The following are the Group’s recommendations for core specimen data elements that should be collected for all studies. The collection of supplemental and emerging data elements recommended for more advanced and extended studies should be encouraged, particularly in studies that are directed at a molecular mechanism that the biomarker measures.

## Specimen Collection from Adult Participants/Subjects:

1. Core Data Element Recommendations
   * Collection of DNA sample for genomic analysis
   * Collection of acute (<24 hours) plasma sample for proteomic and metabolomic analyses
2. Supplemental Data Element Recommendations
   * Collection of serial plasma and serum samples for proteomic analysis
   * Collection of CSF samples for proteomic analysis
3. Emerging Data Element Recommendations
   * Collection of cerebral microdialysis samples
   * Collection of peripheral blood mononuclear cells (PBMCs) for gene and protein expression studies

## Specimen Collection from Pediatric Participants/Subjects:

1. Core Data Element Recommendations
   * Collection of an acute (<24 hours after injury) serum sample for proteomic and metabolomic analyses.
2. Supplemental Data Element Recommendations
   * Collection of serial serum samples for proteomic analysis
   * Collection of CSF samples for proteomic analysis
3. Emerging Data Element Recommendations
   * Collection of cerebral microdialysis samples

The TBI CDE Working Group recommendations for DNA guidelines for genomic analyses are presented in Table 1. The timing of DNA collection is less critical, even in patients who have received a blood transfusion (Gong, et al, 2003). Recommendations for plasma and serum guidelines for proteomic and metabolomic analyses are shown in Table 2. The timing for acquiring these samples is more complicated. An acute plasma sample (defined as less than 24 hours) was recommended by the Working Group as “Core” for all TBI studies to provide the opportunity for the identification of diagnostic and predictive biomarkers in large series of patients. However, the frequency and duration of serial sample collection is biomarker-dependent and cannot be standardized at this time. Information regarding CSF guidelines and microdialysis guidelines can be found in Tables 3 and 4, respectively. Each of these best practice guidelines addresses the acquisition, processing and storage of the samples in sufficient detail to promote standardization.