Educational Outcomes Report

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Table of Contents

Executive Summary and Program Description ................................................................. 3
Expert Faculty .................................................................................................................. 4
Level 1: Participant Demographics ............................................................................... 5
Level 2: Participants’ Assessments of the Educational Activity .................................... 6
Level 3: Knowledge Outcomes ..................................................................................... 9
Continuous Needs Assessment ..................................................................................... 13
Summary, Conclusions, and Future Directions ............................................................. 15

Appendix:
Educational Needs Assessment, Activity Development, and Outcomes Assessment at PRIME®:
Applications of Established Conceptual Frameworks and Principles of Adult Learning .......... 16
Executive Summary and Program Description

Parkinson’s disease (PD) affects approximately 1 million individuals in the US and up to 5 million worldwide. Identification of symptoms and early nursing interventions for these patients are essential factors for successful outcomes. However, nonmotor symptoms of PD may emerge up to 10 years before obvious motor symptoms develop and a definitive PD diagnosis can be made. In a recent needs assessment, which was conducted by PRIME®, neuroscience nurse practitioners, physician assistants, and nurses indicated key educational gaps in the field of PD. The most commonly cited gaps included (1) a lack of training on the identification and diagnosis of early PD; (2) shortcomings in guidelines for appropriate clinical support of patients with early PD; (3) a lack of competence in the therapeutic management of early PD; and (4) incomplete knowledge of strategies for educating patients and their families regarding the clinical course of PD. To address these clinical knowledge and practice gaps, PRIME® sponsored a series of live dinner-based educational activities intended to support clinicians on the “front line” of patient management in PD. This document reports the outcomes of these activities.

The body of the report is organized by distinct levels of educational outcomes, with focused assessments of:

- Participant demographics
- The teaching effectiveness of the faculty
- The quality of the learning experience
- Gains in declarative and procedural knowledge
- Activity-influenced gains in understanding and confidence
- Activity-influenced expectations of clinical performance improvement

Explanations of these outcome domains, along with their evidence-based rationale, are presented in the appendix document titled Educational Needs Assessment, Activity Development, and Outcomes Assessment at PRIME®: Applications of Established Conceptual Frameworks and Principles of Adult Learning.
Program Title:
Clinical Strategies in Early Parkinson's Disease for the Treatment Team

Program Dates & Locations:

April 20, 2011 — Asheville, NC
April 21, 2011 — Tampa, FL
May 18, 2011 — Clearwater, FL
June 13, 2011 — Virginia Beach, VA
June 14, 2011 — Raleigh, NC
June 15, 2011 — Philadelphia, PA

Expert Faculty

Marian Finehirsh, MSN, MSCN, NP-C
Morton Plant Neuroscience Clinic
Clearwater, FL

Nicole Hans, CNP
Sentara Neurology Specialists
Virginia Beach, VA

Theresa Keiser, RN, MSN, FNP-BC
Raleigh Neurology Associates
Raleigh, NC

Terry McClain, MSN, ARNP
Parkinson's Disease and Movement Disorders Center
University of South Florida
Tampa, FL

Rebecca McGowan PA-C
Physician Assistant, Neurology
Asheville Neurology Specialists, PA
Asheville, NC

Gwen Vernon, MSN, CRNP
Comprehensive Neuroscience Center
School of Nursing
University of Pennsylvania
Philadelphia, PA
Level 1: Participant Demographics

210 Registered Attendees

131 Program Participants

70 Earning CME/CE Credit

By discipline, the distribution was as follows:

- 35 Nurse Practitioners
- 20 Physician Assistants
- 35 Specialty Nurses
- 41 Neurologists/Specialty Physicians

*Although this activity was intended for nurse practitioners, physician assistants, and specialty nurses, a relatively large number of neurologists and specialty physicians chose to participate.

A key learning objective for this educational activity focused on supporting the neurology care team in promoting medication adherence in patients with PD. To assess entry-level practices in this area, a pre-activity survey question asked participants how frequently they educate their patients with PD about the importance of medication adherence. As illustrated in Figure 1, the majority of participants, 58%, reported that they either “never” or “occasionally” provided such education. Only 23% and 19% of participants reported providing education about the importance of adherence “regularly” or “always”, respectively.

This data demonstrates that PRIME effectively identified an educational gap among the intended audience. Subsequent measurable data identifies that the program effectively closed the educational gap.
Level 2: Participants’ Assessments of the Educational Activity

Following the educational activity, participants evaluated various aspects of its effectiveness and accessibility. PRIME® uses these outcomes to determine the extent to which its activities fill identified educational gaps and address critical learning objectives. In addition, participants’ assessments of educational activities inform our future needs assessments and curriculum development. Evaluations were completed by 70 participants.

Effectiveness in Meeting Learning Objectives

This educational activity was designed to support participants in achieving the following learning objectives.

1. Assess clinical processes in early identification of patients with Parkinson’s disease (PD)
2. Identify management techniques in early and ongoing PD, including medication adherence and disability management
3. Interpret the efficacy of therapy used in early PD to delay disease and symptom progression
4. Educate patients and the health care community about early PD

Participants assessed the educational activity’s effectiveness in meeting the learning objectives. On a 5-point scale (with 5 indicating the highest ranking), the combined mean average was 4.6 (Figure 2).
Faculty Ratings

Figure 3 presents participants’ ratings of the knowledge, expertise, and presentation skills of the faculty. On a 5-point scale (with 5 indicating the highest rating), the average rating for these measures of faculty teaching effectiveness was 4.7.

Additional Participant Ratings

As illustrated in Figure 4, participants gave high ratings of the educational activity’s accessibility, time allotment, rigor, and adherence to adult learning principles.
Participants’ Open-Ended Comments
In an online survey delivered following the educational activity, participants were given the opportunity to comment freely on its strengths and weaknesses. Representative comments are reproduced as follows.

This was an excellent presentation from a very knowledgeable practitioner. The integration of current research and evidence-based practice was very strong. The speaker has excellent presentation skills. — Nurse Practitioner

This was an excellent overview of approaching the PD patient as well as the medications, their limitations, and side effects. It greatly enhanced my knowledge of PD, especially my awareness for increasing suspicion for early PD diagnosis. — Physician Assistant

An excellent review of PD. I appreciate the opportunity to review current knowledge. — Nurse Practitioner

I thoroughly enjoyed the speaker, the topic, and the format of the program. Please let me know about future events in the Asheville area. — Physician Assistant

It was difficult to have the speaker behind us, and not be able to adequately see or hear her. — Specialty Nurse

This educational event was very informative and I learned a great deal. — Specialty Nurse

A very thorough and comprehensive program. — Physician

I enjoyed the speaker very much and would be interested in attending other talks she may give. I especially liked the nurse’s perspective. — Specialty Nurse

The speaker was one of the best speakers I have heard. — Specialty Nurse

This was an excellent program with a good speaker. — Physician

An excellent speaker, excellent venue, and a great program overall. — Physician

I thought the program was very educational. I learned a great deal of information based on this presentation. The speaker brought in patient examples which helped me to better understand the material. — Nurse Practitioner

A great speaker and content. — Nurse Practitioner

The speaker has excellent teaching skills and knowledge of presented topics. The venue and time are convenient. — Physician

A great program and speaker. Thank you very much. — Nurse Practitioner

An outstanding and informative program. — Nurse Practitioner

Fair Balance
In a post-activity questionnaire, 100% of participants indicated that the educational content was objective and unbiased.
Level 3: Knowledge Outcomes

Before and after the educational activity, participants answered a series of multiple-choice questions designed to evaluate gap-targeted knowledge outcomes. These assessments focused on activity-influenced changes in declarative knowledge and learning insights, values, and behaviors.

Declarative Knowledge

Based on the program’s learning objectives, the following questions were asked to assess participants’ gains in declarative knowledge (correct answers are indicated by asterisks).

1. Which of the following symptoms would LEAST likely be seen in a patient with PD?
   a. Slowness of movements (bradykinesia)
   *b. Tremor that increases with voluntary movement
   c. Rigidity and increased muscle tone
   d. Postural instability

2. Which of the following correctly matches a class of PD medication to its ultimate mechanism of action?
   a. Dopamine agonists prevent the breakdown of dopamine
   b. Dopa-decarboxylase inhibitors increase dopamine transport across the blood-brain barrier
   c. MAO-B inhibitors inactivate dopamine receptors
   *d. COMT inhibitors increase the half-life of levodopa

Figure 5 presents the percentages of participants who answered the declarative knowledge questions correctly before and after the educational activity. Across the 2 questions, the average number of correct answers increased by 29%.
Learning Insights, Values, and Intentions to Change Practices

As reflected by the following pre-activity/post-activity questions, this sub-level of knowledge outcomes addresses the influences of educational interventions on participants’ self-reported understanding of essential topics and their confidence in performing key clinical skills. In addition, at this sub-level of knowledge outcomes, we assess learners’ activity-influenced intentions to change clinical and/or management practices.

How would you describe your current understanding of the efficacy of current pharmacologic agents for treating early PD?

   a. Limited  
   b. Adequate  
   c. Good  
   d. Excellent

Figure 6 presents the percentages of participants reporting different levels of understanding regarding the efficacy of current pharmacologic agents for treating early PD. The greatest magnitudes of pre-activity to post-activity change were reported for “limited” understanding, which decreased from 72% to 28% of participants and “adequate” understanding, which increased from 16% to 51% of participants.

With regard to identifying PD patients who may benefit from early treatment intervention in the earlier stages of PD, how would you rate your current level of confidence?

   e. Limited  
   f. Adequate  
   g. Good  
   h. Excellent

Figure 7 presents the percentages of participants reporting different levels of confidence in identifying PD patients who may benefit from treatment interventions in earlier stages of the disease.
confidence in their ability to identify PD patients who may benefit from treatment intervention in the earlier stages of PD. The greatest magnitudes of pre-activity to post-activity change were reported for “limited” confidence, which decreased from 42% to 3% of participants and “good” confidence, which increased from 11% to 31% of participants.

Reflecting on the knowledge that you have acquired through participating in this educational activity, what changes do you envision implementing in your future practice?

a. Providing education to patients with PD, as well as their families, on strategies for improving medication adherence
b. Applying strategies such as patient diaries and questionnaires to monitor off-time and symptom re-emergence
c. Applying methods for identifying early PD symptoms
d. Educating myself and colleagues regarding the latest clinical data on the efficacy of PD therapies

As illustrated in Figure 8, roughly equal numbers of participants (27%-32%) indicated that their primary intentions for practice changes involved educating patients and their families about the importance of medication adherence, applying methods for identifying early symptoms of PD, and educating themselves and colleagues about findings from recent clinical trials on PD.

How would you describe the potential/actual influence of this educational activity on your ability to effectively communicate with patients?

a. No influence
b. Some influence
c. Considerable influence
d. Major influence
As illustrated in Figure 9, the majority of participants (74%) reported that the knowledge gained from the educational activity would have a “considerable” influence on their ability to communicate effectively with patients.

To further assess expectations for performance improvement, we asked participants how much they anticipated that, over the next 6 months, the knowledge gained from the educational activity will improve their skills in managing patients with PD. As illustrated in Figure 10, 73% of participants indicated that they expected “some” improvement.

![Figure 9. Participants’ views on the influence of the educational activity on their ability to communicate effectively with patients.](image)

![Figure 10. Anticipated activity-influenced improvement in skills in managing PD patients.](image)
Continuous Needs Assessment

To inform the development of new educational activities on MS, we asked participants the following question:

1. Regarding the management of PD, which of the following topics do you consider most important for continuing education in nursing?
   a. Managing treatment-related adverse events
   b. Treating non-motor symptoms
   c. Educating patients about the importance of medication adherence
   d. Understanding the mechanisms of action of PD treatments

As illustrated in Figure 11, most participants (66%) indicated that the most important topics for continuing education involve educating patients about medication adherence and understanding the mechanisms of action of PD medications. These responses directly correspond to the 2nd and 3rd learning objectives, meaning that the educational gaps identified for this program were met.

Our continuous needs assessment is also based on questions that participants asked the expert faculty presenters during and after their presentations. Representative questions are listed as follows:

- How do you decide if your patient has vascular PD?
- What is the pathophysiology of pain in patients with PD?
- What is the cause of PD?
- Early symptoms are very vague – are there any specific symptoms that stand out during diagnosis?
- How important is it to start medications early?
- If a patient has advanced dementia, what are some of the symptoms of PD where you would start Carbidopa-Levodopa?
- What are the negative interactions between Zoloft and Rasagiline?
- What do you do with people that have excessive sexual behaviors?
- If a patient is on a brain stimulator, and he/she is homebound and cannot come into the office to be seen, what do you do?
- When is it appropriate to add a dopamine agonist to levodopa?
- Is sleep apnea associated with PD?
- Do proton-pump inhibitors interfere with Levodopa?
- Is there a consensus on how long someone needs to be on Ritalin?
- How many patients have you seen with DBS procedure, and does insurance cover the cost?
- How long do you do the levodopa challenge test?
- When do you suggest starting on the stimulants?
- At what age, when diagnosed, would you use the stimulant?
- Do stimulators work just like a pacemaker?
- Are there any differences in outcomes between being diagnosed later in life compared to earlier in life?
- Are there any PD support groups?
- Where do you find peripheral benzodiazepine receptors (PBRS)?
- Are there are number of people with meningitis that could be at risk for PD?
What is the current treatment for patients who have lost their sense of smell?

Is a biopsy important in order to diagnose the disease?

Will a head trauma make someone at risk for PD?

Is idiopathic PD associated with genetics?

Is there any information on antioxidants for treatment?

Are you using the DAT scan for PD diagnosis?

Have you recommended Vitamin D for treatment?

How do you keep your patients compliant in taking all of these medications?

What medications are you giving for the DBS surgery?

Can PD patients have a drug holiday?

If patients do not take dopamine agonists as prescribed, will they have withdrawals?

What research is going on with thalamotomy? Is it safer and easier?

What does a patient controlled DBS device entail?

How many times a day can the patient reprogram the DBS device?
Summary, Conclusions, and Future Directions

This CME/CE activity was successfully delivered to health care professionals who are directly involved in managing patients with PD. In addition to nurse practitioners, physician assistants, and specialty nurses who work in neurology settings, the dinner-based meetings were attended by a relatively large number of neurologists and specialty physicians. The main outcomes of the educational activity are summarized as follows.

• Participants gave high ratings for the teaching effectiveness of the faculty and the extent to which the learning objectives were successfully achieved.

• As assessed through a pre-activity/post-activity multiple-choice test, participants demonstrated modest gains in declarative knowledge on PD symptoms and treatments.

• Large numbers of participants reported substantial improvements in (1) their understanding regarding the efficacy of current pharmacologic agents for treating early PD and (2) their confidence in identifying PD patients who may benefit from early treatment intervention.

• As evidenced in Figure 1, data collected from participants demonstrates that PRIME had effectively identified an educational gap in its grant submission prior to the program. Additional evaluation data collected after the program (Figure 11 and other figures) demonstrates that the program's educational design effectively closed the educational gap pertaining to patient education about adherence, as well as improved other knowledge gaps, such as differentiating early treatment.

• Figure 11 also demonstrates a new educational gap, as participants gave high scores to the need for a better understanding of the mechanisms of action of PD treatments. While this was not a stated objective of this program, future programs may be considered for nurse practitioners, physician assistants and specialty nurses in this subject area.

Participants’ open-ended comments and questions to the faculty presenters reflected ongoing educational needs in the areas of methods for diagnosing early PD, clinical guidelines for the therapeutic management of early PD, and strategies for promoting patient medication adherence.
Educational Needs Assessment, Activity Development, and Outcomes Assessment at PRIME®: Applications of Established Conceptual Frameworks and Principles of Adult Learning

Laurence Greene, PhD  
Senior Medical Writer, PRIME Education, Inc.

Chris R Prostko, PhD  
Scientific Program Director, PRIME Education, Inc.

Established in the 1970s, the field of continuing medical education (CME) addresses the concern that the last 30 to 40 years of physicians’ and other healthcare providers’ careers may occur without any formal course of study.\textsuperscript{1,2} This issue is currently compounded by several factors, including (1) ongoing advancements in biomedical science and technology; (2) the continual development of novel therapies for emerging diseases; (3) evolution of models for collaborative and interprofessional medical practices; and (4) major changes in the infrastructure of our healthcare system. Indeed, the knowledge and skills that healthcare professionals acquire during their formative education may be obsolete within a matter of years or, in some cases, even months. To ensure the most successful outcomes for their patients, healthcare professionals must therefore engage in progressive, high-quality, and career-long education and skill training. Thus, CME can be an important element in continuing professional development.

In serving the vital mission of continuing education (CE) and CME for healthcare professionals, PRIME Education, Inc. (PRIME\textsuperscript{®}) operates on established conceptual frameworks and sound principles of adult learning. This article describes PRIME\textsuperscript{®}’s theory-guided and evidence-based processes for educational needs assessment, activity development, and outcomes assessment. The processes are summarized in the schematic overview in Figure 1.

Educational Needs Assessment and Activity Development Informed by Gap Analysis

The success of any CME/CE activity depends on an initial comprehensive assessment of learners’ needs.\textsuperscript{3,4} A logical and productive approach to needs assessment is \textit{gap analysis}, the systematic process of identifying differences between:

1. The healthcare professional’s current knowledge, competence, and performance skills; and
2. Established standards and criteria that must be achieved to promote the highest quality clinical performance and optimal patient outcomes.

As depicted in steps 1 and 2 of Figure 1, gap analysis directly informs the development of learning objectives for educational activities. Gap analysis is also fundamental to devising the methods and tools for outcomes assessment and for developing effective curricular strategies, media, and content. PRIME\textsuperscript{®} operates on the principle that these two processes—the design of outcomes methodology and the development of educational activities—must be tightly integrated. This complementary approach, depicted in steps 3 and 4 of Figure 1, is essential for serving learners’ needs and ensuring successful outcomes of CME/CE activities.

Principled Approaches to Outcomes Assessment

Today’s leading approaches to outcomes assessment in CME/CE have been largely shaped by conceptual frameworks developed by Donald Kirkpatrick,\textsuperscript{5} George Miller,\textsuperscript{6} and Donald Moore and colleagues.\textsuperscript{7} Among other shared features these frameworks are based on the principle that the highest goals of adult education are achieved when learners successfully apply new knowledge to solve problems and master skills in their practice settings. Thus, outcomes assessment in CME/CE must account for the extent to which health professionals:

1. Acquire essential information, ideas, and procedural skills that target identified gaps and serve an educational activity’s learning objectives;
2. Demonstrate competent applications of the knowledge within the educational setting; and
3. Skillfully transfer the newly acquired knowledge to practical settings, effectively closing the gaps that initially motivated the educational intervention.

PRIME\textsuperscript{®}’s pyramid model of outcomes assessment, adapted largely from the recently refined framework of Moore et al,\textsuperscript{7} is presented in Figure 2. The base of the pyramid represents outcomes of participant demographics (level 1) and participants’ assessments of the quality and effectiveness of educational activities (level 2). Level 2 assessments are implemented through post-activity questionnaires in which participants rate the effectiveness, scientific rigor, and objectivity of the curriculum as well as the knowledge, expertise, and presentation skills of the faculty. In PRIME\textsuperscript{™}s continuous assessment model, data derived from level 2...
Figure 1. An overview of PRIME’s approach to needs assessment, educational activity development, and outcomes assessment. Post-activity assessments (steps 9 and 10) are conducted immediately following educational programs and up to 60–180 days later.
evaluations are essential for guiding future gap analyses and for informing the development of new educational activities that enable learners to achieve higher levels of knowledge, competence, and performance. These applications are reflected in the feedback loop from steps 9 and 10 to step 1 in Figure 1.

At level 3 of PRIME®’s pyramid model, pre-activity and post-activity tests are administered to assess changes in declarative (factual) knowledge and procedural knowledge, the latter of which is defined as an expressed understanding of the steps involved in carrying out healthcare practices. Learners’ gains in declarative and procedural knowledge are obviously prerequisites to improving performance skills and, ultimately, to ensuring successful patient health and community health outcomes. This pivotal role of core knowledge is especially pertinent for contemporary healthcare professionals, who continually face the challenges of grasping complex new information and techniques in the biomedical sciences. In addition to assessing learners’ declarative and procedural knowledge acquisition, PRIME® evaluates the extent to which CME/CE activities influence self-reported learning insights, values, and behaviors. Outcomes are assessed, for example, on the influences of CME/CE interventions on participants’ attitudes about educational topics, their intentions to change practices in ways that meet established standards, and their subsequent self-directed learning behaviors. Positive changes in these important subjective learning domains are very often correlated with improved clinical performance and a deeper engagement in lifelong education. In keeping with the recent outcomes framework developed by Moore et al., PRIME® defines competence (level 4) by how successfully learners apply knowledge within the context of an educational activity. For healthcare professionals, gains in competence are thus reflected by such actions as direct applications of knowledge to diagnosing disease; selecting, administering, and adjusting therapies; and counseling and monitoring patients to ensure medication adherence and to prevent medication-related problems. In live and web-based educational settings, PRIME® assesses learner competence through such educational design strategies as performance simulations, practice-feedback sessions involving patient encounters, peer-to-peer virtual town-hall symposia, and technology-driven (eg, Unique Critique®) programs in which expert faculty provide individualized, branching feedback...
to learners in a case-based question-and-answer format. PRIME® also applies elements of these strategies to assess outcomes at the level of performance (level 5).

The most pressing challenge for CME/CE providers is to support healthcare professionals in transferring newly acquired knowledge from educational contexts to practice settings, to promote improvement in performance. The extent to which CME/CE influences performance can be evaluated partly through subjective measures, including post-activity surveys. For example, in a questionnaire administered 60-180 days after an educational activity, PRIME® assesses participants as to how frequently they have applied gap-targeted knowledge in their recent practice, as well as what new actions and interventions they are regularly performing in the clinical setting that they were not performing prior to the CME/CE activity. Though subjective measures, these responses assist PRIME® in tracking the participant’s journey toward performance improvement and in identifying potential new barriers that may thwart the journey, lending important information in the gap analysis.

The ideal approaches to assessing performance outcomes demand direct and objective measures. However, CME/CE providers have traditionally faced many logistical barriers, including patient-privacy issues, in efforts to measure the effects of educational activities on clinical performance. A major initiative, called performance improvement CME (PI-CME), is currently underway to address this problem, engaging maintenance of certification programs. Through application of this technology, PRIME® is evaluating the extent to which performance can be measured and level 5 learning can be achieved. The ability to track patient health outcomes (level 6) is an intended result of this technology through patient registry data. The success of this technology will hinge on many factors, not the least of which is the significant time commitment required of learners to fully engage in the PI-CME activity. As a result, PRIME® is also establishing business partnerships with physician member societies and government organizations, where outcomes of patient health and community health may be identified and measured.

The ultimate goal of CME/CE is to support healthcare professionals in closing targeted learning gaps to improve patient health (level 6) and community health (level 7). At present, logistical matters usually prohibit objective assessments of outcomes at these highest levels. The potential impact of PI-CME in providing data to assess patient and community health outcomes remains to be determined through future applications and associated educational research.

References