

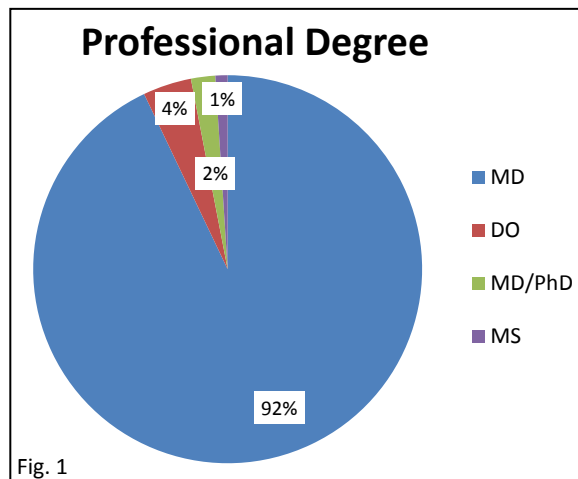
Overall Meeting and Special Lectures

The 91st annual meeting of the American Association of Neuropathologists was held on June 11-14, 2015 in Denver, CO. The annual meeting was certified for *AMA PRA Category 1 Credit™* and consisted of the Special Course, the Presidential Symposium, special lectures, platform presentations, poster presentations, and the Diagnostic Slide Session, all of which were presented by distinguished faculty in the area of neuropathology. Participants of this activity were physicians and research scientists in the field of neuropathology involved in the diagnosis and/or treatment of patients with neurological disorders.

Overall meeting evaluations were collected from participants, and educational outcomes metrics aimed at measuring changes in competence were developed for the Presidential Symposium and the Special Course.

Demographics

A total of 182 participants provided responses to the overall meeting evaluation survey. The majority of the participants were medical doctors (92%) with DOs comprising 4% of the population (**Figure 1**).

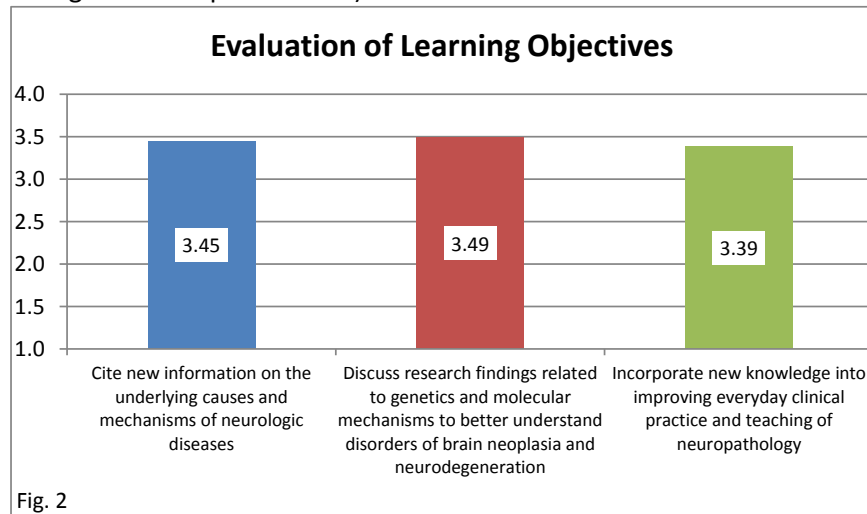


Changes in Practice Behavior and Patient Outcomes

The ultimate goal of any CME activity is to improve participant performance within their clinical practice and/or area of research. Two-thirds (66%) of the participants stated that information presented within this meeting would cause them to make changes to their practice and 95% agreed or strongly agreed that the information presented during the meeting would improve patient outcomes.

Summary of Evaluation Questions

Figure 2 displays the mean rating of the Learning objectives for the overall meeting. Participants stated that the meeting led to Significant or Moderate Improvement in the stated learning objectives (Response scale ranges from “1-Not Met” to “4-Significant Improvement”).



As can be seen in the figures below, all of the mean faculty rating scores were between “Good” and “Excellent” (**Figure 3**; response scale ranges from “1-Poor” to “5-Excellent”).

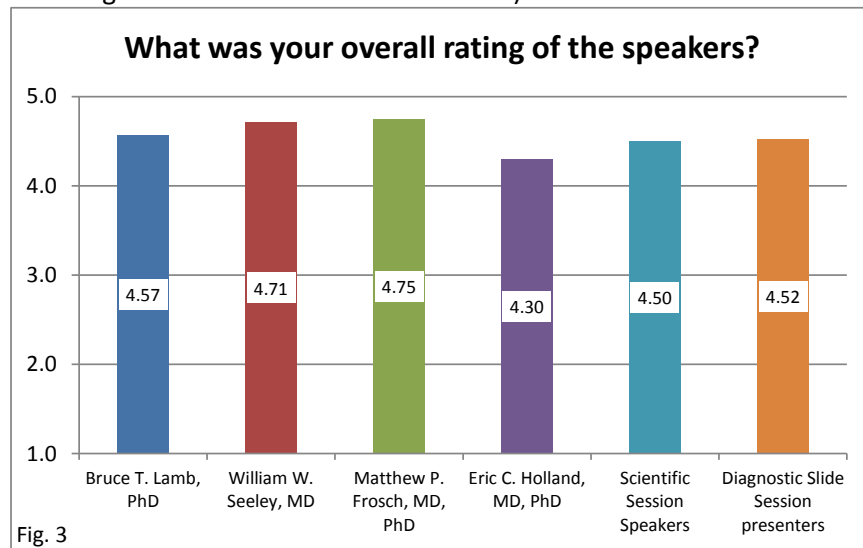
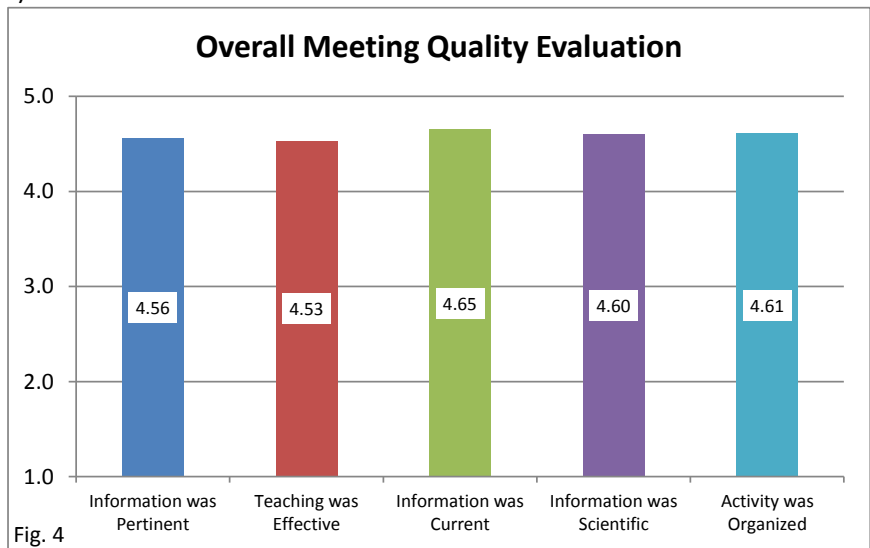
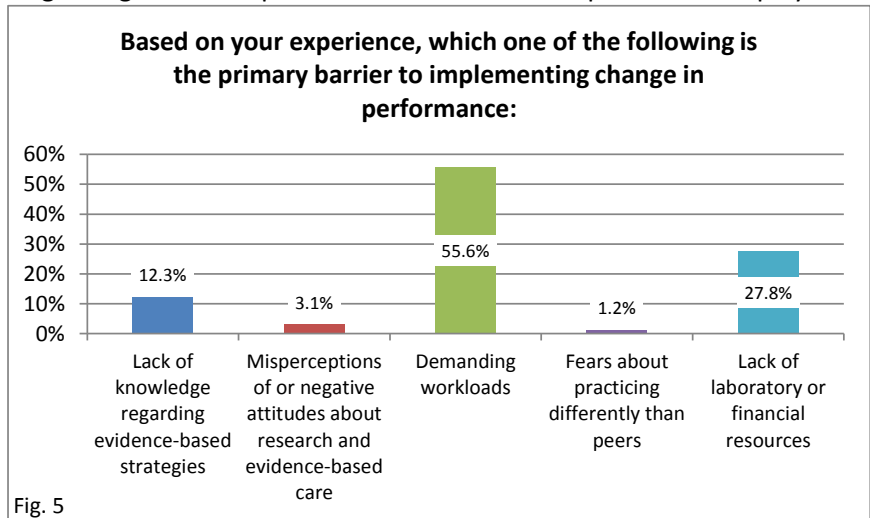


Figure 4 below displays the mean ratings for each of the five questions assessing the participants' evaluations of the quality of the workshop. As can be seen, all ratings are uniformly high indicating that participants felt that (1) the information presented was pertinent to their professional needs, (2) the teaching and learning methods were effective, (3) the information presented was current, (4) the information was presented in a fair and balanced manner with scientific rigor, and (5) the activity was well organized and managed (Response scale ranges from "1-Strongly Disagree" to "5-Strongly Agree"). Additionally, participants indicated that this activity was free from commercial bias (98%).



There was an even response rate for the primary barriers to implementing practice changes. Fifty-six percent (56%) of respondents selected "Demanding Workload" and 28% selected "Lack of Resources" as the primary barriers to implementing changes to their practice. Choices for all responses are displayed in **Figure 5** below.



Conclusion

The 91st Annual Meeting of the American Association of Neuropathologists was a well-received meeting that awarded CME credit to 176 healthcare professionals. Participants were overall very satisfied with the speakers and content presented. Additionally, many learners indicated the likelihood of incorporating the education received at this meeting into their current practice, indicating improved competence and an indication of potential for improved performance.

The following pages describe the results of the formal outcomes studies conducted for both the Presidential Symposium and the Special Course, providing quantitative measures of improved competence among participants.

Presidential Symposium: *Precision Medicine for Dementia*

This CME activity consisted of four presentations by distinguished faculty in the area of dementia. As previously noted, participants' of this activity were physicians and scientists in the field of neuropathology involved in the diagnosis and/or treatment of patients with neurological disorders.

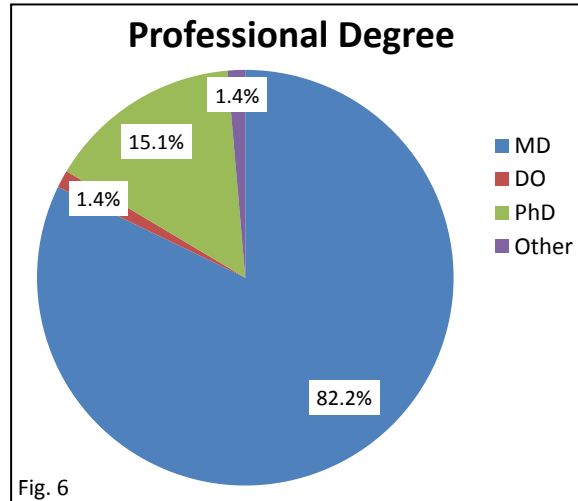
Outcomes metrics developed for this activity was designed to measure the educational effectiveness of the material presented to the learners. A pre-test and post-test were developed consisting of a series of knowledge and case-based competency questions. This delivery method of questions is utilized to measure changes in knowledge and competence of participants.

The Presidential Symposium consisted of the following agenda:

- *Precision Medicine for Dementia*
 - Thomas J. Montine, MD, PhD
University of Washington, Seattle, WA
- *Clinical and Pathologic Complexity*
 - Julie A. Schneider, MD
Rush University Medical Center, Chicago, IL
- *Alzheimer's Disease Genetics: Progress and Promise*
 - Gerard D. Schellenberg, PhD
University of Pennsylvania, Philadelphia, PA
- *Alzheimer's Prevention Initiative*
 - Eric M. Reiman, MD
Banner Health, Phoenix, AZ

Demographics

A total of 117 participants have provided responses to the survey questions of the pre-test, post-test and evaluation. The majority of the participants were medical doctors (82%) with PhD's comprising 15% of the population (**Figure 6**).



Changes in Knowledge (Outcome Level 3)

Seven multiple choice questions were asked during the pre-test and post-test to assess changes in participant knowledge. For all of the knowledge questions (**Figures 7-13**), there was an increase in the number of participants who answered the question correctly for all but questions 4 and 7 (an average increase of 9%). *Correct responses to all questions are noted with **.

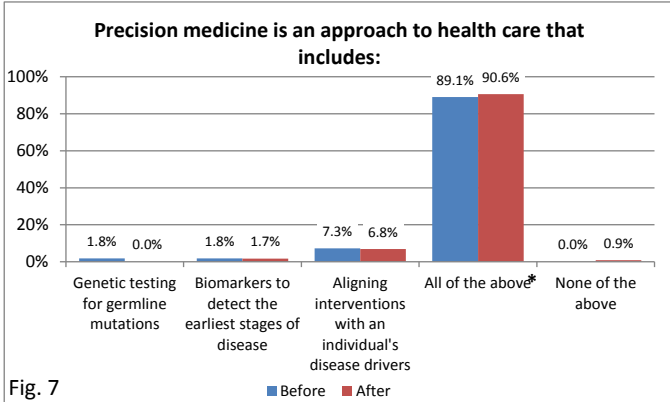


Fig. 7

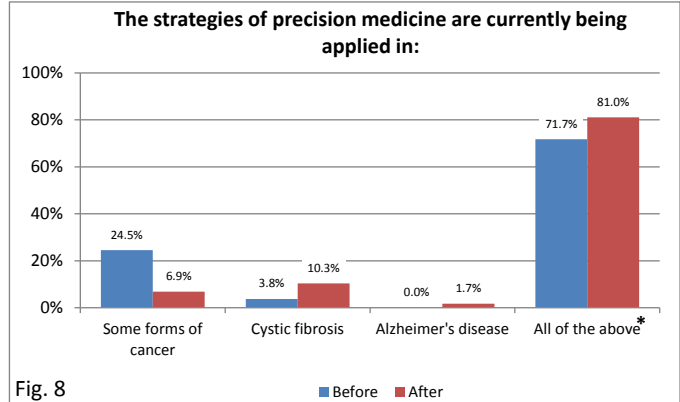


Fig. 8

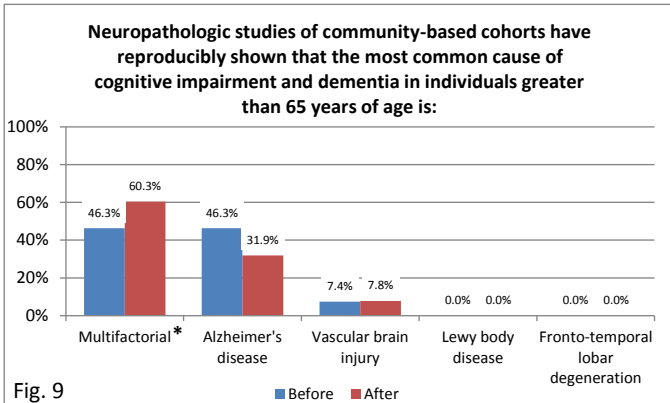


Fig. 9

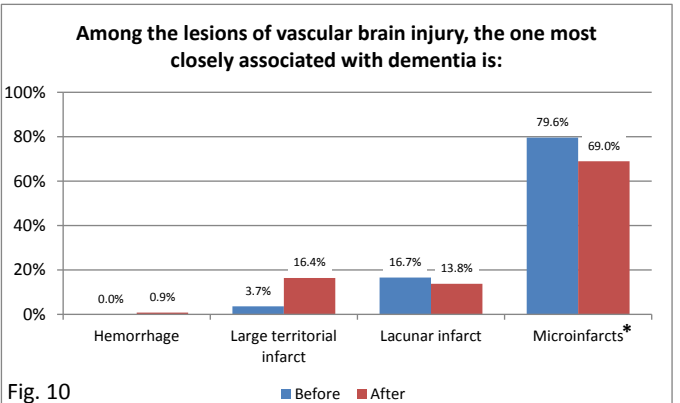


Fig. 10

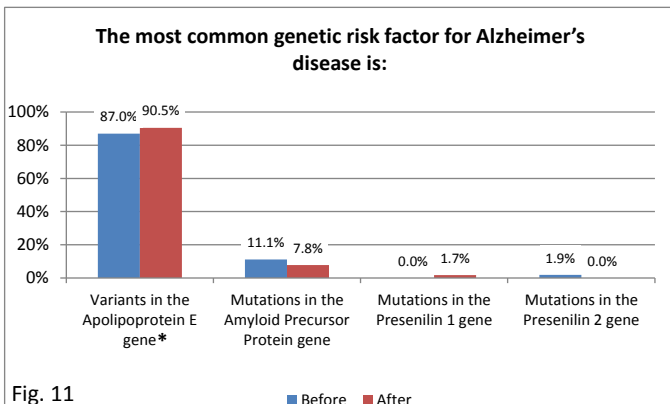


Fig. 11

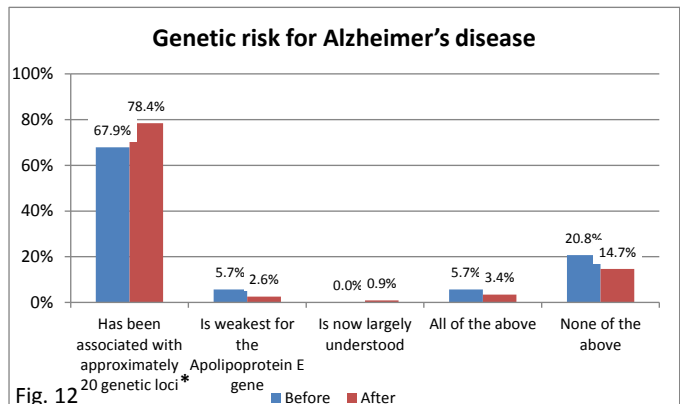
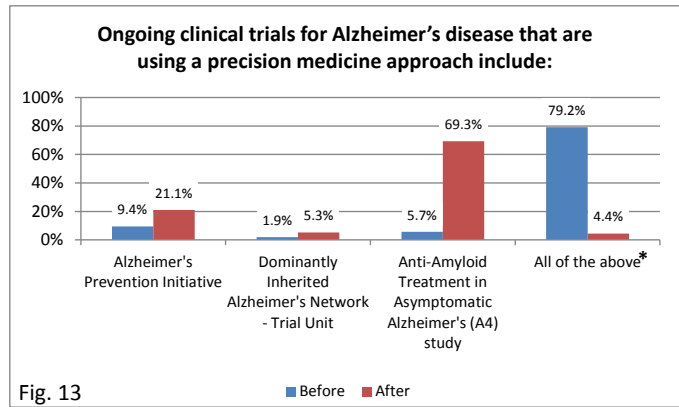


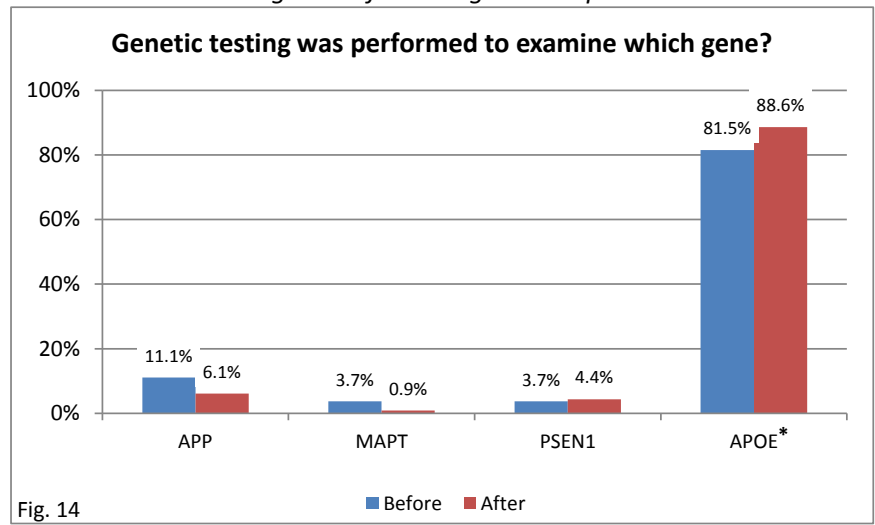
Fig. 12

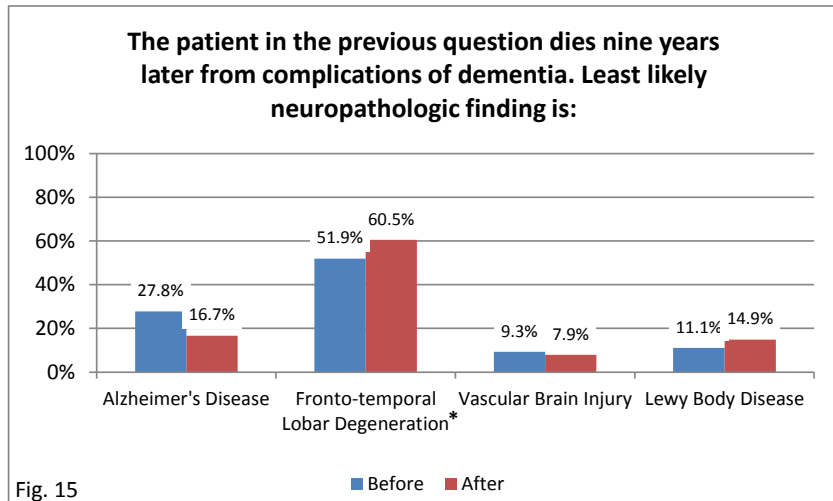


Changes in Competence (Outcome Level 4)

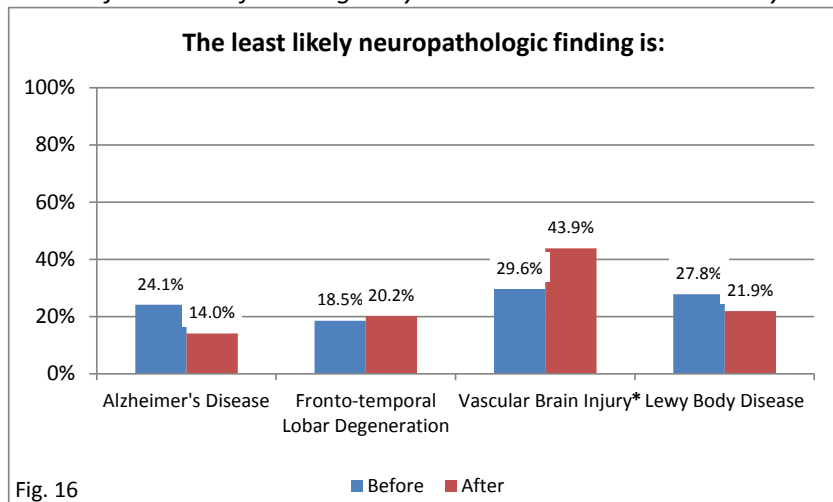
Four case-based questions were developed to measure participant competence. These questions are indicators of how a participant might behave in clinical practice. When compared to the knowledge-based responses, there was a greater increase in measured competence among learners when post-test responses are compared against pre-test responses (**Figures 14-17**). Competence increased by an average of 21% over the four questions, indicating the content directly addressed these topics and was a strong reinforcement of the subject matter. *Correct responses to all questions are noted with *.*

A 76-year-old woman is brought to clinic by her daughter, who is concerned about subjective memory impairment and difficulty with activities that her mother used to do routinely. The patient has no siblings, her father died of heart disease in his 40's, and her mother died of cancer in her 70's. Medical and neuropsychological testing leads to a diagnosis of mild cognitive impairment.

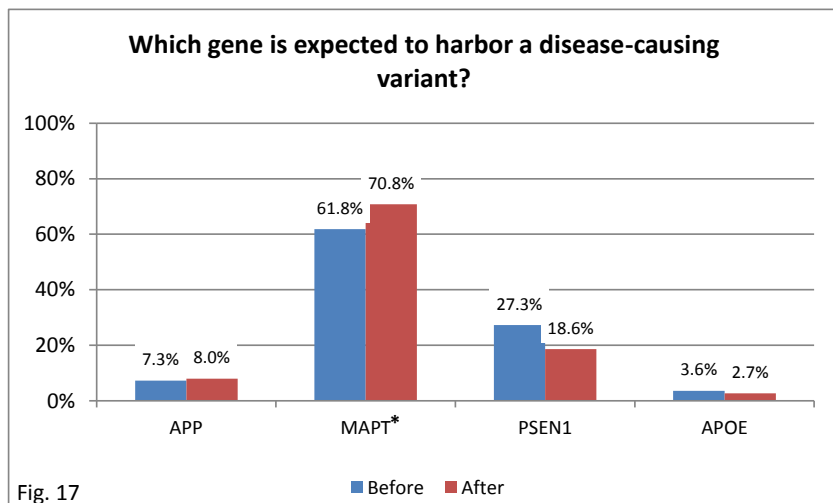




A 49-year-old man died of dementia following a 6-year course that was marked by behavioral problems.



The patient from Figure 16 has a strong history of dementia in his father's family, and his brain autopsy showed marked neurofibrillary degeneration but minimal amyloid plaque accumulation. Genetic testing is requested in order to counsel relatives.



Self-Reported Performance Changes (Outcome Level 4)

In order to measure this level of outcomes we have developed a set of self-reported performance questions, which are built into the evaluation form. Immediately following the Presidential Symposium, 37% of participants indicated the information presented within this activity would cause them to make changes to their research/practice and 92% indicated the information presented during the activity would improve patient outcomes.

Summary of Evaluation Questions (Outcome Levels 1-2)

Figure 18 displays the mean rating of the learning objectives for the Presidential Symposium. Participants stated that the symposium led to Significant or Moderate Improvement in the four stated learning objectives (Response scale ranges from “1-Not Met” to “4-Significant Improvement”).

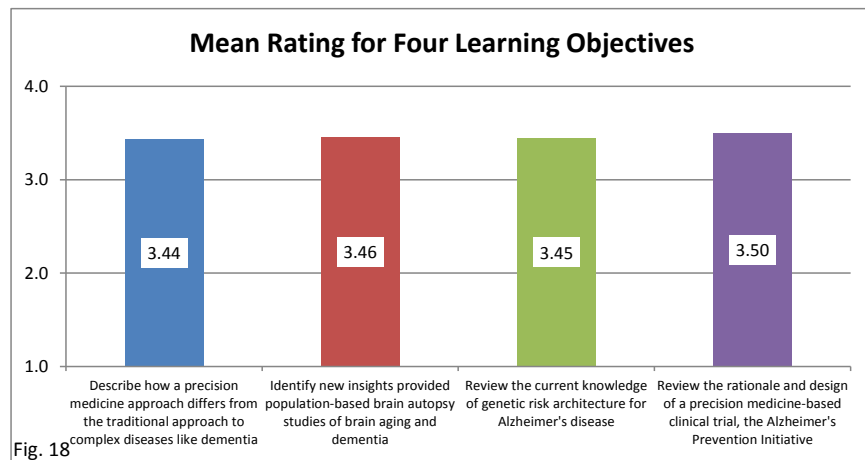


Fig. 18

In addition, as is illustrated in the figure below, the mean faculty rating scores for the Presidential Symposium were between “Good” and “Excellent” (**Figure 19**; Response scale ranges from “1-Poor” to “5-Excellent”).

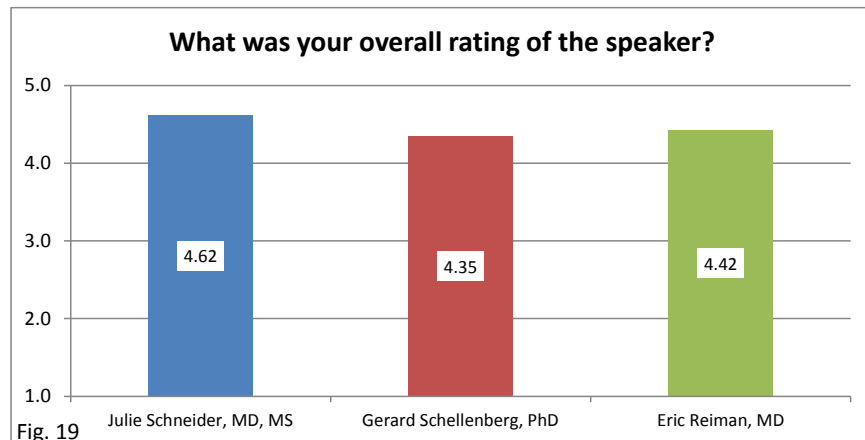


Fig. 19

The figure below displays the mean ratings for each of the six questions assessing participants' evaluations of the quality of the workshop (**Figure 20**). As can be seen, all ratings are uniformly high indicating that participants felt that (1) the information presented was pertinent to their professional needs, (2) the teaching and learning methods were effective, (3) the learning assessment was appropriate, (4) the information presented was current, (5) the information was presented in a fair and balanced manner with scientific rigor, and (6) the activity was well organized and managed. Additionally, participants indicated this activity was free from commercial bias (100%).

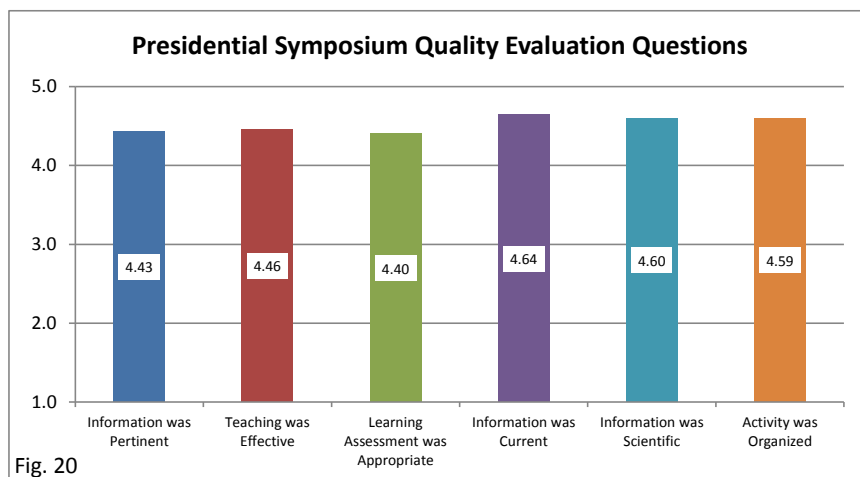


Fig. 20

Almost 70% of respondents selected “Demanding Workload” as the primary barrier to implementing changes to their practice and 27% indicated that “Lack of knowledge regarding evidence-based strategies” as a primary barrier to implementing changes to their practice. Choices for all responses are displayed in **Figure 21** below.

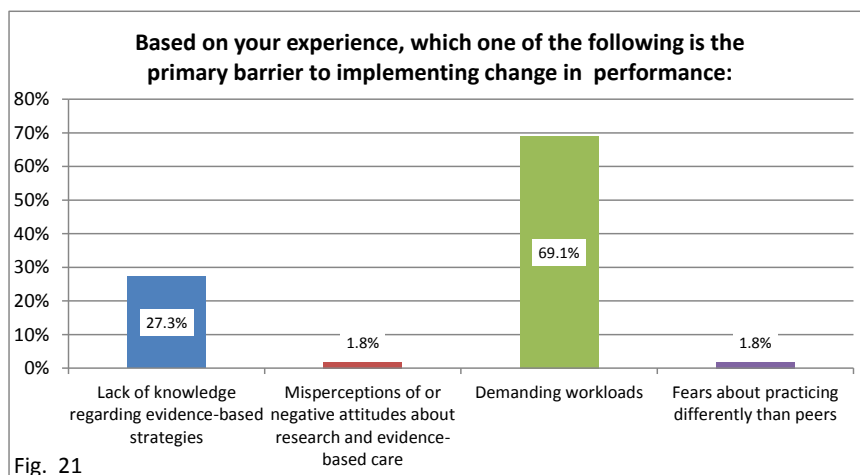


Fig. 21

Conclusion

The Presidential Symposium, *Precision Medicine for Dementia* was a well-received initiative. This educational interventions selected were extremely successful in delivering up-to-date, emerging topics in the area of dementia. Participants' knowledge and competence improved among learners as a result of this education and a number of participants indicated intentions of incorporating the education received, into their current practice.

Special Course:
Morning: Surgical Neuropathology: Reviews and Updates
Afternoon: Recruiting and Training Neuropathologists: Are We Doing a Good Job?

This CME activity consisted of seven presentations by distinguished faculty in the area of neuropathology. Consistent with the previous sessions, participants' of this activity included physicians and scientists in the field of neuropathology involved in the diagnosis and/or treatment of patients with neurological disorders.

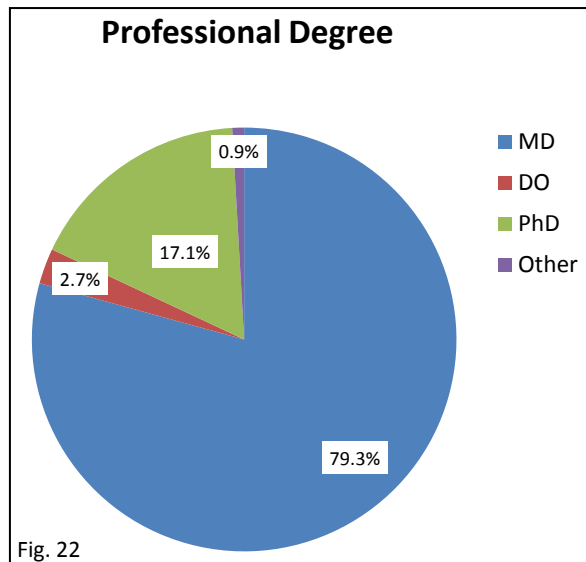
A pre-test and post-test were developed consisting of a series of knowledge and case-based competency questions. This delivery method of questions is utilized to measure changes in knowledge and competence of the learners.

The Special Course consisted of the following agenda:

- *Primary CNS Lymphoma and the So-Called "Pre-Lymphomatous" Conditions*
 - Caterina Giannini, MD, PhD
Mayo Clinic, Rochester, MN
- *Hereditary Non-Amyloid Small Vessel Diseases of the Brain*
 - Francoise Gray, MD, PhD and Elisabeth Tournier-Lasserre, MD
University of Paris, Paris, France
- *What Every Neuropathologist Needs to Know: An Overview of Ophthalmic Pathology for Neuropathologists*
 - Charles G. Eberhart, MD, PhD
Johns Hopkins University, Baltimore, MD
- *What Every Neuropathologist Needs to Know: New Immunomarkers for Practical Diagnosis in Surgical Neuropathology*
 - Arie Perry, MD
University of California, San Francisco, CA
- *How Neuropathologists are Trained – the World View*
 - Marc Del Bigio, MD, PhD
University of Manitoba, Winnipeg, MB, Canada
- *The Future of the Workforce: Can We Make Predictions?*
 - Suzanne Z. Powell, MD
The Methodist Hospital, Houston, TX
- *The Professional Market for Neuropathology Trainees – Round Table*
 - Jeffrey A. Golden, MD
Brigham and Women's Hospital, Boston, MA
 - Dennis W. Dickson, MD
Mayo Clinic, Jacksonville, FL
 - Elizabeth J. Cochran, MD
Medical College of Wisconsin, Milwaukee, WI
 - Brian E. Moore, MD
Southern Illinois University School of Medicine, Springfield, IL

Demographics

A total of 164 participants have provided responses to the survey questions of the pre-test, post-test and evaluation. The majority of the participants were medical doctors (79%) and 17% participants listing PhD (*Figure 22*).



Changes in Knowledge (Outcome Level 3)

Three multiple choice questions were asked during the pre-test and post-test to assess changes in participant knowledge and for two out of the three questions there was an increase in the number of participants who answered these questions correctly after the education. The percentage of correct responses for these three knowledge questions increased by an average of 62% from the pre-test to post-test (**Figures 23-25**). This indicates that the education excelled at providing the learners with the information necessary to understand the topics being presented. *Correct responses to all questions are noted with **.

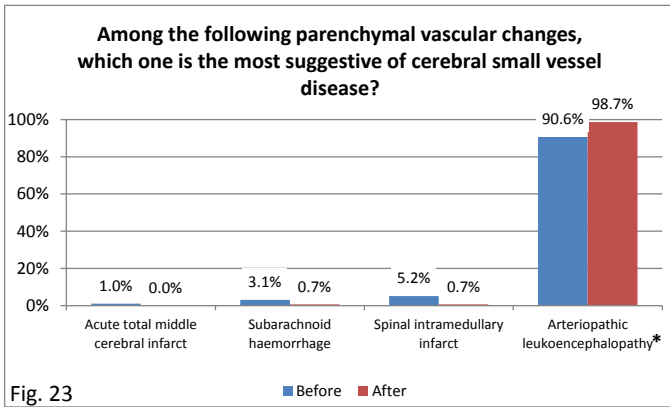


Fig. 23

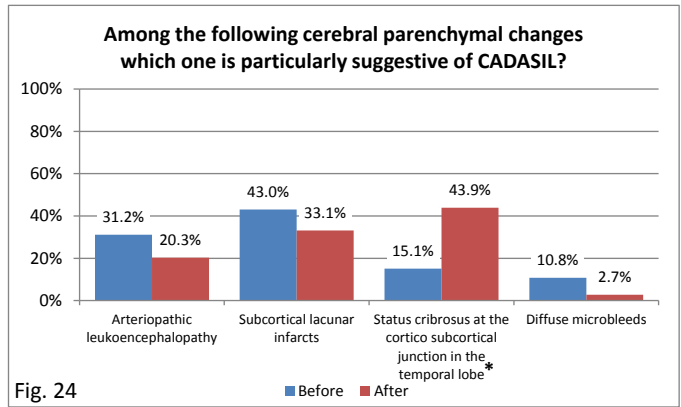


Fig. 24

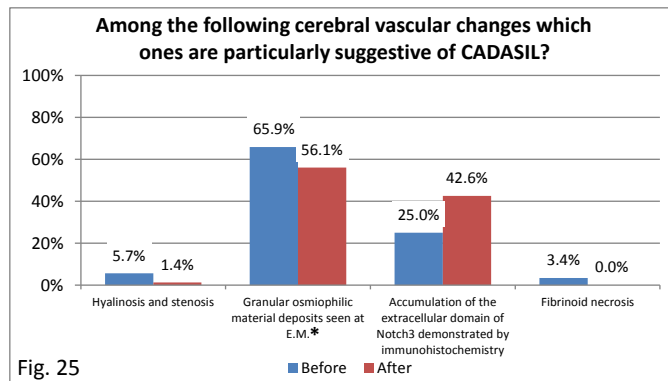
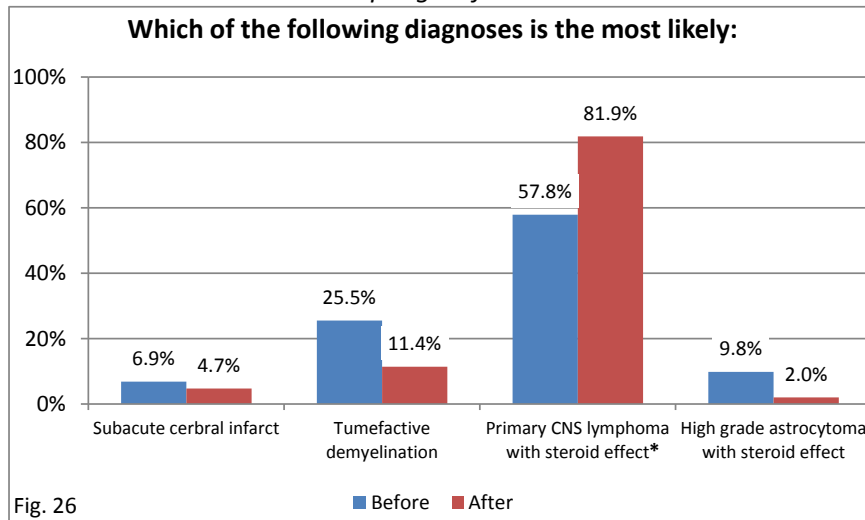


Fig. 25

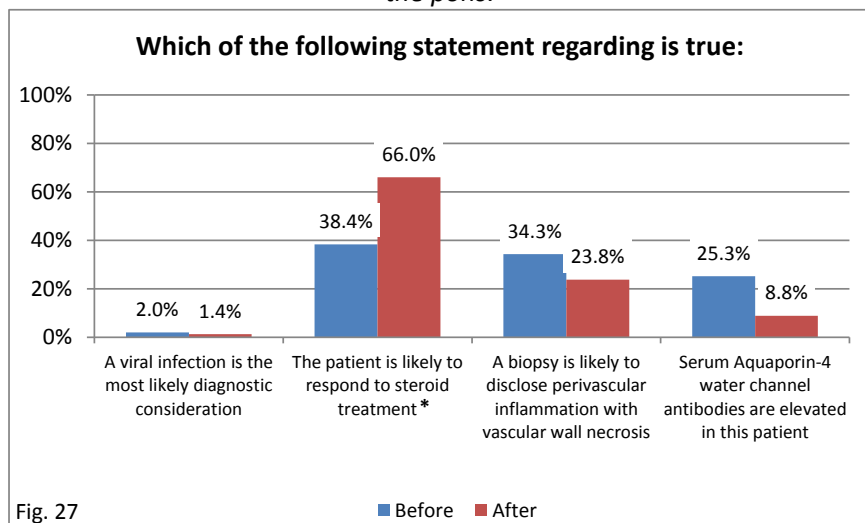
Changes in Competence (Outcome Level 4)

Seven cases were developed to measure immediate change in participant competence. Once again, similar to responses regarding the knowledge questions, a measured increase in competence (average of 36%) can be seen across learners when comparing post-test responses to pre-test responses (**Figures 26-32**). Competence across learners increased across all but case scenario #6, indicating the content directly reinforced the subject matter and addressed the topics tested. *Correct responses to all questions are noted with **.

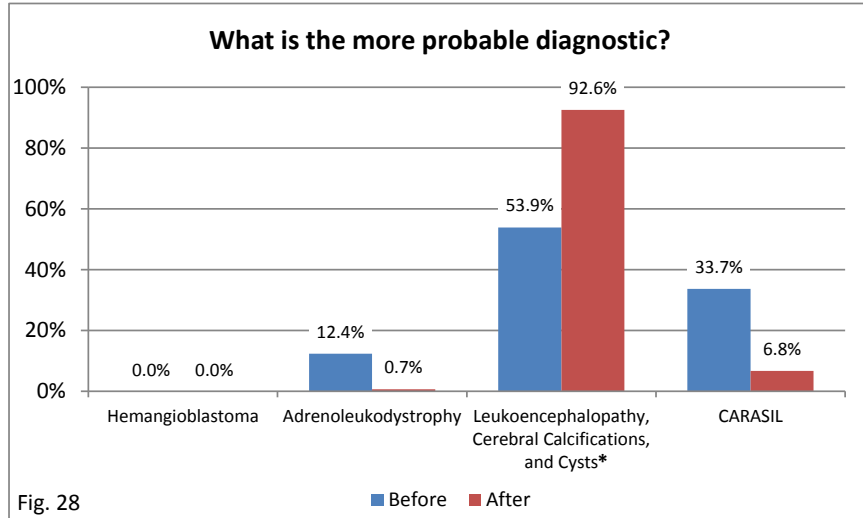
A 65-year-old woman presents to the emergency room on Friday night with a severe right hemiparesis and a large densely enhancing mass involving the left hemisphere and corpus callosum associated with marked edema. A biopsy is obtained on Monday, which shows white matter with scattered large atypical cells and extensive macrophage infiltration.



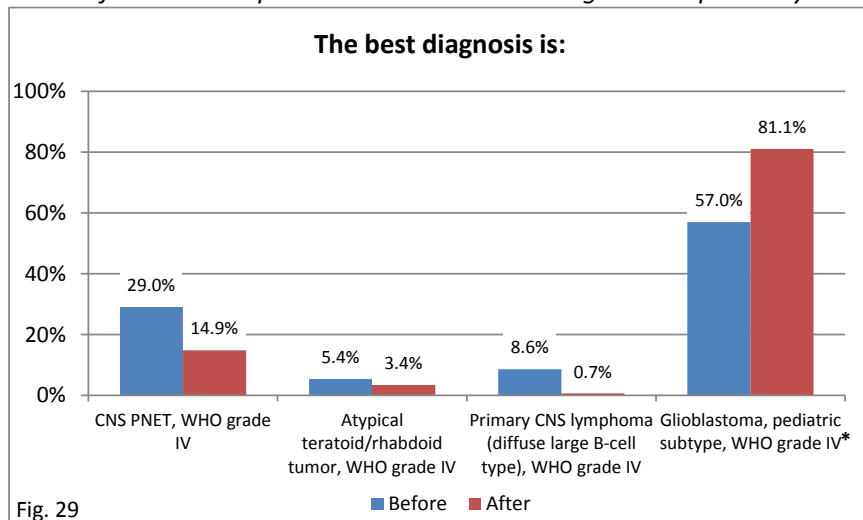
A 45-year old woman presents with subacute gait ataxia and diplopia as well as altered sensation of the face. The imaging discloses distinct findings with punctate, curvilinear, perivascular gadolinium enhancement centered in the pons.



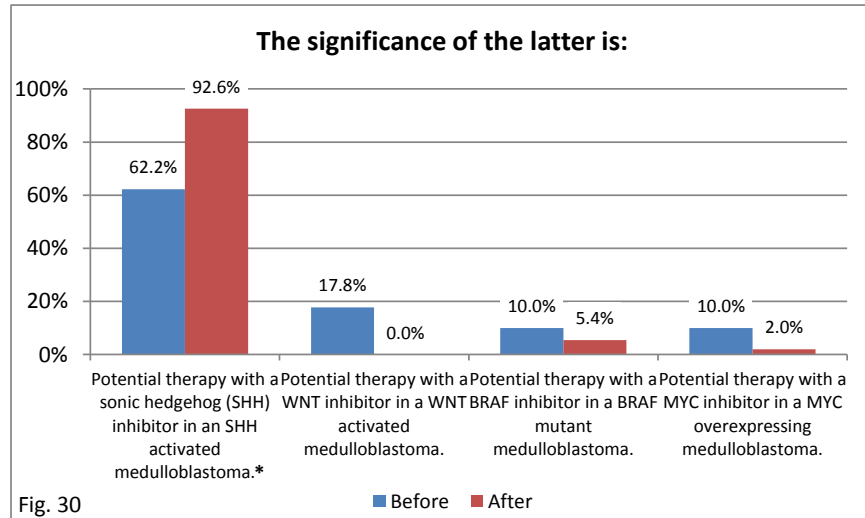
A 9 y.o. girl was referred to for headaches and seizures with progressive worsening. Head CT and brain MRI demonstrated extensive cerebral and cerebellar white matter leukoencephalopathy, cysts, and calcifications, with multifocal areas of enhancement. Family study revealed consanguinity in the parents but no neurological history.



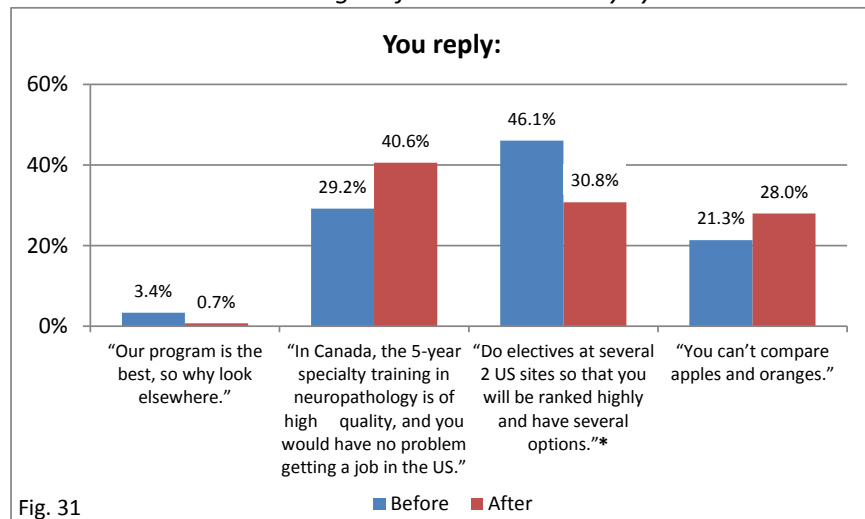
A 12-yo boy presents with a contrast enhancing thalamic mass. A stereotactic biopsy is performed and shows a highly cellular, poorly differentiated neoplasm with small hyperchromatic nuclei, high mitotic index, and necrosis. An immunostain for H3 K27M protein demonstrates strong nuclear positivity in tumor cells.



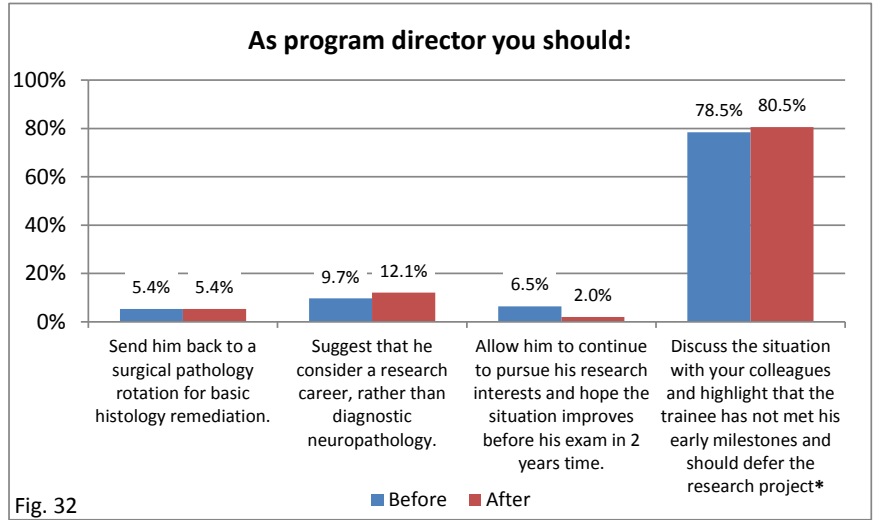
A 2-yr boy presents with a cerebellar mass and evidence of spinal drop metastases. Histology shows sheets of small poorly differentiated tumor cells with high mitotic index, nuclear molding, pyknotic nuclei, and foci of necrosis. There is a focally nodular quality with increased synaptophysin expression noted within these nodules and increased reticulin deposition in between the nodules. An additional stain for GAB1 shows positivity mainly between the nodules.



XY is a medical student (at a US medical school) with a keen interest in neuropathology. He has Canadian citizenship and is considering going back to Canada for his residency but would like to work in the US. You are the program director of the local (US) neuropathology training program, so he asks your opinion about the advantages and disadvantages of the two residency systems.



Dr. XY is now an early third year resident in a US-based neuropathology program. He is deeply involved in research projects directed by other clinical faculty members and is interested in publishing his work. However, he still has difficulty describing the basic histologic features of glioblastoma at the microscope.

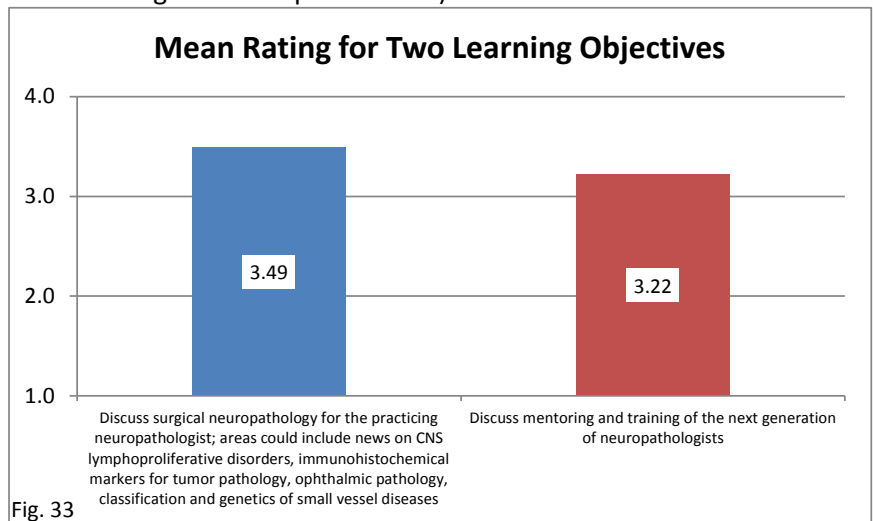


Self-Reported Performance Changes (Outcome Level 4)

Immediately following the Special Course, 64% of participants indicated the information presented within this session would cause them to make changes to their practice, and 95% indicated the information presented during the activity would improve patient outcomes.

Summary of Evaluation Questions (Outcome Levels 1-2)

Figure 33 displays the mean rating of the learning objectives for the Special Course. Participants stated that the special course led to Significant or Moderate Improvement in the five stated learning objectives (Response scale ranges from “1-Not Met” to “4-Significant Improvement”).



In addition, as is illustrated in the figure below, the mean faculty rating scores for the Special Course were between “Good” and “Excellent” (**Figure 34**; Response scale ranges from “1-Poor” to “5-Excellent”).

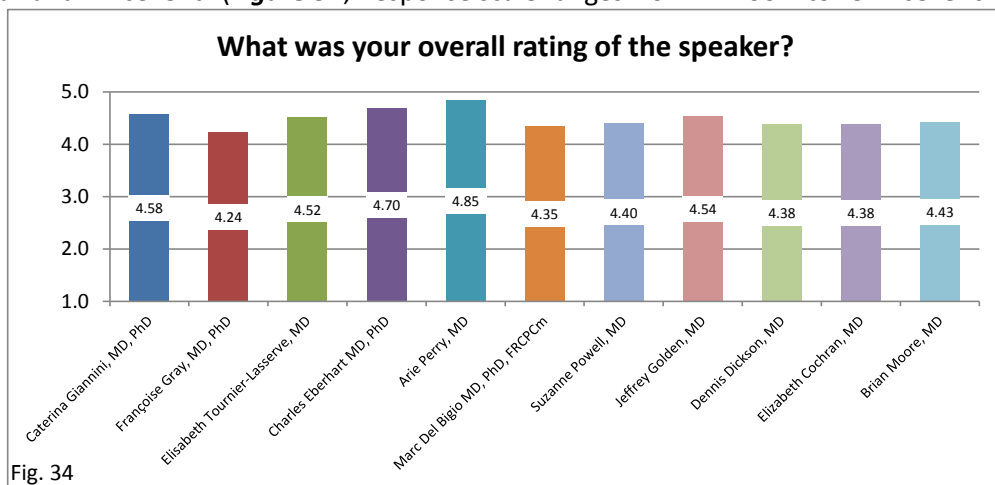


Fig. 34

The figure below displays the mean ratings for each of the six questions assessing participants’ evaluations of the quality of the course (**Figure 35**). As can be seen, all ratings are uniformly high indicating that participants felt that (1) the information presented was pertinent to their professional needs, (2) the teaching and learning methods were effective, (3) the learning assessment was appropriate, (4) the information presented was current, (5) the information was presented in a fair and balanced manner with scientific rigor, and (6) the activity was well organized and managed. Additionally, participants indicated this activity was free from commercial bias (100%).

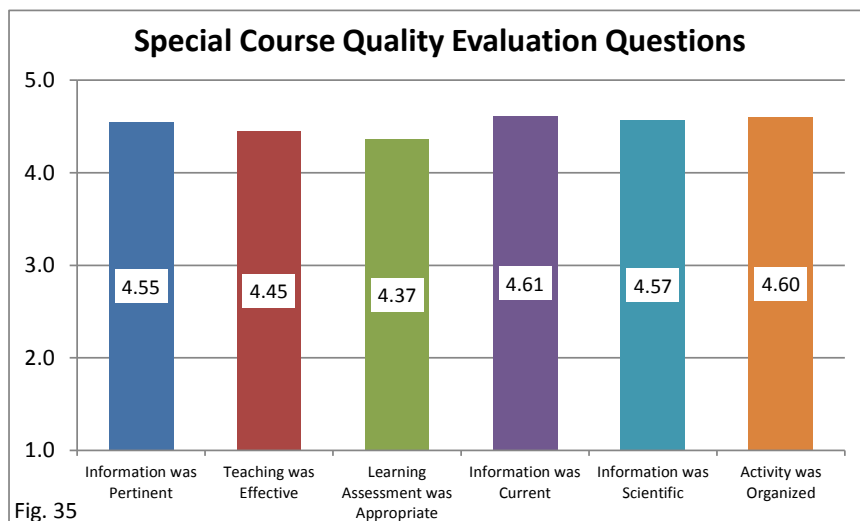
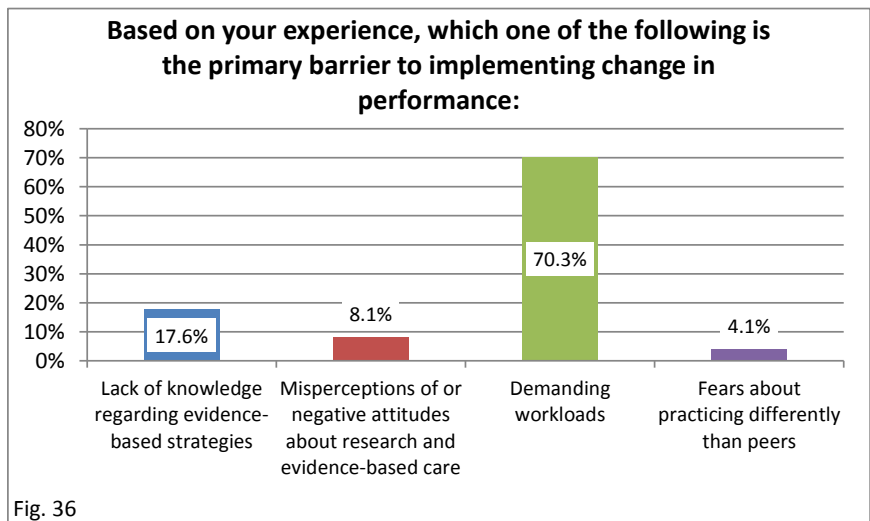


Fig. 35

Seventy percent (70%) of respondents selected “Demanding Workload” as the primary barrier to implementing changes to their practice. Choices for all responses are displayed in **Figure 36** below.



Conclusion

The Special Course: *Surgical Neuropathology: Reviews and Updates and Recruiting and Training Neuropathologists: Are We Doing a Good Job?* was also a well-received session. Evaluation data validates that this educational format was extremely successful at delivering up-to-date emerging topics in the area of neuropathology. Participants improved both their knowledge and competence as a result of the education. Additionally, many learners indicated they were likely to incorporate the education received into their current practice.