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Addressing SPD Staffing Challenges Through Development of Staffing Matrix

TODAY'S HEALTHCARE environment presents many clinical challenges, and these are often exacerbated by a business approach that focuses less on quality and patient safety, and more on volume numbers and lean measures to cut costs. Staffing in the Sterile Processing Department is a perfect example, with many SPDs operating at levels far less than what is safe, effective and optimal.

Data compiled by computerized systems in the SPD, and according to case volumes, is just one small piece of the big picture. Ambulatory settings and small, medium and large hospitals are all striving for a staffing matrix that does not exist. This has led to confusion and serious flaws that limit a facility's ability to provide safe patient care. Given the many challenges SPDs face – from increasing surgical case volumes; care, handling and processing of increasingly complex instrumentation; adherence to manufacturer Instructions for Use (IFU); ensuring proper staff training; and conducting continual process surveillance to ensure quality and safety – it's essential that facilities diligently and consistently adhere to national standards and infection control practices when establishing safe, effective SPD staffing models.

ONGOING CHANGES IMPACT STAFFING

Dramatic changes in the sterile processing field began taking shape in the late

1980s. The rise of laparoscopic surgery and, eventually, minimally invasive surgery – along with new techniques in performing orthopedic; neurologic; ear, nose and throat; urologic; and plastic surgeries, to name a few (not to mention, the introduction of complex robotic instruments) – have generated the need for a new approach to SPD staffing. This approach must be one that supports the Operating Room (OR), as well as ancillary services (i.e., Clinics, Emergency Department, interventional radiology, off-site areas) that have come to rely on the SPD to clean, sterilize and otherwise manage their equipment. Gone are the days of sterilizing only simple, hand-held instruments.

In conjunction with the expansion of the SPD role came the explosion of loaner equipment use; an increase in the number of different sterilization parameters, as well as sterilization equipment, to accommodate the new equipment; and most importantly, the need to verify and confirm sterilization and decontamination practices. In addition, many hospitals have opted to consolidate cleaning and sterilization processes within the SPD, as opposed to having a multitude of sites processing their equipment – a practice that increases the risk of substandard processing during various stages of cleaning by inadequately-trained personnel.

Despite the complexities that have arisen in the SPD, the end goal is always the same: to deliver complete and sterile

instruments, sets and equipment – on time, 100% of the time, with no errors. While the department is equipment-dependent, adequate staffing is paramount to accomplish this mission; however, developing a unified staffing matrix for a hospital system comprised of small, medium and large medical centers – each with varying degrees of complexity – is not feasible. What is possible, though, is establishing a staffing mix that's tailored to one's department and hospital size. *Note: This staffing matrix cannot be built solely on work-study analysis or volume/output parameters, and it can't be strictly functionally-based upon the five areas of the SPD (decontamination, inspection, assembly, sterilization, and storage/supply). Instead, it will be a combination of these processes and will be adapted to a generic standard that all SPDs can utilize.*

By establishing a set of assumptions (as listed below), a standard can be set that will allow all SPDs involved to provide safe and effective care, based on each department's own best practices.

FIRST ASSUMPTION: SPD management should not be included in the SPD staffing mix. A manager's role will vary depending upon the size of the SPD; however, any manager not performing actual SPD duties should not be included in the staffing mix. This is the basis for building Full Time Equivalents (FTE) on the clinical side. *Note: Shift supervisors who do*



perform SPD duties within the department should be included in the staffing mix.

SECOND ASSUMPTION: Decontamination personnel should remain separate from other areas of the SPD when assigned to the Decontamination area. This is often difficult for smaller SPDs with less staff, and it essentially underscores the problem of understaffing. In some SPDs, and especially those in Germany, different-colored scrubs are worn by those in Decontamination. Prevention of cross-contamination is a main goal of the SPD, so it is logical that Decontamination personnel be kept separate.

THIRD ASSUMPTION: SPD professionals should be tasked with SPD-specific functions and should not be responsible for managing other equipment “hand-offs,” such as crash carts, isolation carts, ward equipment, commodes, etc. SPD staff should be responsible for processing and picking sets and instruments for case carts and, at most, placing a custom pack on the cart (not picking all other items).

FOURTH ASSUMPTION: Work-motion studies are only useful to a point. They may provide a baseline from which to work, but are unreliable if based on computer scanning data. An in-depth work-motion study was conducted by the US Army for the SPD, based solely on sets and instruments being assembled. They came up with a formula of 1.5 FTE per OR table per 12-hour shift. Note: This study was based on the actual time spent on human handling of instrumentation, not on times for decontamination or sterilization cycles. This is important as it is based on a composite of both new and seasoned personnel, and represents the basics in SPD processing. In a similar study, it was determined that 1 FTE could process 24-32 trays in an eight-hour period, which

computes to dividing the number of sets processed per day by 24 or 32 to determine the FTEs.¹

FIFTH ASSUMPTION: Much SPD activity is time-sensitive, not volume-oriented. This is especially significant if a department does not have enough sets and instrumentation to get through a day without reprocessing between cases (in these cases, rapid “turn-arounds” must be worked into an already full work schedule). Another factor is the need to read a biological indicator within a certain timeframe before releasing sets. Extra personnel may be needed to accomplish this task to meet the deadlines. This is a particularly challenging issue to resolve, as it also depends on the type and duration of the surgeries being performed – as well as add-on cases, which are unpredictable. Add-on rates vary from institution to institution and may range from 10%-35% of the daily schedule. Many times, add-ons are more time-consuming because more communication may be needed to clarify specific needs and secure/manage loaner equipment.

SIXTH ASSUMPTION: Unplanned staffing issues are a fact of life. While vacation schedules are easy to manage, family emergencies, child-care problems, and unplanned medical events are far more challenging for any healthcare department that relies on a certain number of staff to manage daily tasks effectively and safely. Temporary staffing contracts may not be an option for many facilities.

SEVENTH ASSUMPTION: Sustaining training and quality improvement is a critical SPD function. Inability to provide the time, resources and personnel to fulfill this mission reflects negatively on the institution and may jeopardize patient safety.

EIGHTH ASSUMPTION: Applying industry standards to an area such as the SPD, which involves multiple tasks – all dependent upon human actions and all potentially impacting patient outcomes – does not always equate to standardized time/quantity models. Many interruptions can occur in the SPD (especially when under-staffed) while staff try to process and manage instrument sets. Searching for missing instruments or equipment, replacing malfunctioning instruments, answering phone calls, filling implant trays, and focusing on rapid turnovers are standard challenges for any SPD, and these issues may be further exacerbated by understaffing.

NINTH ASSUMPTION: FTEs are based on an eight-hour day. Hours extending beyond the standard eight-hour day are directly proportionate to the number of extra staff needed to keep processes running efficiently, effectively and safely. In addition, it’s important to staff adequately to allow the support of ancillary services, handling of additional requests from the OR, and preparation for cases for the following day.

TENTH ASSUMPTION: Staffing SPD adequately should be a hospital priority; inadequate staffing is managerial negligence. SPD is the heart of the hospital and, where sterility is concerned, directly affects all areas of a hospital. Inadequate staffing can lead to infections, injuries, delayed or aborted surgical procedures, astronomical litigation costs, and irreparable damage to a healthcare facility’s reputation.

Another factor to consider is the “backlog” of instruments that cannot be decontaminated, assembled or sterilized due to a lack of staff. Workload should not be measured by “what was done.” It’s important to also factor in “what could have been done with more staff.” Doing



more with less may mean exhausted staff, or never being able to keep up with the demand and the many instruments piling up in the department.

By reviewing these ten assumptions, it's possible to generate a staffing matrix (guideline) that can be applied to small, medium, and large SPDs and dedicated areas. Each SPD should assess all its assigned functions and review them for appropriateness. This will include: number of ORs; hours of operation; ancillary support areas; loaner instrumentation volume; training/education needs; and infection control/prevention and process improvement initiatives. In addition, utilizing a "1 FTE per OR table" ratio for an eight-hour period will become the standard. What follows are some examples:

A SMALL, 5-TABLE OPERATING ROOM WORKING AN 8-HOUR SURGICAL DAY, FIVE DAYS A WEEK, WILL INCLUDE:

OR Manager: 1 FTE

Duties: Staffing; report generation for productivity; infection control; process improvement and committee involvement; and consulting to Infection Control. The OR Manager will also manage supply duties (this responsibility may be shared with the floor coordinator), and develop and implement training, inservices and standard operating procedures.

SPD Technician: 5 FTEs

Duties: 1 for Decontamination, 4 for inspection, assembly, sterilization, and storage duties.

Note: Six personnel would comprise a minimal baseline; however, when using the 10 assumptions, there would be the following additions:

SPD Floor Coordinator: 1 FTE

Duties: Oversees day-to-day operations and assignments; covers vacations and

absences for 5 SPD technicians; serves as primary point of contact for the OR for instrumentation issues; attends daily OR schedule reviews; processes all "ins and outs" for loaner instrumentation; assists in process improvement and infection control monitoring; and assists in supply requisitions.

SPD Float Technician: 1 FTE

Duties: Processes clinic issues and turn-ins; processes flexible endoscopes (if SPD is equipped with an Automatic Endoscopic Reprocessor); assists with loaner instrumentation; performs quality checks on decontamination and sterilization activities; and fills in when/where needed.

Note: The baseline staffing is now 8 FTEs and, considering all the duties and tasks to be accomplished, 8 is a reasonable number to ensure that all activities are done safely and efficiently.

A MEDIUM-SIZE OPERATING ROOM WORKING 15 TABLES FOR 8 HOURS, 4 TABLES WORKING AN ADDITIONAL 4 HOURS, AND 1 TABLE WORKING AN ADDITIONAL 8 HOURS. COVERAGE WILL ALSO INCLUDE 2 PERSONNEL FOR 8 HOURS, BOTH SATURDAY AND SUNDAY, AND CALL COVERAGE FOR SATURDAY AND SUNDAY EVENING.

OR Manager: 1 FTE

Duties: Staffing; report generation for productivity; infection control; process improvement and committee involvement; and providing consulting to Infection Control. The OR Manager will also manage supply duties (this responsibility may be shared with the floor coordinator), and develop and implement training, inservices and standard operating procedures.

Assistant Manager: 1 FTE (if workload permits)

Duties: Oversees daily operations;

responsible for staff training/education; serves as point of contact for the computerized SPD system; generates productivity reports for SPD Manager; fills in for SPD manager for meetings, as needed; may participate in Process Improvement, Infection Control and/or Safety programs; Ensures SPD practices are within accrediting body parameters/standards; and monitors Instructions For Use (IFU) on all instruments and equipment in SPD.

SPD Supply Technician: 1 FTE

Duties: In charge of inventory management and supply requisitions, and may fill in as Loaner Coordinator; processes special requests and is responsible for equipment maintenance; generates strategic equipment purchases; and maintains vendor accountability.

SPD Technician: 19 FTEs (includes 17.5 FTE, plus approximately .5 for weekends, and 1 FTE for weeknights Sun-Thurs 11pm-7am)

Duties: 4 assigned to Decontamination; 4 responsible for issuing/storage and case cart preparation; 8 assigned to inspection, assembly and sterilization; 1 assigned to nights; and 2 assigned as day and evening shift leaders.

Note: In this configuration, total staff consists of 22 personnel. This is robust enough to cover vacations and call-outs, and allow shift leaders and/or supply technicians to manage loaner instrumentation, as needed. The night person can be responsible for biologicals for both the SPD and OR, perform final case cart checks, and pick case carts for emergency surgeries. An additional tech would be added if the SPD processes flexible endoscopes (this would bring the staffing total to 23).



LARGE OPERATING ROOM WITH 20-PLUS TABLES WORKING FOR 8 HOURS; 10 TABLES FOR 10 HOURS; 4 TABLES FOR 12 HOURS; AND 2 TABLES FOR 16 HOURS – WITH 1 NIGHT SHIFT FROM 11PM-7AM. WEEKEND OPERATIONS INCLUDE 2 TABLES FOR 12 HOURS (BOTH SATURDAY AND SUNDAY), WITH CALL FOR THE REMAINING WEEKEND SHIFTS.

SPD Director: 1 FTE

Duties: In charge of staffing and report generation for productivity; oversees infection control; involved with process improvement and committee participation; consults to Infection Control; participates in OR, Infection Control, and Emergency Management committees; develops and implements staff training and inservices; reviews and generates standard operating procedures for department; stays abreast of all federal, state and local regulations regarding SPD; maintains budget; and provides input into strategic planning for the Perioperative Department.

SPD Manager: 1 FTE

Duties: Oversees daily operations; in charge of staff training/education; serves as point of contact for computerized SPD system; generates productivity reports for SPD manager; may participate in Process Improvement, Infection Control and/or Safety programs; ensures SPD practices within accrediting body parameters/standards, and monitors Instructions for Use (IFU) on all instruments and equipment in SPD.

SPD Supply Technician: 1 FTE

Duties: In charge of inventory management and supply requisitions, and may fill in as Loaner Coordinator; processes special requests and is responsible for equipment maintenance; generates strategic equipment purchases; and maintains vendor accountability.

SPD Loaner Technician: 1.5 FTE

Duties: In charge of loaner program; participates in daily Perioperative meetings to monitor loaner requests and requisitions; maintains IFU for all loaner sets brought into the facility; and inspects all incoming/outgoing loaner sets.

SPD IT Technician: .5 FTE (to be shared with Perioperative Services/OR)

Duties: Serves as primary trainer/supporter for computerized SPD system; compiles reports from computer system-generated data; troubleshoots computer problems; and serves as IT department liaison.

SPD Technicians: 24.2 FTE

Duties: 5 assigned to Decontamination; 5 responsible for issuing/storage and case cart preparation; 10 assigned to inspection, assembly and sterilization; 1 assigned to nights, and 2 assigned as day and evening shift leaders. One. 2 FTE would cover the two weekend call periods (7pm-7am).

Note: Baseline staffing for a large medical center SPD would start at 29.2 FTEs. Considering the proliferation of loaner instrumentation and the complexities of today's instrument sets, this number seems relatively low. The critical question to consider is can this number of personnel support a fast-moving OR with emergencies, ancillary services, and technically-demanding cases involving 25-40 sets per case? A total joint revision with two options in implant systems, for example, can easily use 30 or more sets. Inadequate staffing can contribute to unclean/unsterile instruments; one piece of bone or tissue that remains on an instrument and is subsequently used on a patient can cause irreparable harm.

IN CONCLUSION

Staffing in the Sterile Processing Department plays a direct role in quality customer service and positive patient outcomes; therefore, it's essential that facilities are adequately and appropriately staffed, based on the SPD's needs, responsibilities and requirements.

Developing an SPD staffing matrix can mitigate the risks associated with inadequate staffing, but it can only be accomplished through a detailed analysis of the department's operations, processes and responsibilities. Much SPD activity is time-sensitive, not volume-oriented. While staffing matrixes in the manufacturing world are often based on both time/volume criteria, the criteria for SPDs is far more complex – involving processes and requests from outside the department (i.e., the OR, ED, ancillary services).

The set of 10 assumptions outlined in this article can help build an SPD staffing matrix that is uniquely and appropriately tailored to each individual hospital's unique operations and circumstances. 

REFERENCE

1. Swenson D. Interpreting Staffing Metrics. Biomedical Instrumentation & Technology. January/February 2013.