

# The Art of Specialization

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**D**iscussions surrounding specialization in the field of clinical engineering always produce multiple viewpoints from passionate individuals. The concept of refining a career to specialize in one area of competency is often a decision that focuses on the needs of an organization rather than the capabilities of the technician. As professionals in the clinical equipment field, each of us has a responsibility to take a path within our career that best fulfills our goals and utilizes our skills and talents to the advantage of the health care organizations we serve.

Leave for a moment the differences in pay and benefits associated with specialization of any form. Instead, focus on the ability to perfect a craft by applying the skills and competencies that are unique to each of us. As an analogy, think of the great painter and sculptor Michelangelo and the work of art he created on the ceiling of the Sistine Chapel. Although he is celebrated as the individual who created this masterpiece, the process took many years and required the labors of many different artists.

The medical equipment service field also takes many artists and specialists to meet the intricate and highly specialized technical needs of the health care industry. Professional careers are made up of individual choices we each make every day that define our level of specialization in the market. Similar to a painter, we become experts by choosing to be a specialist rather than a generalist—one who is focused on either biomedical or imaging equipment, and even more specifically, on the technical or managerial side of the business. None of these choices are wrong; however, they are only right if the end result provides individual satisfaction in the tasks we

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perform each day and add value to the organizations we serve.

Back to the Sistine Chapel. Think about the types of artists required to produce such a magnificent work of art. First, the plaster specialists prepared the walls each day for the fresh paint that would be applied to the fresco. Next, the images were stenciled onto the walls forming the base of what would allow the figure specialists to begin their work. After the base was in place, perhaps an expression specialist would add their unique expertise to help transform the figures and bring them to life. And throughout the process, the painting is inspected, scrutinized, and reworked by the Michelangelo—the project manager.

While the choices we make in the clinical equipment field may not require a brush and paint, our technical and career management decisions deserve careful thought and planning. The components of specialization can be broken down into groupings, none more important than the other, but each with their distinct career opportunities, challenges, and rewards. To keep the debate simple, let's focus on five categories: biomedical, laboratory, radiology, high-end imaging, and management.

While these categories may contain their own subspecialties, they ultimately form a starting point to talk about the rewards that each area of specialization may bring to an individual. Keep in mind that these categories are not boundaries, but only shades of gray in the intricate palette of medical technology.

## Biomedical Technicians

Biomedical service forms the starting point for most technicians in the field. This is the proving ground for troubleshooting and the half-step method. Servicing the diversity of biomedical equipment can be one of the most rewarding experiences of your career. The chance to interact with new customers each day and help those individuals solve unique technology problems is very enlightening.

Many technicians find that their greatest talent lies in their broad knowledge and ability to understand the generalities and complexities of several hundred varieties of biomedical equipment. This experience creates a sound fundamental base of knowledge that can lead to expert status on multiple types of equipment, making the

biomedical technician an invaluable asset to health care organizations.

### Laboratory Technicians

Laboratory technicians are the next category of specialists with modality specific knowledge. Often a technician is a part of a manufacturer's service team, or in some cases, located in a medical care facility. The option of a field service career brings the freedom of working in many locations and controlling your schedule to make the best use of time. While not every technician enjoys the life of a road warrior, the appeal is enough to keep these positions in constant demand.

Laboratory modalities often peak the interest of an "inner scientist." Because of the relationship to chemistry, biology, and detailed analysis, servicing lab equipment is very complex and provides exciting challenges for even the most experienced technician. Additionally, the interaction with lab staff proves to be a rewarding source of continued education and in some cases, opportunities in customer service.

### Radiology Technicians

The radiology subgroup is a great adventure for any technician. While many paths can lead to this modality group, most technicians are either degreed electronics engineers or biomedical technicians from industry service schools with on-the-job training.

Common equipment found in radiology departments can be portable radiography, portable fluoroscopy, general purpose rooms, mammography, and laser imagers/processors to highlight a few. This equipment requires a focus on the principles and physics of producing diagnostic images, which is a unique specialized skill for any technician.

Understanding the way large radiology systems are designed and how they work requires specific training and education. Technicians who are detail oriented generally enjoy this complex facet of working in the radiology arena. The opportunity to thoroughly comprehend the interface of multiple sub-systems appeals to individuals seeking an in-depth knowledge of equipment design and operation.

### High-End Imaging

Radiology is often followed by what some refer to as the pinnacle of medical equipment service—high-end imaging. High-end imaging consists of many types of equipment, including magnetic resonance imaging (MRI), computerized tomography (CT), and cardiac

catheterization rooms, among others. Those who specialize in this type of service are generally looking for the challenges associated with academic training and experience on a select modality. There are a limited number of individuals who gain high-end imaging equipment experience from on-the-job training.

While some clinical or radiology engineering departments in hospitals have high-end engineers on staff, most of these specialists work for independent service organizations or manufacturers. Revenue that high-end imaging creates for a health care institution puts these technicians and engineers in constant demand. Like any other specialty, the laws of economics drive the market and the reward for servicing this type equipment can be very lucrative. At the same time, there is significant pressure on the technician to deliver high-quality, reliable performance.

### Clinical Equipment Management

The final subset of specialty in clinical equipment is management. While most managers have some technical background, the prevailing desire to specialize in this area is based on the enjoyment gained through interaction with people. Managers tend to arrive in their positions in one of two ways. The first is by rising through the technical ranks and seeking opportunities to manage projects and equipment installations, or taking the lead for an upcoming regulatory inspection. This initial exposure in guiding people and processes is generally reinforced by earning a degree in business or management.

The second approach is the formally trained clinical engineer who branches into management following their undergraduate education, or after spending time working in equipment design within the industry. While some may debate which management training approach is the best, both approaches have created significant benefits for the medical equipment industry and are key to ensuring sound equipment management.

The decision to specialize in clinical equipment is a personal one. While no two careers take the same path, we can learn from our mentors, friends, and associates to shape our direction and decisions. The knowledge we gain in this process will either increase our skills across many modalities, enable us to delve deep into a very specific type of equipment, or help us decide if guiding others through management is our true calling. Specialization is an art and it takes many different specialists to create a masterpiece in the field of clinical equipment. ■