Data and Safety Monitoring Plan (DSMP) Guideline

Guidelines are recommendations, rather than rigid rules. Guidelines can be modified using professional judgment and may be adapted to many different situations.

Scope

Applies to Mayo Clinic Human Research Protection Program when monitoring Data and Safety of research for which Mayo Clinic Institutional Review Board (IRB) is the IRB of Record.

Purpose

To provide investigators and research teams with guidelines on how to develop a DSMP.

Guideline

Data and Safety Monitoring Plan

A DSMP prospectively identifies and documents monitoring activities intended to protect the safety of the subjects, the validity of the data, and the integrity of the research study. The DSMP may also identify when to terminate a subject's participation (i.e. individual stopping rules) and/or the appropriate termination of a study (i.e. study stopping rules).

Elements to Consider When Developing a Data and Safety Monitoring Plan

The following DSMP elements and their relevance to the research protocol must be considered. The nature, size, risk, and complexity of the study will determine how to address the following seven elements within the research protocol:

- Subject Safety: monitoring is conducted to avoid or minimize risks (i.e. physical, psychological, or social).
- Data Integrity: monitoring is conducted to assure data is accurate and complete. Monitoring of data assures adherence to the approved clinical study.
- Subject Privacy: monitoring is conducted to assure individual's rights are protected.
- Data Confidentiality: monitoring is conducted to assure data is secured.
- Product Accountability: monitoring is conducted to assure drug(s) or device(s) are tracked and accounted for.
- Study Documentation: monitoring is conducted to assure that required documentation and reports are on file, accurate, and complete.
- Study Coordination: monitoring is conducted to assure that investigator delegation and communication with the research team is planned and systematic.

Options for Documenting a Data and Safety Monitoring Plan

A data and safety monitoring plan may be incorporated within the protocol, documented in the IRB application, or attached to the IRB application. The DSMP may be developed using the Data and Safety Monitoring Plan (DSMP) Template provided by the IRB, or developed using an outline format or narrative summary as preferred by the investigator.

Need for a Data and Safety Monitoring Plan

The criteria for approval of research states that when the research involves more than minimal risk, the research plan makes adequate provision to monitor the data collected to ensure the safety of subjects and that adequate provisions to protect the privacy of subjects and the confidentiality of the data are maintained (45 CFR 46.111).

For all greater than minimal risk research, the IRB requires a DSMP that protects the safety of subjects, the validity of the data, and the integrity of the research study. The IRB reviews the plan and determines if the plan has adequate provisions in place for monitoring the data collected to ensure the safety of participants. This DSMP is in addition to monitoring by or on behalf of the Sponsor (if applicable).

The IRB expects all studies that involve administration of an experimental agent or use of an experimental device, or use of an approved agent or device, that has the potential for mortality or major morbidity will have a written DSMP. A Data and Safety Monitoring Board (DSMB) may also be required for studies that have a high expected rate of morbidity or mortality in the study population.

If the research is considered minimal risk, then the development of a DSMP may be helpful, but its development is not required by the IRB unless, the IRB determines a DSMP is needed for the oversight of the study.

The National Institutes of Health (NIH) states that “oversight and monitoring of all intervention studies to ensure the safety of participants and the validity and integrity of the data” is required. NIH policy states that "monitoring should be commensurate with risks and with the size and complexity of the trials.” NIH also emphasizes “the elements of the monitoring plan may vary depending upon the potential risks, complexity, and nature of the trial.” References: http://grants.nih.gov/grants/guide/notice-files/NOT-OD-00-038.html (release date June 5, 2000) and http://grants.nih.gov/grants/guide/notice-files/not98-084.html (release date June 10, 1998).

The Office for Human Research Protection (OHRP) Code of Federal regulations (45 CFR 46.111) states: “When appropriate, the research plan makes adequate provision for monitoring the data collected to ensure the safety of the subjects.” Reference: http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html.

The U.S. Food and Drug Administration (FDA) states: "Sponsors of clinical investigations involving human drugs, biological products, medical devices, and combinations thereof are required to provide oversight to ensure adequate protection of the rights, welfare, and safety of human subjects and the quality of the clinical trial data submitted to FDA." Reference: http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM269919.pdf

Department of Defense (DoD) Instruction (DoDI) 3216.02 previously required that IRBs approve an independent Research Monitor (RM) with specific roles and responsibilities for all Greater Than Minimal Risk (GTMR) research supported by the DoD. The April 15, 2020 revised DoDI 3216.02 no longer includes the RM requirement. The Mayo Clinic IRB will consider whether the DSMP: (1) adequately protects the safety of subjects, the validity of the data, and the integrity of the research; and (2) is appropriate for the degree of risk associated with the proposed research. The IRB may determine if the appointment of an independent entity (individual or group) is warranted on the basis of specific risks or concerns about the research (Reference: DoD Instruction 3216.02).

For DoD-supported research receiving initial IRB and DoD approval prior to the April 15, 2020 revision of DoDI 3216.02, Principal Investigators who wish to remove the RM from

their current approved protocol must first submit a modification request to the IRB. Until the modification requesting the RM's removal receives IRB approval, the Principal Investigator must comply with the RM's roles and responsibilities as delineated in the IRB-approved research plan.

Preparing a Data and Safety Monitoring Plan

Consider the following seven Human Subject Protection elements when using the DSMP template form, developing a DSMP outline, or constructing a narrative summary for a DSMP. Select the DSMP components (as identified in the table below) depending on the level of risk and the nature of the research study.

Protection Element	**DSMP Component**	**Examples of monitoring activities**
Subject Safety	Specific subject safety parameters	Vital signs, weight, safety blood tests, cardiac status, anxiety, depression scores, etc.
	Frequency of subject safety observations	Weekly telephone follow-up, monthly appointments, observations of subject while in the clinical setting, etc.
	Individual responsible for safety monitoring	Principal Investigator, study coordinator, safety monitor, independent monitor, or Data/Safety Monitoring Board, etc.
	Subject stopping rules - under what conditions will a subject be removed from study participation and who will make the decision?	Exclusion criteria, including adverse response to study procedures, pregnancy, stroke, cardiac irregularity, non-compliance with medication, etc. Include procedures for analysis and interpretation of data, etc.
	Study stopping rules - under what conditions will the study be modified or stopped and who will make the decision?	Unanticipated Problems Involving Risks to Subjects or Others (UPIRTSOs), unexplained adverse outcomes, life threatening adverse event, etc.
	Reporting mechanisms (i.e. deviations, adverse events, UPIRTSOs)	Plans for reporting to IRB, FDA, Sponsor, participating sites, or Data/Safety Monitoring Board, etc.
Data Integrity	Specific data elements to be reviewed	Subject inclusion criteria being met, transcription of data is accurate and complete, units of measure are recorded appropriately, calculations are standardized and performed accurately, etc.
	Frequency of monitoring data, points in time, or after specific number of subjects	First 3 subjects and every 20th subject, monthly, quarterly, or annually, etc.
	Individual responsible for data monitoring	Principal investigator, study coordinator, safety monitor, independent monitor, etc.

Subject Privacy	Under what conditions (time and place) will a subject be consented, interviewed, or telephoned?	Observations of consenting process, interviewing, or clinical visit performed quarterly on 3 subjects. Request input from 5 subjects related to their experiences regarding privacy expectations, etc.
Data Confidentiality	What are the conditions that will protect the confidentiality of the data?	Check for locked file cabinets, secure electronic records, secure location where protected health information is stored, etc.
Product Accountability	Who is responsible for obtaining, storing, preparing, administering, or disposing of the study drug or study device? Who is responsible for overseeing product accountability?	Research Pharmacy, Principal Investigator, Central Pharmacy, Research Laboratory, Nursing, etc.
Study Documentation	Study file management	Study File Management guidelines and checklists for monitoring (sampling of study files annually), etc.
Study Coordination	Roles and responsibilities are clarified, education needs are addressed, planned meetings or communications with documented meeting notes/minutes	Annual debriefing to determine if expectations are clear and if educational needs exist. Scheduled meetings are on calendar, and meeting outcomes are noted and available to staff, etc.

Guideline Notes

N/A

Related Documents

Data and Safety Monitoring Plan (DSMP) Template

Definitions

Data Safety Monitoring Plan (DSMP): A DSMP is a quality assurance plan for a research study. A Data and Safety Monitoring Plan (DSMP) is meant to assure that each clinical investigation has a system for appropriate oversight and monitoring of the conduct of the clinical investigation. The purpose of a DSMP is to insure the safety of the participants, the validity of the data and integrity of the study, and the appropriate termination of studies for which significant benefits or risk have been uncovered or when it appears that the investigation cannot be concluded successfully. A DSMP is commensurate with the risks involved with the research study. The DSMP may include a Data and Safety Monitoring Board (DSMB).

References

45 CFR 46.111

NIH Further Guidance on Datay and Safety Monitoring for Phase I and Phase II Trials

NIH Policy for Data and Safety Monitoring

Food and Drug Administration - Oversight of Clinical Investigations - A Risk-Based Approach to Monitoring

DoD Instruction 3216.02

Owner

Michelle K. Daiss on behalf of Office for Human Research Protection

Contact

Aleisha K. Chappell, CIP, Heidi M. Hanf

Revision History

Date	Synopsis of Change
04/22/2022	Outside of scheduled review. Updated DoD language to reflect current guidance. Updated DoD link. Updated Owner and Contact information.
07/23/2021	Scheduled review. Updated to current template. Minor editorial changes. Updated FDA language to reflect current guidance document and updated DoD link.
09/25/2017	Minor revision. Added the following definitions per Glossary review: Data Safety Monitoring Plan (DSMP).
04/19/2017	Scheduled review. No changes made.