Development of the Fellowship Program in Musculoskeletal Rehabilitation Medicine at Philippine General Hospital in the University of the Philippines Manila

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ABSTRACT

Musculoskeletal conditions are among the leading causes of consultations in Rehabilitation Medicine. A fellowship program in Musculoskeletal Rehabilitation Medicine was proposed to enrich physiatrists' knowledge and skills in evaluating and managing musculoskeletal conditions. In this paper, we shared the process of developing the curriculum of the fellowship program, which was proposed to and eventually approved by the Postgraduate Institute of Medicine, College of Medicine, University of the Philippines Manila.

A core group of consultants, considered as experienced clinicians and educators in Musculoskeletal Rehabilitation Medicine in the study institution, designed the program from the scope of training to learning competencies, outcomes, and assessment methods.

To our knowledge, developing the fellowship program in this constantly evolving area in Rehabilitation Medicine is the first of its kind in the Philippines and a milestone in the history of postgraduate education in the longest-running training program for aspiring physiatrists.

Key Words: Physical Medicine and Rehabilitation, Rehabilitation Medicine, musculoskeletal conditions, fellowship training

INTRODUCTION

Rehabilitation is defined as "*a set of interventions designed* to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment."¹ The field of Physical Medicine and Rehabilitation (PM&R), led by physiatrists (physicians who specialized in PM&R), helps patients to be as independent as possible in everyday activities and enables participation in meaningful life roles. It addresses underlying conditions that may affect organ systems, including musculoskeletal disorders, and optimizes the way patients function in everyday life.¹

Musculoskeletal conditions are the leading cause of outpatient consultations in the Department of Rehabilitation Medicine at Philippine General Hospital (PGH), the national university hospital in the Philippines. Based on the department's census in 2019, musculoskeletal conditions constituted about 70-80% of all outpatient consultations, ranging from 612 to 864 patients with musculoskeletal concerns seen per month.² The musculoskeletal conditions include repetitive or cumulative trauma diseases, workrelated injuries, sports injuries, rheumatologic disorders and orthopedic conditions. The Centers for Disease Control and

Corresponding author: Monalisa L. Lim-Dungca, MD Department of Rehabilitation Medicine Philippine General Hospital University of the Philippines Manila Taft Avenue, Ermita, Manila 1000, Philippines Email: mllimdungca@up.edu.ph Prevention defines musculoskeletal conditions as injuries affecting the muscles, joints, nerves, spine, and related supporting structures.³

With an affectation of the musculoskeletal system, the patient's functional capacity can be diminished. Musculoskeletal impairments may create a significant impact on one's physical, psychological, and social wellbeing, especially as chronic and severe diseases can result in school/work absenteeism and loss of productivity. Consequently, there may be increases in healthcare utilization and costs.⁴

Recent advancements in technology have improved the way patients with musculoskeletal problems are diagnosed and managed. Hence, there is a need to update the knowledge and skills of clinicians in the evaluation and management of musculoskeletal conditions through further training and research beyond a general Rehabilitation Medicine residency program. To our knowledge, we have yet to see a local fellowship training program offered to PM&R graduates interested in the Musculoskeletal Rehabilitation Medicine subspecialty. A fellowship training in this subspecialty is warranted to formally supplement a physiatrist's knowledge and skills from the three-year residency program and enhance their clinical acumen in interpreting musculoskeletal-related ancillary procedures, such as radiographs, ultrasound, computed tomography, and magnetic resonance imaging. The fellowship can also enrich one's knowledge of various pharmacologic, rehabilitative, and interventional treatment options for different musculo-skeletal diseases.

Establishing the need for the Fellowship Program in Musculoskeletal (MSK) Rehabilitation Medicine

The Department of Rehabilitation Medicine at PGH formed a core group composed of faculty members who have acquired an adequate training and clinical and teaching experience in Musculoskeletal Rehabilitation Medicine. The consultants in the core group had completed postgraduate training specifically in Musculoskeletal Ultrasonology, have been in clinical practice for more than ten years as physiatrists, and are senior faculty members in the Musculoskeletal Rehabilitation Service of the Department. The core group was tasked to design the curriculum of the fellowship program and propose it to the Postgraduate Institute of Medicine (PGIM) of the College of Medicine at the University of the Philippines Manila.

The core group started the curricular design by first establishing a local fellowship program in MSK Rehabilitation Medicine. Key informant interviews and a focus group discussion (FGD) were conducted with consultants from different Rehabilitation Medicine training institutions. The interviewees and FGD participants were part of the Special Interest Group on Musculoskeletal Medicine and Ultrasound of the Philippine Academy of Rehabilitation Medicine (PARM). They had extensive experience with musculoskeletal and sports-related conditions in their practice. Consent was obtained from the participants. The interviews and FGD were done in a semi-structured format using predetermined guide questions to explore the need for and feasibility of a local MSK fellowship program and suggest possible learning outcomes.

The data collected were organized and incorporated in the curriculum development, eventually presented to the Department of Rehabilitation Medicine faculty at PGH. Feedbacks were gathered, and several revisions were made to the proposed curriculum. The final version was presented to the PGIM. Several rounds of feedback and edits were done before approval was obtained.

Determining the competencies of MSK Rehabilitation Medicine Fellows

After graduating from a three-year residency training program in PM&R in a local institution recognized by the Philippine Board of Rehabilitation Medicine (PBRM), a fellow interested in MSK Rehabilitation Medicine could expect more in-depth training. Therefore, differentiation between the competencies expected from a resident and a fellow was necessary (Table 1). Based on PBRM standards, residency training in Rehabilitation Medicine should provide adequate exposure to the physiatric evaluation and management of various common musculoskeletal conditions of the hand, spine, and extremities. A residency program

 Table 1. Competencies related to Musculoskeletal (MSK) Rehabilitation Medicine gained from residency and fellowship training programs

Aspects of the MSK Rehabilitation Medicine Curriculum	Residency Training in General Rehabilitation Medicine	Fellowship Training in MSK Rehabilitation Medicine
	 Attends to general Rehabilitation Medicine outpatient clinics, in-patients, and team conferences Attends to MSK service rounds and referred patients 	 Attends to dedicated specialty clinics Participates in interdepartmental conferences Joins outside rotations in centers with special MSK procedures Attends local and international MSK conferences and workshops on interventional procedures and advanced/ complementary techniques
Time Frame	• MSK service rotation, 3 months per year for 3 years	 One-year, continuous daily exposure to various MSK- related services

programs (d	continued)		
Aspects of the MSK Rehabilitation Medicine Curriculum	Residency Training in General Rehabilitation Medicine	Fellowship Training in MSK Rehabilitation Medicine	
Skills	 Performs basic physiatric examination and special tests Identifies medical and rehabilitation problems following the International Classification of Functioning, Disability, and Health (ICF) model 	 Performs in-depth MSK evaluation and special tests on general and special patient populations (e.g., sports, arthritides, occupation-related, trauma) Identifies and anticipates potential MSK-related rehabilitation problems 	
	Evaluates co-morbidities through appropriate diagnostic tests	 Orders and conducts appropriate diagnostic tests, including in-depth musculoskeletal sonology Conducts functional assessments and physical capacity evaluations 	
	• Evaluates pain severity, etiology, and effect on function	Differentiates among nociceptive, neuropathic, and nociplastic pain	
	 Recommends pharmacologic interventions Prescribes appropriate rehabilitation programs for patients with common rehabilitation conditions 	• Prescribes a comprehensive rehabilitative treatment plan across patient populations with a more thorough focus on MSK concerns	
	 Exposure to musculoskeletal ultrasonology principles, indications, basic techniques, diagnosis, and reporting; differentiation between normal versus pathologic structures Observes, assists, and performs basic MSK ultrasound and common interventional procedures 		
	 Assists in interventional procedures (such as injections) with or without ultrasound guidance and with correlation with electrodiagnostic tests, if applicable Assists/ observes/ performs 15-20 cases with supervision 	 Competence in performing special interventional procedures, such as intraarticular and soft tissue injection procedures (e.g., periarticular injections, prolotherapy, perineural injections, trigger point injections) with or without ultrasound guidance and with correlation with electrodiagnostic tests, if applicable Performs interventional procedures (20 cases) Follows up and monitors patients who underwent interventional procedures Teaches such procedures to resident trainees 	
Administrative Functions	Acts as a team memberAdheres to and helps enforce policies	 Works as a team leader and complements the residents May assist in supervising the students and residents in their MSK rotations Actively participates in interdisciplinary rounds and family conferences 	
Professional, Social, and Ethical Responsibilities	 Respects patient's privacy Demonstrates ethical behavior in a multicultural setting Manifests dedication to service Practices patient-centered care approach by respecting the patient's goals, privacy, and autonomy Demonstrates integrity and empathy in MSK specialty clinics and rotations Discusses with patient and family the physician's role in the prevention and treatment of disability 	 Promotes relevant health advocacies Collaboratively works with various medical specialties across patient populations and communities 	
Research	Conducts scientifically and ethically approved research on any Rehabilitation Medicine-related topic	 Completes at least one scientifically and ethically approved research related to MSK Rehabilitation Medicine Presents in at least one research forum Submits a paper for possible publication Helps evaluate the fellowship program and provides relevant feedback to improve the program 	

Table 1. Competencies related to Musculoskeletal (MSK) Rehabilitation Medicine gained from residency	and fellowship training
programs (continued)	

graduate is prepared to function as a general physiatrist. In contrast, a fellowship program graduate can additionally be more adept in the specialized assessment and care of various common and rare musculoskeletal pathologies across a broader spectrum of patient populations.

A fellowship graduate can also be prepared for more extensive administrative, teaching, and research responsibilities while being socially responsive to relevant health advocacies. The fellowship program shall also provide practical learning opportunities to enable a fellow to enrich their competencies not fully achieved during residency training, such as dynamic ultrasound studies and special diagnostic procedures (e.g., sonoimaging and tracking of nerve roots, plexi, and peripheral nerves) and correlating them clinically. The design of the fellowship program was based on the spiral curriculum proposed by Harden and Stamper.⁵ Furthermore, the fellowship program shall highlight the importance of a transdisciplinary care approach to expose the fellow to various practice settings.⁶

Features of the Proposed Fellowship Program in MSK Rehabilitation Medicine

A. Expected Learning Outcomes

At the end of the fellowship year, the trainee is expected to perform the following roles:

Clinician

- Demonstrate specialized knowledge relevant to Musculoskeletal Rehabilitation Medicine
- Exhibit high-level clinical competence and proficient skills in the practice of Musculoskeletal Rehabilitation Medicine

Program Leader

- Effectively lead and collaborate with the different paramedical members of the Rehabilitation team
- Actively participate in transdisciplinary management together with various medical specialties and subspecialties working towards providing holistic care to patients
- Demonstrate proficiency in oral and written communication skills for interprofessional education

Researcher

- Use relevant evidence-based data for clinical decision making
- Educate patients and various stakeholders on current, evidence-based, and appropriate musculoskeletal rehabilitation interventions
- Perform research that can advance the practice of Musculoskeletal Rehabilitation Medicine

Educator

• Participate in continuing professional education courses and promote life-long learning

Effectively participate in educating students and PM&R residents on Musculoskeletal Rehabilitation Medicine

Health Advocate

- Demonstrate professional, ethical, and legal standards in the practice of medicine across all settings and situations
- Practice values of social responsibility in clinical practice
- Actively engage in advocacies related to the welfare of persons with disability

B. Course Description

The Fellowship Program in Musculoskeletal Rehabilitation Medicine will be offered to enrich one's knowledge, skills, and experience in the diagnosis and management of various musculoskeletal conditions across a broader spectrum of patient populations and settings. It will highlight the multimodal rehabilitation interventions considered as standard procedures in clinical practice and explore new trends or updates in diagnostics and management. It will provide many learning opportunities and settings for interdisciplinary and multispecialty collaboration related to Musculoskeletal Rehabilitation Medicine. An external rotation with external linkages and mission work will be in place to provide exposure to different musculoskeletal conditions in various healthcare settings.

The training period for the fellowship program will be one year. Only one fellow will be accepted per year. The fellow will be expected to perform clinical, teaching, research, and administrative tasks related to Musculoskeletal Rehabilitation Medicine.

C. Course Curriculum

1. Core knowledge curriculum

The curriculum will cover the principles of Physical Medicine and Rehabilitation and relevant musculoskeletal anatomy, physiology, kinesiology, pathology, pharmacology, and ultrasonology.

- 1.1. Principles of Musculoskeletal Rehabilitation Medicine
 - a. Anatomy, physiology, and pathology of the musculoskeletal system in the adult and pediatric age groups
 - b. Kinesiology of the spine and upper and lower extremities
 - c. Pharmacology
 - d. Clinical decision making, analysis and clinical correlation of diagnostic studies, and comprehensive physiatric treatment planning
 - e. Basic principles and application of ultrasound in PM&R for diagnostic and interventional procedures

1.2. Public health and wellness

The fellow shall promote musculoskeletal health and wellness through outside specialty rotations for special populations with musculoskeletal issues (e.g., geriatrics, sports, pediatrics) and relevant health advocacies.

2. Ancillary competencies

The following competencies will enhance collaborative interactions with other stakeholders:⁷

2.1. Holistic approach and collaborative work

- a. Participation in intradepartmental and interdepartmental meetings, conferences and workshops
- b. Participation in external service rotations, local and international conferences or both, related to Musculoskeletal Rehabilitation Medicine
- c. Collaboration with colleagues within and outside the specialty
- d. Participation in various medical missions and lay fora related to Musculoskeletal Rehabilitation Medicine

- e. Participation in the learning of students, residents, and colleagues through continuing professional education activities
- 2.2. Organization and administration of service delivery
 - a. Management of the Musculoskeletal Rehabilitation Medicine clinic
 - b. Leadership training in delivering efficient and high-quality service to patients

2.3. Research

- a. Completion and presentation of a case report, research, or both
- b. Promotion of lifelong learning through efficient literature search
- c. Incorporation of evidence-based medicine in clinical practice

D. Instructional Design

A sample instructional design is presented in Table 2. The shoulder region is selected as an example.

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Learning Objectives	Content	Teaching-Learning Activities	Evaluation	Outcomes/ Performance Indicators
Demonstrate in-depth understanding of the normal and abnormal shoulder joint	Relevant anatomy, kinesiology, and pathophysiology	Online synchronous and asynchronous didactics; In-person case discussions; Case presentations	Written, oral, and practical exams	Evaluates and correlates pertinent anatomic structures relevant to the patient's clinical presentation
Perform an appropriate and accurate physiatric examination	Review of physiatric evaluation using the International Classification of Functioning, Disability, and Health (ICF) model; Special MSK tests	Online, in-person endorsements, or both; Small group discussions; Practical demonstrations	Written and practical exams; Observation checklist/ rating scale	Applies ICF model and performs special tests relevant to the shoulder complaint
Adequately explain the rationale and indications for the chosen diagnostic procedure/s for the shoulder	Indications and contraindications of electrodiagnostic tests, musculoskeletal ultrasound, computed tomography, magnetic resonance imaging (MRI), and other procedures	Online, in-person didactics or both, and case presentations; Small group discussions	Written and oral exams	Effectively communicates rationale and indications for the chosen diagnostic procedure/s to the patient, family, and referring specialist
Perform relevant diagnostic procedures in the MSK Rehabilitation Medicine armamentarium	Principles, techniques, and applications of pertinent diagnostic tests	Online, in-person demonstrations of electrodiagnostic or both, and musculoskeletal ultrasound studies	Oral and practical examinations; Observation checklist/ rating scale; Multi-source feedback	Competently performs the diagnostic procedure
Properly correlate the results of diagnostic tests with clinical findings	Review of principles of clinical reasoning; Differential diagnosis	Online, in-person case discussions or both; Small group discussions	Oral and practical examinations; Multi-source feedback	Effectively communicates/ discusses results of diagnostic procedures to the patient, family, rehabilitation team, and referring specialist as needed
Design and implement an individualized, comprehensive, effective, and evidence- based rehabilitation management program	Pharmacologic, non- pharmacologic, and interventional management of shoulder conditions	Online, in-person endorsement or both, and case discussions; Small group discussions; Interdisciplinary team conferences	Written, oral and practical examinations; Multi-source feedback	Effectively communicates and discusses goals, treatment rationale, and prognosis to the patient, family, rehabilitation team, and referring specialist as needed

E. Assessment

The fellow shall be evaluated based on several assessment methods indicated in Table 2. Meanwhile, Figure 1 presents an example of the grading rubric to be used.⁸ In addition, written, oral and practical examinations will be given periodically to ensure attainment of competencies. Case logs shall also be required to monitor the amount and breadth of exposure to various cases and procedures.

F. Faculty and resource requirements

The program's faculty members are fellows of the PARM. The latter have obtained further training and clinical experiences in MSK Rehabilitation, particularly across various special populations, such as Orthopedics and Rheumatology, Sports, Hand, Pediatrics, and Geriatrics. They have also undergone further training in musculoskeletal ultrasound and interventional procedures. The faculty are primarily from the Department of Rehabilitation Medicine at PGH, while local or international experts in the field from other institutions may also be invited as lecturers. A memorandum of agreement for outside rotations will be arranged if needed. Other required resources will be ultrasound machines for hands-on use, along with a wet clinic or skills laboratory wherein the fellow may practice interventional procedures with animal or simulation models. References on musculoskeletal medicine and rehabilitation, musculoskeletal diagnostic and interventional procedures, and complimentary treatments will be made available. The fellow will be given a one-year *"plantilla"* item in PGH.

DISCUSSION

An exploratory process of key informant interviews and focus group discussions with various stakeholders have shown the feasibility of offering a fellowship program in the subspecialty. Further training of physiatrists may potentially improve healthcare delivery in the Philippines.

The one-year Musculoskeletal Rehabilitation Medicine Fellowship program with external rotations can provide ample opportunities to collaborate with other professionals from the allied health field and various medical and surgical specialties. It can also provide an in-depth exposure to special populations with musculoskeletal conditions and promote



Figure 1. Rubric to evaluate the MSK Rehabilitation Medicine fellow.

musculoskeletal wellness through health advocacies. Training will be monitored by periodic assessment of competencies to ensure the fellow maximizes learning.

The program is open to graduates of any local residency training institution in Rehabilitation Medicine recognized by the PBRM. It will supplement their knowledge and skills obtained from residency training and mold them into clinicians, program leaders, researchers, educators, and health advocates relevant to Musculoskeletal Rehabilitation Medicine. To our knowledge, developing the fellowship program in this constantly evolving area in Rehabilitation Medicine is the first of its kind in the country and a milestone in the history of postgraduate education at PGH, the longest-running training program for aspiring physiatrists.

CONCLUSION

A one-year curriculum was developed to address the need for a Musculoskeletal Rehabilitation Medicine fellowship program. Implementation of the program is envisioned to advance the practice of Physical Medicine and Rehabilitation in the Philippines.

Statement of Authorship

All authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising and approved the final version submitted.

Author Disclosure

All authors declared no conflicts of interest.

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