



# **The BIOCARD Study**

Biomarkers of Cognitive Decline  
Among Normal Individuals

**Medications  
Limited Dataset  
March 2019**

## Glossary of Terms

| Term              | Description  |
|-------------------|--|
| Allowable Codes   | codes (and their meanings) allowed to be values for that variable  |
| Audit Findings    | error rates based on BIOCARD or NIH phase audits<br>error rates are calculated as number of errors / total number of variables examined  |
| Baseline visit    | date admitted to NIH phase of BIOCARD study <i>[Note: some data may have been collected prior to this date]</i>  |
| Collection        | when the variable information was collected (i.e., Baseline, Follow-up)  |
| Comments          | further information about the variable not covered in the above fields   |
| Data Type         | numeric or character <i>[Note: Dates are numeric data]</i><br>numeric or character classifications are strictly related to how the data are stored and not how the data should be analyzed                                   |
| JHU phase         | the study phase at JHU from 2009 - present   |
| Missing OK If     | instances (such as skips) or reasons why a blank or missing value is acceptable  |
| NA                | not applicable for this variable   |
| NIH / NIH phase   | the study phase that was performed at the NIH from 1995-2005   |
| Question Text     | the question as it appears on the NACC or BIOCARD data collection forms  |
| Short Description | a short explanation of what the variable means   |
| Source            | the name of the NACC form, BIOCARD form, or NIH dataset containing the variable information (or “DERIVED” if the variable was derived) and the variable question number located on the form or in the dataset, if applicable |
| Unknown Code      | the codes for the “unknown”, “don’t know”, or missing values for the variable  |
| Variable Name     | the name of the variable in the provided dataset <i>[Note: Variables will follow the NACC naming scheme as closely as possible]</i>  |

## Acronyms and Definitions

|       |  |       |   |
|-------|--|-------|---|
| AD    | Alzheimer’s Disease  | JHU   | The Johns Hopkins University                            |
| CDR   | Clinical Dementia Rating                                   | MCI   | Mild Cognitive Impairment                               |
| CERAD | Consortium to Establish a Registry for Alzheimer’s Disease | MMSE  | Mini-Mental State Examination                           |
| CNS   | Central Nervous System                                     | NACC  | National Alzheimer’s Coordinating Center                |
| CSF   | Cerebrospinal Fluid  | NIA   | National Institute on Aging                             |
| CVD   | Cardiovascular Disease                                     | NINDS | National Institute of Neurological Disorders and Stroke |
| CVLT  | California Verbal Learning Test                            | NPI-Q | Neuropsychiatric Inventory Questionnaire                |
| FAQ   | Functional Assessment Questionnaire                        | UPDRS | Unified Parkinson’s Disease Rating Scale                |
| FTD   | Frontotemporal Degenerations                               | WAIS  | Wechsler Adult Intelligence Scale                       |
| GDS   | Geriatric Depression Scale                                 | WMS   | Wechsler Memory Scale                                   |

# Medications Limited Dataset Characteristics

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Number of variables:9

Order of variables:

|    |           |   |
|----|-----------|---|
| 1) | JHUANONID | <i>Participant ID Anonymized by JHU</i> |
| 2) | VISITNO   | <i>Chronological visit number</i>       |
| 3) | MOFROMBL  | <i>Months since baseline visit</i>      |
| 4) | ONMED     | <i>Participant Medication Status</i>    |
| 5) | MEDCODE   | <i>NACC Medication Code</i>             |
| 6) | GENERIC   | <i>GENERIC Medication Name</i>          |
| 7) | AHFS1     | <i>AHFS code(s) 1</i>                   |
| 8) | AHFS2     | <i>AHFS code(s) 2</i>                   |
| 9) | AHFS3     | <i>AHFS code(s) 3</i>                   |

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|           |                    |                                  |
|-----------|--------------------|----------------------------------|
| <b>1)</b> | Variable Name      | <b>JHUANONID</b>                 |
|           | Short Description  | Participant ID Anonymized by JHU |
|           | Source             | NA                               |
|           | Question Text      | NA                               |
|           | Time of Collection | Baseline                         |
|           | Data Type          | Character                        |
|           | Allowable Codes    | JHU + 6 numbers                  |
|           | Missing OK If      | NA                               |
|           | Audit Findings     | NA                               |
|           | Comments           | None                             |

|           |                    |   |
|-----------|--------------------|---|
| <b>2)</b> | Variable Name      | <b>VISITNO</b>  |
|           | Short Description  | Chronological visit number  |
|           | Source             | NA  |
|           | Question Text      | NA  |
|           | Time of Collection | Baseline and Follow-up  |
|           | Data Type          | Numeric   |
|           | Allowable Codes    | <p>NIH visit: Integers and decimals from 0 to 10, where a visit 0 represents a visit that occurred prior to the established baseline date</p> <p>JHU visit: 101, 102, 103, 104, ..... 1XX where XX is from 01 to 99</p> <p>Visit number 999 used for all participants that have died before a 101 visit for forms: A4, A5, A5a, B1, B2, B3, B3a, B8, B9, and D1. For participants that are alive, an A5 may have a 999 visit number to capture medical data acquired during the NIH phase of the study.</p> |
|           | Missing OK If      | NA  |
|           | Audit Findings     | NA  |
|           | Comments           | None  |

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|           |                    |   |
|-----------|--------------------|---|
| <b>3)</b> | Variable Name      | <b>MOFROMBL</b>   |
|           | Short Description  | Months since baseline visit   |
|           | Source             | DERIVED   |
|           | Question Text      | NA  |
|           | Time of Collection | Follow-up   |
|           | Data Type          | Numeric   |
|           | Allowable Codes    | Min = 0<br>Max = TBD  |
|           | Missing OK If      | NA  |
|           | Audit Findings     | NA  |
|           | Comments           | Derived variable.<br>[JHU phase] Calculated as months between the baseline start date and the V1 VISITDATE (formerly V11_Date) for follow-up visits.<br><br>[NIH phase] Calculated as months between the baseline start date and the recorded visit date. |

|           |                    |  |
|-----------|--------------------|--|
| <b>4)</b> | Variable Name      | <b>NOMED</b>   |
|           | Short Description  | Participant Medication Status  |
|           | Source             | A4 #1  |
|           | Question Text      | ONMED  |
|           | Time of Collection | Baseline and Follow-up   |
|           | Data Type          | Numeric  |
|           | Allowable Codes    | 0 = Subject is not currently taking any medications<br>1 = Subject is currently taking medications |
|           | Missing OK If      | NA   |
|           | Audit Findings     | NA   |
|           | Comments           | None   |

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|    |                    |  |
|----|--------------------|--|
| 5) | Variable Name      | <b>MEDCODE</b>   |
|    | Short Description  | Medication Code  |
|    | Source             | A4 #3a-3y & #5a-5j   |
|    | Question Text      | Medication   |
|    | Time of Collection | Baseline and Follow-up   |
|    | Data Type          | Char   |
|    | Allowable Codes    | NIH visits allowable codes: (a, c, d, e, f, n, o, p, r, s, v, vs, ve, vm, or, x).<br>JHU visits Alpha-numeric Codes: ("d" with 5 numbers, or "s" with 5 numbers) |
|    | Missing OK If      | NA   |
|    | Audit Findings     | NA   |
|    | Comments           | None   |

|    |                    |                        |
|----|--------------------|------------------------|
| 6) | Variable Name      | <b>GENERIC</b>         |
|    | Short Description  | Drug Generic Names     |
|    | Source             | A4 #3a-3y & #5a-5j     |
|    | Question Text      | Medication Name        |
|    | Time of Collection | Baseline and Follow-up |
|    | Data Type          | Char                   |
|    | Allowable Codes    | Text                   |
|    | Missing OK If      | NA                     |
|    | Audit Findings     | NA                     |
|    | Comments           | None                   |

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|    |                    |   |
|----|--------------------|---|
| 7) | Variable Name      | <b>AHFS1</b>  |
|    | Short Description  | American Hospital Formulary Service drug coding schema* |
|    | Source             | Please see below  |
|    | Question Text      | AHFS code(s) 1  |
|    | Time of Collection | Baseline and Follow-up                                  |
|    | Data Type          | Char  |
|    | Allowable Codes    | Please see below  |
|    | Missing OK If      | NA  |
|    | Audit Findings     | NA  |
|    | Comments           | None  |

|    |                    |   |
|----|--------------------|---|
| 8) | Variable Name      | <b>AHFS2</b>  |
|    | Short Description  | American Hospital Formulary Service drug coding schema* |
|    | Source             | Please see below  |
|    | Question Text      | AHFS code(s) 2  |
|    | Time of Collection | Baseline and Follow-up                                  |
|    | Data Type          | Char  |
|    | Allowable Codes    | Please see below  |
|    | Missing OK If      | NA  |
|    | Audit Findings     | NA  |
|    | Comments           | None  |

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|    |                    |   |
|----|--------------------|---|
| 9) | Variable Name      | <b>AHFS3</b>  |
|    | Short Description  | American Hospital Formulary Service drug coding schema* |
|    | Source             | Please see below  |
|    | Question Text      | AHFS code(s) 3  |
|    | Time of Collection | Baseline and Follow-up                                  |
|    | Data Type          | Char  |
|    | Allowable Codes    | Please see below  |
|    | Missing OK If      | NA  |
|    | Audit Findings     | NA  |
|    | Comments           | None  |



\* For more information on the American Hospital Formulary Service (AHFS) drug coding schema, please refer to <http://www.ahfsdruginformation.com/ahfs-pharmacologic-therapeutic-classification/#1455225455483-38135b76-9975>

The data dictionary that accompanies the medication datafile indicates that the medications in this file are coded according to the AHFS drug coding schema, which systematically classifies drugs using a long-established coding system.

Each medication has up to three possible AHFS codes – AHFS1, AHFS2, and AHFS3.

- a. The majority of medications are categorized according to their primary active ingredient, as shown by the code under the AHFS1 variable.
- b. A smaller number of medications are coded with multiple AHFS codes (as indicated by codes under the AHFS2/AHFS3 variables, in addition to AHFS1). These are drugs that are combination drugs. (For example, pseudoephedrine/dextromethorphan – a common cold/cough medicine, would have codes under both AHFS1 and AHFS2).

Each medication code includes up to 4 ‘tiers’ of detail, separated by a colon (e.g., 24:04.04.16 = Cardiovascular Drugs » Cardiac Drugs » Antiarrhythmic Agents » Class II Antiarrhythmics).

Please note, a subject might have multiple rows for a given visit date.

The categories included in Tier 1 are shown on page 8 of the data dictionary. Due to the fact that the AHFS coding scheme is copyrighted, information about Tiers 2-4 will need to be accessed through an institutional on-line library.

The AHFS schema uses the following first tier classification system.

To this schema, BIOCARD has added 95:00 to designate reported treatments not in the AHFS codex (including naturalistic, homeopathic, or dietary compounds).

|       |   |
|-------|---|
| 4:00  | Anti-histamine drugs                                |
| 8:00  | Anti-Infective drugs                                |
| 10:00 | Antineoplastic drugs                                |
| 12:00 | Autonomic drugs                                     |
| 16:00 | Blood derivatives                                   |
| 20:00 | Blood formation, coagulation, and thrombosis        |
| 24:00 | Cardiovascular drugs                                |
| 28:00 | Central nervous system agents                       |
| 36:00 | Diagnostic agents                                   |
| 40:00 | Electrolyte, caloric, and water balance             |
| 44:00 | Enzymes   |
| 48:00 | Respiratory tract agents                            |
| 52:00 | Eye, ear, nose, and throat preparations (EENT)      |
| 56:00 | Gastrointestinal drugs                              |
| 60:00 | Gold compounds                                      |
| 64:00 | Heavy metal antagonists                             |
| 68:00 | Hormones and synthetic substitutes                  |
| 72:00 | Local anesthetics                                   |
| 76:00 | Oxytocin  |
| 80:00 | Antitoxins, immune globulins, toxoids, and vaccines |
| 84:00 | Skin and mucous membrane agents (topical)           |
| 86:00 | Smooth muscle relaxants                             |
| 88:00 | Vitamins  |
| 92:00 | Miscellaneous therapeutic agents                    |