**eAppendix 1**

The following is the full text of the clinical cases used for the workshop, including notes for facilitators and breaks for discussion. Facilitators present the cases in small chunks, adding information as the discussion progresses in typical case-based learning format.

Some small edits have been made to the cases and facilitator notes after completion of the study based on our experience running the workshop and in order to make the cases more broadly applicable beyond our institution and location. Whenever these changes occur, the edits appear in brackets for full transparency.

**CASE 1**

*You are a neurocognitive specialist. Mr. Meyer, 60 year old man comes to your practice. When you ask him what brings him in, he says “I don’t know, my partner thought I should come.” The man’s live-in partner of 30 years says he is concerned that Mr. Meyer has been very forgetful lately. He frequently repeats himself and is confused about the date. He cannot remember friends’ names. When confronted about this behavior, he plays it off as a joke. Recently, Mr. Meyer was driving home and ended up lost in a town an hour away. A stranger who was worried about Mr. Meyer borrowed his phone to call his partner, who rushed to come pick him up.*

What are your reactions to this case? What else would you want to know about Mr. Meyer?

Facilitators should wait to see what the open ended question elicits before moving on to ask students to think about Mr. Meyer’s advance care planning and capacity to make decisions.

**Take home point: start thinking about advance care planning early, safety and social situation should be assessed early and reassessed often in dementia course in order to avoid ethical dilemmas down the road.**

Once students have sufficiently worked through the first part of the case, put the following addition in the chat box and have a student read it out loud:

*Mr. Meyer and his male partner have never been married, but have lived together for 30 years. Mr. Meyer also has an ex-wife, from whom he is estranged, a living father, a stepmother, and two sisters. Mr. Meyer states that his preference is for his partner to make medical decisions on his behalf in case he cannot make them anymore.*

Ask students: What do you advise Mr. Meyer and his partner knowing this information? If not forthcoming, ask students specifically, what do you advise from a legal perspective?

Review order of surrogacy in MD (see slides), students should be aware 1) that spouses who are not formally divorced DO still rank in the order of surrogacy if not explicitly documented otherwise and 2) partners who are not legal spouses or legal domestic partners DO NOT rank in the order of surrogacy unless explicitly documented otherwise.

**Take home point: understanding order of surrogacy is very important especially for patients with complicated family dynamics and/or LGBTQ+ identities.**

Once students have sufficiently discussed order of surrogacy, put the following addition in the chat box and have a student read it out loud:

*Mr. Meyer states that he would like to be designated as DNR/DNI. Given that Mr. Meyer already has some symptoms of mild cognitive impairment, how would you assess his capacity to make this decision? How would you assess if it has changed or not as he grows sicker? What if he was trying to decide about being in a Phase I experimental research trial for a dementia medication?*

Have students review the CURVES algorithm for capacity assessment (see slides). Students should recognize that patients need to be able to state a decision, state alternatives to that decision, understand the harms and benefits of that decision, and the decision usually needs to be in line with their longstanding values in order for them to have capacity. Students should recognize that some decisions (like the decision to be in a phase 1 trial which will unlikely benefit the patient, but may harm them) require a higher or different bar for capacity.

**Take home point: Capacity is decision and situation specific, capacity assessment is nuanced and multifaceted.**

As students for any other thoughts or questions on capacity assessment before moving on to Case 2.

**CASE 2:**

*Jane Doe is admitted to the ED after having been found down on the sidewalk on Fayette Street. ROSC is obtained after 35 minutes of compressions in the ED and three doses of naloxone. Her tox screen is positive for fentanyl. After four days in the ICU she has not yet regained consciousness, does not withdraw to painful stimuli, and does not react to the world around her.*

How would you approach this case? What would be your next step?

Hopefully a student will suggest a coma evaluation, and from there you can move into discussion of a brain death exam for this patient. You do not need to go into great detail when reviewing the brain death exam (remind students that they will learn all the specifics of it in the neurology clinical clerkship). The important details for students to know are: in MD the exam should be done twice, at least six hours apart, ideally by a specialized clinician (neurologist, intensivist) who is not on the treating team or the organ transplant team. Students should also recognize that Jane Doe needs to be normothermic, and the team needs to have confidence that all toxins are out of her system before performing the exam. AAN checklist for brain death exam is provided in the slides, and should be reviewed in general terms.

**Take home points: brain death is a clinical exam, needs to be done when no confounding variables present, by a team that does not have a conflict of interest**

*Unfortunately Jane Doe’s exam indicates that she is brain dead. Her family has been located while she has been in the ICU. Her adult daughter states, “I believe that God makes miracles happen. It’s not her time yet, I don’t want to see her go” and expresses discomfort with your suggestion to stop treatment [the original text of this case read “remove life support,” a phrase which was intended to convey how Ms. Doe’s family sees the physician’s suggestion to stop positive pressure ventilation and other ICU interventions. However, the study team recognizes that the wording of this case was misleading and that the term “life support” is generally discouraged to refer to interventions made upon brain dead patients. For this reason, we have replaced it with the more neutral “stop treatment.”]*

How would you open up a discussion with this patient’s family? (consider an ask tell ask framework to better understand what the patient’s adult daughter understands of the situation)

What approaches might you take in this situation? What might make the conversation easier? In what ways might the cultural background and personal histories of the patient and family impact the conversation around brain death? (bringing in other family members, physicians with the same cultural background as patient and family, chaplain or community religious leader from the patient’s faith group, sometimes just giving families time and not rushing them to accept or make a decision)

**Take home points: conversations around brain death are often very difficult. Clinicians should not dismiss the viewpoints of patients’ families, but should try to understand them and mediate towards an outcome that everyone feels comfortable with rather than pushing for a quick decision, even if it is medically or legally “correct.”**

At the conclusion of this section, ask students to reflect on their own beliefs and emotions regarding brain death, and if comfortable, share any questions, concerns, or thoughts they might have.

**eAppendix 2**

The following is the full text of the pre and post surveys used in this study. The surveys were administered through qualtrics software.

**Case-Based Neuroethics Pre-Survey**

Your completion of this survey will serve as your consent to be in this research study, unless you check the opt-out box below.

     \_\_\_I do NOT consent to participate in this study.

Prior to this survey I have (choose all that apply):

* Not completed any of the neuroethics session prework
* Viewed the neuroethics prework e-lectures
* Read the neuroethics prework readings

Last four digits of phone number (for anonymously matching pre/post surveys): \_\_\_\_\_\_\_\_\_\_\_

Year in medical school: \_\_\_\_\_\_

Experiences:

Which clinical rotations have you completed so far? (circle all that apply)

Psychiatry Medicine Womens’ Health Surgery Emergency Med

Critical care Pediatrics Sub I (in? \_\_\_\_\_\_\_\_) Electives (in? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)

I have encountered situations on my clinical clerkships so far that I have found ethically challenging (circle one):

YES NO

I have witnessed/participated in end of life/goals of care discussions on my clinical clerkships so far (circle all that apply). If choosing an option other than “neither” please list the clinical clerkships in which you had this experience beneath your circled choice.

Witnessed Participated Neither

I have witnessed/participated in capacity assessments for clinical decision-making in clinical clerkships so far (circle all that apply). If choosing an option other than “neither” please list the clinical clerkships in which you had this experience beneath your circled choice.

Witnessed Participated Neither

For the following statements, please circle the answer you feel best represents your beliefs:

I am confident in my knowledge of medical ethics.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

I am interested in medical ethics.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

I think all physicians should have formal medical ethics education during medical school.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

For the following questions, circle all that apply

Brain death is:

1. The same thing as circulatory death
2. The same thing as a persistent vegetative state/unresponsive wakefulness syndrome
3. A legal category
4. Primarily a clinical diagnosis
5. Primarily an imaging diagnosis
6. Defined according to the same criteria nationwide

A patient with stage IV lung cancer has a stroke and is determined to be incapacitated. The team needs to decide if the patient should be made DNR/DNI. The patient’s spouse, who is their designated healthcare proxy, states “I believe a miracle could happen and we need to keep fighting as hard as we can.” This is an example of (select all that apply):

1. Substituted judgment
2. Surrogate decision making
3. Applying the reasonable person standard

Determining if a patient has medical decision making capacity is

1. A binary decision—either they have it or they don’t
2. Contingent on the patient being able to state reasonable alternatives to their decision
3. Contingent on the patient being able to state benefits and risks of their decision
4. Contingent on the decision being in keeping with western medical beliefs

Patients in same sex relationships in the state of Maryland need to be legally married in order for one partner to make medical decisions on behalf of the other partner if they are incapacitated.

1. True
2. False
3. I don’t know

What resources would you consult at Hopkins or elsewhere if you encountered an ethical dilemma while caring for a patient?

**Case-Based Neuroethics Post-Survey**

Your completion of this survey will serve as your consent to continue to be in this research study, unless you check the opt-out box below.

     \_\_\_I do NOT consent to participate in this study.

Last four digits of phone number (for anonymously matching pre/post surveys): \_\_\_\_\_\_\_\_\_\_\_

For the following statements, please circle the answer you feel best represents your beliefs:

I am confident in my knowledge of medical ethics.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

I am interested in medical ethics.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

I think all physicians should have formal medical ethics education during medical school.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

I learned something in this activity that I feel I will use during clinical rotations/my future career as a physician.

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

The capacity assessment section was helpful to me:

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

The surrogate decision-making section was helpful to me:

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

The brain death section was helpful to me:

0 1 2 3 4 5 6 7 8 9 10

(disagree completely) (agree completely)

Please provide any general comments on the activity:

For the following questions, circle all that apply

Brain death is:

1. The same thing as circulatory death
2. The same thing as a persistent vegetative state/unresponsive wakefulness syndrome
3. A legal category
4. Primarily a clinical diagnosis
5. Primarily an imaging diagnosis
6. Defined according to the same criteria nationwide

A patient with stage IV lung cancer has a stroke and is determined to be incapacitated. The team needs to decide if the patient should be made DNR/DNI. The patient’s spouse, who is their designated healthcare proxy, states “I believe a miracle could happen and we need to keep fighting as hard as we can.” This is an example of:

1. Substituted judgement
2. Surrogate decision making
3. Applying the reasonable person standard

Determining if a patient has medical decision-making capacity is

1. A binary decision—either they have it or they don’t
2. Contingent on the patient being able to state reasonable alternatives to their decision
3. Contingent on the patient being able to state benefits and risks of their decision
4. Contingent on the decision being in keeping with western medical beliefs

Patients in same sex relationships in the state of Maryland need to be legally married in order for one partner to make medical decisions on behalf of the other partner if they are incapacitated.

1. True
2. False
3. I don’t know

Please add any comments that you have about the online small group format for discussion. Do you feel this session would be meaningfully different if it were conducted in person?

eAppendix 3:

The following are seven representative comments about the workshop taken from the optional qualitative section of the post survey:

1. “This was an amazing activity! I am so grateful to have had this before my neurology clerkship, and it was great to have a neurology expert lead our small group and discuss how these cases come up frequently.”
2. “Great session, felt able to share and ask questions about the content. Also felt like the facilitator did a good job acknowledging that the topic is heavy and that we can take space to care for ourselves when caring for others.”
3. “The lectures prior to the synchronous session was great! I imagine the quality of the discussion varied by small group facilitator”
4. “Brain death was incredibly helpful and I wish we could have spent more time on it.”
5. “I liked that it was interactive and case-based.”
6. “This was a great session tackling some really challenging issues. Very thought provoking and useful!”
7. “Great session, really thought about a lot of good topics. I was already interested in this from previous experience in college. I would suggest having a more explicit conversation about race/SES/health literacy and how those factors can affect how physicians might prematurely pressure some families into making end of life decisions.”
8. “I do feel that this would have been better if conducted in person. Zoom learning has been truly exhausting, and conversation/discussion (especially when about a topic like ethics) tends to flow better when we are all gathered in the same place.”
9. “Would be nice to have longer than an hour and more practice using the assessments as the discussion was cut short due to time constraints. Thank you!”
10. “It was a very meaningful and important session. One hour was slightly short for discussions. But really grateful to have such opportunities, thank you!”