THE AMERICAN ORTHOPAEDIC ASSOCIATION

CORD

Council of Residency Directors

Program Director's Handbook

Edited by Frederick N. Meyer, MD,
In Collaboration With CORD Member Affiliates

The Program Director's Handbook

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Introduction

With the increasing complexities of healthcare in general and more specifically graduate medical education, it is becoming more difficult for orthopaedic program directors, program coordinators and faculty to keep up with all of the ever changing requirements. With increasing requirements being placed on us by the ACGME, and the Orthopaedic Residency Review Committee wanting more and more documentation, at the same time hospitals and institutions are having funding cut and expecting us to make it up in clinical productivity, the role of the Program Director and Program Coordinator is becoming increasingly daunting.

The purpose of this handbook was to attempt to provide a valuable reference to all who need it with the goal of improving residency education. It is hoped that by publishing this handbook in electronic format it will be readily available and that it can be updated as new information such as the Next Accreditation System and the Milestones Project becomes available.

I would like to thank the American Orthopaedic Association for sponsoring this handbook and the Council of Orthopaedic Residency Directors for allowing me to edit it. Mostly however, I would like to thank all of the contributors to this text who I know have put in countless hours in an effort to produce a quality resource.

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Frederick N. Meyer, MD

Introduction

The role of the orthopaedic surgery program director is expanding continuously. The ACGME states the "program directors have the responsibility to oversee and improve the residency or fellowship educational programs, implement changes based on current ACGME accreditation standards and prepare for accreditation site visits." This is currently a time of great change with the coming of the *Next Accreditation System* and dramatic changes in the PGY1 year. As a result, residency directors and coordinators must depend on accurate sources of information to accomplish their mission. One of the best is the ACGME web site at www. acgme.org. This site gives a program director and coordinator valuable information on resident case logs, resident duty hours, the annual resident survey and institutional and specialty requirements not only for orthopaedics but for most of the subspecialty fellowships. The Program Directors' "Virtual Handbook" is must reading not only for new program directors but also for experienced program directors as well.

Patient Quality and Safety

We are currently in an era of tremendous change in healthcare. No matter what eventually happens with the *Patient Protection and Affordable Care Act* we are already seeing third party payers shifting from paying for volume to paying for value. As a result, it is imperative that we, as orthopaedic educators, prepare our residents for the changes that are coming in healthcare. In switching from a volume to value based healthcare system, quality of care and patient safety become paramount. Quality improvement has been part of the hospital culture for years. It is important for physicians to become involved and take the lead in quality and patient safety.

The Institute of Medicine defines quality in healthcare as "health services provided to individuals and to populations that improve desired health outcomes. The care should be based on the strongest clinical evidence provided in a technically and culturally competent manner with good communication and shared decision making." Quality and safety go hand-in-hand.

The ACGME mandates residents be educated in quality patient care and patient safety. In the *Common Program Requirements* the ACGME dictates residents are expected to:

IV.A.5.g.(4) advocate for quality care and optimal patient care systems;

IV.A.5.g.(5) work in interprofessional teams to enhance patient safety and improve patient care quality: and,

IV.A.5.g.(6) participate in identifying system errors and implementing potential solutions.[1]

Improving quality and improving safety can only occur if we accurately measure outcomes. Professor Michael Porter in his book "*Redefining Health Care"* states "Measuring, reporting, and comparing outcomes are perhaps the most important steps toward rapidly improving outcomes and making good choices about reducing costs." Anderson in 1991 and James et. al. in 2006 have reported that better than 50% of all resource expenditures in hospitals are quality-associated waste. Jevsevar has stated "*Quality improvement is the science of process management."* [2]

Quality improvement can come in many areas and can result in better outcomes for our patients. It involves such things as prevention of illness, early diagnosis, obtaining the right diagnosis, performing the right treatment on the right patient, a rapid cycle time in the diagnosis and treatment of patients, initiating treatment in the earlier phase of the disease and less invasive treatment methods.[3]

The process of improving quality and patient safety involves obtaining data, in a format that can be used. This exercise cannot only educate residents in scholarly activity and patient safety but also in systems-based practice. Nurse management is often very experienced with quality management and partnering with them allows residents to work in interprofessional teams.

Check lists and protocols have been shown to improve quality and reduce errors. Residents are often on the front lines of health care and as a result, should not only be involved in implementing a quality improvement program but are often in the best position to determine changes. Residents should learn how to obtain the right data in the right format in a timely manner to effect change. Process improvement involves planning, doing, checking and acting. Try modifying the process and repeating the cycle if quality and safety do not improve.

There are seven tools commonly used in tracking data for quality improvement projects. These include:

1. Cause and effect diagrams
2. Tally sheets
3. Pareto charts

4. Flow charts
5. Run charts
6. SPC charts
7. Scatter charts

Pareto charts are bar graphs that are organized in descending order. They are particularly helpful in determining the largest opportunity for improvement. SPC or Statistical Process Control charts monitor the stability of a process by having a centerline (mean) and measuring data points and deviation of the data points from the mean.

With improved quality we have fewer complications, and fewer mistakes and repeats in treatment. In addition we have faster and more complete recovery, greater return of function with less need for long-term care, fewer recurrences, relapses, flare-ups or acute episodes. There frequently is reduced need for ER visits, slower disease progression and importantly less illness induced by our care.[3]

Because healthcare involves multiple entities including physician offices, hospitals, outpatient surgery centers, therapy, long-term acute care facilities, nursing homes, laboratories, pharmacies, and multiple other organizations, good communication between providers is critical to patient care.

In setting up a quality improvement or patient safety project, one should are the desired outcomes. It is important to make certain the outcomes are patient centered. Results should be studied in both the short and long-term and if they involve disease management, sufficient risk factors need to be included to account for any potential variability in outcomes.

Setting up protocols can improve patient safety and quality. One example is to pick a high priority care practice. This can be determined by using a Pareto chart as described previously. Research the process to generate an “evidence-based” best practice. Evaluate the resources your institution has available to implement this protocol. Resources can include staffing, supplies, physical layout and IT support. Then consider the training and education required. After considering all these, adapt the protocol if necessary to “fit” with your institutions capabilities. The ultimate goal is to remove unnecessary variation from the process and thereby improve patient safety and quality much as the airlines do with pilot check lists.

In designing protocols, it is often more important that you “do it the same” than that you “do it right.” By doing things the same there is often less complexity that leads to fewer mistakes. Error rates fall and you have better outcomes. Physicians and staff become more efficient decreasing healthcare costs and waste. Further, it allows you to apply the scientific method to quality management so no matter where you start you can end up with better patient care.[2]

In the future, physicians will be called on to lead multidisciplinary teams to manage healthcare quality and patient safety. Educating our future orthopaedists in this critical area is extremely important. There are a number of areas for quality improvement projects. These can be selected by residents an overseen by faculty. They also frequently allow residents to work in multidisciplinary teams. Allowing residents to determine their own projects is often helpful as they are frequently closest to the problems. Picking their own projects allows them to develop and lead their own multidisciplinary teams. There are multiple areas in which projects can be selected including:

1. Developing different care pathways for specific problems such as trauma or joint replacement.
2. Developing standardized treatment processes.
3. Developing checklists for discharge or preoperative planning or surgical procedures (including any specialized equipment).
4. Developing better ways to educate both patients and staff.
5. Developing more efficient treatment pathways to increase for example the number of surgical procedures that can be done in a day
6. Develop new ideas on how do reduce patient length of stay.

One common way of involving residents in quality improvement is through the classic Morbidity and Mortality Conference. A resident not involved with the case should review the case and present it at the meeting. In addition, pertinent literature is reviewed by the resident and then presented. It is imperative that these conferences be conducted in a nonthreatening manner with a goal of quality improvement rather than criticism or punishment. The group then discusses the case. Questions to be asked are:

1. What was the cause of the complication?
2. Was the complication caused by patient disease, lack of patient compliance, failure of diagnosis, failure of selecting a proper treatment or implant, or inadequate communication with the patient, the staff or the therapist?
3. Was the complication preventable?
4. What steps can be implemented to prevent the complication from occurring in the future?

As part of this process, residents should seek the advice of and work with the quality management staff of the hospital or practice plan.

An excellent example of resident involvement in patient safety and quality is the one used by the orthopaedic surgery residency at Banner Good Samaritan Medical Center in Phoenix that is posted on the ACGME website in the “Best Practices” section. At Banner, residents have a “Quality Improvement” curriculum while on their research rotation during the PGY2 year. During that time, residents work closely with the Banner Quality Specialists. They are actively involved in reviewing medical records and performing the preliminary investigation that is then reviewed

with the Quality Specialist. If the preliminary investigation indicates the need for "peer review" it is referred to an attending orthopaedic surgeon for further review. The resident is allowed to perform varying duties at the discretion of the attending orthopaedic surgeon. Residents are allowed to participate in the Orthopaedic Committee's peer review process as *ad hoc* members.[4] The process allows residents to gain insight into the peer review process and gives them a valuable educational experience in how to practice safe, quality medical care.

The *Hippocratic Oath* instructs us "*to do no harm"* to our patients. While this has always been the concern of physicians and healthcare providers, the Institute of Medicine Report "*To Err is Human"* has made patient safety and quality a primary concern of patients, the government and the private insurance industry. It should be our responsibility not only to do everything possible to decrease medical errors and improve patient safety but also to educate the next generation of orthopaedists to do the same by providing them with the education, attitudes and tools to do it.

Chapter 1 References

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Chapter 2: The Program Director

Jack Choueka, MD

Introduction

Residency program directors are the most important and central figures in the training of orthopaedic surgery residents, with the success and failure of the programs resting squarely on their shoulders. The program director must possess a broad-based, multifaceted skill set, including excellent clinical abilities, research skills, leadership capabilities and organizational capacity. In addition, the individual must have an underlying passion and ability for training and teaching in an environment with ever expanding requirements and regulations. It is important for the program director to be involved in as many facets of resident education as possible, including maintaining a clinical practice and participating in resident focused research.

The road to becoming a program director is usually not planned. Rarely does someone train in orthopaedics with the intention of becoming a program director. Rather it is a position offered to one who has a strong desire to teach and mentor and who possesses strong organizational skills. He has likely held leadership positions during his training such as that of an administrative chief resident and/or served on departmental committees.

Many program directors accept the position without a true understanding of the requirements and commitment needed to perform the job appropriately. This can often lead to difficulties and frustrations balancing clinical and administrative responsibilities. This is further hampered by the disproportionate number of complaints received by faculty and residents in comparison to the paucity of accolades. While the job is extremely complex and demanding, it is usually massively rewarding as well. It offers enormous potential to hone leadership skills and is often a path to higher levels of administrative responsibilities. It also allows one to impact healthcare more globally, influencing not only current residents, but also those he will to educate. Having a vision for excellence in education shared by all, including the institutional leaders, department chair, faculty and especially by the residents, is key to decreasing stress and improving the ability to implement the requirements. Faculty and residents that see an unselfish commitment to the development of resident education will show appreciation and enthusiasm for the program.

Qualifications

The ACGME stipulates that there should be a single program director with authority and accountability for the operation of the program. The institution's Graduate Medical Education Committee (GMEC) must approve any change in program director. As for all faculty that are

involved with residency training, the program director must be board certified by the ABOS or have qualifications acceptable to the RRC and he must be licensed and in good standing in the medical center or hospital. The program director must exhibit expertise in his specialty along with documented educational and administrative experience. The program director should display leadership responsibility and longevity in the position, as frequent changes to the program director position will likely stimulate an earlier site review.

In addition to the formal qualifications, there are several skill sets that a program director should have including the following:

Honesty and integrity: As the program director is the ultimate role model for resident and faculty behavior, this is an integral requirement. This is especially true when difficult decisions regarding resident discipline, remediation or termination are needed. Staying true to one's values and judgments is critical to maintaining a quality program that provides quality healthcare. A program director must also be honest with himself or herself, accepting the responsibility and time commitment necessary to do the job appropriately.

Listening and communication skills: Active listening is an essential part of the job. Generally faculty and especially the residents are concerned about their education and their future, so it is important to make them feel that their program director is equally concerned. Most problems in a residency occur from miscommunication and misunderstandings, so the program director must be able to listen to all parties involved when making decisions.

Negotiating and problem solving: While it is always best to avoid problems with proper planning, it is impossible to anticipate every circumstance. The program director will find that a large portion of his time is involved in daily problem solving and damage control. This requires the ability to prioritize and negotiate solutions expeditiously. When multitasking, as program directors will often do, it is important not to make rash inadvertent decisions.

In addition to these personal qualifications there are essential competencies that program directors should acquire that may require more intensive training: formulating goals, writing a curriculum, evaluating the effectiveness of the curriculum, understanding adult teaching and learning, and giving effective feedback are example.

The Many Hats of a Program Director

Role as Department and Institutional Leader

At one time, by default, the department chair was the program director, but more recently these roles have become separated. It is common, though, for program directors to hold leadership positions in their department such as associate or vice chair. As such, program directors will have broader responsibilities to the department and institution, such as managing

a budget especially for education, developing and overseeing clinical activities and acting as liaison to other departments such as to the emergency room and peri-operative services. While it is essential for the program director to properly advocate for the education and development of the program, this must be balanced in the context of the overall mission of the institution, its fiscal responsibilities and a priority of delivering quality health care.

Role as Resident Advocate

The program director must advocate for residents and their education on multiple levels, including with the department chair, hospital administration, GME, faculty and even with the residents themselves. An honest assessment of educational needs is paramount to achieving necessary resources.

The program director is usually immediately notified of any issue involving the residents, especially when it involves conflicts. Providing a safe environment for discussion and dialogue will enhance creative problem solving. One of the most challenging situations for a program director is remaining an advocate for residents who have difficulties, especially for those undergoing remediation or disciplinary actions. Relationships with faculty and fellow residents often become strained, and the program director must balance remediation with resident development.

Role with Local GME

The program director of an orthopaedic department should have active representation in the institution's GMEC. Orthopaedic surgery plays a vital role in a hospital's function, with a broad range of specialties and areas in which orthopaedics is intimately involved. Attending regular GME meetings provides information on hospital and national policies and allows interaction among the specialties and departments in which the residents function. Attending and actively participating in regular GME meetings provides an opportunity to interact with other program directors, offering opportunities for collaboration and joint career development. Sharing successes as well as failures with colleagues is an excellent way to help develop one's own program.

National Role and Opportunities

The community of orthopaedic program directors and educators is a vibrant, dynamic group of passionate teachers and specialty leaders who provide an excellent source of information and camaraderie. There is a variety of ways to participate and contribute to this community's development. The Orthopaedic Council of Orthopaedic Residency Directors (CORD) is a newly developed organization that provides education and support to program directors and has become an essential part of program director development.

In order to be a leader at home and garner the respect that is required, a program director should seek out opportunities for education and leadership on a national level. There are a variety of committees within CORD and other orthopaedic societies such as the AAOS that a program director should consider joining. In addition, the ACGME and RRC are often seeking program director representation on several committees.

Relationships

To Faculty

The ACGME program requirements list numerous responsibilities of the program director as it relates to faculty. “At each participating site, there must be a sufficient number of faculty with documented qualifications to instruct and supervise all residents at that location.”
The program director must identify, approve of, monitor and evaluate faculty at all resident training locations. The program director must ensure that faculty “devote sufficient time to the educational program to fulfill their supervisory and teaching responsibilities; and to demonstrate a strong interest in the education of residents, and to administer and maintain an educational environment conducive to educating residents in each of the ACGME competency areas.”

The relationship of the program director to the faculty is complex. Residents perceive the program director as their leader, whereas as a faculty member himself, the program director has a different relationship with the faculty. The program director must balance the role as colleague and director equivalent to a player-coach. As such the program director must maintain the highest level of clinical excellence and leadership, acting as a role model for fellow faculty. It is rare that all faculty members have the same motivation and passion for teaching. Identifying those that do and recognizing their efforts is one method of encouraging others to be better teachers. The program director can and should inspire faculty to be better teachers and mentors. The program director must be a strong advocate for resident education and keep this a high priority for faculty. Maintaining a positive environment and keeping a sense of resident and faculty morale is important not only to assure ideal learning, but also for recruitment of future residents. The program director must provide opportunities for faculty development, training faculty to be better educators, supporting their research efforts and their educational programs. Utilizing opportunities to motivate faculty, such as at an annual retreat, with individual mentoring, and with participation on educational committees, can prove helpful in coalescing the faculty. Encouraging faculty to take courses aimed at enhancing their teaching skills such as the AAOS sponsored orthopaedic educator's course helps develop an engaged core of teachers.

Holding residents and oneself to high standards will encourage faculty members to do the same. At times when conflict arises between a faculty member and a resident, the program director must remain unbiased, listening to both sides, and negotiating a resolution, which takes tact, skill and patience.

To the Department Chair

The relationship of a program director to the chair is critical to the success of a program. It is imperative that they be like-minded and supportive of each other's roles in the department. Fortunately the department chair often selects the program director, so they usually share the same vision and ideologies. The program director must have the authority to administer the residency program; therefore, the support of the department chair is essential in fulfilling this obligation. There should be constant communication and regularly scheduled meetings with the chair to ensure the success of a program. The well being and continued accreditation of the residency program are vital to the proper functioning of the department, so the program director must keep the chair abreast of all developments and changes that may impact the residency. One of the greatest challenges for a program director is dealing with difficult faculty, and the department chair can be instrumental in this regard.

The department chair must provide the necessary resources, and the time to fulfill the duties of program director appropriately. However, when advocating for the residents with the department chair, the program director must be mindful of the greater responsibilities the chair has to the department and to the institution.

Program directors who are also the department chairs must balance all factors when making decisions. Chairs must make efforts to involve faculty and to select one or several to function as associates or delegates to the residency program.

To Residents

Residents are usually the most concerned and passionate about their training and experience they receive. Given the opportunity they are the main source of information regarding the effectiveness of a program or curriculum. In addition to the mandatory meetings with residents, a good program director will speak to residents quite often, if not every day, about the program. Chief residents especially need to have the ability to reach the program director anytime to discuss resident issues such as scheduling, supervision, duty hours and questions regarding patient care. The program director must be open to criticism by the residents, especially as it pertains to their experience, and residents should feel comfortable discussing their own issues as well as the issues with the program, without fear of retaliation. A safe open door policy to residents and reinforcing and encouraging their right to call at anytime to voice concerns or discuss issues is an effective way to maintain open lines of communication.

Inexperienced program directors will sometimes make the mistake of becoming too friendly with residents as way to gain their trust and admiration. Since all program directors were once residents they often feel that they understand the needs of the residents and how to best run a program based on their own resident experience. They will quickly learn that running a residency program requires a more global outlook on training than those perceptions gained during residency. Since it is impossible to maintain an equal personal relationship with all residents, it is best that the program director avoid these relationships altogether. As their leader and as the one who is responsible for their education, the program director must often take on the role of enforcer of rules and be the disciplinarian. Residents themselves will find it easier to relate to the program director that is fair to all, as opposed to friendly with a few. Ensuring that each resident receives equal opportunities for learning and experience, and setting up a program that is balanced is the best way to maintain a productive professional relationship with residents.

To the Residency Coordinator

The residency coordinator should be a full-time employee designated to coordinate the residency and the daily activities of the residents without too many other responsibilities. The program director works more closely with the coordinator than with any other person in the hospital. The program director sets the direction for the program, while the coordinator implements the plan. The program director should be a source of information and guidance to the coordinator, being supportive and open to questions and concerns. The relationship should be such that they have open lines of communication with each other, discussing resident matters daily if not multiple times per day. In general the coordinator, responsible for maintaining all critical information and documentation about the program, tends to be more organized than the program director. The residency coordinator has a special relationship with the residents and can be a valuable source of information regarding the many aspects of the residency.

Residency coordinators represent the residency to the faculty members, administration, resident candidates and to national organizations, so they must possess excellent organizational and interpersonal skills. Residency coordinators may come into the role without previous experience, and the orientation and guidance of understanding of the residency requirements is the responsibility of the program director. A good coordinator is the glue that keeps a well-run program together and therefore when selecting a program coordinator the program director should have final say in the decision since their ability to work together is paramount to a successful program.

To the DIO

The Designated Institutional Official (DIO) has the authority and responsibility for the oversight, administration and compliance of the Sponsoring Institution's ACGME-accredited programs.

The DIO establishes and implements policies and co-signs all program information forms and any correspondence or documents submitted to the ACGME by the program directors. They are a source of valuable information regarding residency training in the hospital. A good relationship with the DIO will help avoid reinventing the wheel on multiple program requirements as they have information on strategies that have succeeded and failed in other departments and can help avoid timely mistakes. It is important to inform the DIO of all changes that are made to rotations as they must approve them on the ADS website. The DIO can be most helpful when dealing with a problem resident, and it is important to involve them in any remediation efforts. Not only are they helpful for essential documentation, but they can also offer an unbiased opinion and counsel for both the faculty and the resident. The DIO will often ask for program director representation on various committees or for input on hospital policies. Providing this essential role for the DIO will help establish a mutually beneficial relationship.

Specific Responsibilities of the Program Director

Develop Curriculum

According to the ACGME common program requirements, "The Program Director is responsible for administering and maintaining an educational environment appropriate to educate the residents in each of the ACGME competency areas."

There must be written educational goals and objectives, based on the six core competencies for each major rotation by level of resident training and for each assignment. The goals and objectives should clearly demonstrate that residents are given increasing responsibility as they progress through their training. The goals and objectives should clearly demonstrate that residents are given increasing responsibility as they progress through training. The written goals and objectives must be provided to the residents and discussed by the supervising faculty at the start of each rotation. It is advised that the program director develop a system documenting that this occurs. In order to best engage faculty in this process, they should be involved heavily in developing the curriculum in their respective rotations. They should also review the curriculum at least annually to ensure its accuracy. Goals and objectives for the PGY-1 rotations must be developed independently from those of the departments they rotate on. They must be specific to the orthopaedic resident reflecting their particular needs as orthopaedic trainees. These should de developed with and approved by the respective program directors.

It can be challenging to understand what is expected for some of the competencies. A very useful resource is The ACGME's Program Director Guide to the Common Requirements on the ACGME website www.acgme.org. In order to fulfill all training requirements, guidelines set by the ACGME as well as by the American Board of Orthopaedic Surgery (ABOS) must be met.

There are a variety of ways to structure teaching for residents. Some of these include bedside

rounds, surgery, attending office hours and clinics, tutorials with allied health professionals, lectures, courses, hands-on experience, peer-to-peer teaching, online courses and modules, simulation labs, cadaver labs, research activities and board review courses.

The following are some general guidelines and principles, based on the ACGME six core competencies that program directors should utilize when developing curriculum goals and objectives for the residency program. This is not intended to be a comprehensive review of all the competency requirements, but rather an overview on how program directors can influence their integration into the program curriculum.

Patient Care

"Residents must be able to deliver patient care that is compassionate, appropriate, and effective for the treatment of health problems and promotion of health."

When developing and structuring clinical rotations the program director should be mindful of both RRC and ABOS requirements, individual program goals and objectives, and local resources. The curriculum and resident experience must provide sufficient variety and volume to afford the residents adequate experience in the diagnosis and management of adult and pediatric orthopaedic disorders. According to the ACGME clinical rotations or experience must include "adult orthopaedic surgery, including joint reconstruction; pediatric orthopaedic surgery, including pediatric trauma; trauma, including multisystem trauma; surgery of the spine, including disk surgery, spinal trauma, and spinal deformities; hand surgery; foot surgery in adults and children; athletic injuries, including arthroscopy; metastatic disease; and orthopaedic rehabilitation, including amputations and post amputation care". As per the ABOS guidelines, residents beyond the PGY1 level should also have minimum of 12 months of adult orthopaedics, 12 months of fractures/trauma, six months of children's orthopaedics, and six months of basic and/or clinical specialties. It is helpful to develop a block outline of the typical resident assignments for all the years of training to illustrate and document resident experience in the various areas

Although some residents would prefer to spend their training in the operating room, it is the responsibility of the program director to provide appropriate continuity of patient care. Residents must be provided with adequate experience in non-operative outpatient diagnosis and care, including all orthopaedic anatomic areas and patients of all age groups. Each week residents must have at least one-half day and preferably two-half days of outpatient clinical experience in physician offices or hospital clinics with a minimum of 10 patients per session on all clinical rotations. Residents must be directly supervised by faculty and instructed in pre- and post- operative assessment as well as in the operative and non-operative care of general and subspecialty orthopaedic patients. Opportunities for resident involvement in all aspects of outpatient care of the same patient should be maximized, which is sometimes difficult with residents switching rotations or being off service due to duty hour requirements; however,

maintaining easily accessible patient information on a secure network is one method to help fulfill this obligation.

As residents progress through the program, the patient care goals need to delineate increasing responsibility for patient care under direct supervision of faculty. One way to achieve this is to set levels of competency in particular procedures or activities that residents must obtain at any given time in their training. For instance a goal may be set that by the end of a junior rotation on a sports service the resident must be able to perform a basic arthroscopic procedure. A credentialing process for procedures that residents can perform without direct supervision should be established. These include procedures such as closed reduction of fractures, application of skeletal traction and joint aspirations.

The program director should also ensure that residents have instruction in basic motor skills, including proper use of surgical instruments and operative techniques. The application of basic motor skills must be integrated into daily clinical activities, especially in the operating room. Simulation labs, microsurgery labs, and cadaver and sawbones workshops can be used effectively for this competency.

Medical Knowledge

Medical knowledge is defined by the ACGME as the resident's ability to "demonstrate knowledge of established and evolving biomedical, clinical, epidemiological, social-behavioral sciences, as well as the application of this knowledge to patient care."

Although residents will gain medical knowledge in nearly all their educational experiences, including surgery, ambulatory care and research efforts, the method most under the control of the program director is the didactic curriculum.

The program director is responsible to oversee the quality of didactic and clinical education in all institutions that participate in the program. If possible the program director should sit in on as many lectures and educational activities as possible. While residents can present some didactics, it is expected that faculty will organize and provide the bulk of the didactics. Since the RRC requires that residents gather at regular intervals for educational experiences, the program director must coordinate opportunities and protected times with several rotations and hospitals to achieve this. Attendance at the conferences for both faculty and residents must be monitored, and evaluations should be made for each educational experience to monitor their effectiveness. The RRC requires that basic teaching aids such as computers, projection equipment and videotape or digital recording resources be available for residents and staff, and the program director must ensure their availability.

The goals and objectives of the program should have measurable criteria to assess this as well as all competencies. The use of OITEs is one method, but cannot be the sole method, to

evaluate a resident's medical knowledge. End-of-rotation exams, case presentations, and online orthopaedic exams provided by several websites are effective in evaluating this competency.

Practice Based Learning and Improvement

"Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning."

In essence, this competency requires that residents take control of their education, which makes integration into a curriculum a challenge for the program director. There are, however, a variety of good ways to incorporate this into the educational program, many of which have been part of orthopaedic residencies for some time.

For instance having residents participate in Morbidity and Mortality Conferences, quality improvement initiatives, and peer review meetings will help residents understand and identify ways to provide quality health care. Encouraging faculty to provide timely feedback will help residents identify deficiencies and improve skills. Having residents participate in clinical and basic science research throughout their training allows them to critically evaluate literature and incorporate it into patient care. Developing resident teaching skills by giving them opportunity to present cases, literature reviews, and topic discussions is an excellent method to teach this competency and to prepare residents for lifelong learning.

Interpersonal and communication skills

The communication skills include both written and verbal communication. Residents must create and sustain a therapeutic and ethically sound relationship with patients and communicate effectively with patients, families, and the public, across a broad range of socioeconomic and cultural backgrounds. Instruction in this area can best be achieved by providing patient care jointly with residents. Faculty should appraise residents in an ongoing basis as to their communication skills, both written and verbal. Providing lectures or seminars on cultural competency is helpful for both residents and staff. The AAOS offers several educational courses and webinars on this topic.

The second part of this competency, interpersonal skills, is probably the most difficult of all competencies to teach. Because most people's interpersonal skills are set early in life, perhaps even as young children, they may be impossible to alter. Program directors will quickly find that residents who are deficient in this area are the most challenging to remediate. Behaviors can be controlled, but morals and how that impacts on dealing with others are difficult to change.

The best way to train residents in interpersonal skills is to select a faculty that provides

excellent role modeling and mentorship. Providing seminars, speakers, and a variety of online modules directed at instruction in interpersonal skills can also be integrated into the curriculum. Simulated patients and role-playing such as Objective Structured Clinical Examinations (OSCEs) can also be used.

Professionalism

The program director needs to develop learning activities to help residents develop a commitment to professional duty and observance to ethical values. Residents are expected to display compassion, honesty, and respect for the patients and to respond to their needs. They should have sensitivity and responsiveness to a diverse patient population and to fellow health care professionals. Therefore, the program needs to educate residents about the personal, social and cultural factors involved in the disease process. Residents should demonstrate commitment to ethical values, confidentiality of patient information, informed consent, and ongoing professional growth. It is difficult to organize teaching in this area as it encompasses all aspects of patient care and resident experiences. Codes of ethics and behavior are becoming more prevalent in hospital culture; hence, resident involvement in these training sessions is essential. To augment training in this competency, programs may use a variety of online curricula and webinars, as well as simulated patients and role modeling, but most important is the role modeling by the faculty and staff.

Systems Based Practice

“Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.”

Working as members of inter-professional and interdisciplinary teams will enhance patient safety and improve patient care quality. Involving residents in quality improvement initiatives, hospital committees, peer review processes, root cause analysis and ongoing department planning are examples of ways to provide active training in this competency.

Monitor & Report Duty Hours

The program director is responsible for monitoring resident stress, including mental and emotional conditions that hinder performance or learning, and offer appropriate intervention. Residents and faculty should be educated to appear for duty well rested to be able to provide care for their patients, in a compassionate learning setting.

The program director should, therefore, implement policies and procedures consistent with institutional and program requirements for resident duty hours and working environment, including moonlighting. These policies should then be distributed and explained to the residents and faculty.

The program director should monitor the residents' daily schedules and activities at each training site, including at-home call, to be sure duty hours are not extreme. Schedules may need to be adjusted as necessary to lessen excessive service demands and fatigue. Residents' duty hours should be monitored to ensure compliance with the ACGME, Local (i.e. 405 rules in New York), and the institutional GMEC policies. The program is responsible to use a monitoring system recommended by the institution's GMEC. The program should also have a quarterly survey to monitor residents' compliance with duty hour rules. Any violations should be documented and reported to the GMEC, and the resident should be counseled as well.

Moonlighting has become a fact of life for some residents with large debt. The program director should institute a departmental policy and monitor all moonlighting activities to make sure they are not interfering with the educational activities and that they are in compliance with institutional policies. Time spent by residents in internal or external moonlighting must be counted towards the 80-hour maximum weekly hour limit. PGY-1 residents are not permitted to moonlight.

The program director should monitor the need for, and ensure the provision of back up support systems when patient care responsibilities are unusually difficult or prolonged. The RRC requires that situations that create undesirable stress be evaluated and modified. Issues such as mental or emotional conditions affecting patient care or learning as well as drug or alcohol related dysfunction should be kept in mind. Many institutions have programs in place to allow residents to seek counseling for treatment of impaired physicians. In addition, residents and faculty need to receive education on stress and fatigue. Attention should be given to adequate on-call space for in-house night call and to residents who express signs of fatigue to rest before going home. Transportation should be available for residents in case of fatigue.

Monitor and Report Surgical Case Logs

The Resident Case Log System is an internet-based case log system that utilizes CPT codes and ICD-9 codes to track resident experiences. The ACGME requires residents to documents and report their encounters or procedures by choosing codes that accurately reflect the encounter or procedure performed or the code that most closely matches.

Residents should enter their cases in the ACGME Case Log System as soon as possible to make sure they are accurate. The ACGME provides each program director with a user ID and password to access the Case Log System. The program director should also generate a full detail, or a CPT/ICD-9 summary report on a regular basis and review the logs to make sure that they are being reported correctly. The review of these case logs also helps the program director

ensure that each resident performs a comparable number of procedures and to compare the program's procedures to the national average. The national data is available on the ACGME website http://acgme.org/residentdatacollection/documentation/statistical_reports.asp The results can be used to modify the program curriculum and rotations to enhance residents' experience. Furthermore, it is the responsibility of the program director to sign off the graduating residents' case logs.

Recently, the RRC has identified the procedures considered most important to use for assessing procedural competence of graduating residents who complete orthopaedic surgery education. The minimums for each procedure have also been suggested. Starting 2012-13, programs whose graduate case volumes average below the minimums listed in four of the fifteen categories may be cited for non-compliance. These procedures are listed on http://acgme.org/acWebsite/RRC_260_News/Ortho_Surgery_Aug11.pdf. The minimums data on each resident can be generated from the ACGME Resident Case Log System. It has also been determined that the range of 1000-3000 total procedures to be an appropriate range for the graduating residents. Residents participating in disproportionately large numbers of cases may indicate deficiencies in other essential areas such as outpatient experience.

Resident Evaluations

Programs must have a formal system for evaluation of the clinical competence of residents in addition to in-service examinations and post-rotation evaluations. The program must use measures to assess competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice. These assessments should document progressive resident performance improvement appropriate to educational level. The goals and objectives that residents receive must include detailed descriptions of both their learning and performance responsibilities as well as the assessment methods that will be used to evaluate them. They should also be informed what constitutes acceptable performance, a determination that must be made by faculty as part of the evaluation tool.

The use of multiple evaluation methods is the best way for a program director to assess a resident's progress. The CORD website is a valuable source for assessment tools. .http://www.aoassn.org/programs/council-of-orthopaedic-residency-directors-(cord).aspx. Listed below are some common types of evaluation tools and what they might be used to measure.

***360 Global rating evaluations*:** Staff, peers, students, and allied health professionals evaluate residents from their own perspective using similar rating forms. Self-evaluations are a useful tool to help residents gain perspective on the feedback they receive.

End Rotation Formative Evaluation: Each resident should receive an evaluation for each

rotation performed. The faculty must evaluate resident performance in a timely manner after each rotation, and document this evaluation at completion of the assignment. Written comments from the faculty, as well as suggestions for improvement, is an integral part of the rotation evaluation form. Each resident should have the opportunity to discuss his/her evaluation with the faculty and/or with the program director. Evaluations should correspond to the goals and objectives and should be year-in-training specific.

Mid Rotation Evaluation**:** It is best for residents to be aware of their progress throughout the rotation, as opposed to being surprised at the end. Timely direct feedback immediately following a patient interaction is the best way to keep residents apprised of their performance. Having faculty meet with residents mid rotation is another way for residents to be assessed prior to completion of a rotation. During this meeting faculty should inform residents of their strengths as well as areas for improvement.

Patient Survey Questionnaire: Patients can provide insight into resident performance unlike any other evaluator. In many ways patients' appraisal is ultimately the most important as it is the only type of evaluation that will continue as part of their careers Patients can evaluate resident care on their ability to counsel and educate families and patients, caring and respectful behaviors, listening skills and patient advocacy.

Pre and Post rotation examinations: A specialty specific examination given at the beginning of a rotation will provide the resident with a basis for study and reflection throughout the rotation. The examination given at the end of the rotation provides an objective measure of improvement.

Procedure or Case Logs: Review of residents' case logs using the ACGME resident case log system is an excellent way to assess their clinical experience as well as to evaluate their knowledge of surgical coding.

Operative Performance or Procedure Based Assessment Tool**:** In addition to informal assessments given to residents following procedures, a formal evaluation survey can be used to assess the residents' competency in obtaining consent, preoperative planning, preoperative preparation, surgical techniques such as exposure, closure, and intra-operative technique, and post-operative management.

Case Presentations: Use of structured cases to assess clinical decision-making should demonstrate knowledge of basic and clinical sciences, investigatory and analytical thinking and practice of cost-effective care.

Portfolio*:* Resident portfolios provide both residents and program directors with a method to assess clinical experiences, educational and research projects, case logs, and feedback in one area. For residents seeking competitive fellowships or who wish to pursue academic careers, starting a portfolio early in their careers will be advantageous.

***Simulations and Models**:* Simulation labs allow assessment of even the most complex procedures and analytic decision making in a safe, controlled environment. They also allow for the development of objective metrics of evaluation.

Standardized Patients and OSCEs (objective structured clinical examination)*:* Standardized patients can use actors or even real patients, trained to respond as real patient would. An OSCE may use a series of standardized patients or other assessment tasks that can be used by faculty to evaluate interviewing skills, physical exam skills, listening skills, and interpersonal interactions.

The ACGME requires that residents meet with the program director at least semiannually to receive feedback on their performance. During this meeting the program director should present the resident with a summary of the formal evaluations they received during the assessment period. Any deficiencies noted should have a remediation plan instituted. Residents should present their plan for self-directed learning. Other topics to discuss include progress toward any required research or scholarly activity, fatigue and compliance with duty hours, suggestions for improvement in the program, and career aspirations. A competency based checklist or template should be utilized and kept as written documentation of the meeting.

Sometimes, program directors encounter faculty that do not complete resident evaluations in a timely manner, or do so with little regard for resident development. Simply put, faculty members who do not engage in both education and assessment of residents including providing direct feedback should probably not be training residents. In these situations department chairs can be helpful in mentoring faculty.

Program Evaluations

The program must document formal, systematic evaluation of the curriculum at least annually. The program director must also monitor and track resident performance, faculty development, graduate performance, and program quality. Residents and faculty should have the opportunity to evaluate the program confidentially and in writing at least annually.

It is important to take time to reflect on the performance of the program and to evaluate strengths and weaknesses. Evaluation of clinical rotations and didactic program and review of individual faculty are vital. This can be done through an annual Faculty Meeting or Retreat, which must be documented, and have a self selected group of residents present. It is expected that written evaluations by residents and faculty be used in this process. The RRC expects that the program will evaluate the extent to which educational goals are met by residents (including the competency areas), the utilization of the resources available to the program, the contribution of each institution, the financial and administrative support of the program, the volume and variety of patients, the performance of the teaching staff, and the quality of

supervision of the residents. Program evaluation can include, in addition to resident evaluations of the program, the institution's internal review of the program, alumni surveys, self-assessment examination results and board scores, performance in didactics, publications by residents, and employment status of graduates. The RRC expects that program graduates should take both Part I and Part II of the American Board of Orthopaedic Surgery certifying examination. At least 75% of those who take the examination for the first time should pass.

If deficiencies are found, the program should prepare a written plan of action to document initiatives to improve performance. The action plan should be reviewed and approved by the teaching faculty and documented in meeting minutes. A copy of the meeting minutes should also be submitted to the institution's GME office.

Whenever new RRC requirements are approved, the program director should review these in detail to assess what new areas of training or documentation need to be implemented by the program.

The Chief Resident Year

The chief resident year is arguably the most important year of a resident's training. It is during this year that residents must demonstrate their maturing into competent orthopaedic surgeons capable of independent practice. They take on various amounts of administrative and teaching responsibilities and generally spend more time with the program director than any other resident. Since there are a variety of responsibilities placed on the chief residents, they must balance their need to pass their exams, develop leadership skills, and obtain enough clinical experience both operatively and non-operatively to enter independent practice.

Chief residents are invaluable to the program. The chief resident can represent resident concerns to the program director and the faculty, act as a resource for the program coordinator in daily administration of the program, participate in recruitment and selection of residents, assist with new resident orientation, assist in counseling or remediation of residents with performance problems, and teach or supervise junior residents. They can be responsible for specific tasks like developing the resident on call schedule, the resident rotation schedule, or organizing resident conferences.

Graduating residents are an excellent source of information for a program director. An exit interview, during which the senior residents can speak freely about the strengths, benefits, and areas for improvement, offers valuable insight into the quality of a program.

Upon completion of the program, the program director must prepare a summative evaluation of the resident. This evaluation becomes part of the resident's permanent record maintained by the institution, and must be accessible for review by the resident in accordance with institutional policy. This evaluation should document the resident's performance during the

final period of education, and verify that the resident has demonstrated sufficient competence in all six competencies to enter practice without direct supervision.

The end-of-program verification statement submitted to the ACGME requires all program directors to verify that the resident has "demonstrated sufficient competence to enter practice without direct supervision." If the program director does not feel comfortable signing such a statement for a resident, that resident should not be allowed to graduate, even if the specified time for residency education has expired. This situation becomes unlikely if proper evaluations have been systematically implemented throughout a residents training period, allowing problems to be identified much earlier, offering opportunities for remediation and even dismissal, well before the end of residency education.

Both the end-of-program summative evaluation and the end-of-program verification statement for all graduates should be retained in perpetuity in a site that conforms to reasonable document security standards (protected from fire, flood, and theft). Program directors and chairs receive multiple training verification requests often for residents they may have never met and it essential provide ready access to these for years to come.

In order for graduating residents to be eligible to sit for their part one of the ABOS exams, they must fulfill all ABOS requirements and the program director must certify their training via formal communication using the RRA forms.

Communication With the ABOS

Each year program directors must provide the ABOS with each resident's Record of Residency Assignment (RRA). Original signed forms are due within 30 days of completion of the academic year. Each June, program directors receive by e-mail necessary information to complete the residents' information. It is important to understand ABOS requirements for training since they differ in some respects from ACGME requirements. For instance, the ABOS and not the ACGME has particular lengths of time for training in particular areas of orthopaedics. The following are the RRAs that need to be completed for each resident:

- Form 1 must be submitted the year the resident enters the program.
- Form 1-A must be submitted at the end of the academic year for each PGY-1 resident.
- Form 2-A must be submitted at the end of the academic year for each PGY-2 through PGY-5 resident.
- Form 3 must be submitted for each resident who graduates or leaves the program prematurely.

Communication with the ABOS must take place when a resident prematurely leaves a program, and most importantly when accepting a resident transfer. When a resident leaves a program

prematurely, the program director must notify the ABOS office in writing within 30 days. The letter must record the reasons for leaving and confirm credit granted for rotations during the academic year in which the resident left. When accepting a resident transfer, the new program director must obtain copies of the resident's rotations and satisfactory performance in all competencies, as well as Record of Residency Assignment forms from the Board office, and review them thoroughly in order to develop an appropriate individual program that will meet the minimum educational requirements. There should be a written communication with the ABOS officers to make sure that the rotations previously completed are compliant with the ABOS requirements. This is critical issue when accepting a PGY-2 residents who have performed their PGY-1 requirements in a non-orthopaedic program such as in general surgery or in a transitional program.

Communication with the ACGME

Thoughtful, respectful and timely communication with the ACGME and respective RRC is pertinent to program accreditation and residency education. This includes reviewing and commenting, when asked, on proposed "Program Requirements" revisions and other proposed actions. The program director is fully responsible for the completion and submission to the RRC of the "Program Information Forms" and for all other necessary actions and procedures required for the program's periodic ACGME reaccreditation processes, as well as for completing the program's ACGME Accreditation Data System (ADS) that requires annual information updates. The program director must oversee and ensure the submission by the residents of complete and accurate case log data as defined by RRC/ACGME.

The program director must notify the RRC in writing, as detailed in the "Program Requirements," with prior approval of institution's GMEC and DIO of any:

- Change in leadership of the program or department
- All applications for ACGME accreditation of new programs
- Changes in resident complement
- Major changes in program structure or length of training such as:
    - Change in or addition of rotations to participating institutions
    - Desire to add or delete participating institution
    - Desire to add or delete rotations of more than six months
- Progress reports requested by the Review Committee
- Responses to all proposed adverse actions
- Voluntary withdrawals of ACGME-accredited programs
- Requests for appeal of an adverse action
- Appeal presentations to a Board of Appeal or the ACGME
- Proposals to ACGME for approval of innovative educational approaches
- Program citations
- Request for changes in the program that would have significant impact, including

financial, on the program or institution

Local ACGME Management

Midway through an accreditation cycle, the GMEC of the sponsoring institution is required to conduct an internal review of the program. Each RRC assigns the month and year of the accredited program's internal reviews in the Letter of Notification. Internal Reviews are performed in order to assess program compliance with institutional and RRC specific requirements. The program director and the department chair are usually notified several months prior to the Internal Review and are required to provide a preselected panel with information regarding the program. This may include the following:

- Completed PIF
- Copies of program policies:
    - Resident Selection
    - Resident Evaluation
    - Resident Promotion
    - Resident Dismissal
    - Resident Evaluations of Program and Faculty
    - Moonlighting
    - Resident Supervision
    - Copies of all evaluation forms employed by the program (for residents, faculty, and program)
- The program letters of agreement (PLAs) with institutions in which residents rotate
- The resident manual (electronic or hard copy), particularly pertinent policies and procedures required by the GMEC and ACGME
- Competency based goals and objectives specific by level, reflecting the program's specialty specific definition of competence
- Outcome measures
- Minutes from the Annual Review of Program
- All correspondence to or from the ACGME since the last site visit, including the most recent LON and progress reports
- The ACGME Program Requirements for the specialty
- Results of the last ACGME Survey of Residents
- Results of the last Institutional GME Duty Hours Survey
- The most recent Internal Review Report of the program

The internal review panel will interview key individuals involved in the program including the department chair, program director, representative faculty and a group of peer-selected residents. For smaller programs they will meet with the entire resident staff. Since residents are generally unaware of the internal review procedures, it is helpful to meet with them prior to

their interviews to discuss the process. This is a good time to have residents help assess strengths and weaknesses of the training program.

According to the ACGME the internal review panel will appraise the following:

- The educational objectives of each program and the effectiveness of each program in meeting them
- The adequacy of available educational and financial resources to meet these objectives
- The effectiveness of each program in addressing areas of noncompliance and concerns in previous ACGME letters of accreditation and previous internal reviews
- The effectiveness of each program in defining, in accordance with the program and institutional requirements, the specific knowledge, skills, attitudes, and educational experiences required for the residents to achieve specialty specific competence in the following: patient care, medical knowledge, practice based learning and improvement, interpersonal and communication skills, professionalism, and systems based practice
- The effectiveness of each program in using evaluation tools developed to assess a resident's level of competence in each of the six general areas listed above
- The effectiveness of each program in using dependable outcome measures developed for each of the ACGME competencies
- The effectiveness of each program in implementing a process that links educational outcomes with program improvement
- The effectiveness of each program in monitoring resident well-being, including residents' stress, impairment, and fatigue
- The effectiveness of each program in helping residents develop a personal program of learning to foster continued professional growth
- The effectiveness of each program in preparing residents to assume responsibility for teaching and for supervising other residents and students
- Faculty development relevant to the teaching and evaluation of the ACGME competencies
- Faculty development relevant to teaching and mentoring skills
- Faculty development relevant to the recognition of impairment and fatigue
- Faculty board certification
- Faculty scholarly activity

After completion of the interviews, the panel will prepare a report to be presented to the GMEC, indicating the review process findings, areas of non-compliance and the action plan.

While findings of the internal review are not presented to the ACGME, the program director should use the report and suggested action plans to make necessary adjustments to the program in preparation for upcoming site reviews.

Working with the GMEC

The Graduate Medical Education Committee (GMEC), comprised of program directors, the DIO, program coordinator representatives, self selected resident representatives, and senior administrators from the major affiliates, meets monthly to consider matters common to all programs to foster interdisciplinary cooperation and to coordinate graduate medical education. The GMEC has oversight responsibility for the following: the quality of education and the work environment; communication with house staff and medical staff; supervision; duty hour compliance; curriculum and evaluation; recommendations for stipends and benefits; selection, evaluation, promotion, transfer, discipline, and/or dismissal of house staff; program accreditation; institutional accreditation; program changes; experimentation and innovation; reductions and closures; and vendor interactions.

It is a helpful for the orthopaedic program director to participate on GME committees in the institution. These may relate to house staff affairs, grievance committees, or internal review committees. By assisting in the internal review of other residencies, the program director can stay abreast of new institutional requirements and get ideas for how other programs are organized and run. Many institutions also offer training seminars for residency program directors on a variety of topics such as resident evaluation, the problem resident, health care reform and other pertinent topics.

Working with Medical Students

Because of the competitive nature of orthopaedic residencies, medical students, as early as in their first year, will seek advice and mentorship from orthopaedic program directors. This is an opportunity to advise and counsel them on necessary steps needed to secure an orthopaedic position. Emphasis on medical school performance, participation in research projects, extracurricular activities, volunteering opportunities and committee involvement should be stressed. This is also a time to help them select appropriate away electives in orthopaedic surgery, mindful of any requirements of their medical school. While it is important to be encouraging and supportive of the students, it is equally important to be forthright and honest with them about their expectations. Often, students with poor academic records are misinformed about their chances of matching into orthopaedics, leading to multiple failed attempts at obtaining a position, when they may have been better directed to another specialty early on.

The program director should establish an elective rotation for fourth-year medical students interested in pursuing a career in orthopaedic surgery. This rotation is typically a four-week experience in the management of injury and illness of the musculoskeletal system. The program director must select the faculty that will direct and participate in these rotations. Usually students are placed on a general orthopaedic service to provide them with the widest range of orthopaedic exposure. Specialty rotations are acceptable as well especially if requested by a student who has had other general rotations or when multiple students are rotating at one time. Students should participate in the care of patients treated in the

outpatient clinics, emergency room, hospital, and operating room, working closely with members of the orthopaedic resident team. In addition, medical students should be given a case and topic to present at the conclusion of the rotation and be provided with opportunities to participate in orthopaedic research.

VSAS® (Visiting Student Application Service) is a AAMC application designed to facilitate the application process for "away" electives at US medical schools and independent academic medical centers that are members of the Council of Teaching Hospitals and Health Systems (COTH). The service requires students to fill out a single application for all participating institutions. VSAS is not currently available for Canadian, International, or osteopathic students to use. Host institutions use VSAS to handle their senior away elective applications from applicants eligible to apply through VSAS.

The program directors can refer to the VSAS website to see if their institution is a member of COTH at https://www.aamc.org/students/medstudents/vsas/.

The program should also have a formal system for evaluation of the clinical competence of medical students to assess competence in patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice. This evaluation system should use feedback from both faculty and residents who work directly with the medical students. The program director should have at least some exposure to all students since they must write an evaluation letter at the end of the rotation, which carries great weight when evaluating candidates in other programs. Students should meet with their preceptor at the beginning of the rotation to discuss learning goals and objectives as well as to seek and receive preceptor feedback midway through the rotation.

There are various thoughts on the need to interview students that have rotated on the orthopaedic service. Some programs interview all rotators regardless of the strength of their application, while other programs do not interview any rotators, treating their rotation as the interview. Students should be informed of the department's guidelines and policies regarding interviews at the outset of the rotation.

Support Systems

Since a program director must balance busy clinical, academic and administrative responsibilities there must be adequate support from the department and the institution. At least one full time residency coordinator must be assigned to manage the daily structure of the program. The idea that an administrative assistant or secretary can perform these duties in addition to running a clinical practice is unreasonable. The program director must have an administrative office with space acceptable to meet with residents, faculty and with other key personnel. They and the coordinator must have a personal computer with enough power and space to support ERAS, with monitors large enough to properly review applications. There must

be a budget available to support resident needs such as lab coats, textbooks, surgical loupes, away courses, travel and unfunded research. A website to advertise the program and a secure network with applicable software to allow compliant communication between residents and faculty is becoming more and more essential with advancing technologies. Most importantly the program director must have a schedule that allows time away from clinical duties to perform research and administrative duties. It is important for the program director to observe and supervise many aspects of the residency, and this requires flexibility in clinic and in operative scheduling. Since issues and problems can arise at any given time, practice extenders such as physician assistants are useful to maintain appropriate patient care.

While the program director is responsible for faculty development the most important member of the faculty to develop is the program director himself or herself. Time allotted to research endeavors, courses, leadership seminars and educational workshops should be provided by the department.

The job of a program director is extremely complex and worthy of a department and institutional title commensurate with experience. Most important in maintaining program directors in their position is to understand that being a program director does not generate income from patient care and therefore program directors must be compensated for their time. Appropriate compensation should reflect the time away from income generating duties plus the additional time spent on off hours and weekends needed to administrate the program.

What Committees should a Program Director Serve on?

Within the department the program director is in charge of all educational committees that involve the residents. With larger departments subcommittees based on specialties may be developed. As a way to gauge the quality of the faculty that interact with the residents, serving on the peer review committee is valuable.

Within the hospital the program director should serve on the Graduate Medical Education Committee and be an active participant in subcommittees such as internal review, work hour task forces and common curriculum requirements. The program director as a department and institutional leader should contribute to the overall hospital mission and serve on hospital wide committees such as strategic planning and performance improvement.
In addition a program director should develop academically and therefore become involved with local and national societies serving on committees of personal interest.

Resources available through national societies

The various orthopaedic national societies have a variety of leadership and educational forums that cater to both new and experienced program directors. Most recently the development of the CORD (Council of Orthopaedic Residency Directors), which has nearly every program represented, has been influential in enhancing program director development. CORD meetings take place twice a year coinciding with the AAOS and AOA annual meetings. Timely topics that are highly interactive are presented, and opportunity to be on a variety of committees is available. In addition a blog to discuss a variety of resident training topics is available online to members. The AOA and AAOS both have education committees that program directors should consider joining, and most specialty societies have resident and fellowship education committees and task forces that can be a valuable source of information as well as mentoring for new program directors.

Chapter 3: The Residency Program Coordinator

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Introduction

The Residency Program Coordinator (PC) works in concert with the Residency Program Director (PD) to organize, oversee, and administrate the residency program. A dedicated and knowledgeable coordinator is essential for a successful orthopaedic residency program. The residency coordinator position is generally a full-time position that leaves little time for duties outside of the program because of the administrative responsibilities required to be an effective and efficient PC. The coordinator is the only person whose job is wholly dedicated to the residency program, and the coordinator often has the most global perspective of the program, incorporating information from the residents, faculty, Program Director, Department Chair, Institution, Residency Review Committee (RRC), and American Board of Orthopaedic Surgery (ABOS). The coordinator must organize this information and interact with each of these sources in order to ensure the effective management of the program with the PD. Patience, organization, and excellent communication skills are essential characteristics for a PC. Because the duties of the coordinator are much more than secretarial and require a great deal of independent function and administrative responsibility, some institutions have changed the title of the position to "Residency Program Manager" or "Residency Program Administrator" to reflect the supervisory role and degree of independent function required in this position.

Qualifications & Essential Skills

Generally, the PC position requires a bachelor's degree or equivalent experience and between 3 and 5 years experience in the medical field or in an academic setting. Some institutions require Training Administrators in Graduate Medical Education (TAGME) certification as a job requirement (http://www.tagme.org). This qualification sets the PC apart by certifying that the PC has acquired the knowledge, skills, and expertise that leads to effective management of the day-to-day activities of the training program. The PC must have strong verbal and written communication skills as he/she is the prime point of contact for information about the residency program, and is the liaison between the program and all of the institutions and regulatory bodies involved in the program and ongoing credentialing of program graduates. Outstanding organizational

skills and the ability to multitask and prioritize are essential, along with flexibility and an ability to adapt to changing schedules (of residents and faculty) and changing program requirements. Computer skills for communication and data entry/reporting are required as well as skills to maintain accurate and easily retrievable files of the residents and residency program. The PC must be pleasant, helpful, culturally sensitive, non-judgmental, fair, and professional. The PC is frequently a sounding board for the residents and a source of advice and guidance on matters both professional and personal, thus the PC must be able to maintain the resident's confidence and confidentiality of information that is shared.

Compensation

Compensation for PCs varies widely based on many factors, including institution, geographic location, job description (assistant versus administrator), education, years in position, program size, TAGME certification, and additional administrative duties (fellowship coordinator). In a 2006 survey of orthopaedic coordinators, the salary mean was $43,308 with a low of $25,000 and a high of $87,000 (Grant, 2008). A survey of Program Administrators in Internal Medicine in 2011 demonstrated a similar range (Alliance for Academic Internal Medicine web page).

Job Description

While the PD is ultimately responsible for the administration of the program, on a day-to-day basis the PC performs many of the duties of the PD as outlined by the RRC in the common program requirements with secondary oversight by the PD. These requirements are outlined in Section II.A.4 of the ACGME Program Requirements for Graduate Medical Education in Orthopaedic Surgery, which can be found on the ACGME website at http://www.acgme.org/acWebsite/RRC_260/260_prIndex.asp.

1. Knowledge of the program requirements – The PC must learn and remain up to date with the regulatory body requirements governing both the program and the individual residents. For the program this includes the ABOS, RRC and Institutional Graduate Medical Education (GME) Office. Residents must comply with Federal and State practitioner requirements as well as Institutional requirements for the home program as well as all institutions where there are clinical rotations. The PC must have a complete understanding of the clinical and educational structure of the program.
2. Communication with the ACGME – The PC is the primary liaison with the ACGME and Orthopaedic RRC. The PC will communicate with the RRC on program citation corrective action from prior site visits and changes in resident status (dismissal, transfer in or out, non-advancement, etc.). The PC updates program information in the Accreditation Data System (ADS) regularly with any faculty or program changes.

The PC verifies and updates the resident information annually at the start of each academic year. The PC also must update GME Track annually.

3. Communication with the ABOS – The PC is the program liaison to the ABOS. A thorough knowledge of the ABOS requirements is required of the PC to ensure that any program changes will not cause any resident to be at risk of failing to meet the Board certification requirements. The PC is responsible for the Record of Residency forms that annually detail the resident's educational program. The PC ensures that graduating residents register for Part I of the ABOS Exam, which typically opens in December. The PC maintains an ongoing record of ABOS Part I and Part II pass/fail results for inclusion in the program institutional and RRC reviews.
4. Resident Recruitment and Selection: The process of resident recruitment occurs throughout the year. The PC is the primary contact for residency program applicants and therefore must effectively interact with the medical students and physicians who are prospective applicants. This requires patience and a pleasant and helpful telephone manner. The PC and PD need to maintain the program website and update new information for prospective applicants. In July, the PC updates the Resident and Program Surveys through the GME census so that program information is up-to-date. The information is released onto the FRIEDA Online site for medical students to view at the start of the application process to aide in their residency decision-making process. When the Electronic Residency Application Service (ERAS) program is available, the PC must learn new features and ensure that the program is loaded onto all of the computers where faculty and staff will access ERAS. Faculty must be informed early and reminded of the interview dates and the PC maintains the list of faculty interviewers in preparation for the interview days. The PC downloads applications from ERAS for review and distribution to the faculty who will review applications and then the PC organizes the list of applicants to be invited for an interview. Once the invitation list has been created through the program review process, the PC sends invitations through ERAS to the applicants and ensures that the proper number of applicants is invited for any interview dates that the program sets. The schedule for the interview day is organized by the PC, who needs to create any handouts for the applicants about the program and the interview day (all applicants want an interview schedule) as well and maintaining the schedule for the interview day and arranging both space and food for the interview day and subsequent resident selection meeting. The PC confirms the final rank list with the PD and enters this into the NRMP website for certification. After the match, the PC sends welcome letters to the newly matched applicants and informs the faculty of the match results. The PC remains as the primary point of contact for the new residents between Match Day and orientation.
5. Coordination and Organization of the Clinical Rotations – The PC assists in the creation and subsequent distribution of the resident rotation schedule. Residents often perform clinical rotations at a number of institutions and the PC maintains up-to-date program letters of agreement (PLA) with each institution as well as coordinating resident orientation and completion of credentialing and compliance measures at each institution. The PLA requirements are listed in section I.B.1. of the

Common Program Requirements. The PLA often includes contractual information about salary, malpractice coverage, and administrative reimbursement that the PC tracks. This requires communication with both individual physician offices and Institutional officials. Because PLAs are with institutions and not individual faculty, if a resident is assigned to a faculty member rather than an institution, a PLA is required for each institution where the resident will travel with that faculty (hospital and surgery centers). The PC is the liaison with the residents for call schedule creation and distribution and the PC must maintain an accurate record of resident vacation and leave. This can be coordinated in a master calendar to ensure coordination of service coverage. The PC arranges distribution, collection, and organization of resident, faculty, rotation, and program evaluations. This is often organized through an electronic data collection system. The PC must help ensure that evaluations are completed in a timely fashion and that the PD is informed of outstanding evaluations that require completion by residents of faculty. The PC organizes this information for the PD for semi-annual reviews as well as for faculty performance reviews.

6. Coordination and Organization of the Educational Programs – The PC works with the residents, faculty, and staff to coordinate all program educational programs. Communication with all of those involved with the educational program is necessary to ensure that the education schedule is coordinated with the speakers and then distributed. The didactic lecture curriculum is coordinated through the PC to ensure that space is reserved, food is ordered when necessary, and proper faculty are present.
    a. OITE: In November of each year, orthopaedic residents take the Orthopaedic In Training Examination (OITE) and the PC secures space that meets the technology requirements to administer the examination as well as organizing food for the day. The PC often serves as the proctor for the examination and at the completion of the exam; the PC submits the computer files to the American Academy of Orthopaedic Surgeons (AAOS) for scoring.
    b. Visiting Speakers & Grand Rounds: The PC often serves as the primary liaison between the program and visiting speakers, including regular Grand Rounds Speakers as well as speakers for special Department programs. The PC assists in making travel arrangements and hotel reservations as well as coordinating travel to and from the airport, hotel, and institution. If honoraria are to be paid, the PC coordinates the check request and after the lecture, the PC organizes receipts and arranges necessary financial reimbursement with the assistance of the financial team within the Department or Institution. The PC is also responsible for securing space and any necessary food for the event as well as publicizing the lectures.
7. Budget – The PC works with the PD to create and track the residency program budget. Planning for continuing costs and anticipation of new program costs for the budget process enable this process to be smooth and effective. Typical program

budget items include: parking (when applicable), journal subscriptions (both print and electronic), OITE exam fee, food for conferences, speaker fees (travel, hotel, honoraria), course fees (registration, housing, travel), interview process costs (space, food, handouts, social program), graduation program (space, catering, awards), resident lead, loupes, AAOS ResStudy, anatomy lab, bio-skills lab, resident allowance/stipends, educational retreats and workshops, on-call meals, outings, alumni newsletter and other program events. Program expenses are tracked in real time and the PC maintains records of expenses incurred by the program and must make adjustments to the budget if unexpected expenses arise and to prepare the budget for the next year. Individual resident expenses must also be properly assigned and tracked and reimbursements processed in a timely fashion.

8. Data Organization- One of the major duties of the PC is entering, collecting, and organizing data from numerous sources.
    a. Evaluations: At the conclusion (and possible mid-point) of each rotation, the PC ensures that resident and faculty evaluations are distributed, collected, and filed. Any poor performance evaluations must be brought to the attention of the PD for review. Faculty and resident evaluations must be completed in a timely fashion in order to maintain appropriate records and ensure that proper feedback has been provided and documented.
    b. Compliance Requirements: Residents must continually meet compliance requirements with institution and program. The PC must ensure that residents are notified of compliance program deadlines to ensure that no loss of privileges results from non-compliance. Some of the ongoing compliance measures include BLS/ACLS/ATLS certification, annual PPD testing, annual corporate compliance training, HIPPA compliance, security training, evaluation and treatment of pain, etc.
    c. Duty Hours: Residents are responsible for logging their duty hours on a regular basis. Numerous systems are available for electronic logging. The PC must ensure that resident duty hour logging is in compliance with program and institutional policies. Duty hour reporting must be monitored on a regular basis to prevent recurrent violations. The PC assists the PD in preparing reports for Institutional GME duty hour monitoring programs.
    d. Case Logs: Residents are responsible for maintaining accurate and up-to-date case logs in the ACGME Case Logging System. The PC must monitor the logging activities of all of the residents to prevent residents from failing to log cases. The PC prepares reports for the PD for semi-annual reviews as well as program monitoring of case minimums.
    e. Alumni: Graduated residents are added to the alumni database for Program Development initiatives and ongoing communication with graduates. This should be updated periodically to ensure information is up-to-date and accurate for alumni contact. An alumni sign-in at the

AAOS Alumni event and at any specialty society events can help to keep this accurate.

9. Administrative Duties-
    a. Resident Handbook: Each year, the PC assists in updating the Resident Manual to reflect any program changes as well as new policies that have been instituted. The handbook should be provided to each resident and with documentation that the handbook has been received.
    b. Meetings: There are numerous meetings that the PC attends both as and active participant, in the place of the PD, and as an observer only at times. Regular institutional GME meetings are an excellent resource to stay up-to-date on upcoming policy changes and to voice concerns about implementation of existing policies. There may also be institutional PC meetings to share innovative programs, evaluations, etc. The PC needs to participate in ongoing professional development to build skills and enhance effectiveness in the role. National meetings of ARCOS and CORD also provide the PC with outstanding resources and connections to enhance the program as well as provide professional development for the PC.
    c. Medical Students: The medical student course descriptions for internal and external rotators must be updated on a yearly basis. A working knowledge of the Visiting Student Application Service (VSAS) is required for this. The PC must ensure that the program accepts the proper number of students and that all credentialing is completed prior to the start of the rotation. Evaluations must be distributed to the faculty, collected, and returned to the parent institution quickly for inclusion in the Medical Student Performance Evaluation (MSPE) and for inclusion in the application transcript.
10. Other Duties –
    a. Medical Student Rotation Coordinator: The PC may be the coordinator for medical student rotations and the PC is be responsible for providing visiting students with an introduction to the program and orientation to the institution. Rotation grade forms need to be distributed to faculty and returned to the student's parent institution in a timely fashion.
    b. Fellowship Coordinator: The PC may also be the coordinator for Fellowship Program(s) within the Department. At a smaller residency program, this may be a manageable job for the PC, however the PC must not be overextended or the program organization will suffer.
    c. Librarian – The PC is often responsible for ordering and organizing books and journals in the Orthopaedic library. Electronic journal subscriptions can be coordinated with the Institutional library when available to minimize cost to the program. The library also houses instructional digital media that needs to be organized and catalogued.

Residency Cycle (adapted from Otterstad, 2003)

JULY

July 1 is the beginning of the academic year in all graduate medical education programs, although many new residents begin their residency orientation in June.

- RRC Annual report filing for Aug 1 due date
- Process requests for information about the training program.
- Process loan deferment forms
- Update trainee information for requesting organizations
- Input current resident and fellow data into GME Track
- Prepare summaries of resident training for each recent graduate & place in their permanent files.
- Remainder of month: assist new house staff in their transition into the program.
- Registration for Orthopaedic Resident In-Training Exam in November
- Organize alumni receptions at Specialty Society Meetings
- Determine interview dates
- Update program website information
- Assign Sub-I and elective rotators
- Prepare resident files for semi-annual meeting with PD
- Biweekly - monitor case logs
- Weekly - assign medical students
- Weekly – monitor duty hours
- Weekly – process reimbursements
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

AUGUST

The primary focus this month is processing requests for information about the training program and sending out recruitment materials.

- Install ERAS software on PC's of all staff who will be using it.
- Organize event for senior medical students interested in orthopaedics
- Prepare materials for students seeking orthopaedic surgery residency.
- Update program website information
- Submit match quotas to NRMP.
- Update program information in ADS
- ERAS opens for applicants/Letter in ERAS to all applicants statement that invitations to interview will be extended no earlier than the application cycle start date set by ERAS
- Secure computer room space for OITE
- Input data to FRIEDA

- Weekly - assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

SEPTEMBER

- Sept 15—ERAS opens →Download applications from ERAS every day after ERAS opens
- Establish procedures with program director for review and screening of applications. Set up local data fields on ERAS.
- Update form letters used in recruitment and prepare enclosures for interview confirmations.
- Assemble packets or materials to be distributed to residency candidates.
- Order supplies and make other advance preparations for the coming interview season.
- Organize alumni reception at AAOS
- Update alumni database for past graduates now entering practice after fellowship
- Select graduation date for upcoming year and secure location for graduation dinner
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

OCTOBER

The majority of residency applications are received in October. Many programs have late October or early November deadlines.

- Oct 1—MSPE available on ERAS
- Orient interviewing faculty to ERAS.
- Continue application review process and organize reviews for interview invitations
- Send out invitations to interview.
- Resident selection committee may meet around this time to plan upcoming interview season.

- Order resident holiday gifts
- Dean's letter released to ERAS
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

NOVEMBER

- Many applicants will be calling to find out their status and whether they will be offered an interview → have a response planned indicating timeline and status.
- Interviews of residency candidates begin.
- Notify faculty, residents, and other appropriate personnel in department of interview schedule
- Coordinate scheduling faculty to give interviews.
- Coordinate scoring of applicants.
- Assist interview committee with applicant information, ERAS, or other recruitment-related activities.
- 2nd Saturday in November = OITE
- Applicant reviews due back November 15thWeekly
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

DECEMBER

- Interviews continue.
- 360 degree evaluations
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

JANUARY

January is traditionally the busiest interview month.

- Coordinate “second look” visits from applicants.
- Send follow-up letters to interviewees.
- Collect final scores and comments from interviewers and residents.
- Register the program for ERAS for the following year.
- Note deadline for match quota changes.
- Prepare data files for ranking meeting
- Prepare resident files for semi-annual review
- Add to February faculty meeting agenda discussion of non-renewal/retention of residents
- Prepare AAOS alumni reception materials
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

FEBRUARY

- Enter match list on NRMP web site.
- Discuss non-renewal/retention of residents at faculty meeting
- Submit resident contract non-renewal/retention to GME office by March 1st
- Attend ARCOS meeting at AAOS Annual Meeting
- Attend CORD meeting at AAOS Annual Meeting
- Weekly - assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

MARCH

- Early March: The National Center for Evaluation of Residency Programs holds an annual workshop for residency program coordinators.
- Mid-March: Match Day! Results of the match are posted on the NRMP web site—an exciting day in a residency program.
- Begin appointment process for new house staff. Send out packets with necessary forms and information.

- Reappoint returning house staff.
- Make a checklist of all tasks that need to be completed for incoming and outgoing house staff. Note the target date for completion. This can be very helpful as it is easy to overlook something.
- Revise recruitment materials for next recruitment year.
- Update website with current information on training programs, deadlines, contact information, and match numbers.
- Update database with house staff information for the following year. Distribute information on new house staff to pertinent institutional personnel as needed.
- March-April is a good time for semiannual resident reviews with program director.
- Submit FTE request and capitol and outside budgeting
- Order certificates for graduating residents/fellows
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

APRIL

- Process new house staff appointments.
- Order books, lab coats, film badges, and other items for new house staff.
- Process new house staff appointments.
- Update/finalize resident budget
- Residents to complete credentialing applications for upcoming year
- Update affiliation agreements
- Coordinate intern schedule with General Surgery as needed
- Mail invitations to graduation dinner
- Preparation of annual resident rotation schedule.
- Process termination paperwork for graduating house staff.
- Plan events for graduating house staff.
- Plan orientation schedule for incoming house staff.
- Continue planning for Graduation events
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club

- Monthly – attend GMEC meeting

MAY

- Preparation of annual resident rotation schedule.
- Process termination paperwork for graduating house staff.
- Plan events for graduating house staff.
- Plan orientation schedule for incoming house staff.
- Orient new academic chief resident
- Prepare chief resident files for exit interview
- Finalize Graduation event details
- Weekly – assign medical students
- Weekly – process reimbursements
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

JUNE

- Finalize and distribute orientation program for incoming house staff to all participants.
- Graduation ceremony for graduating house staff.
- Check out graduating house staff. Collect forwarding addresses, keys, etc.
- Graduating residents must sign final case logs
- 360 degree evaluations 2nd round
- Graduation
- Choose graduation date for the following year
- Weekly – process reimbursements
- Weekly – assign medical students
- Weekly – duty hours
- Biweekly - monitor case logs
- Monthly – Grand Rounds
- Monthly – Journal Club
- Monthly – attend GMEC meeting

Helpful Links for PCs

CORD: http://www.aoassn.org/programs/council-of-orthopaedic-residency-directors-(cord).aspx
AAOS: www.aaos.org
ABOS: www.abos.org
ACGME: http://www.acgme.org
AAMC: www.aamc.org
ERAS: www.aamc.org/eras
GME Track: www.aamc.org/gmetrack
NRMP: www.nrmp.org
ECFMG: www.ecfmg.org
TAGME: www.tagme.org

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Chapter 4: Developing a Mentoring Program

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Introduction

Mentorship is arguably one of the most important features of a graduate medical education program. The future of our profession depends on the training and development of individuals as orthopaedic surgeons and leaders in the field. Though the medical education system is large and complex in our country, one-on-one mentoring relationships remain as important as ever.

Mentor was the trusted friend of the Greek adventurer Odysseus, and was given the task of seeing that Odysseus' son Telemachus developed as a wise, faithful, educated individual. This definition remains with a mentor considered a trusted counselor who helps an individual develop skills, knowledge, and attitudes to help him or her reach important life goals. Whereas role modeling is a passive, unidirectional exercise where one provides a positive example, mentoring is a deeper, more involved relationship. It is an active, bidirectional process which involves coaching and nurturing, and demands conscious participation from both parties. Mentoring can be informal where the relationship is casual and unstructured. Two individuals may meet, work, or socialize together with the mentor helping the other succeed. Formal mentoring is a more structured partnership, often for a specific period of time, where mentors and mentees are matched, chosen, or self-selected. Specific goals and objectives may be agreed upon with regular meetings planned.

Both informal and formal mentoring processes can occur in academic departments with various publics involved. Though not well studied in medicine, [1] in the business world, mentored executives were more likely to earn more money at a younger age, be better educated, follow a specific career path, be happier with their career progress, and derive greater pleasure from their work.[2] Flint's study of orthopaedic residents demonstrated higher resident satisfaction with the mentoring environment when a formal program was in place.[3]

The publics involved for mentoring opportunities for graduate medical education programs include: 1) medical students, 2) residents and fellows, 3) young faculty, and 4) established faculty. Certain issues will cut across age parameters and be relevant for everyone such as personal and professional work-life balance. Other issues are more career stage specific. Whereas medical students may seek advice regarding research opportunities and getting into an orthopaedic residency program, residents will have a wide variety of issues ripe for a mentor-mentee relationship. These issues include dealing with internship and early

residency stress, faculty relationships, exam preparation, research opportunities, getting a fellowship, and selecting a career. Young faculty will be most focused on starting their clinical practice, setting up their schedule, protecting time for research, and becoming a good teacher. Established faculty may have some of the same concerns as young faculty, with the addition of promotion and tenure questions, as well as opportunities for advancement in leadership positions in orthopaedic societies or in one's hospital or medical school.

Barriers to Effective Mentoring

In business, success is widely accepted to be dependent upon relationships. In the world of medicine, relationships and emotional intelligence are often deemphasized relative to raw intelligence. New physicians, particularly surgeons, are not necessarily hard-wired to be good mentors. Personality traits and leadership skills that may be effective in the operating room such as being decisive, authoritative, acting with incomplete information, and perhaps having a large ego are traits or styles not well suited to mentoring.[4]

We can group the major pitfalls for mentorship into four categories: 1) style, 2) ego, 3) selection, and 4) time.[5] Personality type may determine mentoring style but beware as the mentee will have personality traits that also need to be taken into account. Extroverts will derive energy from the external world and other people, often performing well in group activities and being energized by interactive work. Introverts, however, will derive their energy from their own inner self and may need more quiet time or one-on-one sessions. They may feel the need to prepare for mentorship meetings. Other characteristics of personalities include sensing versus intuiting. A sensing individual will like concrete facts, statistics, and simple game plans that are based on reality and the present; they may tend to resist new ideas. An intuitive individual may like concepts, ideas, and possibilities focusing on the big picture and the future; they may resist detailed assignments. In one-on-one communication efforts, a mentor should consider whether their mentee is more of a "feeling person" versus a "thinking person." Feeling individuals will value other people in a very personal way. They will respond to praise, caring, and respect for their efforts and will need esprit de corps to be happy in their situation. A "thinking" individual will value more principles and the cold hard truth even if it hurts someone's feelings. Thinkers may like action rather than words and want respect for competence rather than effort. Obviously these personality types are not black and white, but it may present a barrier for effective mentorship when the drill sergeant interacts with the flower children of the 60s. These personality types are often stereotyped as generational differences between baby boomers, gen X-ers, and the generation Y now entering residency training programs.

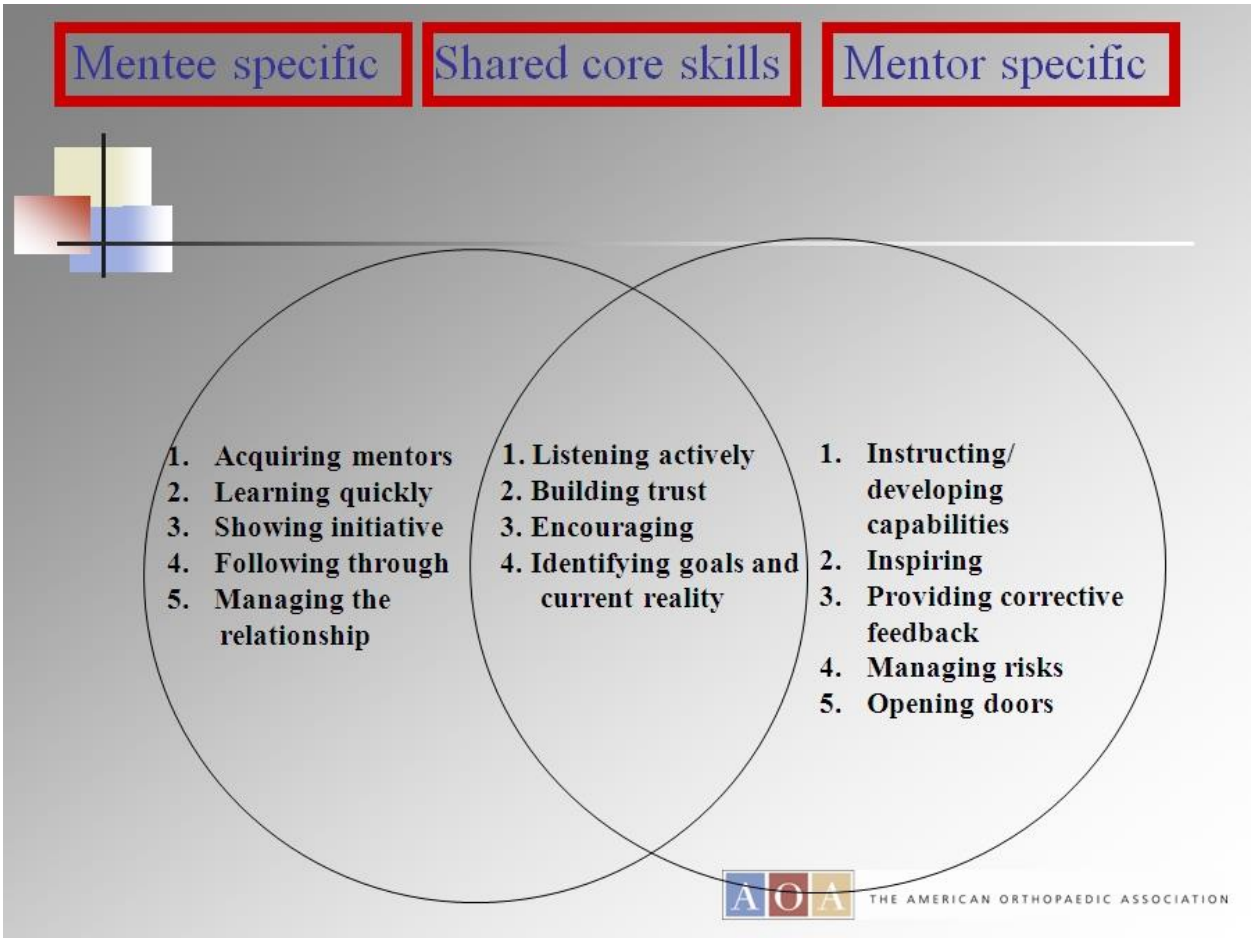
Ego can frequently interfere with effective mentoring. Many surgeons have super-sized egos and they may be unable to derive personal satisfaction from the success of their mentees. If the mentor is pursuing the same accolades as the protégée, it is difficult to succeed as an effective mentor. Selection of a mentoring relationship may become a barrier to success in a given relationship. This is more often true in formal or structured mentorships where assignments are given to faculty members as mentors for residents. As mentioned above, personality styles may clash or either the mentor or mentee is not

committed to the bidirectional requirements of a good mentoring relationship. One of the greatest barriers to overcome for surgeons as mentors is simply time. Effective mentoring does take time and commitment. It is a process that requires repeated contacts, either impromptu or scheduled. An inability to make time for the relationship can be interpreted as a lack of engagement either on the part of the mentor or the mentee.

As a long-standing mentoring relationship evolves, the success of the mentee's accomplishments may (and arguably should) surpass those of his or her mentor. A true mentor will accept this transition in the relationship as the role of educator and superior transitions into a more collegial interaction based upon shared values, experiences, and success. It is critical to remember that a mentee's goals in his or her profession or life in general are unlikely to match the mentor's goals as an individual. As a mentor, one must always remember it is not about self, but about helping the protégée succeed and achieve their goals and desires.

Skills and Techniques

Everyone knows of individuals who serve as exemplary mentors and seem to fulfill that role in an effortless manner as if they were born a natural mentor! Mentoring, however, is not all intuitive or innate. Specific skills are applicable and can be learned. This Venn diagram, adapted from Phillips-Jones' work, [6] divides skills and techniques into: 1) shared or core skills for mentors and mentees, 2) mentee specific skills, and 3) mentor specific skills.[7]



The first shared core skill is that of **building trust**. This is an early and central part of the relationship. It takes time, consistency, and transparency, yet at times keeping confidences. Each side must follow through on promises and respect boundaries such as personal or family issues if those are indeed "out of bounds." Each party must admit errors and actively correct them. **Active listening** is another central technique, which many physicians have trouble doing! As a mentor, do not interrupt during a conversation and do not try to problem solve at this early stage. Perhaps the most valued skill is that of offering **encouragement**. Encouragement is complimenting the other for accomplishments, actions, or efforts and can be one-on-one or in a group setting. This type of recognition can be verbal or a note letting the other know that you have noticed and care. Encouragement should be sincere and not overdone. The last listed shared core skill is that of **identifying goals and current reality**. Clarity, self-knowledge, and learning the other's values and desires are an important part of mentoring. Being specific with respect to goals, strengths, and weaknesses is helpful in this area.

A critical skill more applicable to mentees includes the process of **acquiring a mentor which** works best when it is an active process of developing a relationship with a mentor. Early in residency training, a faculty member may be assigned as a mentor; however, the prospective mentee should not be afraid to search out an individual with whom they have better chemistry or more relevant career goals. Having several mentors is actually

desirable and these relationships may last for certain time periods or an entire career! As a mentee, one needs to provide needs and goals for the mentor and help establish a game plan, feedback mechanisms, and logistics regarding meeting schedules. Mentees should be active learners, prepare for meetings when appropriate, and receive feedback with an open mind. Development is largely in the mentee's hands so **show initiative**, pursue other resources, and take informed risks to stretch learning and goal setting. **Following through** is an important skill for both parties in a mentoring relationship but especially true for mentees. It is also important for the mentee to **manage the relationship** which means taking responsibility for the mentoring process and the outcomes. Keeping up to date with mentors and understanding the evolution and sometimes ending of mentoring relationships is an important mentee skill.

As a mentor, a major purpose is to **instruct and develop the capabilities** of the mentee. This teaching and advising is an informal, tutoring type of skill. The mentor can act as a "learning broker" and assist the mentee in finding people and other resources to help in education and development. Here it is important to note the difference between coaching and managing. Coaching is mentoring, i.e. acting as a guide and a supporter with the focus on developing the individual to their maximum potential. Managing, however, is setting the agenda and directing the steps to be taken for an individual to advance. This is not true mentoring since a mentor cannot set the other person's goals or dictate their step-by-step path. Remember, it is the mentee's goals and aspirations are what is important and not the mentor's goals and aspirations! The mentor should be **inspiring**, and this can be through role modeling or story telling of prior experiences. Challenge the mentee to aim high in pursuing their own form of greatness! Also part of the mentor's job is to **provide corrective feedback** and it will help to ask how the mentee would like this feedback. Here is where personality traits as described earlier are especially relevant. Techniques such as using direct, non-derogatory words and tone, giving feedback in private, being specific with constructive criticism, and then offering suggestions for improvement are all very useful skills. Remember the most important core skill is that of encouragement, so constructive criticism should be done less often than encouragement! Though a good mentor will not manage a mentee's development on a step-by-step basis, they can **manage risks** for their protégée. This is protecting them from major mistakes or significant judgment errors that may negatively affect their career. This could be giving appropriate advice regarding their interpersonal skills with colleagues, identifying the importance of meeting deadlines, and providing guidance on the political environment in a given organization. A tried and true role of the mentor for their protégée is that of **opening doors**. In essence, this means providing visibility for your mentees with different individuals or different audiences, be it with a good word, a letter of recommendation, or personal introductions that will help them promote advancement in professional organizations. The mentor needs to be aware and take advantage of opportunities that arise that allow a younger person to interact or network. The concept of "pace" is applicable here, meaning opening doors when the mentee is ready in their stage of development to take advantage of that opportunity.

Development and Implementation

Good intentions and great ideas are of little value if not acted upon! Development and implementation of the mentoring relationship should include a well thought out plan which provides some structure and meaning to the interactions. Early on, a formal mentoring relationship should identify an appropriate personal vision and goal setting for the mentee. It should be remembered that the personal vision may be dynamic and can thus change over time. Two or three well-defined goals are optimal in most settings and should be written in positive terms rather than how to avoid failing. In an academic environment, goals related to research productivity or clinical skill development can be fairly easily defined. The goals should reflect the mentee's vision and can be created using the mnemonic "SMART" (i.e. **S**pecific, **M**easurable, **A**chievable, **R**elevant, and **T**ime bound). A strategy to achieve these goals can then be developed. Timelines are an excellent way to motivate action and assess progress. Regular interactions are essential and, in the vast majority of mentoring relationships, these will need to be scheduled. Trust, open communication, and selflessness will allow the relationship to develop, mature, and reach the final stages of either ending or establishing a permanent collegial relationship.

Recommendations for Mentorship in Your Program

For **residents** in an orthopaedic graduate medical education program, here are some suggestions to establish mentorship in the program:

1) For the first two or three years, establish formal mentoring pairs with faculty and junior residents. This allows the resident a chance to get help and advice on a variety of issues when they are first out of the gate and do not have the familiarity with faculty to establish mentoring relationships on their own.

2) While setting up pairings initially, it is wise to encourage residents and faculty alike to seek out individuals of their choice for mentoring relationships. Personality types, chemistry, and career aspirations become more evident over time. Early relationships are important since mid-residency decisions such as fellowship choice are significantly influenced by mentorship interactions.[8] These self-selected mentorship relationships will probably usurp the initial assigned pairings but that is normal and desirable.[3]

3) Provide information to faculty and residents regarding mentorship in order to promote thought and understanding of the skills, expectations, and strategies involved. The computer-based learning program on mentorship created by the American Orthopaedic Association's academic leadership committee is a good place to start for a residency training program.[7]

4) Implementation is critical as discussed above. Methods such as describing a vision, setting goals, and establishing timelines will help the relationship move forward and achieve success.

5) For busy medical professionals, the greatest barrier is the need to find time for mentor-mentee interactions!

For **faculty** mentoring, a career in academic orthopaedics will often go through phases.

1) For young faculty, the first five to seven years typically are devoted to further developing clinical skills, learning to become an educator, and creating an environment where one can contribute academically. This really lays the foundation for the rest of the faculty's career. It usually is good advice not to have a young faculty individual become overloaded with committee work or assume major leadership roles within the department or medical center at this time.

2) A chair or other senior advisor in the department should know the rules and recommendations for promotion and tenure in the institution. It is important for young faculty to be aware of the deadlines involved for advancement toward the tenure track, clinician track, or perhaps a clinical educator track, depending on the institution.

3) Young faculty coming in with goals of a career as a clinician scientist will require matching with appropriate mentors and goal setting early on. Start-up funds, space, equipment, and protected time are critical for success for a young faculty who wants to maintain a clinical practice yet establish a career in clinical or translational research. Advice, goal setting, and timelines are very important particularly with respect to seeking external funding for research endeavors.[1]

4) The mid-career of a faculty member is typically from around 40 years of age to their mid-50s. Mentorship relationships will involve advancement for the faculty in orthopaedic related organizations and subspecialty societies. Some faculty will have goals of leadership positions in the various organizations or within their current department or institution. A mentor's role as a knowledge broker can be very helpful in building connections and finding contact information to further develop the mentee's career. This advice could include information regarding leadership or finance courses or obtaining post graduate degrees. Though some faculty will aspire to positions of leadership, others will want to maintain their role as a positive contributor in the department as a clinician, educator, researcher, or a combination thereof. Mid-career academic orthopaedists will become the mentors for young faculty, residents, and fellows.

Senior faculty often continue to be excellent mentors in an academic department or institution. They may continue to provide clinical expertise and leadership and can be stabilizing factors in academic departments. They also may be willing to assume more teaching or administrative responsibilities as their surgical load slowly decreases. They are in a position to groom their successors, a critical role of a true mentor.

Mentorship is a key component of medical education, important for students, residents, fellows, and faculty. As in many endeavors, a greater investment leads to a greater reward. Time and effort spent in learning about mentorship, acquiring skills and techniques, and committing to an active process will help develop the leadership capabilities of young orthopaedic surgeons to carry the torch and advance our profession.

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Chapter 5: Understanding Documentation and Systems Requirements

John D. Lubahn, MD and Greg Daut, MD

Introduction

Residency Program Directors and Coordinators are increasingly required to be familiar with a number of documentation and system requirements. Most teaching programs now use online resident management tools such as *New Innovations* are being used to track resident duty hours, rotations, and faculty, resident and program evaluations. Most residents now track their case logs on the ACGME website. (acgme.org). Residents frequently must complete courses such as "*Compliance"* and *"HIPAA"* online. Online educational modules can be posted in systems such as *Sakai*. The *Resident Handbook* is frequently online and often contains rotation goals and objectives as well as procedures, rules and guidelines for residents. These must be reviewed and updated regularly. Program Directors and Coordinators should also maintain a website for interested applicants to their residency. These should also be reviewed and updated regularly.

Resident Management Tools

A well-functioning Resident Management System is essential for logging, tracking and evaluating resident work. Ideally, the system should provide a single site that allows residents to log duty hours and cases as well as evaluate attendings and rotations and receive their feedback in return. Changes and data are tracked and recorded providing instant response to violations or other issues and easing the process of providing information for audits, site reviews and credentialing. Web-based systems can be accessed from locations outside of the hospital, improving compliance. There are numerous commercially available systems including *MedHub*, *New Innovations* and *e-Value* among others.

Duty Hours

ACGME duty-hour requirements have undergone several revisions in the past decade, including tracking of hours worked and time off. With an online system, resident activities can be monitored and potential problems dealt with in a timely fashion. The need for cumbersome paper logs is avoided. From this data, instant

averages and trends can be generated, for example hours worked per service or whether changes to post-call procedures need to be addressed in order to fall within ACGME guidelines. With minimal need for physical storage space, long-term data can be retrieved and analyzed, making audits more efficient. Reports can also be generated by residents for their own use – allowing the onus of compliance to fall on each individual user.

Evaluations

Evaluations of residents, attendings and rotations can be done in an anonymous, aggregate fashion, which allows more honest feedback without fear of retribution. Difficulties of scheduling individual meetings can be avoided. Feedback data can be tracked and analyzed over time.

Case Logs

Finally, case logs for procedures can be followed. These data can be used for credentialing, meeting graduation minimums and to identify program and trainee deficiencies. Additionally, by basing the logs on ICD-9 codes, coding training can be emphasized. Creation of case logs serves several important functions both for residents and programs.

Residents

Residents are required to log all cases, both surgical and non-surgical, in a timely fashion. The primary purpose is to document progress in training and experience. This become quite important for credentialing after graduation, as many facilities require documentation that a procedure has been performed at least a minimum number of times prior to allowing the prospective hire to perform them. Additionally, during training, case logs allow national standard minimum numbers for graduation to be tracked and met.

The case logs are based on ICD-9 (International Classification of Diseases) or CPT (Current Procedural Terminology) codes and are excellent training for actual practice, allowing familiarity with the coding system and learning common codes. This can also act as a springboard for teaching best practices for reimbursement based on the learned codes.

Greatest accuracy is achieved with immediate documentation of logs following completion of the procedure, or if that is not possible, within a 24-hour span. This should be encouraged for all residents and can be tracked using the online reporting system. Required data points include date of procedure, attending providing oversight, and location. Patient identifying information is avoided due to privacy concerns.

Programs

Tracking case logs enables programs to create a uniform training experience and identify and rectify deficiencies in a timely fashion. Aggregating residency-wide experience can demonstrate program strengths and weaknesses and is useful for accreditation audits. With included software, reports can be generated, or raw data can be exported for use in program-specific software.

Teaching Hospital Billing Rules

Special considerations apply to billing within teaching institutions and when residents provide services. There are frequent updates which can be found on the Centers for Medicare and Medicaid Services website under Guidelines for Teaching Physicians, Interns, and Residents. (cms.gov). The information provided here is accurate as of the December 2011 update.

Medicare Physician Fee Schedule (PFS) applies to teaching physicians as it does to physicians in non-teaching institutions when the service is provided directly by the physician. It is also applicable for resident work provided that physician is physically present, specifically in the same room or room partition (such as a room divided by curtains) providing face-to-face interaction with the patient. The teaching physician must be present for "critical or key portions of the exam." What constitutes a critical or key portion is up to individual discretion but would likely include history of present illness (HPI) and exam of the affected body part or system. The 'GS' modifier must be added to the billing claim, stating that the service "has been performed in part by a resident under the direction of a teaching physician." This is applicable only in a teaching hospital setting and is not applicable if the attending physician is not physically present.

The Medicare Physician Fee Schedule (PFS) applies an exception to services provided by a resident in a primary care setting in an approved Graduate Medical Education (GME) program. This allows residents to provide acute care for undifferentiated problems or chronic care for ongoing problems (including psychiatric care). A resident with more than 6 months of experience may provide services without the attending physician present but while still immediately available and under their supervision. Up to 4 residents may be supervised simultaneously by an attending physician. If a resident has less than 6 months of experience, the attending physician must be present for critical portions of the exam. The billing physician must have no other simultaneous responsibilities, review the care during or immediately after and document the extent of his or her service. Low and mid-level service may be provided: CPT codes 99201, 99202 and 99203 for new patients and 99211-3 for established. Healthcare Common Procedure Coding System (HCPCS) codes include G0402 (initial preventative physical), G0438 and G0439 (annual wellness visit). The exception may be granted

to an outpatient portion of a hospital or other ambulatory facility not associated with a hospital (approved by A/B Medicare Administrative Contractor) where residents provide primary care. Home visits and visits in a physician's private office are not covered. The appropriate modifier is GE.

Adequate documentation is necessary for appropriate billing. All standard requirements for Evaluation and Management (E/M) coding must be met, but a review of these is beyond the scope of this chapter. For the GC modifier, the physician must attest that he or she was present for the critical portions of the exam. If the resident provides the remaining appropriate documentation (history and physical exam) the teaching physician may include only the statement that he or she was present. A macro or computer generated statement may be utilized for this purpose provided that only the attending physician can access it via password or otherwise protected system. Documentation by the resident of the physician's involvement is not sufficient to meet this requirement. Medical student documentation may only be referenced for past medical/surgical, family and social history and review of systems. The resident or teaching physician must separately document the HPI and physical exam as well as medical decision-making.

Website

With continuing progression towards an entirely digital world, a well managed website becomes an increasingly important tool for residency programs and departments. Applications are numerous both for internal use, within the department, and externally for use by prospective resident and fellow applicants and the general public. A well designed website can function as a central hub and become integral to residents' daily activities.

Communication

A website can take the place of pager and phone contact lists. Accessibility can be further enhanced with direct links to text messages or pages. Pre-created groupings can be used to communicate with the entire or defined portions of the residency. Similar mass communication that does not require immediate attention may be better served with automatic mail-to tabs that will generate pre-defined email lists or a message boards. Given the ability to access personal information such as email addresses and phone numbers and the potential for discussion of HIPAA-protected patient information, this area should be password protected.

Shared Learning

Larger files can be made available online and will possibly replace physical libraries in the future. Classic articles, required rotation reading and reviews in preparation for lectures could all be posted in their entirety or as hyperlinks, reducing necessary time to search out the articles physically. Links to other sites or videos could also be

provided. Having an internal system that could be accessed outside of the hospital system would obviate the need for external file dumps such as dropbox.com or Google Docs etc. Again, given concern for copyright and other access issues, password protection is recommended.

Scheduling

Call, lecture and rotation schedules can be created online and managed in real-time. This replaces the need, cost and delay inherent in physical paper schedules. Changes can be highlighted and reminders sent with minimal difficulty. Issues with multiple different schedules in circulation can be avoided. Concerns regarding changes made in error or competing changes from multiple sources can be diminished with limited 'write access,' that is, persons that can change the schedule, while maintaining universal 'read access.' Utilizing repeating functions can speed generation of call schedules or other schedules that recur in a set pattern. Additionally, these schedules can be saved with minimal difficulty and used during periodic site reviews.

Useful Links

An internal website may also take the place of resident handbooks. Rotation expectations, policies and procedures, sample or actual contracts and other documents can all be posted in a central location and linked to the main website. Additionally, links to case log and duty-hour recording sites will round out a functional internal main page.

A completely separate or functionally separate, password protected, external website also serves many functions. Residency websites have become the primary research tool for prospective applicants and allows a residency to provide a meaningful first impression as well as facilitate applications. This can also be a useful marketing tool to the public at large.

Marketing

The residency website is an excellent tool for marketing and for making a strong first impression on prospective candidates. Classically, a chairman or residency director's message will set a welcoming tone for the department, delineate goals and outline the uniqueness and strengths of the program. Additional messages or multimedia presentations from other attendings or residents may provide additional insight and positive testimonials.

Necessary information about rotations, salary, fringe benefits and the application process should be easy to find and access. Finally, contact information both for the residency coordinator and the GME office should be present.

Accessibility

A residency-wide website is most useful when it can be accessed from home and the hospital as well as from increasingly popular mobile and smart devices. Real-time alerts can be received as changes are made to schedules as well as posting of new material. As mentioned previously, great care should be employed to limit access to personal and patient information as well as copyrighted or sensitive material. The internal website can be an entirely different site or an access-protected portion of the main external site.

Design

Ease of use with intuitive controls and navigation are essential for a successful website. Clutter should be avoided and information should be accessible with a minimum of clicks to different links. A search function is quite useful. The ability to customize for individual users may be more difficult but will increase functionality.

Maintenance

Given the increasing complexity of websites, troubleshooting and maintenance is probably best undertaken by the hospital information technologist or other professional IT personnel. Ability to access and make changes within specified borders is a matter of institutional preference. Increasing ability for users to control content introduces the potential for errors and competing changes but allows distribution of work.

Other Documentation Requirements

While most program directors probably believe the ACGME has been evaluating programs forever, the organization was actually founded in 1981. There were two reasons this organization was needed, the first was to standardize resident education and the second was to formalize subspecialty education. In the years leading up to its creation, many small community hospitals had residencies in various specialties with no requirements for research or scholarly activity on the part of the teaching faculty. Teaching conferences were held once or twice a week, but they usually consisted of case presentations, often with a CPC format which were beneficial for morbidity and mortality conferences and set the stage for Quality Assurance committees. Fellowships existed, but varied greatly in the amount of time spent in training and secondarily in the variety of the clinical experience of the trainee.

The ACGME spent the first 10-20 years of its existence establishing itself by regularly reviewing programs that they had accredited to be certain that their standards were met. Programs that were approved were then reviewed again in two or three years to be certain their standards were maintained. Outstanding

programs were often reviewed at five-year intervals providing there was no change in department leadership, such as the Chairman or the program director. Programs that were chronically deficient were often placed on probation and given a chance to correct their deficiencies. If they had, after follow up site visits, their accreditation status was restored. If not, programs were closed. There was an appeals process, but reinstatement was difficult for non-University or non-Academic programs.

The last ten or fifteen years have ushered in an era of computerized technology such that various subjects of review such as scholarly activity can be monitored annually online. With the introduction of the six core competencies (2), resident evaluations have become focused on competency and curriculums have become competency based. Site visits are much less common and can be arranged when problems arise. Deficiencies can be identified and corrected early. Arguably residents now finish from an accredited program better prepared for their certifying exams and to serve their respective communities with a higher level of technical and cognitive expertise.

Always seeking to improve their function as well, the ACGME has begun to look at competency levels on a year-to-year basis for residents establishing "Milestones" for which residents should strive on an annual basis and which could be reviewed online. The Program Information Form or PIF as it has been know will disappear. Site visits will be conducted every ten years and preparation will be conducted through "self-study"(1). The stated purpose of this is to offer programs with good outcomes the chance to modify their curriculum and create more innovative ways of teaching in addition to standard lectures and Socratic, one on one bedside teaching. This Next Accreditation System (NAS) is currently being implemented in 7 of the 26 ACGME accredited core specialties. In addition to Orthopaedics, Emergency Medicine, internal medicine, neurosurgery, pediatrics, diagnostic radiology, and urology are all beginning to use similar measurable developmental benchmarks for competency-based outcomes.

Currently in Orthopaedics, there is a 16-member working group chaired by Peter Stern MD that is composed of members of the ABOS, CORD and related organizations. The group has drafted specialty specific milestones for orthopaedics in the competencies of medical knowledge and patient care and is finalizing a draft for the remaining core competencies. A beta pilot of these Milestones is currently underway in a few programs with plans to expand the pilot with full implementation scheduled to begin July 1, 2013.

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Chapter 6: Resident Recruitment, Appointment and Orientation

Dawn M. LaPorte, MD

Introduction

While coordinating the resident selection process typically occurs over a short period of time, it is one of the most important roles of the Program Director. Resident selection is key to maintaining a strong training program with trainees that possess interests, personalities, drives and goals that are consistent with those of the faculty, residents, training program and department. While interviews are held in the winter and Match Day is in March, recruitment occurs all year long.

Recruitment

Training programs associated with a medical school usually will have orthopaedic surgery electives for students, including an elective as part of the required General Surgery basic clerkship. While the faculty is evaluating the student's performance, the students are also assessing the orthopaedic program based on their experience. Positive interactions with faculty and residents who prioritize teaching and a well-organized rotation are important to highlight the strengths of the training program. This may attract students to the field of orthopaedics. Even if these students do not choose to pursue orthopaedics, they will talk to their colleagues, some of whom will choose orthopaedics, and pass on positive or negative feedback.

Students who do orthopaedic subinternships, either at their home institution or away, are planning to apply to orthopaedic surgery residency programs. While these students are auditioning and trying to impress you, they are also evaluating the training program and likely comparing it to any other program(s) they are familiar with. It is important to have a well-structured subinternship, ideally maximizing exposure to clinic and operating room, interesting cases, teaching sessions, and good mentors (faculty and/or resident).

Pearls

- Some programs have medical students fill out an application for visiting subinternships and accept only candidates that would meet criteria for interviews.

- Program Directors can meet with subinterns at the beginning and end of a rotation to discuss expectations, help orient the student, address questions, and then discuss evaluation/performance/feedback at the end.

- The program can consider interview(s) while a visiting student is there and then no need to travel/return during the interview process.

- There are other opportunities to generate interest in your program. These include encouraging orthopaedic faculty in your department to participate in teaching at the

medical school, for example, during classroom basic musculoskeletal lectures, extremity and or spine anatomy, or as part of surgery clerkship didactics. Further, if the medical school has an orthopaedic interest group, participation in their events by the Program Director, residents, and/or other faculty can help promote the department and training program. Some medical schools hold mock interviews for senior medical students and faculty participation in these is good exposure. The SNMA holds national meetings and representation at these meetings is favorable. Finally, many students look to internet sites for "inside" information about programs. Following any relevant threads on ortho gate or having a designated resident follow this can be beneficial as well.

NRMP

All programs must register with the NRMP (www.NRMP.org) in order to participate in the Match. Only ACGME accredited programs can register with the NRMP. Medical students complete a standard application form for orthopaedic surgery residency through ERAS. ERAS applications open on September 1. Individual program application deadlines range from early October to December. Once the deadline has passed, the applications need to be reviewed and then candidates selected for invitations to interview. A system for application review needs to be in place. There are a number of different methods for applicant review, screening, and rating. Screening can be facilitated through the ERAS program for a large number of parameters. Some programs have the Program Director and possibly Assistant Program Directors or designated small group of faculty review and rank the applications. Many have two reviewers look at and rank each application. Some Program Directors will evaluate all applications that meet minimum criteria. Other programs will have a small committee review and rank the applications and then the Program Director plus or minus designated assistants will perform a "second look" before determining final interview list. Regardless of who the reviewers are, there should be a consistent system for application review or at least an agreed upon method of evaluation and priorities. Many programs will use a form for application review and or ranking. Some programs offer an interview to all students who have completed a subinternship and these applicants are not included in the pool to be reviewed and ranked.

There should be a predetermined number of applicants who will be invited for interviews based on the number of positions available, resources for interviewing, and possibly number of applicants. Different programs weight certain components of the applications more heavily. Some programs have a minimum or "cutoff" for USMLE Step I scores. This is based on association of Step I scores with Board pass rates (Swanson et al 2009, Herndon et al 2009). Some prioritize high grades on the required clinical rotations. Egol and colleagues have shown this to have a strong correlation with faculty evaluations of interpersonal skills (Egol et al, 2011). Dirshl et al reported that number of honors grades during clinical electives was the best predictor of overall resident performance (Dirshl et al, 2002). Academic programs often look for research experience and/or accomplishment. Many programs value humanitarian involvement as well. The Dean's letter is not available until November 1 and has been suggested to be key in identifying any "red flags" or concerns in the affective domain. Once a list and backup list is generated, invitations for interviews are sent out to the applicants. Figure 1 is an example of a prescreening tool used to evaluate applicants for interviews.

Pearls

- All invitations to interview should be sent at the same time.
- If there are a maximum number of candidates for each interview date, the invitation should note that availability of dates is on a "first come first served" basis.
- The program coordinator or director can send an email thanking applicants for applying and letting them know that they are not invited for interview. Figure 2 is a sample letter sent to applicants who did not qualify for an interview.

Interviews

While interview days and dates will vary as will the structure of the day, all interview days should include a welcome and an introduction and overview of the program (often presented by the Chairman and/or Program Director), interviews with faculty, and an opportunity to meet and speak with current residents. Many programs will hold a social event the night before or night of the interview. These vary from dinner with faculty and residents to social events with residents only. This provides an opportunity for the applicants to meet and interact with current residents in a more relaxed venue and get a feel for the personality of the program. This also presents an opportunity to observe applicants' personalities and social skills outside the stress of an interview situation.

The applicants should each have the same number of faculty interviews. The individual faculty will have their own interview styles and questions will certainly vary. Ideally all interviewers will be looking for similar criteria and characteristics and a uniform evaluation form is helpful. (Figures 3 and 4) Consider having a senior resident or small group of senior residents interview applicants in addition to the faculty.

Pearls

- Ensure strong resident attendance at the interviews and associated social events.
- Ask current residents what are weaknesses or concerns about the program and address these (plus plans to address if appropriate) with the applicants.
- Highlight strengths and/or unique features of the program, for example, motor skills lab, international outreach elective, AO basic and advanced courses.
- Take applicants on a tour of the city or hospital if there are unique/interesting features.
- Consider lunch with current residents following morning interviews. Applicants often will have more questions and comments after interviews.
- Program Director should solicit feedback from current residents regarding applicants (from interaction during Subinternship or interview day/social event).

- After all interviews are completed, a rank list must be generated. There are multiple approaches to creating the rank list. All faculty interviewers can meet at the close of each day of interviews and rank the applicants either with an individual "score" or directly into a rank order list. That list can then be modified after each additional interview day. Programs that assign applicants individual scores must subsequently put the applicants in rank order. Many programs rank all of their interviewees, however, if there is an applicant you would not want in your program, that individual should not be included in the rank list. All discussion about the applicants should be confidential and comments made during the ranking meetings should not "leave the room". If there are questions about any candidates, a phone call to their program director or an author of one of their recommendation letters may be helpful. Some programs will routinely place calls regarding their top ranked group.

After the Interview

The Program Director will likely receive multiple thank you notes and emails (even if you say not to send thank you notes). There is no set recommendation for how to or whether to respond to these emails. It is certainly appropriate to answer questions posed in the email and to respond with encouraging words. It is not appropriate or acceptable, however, to tell an applicant where they are ranked or to ask how they will rank your program. It is a violation of NRMP policy to accept an applicant into your program before the Match.

Some applicants are involved in the "couples match", where they have a spouse or significant other applying to residency at the same time and the NRMP will match them to the optimal combination of programs in the same geographic region. The Program Director may receive calls or emails from an applicant requesting that a contact be made with a Program Director of another specialty for their applicant's significant other. Alternatively, a Program Director may contact you asking your ranking of their applicant's significant other or if you can give some priority or preference to their candidate's significant other. How to respond may be your decision as Program Director if your program does not have a policy regarding this in place. Recommendation would be to be consistent in addressing issues pertaining to the couples match.

The final rank list is submitted to the NRMP by late February (deadline to certify rank list is set by NRMP and is published). A match through the NRMP is a binding commitment for both the institution and the applicant.

After the Match; Orientation

After learning the match results in March, it is nice to contact each new resident and congratulate them, let them know you are looking forward to working with them, give them important contact information, and confirm their contact information. The program coordinator or an interested resident can help the new group find living accommodations and can address questions about the area. As June approaches, dates for orientation and official start dates should be communicated to the new residents. If there are any required online modules (e.g., HIPAA training), these can be shared before orientation so the new residents can complete these at their convenience. Orientation for new interns will vary based on the program and institution but should include familiarization with the hospital and facilities, electronic patient record systems, ordering and reporting systems, and general expectations for interns. There should be dedicated orientation sessions for General Surgery and these often include ATLS and/or ACLS/BLS training and

certification. Orthopaedic surgery orientation should include goals and expectations for the intern and may include how to perform an orthopaedic consult, basics of orthopaedic emergencies, and basics of casting, splinting, and cast removal. A printed "handbook" or manual including the department mission statement, goals and objectives for each rotation, supervision policies, duty hour policies, important contact information, and any important department or institutional policies, can be very beneficial. Many institutions have on-line educational modules that must be completed by new residents. Our senior residents coordinate a scavenger hunt around the hospital to help the interns learn where and how to find things (also a fun team-building exercise). A social event to welcome the new interns and their families is nice at this time and may help decrease anxiety. Orientation is the intern's first official interaction with their new department and sets the tone and expectations for the year; it is worth some effort to make orientation a great experience. A sample resident orientation schedule is included in figure 5

Figure 1

Orthopaedic Surgery Residency Candidate

Initial Administrative Screening Score

2011 - 2012

Name: _____

Element							*Raw Score*		*Weight*		*Score*	*Max Score*
Board Score	>250 5	240-250 4	230-240 3	220-230 2	210-220 1	<210 0	_____	x	5	=	_____	25
Grades/Honors		AOA 4	75-100% 3	50-75% 2	25-50% 1	<25% 0	_____	x	4	=	_____	16
Medical School		Top 25 4	Benchmark 3	Other US 2	Off Shore 1		_____	x	4	=	_____	16
Research		>3 Peer 4	1-2 Peer 3	Any Pubs 2	Research 1	None 0	_____	x	3	=	_____	12
										Total	_____	**69**
							Bonus					
Diversity Female							_____	x	2	=	_____	2
Minority							_____	x	2	=	_____	2
Extra-Curricular Activities Advanced Degree							_____	x	1	=	_____	1
Military							_____	x	5	=	_____	5
Significant Work Experience							_____	x	1	=	_____	1
USA Student*	Outstanding 2		Good 1	Average 0	Below Avg. -1	Poor -2	_____	x	2	=	_____	4
USA Externship*	Outstanding 2		Good 1	Average 0	Below Avg. -1	Poor -2	_____	x	5	=	_____	10
Relative of USA Alumnus*							_____	x	5	=	_____	5
										Total	_____	**31**

Total Administrative Score

69
+ 31
Max **100**

Automatic Interview

We propose to select the top applications to go to faculty for review

Figure 2

Dear Applicant:

Thank you for applying to the Orthopaedic Surgery residency training program here at the University of South Alabama. We have now concluded the process of reviewing each application and I regret to inform you that you have not been selected for a personal interview.

It is unfortunate for every program that an invitation to interview cannot be extended to each qualified and deserving applicant. This year our program received 362 applications for three PGY-1 residency positions. The competitive nature of our specialty is limiting for many applicants who would make fine house staff officers.

Please accept my best wishes for your success in the residency selection process. I trust you will match with an excellent training program.

Sincerely,

Figure 3

Interviewer: **Residents** **Date:**

USA DEPT. OF ORTHOPAEDIC SURGERY
PGY-1 CANDIDATE SCORE SHEET

DIRECTIONS: Circle the score you deem most appropriate for this candidate and then indicate your score to the right. Scores cannot be a decimal score – must be one of the number scores listed. ***The final score is made up of the Administrative, Faculty and Interview scores**

Elements for interview:

1. **Excellent Communication Skills**
2. **Capacity for Growth through Academic Projects**
3. **Well Rounded Individual**
4. **Good Fit for our Program**

6 = Outstanding	**Ranks at the top of the list. Should be heavily recruited.**
5 = Excellent	**Ranks high (top 10%) on the list.**
4 = Above Average	**Ranks high (top 25% on the list).**
3 = Average	**Would fit in well with current residents/faculty.**
1 = Poor	**A last-choice (bottom 10%) candidate.**
0 = Unacceptable	**Avoid this applicant – unsuitable for our program.**

						Raw Score	Weight	Score (Max score is 60) ↓
(CIRCLE ONE)								
Outstanding	Excellent	Above Average	Average	Poor	Unacceptable			
6	5	4	3	1	0	_____	X 10 =	_____

NOTES & COMMENTS: _____

_____

_____

_____

_____

FINAL SCORE*
(Max = 200 pts)

_____
Adm/Fac Score

_____
Interview Score

_____
FINAL SCORE FOR RANKING

Figure 4

Orthopaedic Surgery Residency Candidate

Faculty Screening Score

Administrative Score
Total = ___
Max = 100

Name: _____

Element					*Raw Score*	*Weight*	*Score*	*Max Score*
Quality of Recommendation Letters								
Outstanding	All Superior	Mostly Superior	Mixed	Average				
5	4	3	2	1	_____	2	_____	10
Volunteer Work								
Outstanding	Good	None						
2	1	0			_____	2	_____	4
Work Ethic (from recommendation letters / observations)								
Outstanding	Evidence	N/A	Poor					
2	1	0	-1		_____	10	_____	20
Athletics								
College Letter	College Source	None						
2	1	0			_____	3	_____	6
			Total Faculty Screening Score				____	40

	Applicant	Max
Administrative Score	= ____	*100*
Faculty Score	= ____	*40*
Sum Score	= ____	*140*

Figure 5

2012 HOUSESTAFF
HOSPITAL ORIENTATION SCHEDULE
FRIDAY, JUNE 29, 2012

2ND FLOOR CONFERENCE CENTER

07:30 AM	Registration	
08:00 AM	Welcome & Introduction of Clinical Chairs	
08:15 AM	Graduate Medical Education	Assistant Dean, Graduate Medical Education
08:30 AM	Medical Association of the State of Alabama	
08:45 AM	**Computer Training Group 1**	**(see attached list)**
08:45 AM	Health Care Compliance	
09:00 AM	Infection Control	
09:15 AM	**Computer Training Group 2**	**(see attached list)**
09:30 AM	Workplace Harassment	
09:45 AM	**Computer Training Group 3**	**(see attached list)**
09:50 AM	Hospital Privacy and Security	Director, Hospital HIPAA Privacy
10:20 AM	Emergency Room	
10:30 AM	BME and Your Licensure	Alabama Board of Medical Examiners
12:00 AM	**LUNCH**	-
01:00 PM	**Computer Training Group 4**	**(see attached list)**
01:00 PM	Useful Information from the Pharmacy	Director, Pharmacy Services
01:30 PM	Patient Restraint Protocol	
01:45 PM	Human Resources	
03:15 PM	Human Resources	

Chapter 7: Curriculum Development

Sandra Jarvis-Selinger, PhD and Kevin P. Black, MD

Introduction

As part of the ACGME common program requirements, the program director must "administer and maintain an educational environment conducive to educating the residents in each of the ACGME competency areas" (ACGME Common Program Requirements, 2011 p 3).(1) This can be a daunting task for the typical program director who has not received formal training in educational theory and curriculum design. The following chapter is an attempt to demystify curriculum development by providing pragmatic and useful information to support program directors. In addition, reflective curriculum design will maximize the quality of resident education.

An Approach to Curriculum Design

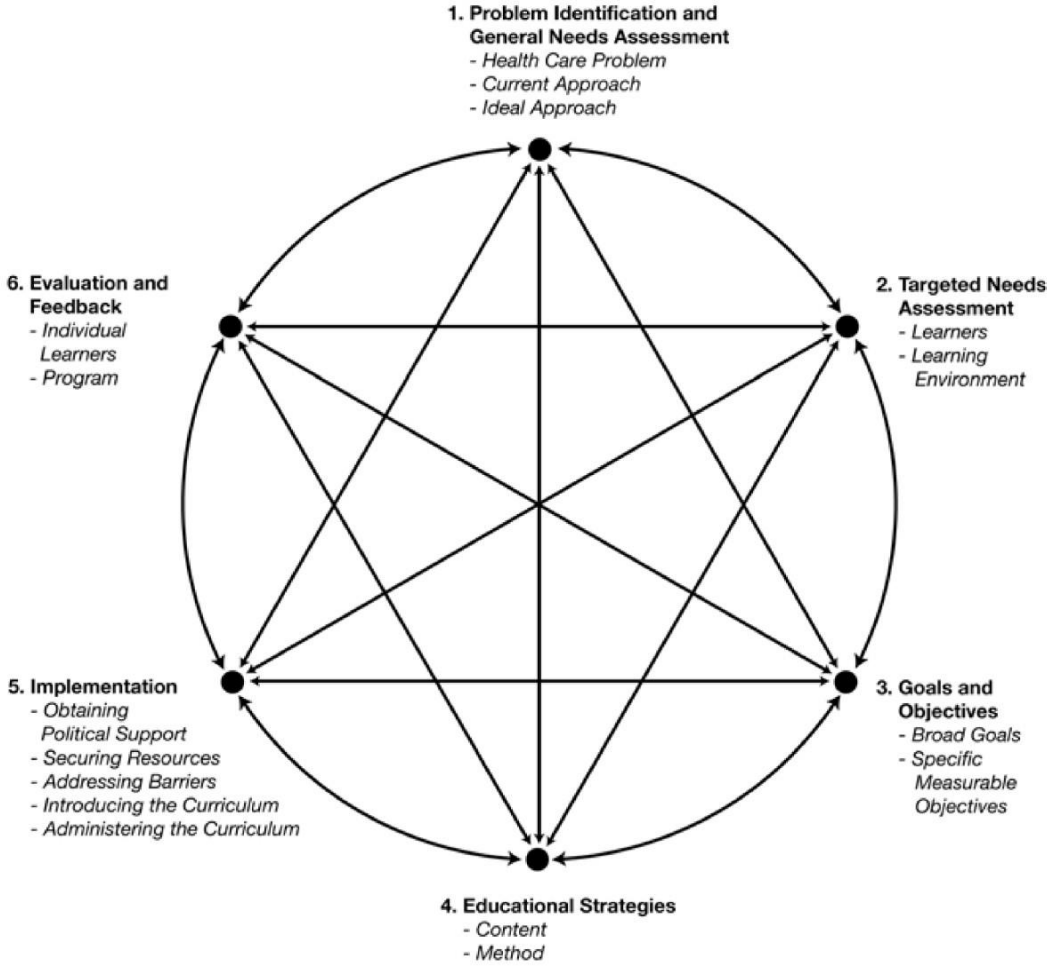
There are many comprehensive approaches to curriculum design.(2–4) One of the most useful design frameworks for medical educator's is a six-step approach developed by Kern et al. which includes: 1) problem identification and general needs assessment, 2) needs assessment of targeted learners, 3) goals and objectives, 4) educational strategies, 5) implementation, and 6) evaluation and feedback (see figure 1). (4,5)

This model provides a reflective approach to curriculum design, especially when programs are contemplating 'big' changes. For example in Steps 1 and 2, doing a proper needs assessment takes time and resources and therefore may be beyond the scope of a single program director to engage in. But modifying and applying Kern et al's six-step approach is also useful for programs that may, for a variety of reasons, need to review their current educational and clinical offerings. As outlined by Lockyer, a needs assessment permits the "clear identification of issues, skills, and topics that need to be addressed. It then allows the educator to concentrate on those needs explicitly, thus ensuring that appropriate time, learning and administrative strategies are available to address the critical deficiencies" (p. 190).(6)

There are a variety of way to collect needs assessment data including traditional means such as interviews, focus groups and questionnaires. (7) Additionally, information about the 'needs' of an educational program can also be collected from direct data sources such as residents' in-training exam scores, performance on ABOS certification examinations, or objective structured clinical examinations (OSCEs).

These can enlighten a program director to what residents know and don't know and therefore how the program could be enhanced to support resident education.

Figure 1: A six-step approach to curriculum development[1]



Kern's remaining steps (three through six) are discussed in more detail in the sections to follow. After a brief overview of 'understanding accreditation standards', this chapter will provide a description and examples of how to create useful rotation specific goals and objectives (step 3), outline some useful educational strategies for teaching residents (step 4) and the importance of assessment and evaluation (step 6). Step 5 (Implementation) will not be directly discussed as a separate topic in this chapter because it would be difficult to do so in a general way given the political, programmatic and systematic variations that exist across orthopaedic residency programs.

[1] Kern DE, Thomas PA, Hughes MT. Curriculum Development for Medical Education: A six –step approach. Baltimore: John Hopkins Press (2009).

In addition to these sections, the chapter will conclude with a brief discussion of some of the important non-medical expert competencies that must be addressed in any residency program. These will include topics such as residents-as-teachers, residents-as-researchers/research consumers, and systems-based practice.

Understanding Accreditation Standards

Once needs are assessed, curriculum development should to take into account learning goals and objectives. Reviewing accreditation standards is the best starting point. New accreditation standards for orthopaedic resident education were implemented on July 1, 2012. Although these standards can be easily accessed online, this section will focus on those areas, which require particular emphasis and/or might pose unique challenges. Unchanged in the resident curriculum is the focus on experiential learning and the need for graded and progressive responsibility under appropriate supervision.

Firstly, the ACGME core competencies must be integrated into the curriculum. Detailed discussion of them is beyond this chapter, but they are summarized below.

1) Patient care: Residents must be able to provide care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health.

2) Medical knowledge: Residents must demonstrate knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.

3) Practice-based learning and improvement: Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based upon constant self-evaluation and life-long learning.

4) Interpersonal and communication skills: Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

5) Professionalism: Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles.

6) Systems-based practice: Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Although the American Board of Orthopaedic Surgery does not oversee the residency program accreditation process, it does establish guidelines for board certification, which shape the residency experience.(8) The minimum distribution of educational experience must include:

1) Twelve months of adult orthopaedics
2) Twelve months of fractures/trauma
3) Six months of children's orthopaedics
4) Six months of basic and/or clinical specialties

Experience may be received in two or more subject areas concurrently. Concurrent or integrated programs must allocate time by proportion of experience.

In addition, the Orthopaedic RRC provides specific guidelines for the PGY-1 resident experience. Details are beyond the scope of this chapter, but it is important to recognize that the Orthopaedic Program Director has responsibility for oversight of this year. A minimum of six months of structured education in general surgery is required, to include multi-system trauma, surgical intensive care, vascular surgery, and plastic surgery/burn care. In addition, at least one month each in three or more of the following are required: anesthesiology, emergency medicine, internal medicine, musculoskeletal imaging, neurosurgery, pediatrics, medical/cardiac intensive care, neurology, rehabilitation or pediatric surgery. During this time, the resident can also perform up to three months of orthopaedic surgery.

The PGY-2 thru 5 years must include up to 36 months of rotations on orthopaedic services. In addition, rotations on services such as physical medicine and plastic surgery are suggested but not required. The resident experience must include exposure to each of the major orthopaedic subspecialties, although specific durations are not mandated by the ACGME. Each resident must log between 1000 and 3000 procedures for their PGY-2 through 5 years. In addition, residents must have at least one half-day per week and preferably two half-days per week in the outpatient clinic.

In addition, the curriculum must include not only activities at the sponsoring institution but additional participating sites as well. Of note when considering additional sites is that a program letter of agreement between the sponsoring institution and outside sites must be renewed every five years. This letter needs to clearly specify the duration and content of the educational experience, and specifically outline the policies and procedures that will govern resident education during that rotation.

Overall the residency curriculum must contain broad educational goals, which are distributed to faculty and residents at least annually. In addition, each rotation must have specific competency-based goals and objectives for every year of resident education and these must also be distributed annually. On average there must be at

least four hours of formal teaching activities each week, and basic science conferences and the major clinical conferences should be provided at the primary clinical sight. These should include a broad cross section of the basic sciences as well as topics such as orthotics and prosthetics, rehabilitation of neurologic injury and the ethics of medical practice. We recommend development of a comprehensive two-year curriculum for both the basic sciences and clinical discipline teaching conferences, allowing for the core subject areas to be formally reviewed more than once during the resident's training.

Rotation Specific Goals and Objectives

Rotation specific goals and objectives are essential components of program planning and creation of them requires insight not only into what learning opportunities are available for the resident when working with you, specifically, but with additional faculty on the same service as well. In addition, one must also consider how the clinical experience on any particular service relates to other learning opportunities that the resident has had or will have. In addition, one must clearly understand the background of the resident and develop goals and objectives that are attainable. Finally, these goals and objectives must exist for each of the core competencies.

For some of the competencies, such as interpersonal and communication skills, professionalism and practice based learning and improvement, the goals and objectives are relatively similar across services. For the patient care, medical knowledge, and systems based practice and improvement competencies, however, very different goals and objectives will exist.

It is important to realize that the orthopaedic Residency Review Committee does not, at present, mandate demonstrated competence in specific clinical skills. Rather, guidelines are provided in regard to learning opportunities. As a result, orthopaedic educators and program directors have flexibility in determining the specific goals and objectives. For medical knowledge and patient care, goals and learning objectives should vary widely for junior and senior residents. They may also vary significantly for residents within the same year, depending upon the goals of the individual resident. For example, a faculty member and resident may choose to create a more extensive and advanced set of goals and objectives for a resident on the spine service that is going to do a fellowship in that same field.

This approach demonstrates several key points. First, each resident must develop a required level of knowledge and clinical skill for a particular level of training. It is the responsibility of the program and its educators to determine this and it cannot be left to chance. For example, most would agree that the junior resident on the sports medicine service should develop competency at taking a history, performing a physical exam, interpreting x-rays and basic MRI findings, and developing basic

arthroscopic triangulation skills by the conclusion of their rotation. The senior level resident must not only have mastered this, but demonstrate more complex reasoning and technical skills such that, for example, he/she can determine that an ACL reconstruction failed due to poor tunnel placement and make recommendations for revision surgery. The necessary knowledge and skills must be recorded, shared with the resident at the beginning of their rotation, and reviewed with them periodically during the rotation as well as at the conclusion. In most situations a resident will not actually see everything that you want them to be familiar with (e.g., suprascapular nerve palsy). Even, however, if they have not seen a patient with this condition, their knowledge of it can be supplemented with a particular manuscript or incorporating a discussion of this into an evaluation of a patient with a massive rotator cuff tear and weakness of external rotation.

In addition to the requisite baseline level of medical knowledge and patient care skills required for all residents, flexibility is appropriate to support the resident in achieving higher levels. Residents will acquire necessary levels of competency at different rates due to ability, previous experiences or level of interest. A common scenario is the senior resident who wants to develop advanced skills in a specific area prior to beginning his/her fellowship. It is very appropriate to support this variability providing it is not compromising their other necessary clinical experiences.

Finally, it is essential that all of the goals and learning objectives be documented and reviewed with the resident at the beginning of the rotation, and that there exists agreement in regard to what is to be learned. This requires a complete understanding of the background of the learner and, when appropriate, an understanding of their unique goals as well.

The goals and objectives for the Systems Based Practice competency require additional thought and preparation by the residency program. Regardless of clinical discipline, all would agree that residents develop the ability to function as part of a multidisciplinary health care team. On the hand service for example, a specific objective might be for the resident to demonstrate an awareness of the role of the occupational therapist and how they can contribute to the care of the patient. Service lines which are largely inpatient based typically require more detailed "health systems" goals and objectives. For example, on the joint arthroplasty service, specific objectives might be for the resident to 1) develop an understanding of the roles of all members of the health care team (e.g., utilization review nurse, care coordinator, pharmacist, etc.), 2) participate actively in the discharge planning process and 3) learn to communicate clearly and in a timely fashion with all members of the health care team.

In summary, development of rotation specific goals and objectives must be completed for each competency, each rotation and each resident level. Learning must not be left to chance. In addition, the language of goals and objective needs to be 'actionable'; that is they need to be clearly related to what the resident should

know (knowledge) as well as how they should perform (skills) and behave (attitudes). Although it requires significant preparation and thought by faculty the goals and objectives represent the foundation of the resident learning experience. Finally, once completed they are not to be put on the shelf and forgotten about but, rather, must be reviewed regularly with each resident.

Educational Strategies

Using Kern's model as a framework, the next step (Step 4) focuses on educational strategies. This includes a consideration of both content and methods. The accreditation standards outlined by the Orthopaedic RRC and ACGME provide a guideline for required content as well as suggested areas of clinical education. Therefore, program directors need to consider how to implement and design rotations that will meet accreditation standards as well as provide a rich educational experience for residents.

What is also important to consider in this step (and the focus of this section) is what educational approaches or methods should be considered in teaching the content. An important consideration with any educational method (e.g., lecture, learning projects, standardized patients, "real life" experiences, etc.) is take into account what objectives it is trying to accomplish. One of the easiest ways to think about these objectives is in three categories: 1) Cognitive (including both knowledge and problem solving), 2) Affective/Attitudinal and 3) Psychomotor (including changes in skills, competence, performance or behavior). Since this section cannot be an exhaustive discussion of all possible educational methods used to teach, the focus will be on four areas most common in residency education: 1) didactic or lecture based methods, 2) case based approaches, 3) discussion groups, and 4) simulation.

Didactic or Lecture Based Methods

Lectures are a substantial part of higher education and by the time residents enter an orthopaedic program they have attended more lectures than seen patients. Lectures can be an efficient method of transmitting information to large groups of students.(9) Lectures can be used to create new knowledge, expand understanding and enhance clinical thinking, thereby helping students to develop into independent, critical thinking physicians. They can bring a subject alive and make it meaningful; alternatively, they can kill it.(9)

Research is abundant on 'tips for creating effective lectures' with creating active learning opportunities, engaging students, including humor and building interesting PowerPoint presentations being among them. What is less known and potentially more impactful is refocusing on the learner. In other words, instead of looking at

the performance of the faculty member (which is where most of the tips and tricks discussions target), think more about a key educational principle *what they learn is more important than what you teach*.(10) Ostensibly, this is the foundation of student-centered learning. When applied to the lecture, it takes into account that for anyone who lectures, it's less about honing their performance and more about engaging students in effective information processing. That isn't to say that *performance* shouldn't be discounted – each of us has many examples of the mind-numbing, long-winded lecture but the difference between a good (entertaining) lecture and a great (knowledge changing) lecture resides with the students. Research has shown that a shift to thinking about effective information processing can create more effective and impactful lectures.(9,11) deWinstanley and Bjork outline three key components that can enhance students' learning from lectures.(11)

The first consideration is to focus residents' attention. Learning research shows that divided attention is detrimental to the encoding of information.(12–14) In a typical lecture, even if one is on task, students must divide their attention between verbal and visual cues provided by the instructor, decision making and note-taking (which is further divided with daydreaming, email checking, texting, talking, etc.). Because lectures can represent a critical opportunity for encoding new information and the instructor has some control over that type of encoding, students' attention during a lecture needs to be focused on the critical information to facilitate effective cognitive processing. One example to facilitate attention is to space repetition of a key concept throughout the lecture. In this way, the reinforcement aids learning and the repetition draws attention to the concept. Another example is the use of imagery (x-rays, graphs, pictures) or having student create mental images of the key concept.

While focusing student's attention is a necessary but not sufficient condition for supporting effective information processing, learning also requires accurate interpretation.(11) Two separate processes can occur during interpretation: assimilation (new information connects to what is already known) or accommodation (new cognitive structures are created to accommodate new information). Instructors, for example, can assimilate new information by drawing connections to what students already know. Similes and metaphors are also good tools for this (e.g. "shepherd's crook deformity" to describe deformity of the proximal femur in Paget's disease).(15)

The third consideration is to give students opportunities to practice 'generation and retrieval' – both have been shown to create strong cognitive connections which facilitates learning and long-term retention.(11) Generation refers to the ability of the learner to reproduce information in other forms (e.g. note taking) as a way to encoding passively presented information. The reproduction of information in novel forms (not just reciting) helps create more opportunity for effective learning. Faculty can support this process by asking students to explain concepts in their own words, answer questions, produce or modify an existing outline of a lecture,

generate specific terms, or make predictions. In addition to facilitating students to generate new information for themselves, thereby creating new cognitive interconnections; another powerful practice is retrieval.(16,17) Retrieval refers to the ability to successfully retrieve prior information. There are two major benefits of facilitating students to actively retrieve prior information during lectures: 1) successfully retrieving information at one point in time increases the likelihood of successful recall later and 2) during retrieval students become aware of when they do not know the information (known as metacognition – the ability to be aware of one's own thinking). It can be the process when you are aware that you have encoded the information (remembered it) but also know you are unable to retrieve it (the "on the tip of my tongue feeling"). Students who are able to be reflective on what they know and don't know are also more likely study the information they don't know outside a lecture (another active learning strategy that reinforces lecture learning).(11) Asking students to retrieve prior knowledge in a lecture also benefits the faculty member. They become aware of what his or her residents don't know which may enable more time or attention on working through the issues and roadblocks.

Faculty development offerings that include these components (i.e. presentation of information), opportunities for faculty to practice incorporating changes into their lectures (i.e. active encoding and practice) and peer reviews of teaching (i.e. feedback) are critical to support faculty to change their lecturing habits.(18)

Case-based Approaches

Building on the foundational components of effective learning, case based approaches can also benefit from considering these elements. A case-based method (CBL) is an educational approach closely related to problem-based learning (PBL). Both case-based and problem-based learning are founded on principles of adult learning theory's belief that adults can self-direct their learning and that their prior knowledge provides a strong foundation to activate new knowledge. The main trait of both PBL and CBL is that learning is based around a problem or case (not a content area or topic as in a lecture). CBL is not simply adding case presentations to a lecture, it is when a case is presented that promotes authentic learning and necessitates students to develop a collaborative, team based approach to their education.(19) Cases are written as problems and are intended to provide students with the patient background and necessary clinical information. The main difference cited in the literature between case-based and problem-based learning is that PBL students do not need to have any significant prior knowledge and the issues/problems are presented as a way to learn about new information, whereas in CBL students need some prior knowledge or foundational clinical concepts in order to 'solve the case'. (19,20) When done well CBL allows residents to develop clinical reasoning skills including hypothesis generation and consolidation of pertinent clinical factors in order to effectively apply relevant information and skills.

Discussion Groups

Discussion groups provide another educational approach to support effective learning. For the purposes of this section, discussion groups include activities such as journal clubs, study groups and other activities that are resident-led. Therefore, unlike lecture-based and case-based approaches, one of the defining features is the ability for residents to take an active role in defining all aspects of how the discussion groups are organized, what goals they will accomplish, etc. Discussion groups are an excellent example of near-peer teaching. Near-peer teaching involves more experienced students acting as teachers who are ideally placed to pass on their knowledge and experience to more junior learners.(21) One study found that both 'teachers' (i.e. more experiences residents) and 'learners' (i.e. less experienced residents/medical students) felt that residents are "closest to students' training level and therefore understand best how students should be taught" (22)(p. 448). In this way the 'gap' in knowledge between more and less experienced residents provides two major benefits: 1) an ability of 'teacher' residents to explain strategies for how they learned the material, challenges they faced when learning the material, etc. (which is potentially fresher in their minds than for faculty) and 2) the ability of the 'learner' resident to see a closer connection between themselves and their fellow residents (e.g., understanding that their learning challenges are not unique and that others experience similar things).

A common example of a near-peer discussion group is journal clubs.(23,24) Deenadayalan et al completed a systematic review of effective journal clubs. (24) The authors concluded that there were 9 characteristics of successful journal clubs which included: 1) regular and anticipated meetings, 2) mandatory attendance, 3) clear long- and short-term purpose, 4) appropriate meeting timing and incentives, 5) a trained journal club leader to choose papers and lead discussion, 6) circulating papers prior to the meeting, 7) using the internet for wider dissemination and data storage, 8) using established critical appraisal processes and 9) summarizing journal club findings.(24)

With any educational activity that involves 'near peer' teaching it is important to provide training for those who will be teaching or leading discussion groups.(23) Just like faculty teachers, near-peer teachers (or facilitators) may lack formal educational experience.(21) Therefore, all teaching faculty or residents should be provided with some development opportunities to hone their facilitation, communication, and teaching skills.

Simulation

Simulation and other educational approaches, which focus on teaching psychomotor skills, create different opportunities for learning. Traditionally surgical training programs have taught residents exclusively through an apprenticeship model with

the majority of skills training occurring in the OR. While this is the most important context in which to learn surgery, current training models have incorporated the use of simulation to aid in the acquisition of surgical skills. Training within a simulation environment is a critical supplement to the curriculum.(25)

It is beyond the scope of this section to detail across the 'fidelity' continuum, what types of simulation can be incorporated into an orthopaedic training program, but there are some guidelines that may be useful to consider. McGaghie et al provides a comprehensive review of simulation-based medical education.(26) The authors present twelve features and best practices of simulation which include:

1) Feedback – the most important aspect of any simulation program is that it needs to provide feedback for the purposes of learning. Simulation without feedback will not be effective.

2) Deliberate practice – refers to a form of training that consists of focused, repetitive practice where residents continuously monitor their own performance, and corrects, experiments, and reacts to immediate and constant feedback, with the aim of steady and consistent improvement.

3) Curriculum integration – any educational experience needs to be integrated into an overall curriculum plan (which is the basis of this entire chapter). Simulation is not exempt.

4) Outcome measurement – there are three common outcome measures used in simulation: a) observations by faculty, fellows, senior residents, etc.; b) resident response data (e.g. multiple choice questions, reflection responses); and c) haptic sensors that record residents' motion or touch during simulation.

5) Simulation fidelity – ranging from low fidelity bench models to complex, high fidelity virtual reality models. Whatever level of fidelity is chosen it should match the educational objectives (e.g., low fidelity like knot tying on a peg board, suits low level repetitive skill acquisition).

6) Skill acquisition and maintenance – acquisition of skills is the most common use of simulation. Research reported in the systematic review showed that skill decay could happen as quickly as 3 months and as long as 12 months and depended on the specific skill, how much repetition was given and the time elapsed between learning the skill and assessment of skill acquisition.

7) Mastery learning – refers to ensuring that all residents accomplish all the educational objectives of the simulation program with little or no performance variation. The idea of mastery learning is that residents must achieve a level of competence in a certain skill set (e.g. mastered the

skill) before moving onto more complex skills.

8) Transfer to practice – another important consideration of simulation is how well will it transfer to real clinical settings. This is one of the highest goals of simulation, that skills learned and repeated (with feedback) in an 'artificial' environment will transfer smoothly to real-world settings.

9) Team training – including thinking about simulation not just in individuals' skill acquisition but that is can also provide opportunities for practicing team skills in a "consequence free" environment

10) High stakes testing – in additional to the formative feedback that is so important within a simulation environment, simulation can also be used for more 'high stakes' summative assessments of performance (i.e., pass/fail, certification, achieve competency, etc.)

11) Instructor training – another important aspect that contributes to the success of any simulation program is having effective facilitators. Even though evaluation studies are lacking on what type of instructor training is most effective, three valuable lessons are discussed: a) simulation is not easy or intuitive, b) clinical experience alone is not sufficient for instructor effectiveness, and c) instructors need not be from the same health profession as learners.

12) Education and professional context – these contexts refer to the components of any orthopaedic training program and have a powerful influence on the effectiveness of simulation. Examples include faculty buy-in, institutional support, faculty expertise, authenticity of the simulation experiences, other educational and clinical opportunities, institutional support, etc.

Simulation programs need to consider each of these features and best practices in order to be fully integrated and educationally successful in any residency program.

Summary

As with all the educational approaches discussed in this section learning occurs best with repetition of knowledge and skills acquisition over various educational modalities. For example, teaching about ACL reconstruction is best served by 1) delivering an interactive lecture on the topic which focuses on the foundational knowledge that helps students begin encoding the information, 2) having an opportunity to design and discuss patient cases which underscore how the clinical management of ACL injuries helps students transfer their new knowledge, 3)

allowing students to participate in a discussion group (e.g. journal club) to critically discuss the evidence, controversies, best practices, etc. which continues to develop their knowledge and concluding with 4) opportunities to use simulation and guided feedback to practice all the things students have learned and access the necessary feedback needed to hone their skills.

Resident Assessment

Kern's sixth step is a focus on evaluation and feedback. As part of Kern's model this step is directed toward understanding both individual assessment and program evaluation. For the purposes of this chapter, we used this division in the following two sections with this section focusing on resident assessment and the next focusing on program evaluation. We use 'assessment' to refer to judgments and observations made about individual resident performance and 'evaluation' to refer to judgments made about the residency program.

Although resident assessment is frequently a difficult thing for educators to do, it is one of the most important responsibilities. Without doing this appropriately, the resident may not be aware of deficiencies in their performance, and the educator may not understand deficiencies in the learning experience being provided to the resident. In addition, assessment serves as the foundation for documentation of residents' competency, achievement and overall performance.

In broad categories, this can be divided into formative and summative assessments (see Table 1). Summative assessment is, perhaps, an easier concept to understand as it represents a final analysis of an individual's performance over a period of time and requires a judgment (i.e., whether the resident demonstrated the appropriate competencies to pass the rotation). Formative assessments are frequent, ongoing and include observation and feedback of the learning process. Its purpose is to enhance learning, not allocate grades, and provide feedback on observed performance, recognizing that there is more opportunity to learn and improve. It is a bidirectional process that not only identifies how learning is going for the student, but also looks for ways to provide a better educational experience. Formative assessments can be performed many times throughout a resident rotation, but at the very least should be performed at the midway point. These ongoing 'low stakes' opportunities allow for improvements in resident performance and eliminate the potential for the "surprise" negative summative assessment at the end of the clinical rotation.

Table1: Formative vs. Summative Assessment

Dimension of Difference	Formative Assessment	Summative Assessment
Content: timing, primary purpose	Ongoing (to improve learning)	Final (to gauge quality)
Orientation: focus of measurement	Process-oriented (how learning is going)	Product-oriented (what's been learned)
Findings: uses thereof	Diagnostic (identify areas for improvement)	Judgmental (arrive at an overall grade/score)

Assessment of resident performance should include each of the core competencies, and can only be performed correctly if expectations, goals, rotation specific objectives and methods of assessment have been reviewed with the resident prior to the start of the rotation. Resident performance should be assessed relative to previously agreed upon internal or external criteria. Most frequently, in orthopaedic resident education internal criteria are used, such as the ability of a junior resident to perform diagnostic arthroscopy and demonstrate appropriate triangulation skills by the conclusion of his rotation. It may also involve assessment of the resident's interactions with nursing and support staff (interpersonal and communication skills). In addition, an external benchmark such as the in-training examination score can be used to help assess resident knowledge in addition to what has been observed on a daily basis during clinical rotations or teaching conferences.

Several points merit emphasis. First and foremost, assessment must be valid and based upon actual resident performance and realistic performance criteria. One must avoid the "white wash"; deciding in advance that the resident will perform well and using the assessment to justify that decision. Even for the best residents, there is usually some variation in the knowledge and skill level between clinical disciplines, and an excellent performance and assessment on one clinical rotation should not automatically result in a similar outcome on another. For example, junior faculty may find it challenging to give critical feedback often times trying to be more support but being less objective of the resident. Similarly, the "hatchet job" must also be avoided (i.e., deciding in advance that the resident will not perform well and using the assessment to justify your belief). Finally, the assessment must be meaningful, and not constitute just "going through the motions" so one can document that an assessment has been completed.

Mock oral examinations, in addition to preparing residents to sit for their Board examination, can be very useful in gaining a better understanding of resident knowledge and judgment. In addition, 360^{o} evaluations, though not perfect, can be very helpful in evaluating competencies that are not based as much on medical knowledge, judgment or technical skills. Communication skills and the ability to function as part of a multidisciplinary team have been increasingly recognized as fundamental to improving patient safety and quality of care. The 360^{o} evaluation

allows a broad cross section of providers that interact with the resident to contribute to the assessment in different ways to provide meaningful input.

Program Evaluation

The second part of Kern's sixth step focuses on program evaluation. As Kern et al describes, program evaluation helps the program, department and institution (i.e. all key stakeholders) make decisions or judgments about the curriculum based on evidence.(4,5) It allows the program director to answer a critical question: Were the goals and objectives of the curriculum met? (If so, how? and if not, why not?).

Kern et al outline a fairly "traditional" approach that will be familiar to anyone who has engaged in research (e.g. design the research questions, select methods, choose participants, construct or adapt instruments, collect data, analyze results, and report). It is beyond the scope of this chapter to go into every detail about program evaluation given the plethora of literature on the topic (27–31) but there are some unique considerations when developing a program evaluation. One of the first considerations is to identity who will be the likely users of the information.(31) Unlike traditional research that may not consider end users until much later in the process, a good program evaluation considers the audience and the implications of the evaluation early in the process. Cook (31) provides a very readable and useful overview of this and other considerations critical in a medical education program evaluation which includes:

1) First ask, "Whose opinion matters?"

2) Next ask, "What would really be meaningful to them?"

3) Do not confuse evaluation with assessment

4) Get input from others

5) Consider various evaluation paradigm approaches

6) First select the outcome, then the measurement method, then the instrument, then the modality

7) Consider many different outcomes (and measures and instruments and modalities)

8) Select outcomes that align with educational goals

9) Consider the validity and reliability (or trustworthiness) of instrument scores

10) Pilot test the evaluation process

11) Obtain a sufficiently large and representative sample

12) Plan ahead and be realistic (you can not have it all)

One of the challenges associated with any good program evaluation is how to assess the program's effectiveness and impact. In designing your program evaluation, it may be worthwhile to investigate Kirkpatrick's model of evaluation.(32,33) The model has four levels which include: 1) reactions, 2) learning, 3) transfer and 4) results. The first level described is the most common data collection in program evaluation and answers the question "did they like it"? These evaluations target faculty and residents' satisfaction and perspectives when new curriculum has been implemented. The most common examples are audience feedback surveys. Building on this level the 'learning' level targets how the educational program affected residents' knowledge, skills and attitudes. This level is also common to most program evaluations and examples include multiple choice quizzes, mock oral exams, etc. Past these first two levels, evaluation approaches become less common but no less important. The levels that target transfer and results are where strong evaluation data lies. It is not to discount that the 'reactions' level isn't important because residents and faculty satisfaction scores may translate into buy-in but program evaluations that consider additional questions such as "was the knowledge or skill transferred from the learning environment to real-world clinical contexts?" (level 3) or "what is the longer term impact of the program on patients, institutional cost, human resources, etc.?" (level 4). Level four is also where questions about sustainability arise. Program evaluations should strive to include more than just satisfaction and perspective scores but one caution to note is changes (e.g. patient outcomes) are difficult to correlate with educational interventions.

For program evaluations to improve, educators and program directors need to take a broader approach to evaluation as defined above. This would include moving beyond the simple question of 'did it work' to also consider what worked, for whom, under what conditions and what didn't work as well as why. Also important is how context impacts the quality and efficacy of any educational offering, whether integration was important or not to the success of the new offering, how the duration of the offering contributed (or not) to residents' learning, and the feasibility of the new approach over the duration of a developmental trajectory. As well, there is a need for better logic models or conceptual frameworks to guide curriculum development, implementation and evaluation. For example, educational offerings need to be perceived as worthwhile and cost effective for administrators, faculty, staff, residents and ultimately patients.

Remember it is more important for what is measured to be in line with the program's objectives than to try to measure the highest level of Kirkpatrick's model. Also be realistic about what kind of program evaluation is feasible in terms of your available resources (e.g. time, money, human resources, etc.). Do not forgo doing a program evaluation entirely but as Cook and others counsel, be realistic.(5,31)

What about the non-medical expert?

Beyond the clinical curriculum necessary in all orthopaedic training programs, the ACGME requires additional "non-medical" core competencies be included in residency training. In this section we deal briefly with three areas that connect with these core competencies: 1) residents-as-teachers (which connects to the 'interpersonal and communication skills' and practice-based learning and improvement' competencies), 2) residents-as-researchers/research consumers (connects to 'practice-based learning and improvement'), and 3) systems-based practice.

Residents-as-Teachers

Residents must be effective teachers in order to communicate with patients, work in teams, share knowledge, disseminate research findings, and teach both medical students and other resident colleagues. While very few residents are naturally gifted teachers, it is widely understood that teaching can be learned and refined over time as long as it is responsive to residents' level of training and integrated into their daily work. In addition to the important skill set teaching brings to a physician's practice, the ACGME competencies speak to the need to prepare residents for this role. Within the 'practice-based learning and improvement' competency the ACGME outlines that residents be able to effectively "participate in the education of patients, families, students, residents and other health professionals".(5,31) As well, supporting residents to become effective teachers is foundational to creating competent professionals who have strong 'interpersonal and communication skills', thus satisfying the ACGME requirement.(1,34)

Known as 'near-peer teaching', resident-teachers are ideally placed to pass on their knowledge and experience to more junior learners. Residents not only teach their knowledge and skills to medical students and junior residents, but they are also important role models of professionalism and can have a direct impact on medical students' career choice. Finally, the capacity to effectively communicate and education about topics such as diagnosis, treatment, and management of illness is essential to support excellent patient care.

While the value of residents-as-teachers programs has been established, there is no consistent approach to the content or design of resident-as-teacher programs. Most programs focus on developing a generic skill set that includes: communication skills, establishing learning goals, use of effective questions, teaching procedures, giving presentations, and providing feedback. Within the literature, four emerging trends are apparent which include: 1) emphasizing learner-centered approaches to teaching; 2) working within a developmental continuum across multiple years (i.e. presenting different topics based on the residents' level of training); 3) integrating any resident-as-teachers program into residents' daily clinical work and educational schedule; and 4) recognizing the need for discipline-specific programs that are sensitive to the context and work of the specialty (e.g., teaching surgical residents how to teach in the OR).(1) In addition, four common assessment tools have been identified in the literature to understand the impact of teaching residents to teach. These include: resident self-assessment, learners' (medical students') assessment of residents' teaching, direct observation including objective structured teaching exams (OSTE), and indirect observation such as videotaped teaching encounters.(35)

Residents-as-Researchers/Research Consumers

In addition to the concept of teaching effectiveness in the 'practice-based learning and improvement' competency, the other part of the ACGME's language in that section deals with the ability of the resident to become competent in critically appraising both of the literature and their own learning in order to improve their practice. Residency programs need to consider how to support residents to become effective research consumers and ideally active researchers.

Starting with supporting the development of research consumers, critical appraisal skills are key.(35–38) A Cochrane Review was completed in 2010 and found that teaching critical appraisal skills to health professionals improved their knowledge but the literature reviewed showed a lack of evidence as to whether these changes in knowledge impacted the process of care or changes in patient outcomes. Other studies looked at journal clubs as a common way residency programs teach critical appraisal.(39–42)

Research has also gone beyond understanding how to teach residents to be effective research consumers to being effective researchers.(39,41) Vinci et al, for example, described the development of an academic research rotation dedicated to teaching pediatric residents how to be effective researchers. They found that in order to be successful, the rotation needs to include protected resident time, senior faculty mentorship and program funding. With those key components, the rotation led to productive resident research and encouraged resident engagement in other academic activities. Another study looked at a Canadian orthopaedic residency program's protected research block and its effect on the numbers of grants obtained, research projects completed, publication submissions and conference

presentations.(43–46) Chan et al found that protecting a block for research time during residency allowed orthopaedic residents greater research success.(46)

In addition to journal clubs, courses and academic rotations there are many great online resources available.(46) For example, the Centre for Evidence Based Medicine at the University of Oxford, has a wealth of free critical appraisal resources and tools.(47–49) They have a variety of critical appraisal sheets that are useful for residents to learn to effectively appraise systematic reviews, randomized control trials, etc. They also provide explanations and examples on concepts like "numbers needed to treat" and have a computer-assisted critical appraisal tool available for download.

Systems Based Practice

Orthopaedic program directors have struggled with development of a curriculum and methods of assessment for the Systems Based Practice competency. Many academic medical centers across the country have implemented a "core competency" lecture series to provide instruction for residents in some of these more challenging areas such as legal matters, finance and patient safety topics.

In a previous investigation done by the authors, we surveyed orthopaedic residents and educators from across the country to determine what Systems Based Practice topics were being taught, how they were taught, and how assessment was performed.(50) The data indicated that curriculum topics were highly variable, with "clinical observation" being the most common method of teaching, and assessment occurring infrequently. In a second part of this investigation, we engaged in focus group discussions with a broad cross-section of stakeholders including orthopaedic faculty, residents, community orthopaedists, nursing and allied health staff, as well as legal, finance, administrative, and risk management/patient safety leadership. From these discussions we learned that orthopaedic faculty were extremely uncomfortable with this competency, expressing that there was not a clear understanding of what should be taught, how it should be taught as well as how they should be assessing residents. This is obviously concerning given that our survey data indicated that "clinical observation" was reported to be the most common learning tool, which, without coupled with a clear assessment plan, appears to be a very passive approach to teaching. In addition, we learned that although the orthopaedic surgeon and residents view this competency as focusing largely upon efficiency in task completion and finance, other health care professionals that we work with on a daily basis feel that there are large gaps in our residents' knowledge base in communication, teamwork, patient safety and quality.

Based in part upon the results of this study, the authors have developed a "Health Systems Rotation" for PGY 1 residents, which is currently being utilized at one of their institutions.(50) Although a detailed description of this is beyond the scope of this chapter, the Rotation is designed to be experiential such that residents observe

health care through the eyes of the patient and other health care providers, asking themselves what could have been done differently to provide a better and safer experience for the patient and their family. It is important to emphasize our belief that much like residents do not learn how to perform surgery and develop clinical judgment solely by reading a book or sitting in lectures, this competency must also be developed interacting in the patient care setting. At present this Health Systems Rotation is comprised of two one-week blocks taken from PGY-1 residents three months of orthopaedics. Their direct observations of patient care are supplemented with meeting nursing and allied health staff to develop a better appreciation for their perspectives, participating in medical center patient safety and risk management meetings, lectures in finance, and required readings such as Wachter's "Understanding Patient Safety" and Gawande's "Checklist Manifesto".(51,52) Feedback from our residents has been remarkably positive. Although there remains a tremendous amount of work to do enhance the learning experience of our residents in this critical area, we believe our approach is very consistent with Kern's recommendations for curriculum development a necessary first step in teaching this competency.(4,5)

Conclusion

The intention of this chapter is to provide some exposure to a vast knowledge and literature base focused on curriculum development. Relying on Kern's six-step framework allowed us to organize this chapter to discuss issues related to: 1) problem identification and general needs assessment, 2) needs assessment of targeted learners, 3) goals and objectives, 4) educational strategies, 5) implementation, and 6) evaluation and feedback. Additionally we have provided key references at the end of the chapter for further investigation and more comprehensive information.

As outlined at the beginning of this chapter, the program director must be the maestro of the residency program and continue to support and maintain a positive educational environment that trains residents in each AGCME competency. This is coupled with the fact that the typical program director has not likely received formal training in curriculum design. Therefore we have attempted to demystify curriculum development by providing pragmatic and useful information to support program directors and create an opportunity to engage in reflective curriculum design that will maximize the quality of resident education.

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Chapter 8: The Resident Learning Environment

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Introduction

What do we mean by the "resident learning environment"? When you search the literature you are presented with a myriad of topics. This list includes: work hour restrictions, sleep deprivation, core competencies, core educational curriculum in the clinic and operating room, and student evaluation, to name a few. What you don't get is any focused reference or guideline of what the overall "resident learning environment" should look like. It could be argued, as well, that a learning environment will be appropriately different at various institutions, which adds to the variability. Despite this variability, the ability to foster a "great" residency-learning environment, common across all institutions, is having a committed team that includes dedicated faculty, staff, and residents as well as institutional support and commitment.

Over the last decade, the resident learning environment has been significantly altered by two major initiatives: 1) The restricted residency hours and 2) The implementation of competency-based training (ACGME's six core competencies). We have seen how these historical decisions have impacted the resident environment. In the future, in addition to the impact of these changes, technology innovation (i.e. electronic medical record, hand held devices, simulation, etc.) and an increased focus on the non-medical expert core competencies (i.e. interpersonal communication skills, practice based learning, systems based practice, and professionalism) are likely going to have a large impact on the resident learning environment. In addition, the ever-growing health care reform that mandates fiscal responsibility without compromising patient care will have strong educational effects in the future. Driving these changes is an increased institutional focus on quality initiatives and an increased awareness that future physicians will need to be more team oriented and quality focused. Not surprisingly then, residents exist within an environment where these significant changes are impacting their education. For example, restricted work hours have created a corollary effect of putting more emphasis on building effective team environments for dealing with handoff's and coordination of patient care.

The Role of the Department and Faculty

Advocating for resident education is akin to "creating an educational culture" in your department which takes time. The key is to keep the resident at the center of attention or in

other words, just like the shift to a "patient centric" model of care, we need to take a "resident centric" approach to education. Lacasse et al. [1] describes a "learner centered approach to raise efficiency" for clinical teaching. The general concept is to encourage self-directed learning and promote shared responsibility of learning by the teacher and the learner. They identified four keys steps to this process: 1) Identifying the learners' feelings regarding their environment, patient care, and study issues that could impair their learning, 2) Establishing a learning contract that defines the learning needs and expectations, 3) Teaching effectively to share ideas and strategies to achieve learning goals, and 4) Promoting resident self-assessment and constructive feedback by the teacher. This is just one example of an organized format for establishing an effective teaching environment. This approach also highlights a very important educational principle, "What is learned is more important than what is taught".

Another key aspect is to consider the development of your faculty team. Buy-in and support from the faculty and department chair with an open line of communication between residency director, faculty, and residents is vitally important. You need a committed group of faculty and staff who have an interest and passion for education and believe in an environment for promoting and maintaining lifelong learning habits. [2] Faculty attitude has a significant impact on your residency educational program. Kragh et al. [3] reported an inversely proportional relationship between faculty turnover and resident OITE scores. As faculty turnover increased, OITE scores decreased and vice versa.

Identifying a core group of faculty that is highly invested in the residency program is critical to your educational mission. Woods et al. [4] formally assessed the roles, responsibilities, and resource needs of this core group of faculty. Their most important conclusion was the differentiation between an advisor and a mentor, both of which are equally important for your program. The authors point out that historically that these roles have been considered one in the same but they are, in fact, distinctly different. Through resident input they were able to clarify the two roles. An advisor was described as a liaison to the residency program director, who would help with monitoring individual resident progress throughout the program. The advisor would help with the planning, administration, assessment, and feedback portions of the program. A mentor, on the other hand, was someone that served as a career guide for residents. The residents felt that mentors had (and needed) a deeper level of understanding of the resident and provided more support and nurturing. The authors also described that residents would likely have one advisor during their training program, but likely many mentors. They reported increased satisfaction of the residents with the implementation of an advising program that was institutionally supported and distinct from the residents' mentorship relationships.

Having a focus on faculty, promoting faculty development and providing support, whether through incentives, recognition, faculty retreats, workshops, and/or protected time is extremely important. One example of a faculty development program is the AAOS Orthopaedic Educator course, which occurs annually. This course is designed to support orthopaedic faculty educators'. Educational principles, tools for effective teaching in the clinic and operating room, dealing with problem residents, and career development are some of the topics covered during this course, making it an excellent resource. One example of a tool taught at this course is BOGERD that is an acronym that stands for Background, Opportunity,

Goals, Expectations, Rescue, and Deal. Educators are encouraged to use this acronym to help set the framework for any teaching moment whether it is for a rotation or just before scrubbing a surgical case. The key points of this approach are to explore the background experience of the resident, understand the opportunities and barriers that exist for learning, develop appropriate individual learner goals and expectations (i.e. No sense in teaching the learner something that they already know), gear teaching moments to learners needs, and establish an effective way of providing appropriate support (rescue) and feedback. This is finalized by establishing an agreed upon approach (deal) between the faculty and the resident. Faculty who attend courses such as this one will become an expert resource to your residency program in terms of a train-the-trainers model.

In addition to the critical need to support faculty, there has been increasing concern about the impact of restricted resident hours on faculty workload. It has been suggested that faculty workload has in fact increased with the work hour changes. [5] A systematic review of articles from 2000 – 2008 reported a negative impact of the duty hour restrictions on faculty. [5] The authors concluded that faculty had less time for teaching, the quality of life was worsening for faculty. Work was shifting from residents to faculty, and faculty experienced decreased job satisfaction. The faculty were also dissatisfied with resident training, the quality of patient care, and continuity of patient care. However, there is literature to support that even if the faculty are busier and have less time to teach, it does not necessarily equate to a decreased quality of teaching. Kelly et al [6] conducted a prospective observational study using learner assessment tools to evaluate students' perception of the quality of attending teaching related to the their perception of clinical workload and patient volumes for attendings. They found there was little effect of clinical workload and attending physician availability on their teaching scores. The most important factors for attendings scoring high for their teaching skills were related to their willingness to teach, interpersonal skills, and the learning environment established by the attending. The residents valued the attendings' willingness to teach even if they were not as available to teach. Good teaching was more dependent on the teaching characteristics and skills of the attending and not the work environment. Skilled educators were characterized as being knowledgeable, organized, efficient, focused, flexible, respectful of residents and patients, used "teachable moments", adapted to the needs of the work environment, provided feedback, and acted as a positive role model. Thus, despite being busy, effective clinical teachers adapted to the new environment without compromising resident education. It is very likely the restricted work hours have had some form of negative impact on the faculty educators of today, however, even in the face of this adversity, committed educators will persevere. Fostering an environment that supports your "key" faculty will go a long way to help you create a "great" residency program.

Institutional Support

It is not hard to get caught up in your own departmental "island" when trying to create a "great" residency program, but it is important to remember that your institutional culture will also have a significant effect on your faculty and resident development. Institutional support

for a positive learning environment is critical for your success, not only for the learners, but also for the faculty and staff. Education should be recognized as a valuable mission of the institution, by promoting new innovation and improvements. Your quest to create educational priority for the residents may conflict with new government regulated system changes such as the electronic medical record, quality performance, and national reporting registries, to name a few.

Beyond educational excellence, there are a lot of new pressures for departments and institutions alike. Philibert et al. [2] conducted a qualitative evaluation and examined the common attributes of nine institutions that were already considered successful in fostering innovation and improvement in the learning environment. They found three common themes amongst the institutions: 1) A cohesive centralized structure and culture that promoted integration of education, research, and patient care, 2) The common belief that patient care in the institution is improved because of resident education, and 3) A learning organization with a learning culture that is engaged in ongoing improvement and change. These institutions had the organizational attribute of being a learning organization that promoted the use of data for making ongoing changes and improvement, understanding the value of including residents and faculty to improve patient care and education. Hoff et al. [7] discuss the "learning organization concept" and they argue that this concept can be applied to the current residency training environment. The key concept includes the ability to collect and evaluate new data and adapt organizational performance based on the new information. With this concept the "worker" performance is integral to the organization and development of best practices. They propose that a "learning organization concept" creates an ideal environment for improved performance related to the six core competencies, particularly, practice based learning, professionalism, and systems based practice. The institution fosters a shared vision of providing exceptional patient care and encourages individual and group reflection on performance and lessons learned, fosters cooperation and not competition with respectful professional relations. Under this learning model the ideal institution will encourage innovation, have a culture that supports change in order to improve core work processes, while still providing efficient, streamlined care. [8]

The Resident Perspective

The residents' culture and attitudes are shifting from the traditional views of physician lifestyle. Breen et al. [9] surveyed 21 general surgery residency programs (n =238 student responses). They showed that two thirds of the residents wished to work 60 hours or less as an attending, one quarter found job sharing desirable, 90% desired sharing "on call" responsibilities, 71% indicated that it would be undesirable to be "on call" for their patients at all times without weeknight or weekend coverage, and that they would be comfortable allowing cross coverage of their operative complications, including reoperation. The restricted work hours has created expectations of transitioning and sharing patient care and a system of coordinated "handoffs", that may be unfamiliar to your more traditional faculty attendings. It is important for the program director to recognize this disconnect and help reconcile the

different physician cultures and attitudes between faculty and residents. Coverdill et al. [10] reported that there was a divide between faculty and residents over conflicts regarding the duty hour restrictions, core values, and patient care. In this study (of 15 general surgery programs) the authors explored, through questionnaires and individual interviews, the professional values and value conflicts for faculty and residents since the introduction of the restricted resident duty hours. Both faculty and residents expressed strong support of the traditional value of "putting the patient first" and accepting inconvenience for the sake of providing proper patient care. However, residents were more likely to preface this value statement with comments about the need for balance in life professionally and with families. The faculty held a more traditional "individualistic" view of patient care, whereas the residents were more "team focused". Residents viewed 'work-life' balance as essential and that this could be achieved with effective teamwork. The authors also highlighted a moral struggle for the residents. Since the residents still held the professional value of "patient comes first", they struggled with the concept of "Do I abandon my patient and uphold the rules?" or "Do I lie about my duty hours and stay with the patient?" This "stay-or-go" moral dilemma is something that the residents deal with everyday and poses a huge professional dilemma for them. One of the core competencies is to foster "professionalism" and yet the very system that the residents work in puts them in an impossible situation. It is important to recognize the disparity between faculty and residents and the "value" challenges, as well as their individual internal conflicts. Program directors need to look for opportunities to develop skills in teamwork and communication in order to lessen the potential disharmony. [10]

The ACGME in 2003 started to confidentially survey residents and fellows during program accreditation site visits to raise issues related to education and the work environment. The ACGME web based resident survey is a good source of information regarding the resident work environment and compliance with duty hour restrictions. Holt et al [11] recently reported the results of the ACGME resident fellow survey data from 2007 and 2008, showing a high degree of internal reliability. The most significant finding was that programs with resident identified duty hour issues were more likely to have received duty hour citations from residency review committees. If no duty hour issues were identified then these programs received fewer citations. In addition, there was a relationship between deficiencies in educational environment and duty hour violations. It was felt that some programs potentially focus too much on the duty hour issues at the cost of the rest of the educational program. Inadequate time for rest between shifts and a lack of mechanisms for addressing issues without fear of intimidation was strongly related to duty hour violations. It will be critical for your program to have a mechanism for residents and faculty to openly address issues and concerns without retribution. Bryne et al. [12] reported their results of using an internal anonymous resident survey from 2001 – 2005 at Loma Linda University Medical Center. They found that the survey played a major role in initiating and monitoring change in the resident work environment. They found a decrease in ACGME citations after developing action plans based upon the survey results. If the residents perceived that efforts were made for improvement then they were likely to be happier in the program. It has also been suggested that the residents' evaluation of their work environment is reflective of their perceptions of the quality of care they provide patients.[11] If residents believe they are providing high quality, safe, patient care, they will be more satisfied with their environment.

Resident Work Hours

In 2001, the Accreditation Council for Graduate Medical Education (ACGME) Outcome Project, developed standards and limitations for resident work hours predicated on a public call for optimizing both patient safety and the resident learning environment. On July 1, 2003, restricted resident hours were mandated for all residency programs, across all disciplines. [13] The impact of this mandate has had both positive and negative effects. The positive effects included a better job satisfaction and lifestyle for resident, more rest, improved resident morale, more independent study time, and increased resident research productivity [5, 14-16]. After a systematic review of the literature, Jamal et al [5] reported that the literature did not support that the restricted duty hours adversely affected operating room experience. They also prefaced this by saying that this information may be biased however, as institutions may be less likely to report decreased operative experience if they are trying to attract residents and that the reported work hours may not be truly adhering to the 80 hour restrictions. Baskies et al. [17] also found no adverse effect of resident work hour restrictions on operative volume for orthopaedic residents. The reported negative impact of restricted resident duty hours included increased work hours for faculty, medical errors related to "handoffs" and disruption of continuity of care, "shift mentality" among the residents, challenges with funding available to hire midlevel providers to help with service needs, and the adoption of a "night float" rotation.[5, 16, 18] Zahrai et al. [19] concluded that residents on the night float service had substantially worse health-related quality of life based on the SF-36 when compared to a standard call group of residents. They found no difference in educational benefit or stress levels when comparing the two groups. Brandenberger et al. [20] concluded that surgical proficiency is dependent on the time of the day and not necessarily the length of call. They found that a night float group of residents was significantly less proficient in cognitive tasks after their shift compared to their daytime cohort.

With the rise of the mandated resident work hours, never before has it been more important to put resident education in the front line when organizing a residency program. There is now more pressure than ever to optimize all "teaching opportunities." Service work is no longer a priority but rather the resident educational value is the priority. This is a conflicting theme, since we all know that some patient service has great educational value such as rounding on patients and monitoring their progress. It is imperative to evaluate these learning opportunities more critically to optimize the learning not just the service. Reines et al. [21] used a web based tool to survey faculty and residents and asked them to categorize 27 different resident activities on a five point scale with 1 (pure service) and 5 (pure education). Attendings and residents were in agreement for a number of tasks when relating the activity to service vs. educational. Residents uniformly wanted more pure education than did the attendings. There was discrepancy regarding morning and afternoon rounds, holding retractors, and working up trauma patients. Attendings ranked these activities higher on the educational level than most residents; however, junior residents saw these activities as more educational and senior level residents perceived these activities as more service related. The value of educational sessions will need to be critically reviewed and devoting time to this is essential. Resident evaluations of rotations, teaching session, journal clubs, and the list could go on, can be very helpful and will provide you with an overall picture of residents' perception.

The residents' perception may in fact be incorrect and rather than changing the educational encounter it may be more effective to redirect the residents' viewpoint.

Use of midlevel care providers has become common place to support the "less" educational components of patient care, with good reported results in the literature. [21-27] Midlevel providers can help improve the efficiency of workflow whether it is seeing patients on the floor, helping in the clinic or operating room, or completing discharges. They help to eliminate wasteful activities, develop better processes, and become important members of a cohesive multidisciplinary team. Improved resident satisfaction, reduced workload, and increased time available for education have been reported successes of implementing midlevel provider services. [8, 23]

Whether restricted resident hours compromise surgical experience is still a topic for debate. [28, 29] Many questions have been raised regarding surgical experience and the orthopaedic community needs to reflect more on this topic. Orthopaedic educators are being asked more now than ever to consider what a minimal surgical experience should be for a graduating orthopaedic resident. What does a competent orthopaedic surgeon look like graduating from residency? Is there a core surgical curriculum? How many procedures must a resident perform before being considered "competent"? There are new innovative ideas being developed as a result of these and similar questions. There are many emerging educational approaches that are attempting to solve these issues. For example, Bell et al, [30] have developed videos of expert surgical performance for residents to review. After they have seen the expert video, residents go through guided practice of the surgical procedure and it is videotaped. The faculty evaluators can then review video to assess skills and provide feedback to the learner. In another example, Kanashiro et al. [31] reported the use of an inventory called OREEM (Operating Room Educational Environment Measure), which was based upon a Scottish tool called STEEM (Surgical Theatre Educational Environment Measure). They engaged a group of general surgery residents in Calgary, Alberta, Canada and used the inventory to identify the perception of residents' for four subscales that contributed to the educational environment in the operating room: 1) The atmosphere in the operating room, 2) The role of the resident workload, 3) The level of supervision, and 4) The support available for the educational gain of the learner. Their preliminary use of the inventory highlighted some key findings regarding the residents' perceptions. They found that there were differences in perceived learning opportunities between males and females with females perceiving fewer learning opportunities. They also discovered that learning opportunities were potentially being lost because of lack of case discussions between teacher and learner prior to the operation and a lack of support for junior residents being paged or drawn away from the case. On a positive note, they identified that a nondiscriminatory atmosphere and strong surgical skills of their teachers improved resident perception of the surgical environment.

Levinson et al. [32] surveyed 31 obstetrics and gynecology residents and 40 attendings regarding perspectives on current methods of surgical training in the operating room. They found there was a significant difference between resident and faculty perceptions regarding the quality of teaching and feedback regarding performance. They identified the need for improved communication and systematic feedback in the operating room. These papers highlight the value in critically appraising the perceptions of the operating room environment

and could be used to improve your understanding and approach, ultimately creating positive educational change through improvements.

For The Future

Technology

There is no doubt that there have been major technologic advancements in the last decade including within the educational environment. Residents today have immediate access to information and knowledge like never before. The use of handheld devices and electronic resources are becoming commonplace. The concept of the "digital native" and the "digital immigrant" has evolved. [33] Prensky describes the "digital natives" as those born into the world of technology, thus embracing the new advancements (i.e. our current residents). Whereas, most faculty, are the "digital immigrants" who have experienced the technology revolution later in life and are not as comfortable with the changes. One example is the implementation of electronic health records, which is a government mandate. The residents are more adaptable to this system's change than their predecessors, thus creating yet another disconnect between the faculty and the residents.

In addition to the mere explosion of educational technology, technology also calls into question the effectiveness of traditional teaching techniques for the students of today. Prensky [33] describes these students as wanting information "really fast" and that they like to parallel process and multitask, thriving on instant gratification and rewards. Because of these characteristics, students may not be as responsive to traditional didactic, step-by-step teaching. As resident educators we need to become more familiar with these new innovations and embrace new technology-enabled possibilities. Providing formalized training and education regarding the potential for improving educational experiences and improving workflows, using new technologies, would be invaluable to faculty members and residents.

Another example of rapidly evolving technologic advancement is that of "simulation". Since 2008, it has been mandated that a simulation program be established in all general surgery residency programs. The concept of "see one – do one – teach one" is now evolving into a "see one – practice many – then do one when competent measures have been met". There is a wealth of literature that supports simulation as an effective teaching tool. [34, 35] It is important to recognize that simulation is just another teaching tool and does not replace the 'real-life' teaching encounters but can serve to enhance it. In other words, simulation can be an effective tool to train the novice before they enter high-stakes environments like the operating room. Paskins and Peile [36] reported final year medical student views on simulation based teaching and reported that five key themes were critical for an effective simulation program. The two most important components were feedback and integration. Immediate feedback and clear outcome measures of performance were crucial. The second most important factor was integration of the learned skill or knowledge into real practice on an ongoing basis. The students also felt that the learning style with more practical hands on experience, the "safe" environment for practice, and the validity of the simulator (although much less important) were central to a developing an effective simulation program. Whatever new innovations are being implemented, it is extremely important for faculty educators to remain diligent about

assessing the effectiveness of these new learning technologies. In addition, it is the program director's and department's responsibility to train and support faculty as educational changes occur.

Non-medical Expert Core Competencies

There has been substantial consideration given to the development of the six ACGME core competencies and all are essential for resident development. Naturally, faculty educators have been more comfortable with evaluating the residents on the first two competencies (based on patient care and medical knowledge). This is not surprising since this was the basis upon which more "traditional" faculty were evaluated when they were residents and medical content has the ability to be more objectively measured. However, the remaining four non-medical core competencies related to interpersonal communication skills, practice based learning, systems based practice, and professionalism remain a challenge for faculty educators to evaluate objectively.

For the future, it is likely that innovative and objective ways to evaluate these competencies will evolve. With the rise of technology and a national push for more objective measures of quality performance, it is not unreasonable to propose that our ability to train and evaluate residents with respect to these competencies will improve. It could also be argued that this must happen, as it will be our responsibility to instill quality values and self-improvement in our residents since this is the medical environment that the future holds for them. Tess et al. [37] studied the effect of a mandated educational intervention for residents' that was developed to create a foundational understanding of quality improvement and patient safety. Multidisciplinary teams were created based on the location of a ward, of which the residents were a part. Seven core faculty members were trained specifically in quality improvement. After the first 18 months of this program being implemented, the authors' found that there were an increased number of residents involved in quality improvement projects and the residents were more engaged. The residents perceived that education on the wards improved and that there was increased teaching and decreased patient load despite no change in teaching schedule or team census. One explanation for this was that inefficient wasteful practices were being eliminated with quality improvement projects that in turn left more valuable time for teaching. [38] The residents also reported greater satisfaction in the quality of patient care delivered.

In Closing

Our ultimate goal is to train competent, compassionate, professionals who can balance their commitments to patients and still live a healthy lifestyle. This will require dedicated faculty and a supportive department and institution alike. The environment needs to be organized and structured in order to maximize every learning opportunity. The program director needs to "be the maestro" and program planning is critical; education cannot just happen by chance. The restricted resident hours have certainly had both a positive and negative impacts and we

need to acknowledge these effects and work to develop a cohesive team environment of coordinated patient care. Technology will continue to play a big role in how we teach residents and take care of patients especially as simulation technologies are expected to continue to evolve. We have six core competencies which structure our evaluation of residents and in the future it is proposed that more objective ways to measure the interpersonal communication skills, practice based learning, systems based practice, and professionalism competencies will develop. Now more than ever, residency program directors have to be "out of the box" thinkers, they need to be critical of the value and worth of the different aspects of their educational environment, and understand that the residents of the future are being trained in a different environment that is team oriented, more quality focused, and more accountable for outcomes and cost.

Chapter 8 References

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Chapter 9: Accreditation

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Disclosure: I am a former member of the RRC for orthopedic surgery. I am a director elect for the American Board of Orthopedic Surgery. My comments below are not on behalf of either organization but my own opinion.

Introduction

Accreditation is the process by which programs in graduate medical education are recognized for having met certain standards in the pursuit of achieving quality. In the United States the Accreditation Council for Graduate Medical Education (ACGME) is the accrediting body for all residency and fellowship programs in the United States. It is an independent, private and non-profit organization. Its member organizations include the American Medical Association (AMA), American Hospital Association (AHA), American Board of Medical Specialties (ABMS), American Association of Medical Colleges (AAMC) and the Council of Medical Specialty Societies (CMSS). A Board of Directors nominated by these organizations determines policies. In addition to the full-time staff, it is served by three hundred to four hundred volunteers many of which serve on specialty review committees. ACGME accreditation of a residency or fellowship is required in order to receive federal funding. In addition, it is necessary for specialty board certification in most medical specialties. For Orthopaedic Surgery, completion of an ACGME residency is required for Board Certification in Orthopaedic Surgery. Completing an ACGME accredited fellowship is necessary for a Certificate of Added Qualification (CAQ) in Hand Surgery and a Certificate of Subspecialty Certification in Sports Medicine.

The residency review committee (RRC) for orthopedic surgery consists of an executive director and staff members who are employees of the ACGME. The American Board of Orthopedic Surgery (ABOS), the American Medical Association (AMA), and the American Academy of Orthopaedic Surgery (AAOS) nominate the physician members. Oversight is provided through the governance structure of the ACGME. New this year is a Senior Vice President Physician executive who is responsible for surgical education programs. The residency review committee meets twice a year. Physician member terms are six years in length. A chair and vice chair are elected by the committee. The committee is responsible for selecting new members. Finally, the executive director of the American Board of Orthopedic Surgery participates in the RRC meetings as a nonvoting member.

The residency review committee reviews program data and information provided by the program director and if applicable the site reviewer. The information currently available relates to program history, case log data, the program

information form (PIF), results of graduates on part one of the ABOS certifying examination and resident surveys. Proposed data regarding faculty surveys, milestones and their reports of evaluations of the institutional learning environment will be reviewed in the future as part of the next accreditation system (NAS). The RRC is responsible for determination of accreditation status and the length of accreditation cycle. It also reviews new applications for residency and fellowship programs and requests for additional resident and fellow positions. Last it follows up on requests for additional information.

The committee uses the common and specialty specific program requirements in its evaluation of the program. These requirements are available on the ACGME website. They are periodically revised and those interested are invited to make comments. In addition, the website contains significant additional information regarding the process of accreditation including comments from the leadership of the ACGME. The name is of current members of the RRC and Executive Director is also available.

It is important not to confuse accreditation with certification. Certification is the process of assuring the public that an individual physician is competent and is the responsibility of the American Board of Orthopedic Surgery.

What is Involved with Accreditation?

The process of accreditation begins with an application to the RRC. The directions can be found on the website. For new programs it is important that there be evidence of an outstanding learning environment. It is important to document faculty with demonstrated interest in teaching, sufficient resources to support graduate medical education including patient volume and variety, and administrative structure including a program coordinator, an outline of proposed educational activities including a didactic schedule and a proposed block diagram of rotations. It is also important to have written policies regarding resident and faculty evaluation, program evaluation and resident selection and disciplinary procedures. Program letters of agreement with affiliated institutions must be completed. Written competency based goals and objectives must be documented for each level of training. Proposed resident rotations must meet the requirements of the RRC. It would be wise to also consider the requirements of the ABOS that are sometimes different than the RRC requirements.

When considering accreditation, the RRC is chiefly concerned with the education provided to the resident or fellow. They do not consider effects on workforce or service needs. For new programs the committee may grant initial certification or propose withhold. There are appeal options for the program director detailed on the website in instances of proposed adverse actions.

For continuing accreditation the RRC periodically reviews program's using information submitted by the program director in the form of a program information form or PIF. This is usually accompanied by a report from a site visitor. Orthopedic surgery is one of the unusual specialties to have orthopedic surgeons who have performed site reviews. Increasingly non-orthopedic field staff teams will likely perform these reviews. The RRC also considers case log data of the graduates, the results of the resident survey, and the results of board certification examinations for graduates in determining accreditation status and the length of the accreditation cycle. The options to the residency review committee are continued accreditation, proposed probation, or propose withdrawal. In a similar way to the initial application there are appeal processes available to the program if the recommendation is a proposed adverse action.

The new accreditation system will likely change this significantly. There will be more frequent reviews of the institutions learning environment (CLER) and less frequent site reviews of the program itself. The committee will rely on data submitted to the ACGME by the program director on a more regular basis including case log data, milestone data, resident and faculty survey data, and additional metrics that have yet to be determined and refined. The goal is to decrease reliance on the program information form and formal site reviews. It is hoped that site reviews if performed would be more constructive in nature. For a full discussion of the NAS please refer to the ACGME website. (acgme.org).

For requests for additional resident or fellow positions the only concern is a sound educational rationale. Service obligations, workforce issues and the presence of new faculty are rarely considered an adequate justification for an increase in complement. A new educational experience or additional education accompanied by a template or block diagram detailing the old and new experience is important as a part of the educational rationale for the increase. It is also important to carefully consider the base size of the program and the effect of significant increases in number. Case log data will be carefully considered as will a history of excellence in education.

Program Requirements

Program requirements for residencies and fellowships in orthopedic surgery are located on the ACGME website. The majority of the requirements are what is known as “common program requirements” that apply to all residency and fellow programs regardless of specialty. These are the same for pediatrics as for orthopaedic surgery. The proportion of common program requirements has expanded over the past 10 to 15 years. These requirements outline the responsibilities of the institution, program director, and faculty in providing an adequate learning environment. There are requirements related to work hours and fatigue education as well as supervision.

In addition there are specialty specific requirements that are different for the core residency and fellowships in each subspecialty. Ideally program directors and coordinators carefully read the program requirements for their specialty at least once each year and comment, when invited by the ACGME, on proposed changes to the program requirements. The requirements should not be seen as discouraging innovation in education. They are considered a baseline for accreditation.

Following a program review, the Program Director will be notified of the accreditation status, the length of cycle and also may receive one or more citations related to the program requirements. These should be seen as opportunities for improvement. Many are related to the process (paperwork) as opposed to the substance of accreditation. Unless the program is requested to submit a progress report, no response is necessary. Previous citations will be revisited and it is expected that requirements be met at the time of the next review. It is the rare program that does not receive at least one citation at the time of review.

The Internal Review Process

One of the requirements is that each ACGME accredited program has an internal site review at the chronologic midpoint of their accreditation cycle. This review is the responsibility of the graduate medical education committee for the institution or in cases where there is no institution of the graduate medical education committee of the program. This is not the same as the yearly programmatic review by the faculty and residents that is also required.

At this time, the designated institutional official faculty member and resident perform a review of the program in light of the requirements. This is an opportunity for the program director and coordinator to learn about the strengths and weaknesses of the program and in particular to be able to correct or remedy failure to meet program requirements. The report of the internal review is not made available to the RRC. Only the fact that it was done is important.

Summary

The ACGME is the accrediting body for graduate medical education in this country. It is an independent organization. It acts through its residency review committee structure. In orthopedic surgery the RRC consists of orthopedic surgeons nominated by the ABOS, the AAOS and the AMA. The AAOS and AMA elicit application processes periodically as noted on their websites. Although to a certain extent program requirements including work hour restrictions and supervision guidelines are determined by a non-orthopedic surgeons in the ACGME itself, orthopedic surgery does have representation and has been active in determining direction and in exercising discretion in order to protect what is essential to the profession.

Members of the orthopedic RRC volunteer in an effort to improve orthopedic education. They are open and receptive to the comments and concerns of program directors. It is important that they be considered colleagues in this effort. Communication between organizations of Orthopaedic Program Directors (CORD) and Orthopaedic Coordinators (ARCOS) and the Orthopaedic RRC needs to be open and constructive, particularly in this time of change.

Chapter 10: Program Director and Coordinator Development

S. Elizabeth Ames, MD

What is Program Director (PD) Development?

Faculty development is a process by which faculty work systematically to improve their skills in education, skills necessary for scholarly activities, leadership skills, personal development, and skills in designing and implementing a professional development plan. Program director and coordinator development expands on all of these things and adds the need for developing skills in organizational and administrative roles. Basic educational skills are expanded into a need to develop curricula, or at least supervise their development. Scholarly activities are expanded into mentoring overall programmatic development rather than just individual goals. Leadership skills are expanded into needing to learn to lead others (downward) and to be productive members of upper level leadership (upward). Personal development and planning is expanded into developing and planning a program. In short, program leaders need faculty development on steroids.

It goes without saying that a program director in a program with strong faculty development will find it easier to expand these roles than one that does not. In reality, though, that is probably the less common path. Program directorship is in a period of rapid redefinition, in part mandated and in part required by the changes in the specialty of orthopaedics. There is little "seasoning" for the administrative landscape, which is constantly changing. There are some fundamental skills and resources that are helpful, and this chapter attempts to outline those that may be useful to the broader audience.

The first question is: who are we and what do we need? Program directors in orthopaedic surgery play a pivotal role in the recruitment, training, education and overall well being of orthopaedic residents, and as such have a significant role in the structure of the training environment. Despite these relationships, there is a lack of literature that describes orthopaedic program directors even in the most basic sense. This presents a challenge in terms of understanding what is needed for education, for support, and to increase longevity and job satisfaction in this important position.

There are studies describing our colleagues in general surgery. Arora & Kaplan surveyed the membership of the Association of Program Directors in Surgery in 2008[1]. Most respondents were male (89.7%), Caucasian (86.9%), fellowship

trained (63.7%) and the majority appointed to the academic rank of associate professor or professor at their institution. At the time of the survey, about 25% were also holding the position of Chair and many were also in charge of the relevant medical school clerkship program. Only 11% had formal degrees or training in education, but the vast majority had participated in additional training in education (63%) and most had received teaching awards (82.9%). Interestingly, over 50% were actively conducting education research.

Arora & Kaplan also collected information on preparation for the position, hours worked, duties, and characteristics of support with respect to staff and protected time from their group. Beeson et al[2] collected similar information for emergency medicine program directors. The majority of respondents in both studies were between 3 and 6 years on the job. The mean age of program directors in emergency medicine (EM) was 43 years. The mean age for surgery (S) program directors was 51 years. Similar data has been reported in OB/Gyn[3] and internal medicine[4]. Reported years of intent to stay in the position was also similar at a mean of 5.5 years for emergency medicine and 5.7 years for surgery. The EM group had a very high percentage of program directors who "graduated" into the job after a trial as associate program director (65%) and 50% of those reported strong mentorship from their program director. In the surgery group, 31.5% had held an APD position, while 54% had no formal preparation or only a "brief job description". Similarly, the EM program directors were likely to report that they had an associate program director working with them. Both groups of program directors were highly likely (>70%) to report they had at least one staff member such as a coordinator working with them.

Respondents to both surveys reported 20-25 hours per week spent on administrative duties related to the program directorship. Eighty to ninety percent included counseling residents on academic issues, counseling residents on personal issues, evaluations, resident recruitment, and duty hours enforcement as their primary responsibilities. Sixty to seventy percent included activities like rotation scheduling, duty hour monitoring, morbidity conference, basic science curriculum development and teaching, and supervising simulation workshops. Over 50% of the surgery program directors had an additional administrative title of department chairperson (25.3%), vice chair or division chair (34.1%), or clerkship director (9.6%).

Total hours per week for the surgery programs did not vary by number of residents, gender of PD, or reported age. Beeson's study recorded hours by academic vs. community programs in EM, and found these were the same for both groups. In the general surgery group, 55.5% reported that they had decreased their clinical hours by 21 hours/week when they took the position, and 38.7% reported having protected time (although they also reported working 20% more than the protected time allowed). Program directors with protected time reported spending an average of 20% more attending to program director duties than those that did not. Most program directors had reduced their clinical hours by 21 hours per week

(55%). A negative correlation was observed between PD clinical hours (but not total hours) and job satisfaction. The surgery PD's queried felt that 40% was the ideal protected time to carry out their responsibilities. 89.9% of program directors in surgery reported working at home on PD duties, a mean of 7.3 hours. The salary ranges were wide in Emergency Medicine and not analyzed by percentage support. 78% of the surgery program directors reported salary support, a mean of 32.9% of their overall compensation. A segment of this population had no reduction in clinical hours, no protected time, and less than 30% compensation (28.6%) or no compensation (15.1%).

On a positive note, job satisfaction in both groups was high. Surgery program directors reported some level of dissatisfaction in questions about how PDs feel valued by colleagues and the availability of institutional resources. The top five problems identified by the emergency medicine directors was lack of adequate time, career needs interfering with family needs, lack of adequate faculty help with residency matters, inadequate time for scholarly activity, and budget concerns. Job turnover was not directly tracked in either study, but none indicated an intention to leave within three years. In contrast, a study of program directors in internal medicine tracked turnover over three years (1996-1999) and found a 30% turnover rate during that time.[4] High turnover rates remain a concern in many other specialties. Anderson et al[5] reported a higher rate of burnout measured by the Masbach Burnout Inventory in surgery program directors who were younger and who had fewer number of years in the position.

There are no studies in the literature that look at substantive questions regarding surgical program directorship; for example, what drives an individual to the job? What are the greatest satisfiers? Are program directors going to be able to continue to teach, perform research, and pursue their own individual development as administrative duties increase? What skills are "trainable", and which are more related to the personality of the individual? Do perceptions or the job itself change over time? Program directors face increasing challenges in administration, budget restrictions, clinical demands, and the need for constant innovation to keep pace with surgical education.

"In my years as program director the most important thing I did to make my efforts successful was to devote the time, effort and energy needed not only to direct the program but to get to know the residents-their strengths, weaknesses, where they were from, family backgrounds, anything that could help you insure their success. It is critically important for the residents to know you are invested in their education and there is no better way to do this than by letting them know that being PD is very important to you and you are willing to spend the time to do it right." **Joseph Zuckerman, MD, NYU**

What is Program Coordinator (PC) Development?

Program coordinators face many of the same issues as program directors in terms of professional development. This role is further along, though, in terms of a standardized approach to teaching and measuring the skills required. The National Board for Certification of Training Administrators of Graduate Medical Education Programs (C-TAGME) has been created to establish standards for the profession, to acknowledge the expertise needed to successfully manage graduate medical education programs, and to recognize those training program administrators who have achieved competence in all fields related to their profession. TAGME does not function under the auspices of the ACGME or any clinical specialty national board. It is an independent certifying organization. However, TAGME monitors updates from those organizations as they pertain to the assessment of the knowledge, skills and abilities of managers/coordinators of graduate medical education programs. Orthopaedics is one of the specialties with certification tools developed within this program.

Program coordinators share the program director's challenges and carry additional administrative burdens in terms of the mountain of paperwork required to keep a residency program organized. A relationship built on teamwork is critical for success.

Helpful Organizations and Opportunities

There are a variety of organizations that are useful to both program directors and program coordinators in addition to the Council of Orthopaedic Program Directors (CORD: http://www.aoassn.org) and the Association of Residency Coordinators in Orthopaedic Surgery (ARCOS: http://www.arcosonline.org). These include:

- American Council of Graduate Medical Education (http://www.acgme.org)
- American Academy of Orthopaedic Surgery (http://www.aaos.org)
- Association of Program Directors of Surgery (http://www.apds.org)

The ACGME has a multitude of requirements that pertain to program directors and provides basic guidelines, and specific requirements for orthopaedic program directors located at http://www.acgme.org. Click on the *Program and Institutional Guidelines* tab. The ACGME expects the program director to maintain an educational environment that allows residents to successfully master the core competencies, monitor the quality of didactic sessions and rotations, supervise faculty and resident evaluations, enforce their policies and procedures, and monitor patient care and other resident activities. The ACGME provides outlines of the expectations in each of these areas on their website. More specific information regarding the roles and requirements for the program director has been outlined in a previous chapter.

There are no other national organizations for program directors of all specialties; but several specialties have developed national programs for program director development (for example, NIPDD via the American Association of Family Practice) but these are not specific for orthopaedics.

The AAOS publishes the "Orthopaedic Residency Coordinator Handbook" to outline the resources available to program coordinators.

There are several organizations within our own specialty that specifically provide development content useful to both faculty and program directors. The American Orthopaedic Association (http://www.aoassn.org) offers the Emerging Leaders Program, the Kellogg Leadership Series, and annual meetings with content dedicated to academic and professional development. The Orthopaedic Educator's Course (http://www7.aaos.org/education/courses/course_detail.aspx) is a unique resource focused on faculty and program director development. Many local GME offices also offer workshops and other content. They may also have monthly program director and program coordinator meetings. Partnership with your local DIO (ACGME Designated Institutional Official) can help with shared resources.

"The single most important thing I did in preparation was participate in the AAOS educators course as a new attending. This gives you a perspective on how to educate the residents within the busy practice of orthopaedics. Once I had established my teaching style, I could then move on to how to organize the teaching mission for the department. What I wish I had done was take a class on conflict management as it seems like a daily task for me. Conflicts between residents, residents/attendings, residents/ER staff, residents/nursing staff, finance guys/residency program, police officers/residents are all a part of my job. The single most important thing for a program director is to have a passion for residents. This includes their well-being as people in addition to their well-being as learners in your system."
Todd Milbrandt, MD, UKY

Leadership and Personal Development

The traditional definition of leadership often focuses on the great figures of history, either global or local. In reality, the most effective leaders are rarely public heroes or high profile individuals. The people who create, transform, or reshape something of importance are often those hailed as critical to the success of the endeavor or organization. Effective leaders move patiently and incrementally, and they do not function in a vacuum; rather, they inspire others to work with them, and share responsibility where it is applicable. The program director position is high profile in the localized world of the program, but success relies more and more on teamwork with the residents, the faculty, the chairman, and the support staff. The program coordinator is the glue that holds the team together.

"Approachability is one of the most important attributes a program director can have. Individuals, and Residents as a group, need to feel very comfortable approaching the Program Director to discuss any issues or ideas to improve training."
Derek Chase, MD, UCSD Chief Resident

Developing leadership skills and teamwork skills are among the most important prerequisites for both program directors and program coordinators. Medical education traditionally is weak on both fronts, and even now more and more emphasis is put on education and certifications that emphasize the administrative aspects of the job; yet, the most common discussion topics that come up in workshops of people responsible for leading residency programs focus more on skills like managing the problem resident, or encouraging faculty development. Leadership series like the AOA's Kellogg Series (http://www.aoassn.org/meetings-events/aoa-leadership-education/aoa-kellogg-leadership-series.aspx), a hospital's executive leadership programs (example at http://www.fletcherallen.org/for_providers/referring_providers/center_for_health_care_management/education), or even an independent study excursion on a site like the Harvard Business School Educators site (http://cb.hbsp.harvard.edu) can yield simple tools that help build relevant skills. The exercise of designing and leading a simple leadership course for residents can help focus your own education - and meet a systems-based practice requirement at the same time!

Longevity

Establishing leadership takes time – residents naturally meet transitions with skepticism and trust in this position is earned through action more than by title. Program stability is enhanced by leadership stability, whether chair or program director. The challenge is that the job itself is personally demanding and constantly evolving. Allen Silbergleit, MD's address to the 2006 APDS spring meeting includes the following quote: *"What have I learned over four decades? You cannot stand still! I have been a PD for forty years, not one year repeated forty times over."* There are times when turnover is unavoidable, but in general part of a personal development plan for this role includes planning for an extended stay both for the benefit of the PD and for the residency. Part of the skill set includes developing a clear relationship with the Chairman with an open line of communication, clear boundaries of responsibility, and optimally mutual respect. Many Chairs take on a mentorship role; since many have done the job themselves, it is a natural fit. Program directors may need help balancing clinical stressors with the additional administrative responsibilities and the challenges of managing the residents. In this sense a program director is both a worker/faculty and a leader.

"As a department chair selecting the right person to be program director is very important-but equally important is to provide them with the autonomy to do the job as

they think it should be done. Always be available as an advisor but recognize that it is up to the program director to "direct"- not the department chair."
Joseph Zuckerman, Chairman, NYU

Avoiding turnover in residency leadership follows the same principles as avoiding turnover in other areas of medicine and business. The primary factor leading to turnover is an external locus of control; in other words, feeling like someone or something else (or luck) determines what happens to the individual on a small or large scale. There is an element of that intrinsic to the role of program director, but it should not be the primary driver in the job. Take-over by an extrinsic locus of control in one's job has to be balanced by job engagement and a sense of personal accomplishment, or burnout will occur. Burnout is defined as feeling depleted by one's work, and characterized by the loss of emotional, mental, and physical energy due to continued job related stress. As such, it leads to depersonalization in the work role much like depression leads to depersonalization in one's personal life. Burnout can be measured, and rates as high as 30% have been found in surgeons, perioperative professionals, residents, and medical students[6-9]. Burnout can be prevented, or at least moderated, by the idea of continual professional learning and the concept of communities of educators.

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Chapter 11: Understanding GME Funding

William B. Bush

Introduction

An academic medical center (AMC) is most often a hospital that is linked to a medical school and has as its mission teaching, research and service. AMC's tend to be located in large urban areas and have a high percentage of uncompensated care. In addition to providing the basic core services any hospital would provide, highly specialized services such as burn, neonatal and pediatric intensive care, trauma and transplant are also available. The AMC serves as the hub for the training of interns, residents, fellows, nurses and allied health professionals. Medicare makes payments to prospective payment system hospitals for the costs of approved residency training programs in medicine, osteopathy, dentistry, and podiatry. An approved residency program is one approved by ACGME, AOA, CODA and the CPME. In order to be reimbursed, a resident must be a graduate of an accredited medical school in the United States or Canada, or have passed the USMLE parts I and II as well as be enrolled and participating in an approved program.

Medicare

Medicare is the primary third party payer-funding source for graduate medical education (GME). To be reimbursed, the hospital must complete and submit their Medicare cost report. The cost report is due within 150 days of the hospital's fiscal year end. Within the report there are specific pages devoted to the calculation of the reimbursement related to graduate medical education cost. There are two primary components of cost paid by Medicare. Direct Graduate Medical Education cost (DGME) and Indirect Medical Education cost (IME). Both have specific methodologies for determining the amount to be reimbursed. In order to get through each individual calculation, the appropriate full time equivalent (FTE) count must be obtained.

For cost report purposes, a FTE is defined as the total hours necessary to fill a residency slot. Most AMC's have software that logs the days residents spend doing their block and site-specific rotations. Ultimately, the worked days are totaled and divided into total days in a year to obtain the correct number of FTE's. For DGME, the FTE count is weighted for initial residency period (IRP) limitations when applicable. There is also a cap on the number of FTE's that can be claimed on a cost

report. The Balanced Budget Act of 1997 limits the number of residents that a hospital may claim to the number reported on their 1996 cost report. Any program growth since 1996 is not funded by CMS.

Although CMS is not allowing the nationwide cap to increase for established programs, they have on two occasion's reallocated cap from hospitals where it was unused to hospitals that demonstrated a need. Under section 422 of the Medicare Modernization Act teaching hospitals were allowed to request up to 25 additional residency slots from the pool created by the redistribution. The redistributed slots were hospital specific and were reimbursed at reduced rates. Under the second redistribution, there was no reduction in reimbursement and the slots could be shared between hospitals.

Sometimes it is necessary for the resident to move from the AMC to another hospital for training. CMS will only allow a hospital to include on its cost report those resident rotations actually occurring within that hospital (or within a contracted non-hospital setting). If the resident rotation occurs at another hospital facility and that hospital facility does not have the cap needed to include it on the cost report, then CMS will not pay for the rotation. The AMC can attempt to remedy this by entering into an "affiliation agreement for cap sharing" with the hospital facility allowing the rotation. Cap related to both IME and DGME can be moved as specified in the agreement. The agreement must be filed by the beginning of the academic year to which they apply (July 1), and an amended agreement must be done at the end of the academic year and filed by June 30. Payments are based on the last three years rolling average of the capped and weighted (DGME only) FTE counts.

Medicare payment for DGME is based on the hospital specific per resident amount (PRA). The per resident amount is based on 1984 base year cost data that included resident, clerical, supervising teaching physician salaries and benefits as well as allocated hospital overhead. These costs were totaled and divided by the total allowed resident FTE's. The result is the hospital specific per resident amount. A PRA for primary care and for non-primary care physicians was established. An update factor is applied to the PRA's to allow for cost increases although for 2004 and 2005 CMS only updated the PRA for primary care. This was done to encourage the training of primary care physicians. Once you have an updated PRA, the primary care FTE's are multiplied by the primary care PRA and the non-primary care FTE's are multiplied by the non-primary PRA. The total dollars are then multiplied by the hospital specific Medicare utilization percentage. The result is the amount reimbursed for DGME by Medicare. For example: Hospital A has a primary care PRA of $100,000 and 10 primary care FTE's, the non-primary care PRA is $95,000 and the non-primary care FTE's are 20. Hospital Medicare utilization is 50%. The calculation is:

Primary Care PRA:	$100,000
Primary Care FTE's:	10
Total:	$1,000,000

Non-primary care PRA:	$95,000
Non-primary care FTE's:	20
Total:	$1,900,000
Total Primary and Non-primary:	$2,900,000
Medicare Utilization %:	50%
Total Reimbursed:	$1,450,000

Indirect Medical Education payments are an add-on to each Medicare inpatient case to reflect the higher patient care costs of teaching hospitals relative to non-teaching hospitals. The IME adjustment factor is calculated using a hospital's ratio of residents to beds, which is represented as r, and a multiplier in the following equation: multiplier x [(1 + r)^.405 - 1]. Congress sets the multiplier. Since 2008 the multiplier has been 1.35 and represents a 5.5 percent increase in IME payment for every 10 percent increase in the resident-to-bed ratio. The amount of IME payment that a hospital receives is dependent upon the number of residents the hospital trains and the current level of the IME multiplier. Once calculated, the IME adjustment factor is multiplied by Medicare inpatient payments to determine the IME payment. For example, if Hospital A has an intern and resident to bed ratio of 50% and Medicare inpatient payments of $10 million dollars the IME add on payment would be calculated as follows:

IME Adjustment Factor:	1.35*((1+.5)^.405-1) or 24%
Medicare Payments:	$10,000,000
IME add-on payment:	$2,400,000

Because children's hospitals have low Medicare utilization and as a result few Medicare payment dollars, the traditional formulas for computing DGME and IME payments noted above will not work to cover the cost of residents training in these facilities. Congress recognized this issue and through the authorization by the Public Health Service Act created the Children's GME program or CHGME. The Bureau of Health Professionals currently administers the program. Unlike Medicare funding, CHGME is funded through an annual appropriation and is subject to the annual budgetary process. There have been many attempts in congress to cut this funding altogether. For now, it remains in place. The funding is allocated one-third to DGME and two-thirds to IME. A children's hospital receives payments based on their relative DGME and IME value to the sum of all qualifying children's hospital's relative DGME and IME values.

Other Payers

Even though Medicaid is a combined state/federal program, the reality is no two programs are exactly alike. Federal funding for Medicaid is based on the Federal

Medical Assistance Percentage or FMAP. The FMAP is state specific. In Alabama, the FMAP generally ranges between 67% and 70%. If the FMAP is 67% then for every one hundred dollars of Medicaid expenditures, $33 is put up by the state and $67 is put up by the CMS. During economic hard times the state often does not have the funding needed to cover all the cost of the Medicaid program. This results in payment reduction to providers. Currently, hospital providers are paid less than cost for both inpatient and outpatient billings. For adults, Medicaid pays up to 16 hospital days per year at a pre-determined per diem rate. Medicaid outpatient payments are based on a fee schedule. Medicaid does not pay a separate DGME and IME as Medicare does.

Blue Cross Blue Shield (BCBS**)** pays a predetermined per diem for inpatient and a combination fee schedule cost plus for outpatient. BCBS does not carve out graduate medical education as a separate payment the way Medicare does. Although BCBS payment methodologies may vary from state to state, they are clearly moving toward risk sharing agreements whereby they reward providers for meeting quality benchmarks through additional payment incentives. BCBS also employs a tiering program that requires hospitals to meet certain cost and quality requirements in order to be a tier one hospital. Patients who go to hospitals that are not tier one may face higher deductibles and co-pays.

Chapter 12: Dealing With Problems

Craig S. Roberts, MD, MBA

Introduction

Administrative work has been described as being a lot like raising kids,[1] and nowhere is this statement more true than dealing with problems. Dealing with problems is routine for a program director (PD) in orthopaedic surgery. By the term "problem," I mean those day-to-day occurrences that are opportunities for innovation, challenges, pivotal points for change, and areas for innovations.

Dealing with problems is different from the usual cut-and-dry or what one might call "black and white" matters in orthopaedics where a bone is fractured or intact, and a ligament is torn or intact. Instead, these are the gray areas. Many orthopaedic surgeons might find themselves the most uncomfortable dealing with these areas. Our problem-solving hats by which doctors normally think in these types of situations ought to be replaced by the "soft skills" more commonly used by counselors, psychologists, and coaches. These skills include following process and procedures, mentoring, having crucial conversations, using conflict resolution techniques, demonstrating leadership, managing, and problem solving.

The ability of the program director to master these skills often determines his/her success as a PD. This chapter will review strategies for the PD to deal with problems such as complaints, conflict resolution, the problem resident, the problem faculty member, and international medical graduates. Although much of the PD's life is centered on handling complaints, the PD also needs to communicate expectations and performance standards and lead the educational enterprise.

Handling Complaints

When handling complaints, it is important to set the tone and establish boundaries.[1] Setting boundaries involves making it clear at the onset of listening to a complaint that you have only a certain amount of time right now. Another meeting can be arranged if necessary.[1] If a meeting is expected to be particularly contentious, consider writing out and scripting some of the dialogue. Sentences that are particularly helpful include sentences like, "What action do you see from me?"[1] Some other sentences that I have found useful are: "Now that I've listened carefully to you, I need to find out what the other people involved have to say. I'll get back to you after I do that."[1] There are also several commercially available business books that provide written scripts for difficult situations.

Gunsalus notes several guidelines for handling complaints.[1] The first rule is to never take complaints personally.[1] It is important to understand whether they seek any action or whether just talking will be enough.[1] Being courteous and cordial is important. The second rule is to never act on a complaint without hearing (at least) two sides to the story.[1] Not only are there usually several facets to a story, there are different perceptions of the same situation or set of facts.[1]

Resident Handbook Policy

Programs need to have a resource such as a resident handbook that describes the minimal expectations for behavior and performance of orthopaedic residents. Policies need to be in place for such mundane matters as vacations, course attendance, moonlighting, medical records, punctuality, hospital by-laws, parking, and departmental operations. The resident handbook becomes the "constitution" for resident behavior and performance. Resident behavior and performance is then evaluated as either consistent or inconsistent with the handbook. This handbook is the document that defines the minimal competencies and expectations for the residents. Having such policies makes it very clear what the boundaries are.

Setting Expectations and Performance Standards

New program directors should not miss the opportunity to set expectations, and to create the culture of the residency program. Setting expectations is best done at the beginning of the academic year in multiple venues: large groups, small groups, and individual meetings. The actual process of communicating is just as important as the message content itself. Co-creation of initiatives and getting buy-in from stakeholders (e.g., residents, faculty, etc.) works better than top down or autocratic methods. Processes are best looked at as a series of transparent steps with multiple inputs and milestones. The more controversial and contentious the issue is, the more likely the process will be challenging and prolonged. More difficult issues require more delicacy and planning, along with goals, deadlines, milestones, agendas, and accountability. Otherwise, these processes run the risk of being unproductive.

The Problem Resident

The most important part of managing the problem resident is early identification. Fellow residents, orthopaedic faculty, or other departments often identify problems. Often multiple inputs clearly identify the resident who is a problem. Unprofessional encounters on the phone or in person with other Departments are also common.

The resident having difficulty academically rarely has only an academic problem. Such residents are usually having problems in all domains: affective, cognitive, and psychomotor. Problems are usually global.

Getting to the bottom of the problems with a resident is critical and will most likely involve multiple approaches. An initial meeting between the problem resident and the PD is a good way to start, followed by input from fellow residents, faculty members, faculty and residents from other Departments, as well as from mid-level providers. Outside evaluations by professionals for chemical dependency and substance abuse should also be strongly considered. Psychological or psychiatric evaluation is also a key part to this. The use of commercially available videos such as, "Disruptive Residents" can also be helpful as an educational tool.[2] After multiple inputs have been received and the facts are clear, the PD needs to come to a decision about the scope and magnitude of the resident's problems.

There is a wide spectrum of problems that residents can have. Problems can be simple and specific on one end of the spectrum, and global and complex on the other. Once the PD identifies the problem(s), the next step is to classify them and decide on the appropriate action according to the policies and procedures of the Departmental Resident Handbook. Options usually include an overall determination of "unsatisfactory evaluation", "academic warning", "academic probation", and "dismissal". In most cases, the situation needs to be handled initially with an "unsatisfactory evaluation" or "academic warning". These situations usually involve specific deficiencies on a specific rotation over a shorter period of time. Problems in general are best identified and addressed quickly, so that the PD addresses problems in real time or as close to real time as possible so that the problems do not continue over multiple rotations. In addition, the spirit of academic due process at universities involves a step-by-step process, with multiple inputs, written warnings, opportunities for resident remediation, resources for resident remediation, and resident retention whenever possible.

Academic warnings are delivered face to face and then in writing, listing problems and areas of noncompliance with the Departmental Policies and Procedures, actions and processes that need to take place to correct these areas of noncompliance, the length of the warning period, how the resident will be evaluated at the end of the period, and what might occur if the evaluation of the resident is unsatisfactory at the end of that period. The PD should always consider multiple inputs to back up his or her decision. These inputs are often program specific and might include input from the Chair, the Education Committee, and the faculty. These steps are particularly important if the Departmental processes structure the PD's decision about a disciplinary action as more of a recommendation than a final decision.

If the recommendation or decision is academic probation, then it is also likely that the Graduate Medical Education Office (particularly the DIO) has to sign off on it. The co-signature of the Dean of the School of Medicine may also be necessary. Probation periods usually have to be linked to the precise reason ("He did not

demonstrate the knowledge, skills, and professionalism becoming of a PGY-3 resident in orthopaedic surgery."). The duration of the probationary period needs to be defined. The action plan and expectations need to be given to the resident in writing. What will occur at the end of the probationary period also needs to be spelled out (e.g., continued probation, taken off probation and restored to normal status, and dismissal). It should also be assumed that if a resident is going to be dismissed, it will ultimately be challenged, and litigation is likely to ensue. Therefore, processes and documentation need to be bulletproof.

The Problem Faculty Member

Problem faculty members can be more difficult to handle than problem residents. The difficulty is increased because the PD often has limited ability to influence and control the behavior of faculty members due to complicating factors (e.g., position such as seniority, rank, or higher clinical productivity, etc.). The program director's interface with the problem faculty member is mainly regarding resident education. The noneducational or "other" aspects of the problem faculty member are best left to the Chair. The program director, nonetheless, needs the support of the Chair to deal with the resident educational issues with the problem faculty member. The approach should be objective, nonconfrontational, and professional, and should only address performance and behavior and not try to analyze or understand motive.

Another challenge to the program director in dealing with the problem faculty member is that of trying to "lead clever people".[3] These are faculty members who really don't want to be lead. They are often "rock stars" among the orthopaedic attendings. The PD needs to be able to positively influence these "clever" faculty, and engage them in improving the residency program. The program director needs to be realistic, however, and really understand what value these "rock stars" provide and whether they are capable of changing.

Legal Record Keeping

Gunsalus[1] noted, it is never your job to be a lawyer. Times where you see legal risk (e.g., dismissal of a resident, dismissal of a faculty member, etc.) are not the times to improvise. Policies and procedures are your friends.[1] The rules in the Resident Handbook and the institutional Graduate Medical Education office usually govern these areas. Processes are usually slow and laborious, especially in universities. However, if each step is documented appropriately, the process and its resolution will usually stand up in the end when it is challenged. In contrast, impulsive actions and arbitrary decisions made are often overturned. In such high-stake situations, the PD should consider input from the Dean of Graduate Medical Education and legal counsel.

How can one best document these steps? If the stakes are not extremely high or routine, the easiest way to do this is a process note. This is a note in the personal files of the program director which records the meeting in objective "less is more" terms: who, when, what information was told to or shared with you, and any action you promised.[1] If the stakes are very high, an alternative way to do this is to send the individual a letter which confirms that the meeting occurred and stating what was said. Records should be maintained for as long as possible. Resident files will be needed for credentialing and certification for years to come.

Because some problems require a formal process (e.g., reprimands, terminations, etc.), you need to not only do adequate documentation, but also to obtain the advice and resources of other professionals in your organization (e.g., legal counsel, human resources, mental health services, etc.). In addition, there are other situations as noted by Gunsalus[1] which require formal processes when they involve the following characteristics: deep rooted and long-standing problems, people who are highly volatile, large power differences (e.g., student complains about a star faculty member), allegations which, if prove to be true, are possibly criminal, and those involving sexual relationships.

Working with International Medical Graduates (IMGs)

With IMGs constituting 25% of the US Physician force,[4] 15% of the fellows of the American College of Surgeons, and 6% of positions filled in orthopaedics and plastic surgery,[5] the interface of PD's with IMGs is likely to increase.

Graduates of medical schools outside the United States pose unique challenges. Criteria for application to residency training programs for interns include ECFMG (Educational Commission for Foreign Medical Graduates) certification and USMLE (United States Medical Licensing Examination) results. ECFMG certification is required before foreign medical graduates can take step 3 of the USMLE. In addition, official transcripts from the applicant's medical school, ERAS application, letters of recommendation, and a personal statement[6] are required. Verification of the medical school academic record and training can be more difficult than it is with graduates from American medical schools. Unfamiliarity with American graduate medical education and lack of experience with American customs can lead to misunderstandings. Communications are most effectively done in writing. E-mail is preferred over standard mail. Cerio and Loghmanee note that there is an inherent bias in the United States against IMGs that is based on the perception of inferior training.[5] These authors note that this bias is not justified and that IMGs can bring more positives than negatives to a residency-training program.

Program Director Skills and Development

Specific program director skills include technical skills, management skills, administration skills, and interpersonal skills. The technical category includes the skills one might associate with being an orthopaedic surgeon (e.g., surgical skills, diagnostic skills, etc.). Administrative and management skills include the skills that one might obtain from an MBA program, corporate management training programs, or on-the-job executive training. These skills include management, finance, public relations, organizational behavior, marketing, accounting, macroeconomics, and leadership. Interpersonal skills are the skills one associates with emotional intelligence.

Technical skills (surgical excellence, in particular) are essential for the program director because it is the only way to establish credibility as an orthopaedic surgeon, both among colleagues in practice and residents in training. Being an orthopaedic surgeon is similar to being a fighter pilot: colleagues want to know that you are flying the plane every day (e.g., doing surgery every day). Credibility and respect will be more easily earned by the program director who is also an excellent clinician. Young programs directors should make it a priority to strive for clinical excellence.

Management and administrative skills are key for the PD to function effectively in the various systems in which he or she works. These might include the Department of Orthopaedic Surgery, the hospital and hospital network, the University, and professional organizations. Whether it is effectively running meetings, developing programs, garnering resources, budgeting, or influencing stakeholders, these skills together with a certain "business savvy " are necessary. The PD in most academic programs participates in the Graduate Medical Education (GME) Committee and internal reviews of other residency programs. Specific GME skills and knowledge can be learned from educational resources for new program directors available from various commercial entities, resources from the local GME office and the DIO, and AOA resources such as CORD.

Emotional intelligence includes self-awareness, self-management, social awareness, and relationship management.[7] These four emotional intelligence skill areas can be placed under two primary competencies: personal competence and social competence.[7] Self-awareness and self-management skills come under personal competence, which focuses more on you individually than on your interactions with other people.[7] Your ability to stay aware of your emotions and manage your behavior and your tendencies comes under personal competence.[7] Social competency, in contrast, is your ability to understand other people's moods, behaviors, and motives, in order to improve the quality of your relationships.[7] Social competence includes social awareness and relationship management skills.[7] The value and effectiveness of Emotional Intelligence in the life of the PD is vastly understated.

Conclusion

New program directors ought to evaluate his or her own professional development on a regular basis. Areas to look at include their own regular emotional and cognitive reactions to stressful and challenging professional situations and using this information as a personal inventory for self-reflection and self-improvement.

Dealing with problems is a large part of the daily work of the PD. It is very easy to be overwhelmed by the daily routine of complaints, criticisms, conflicts, and confrontations. The challenge for the PD is how to effectively manage problems through processes and discipline. Accomplishing this is the prerequisite to what most PDs want to do most: operationalize leadership and innovation in orthopaedic residency training.

Recommended Readings:

1. Patterson K, Grenny J, McMillan R, Switzler A. Crucial Conversations: Tools for talking when the stakes are high. 2nd Edition. McGraw Hill, 2012.

2. Runion, M. Perfect Phrases for Managers and Supervisors. 2nd Edition. McGraw Hill, 2010.

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6. Applying to the Orthopaedic Surgery Residency Program. SUNY Downstate Medical Center. Department of Orthopaedic Surgery and Rehabilitation Medicine. http://www.downstate.edu/orthopaedics/residency_surgery_apply.html. Accessed 8/29/12.

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