures using the tests and measures selected in Step 5. During this process, the therapist is encouraged to continue to develop rapport with the child and family by explaining the procedures used and briefly reporting on findings.

Step 7: Evaluation

In Step 7, the therapist synthesizes and interprets the data collected during the examination. To facilitate the evaluation process, the therapist is asked to consider issues raised from the answers to questions in Figure 1. To effectively address these questions, the therapist is asked to draw upon the mental image developed in Step 1 related to the typical activities and social roles of children in the patient's peer group. This approach allows the therapist to consider contextual factors such as age, sex, societal expectations, and environmental barriers that may affect the patient's ability to fully participate in the age-appropriate social roles and functions.

Step 8: Diagnosis and Prognosis

In Step 8, the therapist determines the physical therapist diagnosis and prognosis. In providing a physical therapist diagnosis, the therapist supplements the medical diagnosis by identifying the child's specific

movement dysfunctions.^{11,24} In this step, the therapist also identifies practice patterns from the *Guide to Physical Therapist Practice*,¹¹ classifies the child's abilities, and determines the child's potential to achieve the specified functional outcomes as outlined below. As part of this step in the algorithm, the therapist is asked to consider which 1 or 2 physical therapy problem areas are most limiting to the child's functional execution of motor skills. This process forces the therapist to prioritize problem areas, assists in focusing the physical therapy plan of care, and helps to drive intervention strategies in later steps within the algorithm. The therapist also determines whether referrals to other disciplines are indicated to ensure optimal care.

The therapist is encouraged to refine the mental image of the child based on the information gathered during Steps 6 through 8 and draw upon this updated image of the child to determine whether the hypothesized goals are reasonable and attainable. If not, the therapist is asked to consider whether the hypothesized goals can be modified to reflect both the family's goals and the examination findings in an effort to maximize future functional independence. Identifying any discrepancies between the family's desired outcomes and the patient's capacity to achieve such outcomes is a vital aspect of this step in the HOP-FA, as the therapist must determine whether physical therapy services are indicated. Children with developmental conditions often present with a variety of impairments in the ICF¹² realm of body structure and function, but impairments themselves do not necessarily indicate the need for physical therapy intervention. The therapist must instead determine the child's potential to achieve gains in function, as well as the child's needs relative to wellness and prevention. For example, the

therapist may determine that a teenager with spastic quadriplegic cerebral palsy who functions at GMFCS¹⁶ level V does not have the capacity to achieve his family's desired outcomes related to independent ambulation. The therapist may conclude, however, that this patient does have the capacity to assist with transfers if provided with a short course of physical therapy focused on transfer training. In this instance, the therapist should discuss the examination findings with the family and work with the family to determine whether such outcomes are desirable to the family.

The therapist also must determine the child's needs related to wellness and prevention. Perhaps the child's adaptive equipment needs to be adjusted or replaced due to growth or possibly the home program needs to be updated to meet the child's current status. In this case, the therapist should discuss these findings with the family and work with the family to determine whether outcomes related to these needs are desirable to the family. If the therapist concludes that the child has reached his or her capacity for physical function and that the child's needs related to wellness and prevention are being met, physical therapy interventions are not indicated, and a plan of care would not be developed for this child.

If the therapist determines that physical therapy interventions are indicated related to the child's capacity to achieve gains in function or to the child's needs relative to wellness and prevention, a plan of care is developed. The plan of care includes the anticipated goals and expected outcomes as refined during this step in the HOP-FA, the specific physical therapy interventions to be used, the proposed frequency and duration of physical therapy services, anticipated dates for re-examination and

readministration of outcome measures, and predicted plans for discharge.

Step 9: General Intervention Planning

In Step 9, the therapist performs general intervention planning for the child under each component of physical therapy intervention as indicated by the plan of care: coordination, communication, and documentation; patient- and family-related instruction; and procedural interventions. To facilitate this process, the therapist draws upon the updated image of the child, the abilities of both the child and the family, and the prioritized physical therapy problem areas as formed in Step 8 and is asked to consider factors raised by the answers to questions listed in Figure 2. Of particular importance in this step, the therapist determines the specific strategies, such as a home program, that will help achieve therapeutic carryover for the child.

Step 10: Intervention Session Planning

In Step 10, the therapist plans individual intervention sessions. The therapist is encouraged to base each individual session on a specific functional goal or goal to be achieved during the session. Each session goal is a step to achieving a functional goal on the plan of care as developed in Step 8. To facilitate planning for individual intervention sessions, the therapist is asked to consider factors raised by the answers to questions listed in Figure 3.

As the final aspect of this step in the algorithm, the therapist lists the specific sequence of activities to be included in the sessions, including preparation activities, motor activities, and links to the next session. For each activity, the therapist is prompted to consider the motivational or play component and feed-

The Hypothesis-Oriented Pediatric Focused Algorithm

• What specific case coordination activities are indicated for this child and family?
• Are there any basic safety issues or precautions that must be considered for this child?
• What can be done to build upon this child's strengths that will assist in achieving the identified goals?
• How should the therapeutic environment be set up to optimize intervention activities and to best meet the needs of this child?
• What specific motivational and play strategies are best to use with this child?
• What general postures and movements should be encouraged during physical therapy sessions?
• Are there postures and movements that should be discouraged during physical therapy sessions?
• Are there basic goals from other disciplines that can be easily integrated into physical therapy sessions?
• What are the specific educational needs for this child, family, and caregivers?
• What strategies will be best to help achieve therapeutic carryover for this specific child?
• What components of the plan of care can be delegated to a physical therapist assistant? Are there components of the plan of care that should not be delegated to a physical therapist assistant?

Figure 2.

Questions related to Step 9: general intervention planning.

• What are the components and demands of the task outlined in this functional goal?
• What are the components and demands of the environment where this task will ultimately be performed?
• What strengths does the child have that will help to achieve this goal?
• What components of the task are missing from the child's movement repertoire? What is the potential impact of the functional environment where this task will ultimately be performed?

Figure 3.

Questions related to Step 10: intervention session planning.

back mechanisms to be used with the activity and how to increase or decrease the challenge of each therapeutic activity so that the session can be easily adjusted to accommodate to the child's specific functional abilities.

It should be emphasized that although a detailed plan is created in this step, the actual intervention session may or may not end up actually being conducted according to the specific plan. Children often have their own ideas about which activities they would like to perform during the session. By planning the session based on the analysis of a functional goal, the therapist is more readily able to adapt the session to meet the child's changing activity preferences. For example, if the therapist knows that eccentric contraction of the quadriceps muscle is an

essential component of the functional goal that is missing from the child's repertoire and the child demonstrates disinterest in the activities planned by the therapist, the therapist can redirect the child to other activities that will target eccentric quadriceps muscle strengthening. In this way, the session is focused on the child's needs but allows for the flexibility that is necessary to successfully engage the child in therapy activities.

Step 11: Reflection

In Step 11, the therapist is asked to reflect on the session, assess the effectiveness of the specific intervention session, and consider the child's overall progress within the plan of care. This is an essential aspect of the HOP-FA, as it ensures that the therapist is continually monitoring the child's progress and continued need

for physical therapy intervention. To facilitate this process, the therapist is asked to consider the answers to questions listed in Figure 4. Based on the therapist's responses to each of these questions, the therapist may determine that changes in the plan of care are indicated or that a formal re-examination is indicated as outlined in Step 12. The therapist consistently uses these reflective questions after each intervention session to ensure that the child is progressing toward the established goals as indicated.

Step 12: Formal Re-examination

Based upon the re-examination dates and strategies identified in Step 8 or upon reflection carried out in Step 11, the therapist initiates formal re-examination processes in Step 12. According to the *Guide to Physical Therapist Practice*,¹¹ re-examination

<ul style="list-style-type: none"> • What went well during the session? What could have gone better?
<ul style="list-style-type: none"> • What could be done differently at the next session to make the intervention session more effective?
<ul style="list-style-type: none"> • Is the child progressing toward the established goals and outcomes as expected? Why or why not? Does physical therapy continue to be indicated for this child, or has the child achieved maximal benefit from physical therapy services?
<ul style="list-style-type: none"> • What changes to the plan of care are needed to improve goal acquisition and to maximize the child's future functional independence? Is a formal re-examination indicated? Are changes in the discharge plans indicated?

Figure 4.

Questions related to Step 11: reflection.

encompasses readministration of selected tests and measures to evaluate progress and to modify or redirect intervention. The therapist may find concepts from Steps 1 through 8 of the HOP-FA to be helpful in guiding the re-examination process.

Application of the HOP-FA

Forms developed to assist in applying the HOP-FA in academic settings are provided in [eAppendix 1](#) (available at ptjournal.apta.org). In the classroom, the HOP-FA is used in conjunction with video case studies. A completed patient history that includes the child's and family's reasons for seeking physical therapy services is provided to the students in advance. The students use this history to complete Steps 1 through 5 using the form "Planning the Pediatric Physical Therapist Examination" provided in [eAppendix 1](#). During class, the students complete Step 6 through a video-based examination of the child and record pertinent findings using the form "The Pediatric Physical Therapist Examination" provided in [eAppendix 1](#). After the video-based examination is completed, students complete Steps 7 and 8 using the form "Evaluation/Diagnosis/Prognosis" provided in [eAppendix 1](#). During class, general questions regarding the video case are posed to facilitate student reflection concerning the case. These reflective questions typically include:

- How did the mental image of the child's function and impairments

developed in Step 1 compare with the child's actual function and status on the video? What was different and why?

- How has this case influenced your impressions concerning pediatric physical therapist practice?

Students then complete Step 9 using the form "General Planning Guidelines for Pediatric Physical Therapy Intervention" and Step 10 using the form "Planning a Specific Intervention Session for the Child" provided in [eAppendix 1](#). These same forms can be used in the clinical education setting or during laboratory activities with children who have actual physical therapy needs. When interventions are actually carried out, Step 11 is completed using the form "Reflection" provided in [eAppendix 2](#) (available at ptjournal.apta.org). When completing the HOP-FA forms as part of classroom or clinic-based learning activities, students are asked to cite supporting evidence for hypotheses and decisions whenever possible.

When asked to reflect upon the use of the HOP-FA with the video cases in the classroom and during hands-on laboratory activities with actual pediatric patients, students have reported that the HOP-FA provides them with a consistent and systematic method for organizing and executing the patient/client management model.^{8,9} Students felt the HOP-FA allowed them to consider factors related to the individual patient and the family ahead of time

and helped to ensure that all aspects of the examination or intervention session were considered and carried out. Students who described themselves as being uncomfortable working with children stated that the HOP-FA provided them with guidance and direction and helped them to feel more at ease with the children and families.

Students who used the HOP-FA in the classroom have reported that it also was a useful tool during pediatric clinical education experiences. The HOP-FA reportedly not only helped these students to consider patient-specific factors and needs but also served as a reminder of the social, educational, and family activities typically engaged in by children of the same age as their patients. Students also reported that the HOP-FA encouraged them to reflect in a manner that was helpful in subsequent patient encounters. One student reported that the repetition of completing the HOP-FA for each patient helped her to utilize clinical reasoning processes in a way that became almost second nature (Kenyon, unpublished data, 2012).

Summary

The HOP-FA was designed to serve as a guide to the clinical reasoning processes in pediatric physical therapist practice. The HOP-FA does not provide specific guidelines for execution of the patient/client management model but rather serves to guide the therapist through various clinical reasoning processes by ask-

The Hypothesis-Oriented Pediatric Focused Algorithm

ing that the therapist consistently consider factors unique to pediatric physical therapist practice. The HOP-FA may be useful as a tool for clinical education and the classroom, as well as for clinicians who are new to or re-entering pediatric practice.

The author acknowledges Mary Blackinton, PT, EdD, GCS, for her assistance in organizing and editing the manuscript.

Different aspects of the framework outlined in the article have been presented at the following conferences: Combined Sections Meeting of the American Physical Therapy, February 9, 2008, Nashville, Tennessee; Combined Sections Meeting of the American Physical Therapy Association, February 10, 2009, Las Vegas, Nevada; and 2nd European Congress on Physiotherapy Education sponsored by the European Region of the World Confederation for Physical Therapy, September 25, 2008, Stockholm, Sweden.

DOI: 10.2522/ptj.20120080

References

- 1 Barrows HS, Pickell GC. *Developing Clinical Problem Solving Skills: A Guide to More Effective Diagnosis and Treatment*. New York, NY: WW Norton and Co; 1991.
- 2 Wainwright SF, Shepard KF, Harman LB, Stephens J. Novice and experienced physical therapist clinicians: a comparison of how reflection is used to inform the clinical decision-making process. *Phys Ther*. 2010;90:75-88.
- 3 Wainwright SF, Shepard KF, Harman LB, Stephens J. Factors that influenced the clinical decision-making processes of novice and experienced physical therapists. *Phys Ther*. 2011;91:87-101.
- 4 Edwards I, Jones M, Carr J, et al. Clinical reasoning strategies in physical therapy. *Phys Ther*. 2004;84:312-335.
- 5 Echternach JL, Rothstein JM. Hypothesis-oriented algorithms. *Phys Ther*. 1989;69:559-564.
- 6 Rothstein JM, Echternach JL, Riddle DL. The Hypothesis-Oriented Algorithm for Clinicians II (HOAC II): a guide for patient management. *Phys Ther*. 2003;83:455-470.
- 7 Palisano RJ, Campbell SK, Harris SR. Evidenced-based decision making in pediatric physical therapy. In: Campbell SK, Palisano RJ, Orlin MN, eds. *Physical Therapy for Children*. 4th ed. St Louis, MO: Elsevier; 2012:1-36.
- 8 Kenyon LK. An innovative instructional method in pediatrics: use of a case-based framework to teach clinical decision-making skills: focus on assessment skills. Presented at: Combined Sections Meeting of the American Physical Therapy Association; February 9, 2008; Nashville, Tennessee.
- 9 Kenyon LK. An innovative instructional method in pediatrics: use of a case-based framework to teach clinical decision-making skills in intervention. Presented at: Combined Sections Meeting of the American Physical Therapy Association; February 10, 2009; Las Vegas, Nevada.
- 10 Kenyon LK. An innovative instructional method in pediatrics: use of classroom tools to teach clinical decision-making skills. Poster presented at: 2nd European Congress on Physiotherapy Education, sponsored by the European Region of the World Confederation for Physical Therapy; September 25, 2008; Stockholm, Sweden.
- 11 Guide to Physical Therapist Practice. 2nd ed. *Phys Ther*. 2001;81:9-746.
- 12 *International Classification of Functioning, Disability and Health: ICF*. Geneva, Switzerland: World Health Organization; 2001.
- 13 Westby C, Burda A, Mehta Z. Asking the right questions in the right ways: strategies for ethnographic interviewing. *ASHA Leader*. 2003;8(8):4-5, 16-17.
- 14 Law M, Baptiste S, Carswell A, et al. *Canadian Occupational Performance Measure*. 4th ed. Ottawa, Ontario, Canada: CAOT Publications ACE; 2005.
- 15 Missiuna C, Pollock N, Law M. *Perceived Efficacy and Goal Setting System*. San Antonio, TX: Pearson Corporation; 2004.
- 16 Palisano RJ, Rosenbaum PL, Bartlett D, Livingston MH. The Gross Motor Function Classification System—Expanded and Revised. 2007. CanChild Centre for Childhood Disability Research. Available at: <http://motorgrowth.canchild.ca/en/GMFCs/expandedandrevised.asp>. Accessed March 15, 2009.
- 17 ICF Application and Training Tools. World Health Organization website. Available at: <http://www.who.int/classifications/icf/training/icfchecklist.pdf>. Accessed January 25, 2012.
- 18 WHO ICF-CY Work Group. ICF-CY Checklist, version 1.B, 3-6 years. Available at: http://www.ccoms-fci-cif.fr/ccoms/pagint/PDF/ICF_CY_Checklist_3_6_years.pdf. Accessed January 3, 2012.
- 19 Potter K, Fulk GD, Salem Y, Sullivan J. Outcome measures in neurological physical therapy practice, part I: making sound decisions. *J Neuro Phys Ther*. 2011;35(2):57-64.
- 20 Jette DU, Halbert J, Iverson C, et al. Use of standardized outcome measures in physical therapist practice: perceptions and applications. *Phys Ther*. 2009;89:125-135.
- 21 Engelen V, Ketelaar M, Gorter JW. Selecting the appropriate outcome in paediatric physical therapy: how individual treatment goals for children with cerebral palsy are reflected in GMFM-88 and PEDI. *J Rehabil Med*. 2007;39:225-231.
- 22 Russell DJ, Rosenbaum PL, Avery LM, Lane M. *Gross Motor Function Measure (GMFM-66 & GMFM-88) User's Manual*. High Holborn, United Kingdom: Mac Keith Press; 2002.
- 23 King G, Law M, King S, et al. *CAPE/PAC: Children's Assessment of Participation and Enjoyment & Preference for Activities in Children*. San Antonio, TX: Pearson Corporation; 2004.
- 24 Diagnosis Dialogue: Defining the "x" in DxPT. Washington University in Saint Louis Program in Physical Therapy website. Available at: <https://dxdialog.wusm.wustl.edu/Pages/Overview.aspx>. Accessed September 11, 2012.

Physical Therapy

Journal of the American Physical Therapy Association



**The Hypothesis-Oriented Pediatric Focused
Algorithm: A Framework for Clinical Reasoning in
Pediatric Physical Therapist Practice**

Lisa K. Kenyon

PHYS THER. 2013; 93:413-420.

Originally published online October 19, 2012

doi: 10.2522/ptj.20120080

References

This article cites 10 articles, 6 of which you can access for free at:

<http://ptjournal.apta.org/content/93/3/413#BIBL>

**Subscription
Information**

<http://ptjournal.apta.org/subscriptions/>

Permissions and Reprints

<http://ptjournal.apta.org/site/misc/terms.xhtml>

Information for Authors

<http://ptjournal.apta.org/site/misc/ifora.xhtml>
