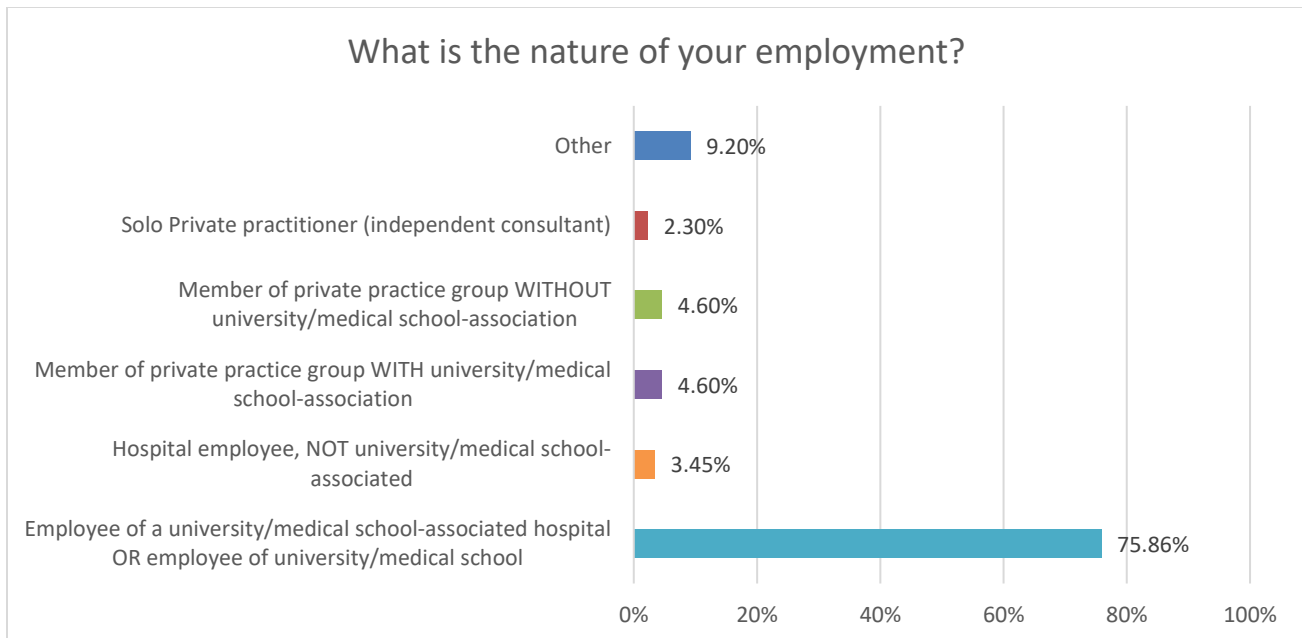
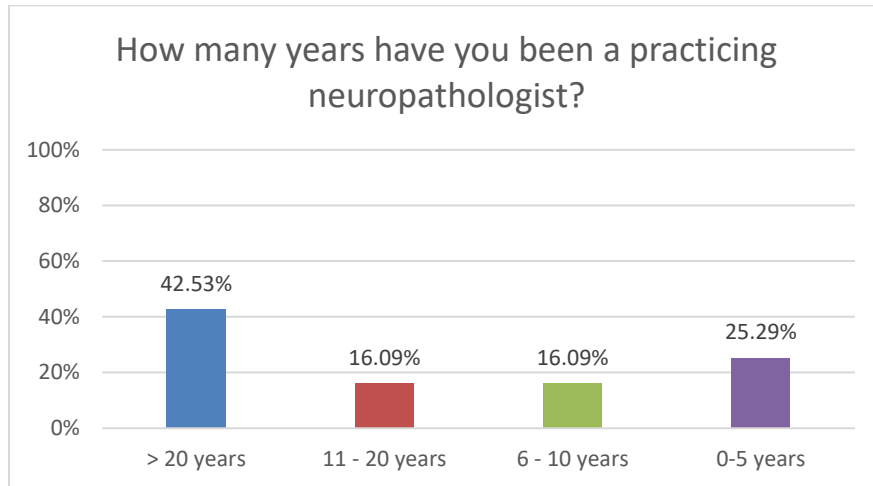


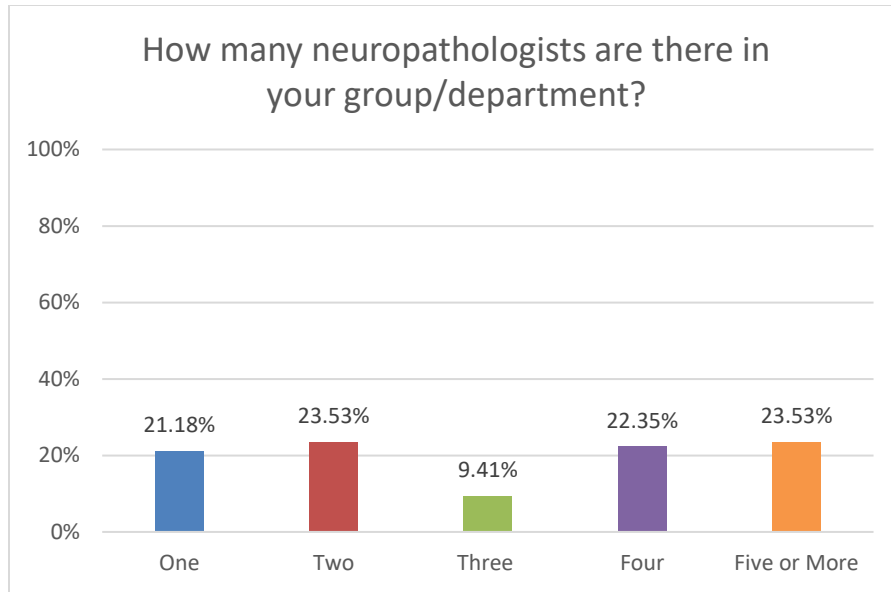
AOE Analysis of AANP’s Fall 2019 Membership Survey

A survey was sent to the membership base of the American Association of Neuropathologists (AANP) in the fall of 2019. This survey is used for planning of future annual meeting topics by providing a better understanding of current neuropathology practice characteristics. A total of 107 members provided responses to the 29 clinical assertion statement questions within the survey and the summary of these results are described below.

The survey asked individuals to provide responses to demographic questions to help further contextualize the results, as found below.



Other includes: Retired (4), Government Employee (1), Not doing neuropathology now (1), Neuropath Fellow (1), University Research Activity (1)



Clinical Assertion Statements

The survey asked members to rate 29 different clinical assertion questions using a 5-point Likert-type scale from 1=Disagree Completely to 5=Agree Completely, with a neutral option of 3=Neither Disagree nor Agree. These questions were developed to determine a member's level of knowledge regarding nine separate topics in neuropathology. Data is presented as mean +/- standard deviation.

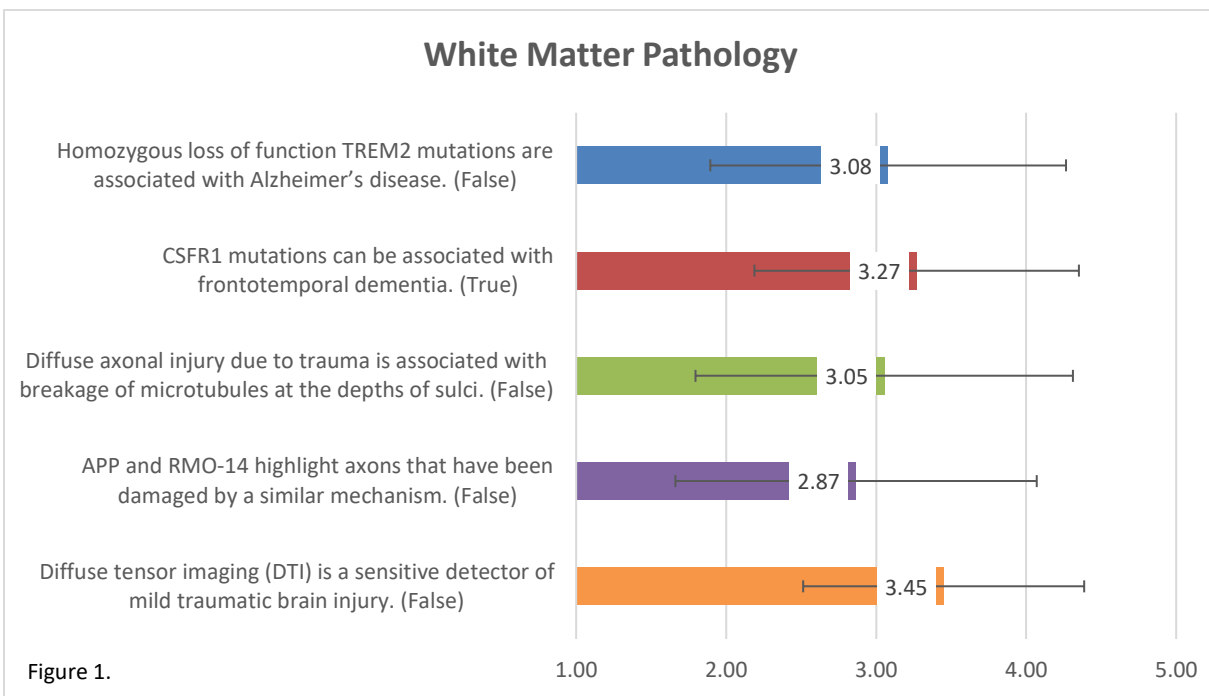


Figure 1 provides the results for the five questions evaluating knowledge in the area of **white matter pathology**. Statements one, three, four and five are false while statement two is true. Statements two and four had mean scores in the desired direction. Statement five had a mean score on the incorrect side of the scale. Statements one and three had mean scores close to the neutral position which may indicate where additional education is appropriate. In sum, areas of appropriate additional education include:

- Homozygous loss of function TREM2 mutations are associated with Alzheimer’s disease. (False statement, mean score of 3.08)
- Diffuse axonal injury due to trauma is associated with breakage of microtubules at the depths of sulci. (False statement, mean score of 3.05)
- Diffuse tensor imaging (DTI) is a sensitive detector of mild traumatic brain injury. (False statement, mean score of 3.45)

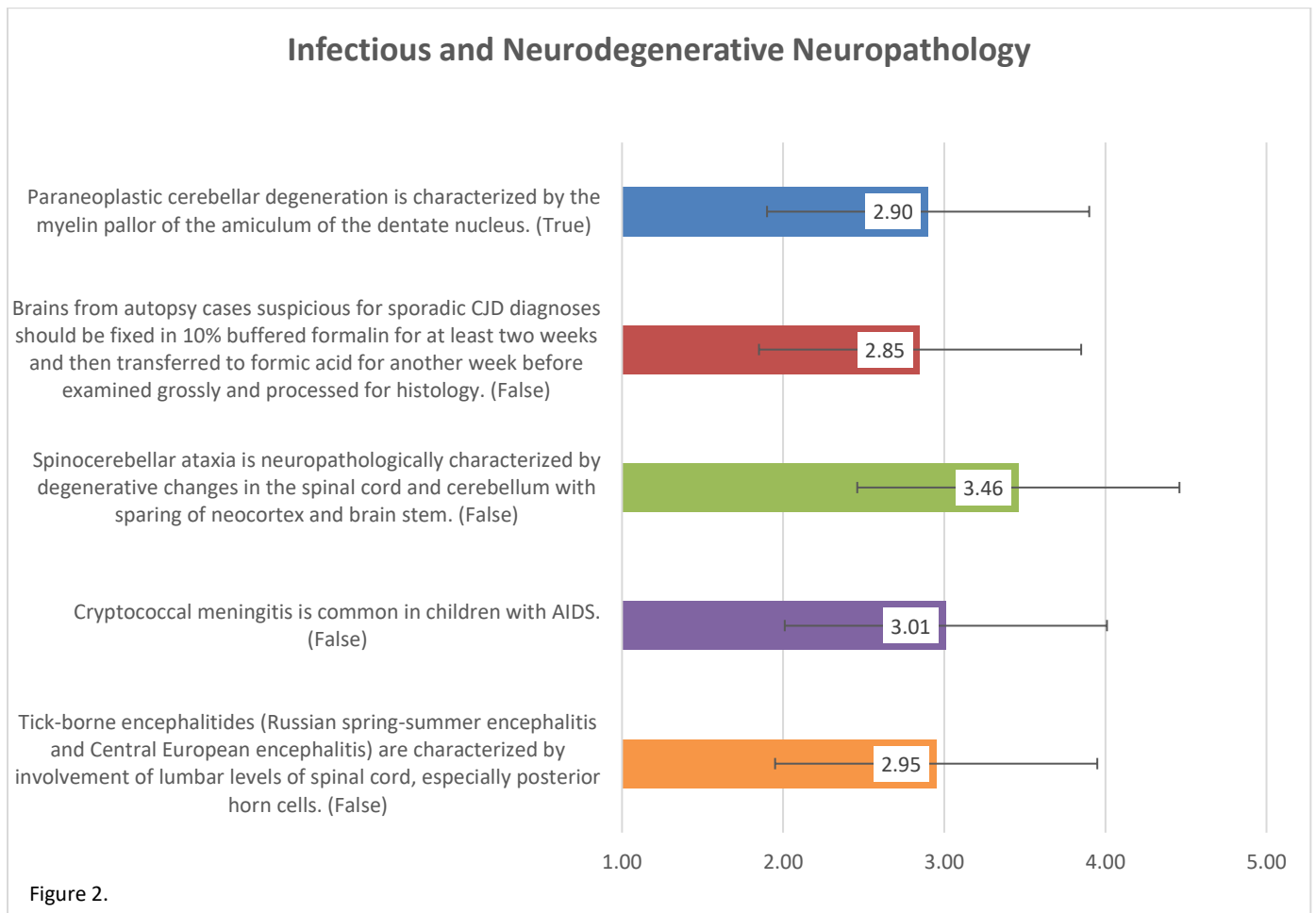


Figure 2 provides the results for the five questions evaluating knowledge in the area of **infectious and neurodegenerative neuropathology**. Statements two through five are false while statement one is true. Statements two and five had a mean score in the desired direction, however, statement five had 56% of respondents answer in the neutral position indicating education is appropriate related to statement five. Statements one and three had a mean score on the incorrect side of the scale indicating where additional education is appropriate. Statement four had a mean score close to the neutral position. In sum, areas of appropriate additional education include:

- Paraneoplastic cerebellar degeneration is characterized by the myelin pallor of the arbor vitae of the dentate nucleus. (True statement, mean score of 2.90)
- Spinocerebellar ataxia is neuropathologically characterized by degenerative changes in the spinal cord and cerebellum with sparing of neocortex and brain stem. (False statement, mean score of 3.46)
- Cryptococcal meningitis is common in children with AIDS. (False statement, mean score of 3.01)
- Tick-borne encephalitis (Russian spring-summer encephalitis and Central European encephalitis) are characterized by involvement of lumbar levels of spinal cord, especially posterior horn cells. (False statement, mean score of 2.95, 56% of respondents in neutral position)

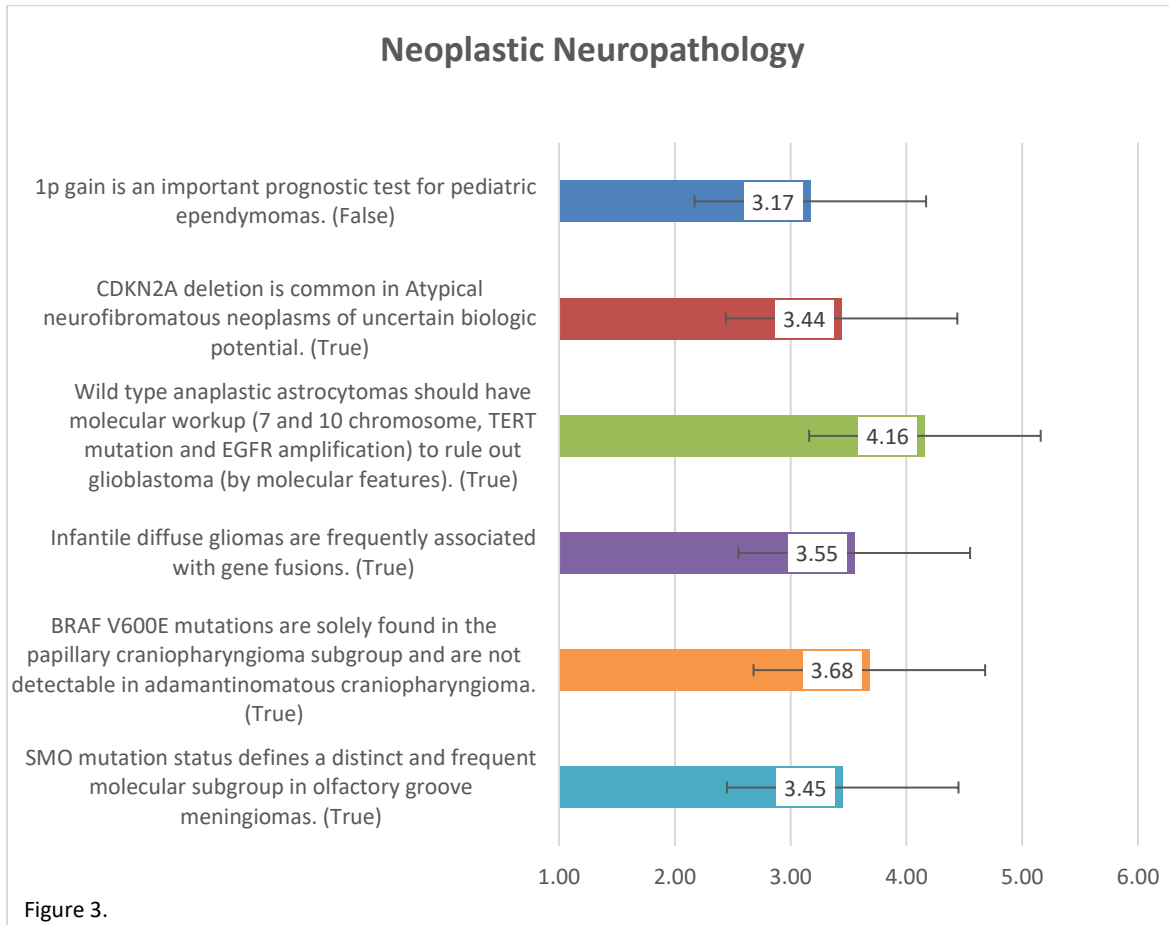


Figure 3.

Figure 3 provides the results for the six questions evaluating knowledge in the area of **neoplastic neuropathology**. Statements two through six are true while statement one is false. Members selected responses in the desired direction for statements two through six, however, statement two had 51% of respondents answer in the neutral position indicating education is appropriate related to statement two. Statement one had a mean score on the incorrect side of the scale indicating where additional education is appropriate. In sum, areas of appropriate additional education include:

- 1p gain is an important prognostic test for pediatric ependymomas. (False statement, mean score of 3.17)
- CDKN2A deletion is common in Atypical neurofibromatous neoplasms of uncertain biologic potential. (True statement, mean score of 3.44, 51% of respondents in neutral position)

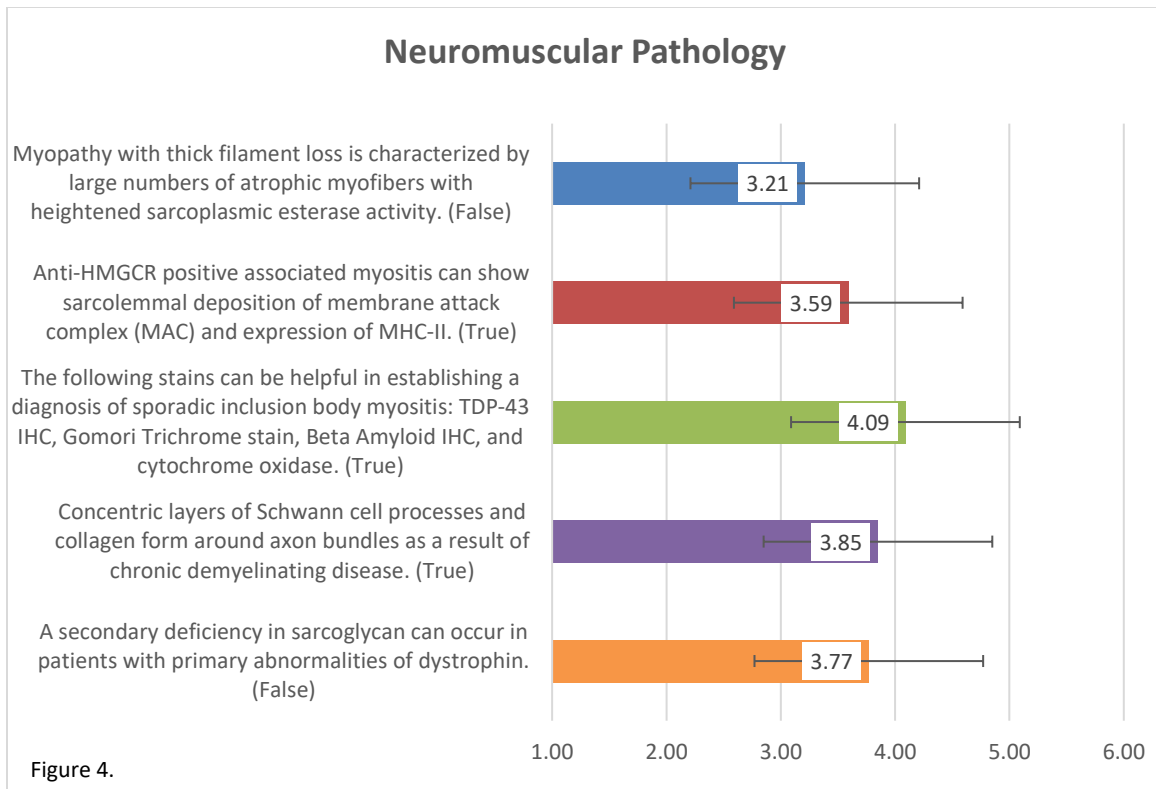


Figure 4 provides the results for the five questions evaluating knowledge in the area of **neuromuscular pathology**. Statements one and five are false while statements two, three and four are true. Members selected responses in the desired direction for questions two, three and four in the area of neuromuscular pathology. Statements one and five had a mean score on the incorrect side of the scale indicating where additional education is appropriate:

- Myopathy with thick filament loss is characterized by large numbers of atrophic myofibers with heightened sarcoplasmic esterase activity. (False statement, mean score of 3.21)
- A secondary deficiency in sarcoglycan can occur in patients with primary abnormalities of dystrophin. (False statement, mean score of 3.77)

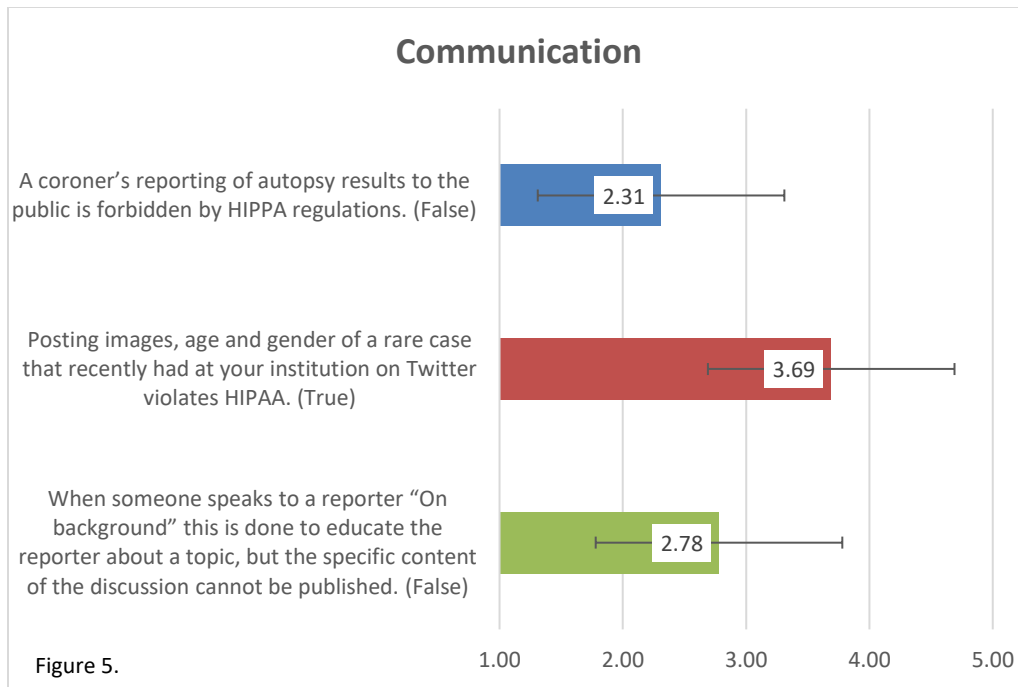


Figure 5 provides the results for the three questions evaluating knowledge in the area of **communication**. Statement one and statement three are false. Statement two is true. All three statements had mean scores in the desired direction. However, statement three had 64% of respondents answer either incorrectly or in the neutral position indicating that education may be appropriate related to statement three. In sum, areas of appropriate additional education include:

- When someone speaks to a reporter "On background" this is done to educate the reporter about a topic, but the specific content of the discussion cannot be published. (False statement, mean score of 2.78, 64% of respondents answered incorrectly or in the neutral position)

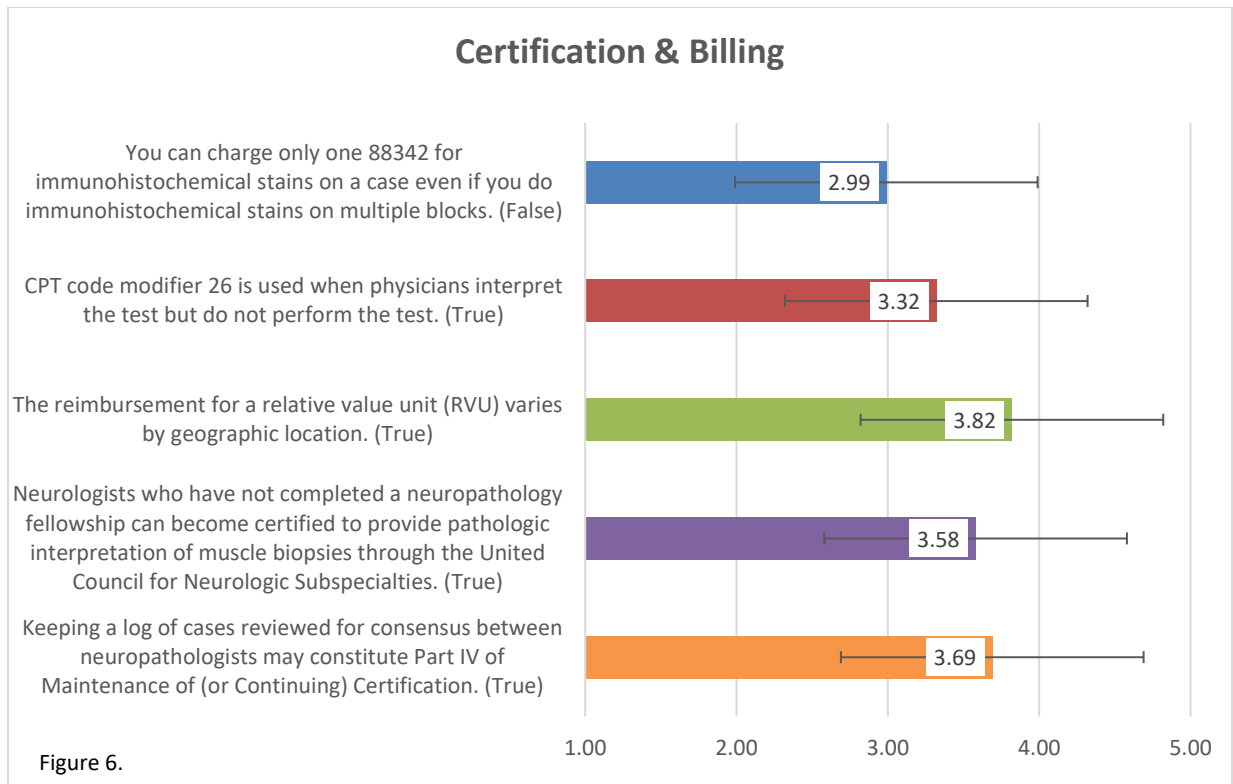


Figure 6 provides the results for the five questions evaluating knowledge in the area of **certification and billing**. Statements two through five are true while statement one is false. Statement one had a mean score close to the neutral position which may indicate additional education is appropriate. Statements two through five had mean scores in the desired direction, however, statement two had 75% of respondents answer in the neutral position, indicating education is appropriate. In sum, areas of appropriate additional education include:

- You can charge only one 88342 for immunohistochemical stains on a case even if you do immunohistochemical stains on multiple blocks. (False statement, mean score of 2.99)
- CPT code modifier 26 is used when physicians interpret the test but do not perform the test. (True statement, mean score of 3.32, 75% of respondents in the neutral position)

Conclusion:

Based on the analysis of the 2019 Membership Survey, there were some statements where responses were close to neutral and many respondents answered in the neutral position which provides areas where there may be need for additional education. Further, several scores were on the opposite/wrong side of the scale. Both situations indicate that the following are areas of need for additional education:

- **White Matter Pathology:**
 - Neutral: Homozygous loss of function TREM2 mutations are associated with Alzheimer’s disease. (False statement, mean score of 3.08)
 - Neutral: Diffuse axonal injury due to trauma is associated with breakage of microtubules at the depths of sulci. (False statement, mean score of 3.05)
 - Diffuse tensor imaging (DTI) is a sensitive detector of mild traumatic brain injury. (False statement, mean score of 3.45)

- **Infectious and Neurodegenerative Neuropathology:**
 - Paraneoplastic cerebellar degeneration is characterized by the myelin pallor of the arbor vitae of the dentate nucleus. (True statement, mean score of 2.90)
 - Spinocerebellar ataxia is neuropathologically characterized by degenerative changes in the spinal cord and cerebellum with sparing of neocortex and brain stem. (False statement, mean score of 3.46)
 - Neutral: Cryptococcal meningitis is common in children with AIDS. (False statement, mean score of 3.01)
 - Neutral: Tick-borne encephalitides (Russian spring-summer encephalitis and Central European encephalitis) are characterized by involvement of lumbar levels of spinal cord, especially posterior horn cells. (False statement, mean score of 2.95, 56% of respondents in neutral position)

- **Neoplastic Neuropathology:**
 - 1p gain is an important prognostic test for pediatric ependymomas. (False statement, mean score of 3.17)
 - Neutral: CDKN2A deletion is common in Atypical neurofibromatous neoplasms of uncertain biologic potential. (True statement, mean score of 3.44, 51% of respondents in neutral position)

- **Communication**
 - Incorrect or Neutral: When someone speaks to a reporter “On background” this is done to educate the reporter about a topic, but the specific content of the discussion cannot be published. (False statement, mean score of 2.78, 64% of respondents answered incorrectly or in the neutral position)

- **Neuromuscular Pathology:**
 - Myopathy with thick filament loss is characterized by large numbers of atrophic myofibers with heightened sarcoplasmic esterase activity. (False statement, mean score of 3.21)
 - A secondary deficiency in sarcoglycan can occur in patients with primary abnormalities of dystrophin. (False statement, mean score of 3.77)

- **Certification & Billing:**
 - Neutral: You can charge only one 88342 for immunohistochemical stains on a case even if you do immunochemical stains on multiple blocks. (False statement, means score of 2.99)
 - Neutral: CPT code modifier 26 is used when physicians interpret the test but do not perform the test. (True statement, mean score of 3.32, 75% of respondents in the neutral position)