



Standardizing Outpatient Cardiac Rehabilitation Practices in a Large Multistate Medical System: A Practice Convergence Project

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Abstract

The United States healthcare system is evolving from fee-for-service reimbursement to paying for high-value care. This paper describes work to standardize 20 separate outpatient cardiac rehabilitation programs (CR) in a multistate medical system with the goal of providing consistent high-value CR services. The project is part of a medical system-wide practice convergence initiative to provide services common to more than one location at the same level of high quality and with the same level of individualized, yet standardized patient experience. The CR project began in August 2014 and the initial phase was completed in October 2018. Fifty-two staff members participated. Six areas of practice were selected: patient exercise session data management system (clinical database) standardization, patient assessment tools, the individual patient treatment plan (ITP), patient education procedures, policies and procedures, and staff competencies. Information technology work involved database interfaces, the ITP, and documentation of CR services in the electronic medical record with the goal of maximizing CR staff efficiency. Progress was made in standardization of several areas: patient exercise session data management system, patient assessments, the ITP, patient education and staff competencies. Standardization of emergency procedures and patient exercise prescription was accomplished. Variability in program facilities, staff expertise and local practice patterns underscored the complexity of standardization of all policies and procedures. A CR Committee was formed to continue work on unresolved issues and to incorporate innovations as the practice of CR evolves over time.

Keywords: Cardiac rehabilitation; Practice standardization; Practice convergence; High value cardiac rehabilitation services

Introduction

The United States healthcare system is in the process of undergoing structural changes in reimbursement for services that will eventually affect all providers, hospitals, and clinics. Historically, reimbursement has been provided for each episode of care in a “fee for service” model. This model rewards high volumes of care and is not tied to patient outcomes. Under this model, the annual rate of increase in healthcare expenditures has outpaced the rate of inflation over the past several decades and is not sustainable. New models of reimbursement with the focus on paying for high-value care are currently under development and implementation. High-value care is defined as producing the best health outcomes at the lowest cost [1]. New types of reimbursement models include pay for performance, bundled payments, capitation (global budgets), and financial risk sharing. These factors have increased the incentive for providers and associated healthcare systems to improve patient outcomes, to increase the efficiency of practice patterns and to reduce costs. Cardiac rehabilitation (CR) is longitudinal care typically lasting 3-6 months for outpatients with diagnoses of acute myocardial infarction, coronary revascularization surgery, stable angina pectoris, heart valve repair or replacement, chronic heart failure, heart transplantation or peripheral artery disease [2-4]. Components of CR include medical evaluation, prescribed exercise, cardiovascular risk factor management, education and counseling. CR is provided by interdisciplinary teams that may include

physicians, mid-level providers, exercise physiologists, registered nurses, physical therapists, dietitians, and other healthcare professionals as needed. There is abundant evidence that CR provides impressive benefits, such as improved symptoms and quality of life, and reduced mortality and re-hospitalizations at a reasonable cost [5-7]. None-the-less, it is incumbent upon CR programs and their healthcare systems to evaluate how CR services are provided and to improve efficiencies in order to ensure the best outcomes for patients and to remain economically viable. The purpose of this paper is to describe efforts to promote consistency and efficiency in all CR programs within a large, multistate medical system. These efforts were part of a medical system-wide initiative of “practice convergence” to be accomplished over the next decade. The Merriam-Webster dictionary definition of convergence is, “moving toward union or uniformity” [8].

Methods

Brief description of the Mayo Clinic Medical System

The Mayo Clinic is a non-profit medical practice and research group based in Rochester, Minnesota. There are academic medical centers in three geographic locations: Rochester, Minnesota (34,000 employees), Jacksonville, Florida (6,000 employees) and Scottsdale, Arizona (6,000 employees). It operates six colleges of medicine and biomedical science. There are approximately 4,500 physicians and scientists as well as 2,400 residents, fellows and students at the three academic medical centers. In addition, over the past three decades Mayo Clinic has acquired and now operates approximately 70 hospitals or clinics in

Minnesota, Iowa, and Wisconsin with an additional 17,000 employees. Over 1.3 million patients from all 50 states and 150 countries seek care at a Mayo Clinic facility each year. There are currently 20 outpatient CR programs in the system.

Description of the concept of practice convergence in the Mayo Clinic Medical System

The concepts for practice convergence were developed by Mayo Clinic leadership in response to the anticipated changes in medical care reimbursement discussed previously. A Practice Convergence Council was formed and charged with the responsibility of oversight. The goal of practice convergence is to provide the highest possible quality of care no matter where the patient receives their care in the system. Quality care is defined as efficient, coordinated, safe and state of the art. Obviously not all services will be available in all locations due to differences in facility size, resources and staff expertise. However, services common to more than one location will be expected to be of the same quality and the patient experience the same. Practice convergence is extremely complex and will occur in stages over the next 10 years. Uniformity and standardization of the following factors is the current focus:

- New electronic medical record (EMR) (to replace the in-house system which had reached the effective lifespan after more than 20 years)
- Clinical department systems

- Decision support tasks
- Clinical processes
- Policies, procedures and nomenclature
- Equipment and supplies

Convergence of Cardiac Rehabilitation Programs in the Mayo Clinic Medical System

The 20 CR programs in the system reside in four states (Minnesota, Wisconsin, Arizona and Florida) and are diverse in terms of size, staffing, patient load, administrative structure and services that are provided. Historically, the CR programs were organized and functioned independently from one another. Table 1 provides basic descriptive features of the programs in 2019. Length of operation of the programs ranged from 6 to 38 years with annual numbers of referred patients from 37 to 350. The number of staff (full-time equivalents, FTE) ranged from 0.4 to 8.0. Allied health staff FTE assigned to CR included Exercise Physiologists, Registered Nurses, Respiratory Therapists, Physical Therapists, Physical Therapy Assistants, and Occupational Therapists. Some programs offered unique services. Most programs were administered under Cardiology, although five were administered under Physical Medicine and Rehabilitation and two were part of Health and Rehabilitation departments. Thirteen programs utilized the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR) Registry for reporting outcomes.

Location	Years in Operation	FTE	Patients/Yr	Administration	Unique Services	AACVPR Registry
Albert Lea, MN	29	1.6	108	PM&R	No	Yes
Scottsdale, AZ	13	4.0	135	CV	No	No
Austin, MN	36	2.0	110	PM&R	Health Risk Assessment	Yes
Barron, WI	22	1.2	61	CV	No	Yes
Bloomer, WI	22	1.0	50	CV	No	Yes
Cannon Falls, MN	6	1.0	55	PM&R	No	Yes
Eau Claire, WI	37	2.6	197	CV	No	Yes
Fairmont, MN	32	0.8	55	Health and Rehabilitation	No	No
Jacksonville, FL	16	5.6	180	CV	Physical Therapist	Yes
LaCrosse, WI	38	3.0	170	CV	Programs for cancer, diabetes, HFpEF, EECF	Yes
Lake City, MN	18	1.0	37	PM&R	No	No
Mankato, MN	37	3.9	230	Health and Rehabilitation	Exercise is Medicine Program	No
Menomonie, MN	25	2.36	100	CV	No	Yes
New Prague, MN	31	0.8	51	CV	No	No
Osseo, WI	22	0.6	41	CV	No	Yes
Red Wing, MN	8	1.5	66	PM&R	Pharmacy, yoga	Yes
Rochester, MN	38	8.0	350	CV	Long-term risk factor management program after CR, DXA, screen for OSA, cancer exercise program	Yes
Sparta, WI	23	1.5	70	CV	No	Yes

St. James, MN	12	0.4	40	CV	No	No
Waseca, MN	27	0.8	66	CV	No	No

FTE: Full-Time Equivalent; AACVPR: American Association of Cardiopulmonary Rehabilitation; PM&R: Physical Medicine and Rehabilitation; CV: Cardiovascular; HFpEF: Heart Failure with Preserved Ejection Fraction; EECp: Enhanced External Counter-Pulsation; CR: Cardiac Rehabilitation; DXA: Dual Energy X-Ray Absorptiometry Measures Fat and Lean Tissue; OSA: Obstructive Sleep Apnea

Table 1: Description of the outpatient cardiac rehabilitation programs in the Mayo Clinic Medical System.

Variation in CR practice among the 20 sites is illustrated by the following observations:

- Marked variability in the types and frequency of patient assessments.
- The format of the Individual Patient Treatment Plan (ITP, a Center for Medicare & Medicaid Services requirement) was different for each site.
- Outcome data, such as mortality and re-hospitalizations, were not consistently captured at most sites, resulting in difficulty in assessing quality of care.

Three different commercially available patient exercise session data management systems were in use. These systems function as clinical databases and house critically important patient information, such as demographics, primary healthcare providers, pertinent medical and surgical history, medications, cardiovascular risk factors, patient assessments performed during CR, and the exercise prescription for each patient as well as the details of each completed exercise session. Information from this database forms the basis for the ITP. Several sites had systems nearing the end of useful life. Only two sites' systems interfaced with the EMR. Some program's systems did not allow interfacing with other data systems and required duplicate or triplicate data entry.

There were 25 different formats for the purposes of patient intake, fall risk assessment, patient experience survey and patient follow-up survey. In addition, there were 26 different forms for informed consent, patient quality of life questionnaire, depression screening and assessment of current levels of physical activity.

Initiation of the CR Convergence Project

The initial discussions regarding the project began in 2010. The project was placed on hold and was re-initiated in 2014. All 20 sites were informed of the plan and support for the project was universal. The project scope and objectives were developed with collaboration of representatives from each site:

Statement of the problem: Important inconsistencies in practice procedures exist among CR programs throughout the medical system; lack of interface of CR program data and the EMR in most locations; failure to capture outcome data critical for quality and value assessment

Description of the project: Implement consistent processes and standards across programs to the extent feasible

Objectives: Improve staff productivity, efficiency and effectiveness; decrease costs; optimize reimbursement; improve collaboration among CR programs to share knowledge and experience; increase opportunities for clinical research and staff education; optimize program quality and provide the highest value care possible

In scope: Determine which of the commercially available patient exercise session data management systems is the best fit for the CR programs and obtain the technology for all sites; develop a suitable format for the ITP with an interface to the newly implemented medical system-wide EMR; standardize the methods for various patient assessments; standardize outcome measure assessment; standardize reporting of outcomes; standardize patient education resources; standardize program policies; identify standards for patient exercise equipment.

Not in scope: Physical facility characteristics; administrative structure of the various programs.

Budget: Project expenses of \$205,000; capital expenses (to fund a common patient exercise session data management system for each program) of \$1,500,000.

The project received approval from the Practice Convergence Council and officially began in August of 2014. Key stakeholders for each site were identified among CR physician leadership, administrators, CR healthcare providers and information technology staff. A Project Manager was assigned to the project. That individual was a Mayo Clinic employee with training and experience in directing large, complex projects and was responsible for budget, interaction with the Practice Convergence Council as well as the Cardiovascular Specialty Council, the Clinical Systems Oversight Executive Group, the Cardiovascular Information Technology Subcommittee, and monthly teleconferences with participants. It was acknowledged that convergence is an ongoing process and will never be complete, due to innovation, new technology and ideas, and the expected and anticipated evolution of the practice of CR.

A meeting with representatives from all sites occurred in May 2015 in Rochester, Minnesota. The accomplishments at the meeting included:

- Representatives became familiar with the Project Manager and the role of that person in the convergence process
- Team members met each other face-to-face and became more familiar with all CR programs in the system
- Key CR processes common to all sites were identified
- A process map for the project was developed: a graphic representation of activities, flow of information, interconnections and how the work will be accomplished.
- "Best practices" sources were identified, evidence-based wherever possible [5,9] and the expert opinion of Mayo Clinic CR leadership on unique topics not included in the guidelines
- Topics amenable to convergence were identified and workgroups were formed to address each topic

An initial primary goal was established: adoption of a common patient exercise session data management system with interface with the EMR for all 20 programs. To facilitate this goal, two vendors with

products compatible with Mayo Clinic requirements were invited to present their products at the meeting. Representatives from the vendor for the new medical system-wide EMR also attended the meeting.

Workgroup specifics: The following six topics were selected and workgroups were developed:

- Patient exercise session data management system standardization, interface with the EMR.
- Patient assessment tools
- Individual Patient Treatment Plan
- Patient education procedures, resources
- Policies and procedures
- Staff competencies

Chairpersons were designated for each workgroup by asking for volunteers. One representative from each site volunteered to serve on each group. For small programs, a single staff member served on multiple workgroups. This required staggering the work timeline for the various groups. The chairperson was responsible for the arrangement of monthly teleconferences, the agenda, meeting minutes and posting the minutes and other documents of interest on SharePoint, a web-based site integrated with Microsoft Office that served as a clearing house for information and was available for all members of the project. Email was the primary method of communication in between teleconferences. The Project Manager organized and ran the monthly CR Practice Convergence teleconferences for all participants.

Decisions on specific convergence issues were made by workgroup consensus, with each site having one vote. Discussions continued after voting to achieve consensus and buy-in from all sites. The process proved to be collaborative and effective.

Results

As anticipated, the project proved to be extremely complex and required the time and talents of 52 staff members. The work was accomplished by allied health staff with consistent communication with, and input from, the CR physician leadership. The task was accomplished without alterations in the clinical workload. Variability in CR program size, clinical expertise and experience of staff, available local resources and variability in Medicare/Medicaid Contractor policies regarding CR made convergence on all pre-defined topics impossible. The scope of the work performed by IT staff was enormous and is ongoing. Examples of the IT workload include:

- The interface between the new EMR which includes both medical system-wide and CR specific requirements, such as the patient exercise session data management system
- The interface between the EMR and the medical system-wide, unified Cardiovascular Database currently under development; data capture in the database without the need for multiple data point entries
- The interface between the EMR and the AACVPR Registry for outcomes reporting

Progress in the workgroups

Patient exercise session data management system: This workgroup compared and evaluated the two selected vendor's products. IT evaluated the systems with special emphasis on system security and the interface between the systems, the EMR and the universal CV

database. A vendor was selected in June 2016. The budget for acquiring the systems the 20 CR programs was approved and a timetable for installation of the systems was determined. All systems were installed and are operational. Over the useful life of the systems, it is anticipated that increased efficiency in the use of IT resources (one IT team shared by all sites), common vendor support contracts and less staff time requirement for data handling will prove to be cost-effective.

Patient assessments: The following assessments for patients recommended by AACVPR and the current electronic and/or paper documentation forms in use were reviewed:

- Health-related quality of life questionnaire
- Screening for depression
- Nutrition assessment questionnaire
- Functional capacity assessment
- Physical activity assessment
- Fall risk appraisal
- Patient experience in CR questionnaire

The group selected one form of assessment and one form of electronic documentation for each category.

ITP: The individual patient treatment plans used by each site were reviewed and the following recommendations were made for a universal ITP, currently under development, compatible with the EMR:

- Must be expandable and modifiable
- Must be efficient and minimize duplication of effort (multiple data point entry) by importing data to and from other databases wherever possible

Patient education: This workgroup selected cardiovascular health topics common to all sites. With the assistance of a Mayo Clinic Patient Education Specialist they surveyed existing Mayo Clinic patient education materials, including written documents and videos. All selected topics were available in current Mayo Clinic materials and 21 specific items were selected for use in CR.

Policies and procedures: This team reviewed each site's pertinent documents. It was determined that the inter-program variability in services offered and the limited availability of resources at some sites were limitations. Not all policies and procedures were amenable to immediate convergence. For example, patient referral to and enrollment in CR were tabled due to the complexity of the issue given that many programs receive referrals from outside of the Mayo Clinic system.

The following policies and procedures, common to all sites, were converged: emergency procedures and patient exercise prescription.

Staff competencies: This group reviewed each site's approach to assessment and maintenance of basic staff skills and knowledge. It was determined that all staff will be required to maintain competencies recommended by AACVPR [10].

The CR convergence project completion date was October 9, 2018 and a project closure report was submitted to the Practice Convergence Council and the Clinical Practice Committee. The Mayo Clinic Cardiac Rehabilitation Committee was formed which includes CR physician leadership, two co-chairs, an administrator and one CR staff from each of the 20 sites. The committee meets quarterly with agenda items provided by any committee member. Work continues on unresolved issues and incorporation of practice innovations as the practice of CR evolves.

Conclusion

This paper has described the efforts of a large multistate medical system to improve standardization of processes, staff efficiency in providing care, and patient outcomes in 20 separate CR programs. The goal was to increase the value of care. During the process, it became apparent that considerable diversity in patient care processes existed among programs. Efforts at standardization, with emphasis on following evidence- and guideline-based practices, were begun and will continue. A unified patient exercise session data management system was implemented in all programs. Additional work is ongoing to develop an interface between the data management system and the newly implemented system-wide EMR. One important lesson from the project was that collaboration between programs with the sharing of knowledge, experience and best practices benefited all of the programs. The provision of high-value care will require a continued commitment to practice efficiently and excellent outcomes.

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