

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)

Triennial Report

Monitoring Adherence to the NIH Policy on the Inclusion of Women and Minorities in Clinical Research as Reported in FY2022 – FY2024

I. Background/Overview

The NIH and NIAMS are committed to the inclusion of women and minorities in all NIH-funded clinical research. As required by the NIH Revitalization Act of 1993 (Public Law 103-43), women and members of minority groups and their subpopulations as research participants must be included in all NIH-funded clinical research. Additionally, NIH-defined Phase III clinical trials must be carried out in a manner sufficient to analyze data by race, ethnicity, and sex and report these results in accordance with policy. The overall goal of the NIH Inclusion Policy is to ensure that individuals are included in clinical research in a manner that is appropriate to the scientific question under study and the prevalence of the specific disease/condition in the population/subpopulation.

A. Mission of the NIAMS

The mission of the NIAMS is to support research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases; the training of basic and clinical scientists to carry out this research; and the dissemination of information on research progress in these diseases. The NIAMS supports a multidisciplinary program of basic, clinical, and translational investigations; epidemiologic research; research centers; and research training for scientists within its own facilities as well as grantees at universities and medical schools nationwide. It also supports the dissemination of research results and information through the NIAMS Information Clearinghouse and through the NIH Osteoporosis and Related Bone Diseases National Resource Center.

B. Description of the NIAMS Clinical Research Portfolio

The Institute's research portfolio includes five core mission areas: Systemic Rheumatic and Autoimmune Diseases, Bone Biology and Diseases, Muscle Biology and Diseases, Joint Biology and Diseases and Orthopaedics, and Skin Biology and Diseases.

Under Systemic Rheumatic and Autoimmune Diseases research area, the NIAMS supports:

- Arthritis Biology Program
- Rheumatic Diseases Integrative Biology Research Program
- Scleroderma, Fibrosis, and Autoinflammatory Disease Program
- Systemic Autoimmune Disease Biology Program

Under Bone Biology and Diseases research area, the NIAMS supports:

- Bone Biology, Metabolic Bone Disorders, and Osteoporosis Program
- Clinical, Integrative Physiology and Rare Diseases of Bone Program

Under Muscle Biology and Diseases research program, the NIAMS supports:

- Muscle Development and Physiology Program
- Muscle Disorders and Therapies Program

Under Joint Biology, Diseases, and Orthopaedics research program, the NIAMS supports:

- Cartilage and Connective Tissue Program
- Clinical Osteoarthritis and Diagnostic Imaging Program
- Musculoskeletal Tissue Engineering and Regenerative Medicine Program
- Orthopaedic Implant Science Program
- Orthopaedic Research Program

Under Skin Biology and Diseases research program, the NIAMS supports:

- Epidermis, Dermis, and Skin Senses Program
- Skin Immunology and Diseases, Skin Microbiome Program
- Skin Repair, Pigmentation and Appendages, Vasculature/Lymphatic Systems Program

In support of its research program goals and objectives, the NIAMS funds an extensive portfolio of clinical research, which includes interventional studies (i.e., clinical trials) and observational studies varying in size and complexity. While some of the diseases covered by the NIAMS mission are rare – affecting only a few thousand people worldwide, most are chronic and common, and many causes lifelong pain, disability, or disfigurement. They affect people of all ages, racial and ethnic populations, and economic groups. Many affect women and minorities disproportionately — both in increased numbers and increased disease severity. For example, women with systemic lupus erythematosus (SLE) outnumber men nine to one. African American women are three times as likely to have SLE as are white women. SLE is also more common in Hispanic, Asian, and American Indian women. SLE risk genes have been identified on the X chromosome, which provides potential evidence for this autoimmune disease's sex bias.

Rheumatoid arthritis, osteoporosis, and osteoarthritis (in people over 45 years of age) are also more prevalent among women, whereas certain forms of ankylosing spondylitis (inflammation of the joints in the spine) occur more frequently in men. Given what is known about the populations affected by NIAMS diseases, it is important to ensure that the funded science is appropriately including individuals of diverse racial and ethnic groups.

II. Strategies for Ensuring Compliance in the Extramural Program

Strategies for ensuring compliance with the inclusion policy begins well before grant applications are received for peer review. In the funding opportunity announcement (FOA), specific language is included to support the inclusion of diverse populations in clinical studies. Any exclusion of a specific race/ethnicity, sex, or age group must be scientifically justified in the grant application. NIAMS scientific review, program, and grants management staff are aware of the NIH policies on inclusion based on sex, race/ethnicity, and age in clinical research. The NIAMS inclusion representative serves as a resource to answer questions about policy and compliance.

A. Peer Review

The implementation of inclusion guidelines involves the participation of NIAMS review, program, clinical management, and grants management staff. Inclusion is first addressed during the peer review process. Reviewers on NIH peer review panels are given specific guidance on reviewing inclusion based on sex, race/ethnicity, and age when considering clinical research applications. Reviewers evaluate applications for the appropriateness of the proposed plan for inclusion by sex, race/ethnicity, and age. For NIH-defined Phase III clinical trials, enrollment goals are further assessed for plans to conduct analyses of intervention effects among sex, racial, and ethnic groups. Initial review groups make recommendations as to the acceptability of the proposed study population with respect to the inclusion policies.

Unacceptable inclusion plans must be reflected in the priority score of the application and documented in the minutes of the review session. Applications with unacceptable inclusion plans receive a bar to funding; an award is not issued until an acceptable resolution is received.

B. Program Monitoring and Grants Management Oversight

Prior to an award, program officials/program directors are responsible for reviewing the inclusion information in the application and indicating whether the plans are scientifically appropriate. NIAMS program officials discuss issues of non-compliance with applicants and advise them on how to resolve problems. The applicant then modifies the project or provides additional information to address reviewer concerns. These procedures ensure that NIAMS funds no application with unacceptable inclusion of women, minorities, and age groups. Program staff monitor enrollment in annual progress reports and provide consultation to investigators for enhancing outreach to specific populations as needed. Grants management staff ensure that appropriate terms and conditions of award are included in the Notice of Award, and that this information is appropriately documented in the official grant file. For NIH-defined Phase III clinical trials, program staff monitor the requirement for sex and race/ethnicity analyses in annual progress reports. The Clinical Management Team is involved with monitoring inclusion data within the Human Subjects System (HSS) and addressing any technical issues that arise. They also provide expertise in devising strategies to help studies that are not meeting their inclusion goals and keep up to date on all inclusion policies.

C. NIAMS Training Approaches

NIAMS Program Officials/Program Directors and Scientific Review Officers attended the 2020 Inclusion Training for Program Staff and the 2020 Inclusion Training for Review Staff in April 2020 conducted by the NIH Office of Extramural Research (OER). The purpose of this training was to train NIH program and review staff on the NIH inclusion policies and procedures for the inclusion of women, minorities, and individuals across the lifespan. Staff may access the archived trainings on the NIH staff intranet. New NIAMS staff may also attend the NIH Integrated Core Curriculum training, which provides an intensive overview of the grants process and covers topics including initiative development, application submission, scientific peer review, resources and tools, council and pre-award, and post-award.

NIAMS Clinical Management staff provides updates on inclusion processes and addresses frequently asked inclusion and HSS questions. The Clinical Management staff collaborates with extramural Program Officers and grants management staff.

D. NIAMS Specific Procedures

Additionally, some NIAMS clinical research studies, specifically clinical trials have an additional level of oversight implemented through a NIAMS-appointed Data and Safety Monitoring Board (DSMB) or a NIAMS-appointed Safety Officer (SO) who pays special attention to the enrollment of participants and whether the researchers are meeting specified sex and race/ethnicity targets. If a study is falling behind on reaching its minority goals, the monitoring body will request a plan from the principal investigator (PI) to improve the study's outreach to a particular population. The NIAMS and the monitoring body also pay careful attention to PI requests to add or replace clinical study sites to ensure that a new recruitment site will contribute the appropriate patient population to reach the study's inclusion targets. PIs must provide the following information before additional sites will be approved:

- Description of the patient population pool/catchment area of the new site (3-4 sentences)
- Overall study target enrollment
- Target enrollment for new site
- Description of the expected minority population pool of the new site
- Target minority enrollment for new site

III. Strategies for Ensuring Compliance for Intramural Research

NIAMS requires all intramural investigators conducting clinical research to provide plans for the appropriate inclusion of women and minorities, or a justification whenever representation is limited or absent, as part of their NIH protocol reviews. Intramural Institutional Review Boards (IRB) review the research protocols for compliance with inclusion guidelines and conduct annual Continuing Reviews. With each annual review and renewal, the investigator documents the number, sex, race, and ethnicity of participants who were accrued during the past year; any issues with accrual are addressed at the annual review by the investigator and reviewed by the pertinent IRB. The Clinical Center's Office of Protocol Services coordinates annual reporting of participant demographic data to the Office of Extramural Research (OER) and the Office of Research on Women's Health. As part of a quadrennial review policy, any clinical protocols that are open for four years or more involve discussion among the Institute Clinical Director and the PIs to discuss the adequacy of enrollment goals and any issues related to meeting them. Additionally, the NIAMS Clinical Director and Clinical Operations Manager meet yearly with individual PIs to carefully review study progress regarding target enrollment.

IV. Analysis and Interpretation of Data

The appended tables show the NIAMS inclusion enrollment data for extramural and intramural clinical research studies in fiscal years (FY) 2022 through 2024. Please note that data reflected for FY2022 incorrectly included two Inclusion Enrollment Records (IERs) in the reporting that contained existing datasets with enrollment data of 139,518 participants. For the purposes of reporting inclusion data, existing datasets are not counted. This error incorrectly inflated our FY2022 enrollment numbers; however, this was corrected, and data are reflected correctly for FY2023.

A. NIAMS Aggregate Inclusion Enrollment Data

Clinical research studies report inclusion enrollment data, which are contained within IERs in the HSS. Depending on how the project record is set up for reporting inclusion, a study may have one or more IERs representing different study populations.

Table 2-1 (see Appendix 1) shows the number of IERs for NIAMS Extramural and Intramural clinical research projects that reported inclusion data between FY2022 and FY2024. Most records were from grants conducting research at U.S. (domestic) sites. IERs without enrollment indicate studies that have not recruited any participants. Female-only or male-only IERs indicate studies that were scientifically justified to recruit only a single-sex. The total number of records reporting inclusion data increased from FY2022 to FY2023, with an overall 3% increase in records reporting data between FY2022 (529 IERs) and FY2023 (545 IERs). The total number of records reporting inclusion data decreased from FY2023 (545 IER) to FY2024 (514 IER), with an overall 6% decrease in records reporting data between FY2023 and FY2024.

The total enrollment for all NIAMS intramural and extramural Clinical Research by sex, race, and ethnicity is displayed in Table 5-1-1-C (see Appendix 2). The NIAMS total participant counts declined between FY2022 (28,627 females, 9,949 males) and FY2023 (8,164 females, 4,275 males). In FY2024, the NIAMS total participant enrollment remained consistent with FY2023 total enrollment counts. In FY2024, the NIAMS total participant enrollment was 8,534 females and 4,185 males. The percentage of males (25.9%) enrolled in clinical research in FY2023 increased from FY2022 (24.9%). The percentage of females enrolled in clinical research declined from the FY2023 count (33%) as compared to FY2024 (29.1%). The decrease in the number of participants may be attributed to more inclusion records or performing quality control checks to distinguish existing datasets from active participant inclusion enrollment reports.

The percentage of minority enrollment for NIAMS clinical research studies has slightly increased

in female and male participants. In FY2022- FY2023, the percentage of minority enrollment for female participants increased from 29.2% to 33%. In FY2022-FY2023, the percentage of minority enrollment for men increased from 24.9% to 25.9%. In FY2024, the percentage of minority enrollment remained consistent, with a slight decline in enrollment of female (29.1%) and male (20.4%) participants. The total enrollment by race and ethnicity showed some slight changes during FY2022 and FY2024. In FY2022-FY2024, the total enrollment percentages remained unchanged for the American Indian (0.4%) and Native Hawaiian/Pacific Islander participants (0.2%). In FY2022-FY2024, the total enrollment percentage of Asian participants has increased from 4.9% to 7.2%. In FY2024, the total enrollment of Asian participants was 4.9%. In FY2023-FY2024, the total enrollment percentage of Black/African American participants slightly declined from 13.6% to 12.1%. In FY2023-FY2024, the total enrollment percentage of Hispanic/Latino enrollment slightly declined from 7.8% to 6.4%. The total enrollment by race and ethnicity shows slight declines in total participant enrollment in both male and female participant counts.

The total enrollment for NIH-wide intramural and extramural Clinical Research by sex, race, and ethnicity is displayed in Table 5-1-1-C (see Appendix 4). In FY2024, NIAMS has a slightly higher total enrollment percentage for female participants than the NIH (58.2% in FY2024 for NIAMS; 55.5% in FY2022 for NIH-wide). In FY2023, the percentage of NIAMS female participant enrollment (57.8%) was slightly higher than NIH-wide data (56.5%). In FY2023, the percentage of the total enrollment of male participants for NIAMS was slightly higher than the NIH total enrollment percentage (38.5% for NIAMS; 37.2% NIH-wide).

For minority enrollment, NIAMS has lower total enrollment percentages across all racial/ethnic minority categories. In FY2022, the NIAMS enrollment percentage for minorities (28%) was slightly lower than the NIH-wide percentage (30.6%). In FY2023, the NIAMS total enrollment percentage for minorities (30.3%) was slightly lower than the NIH-wide percentage (44%). In FY2024, the NIAMS total enrollment percentage for minorities (25.4%) was slightly lower than the NIH-wide percentage (43%). The NIH-wide total enrollment counts for minority participants have declined from FY2022 (15,579,474 female and 14,044,907 male) to FY2023 (3,328,616 female and 1,998,338 male). In FY2024, the NIH total enrollment counts continue to show a decline (3,621,570 female and 2,284,529) compared to FY2023.

NIAMS supported NIH-Defined Phase III Trials

NIAMS supports NIH-defined Phase III clinical trials. NIAMS extramural currently supports two NIH-defined phase III clinical trials that require valid analyses by sex and race/ethnicity, which

includes six IERs.

The total enrollment for all NIAMS-supported NIH-Defined Phase III Clinical Trials by sex, race, and ethnicity is displayed in Table 5-2-2-C (see Appendix 3). In FY2022-FY2023, the total enrollment number for NIH-defined phase III clinical trials has increased from FY2022 (122 female and 86 male participants) to FY2023 (826 female and 392 male participant enrollment). In FY2022-FY2023, the total female participant enrollment has increased from FY2022 (58.7%) to FY2023 (67.1%).

B. Research, Condition, and Disease Categorization (RCDC) Report

As of March 1, 2022, NIAMS clinical research inclusion enrollment data by RCDC category are available on the NIH RePORT website through this link: <https://report.nih.gov/RISR/>

V. Additional information

Appendix 1

Table 2-1. Total Inclusion Data Records (IERs) for NIAMS Extramural and Intramural Clinical Research Reported Between FY2022 and FY2024

Fiscal Year	Total IERs	IERs Without Enrollment	IERs With Enrollment	US Site IERs	Non-US Site IERs	Female Only IERs	Male Only IERs	IERs Excluding Male only and Female only*
2022	529	216	313	302	11	38	16	259
2023	545	222	323	314	9	27	16	280
2024	514	204	310	298	12	28	17	265

* Inclusion Data Records (IERs) excluding male only and female only include unknown sex, and combination of unknown and any sex.

Appendix 2

Table 5-1-1-C. Enrollment for All NIAMS Extramural and Intramural Clinical Research, Sex by Race and Ethnicity

Fiscal Year	Sex	Minority	% Minority	Total Enrollment	% Total	Not Hispanic	% Not Hispanic	Hispanic Latino	% Hispanic Latino	Unknown Not Reported	% Unknown Not Reported
2022	Female	28,627	29.2	98,000	70.2	86,799	88.6	10,095	10.3	1,106	1.1
2022	Male	9,949	24.9	39,971	28.6	35,778	89.5	3,572	8.9	621	1.6
2022	Unknown	518	33.5	1,547	1.1	86	5.6	506	32.7	955	61.7
2023	Female	8,164	33.0	24,773	57.8	21,105	85.2	2,674	10.8	994	4.0
2023	Male	4,275	25.9	16,488	38.5	14,584	88.5	1,289	7.8	615	3.7
2023	Unknown	541	34.2	1,580	3.7	156	9.9	513	32.5	911	57.7
2024	Female	8,534	29.1	29,289	58.2	22,365	76.4	3,110	10.6	3,814	13.0
2024	Male	4,185	20.4	20,554	40.9	16,000	77.8	1,309	6.4	3,245	15.8
2024	Unknown	53	11.5	461	0.9	99	21.5	28	6.1	334	72.5

Fiscal Year	Sex	American Indian Alaska Native	% American Indian Alaska Native	Asian	% Asian	Black African American	% Black African American	Native Hawaiian Islander	% Native Hawaiian Islander	White	% White	More Than One Race	% More Than One Race	Unknown Not Reported	% Unknown Not Reported
2022	Female	147	0.2	4,377	4.5	13,593	13.9	73	0.1	67,993	69.4	1,587	1.6	10,230	10.4
2022	Male	101	0.3	2,442	6.1	3,674	9.2	50	0.1	29,310	73.3	455	1.1	3,939	9.9
2022	Unknown	5	0.3	1	0.1	4	0.3	0	0.0	59	3.8	2	0.1	1,476	95.4
2023	Female	94	0.4	1,741	7.0	3,357	13.6	42	0.2	17,058	68.9	783	3.2	1,698	6.9
2023	Male	69	0.4	1,327	8.0	1,402	8.5	28	0.2	12,230	74.2	378	2.3	1,054	6.4
2023	Unknown	3	0.2	12	0.8	7	0.4	0	0.0	53	3.4	11	0.7	1,494	94.6
2024	Female	122	0.4	1,424	4.9	3,554	12.1	32	0.1	18,975	64.8	765	2.6	4,417	15.1
2024	Male	82	0.4	1,011	4.9	1,594	7.8	36	0.2	14,195	69.1	359	1.7	3,277	15.9
2024	Unknown	1	0.2	8	1.7	8	1.7	1	0.2	78	16.9	11	2.4	354	76.8

The data presented in this report show only inclusion data records labeled as prospective data. Inclusion data records labeled as existing data are excluded.

Appendix 3

Table 5-2-2-C. All Enrollment for NIAMS Extramural and Intramural Phase III Clinical Research, Sex by Race and Ethnicity

Fiscal Year	Sex										
		Minority	% Minority	Total Enrollment	% Total	Not Hispanic	% Not Hispanic	Hispanic Latino	% Hispanic Latino	Unknown Not Reported	% Unknown Not Reported
2022	Female	52	42.6	122	58.7	98	80.3	8	6.6	16	13.1
2022	Male	22	25.6	86	41.3	76	88.4	4	4.7	6	7.0
2022	Unknown	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2023	Female	224	27.1	826	67.1	745	90.2	45	5.4	36	4.4
2023	Male	73	18.6	392	31.8	349	89.0	19	4.8	24	6.1
2023	Unknown	2	15.4	13	1.1	9	69.2	1	7.7	3	23.1
2024	Female	65	64.4	101	86.3	41	40.6	60	59.4	0	0.0
2024	Male	16	100.0	16	13.7	0	0.0	16	100.0	0	0.0
2024	Unknown	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Fiscal Year	Sex														
		American Indian Alaska Native	% American Indian Alaska Native	Asian	% Asian	Black African American	% Black African American	Native Hawaiian Pacific Islander	% Native Hawaiian Pacific Islander	White	% White	More Than One Race	% More Than One Race	Unknown Not Reported	% Unknown Not Reported
2022	Female	0	0.0	2	1.6	38	31.1	0	0.0	74	60.7	4	3.3	4	3.3
2022	Male	0	0.0	0	0.0	18	20.9	0	0.0	64	74.4	0	0.0	4	4.7
2022	Unknown	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
2023	Female	2	0.2	13	1.6	148	17.9	2	0.2	620	75.1	25	3.0	16	1.9
2023	Male	2	0.5	5	1.3	42	10.7	0	0.0	320	81.6	11	2.8	12	3.1
2023	Unknown	1	7.7	0	0.0	0	0.0	0	0.0	7	53.8	1	7.7	4	30.8
2024	Female	1	1.0	1	1.0	3	3.0	0	0.0	37	36.6	59	58.4	0	0.0
2024	Male	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	16	100.0	0	0.0
2024	Unknown	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Appendix 4

Table 5-1-1-C. Enrollment for All **NIH-Wide** Extramural and Intramural Clinical Research, Sex by Race and Ethnicity

Fiscal Year	Sex	% Minority		Total Enrollment		Not Hispanic		Hispanic Latino		% Unknown Not Reported	
					% Total	Hispanic	% Not Hispanic	Latino	% Hispanic Latino	Not Reported	% Unknown Not Reported
2022	Female	15,579,474	31.2	50,007,156	51.5	46,265,802	92.5	3,351,087	6.7	390,267	0.8
2022	Male	14,044,907	30.0	46,853,626	48.2	43,208,368	92.2	3,307,386	7.1	337,872	0.7
2022	Unknown	69,350	23.0	301,270	0.3	47,219	15.7	45,383	15.1	208,668	69.3
2023	Female	3,328,616	48.1	6,926,655	56.5	5,251,212	75.8	902,305	13.0	773,138	11.2
2023	Male	1,998,338	43.9	4,556,310	37.2	3,716,954	81.6	510,337	11.2	329,019	7.2
2023	Unknown	67,271	8.7	775,876	6.3	88,550	11.4	24,450	3.2	662,876	85.4
2024	Female	3,621,570	46.9	7,717,790	55.5	5,467,385	70.8	1,022,405	13.2	1,228,000	15.9
2024	Male	2,284,529	44.4	5,142,867	37.0	3,766,124	73.2	611,026	11.9	765,717	14.9
2024	Unknown	75,369	7.1	1,055,128	7.6	114,031	10.8	22,105	2.1	918,992	87.1

Fiscal Year	Sex	% American Indian Alaska Native		Asian	% Asian	% Black African American		Native Hawaiian Pacific Islander	% Native Hawaiian Pacific Islander	White	% White	More Than One Race	% More Than One Race	Unknown Not Reported	% Unknown Not Reported
2022	Female	592,947	1.2	1,537,559	3.1	9,358,983	18.7	64,156	0.1	36,701,652	73.4	1,204,269	2.4	547,590	1.1
2022	Male	579,925	1.2	1,386,168	3.0	8,089,658	17.3	64,887	0.1	35,167,186	75.1	1,144,408	2.4	421,394	0.9
2022	Unknown	1,118	0.4	9,982	3.3	11,792	3.9	262	0.1	17,673	5.9	6,857	2.3	253,586	84.2
2023	Female	235,723	3.4	824,640	11.9	1,441,191	20.8	24,338	0.4	3,158,527	45.6	184,424	2.7	1,057,812	15.3
2023	Male	103,586	2.3	544,257	11.9	847,196	18.6	17,416	0.4	2,389,426	52.4	120,362	2.6	534,067	11.7
2023	Unknown	2,896	0.4	12,616	1.6	19,733	2.5	547	0.1	57,867	7.5	13,106	1.7	669,111	86.2
2024	Female	92,322	1.2	831,033	10.8	1,525,881	19.8	24,660	0.3	3,669,170	47.5	292,481	3.8	1,282,243	16.6
2024	Male	60,332	1.2	611,423	11.9	918,924	17.9	18,257	0.4	2,667,198	51.9	174,014	3.4	692,719	13.5
2024	Unknown	4,385	0.4	19,520	1.9	18,288	1.7	751	0.1	81,907	7.8	12,302	1.2	917,975	87.0