Data Collection Worksheet

Please Note: The Data Collection Worksheet (DCW) is a tool to aid integration of a PhenX protocol into a study. The PhenX DCW is not designed to be a data collection instrument. Investigators will need to decide the best way to collect data for the PhenX protocol in their study. Variables captured in the DCW, along with variable names and unique PhenX variable identifiers, are included in the PhenX Data Dictionary (DD) files.

Transcranial Doppler Ultrasonography

Identifying Intracranial Landmarks and Major Cerebral Arteries

Transcranial Doppler (TCD) ultrasonography provides visual landmarks to help correctly identify intracranial blood vessels. Correct identification of intracranial vessels relies on the diameter of the head, position of the transducer, angle of the transducer, depth of the Doppler sample, and direction of the blood flow. In adults, the diameter of the head is assumed to be 130-140 mm, whereas the head diameter must be measured due to variation of children's head sizes. In children, the bitemporal diameter is measured so that the location of the midline can be calculated (half of the diameter of the head). The internal carotid artery (ICA) bifurcation is the landmark that is the reference point for all other intracranial anatomy. The depth of the ICA bifurcation is estimated to usually be 10 to12 millimeters shallower than the midline.

Recording Transcranial Doppler Ultrasonography Results

The results of the TCD are spectral waveform plots of velocity vs. time and the calculated velocity is the time averaged mean of the maximum velocity. Examiners should record the highest time-averaged mean blood-flow velocity in 2-millimeter increments in the following arteries:

- middle cerebral artery (at three points),
- distal internal carotid artery,
- anterior and posterior cerebral arteries, and
- basilar artery.

Scoring

Normal: blood velocities less than 170 centimeters per second in all arteries.

Conditional: blood velocities greater than 170 centimeters per second but less than 200 centimeters per second in all arteries.

Abnormal: blood velocity of 200 centimeters per second or greater in either the internal carotid artery or the middle cerebral artery

Inadequate: if the middle cerebral artery (MCA) velocity cannot be estimated on both sides due to poor signal to noise (S/N) ratio the study is inadequate unless one side shows MCA velocity of greater than or equal to 200 centimeters per second.

Protocol source: https://www.phenxtoolkit.org/protocols/view/821001