THE NACC NEUROPATHOLOGY DATA FORM

ADC subject ID: _____ Completed by: _____

1. MDS, UDS, or BDS patient ID	____ ____ ____ ____ ____ ____ ____ ____ ____ ____
2. Date form completed (MM/DD/YYYY)	____ ____ / ____ ____ / ____ ____ ____ ____
3. Neuropath ID	____ ____ ____ ____ ____ ____ ____ ____ ____ ____
4. Sex (CHECK ONE)	☐ 1 Male ☐ 2 Female
5. Age at death	____ ____ ____ years
6. Date of death (MM/DD/YYYY)	____ ____ / ____ ____ / ____ ____ ____ ____
7. Postmortem interval (PMI): time between death and brain removal	____ ____ . ____ hours *(99.9 = unknown)*
8. Fixative	☐ 1 Formalin ☐ 2 Paraformaldehyde ☐ 7 Other (SPECIFY): _____

9. GROSS FINDINGS

a. Whole brain weight (if half brain, multiply weight by two)	____ ____ ____ ____ grams *(9999 = unknown)*
b. Does the value in Question 9a represent fresh or fixed weight? (CHECK ONE)	☐ 1 Fresh ☐ 2 Fixed ☐ 8 Not applicable

c. Severity of gross findings

(CHECK ONE BOX PER ROW)

	None	Mild	Moderate	Severe	Not assessed	Missing/ unknown
1. Cerebral cortex atrophy	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
2. Lobar atrophy (significant frontal and/or temporal atrophy)	☐ 0	☐ 1 Yes			☐ 8	☐ 9
3. Hippocampus atrophy	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
4. Substantia nigra hypopigmentation	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
5. L. ceruleus hypopigmentation	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
6. Atherosclerosis (of the circle of Willis)	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9

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10. METHODS USED FOR SCORING CASE

a. Tau antibody (CHECK ONE)	☐ 1 Non-phospho specific ☐ 2 PHF1 ☐ 3 CP13 ☐ 4 AT8 ☐ 7 Other (SPECIFY): _____ ☐ 8 Not assessed
b. Amyloid beta antibody (CHECK ONE)	☐ 1 4G8 ☐ 2 10D5 ☐ 7 Other (SPECIFY): _____ ☐ 8 Not assessed
c. Alpha synuclein antibody (CHECK ONE)	☐ 1 Non-phospho specific (e.g., LB509) ☐ 2 Phospho-specific (e.g., pSYN#64) ☐ 7 Other (SPECIFY): _____ ☐ 8 Not assessed
d. TDP-43 antibody (CHECK ONE)	☐ 1 Non-phospho specific ☐ 2 Phospho-specific ☐ 7 Other (SPECIFY): _____ ☐ 8 Not assessed

e. Histochemical stains (CHECK ONE BOX PER ROW)

1. Modified Bielschowsky	☐ 0 No	☐ 1 Yes
2. Gallyas	☐ 0 No	☐ 1 Yes
3. Other silver stain	☐ 0 No	☐ 1 Yes
4. Thioflavin	☐ 0 No	☐ 1 Yes
5. Other (SPECIFY): _____	☐ 0 No	☐ 1 Yes

11. ALZHEIMER'S DISEASE. Please score AD neuropathologic changes.

a. Thal phase for amyloid plaques by immunohisto-chemistry (IHC) **(A score —** CHECK ONE**)** *Use only standard blocks (as described in Montine et al., Acta Neuropathol (2012) 123:1–11) to assign phase (i.e., midfrontal, superior/middle temporal, inferior parietal, hippocampus, entorhinal, basal ganglia, midbrain, cerebellum).*	☐ 0 Phase 0 (A0) ☐ 1 Phase 1 (A1) ☐ 2 Phase 2 (A1) ☐ 3 Phase 3 (A2) ☐ 4 Phase 4 (A3) ☐ 5 Phase 5 (A3) ☐ 8 Not assessed ☐ 9 Missing/unknown
b. Braak stage for neurofibrillary degeneration **(B score —** CHECK ONE**)** *Use standard blocks (as described in Montine et al., Acta Neuropathol (2012) 123:1–11) to assign phase (i.e., mid-frontal, superior/middle temporal, inferior parietal, occipital, hippocampus, entorhinal).*	☐ 0 Stage 0: AD-type neurofibrillary degeneration not present (B0) ☐ 1 Stage I (B1) ☐ 2 Stage II (B1) ☐ 3 Stage III (B2) ☐ 4 Stage IV (B2) ☐ 5 Stage V (B3) ☐ 6 Stage VI (B3) ☐ 7 The presence of a tauopathy (other than aging/AD) precludes Braak staging ☐ 8 Not assessed ☐ 9 Missing/unknown
c. CERAD score for density of neocortical neuritic plaque (plaques with argyrophilic dystrophic neurites, with or without dense amyloid cores). Score without respect to age or diagnosis. **(C score —** CHECK ONE**)** *Use only standard blocks (as described in Montine et al., Acta Neuropathol (2012) 123:1–11) to assign phase (i.e., midfrontal, superior/middle temporal, inferior parietal).*	☐ 0 No neuritic plaques (C0) ☐ 1 Sparse neuritic plaques (C1) ☐ 2 Moderate neuritic plaques (C2) ☐ 3 Frequent neuritic plaques (C3) ☐ 8 Not assessed ☐ 9 Missing/unknown
d. NIA-AA Alzheimer's disease neuropathologic change **(ADNC)** (CHECK ONE)	☐ 0 Not AD ☐ 1 Low ADNC ☐ 2 Intermediate ADNC ☐ 3 High ADNC ☐ 8 Not assessed ☐ 9 Missing/unknown

e. Other pathologic changes associated with AD

1. CERAD semi-quantitative score for diffuse plaques (plaques with non-compact amyloid and no apparent dystrophic neurites). Score from the neocortical field with the highest plaque density and without respect to age or diagnosis. (CHECK ONE)	☐ 0 No diffuse plaques ☐ 1 Sparse diffuse plaques ☐ 2 Moderate diffuse plaques ☐ 3 Frequent diffuse plaques ☐ 8 Not assessed ☐ 9 Missing/unknown
2. Cerebral amyloid angiopathy (CHECK ONE)	☐ 0 None ☐ 1 Mild ☐ 2 Moderate ☐ 3 Severe ☐ 8 Not assessed ☐ 9 Missing/unknown

12. CEREBROVASCULAR DISEASE (CVD). Report all CVD, macroscopic vascular brain injury (VBI), and microinfarcts or microhemorrhages.

a. Old infarcts observed grossly, including lacunes?
(CHECK ONE)

☐ 0 No **(SKIP TO QUESTION 12b)**
☐ 1 Yes **(COMPLETE QUESTIONS 12a1–12a4)**
☐ 8 Not assessed **(SKIP TO QUESTION 12b)**
☐ 9 Missing/unknown **(SKIP TO QUESTION 12b)**

NOTE: Number column cannot be left blank if Question 12a=Yes. Size of infarct columns should be left blank if not applicable. ***Not assessed = 88*** ***Missing = 99***

Location of old infarcts	Number	Size of largest (greatest dimension in cm)	Size of next (greatest dimension in cm)	Size of next (greatest dimension in cm)
1. Cerebral cortex	___ ___	___ ___ . ___	___ ___ . ___	___ ___ . ___
2. Subcortical cerebral white matter and peri-ventricular white matter	___ ___	___ ___ . ___	___ ___ . ___	___ ___ . ___
3. Deep cerebral gray matter or internal capsule	___ ___	___ ___ . ___	___ ___ . ___	___ ___ . ___
4. Brainstem or cerebellum	___ ___	___ ___ . ___	___ ___ . ___	___ ___ . ___

NOTE: For large cortical infarcts that include underlying white or gray matter, indicate as cortical infarct. For subcortical infarcts that include both white matter and gray matter, indicate whichever region is primarily affected.

b. Were single or multiple old hemorrhages observed grossly?

☐ 0 No **(SKIP TO QUESTION 12c)**
☐ 1 Yes **(COMPLETE QUESTIONS 12b1–12b3)**
☐ 8 Not assessed **(SKIP TO QUESTION 12c)**
☐ 9 Missing/unknown **(SKIP TO QUESTION 12c)**

(CHECK ONE BOX PER ROW)	No	Yes	Not assessed	Missing/ unknown
1. Subdural or epidural hemorrhage	☐ 0	☐ 1	☐ 8	☐ 9
2. Primary parenchymal hemorrhage *Include those >5mm. If ≤5mm, include as microbleed; see Question 12d.*	☐ 0	☐ 1	☐ 8	☐ 9
3. Secondary parenchymal hemorrhage (e.g., tumor, vascular malformation)	☐ 0	☐ 1	☐ 8	☐ 9

c. Old microinfarcts (not observed grossly)?

(CHECK ONE)

☐ 0 No **(SKIP TO QUESTION 12d)**
☐ 1 Yes **(COMPLETE QUESTIONS 12c1–12c4)**
☐ 8 Not assessed **(SKIP TO QUESTION 12d)**
☐ 9 Missing/unknown **(SKIP TO QUESTION 12d)**

(OLD MICROINFARCTS — CHECK ONE BOX PER ROW)	0	1	2	3 or more	Not assessed	Missing/ unknown
1. Number in screening sections of cerebral cortex (gray matter of cerebral cortex)	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
2. Number in screening sections of subcortical white matter and periventricular white matter	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
3. Number in screening sections of subcortical gray matter	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
4. Number in brainstem and cerebellum	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9

d. Old cerebral microbleeds?

(CHECK ONE)

Include old hemorrhages that are ≤5mm.

☐ 0 No **(SKIP TO QUESTION 12e)**
☐ 1 Yes **(COMPLETE QUESTIONS 12d1–12d4)**
☐ 8 Not assessed **(SKIP TO QUESTION 12e)**
☐ 9 Missing/unknown **(SKIP TO QUESTION 12e)**

(OLD MICROBLEEDS — CHECK ONE BOX PER ROW)	0	1	2	3 or more	Not assessed	Missing/ unknown
1. Number in screening sections of cerebral cortex	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
2. Number in screening sections of subcortical white matter and periventricular white matter	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
3. Number in screening sections of subcortical gray matter	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
4. Number in brainstem and cerebellum	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9

(CHECK ONE BOX PER ROW)	None	Mild	Moderate	Severe	Not assessed	Missing/ unknown
e. Arteriolosclerosis? (CHECK ONE) *(Assessed in subcortical white or gray matter)*	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9
f. White matter rarefaction? (CHECK ONE) *(H&E or myelin stain may be used)*	☐ 0	☐ 1	☐ 2	☐ 3	☐ 8	☐ 9

g. Other pathologic changes related to ischemic or vascular disease not previously specified?

☐ 0 No **(SKIP TO QUESTION 13)**
☐ 1 Yes **(COMPLETE QUESTIONS 12g1–12g12)**
☐ 8 Not assessed **(SKIP TO QUESTION 13)**
☐ 9 Missing/unknown **(SKIP TO QUESTION 13)**

(CHECK ONE BOX PER ROW)	No	Yes	Not assessed	Missing/ unknown
1. Laminar necrosis	☐ 0	☐ 1	☐ 8	☐ 9
2. Acute neuronal necrosis	☐ 0	☐ 1	☐ 8	☐ 9
3. Acute/subacute gross infarcts	☐ 0	☐ 1	☐ 8	☐ 9
4. Acute/subacute microinfarcts	☐ 0	☐ 1	☐ 8	☐ 9
5. Acute/subacute gross hemorrhage	☐ 0	☐ 1	☐ 8	☐ 9
6. Acute/subacute microhemorrhage	☐ 0	☐ 1	☐ 8	☐ 9
7. Vascular malformation of any type	☐ 0	☐ 1	☐ 8	☐ 9
8. Aneurysm of any type	☐ 0	☐ 1	☐ 8	☐ 9
9. Vasculitis of any type	☐ 0	☐ 1	☐ 8	☐ 9
10. CADASIL	☐ 0	☐ 1	☐ 8	☐ 9
11. Mineralization of blood vessels	☐ 0	☐ 1	☐ 8	☐ 9
12. Other (SPECIFY): _____	☐ 0	☐ 1		

13. LEWY BODY PATHOLOGY (as determined by alpha-synuclein IHC). This score is independent of the clinical presentation.

Is there evidence of Lewy body pathology?

(CHECK ONE)

- ☐ 0 No
- ☐ 1 Brainstem predominant
- ☐ 2 Limbic (transitional)
- ☐ 3 Neocortical (diffuse)
- ☐ 4 Amygdala predominant
- ☐ 5 Olfactory bulb
- ☐ 8 Not assessed
- ☐ 9 Missing/unknown

14. NEURON LOSS IN THE SUBSTANTIA NIGRA (CHECK ONE)

- ☐ 0 None
- ☐ 1 Mild
- ☐ 2 Moderate
- ☐ 3 Severe
- ☐ 8 Not assessed
- ☐ 9 Missing/unknown

15. HIPPOCAMPAL SCLEROSIS (CA1 and/or subiculum) (CHECK ONE)

- ☐ 0 None
- ☐ 1 Unilateral
- ☐ 2 Bilateral
- ☐ 3 Present but laterality not assessed
- ☐ 8 Not assessed
- ☐ 9 Missing/unknown

16. DISTRIBUTION OF TDP-43 IMMUNOREACTIVE INCLUSIONS

Region (CHECK ONE BOX PER ROW)	No	Yes	Not assessed	Missing/unknown
a. Spinal cord	☐ 0	☐ 1	☐ 8	☐ 9
b. Amygdala	☐ 0	☐ 1	☐ 8	☐ 9
c. Hippocampus	☐ 0	☐ 1	☐ 8	☐ 9
d. Entorhinal/inferior temporal cortex	☐ 0	☐ 1	☐ 8	☐ 9
e. Neocortex	☐ 0	☐ 1	☐ 8	☐ 9

17. FRONTOTEMPORAL LOBAR DEGENERATION AND OTHER TAUOPATHIES

Evaluation should follow published guidelines. For details of specific diagnoses and a classification diagram of FTLD subtypes, see the Coding Guidebook for the NACC Neuropathology Data Form.

a. FTLD with tau pathology (FTLD-tau) or other tauopathy

(CHECK ONE)

- ☐ 0 No **(SKIP TO QUESTION 17c)**
- ☐ 1 Yes **(COMPLETE QUESTIONS 17b1 – 17b10)**
- ☐ 8 Not assessed **(SKIP TO QUESTION 17c)**
- ☐ 9 Missing/unknown **(SKIP TO QUESTION 17c)**

b. FTLD-tau subtype

(CHECK ONE BOX PER ROW)

	No	Yes	Not assessed	Missing/unknown
1. FTLD-tau (PiD)	☐ 0	☐ 1	☐ 8	☐ 9
2. Other 3R tauopathy (Includes *MAPT* mutation tauopathy)	☐ 0	☐ 1	☐ 8	☐ 9
3. FTLD-tau (CBD)	☐ 0	☐ 1	☐ 8	☐ 9
4. FTLD-tau (PSP)	☐ 0	☐ 1	☐ 8	☐ 9
5. Argyrophilic grains	☐ 0	☐ 1	☐ 8	☐ 9
6. Other 4R tauopathy (Includes sporadic multiple systems tauopathy, globular glial tauopathy, *MAPT* mutation tauopathy)	☐ 0	☐ 1	☐ 8	☐ 9
7. Chronic traumatic encephalopathy	☐ 0	☐ 1	☐ 8	☐ 9
8. Amyotrophic lateral sclerosis (ALS)/ Parkinsonism-dementia complex of Guam	☐ 0	☐ 1	☐ 8	☐ 9
9. Tangle dominant disease	☐ 0	☐ 1	☐ 8	☐ 9
10. Other 3R + 4R tauopathy (Includes unclassifiable, focal, glial only, *MAPT* mutation tauopathy, NOS)	☐ 0	☐ 1	☐ 8	☐ 9

c. FTLD with TDP-43 pathology (FTLD-TDP)?

(CHECK ONE)

- ☐ 0 No
- ☐ 1 Yes
- ☐ 8 Not assessed
- ☐ 9 Missing/unknown

d. ALS/motor neuron disease (MND) present?
(CHECK ONE)

- ☐ 0 No
- ☐ 1 Yes, with TDP-43 inclusions in motor neurons
- ☐ 2 Yes, with FUS inclusions in motor neurons
- ☐ 3 Yes, with SOD1 inclusions in motor neurons
- ☐ 4 Yes, with other inclusions
- ☐ 5 Yes, with no specific inclusions
- ☐ 8 Not assessed
- ☐ 9 Missing/unknown

e. Other FTLD?
(CHECK ONE)

- ☐ 0 No **(SKIP TO QUESTION 18a)**
- ☐ 1 Yes **(COMPLETE QUESTIONS 17f1 – 17f5)**
- ☐ 8 Not assessed **(SKIP TO QUESTION 18a)**
- ☐ 9 Missing/unknown **(SKIP TO QUESTION 18a)**

f. Other FTLD subtype
(CHECK ONE BOX PER ROW)

	No	Yes	Not assessed	Missing/ unknown
FTLD-FUS				
1. Atypical FTLD-U (aFTLD-U)	☐ 0	☐ 1	☐ 8	☐ 9
2. NIFID (neuronal intermediate filament inclusions disease)	☐ 0	☐ 1	☐ 8	☐ 9
3. BIBD (basophilic inclusion body disease)	☐ 0	☐ 1	☐ 8	☐ 9
FTLD other				
4. FTLD-UPS (ubiquitin-proteasome system [ubiquitin or p62 positive, tau/TDP-43/FUS negative inclusions])	☐ 0	☐ 1	☐ 8	☐ 9
5. FTLD-NOS (includes dementia lacking distinctive histology (DLDH) and FTLD with no inclusions (FTLD-NI) detected by tau, TDP-43, or ubiquitin/p62 IHC)	☐ 0	☐ 1	☐ 8	☐ 9

18. AGING-RELATED TAU ASTROGLIOPATHY (ARTAG)

Evaluation should follow published guidelines. See the Coding Guidebook for the NACC Neuropathology Data Form.

a. Is ARTAG pathology present?

- ☐ 0 No **(SKIP TO QUESTION 19)**
- ☐ 1 Yes **(CONTINUE)**
- ☐ 8 Not assessed **(SKIP TO QUESTION 19)**
- ☐ 9 Missing/unknown **(SKIP TO QUESTION 19)**

b. Overall severity of ARTAG pathology

- ☐ 1 Mild
- ☐ 2 Moderate
- ☐ 3 Severe
- ☐ 8 Not assessed
- ☐ 9 Missing/unknown

c. Is ARTAG pathology present in the **AMYGDALA?**

- ☐ 0 No **(SKIP TO QUESTION 18e)**
- ☐ 1 Yes **(CONTINUE)**
- ☐ 8 Not assessed **(SKIP TO QUESTION 18e)**
- ☐ 9 Missing/unknown **(SKIP TO QUESTION 18e)**

d. Localization of ARTAG pathology in the amygdala:

(CHECK ONE BOX PER ROW)	None	Focal	Widespread	Not assessed	Missing/ unknown
Subpial	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
Subependymal	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
Gray matter	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
White matter	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
Perivascular	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐

e. Is ARTAG pathology present in the **FRONTAL NEOCORTEX**?	☐ 0 No **(SKIP TO QUESTION 19)** ☐ 1 Yes **(CONTINUE)** ☐ 8 Not assessed **(SKIP TO QUESTION 19)** ☐ 9 Missing/unknown **(SKIP TO QUESTION 19)**

f. Localization of ARTAG pathology in the frontal neocortex:

(CHECK ONE BOX PER ROW)	None	Focal	Widespread	Not assessed	Missing/ unknown
Subpial	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
Gray matter	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
White matter	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐
Perivascular	0 ☐	1 ☐	2 ☐	8 ☐	9 ☐

19. OTHER PATHOLOGIC DIAGNOSES

(CHECK ONE BOX PER ROW)	No	Yes	Not assessed	Missing/ unknown
a. Pigment-spheroid degeneration/NBIA	☐ 0	☐ 1	☐ 8	☐ 9
b. Multiple system atrophy	☐ 0	☐ 1	☐ 8	☐ 9
c. Prion disease	☐ 0	☐ 1	☐ 8	☐ 9
d. Trinucleotide disease (Huntington disease, SCA, other)	☐ 0	☐ 1	☐ 8	☐ 9
e. Malformation of cortical development	☐ 0	☐ 1	☐ 8	☐ 9
f. Metabolic/storage disorder of any type	☐ 0	☐ 1	☐ 8	☐ 9
g. WM disease, leukodystrophy	☐ 0	☐ 1	☐ 8	☐ 9
h. WM disease, multiple sclerosis or other demyelinating disease	☐ 0	☐ 1	☐ 8	☐ 9
i. Contusion/traumatic brain injury of any type, acute	☐ 0	☐ 1	☐ 8	☐ 9
j. Contusion/traumatic brain injury of any type, chronic	☐ 0	☐ 1	☐ 8	☐ 9
k. Neoplasm, primary	☐ 0	☐ 1	☐ 8	☐ 9
l. Neoplasm, metastatic	☐ 0	☐ 1	☐ 8	☐ 9
m. Infectious process of any type (encephalitis, abscess, etc.)	☐ 0	☐ 1	☐ 8	☐ 9
n. Herniation, any site	☐ 0	☐ 1	☐ 8	☐ 9
o. Trisomy 21/Down syndrome	☐ 0	☐ 1	☐ 8	☐ 9
p. AD-related genes (dominantly inherited); do not include APOE or other polymorphisms or genetic risk factors.	☐ 0	☐ 1	☐ 8	☐ 9
q. FTLD-related genes (dominantly inherited); do not include polymorphisms or genetic risk factors.	☐ 0	☐ 1	☐ 8	☐ 9
r. Other (SPECIFY): _____	☐ 0	☐ 1		
s. Other (SPECIFY): _____	☐ 0	☐ 1		
t. Other (SPECIFY): _____	☐ 0	☐ 1		

ADC subject ID: _____ Completed by: _____

20. BANKED BIOSPECIMENS. Use this section to record information related to the storage and accessibility of brain, blood, plasma, serum, DNA, and CSF.

Indicate which of the following specimens are available in the Neuropathology Core at your Center, understanding that some of these biospecimens also may be banked in other Cores.

(CHECK ONE BOX PER ROW)	No	Yes	Missing/ unknown
a. Banked frozen brain or half brain	☐ 0	☐ 1	☐ 9
b. Banked frozen wedge of cerebellum or other sample for future DNA prep	☐ 0	☐ 1	☐ 9
c. Formalin- or paraformaldehyde-fixed brain	☐ 0	☐ 1	☐ 9
d. Paraffin-embedded blocks of brain regions	☐ 0	☐ 1	☐ 9
e. Banked postmortem CSF	☐ 0	☐ 1	☐ 9
f. Banked postmortem blood or serum	☐ 0	☐ 1	☐ 9
g. Banked DNA	☐ 0	☐ 1	☐ 9
h. Full autopsy performed? If full autopsy, major findings: 1. _____ 2. _____ 3. _____ 4. _____	☐ 0	☐ 1	☐ 9