Overview

Working group: Congenital Muscular Dystrophy

The NINDS Congenital Muscular Dystrophy (CMD) Common Data Elements (CDE) project was comprised of a Working Group (WG) of researchers from the CMD community. The WG reviewed a few of the CDEs related to patient history and recommended the addition of minor components. The WG also suggested the use of the CDE lists that were compiled for muscle biopsies, nerve biopsies, and intraepidermal nerve fiber densities. Those forms were generated through a process of personal experiences and suggestions from the neuropathology community.

In terms of recommendations differing between different types of CMD, the elements of the history reviewed should be included for all types of muscular dystrophy. Many patients will also have muscle biopsies, so that form should be used when applicable. Most children with CMD will not need nerve biopsies or intraepidermal nerve fiber testing, but the forms are included in case they do.

One of the goals in the development of Case Report Forms (CRFs) was to establish a set of CMD requirements, since there is no current standard for pathological reporting of muscle or nerve biopsies. In the development of these standards, there were no unique issues with respect to the pathological workups.

With the help of the CDE development process for CMD, the WG has identified that there have not been many natural history studies in this disease space, so it was difficult to base recommendations on prior published work. However, now that the first set of CDE recommendations for this disease have been made, developing a unified approach should be easier as more data are produced using the CMD population.

Summary recommendations

The majority of the CMD CDEs presented in the template CRFs are generally recommended when the information is available and appropriate for the study protocol; otherwise, all the medical history CDEs and diagnostic assessments are not required. Their relevance depends upon the study design (i.e., clinical trial, cohort study, etc.) or type of research involved.

Table 1. READ ME: This is a recommendations summary document of the instruments/measures/case report forms, sorted by domain and subdomain. Details of the recommendations follow this spreadsheet in the form of information documents (e.g., Notices of Copyright) or case report forms and CDE Details.

Instrument / Scale / CRF Name *Name and acronym of the instrument/measure that is recommended for inclusion in the CDEs*	Classification (e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)	Domain	Sub Domain
10 meter walk test	Exploratory	Outcomes and End Points	Functional Status
2 minute walk test	Exploratory	Outcomes and End Points	Functional Status
6 min walk test	Supplemental - Highly Recommended for ambulatory CMD patients.	Outcomes and End Points	Functional Status
9 - Hole Peg Test	Exploratory	Outcomes and End Points	Functional Status
Alberta Infant Motor Scale (AIMS)	Supplemental - Highly Recommended for infants	Outcomes and End Points	Functional Status
Barthel Index	Exploratory	Outcomes and End Points	Functional Status
Brooke Upper Extremity Scale	Supplemental	Outcomes and End Points	Functional Status
Egen Klassifikation Scale Version 2 (EK2)	Supplemental - Highly Recommended in adolescents and adults (CMD)	Outcomes and End Points	Functional Status

Instrument / Scale / CRF Name *Name and acronym of the instrument/measure that is recommended for inclusion in the CDEs*	Classification (e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)	Domain	Sub Domain
Goniometry	Supplemental - Highly Recommended studies involving motor function	Outcomes and End Points	Functional Status
Gross Motor Function Measure (GMFM)	Exploratory	Outcomes and End Points	Functional Status
Hammersmith Functional Motor Scale (HFMS) / Hammersmith Functional Motor Scale-Expanded (HFMS-Expanded)	Supplemental - Highly Recommended for studies analyzing motor function - age limit 2+	Outcomes and End Points	Functional Status
Jebsen Hand Function Test (JHFT)	Exploratory	Outcomes and End Points	Functional Status
Motor Function Measure (MFM) Scale	Supplemental	Outcomes and End Points	Functional Status
North Star Ambulatory Assessment (NSAA)	Supplemental – Highly Recommended for ambulatory patients with CMD	Outcomes and End Points	Functional Status
Pediatric Evaluation of Disability Inventory (PEDI)	Supplemental	Outcomes and End Points	Functional Status
Stair climb (Time to climb 4 stairs)	Supplemental	Outcomes and End Points	Functional Status
Timed up and go (TUG)	Exploratory	Outcomes and End Points	Functional Status
Vignos Lower Extremity Scale	Supplemental	Outcomes and End Points	Functional Status

Instrument / Scale / CRF Name *Name and acronym of the instrument/measure that is recommended for inclusion in the CDEs*	Classification (e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)	Domain	Sub Domain
Hand Grip Dynamometry	Supplemental	Outcomes and End Points	Muscle Strength Testing
Hand Held Dynamometry	Supplemental	Outcomes and End Points	Muscle Strength Testing
Manual Muscle Testing (MMT)	Supplemental - Highly Recommended for studies involving muscle strength assessment.	Outcomes and End Points	Muscle Strength Testing
Maximum Voluntary Isometric Contraction (MVICT)	Supplemental	Outcomes and End Points	Muscle Strength Testing
Pinch Grip Dynamometry	Supplemental	Outcomes and End Points	Muscle Strength Testing
Purdue Pegboard	Supplemental	Outcomes and End Points	Neuropsychological Testing
Bayley Scale of Infant Development (BSID / Bayley III)	Supplemental - Highly Recommended for developmental, psychological, and neuropsychological studies of infants and toddlers up to 42 months old.Highly Recommended as a means of characterizing study participants.	Outcomes and End Points	Functional Status
Peabody Picture Vocabulary Test 4th Edition (PPVT-4)	Supplemental	Outcomes and End Points	Functional Status

Instrument / Scale / CRF Name *Name and acronym of the instrument/measure that is recommended for inclusion in the CDEs*	Classification (e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)	Domain	Sub Domain
Pediatric Evaluation of Disability Inventory (PEDI)	Supplemental	Outcomes and End Points	Functional Status
Wechsler Abbreviated Scale of Intelligence (WASI)	Supplemental - Highly Recommended for psychological and neuropsychological studies for ages 6 years and up. Recommended for other types of studies as a way to characterize the study population.	Outcomes and End Points	Neuropsychological Testing
Wechsler Individual Achievement Test-III (WIAT-III)	Supplemental	Outcomes and End Points	Neuropsychological Testing
Wechsler Intelligence Scale for Children-IV (WISC-IV)	Supplemental - Highly Recommended for psychological and neuropsychological studies for ages 6 to 16 years. Recommended for other types of studies as a way to characterize the study population.	Outcomes and End Points	Neuropsychological Testing
Wechsler Preschool and Primary Scale of Intelligence (WPPSI-IV)	Supplemental – Highly Recommended for psychological and neuropsychological studies for preschool age children (2;6-7:7 years).Recommended for other types of studies as a way to characterize the study population.	Outcomes and End Points	Neuropsychological Testing

Instrument / Scale / CRF Name *Name and acronym of the instrument/measure that is recommended for inclusion in the CDEs*	Classification (e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)	Domain	Sub Domain
Patient Reported Outcomes Measurement Information System (PROMIS)	Supplemental - Highly Recommended for studies of psychosocial functioning, quality-of-life, outcome, and long-term adjustment studies.	Outcomes and End Points	Quality of Life
Quality of Life in Neurological Disorders (Neuro-QOL)	Supplemental - Highly Recommended for studies of psychosocial functioning, quality-of-life, outcome, and long-term adjustment studies.	Outcomes and End Points	Quality of Life

Table 2. READ ME: This is a recommendations summary document of the instruments/measures/case report forms, sorted by domain and sub-domain. Details of the recommendations follow this spreadsheet in the form of information documents (e.g., Notices of Copyright) or case report forms and CDE Details.

CRF Name	Classification *(e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)*	Domain	Sub Domain
Bioelectrical Impedance	Exploratory	Assessments and Examinations	Imaging Diagnostics
Brain Magnetic Resonance Imaging (MRI)	Supplemental, highly recommended for dystroglycanopathies Supplemental for MDC1A Exploratory for all others	Assessments and Examinations	Imaging Diagnostics

CRF Name	Classification *(e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)*	Domain	Sub Domain
Cardiac Magnetic Resonance Imaging (MRI)	Exploratory	Assessments and Examinations	Imaging Diagnostics
Diffusion Tensor Imaging (DTI)	Exploratory	Assessments and Examinations	Imaging Diagnostics
Dual-Energy X-Ray Absorptiometry (DEXA)	Exploratory	Assessments and Examinations	Imaging Diagnostics
Muscle MRI	Supplemental	Assessments and Examinations	Imaging Diagnostics
Muscle ultrasound	Supplemental	Assessments and Examinations	Imaging Diagnostics
Muscle Biopsy and Autopsy Tissue	Please see CDE details for added and modified CDEs. Also, please review the classifications. Aside from the General Core CDEs (i.e. Age and Gender), the group might wish to classify others as either Supplemental or Supplemental – Highly Recommended for studies that include muscle biopsy and autopsy tissue.	Assessments and Examinations	Laboratory Tests and Biospecimens/Biomarkers
Nerve Biopsy	All CDEs on this form are currently classified as Supplemental. It was suggested by a WG member that the group might want to consider the inclusion of a more complete clinical history section in this CRF, similar to what was done in the muscle biopsy CRF.	Assessments and Examinations	Laboratory Tests and Biospecimens/Biomarkers

CRF Name	Classification *(e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)*	Domain	Sub Domain
Skin Biopsies Qualification of Intraepidermal Nerve Fibers	The WG discussed possibly removing the CDEsregarding autopsy specimens, as it is highly unlikely this analysis would be performed on autopsy tissue.	Assessments and Examinations	Laboratory Tests and Biospecimens/Biomarkers
Echocardiogram	Exploratory	Assessments and Examinations	Non-Imaging Diagnostics
Electroencephalography (EEG)	Supplemental	Assessments and Examinations	Non-Imaging Diagnostics
Prenatal and Perinatal History	A WG member suggested that the CRF requires a greater investigation of the maternal and prenatal history. Some suggested fields were added. All CDEs on this form will be classified as Supplemental.	Participant/Subject History and Family History	General Health History
Prior and Concomitant Medications	The WG classified the CDE (C02002) Medication prior or concomitant use indicator - Indicator of whether the participant/subject reported taking any medications during the time period relevant to the study protocol – as Core. The remaining CDEs on this form are classified as Supplemental.	Participant/Subject History and Family History	General Health History

CRF Name	Classification *(e.g., Core, Supplemental - Highly Recommended, Supplemental, Exploratory)*	Domain	Sub Domain
Surgical History	A WG member suggested to classify CDE (C12671) Surgery lifetime total count - total number of surgeries the participant/subject has undergone in his/her lifetime - as Core. All other CDEs on this form are classified as supplemental.	Participant/Subject History and Family History	General Health History