MUSCULOSKELETAL TUMOR SOCIETY

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Rules and Procedures for MSTS Recognition of Fellowship Programs

Overview: The MSTS is excited to announce a new fellowship accreditation program that will advance our society's mission for excellence in education and patient advocacy. This change coincides with musculoskeletal oncology transitioning to an independent match process rather than being part of the AAHKS Reconstruction fellowship match. Beginning June 1st, 2022 MSTS will start a process to formally recognize musculoskeletal oncology fellowships. The timeline fellowship recognition application and approval is provided in Appendix A of this document. Programs must be MSTS recognized in order to participate in SF Match and the Central Application Service (CAS). Orthopaedic Oncology fellows who wish to become active members of the MSTS must graduate from an MSTS recognized program. The purpose of this new initiative is to ensure that fellowship programs, current and future, meet a minimum standard of educational and experiential quality as they train the next generation of orthopaedic oncologists. For a fellowship program to be recognized by the MSTS it must either be ACGME accredited or apply for MSTS recognition.

https://www.acgme.org/Specialties/Program-Requirements-and-FAQs-and-Applications/pfcatid/14/Orthopaedic%20Surgery

Requirements for MSTS Fellowship Program Recognition

ACGME Pathway: Programs that are ACGME accredited will be automatically MSTS recognized.

MSTS Recognition Pathway: Programs that are not ACGME accredited may choose to apply for MSTS recognition through the MSTS recognition application process. This involves filling out an online application, undergoing an in person or virtual site visit, and paying a fee; the fellowship committee may request additional information as part of the application. The MSTS fees include an initial application fee of $4500 and subsequent annual renewal fee of $3000 (note fees are subject to change without notice; fees are set to breakeven with cost of administering program recognition).

Please see Timeline for Applications in Appendix A

MSTS Accreditation Rules and Procedures

I. Institution

A. One sponsoring institution should assume ultimate responsibility for the fellowship program including fellow education at participating institutions.

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B. Sponsoring institution must be affiliated with a multidisciplinary adult and pediatric sarcoma program that includes full time personnel as indicated in section IIC below.

C. Programs must provide an intellectual environment for acquiring the knowledge, skills, clinical judgment, and attitudes essential to the practice of the subspecialty. Education must be emphasized over service.

D. Fellowship education must occur in a manner that enhances rather than detracts from resident education in orthopaedic oncology.

II. Personnel

A. Fellowship Director: Each program must have a designated fellowship director who meets the following requirements:

1. The Fellowship director's primary career focus is in orthopaedic oncology
2. Dedicates over 50% of their time to the clinical practice of orthopaedic oncology
3. Must be in third or more year of post-fellowship clinical practice
4. Has complete authority of and accountability for the administration, operations, educational program, scholarship program, fellow selection, fellow and program evaluations, and promotion regarding the fellowship program.
5. Completes all required documentation as requested by the MSTS in a timely manner.
6. Ensures program compliance with all MSTS program requirements.
7. The Program Director must oversee and ensure complete and accurate case log documentation by the fellow.
8. Notify the MSTS fellowship committee about any significant change in the program within 1 month of the occurrence. This includes but is not limited to change in fellowship director or program coordinator, addition/subtraction of core faculty, or fellow withdrawal from program.
9. Notify matched applicants about loss of core faculty or any significant change to the educational program within 1 month. If significant changes occur after the interview but before the match, the program director must notify all applicants who interviewed.
10. Inform applicants about expectations pertaining to serving in an attending or clinical instructor capacity; for example taking attending level call and/or moonlighting.

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11. Maintain a full and unrestricted license to practice medicine in the United States or Canada or give evidence of full time medical service in the federal government, which does not require licensure.
12. Current board certification via the American Board of Orthopaedic Surgery, the American Osteopathic Board of Orthopaedic Surgery, or the Royal College of Surgeons of Canada-Orthopaedics. Board Eligible status does not fulfill this requirement.
13. Maintain an environment of scholarly activity. The Program Director must demonstrate involvement in scholarly activity in addition to local teaching.

B. Core Faculty: For the first fellowship position, there should be a minimum of 2 practicing orthopedic oncologists. An additional fellow may be added to the program for each additional faculty member. At least one core faculty member must be in 7th or more year of practice. All faculty members must have the following qualifications:

1. Dedicate over 50% of their time to the clinical practice of orthopaedic oncology
2. Maintain a full and unrestricted license to practice medicine in the United States or Canada or give evidence of full time medical service in the federal government which does not require licensure.
3. Completion of an orthopaedic oncology fellowship
4. Published at least one first or last author orthoapedic oncology related research article.
5. Current board certification via the American Board of Orthopaedic Surgery, the American Osteopathic Board of Orthopaedic Surgery, or the Royal College of Surgeons of Canada-Orthopaedics

C. Multidisciplinary Team: Orthopaedic oncology by nature is a multidisciplinary field. A fellowship program must have collaborators in the following disciplines who are affiliated with the institution where the fellowship program is based.

1. Adult medical oncology
2. Pediatric oncology
3. Pathologist with experience in musculoskeletal tumors

4. Musculoskeletal radiologist
5. Radiation Oncology
6. Access to associated surgical disciplines such as vascular surgery, plastic surgery to support, as needed, the orthopaedic tumor service.
7. Physical and Occupational therapist with experience in caring for cancer patients.

D. Program Coordinator

1. A program coordinator must be identified and have adequate time allotted to managing the administrative tasks associated with a musculoskeletal oncology fellowship. These tasks include but are not limited to making policies and procedures available for applicants and fellows, assisting with credentialing, communicating with the MSTS fellowship committee and providing accreditation documentation as necessary. The program coordinator may share additional responsibilities such as coordinating other fellowships or acting as residency coordinator

III. Fellow Education Requirements: The program must have a written curriculum that outlines how the fellowship will produce an orthopaedic oncologist capable of independent practice. The program must have a volume of at least 300 new patients per fellow per year including benign and malignant bone and soft tissue tumors. The details of the curriculum are the responsibility of the fellowship director but must include the following:

A. Broad Clinical exposure

1. **Surgical experience**: Fellows must demonstrate competence in surgical skills related to orthopaedic oncology. The fellow must perform a minimum 150 operative procedures related to musculoskeletal tumors. The experience must include surgery in the following categories and see Appendix B for case log minimums:
    a. Pelvic sarcomas
    b. Metastatic bone disease
    c. Pediatric (<18years old) bone sarcoma limb salvage
    d. Pediatric (<18 years old) soft tissue sarcoma
    e. Extremity/pelvis soft tissue sarcoma
    f. Extremity/pelvis bone sarcoma

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   g. Amputation
   h. Management of complications including but not limited to infection, wound infection or dehiscence, implant loosening, allograft nonunion or fracture, and fractures related to sarcoma treatment e.g. radiation, periprosthetic fractures.
2. **Outpatient experience**: Fellows must learn how to evaluate patients, create effective treatment plans, communicate with team members, and counsel patients regarding their disease in the outpatient setting. This experience must include the following:
   a. Staging of bone and soft tissue sarcomas
   b. Learning how to participate in multidisciplinary care for bone and soft tissue sarcomas and metastatic bone disease
   c. Diagnosing and formulating treatment plans for bone and soft tissue tumors
   d. Identifying and formulating treatment plans for surgical complications
   e. Developing communication skills including how to have difficult conversations such as informing of new cancer diagnosis and shared decision making.
   f. Learning about non-surgical treatment strategies for musculoskeletal tumors
   g. Learning how to be an effective member of a multidisciplinary sarcoma team.
3. **Multidisciplinary Tumor Board:** Fellows must participate in regularly scheduled tumor board.
4. **Fundamentals of diagnostics:** Through clinical exposure and didactics the fellow must have sufficient educational experience to develop:
   a. Expertise in radiological diagnosis of musculoskeletal tumors
   b. Basic understanding of pathological evaluation of musculoskeletal tumors including familiarity with basic histology, immunohistochemical staining, molecular testing, and advanced diagnostics of bone and soft tissue tumors.

B. Education Conferences: The fellow must participate in educational programming that includes at least:

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1. Monthly or more frequent multidisciplinary sarcoma tumor board
2. Monthly or more frequent didactic teaching conference.
3. At least monthly journal club or similar literature review conference
4. Quality and safety conference such as monthly department M&M conference, post-operative case conference, or any other formal opportunity to discuss quality, safety and/or complications.
5. At least one national meeting, for example: MSTS, ISOLS, AAOS, CTOS

IV. Scholarship: The critical evaluation of research literature is an important aspect of orthopaedic oncology. Fellowship programs must establish scholarship activity as a graduation requirement. Scholarship activities may include first author on a publishable quality research article or in-depth review article or book chapter or participation in a formal research design and statistics course.

V. Moonlighting: The fellow may do moonlighting work. This may include taking attending call at the primary fellowship institution or an outside institution. The fellowship director is responsible for ensuring that moonlighting does not interfere with the fellow's education or clinical responsibilities related to the musculoskeletal oncology fellowship.

VI. Evaluation

- **A. Evaluation of the program by the fellow.** The program should create an environment where fellow comments and feedback are encouraged. At a minimum, the fellow must provide a written program evaluation at the end of the year.
- **B. Evaluation of the fellow by the program**. The program must provide feedback to the fellow on a routine basis including a mid year and end of year evaluation.
- **C. Program self-evaluation**. All members of the program including director, core faculty, program coordinator, and fellow should participate in yearly evaluation and improvement efforts of the fellowship program. This can be accomplished by a program evaluation committee or other formal process.

VII. Maintenance of Recognition: The MSTS fellowship committee will review each fellowship program on a yearly basis. In order for programs to maintain recognition they must complete the following items:

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- **A.** Programs must comply with all MSTS rules and procedures for fellowship accreditation that are indicated in this document.
- **B.** Submit yearly case log data for the graduating fellow within one month of the fellow's graduation date.
- **C.** Graduating fellow must complete the annual survey administered by the MSTS fellowship committee.
- **D.** Pay annual fee.

VI. Adverse Actions: The following actions may be taken based on a fellowship programs performance. Program status will be indicated on the MSTS website. Programs will be given the opportunity to correct deficiencies. All actions will be communicated to programs in writing.

- **A. Letter of Concern**: If the fellowship program is found to be deficient or non-compliant with the rules for recognition as outlined in this document, the fellowship program director will be notified in writing. Within 45 days of receiving the letter of concern the program director must file a letter of response addressing the concerns with the fellowship committee. If areas of concern persist the program may be placed on probation.
- **B. Probation**: If deficiencies or non-compliance persist the program will be placed on probation. A probation letter will be sent to the fellowship program director that outlines the deficient areas, corrective actions required, and timeline for action. At the end of the probationary period the program may be fully reinstated, remain on probation, or be terminated.
- **C. Suspension**: If there are major deficiencies in the program it will be suspended and not allowed to participate in the upcoming SF Match while corrective actions are taken. Examples of major deficiencies include but are not limited to failure to meet case minimums over 2 consecutive years, unprofessional behavior or abuse by faculty/staff towards the fellow, submitting falsified material or information to the MSTS. Suspension will result in the program being removed from the list of recognized fellowships. Suspension will last for no less than 1 year. Suspension will end when a program demonstrates substantial improvement.

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D. Protection of the Fellow: if at any time a program is substantially out of compliance such that fellow education or well-being is severely compromised the MSTS fellowship committee will expedite the adverse action and corrective measures. If a program is suspended the MSTS fellowship committee will work with the impacted fellow to find an acceptable course of action to ensure a fellow who matches into a recognized program that subsequently loses recognition during their fellowship will still be eligible for MSTS membership.

VII. Grievance and appeals:

A. A fellowship program may file an appeal within 6 weeks of receiving any adverse action taken by the fellowship committee. The fellowship committee's adverse action and the fellowship program's appeal will be forwarded to an appeals panel appointed by the executive committee. The appeals panel will be composed of MSTS members who are not on the fellowship committee and do not practice within the geographic region of the fellowship program.

B. Fellows may file complaints, grievances, or concerns regarding a program, the match, or any other fellowship related topic.

C. All appeals and grievances must be submitted in writing to the MSTS Fellowship Committee Chairperson

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Appendix A

MSTS Fellowship Recognition Timeline

ACMGE accredited programs: ACGME accredited programs are automatically MSTS recognized. The only action needed is to maintain ACMGE accreditation per ACGME rules and procedure.

The following apply to programs that do not have ACGME accreditation or MSTS recognition.

2022 Match Cycle

All fellows who match in the 2022 Match cycle (Fellowship training dates 2023-2024) will be considered eligible for MSTS membership.

2023 Match Cycle

Starting with 2023 Match cycle (applications open Aug 2022 and Match in April 2023) programs must participate in the MSTS fellowship recognition process in order to participate in the SF Match. Fellows who wish to become Active Members in the MSTS must graduate from an MSTS recognized fellowship.

Participation in the MSTS recognition process for the 2022-2023 Match cycle year is defined as follows:

1. Programs must start the MSTS Recognition applications by July 5th,2022.
    a. For programs that seek MSTS pathway recognition, the Minimum required to fulfill this requirement is complete “Part I: Background and Personnel” of the application.
2. Programs that wish to gain ACGME accreditation must submit proof of submitting/starting the ACGME accreditation process. A letter from the ACGME, institution DIO, email confirmation of application submission, or other official document that confirms the start the of the ACMGE application process will fulfill this requirement.
3. Programs must have finalized and approved MSTS Recognition application or ACGME accreditation by April 3,2023
4. In the scenario that programs are denied approval for MSTS recognition (denied either MSTS Application or ACGME accreditation) prior to the April 3, 2023 deadline the following apply:
    a. Their fellow who graduates in 2024 will not be penalized. The fellow will be eligible for Active Membership

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b. The Program will not be eligible to participate in the fellowship match for the 2024 Match cycle. The program may reapply the for the subsequent year.

2024 and future Match Cycles

Starting with the 2024 Match cycle, (applications open Aug 2023 and Match in April 2024), and moving forward programs must participate in the MSTS fellowship recognition process for their graduating fellows to be eligible for active membership into the MSTS.

Participation in the MSTS recognition process for the 2023-2024 Match Cycle and future years is defined as follows:

1. Already completed and approved MSTS Recognition or ACGME accreditation in the year(s) prior.
2. Programs not already approved must submit completed application with all required documents by January 31 of the year that applications open; for example, for the 2024 match cycle applications for new programs are due January 31 2023 in anticipation of participating in the SF Match/Central Application Service starting August 2023 for match to take place April 2024. The MSTS fellowship committee with review all applications and make recommendations to the Executive Committee for approval of fellowships. Estimated time from submission of application to final approval decision is 3 months.
3. For new programs wishing to pursue ACGME accreditation: the program must have full ACGME approval by July 1st of the year in which applications open for that cycle; for example, ACGME approval is needed by July 1st 2023 in order to be participate the SF Match/Central Application Service starting August 2023 for match to take place April 2024.

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Appendix B

MSTS Fellowship Surgical Guidelines

Fellows must demonstrate competence in performing operative procedures related to benign and malignant bone and soft tissue tumors, metabolic musculoskeletal disease, and complex reconstruction with an oncologic diagnosis, including a minimum of 150 relevant oncologic operative procedures which should include:

1. at least 5 internal or external hemipelvectomies or sacrectomies

2. at least 20 soft tissue malignant tumor resections with appropriate reconstructive surgery

3. at least 10 extremity (proximal humerus, elbow or forearm, proximal/distal femur, proximal/distal tibia) limb salvage procedures that involve wide margin bone resection and reconstruction for a diagnosis of primary bone sarcoma.

4. at least 5 cases demonstrating surgical management of the complications of limb salvage surgery. Complications include but no limited to wound infection, wound dehiscence, aseptic loosening of endoprosthesis, endoprosthesis failure, soft tissue failure, nonunion or fracture of allograft, and other.

5. at least 20 cases demonstrating management of distant metastatic disease

6. at least 15 pediatric oncologic cases in the first three categories (under 18 years of age)

7. at least 3 extremity amputations

The following are examples of CPT codes that are commonly used. The list will be updated and modified regularly.

Soft tissue Resections and Reconstruction:

21936 Radical resection of tumor (eg, sarcoma), soft tissue of back or flank; 5 cm or greater

22905 Radical resection of tumor (eg, sarcoma), soft tissue of abdominal wall; 5 cm or greater

23078 Radical resection of tumor (eg, sarcoma), soft tissue of shoulder area; 5cm or greater

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24079 Radical resection of tumor (eg, sarcoma), soft tissue of upper arm or elbow area; 5 cm or greater

25078 Radical resection of tumor (eg, sarcoma), soft tissue of forearm and/or wrist area; 3 cm or greater

27059 Radical resection of tumor (eg. sarcoma), soft tissue of pelvis and hip area; 5 cm or greater

27364 Radical resection of tumor (eg, sarcoma), soft tissue of thigh or knee area; 5 cm or greater

27616 Radical resection of tumor (eg, sarcoma), soft tissue of leg or ankle area; 5 cm or greater

28047 Radical resection of tumor (eg, sarcoma), soft tissue of foot or toe; 3 cm or Greater

Limb Salvage:

23210 Radical resection of tumor; scapula

23220 Radical resection of tumor, proximal humerus

24150 Radical resection of tumor, shaft or distal humerus

25170 Radical resection of tumor, radius or ulna

27365 Radical resection of tumor, femur or knee

27645 Radical resection of tumor; tibia

27646 Radical resection of tumor; fibula

27647 Radical resection of tumor; talus or calcaneus

Spine / Pelvis:

22112 Partial excision of vertebral body, for intrinsic bony lesion, without decompression of spinal cord or nerve root(s), single vertebral segment; thoracic

22114 Partial excision of vertebral body, for intrinsic bony lesion, without decompression of spinal cord or nerve root(s), single vertebral segment; lumbar

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22101 Partial excision of posterior vertebral component (eg, spinous process, lamina or facet) for intrinsic bony lesion, single vertebral segment; thoracic

22102 Partial excision of posterior vertebral component (eg, spinous process, lamina or facet) for intrinsic bony lesion, single vertebral segment; lumbar

27075 Radical resection of tumor; wing of ilium, 1 pubic or ischial ramus or symphysis pubis

27076 Radical resection of tumor; ilium, including acetabulum, both pubic rami, or ischium and acetabulum

27077 Radical resection of tumor; innominate bone, total

27078 Radical resection of tumor; ischial tuberosity and greater trochanter of femur

Management of Metastatic Disease:

23491 Prophylactic treatment (nailing, pinning, plating or wiring) with or without methylmethacrylate; proximal humerus

23616 Open treatment of proximal humeral (surgical or anatomical neck) fracture, includes internal fixation, when performed, includes repair of tuberosity(s), when performed; with proximal humeral prosthetic replacement

24498 Prophylactic treatment (nailing, pinning, plating or wiring), with or without methylmethacrylate, humeral shaft

27187 Prophylactic treatment (nailing, pinning, plating or wiring) with or without methylmethacrylate, femoral neck and proximal femur

27125 Hemiarthroplasty, hip, partial (eg, femoral stem prosthesis, bipolar arthroplasty)

27130 Arthroplasty, acetabular and proximal femoral prosthetic replacement (total hip arthroplasty),with or without autograft or allograft

27244 Treatment of intertrochanteric, peritrochanteric, or subtrochanteric femoral fracture; with plate/screw type implant, with or without cerclage

27245 Open treatment of intertrochanteric, pertrochanteric, or subtrochanteric femoral fracture; with intramedullary implant, with or without interlocking screws and/or cerclage

27447 Arthroplasty, knee, condyle and plateau; medial AND lateral compartments with or without patella resurfacing (total knee arthroplasty)

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27495 Prophylactic treatment (nailing, pinning, plating, or wiring) with or without methylmethacrylate, femur

27511 Open treatment of femoral supracondylar or transcondylar fracture without intercondylar extension, includes internal fixation, when performed

27513 Open treatment of femoral supracondylar or transcondylar fracture with intercondylar extension, includes internal fixation, when performed

27745 Prophylactic treatment (nailing, pinning, plating or wiring) with or without methylmethacrylate, tibia

Surgical Management of Complications:

15736 Muscle, myocutaneous, or fasciocutaneous flap; upper extremity

15738 Muscle, myocutaneous, or fasciocutaneous flap; lower extremity

23334 Removal of prosthesis, includes debridement and synovectomy when performed; humeral or glenoid component

24435 Repair of nonunion or malunion, humerus; with iliac or other autograft (includes obtaining graft)

27091 Removal of hip prosthesis; complicated, including total hip prosthesis, methylmethacrylate with or without insertion of spacer

27488 Removal of prosthesis, including total knee prosthesis, methylmethacrylate with or without insertion of spacer, knee

24515 Open treatment of humeral shaft fracture with plate/screws, with or without cerclage

27506 Open treatment of femoral shaft fracture, with or without external fixation, with insertion of intramedullary implant, with or without cerclage and/or locking screws

27472 Repair, nonunion or malunion, femur, distal to head and neck; with iliac or other autogenous bone graft (includes obtaining graft)

27724 Repair of nonunion or malunion, tibia; with iliac or other autograft (includes obtaining graft)