Questions Posed to the Consensus Working Group at the In-Person Meeting With Results:

Commas separate results from multiple vote iterations

1. Steroids should not be used as a routine therapy for the treatment of severe TBI
   a) Agree – 100%
   b) Disagree – 0%

2. Should we replace the statement shown below with individual statements?

   Details of mannitol and HS dosing to be dealt with later
   - "Bolus treatment with IV Mannitol"
   - "Bolus treatment with IV Hypertonic Saline"

   a) Yes – 61%
   b) No – 39%

3. For Tier One Interventions for ICP-Only Algorithm, should we replace the statement shown below with individual statements?

   Details of mannitol and HS dosing to be dealt with later
   - "Bolus treatment with IV Mannitol"
   - "Bolus treatment with IV Hypertonic Saline"

   a) Separate – 94%
   b) Group – 6%

4. For Tier One Interventions for ICP-Only Algorithm, should Tier 1 " maintain normothermia"?
   a) Yes – 97%
   b) No – 3%

5. "Consider anti-seizure medications for 1 week only (85%)"
   We will address EEG separately

   Should we add this statement here at Tier 1 & 0
   a) Yes – 94%
   b) No – 4%

6. We added "Consider EEG monitoring (94%)"

   Should we add this statement here at Tier 1
   (and to Type B Tier 1)?

   a) Yes, add this statement here at Tier 1 (and to Type B Tier 1) – 94%
   b) No, this belongs at another Tier – 0%
   c) No, this does not belong here or in Type B – 6%

7. For tier 1 should we include 'CSF drainage (if EVD available)'?

a) Yes – 97%
b) No – 3%

8. For tier 1 should we include 'Consider placement of an EVD to drain CSF'?
   a) Yes – 94%
   b) No – 6%

9. Should we maintain CPP 60 – 70 as a Tier 1 parameter?
   a) Yes – 97%
   b) No – 3%

10. Should we put an autoregulation - related CPP manipulation into Tier 2?
    a) Yes – 87.5%
    b) No – 12.5%

11. Should the following language be added to Inter Tier

    Reexamine the patient and consider Repeat CT to reevaluate intracranial pathology
    a) Yes – 100%
    b) No – 0%

12. Should the following language be added to Inter Tier: Reconsider surgical options for potentially surgical lesions
    a) Yes – 100%
    b) No – 0%

13. Should the following language be added to Inter Tier: Consider extracranial causes of ICP elevation as an Inter-Tier recommendation
    a) Yes – 100%
    b) No – 0%

14. Should "Neuromuscular paralysis in adequately sedated patients if trial is effective" be a Tier 2 option?
    Voted in at 91% at Tier 3 for ICP-Only algorithm

    A YES vote would be to move it to Tier 2
    a) Yes – moves it to Tier 2 – 81%
    b) No – should be Tier 3 – 19%
    c) No – should not be used – 0%

15. Mild hypocapnia
    a) Tier 2 – 56%
    b) Tier 3 – 25%
    c) No – Should not be used for ICP control – 19%

16. Mild hypocapnia
    a) Tier 2 – 76%, 88%
    b) Tier 3 – 24%, 12%

17. Mild hypocapnia definition
    a) 30-35 – 16.7%
    b) 32-35 – 60.0%
    c) 33-35 – 23.3%

18. Mild hypocapnia definition
    a) 32-35 – 84%
    b) 33-35 – 16%

19. Should “Adjust temperature to 35 - 37º C, using active cooling measures” be a Tier 2 option for ICP-Only patients?

    Tier 2 in BOOST3 and NY Algorithm
    Tier 3 for Type B in combined algorithm (84%)

    a) Tier 2 – 33%
    b) Tier 3 – 64%
    c) No – Should not be used for ICP Control – 3%

20. Should “Adjust temperature to 35 - 36º C, using active cooling measures” be a Tier 2 option for ICP-Only patients?

    Tier 2 in BOOST3 and NY Algorithm
    Tier 3 for Type B in combined algorithm (84%)

    a) Tier 2 – 18.2%
    b) Tier 3 – 81.2%

21. Temperatures below 35 should not be used routinely due to systemic complications
    a) Agree – 85%
    b) Disagree – 15%

22. Should “Some wording about a higher-dose mannitol treatment” be a Tier 2 option for ICP-Only patients?

    Tier 2 NY Algorithm = High dose mannitol (> 1.0 g/kg bolus)
    This wording at 68% for Type B Tier 2 in combined algo.

    Tier 2 in BOOST3 = High dose Mannitol >1 g/kg, or higher frequency of standard dose mannitol
    This wording at 66% for Type B Tier 2 in combined algo.

a) Yes, we should figure out a higher-dose mannitol treatment, then assign it a role – 22%
b) No – We should not divide mannitol into two dosing – 78%

23. Should "Some wording about a higher-dose mannitol treatment" be a Tier 2 option for ICP-Only patients?

Tier 2 NY Algorithm = High dose mannitol (> 1.0 g/kg bolus)
This wording at 68% for Type B Tier 2 in combined algo.

Tier 2 in BOOST3 = High dose Mannitol >1 g/kg, or higher frequency of standard dose mannitol
This wording at 66% for Type B Tier 2 in combined algo.

a) Yes, we should figure out a higher-dose mannitol treatment, then assign it a role – 9%
b) No – We should not divide mannitol into two dosing – 91%

24) For Manitol should we put a dosing range?
a) Yes – 79%, 88%
b) No – 21%, 12%

25) Dosing for Mannitol up to
a) 1 – 85%
b) 1.5 – 15%

26) Should "Some wording about a higher-dose hypertonic saline treatment" be a Tier 2 option for ICP-Only patients?

Tier 2 in BOOST3 = "Hypertonic saline bolus (i.e., 30 ml of 23.4%). May repeat if sNa levels are < 160 meq/l"

This wording at 66% for Type B Tier 2 in combined algo.

a) Yes, we should figure out a higher-dose hypertonic saline treatment, then assign it a role – 6%
b) No – We should not divide hypertonic saline into two dosing – 94%

27) The current recommendation for sedative-hypnotic "coma" for Tier 3 is "High-dose pentobarbital ("barb coma")" voted in at 88%

The wording for similar treatment in the combined algorithm Tier 3 in Types B and D is "Pentobarbital or Thiopentone titrated to ICP control up to burst suppression, according to local protocol, if trial dose is effective. Avoid hypotension."

a) Yes – 91%
b) No – 9%

28) High dose propofol as a Tier 3

a) Yes – 12%
b) No – 88%

29) ICP Only
All Tiers

MAP Challenge / Trial
a) Yes – 100%
b) No – 0%

30) 10mm MAP Challenge
a) Yes – 94%
b) No – 6%

31) Don't exceed CPP of 90mm of mercury
a) Yes – 94%
b) No – 6%

32) 20 minute duration
a) Yes – 93%
b) No – 7%

33) Adopt existing protocol for augmenting MAP
a) Yes – 90%
b) No – 10%

34) Should the following language be added to Tier 0 treatment under Expected?

"Admission to ICU"
a) Yes – 87.5%
b) No – 12.5%

35) Should the following language be added to Tier 0 treatment under Expected, Optimize venous return from the head

"Keep the head midline"
a) Yes – 84%
b) No – 16%

36) Should the following language be added to Tier 0 treatment under Expected, Optimise venous return from the head

"Aim to optimize cerebral venus return by maneuvers
like keeping the head midline and ensuring cervical collars are
not too tight"

a) Yes – 100%
b) No – 0%

37) For Tier 0 under Expected, what is the temperature above which you will treat?
a) 38.5°C – 23%, 29%
b) 38.0°C – 45%, 39%
c) 37.5°C– 32%, 32%
d) Other – 0%, 0%

38) Expected to measure core temperature as a Tier 0 intervention?
a) Yes – 100%
b) No – 0%

39) Should we specify at Tier 0 a treatment temperature for fever
a) Yes – 61%, 87%
b) No – 39%, 13%

40) Would you treat temperature greater than 38.0?
a) Yes – 87%
b) No – 13%

41) Would you treat temperature greater than 37.5 as Tier 0?
a) Yes
b) No

42) Should we specify a temperature above which severe TBI patients in the absence of other indications should be warmed?
a) Yes – 45%
b) No – 55%

43) Address rewarming?
a) Yes – 41%
b) No – 59%

44) Patients with isolated severe TBI without any other indication for rewarming then active rewarming should be avoided
a) Yes
b) No

45) Active rewarming should be avoided
a) Yes
b) No

46) For Tier 0 under Expected what is the temperature at or below which TBI patients should be warmed?
    a) 35.6°C
    b) 36.0°C
    c) 35.5°C
    d) 35.0°C
    e) Other

47) For Tier 0 under Expected, what is the minimum oxygen saturation (SaO2) threshold range?

    If you fancy a specific value, please pick the appropriate range:
    a) 98 - 100% – 6%
    b) 95 – 97% – 31%
    c) 92 - 94% – 50%
    d) 90 – 91% – 13%

48) What is the minimal acceptable SA02 target in absence of contraindications?
    a) 95 – 97% – 36%
    b) 92 - 94% – 64%

49) What is the minimal acceptable SA02 target?
    a) 92% – 7%
    b) 93% – 0%
    c) 94% – 59%
    d) 95% – 34%

50) What is the minimal acceptable SA02 target?
    a) 94% – 71%
    b) 95% – 29%

51) Should we maintain a normal SPA02 (94 – 100%)
    a) Yes – 100%
    b) No – 0%

52) For Tier 0 under Recommended, should we recommend the use of computerised pupillometry?
    a) Yes – 9.7%
    b) No – 90.3%

53) Patients should undergo serial evaluations of neurological status and pupillary reactivity.
    a) Yes – 100%
    b) No – 0%

54) Should we specify a minimum frequency?
    a) Yes – 66%, 41%
    b) No – 34%, 59%

55) For Tier 0 under Recommended, should we recommend to Consider early involvement of Rehabilitation Medicine?
    a) Yes – 47%
    b) No – 53%

56) Should we put any kind of statement about adding additional monitors?
    a) Yes – 48%
    b) No – 52%

57) Language for recommendations when advancing from Tier to Tier

    Should "Review that basic physiologic parameters are in desired range (e.g. CPP, blood gas values)" be included in these fields?
    a) Yes – 91%
    b) No – 9%

58) Language for recommendations when advancing from Tier to Tier

    Should "Consider patient transfer to specialist TBI centre" be included in these fields?
    a) Yes – 59%
    b) No – 41%

59) Language for recommendations when advancing from Tier to Tier

    Should "Consider involving Rehabilitation Medicine" be included in these fields?
    a) Yes – 30%
    b) No – 70%

60) Language for recommendations when advancing from Tier to Tier

    Should we include any language about palliative care consultation
    a) Yes – 30%, 11%
    b) No – 70%, 89%

61) Language for recommendations when advancing from Tier to Tier

Should “Consider consultation with specialist TBI centre” be included in these fields?

a) Yes – 77%
b) No – 23%

62) Language for recommendations when advancing from Tier to Tier

Should “Consider consultation with higher level of care if applicable for your health care system” be included in these fields?

a) Yes – 83%
b) No – 17%

63) Neuroworsening = the occurrence of one or more of the following objective criteria:

Spontaneous decrease in the GCS motor score of ≥ xxx points (compared with the previous examination)

a) Should use ≥ 2 points – 29%, 6%
b) Should use ≥ 1 points – 71%, 94%
c) Should not be part of the definition – 0%, 0%

64) Neuroworsening = the occurrence of one or more of the following objective criteria:

New decrease in pupillary reactivity

a) Acceptable as is – 97%
b) Needs modification – 3%
c) Should not be part of the definition – 0%

65) Neuroworsening = the occurrence of one or more of the following objective criteria:

Pupillary asymmetry wording

a) Interval development of pupillary asymmetry of ≥2 mm – 15%
b) Interval development of pupillary asymmetry of ≥2 mm or bilateral mydriasis – 81%
c) Should not be part of the definition – 4%

66) Neuroworsening = the occurrence of one or more of the following objective criteria:

Pupillary asymmetry wording

a) New pupillary asymmetry – 6.5%
b) New pupillary asymmetry or bilateral mydriasis – 90.3%
c) Change the wording – 3.2%

67) Neuroworsening = the occurrence of one or more of the following objective criteria:

New focal motor deficit

a) Acceptable as is – 100%
b) Needs modification – 0%
c) Should not be part of the definition – 0%

68) Neuroworsening = the occurrence of one or more of the following objective criteria:

Herniation syndrome (e.g. Cushing's triad)

a) Acceptable as is – 84.4%
b) Needs modification – 9.4%
c) Should not be part of the definition – 6.3%

69) Neuroworsening = the occurrence of one or more of the following objective criteria:

Deterioration in neurological status sufficient to warrant immediate medical or surgical intervention
From original definition by Morris et al.

a) Acceptable as is – 19%
b) Needs modification – 3%
c) Should not be part of the definition – 78%

70) Neuroworsening = the occurrence of one or more of the following objective criteria:

Deterioration in neurological status sufficient to warrant immediate medical or surgical intervention
From original definition by Morris et al.

a) Acceptable as is – 16%
b) Should not be part of the definition – 84%

71) Neuroworsening = the occurrence of one or more of the following objective criteria:

¿ICP > 30?

a) Acceptable as is – 9%
b) Needs modification in terms of ICP value – 19%
c) Should not be part of the definition – 72%

72) Neuroworsening = the occurrence of one or more of the following objective criteria:

¿ICP > 30?

a) Needs modification in terms of ICP value – 16%
b) Should not be part of the definition – 84%

73) Emergent evaluation to identify possible cause (*) of neuroworsening

If herniation is suspected
- empiric treatment
- consider emergent imaging or other testing
- rapid escalation of treatment

a) Yes – 84%
b) No – 16%

74) For mannitol, Osmolality limits should be:
a) 320 mOsm/L – 81%
b) 360 mOsm/L – 13%
c) Other – 6%

75) For mannitol, serum sodium limits should be:
a) 150 mEq/L – 0%
b) 155 mEq/L – 37.5%
c) 160 mEq/L – 18.8%
d) Don't need Na limits for mannitol – 43.8%
e) Other – 0%

76) For HS, Osmolality limits should be:
a) 320 mOsm/L – 88%
b) 360 mOsm/L – 9%
c) Other – 3%

77) For HS, Na limits should be:
a) 150 mEq/L – 0%
b) 155 mEq/L – 48.5%
c) 160 mEq/L – 45.5%
d) Other – 6.1%

78) Same limits for both
a) Yes – 63%
b) No – 37%

79) For both 155 and 320
a) Yes – 76%
b) No – 24%

80) Mannitol 320
a) Yes – 100%
b) No – 0%

81) Hypertonic
    a) 155 – 52%
    b) 160 – 48%

82) Hypertonic, Range of 155 – 160
    a) Yes – 88%
    b) No – 12%

83) For HS, Osmolality limits should be:
    a) 320 mOsm/L – 88%
    b) 360 mOsm/L – 9%
    c) Other – 3%

84) For HS, Na limits should be:
    a) 150 mEq/L – 0%
    b) 155 mEq/L – 48.5%
    c) 160 mEq/L – 45.5%
    d) Other – 6.1%

85) Limits for hypertonics
    a) 155 - 160 mEq/L Na Hypertonic Saline and 320 mOm/L for mannitol – 28%, 16%
    b) 155 mEq/L Na and 320 mOs/L for both – 72%, 84%

86) Should we add an intervention involving CPP elevation to Tier 1?
    - BOOST3has just added "Optimize CPP: May increase CPP up to a maximum of 70 mm Hg with fluid boluses or va sopressors as clinically appropriate
        - Notes: May assess autoregulation per local protocol to optimize MAP/CPP. "

    a) Yes, and wording is acceptable – 25%
    b) Yes but need to consider changing wording – 50%
    c) Should be Tier 2 – 25%
    d) Should not be in ICP-only algorithm – 0%

87) Should we alter the intervention involving CPP elevation to Tier 2?
    "Optimize CPP: May increase CPP above 70 mm Hg with fluid boluses or vasopressors."

    a) Yes, and wording is acceptable – 20%
    b) Yes but need to consider changing wording – 31%
    c) Should be Tier 3 – 26%
    d) Should not be in ICP-only algorithm – 23%