TSIG NEWS

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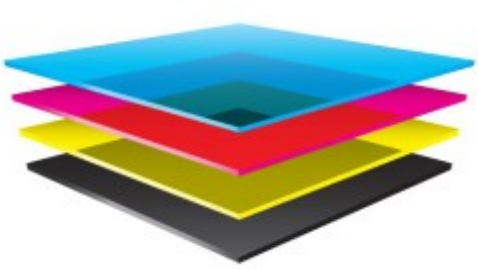

- **AutoCAD Drawings**
- **Life Safety Plans**
- **Space Reimbursement Plans**
- **Damper Inventory Management**
- **Medical Gas Tracking**
- **Evacuation Plans**
- **High-risk Ventilation Plans**
- **Utilities Inventory Management**
- **Security Systems Inventory**

VENTILATION INTIMIDATION: Managing High Risk Locations

George A. Rivas, CHSP, FSM

It may come as a surprise to many but there are no specific, prescribed requirements for establishing ventilation verification testing for high-risk locations within either The Joint Commission's (TJC) Environment of Care (EC) standards nor in the Center for Medicare & Medicaid Services (CMS) Conditions of Participation for Hospitals. Although TJC has two EC Elements of performance that address ventilation;

- EC.02.05.01 EP15 states that healthcare organizations must maintain appropriate pressure relationships, air exchanges and filter efficiencies.
- EC.02.06.01 EP13 requires hospitals to maintain temperature & humidity suitable for services afforded.

and per CMS 482.41(c)(4), providers must assure the proper ventilation and temperature for select areas, however neither regulatory body has established a list of defined locations within the hospital setting where one must continuously monitor temperature, humidity, pressure relationships or number of air changes- nor do either define a universal set of specific parameters that hospitals must adhere to with the rare exception where CMS states within their State Operations Manual (SOM) that temperature & humidity for anesthetizing locations must be maintained within "acceptable standards" and limits relative humidity at 35% or 20% if an organizations elects to use the categorical waiver .

There are numerous published sources available to serve as a reference such as ASHRAE, AAMI, AORN but there are differences in each of these resources so where does one go for this important information if not specifically prescribed by an accrediting agency? The answer is simple– you first check with your local State Department of Health requirements. To simply adopt a reference without seeking this information directly from your State licensing agency could prove a conflict should your State requirements differ from the reference chosen. Although both TJC and CMS reference the FGI Guidelines for Construction as a possible reference, there is a huge misconception that all hospitals must adhere to the ASHRAE Table 7.1 published within these Guidelines however if is important to note that not all the States have adopted the Guidelines and a significant number of States reference different editions of the publication.

To illustrate this difference, the State of New York requires any new HVAC system to meet the design criteria noted within the 2010 edition of the FGI Guidelines while allowing existing hospitals to adhere to the 1996/1997 edition of the AIA Guidelines for Construction. In contrast, the State of Illinois does not reference the Guidelines at all and establishes their own requirements for both new and existing requirement within Title 77 IDPH Hospital Licensing Requirements.

Therefore it makes sense to first check to see with what the ventilation requirements are directly from your State's licensing requirements.

There are no restrictions on setting the bar higher than what your State requires however it is important to recognize that your organization just has to jump that much higher to meet said demands. This is a problem hospitals often find themselves in trouble during survey, when they set such rigid policies defining ventilation parameters that they may not always be capable of meeting. For example, there are no exacts when it comes to temperatures and humidity and there are even footnotes within the ASHRAE 7.1 table that allows some wiggle room on these parameters. In fact footnote (o.) allows for variances in the parameters for operating rooms based on the type of surgical procedure or as required by the surgical team. Even CMS provides some wiggle room within their interpretive guidelines by noting the following; "although not required, CMS **recommends** that hospitals maintain the upper range of relative humidity at 60% or less…".

What unfortunately happens within organizations who may be unclear as to the actual ventilation requirements is that they adopt practices from information that someone may have read online or in an article or may have heard in a seminar or relayed to from their neighboring colleagues. Nothing could prove more damaging or less effective than simply following the lead of another without first seeking out the necessary information. To illustrate this point, consider a hospital system where the Engineering Director was told by another manager that they heard that TJC was requiring the monitoring of temperature and relative humidity in all areas within the hospital where sterile packs are stored. Diligent to assure compliance the Engineering Director conducted an inventory of all such locations within the 5 hospital system where sterile packs were kept/ stored and then installed monitoring devices in each room, while also posting a log on a clipboard for the daily recording of temperature and humidity. Two weeks later it came to be learned that not a single entry had been made on any of the logs and the issue noncompliance was raised to Infection Control. The Director of Infection Control, now upset that no one consulted her department before installing the monitoring devices, then demands to have them all removed, noting the fact that no such requirement exists. This costly and embarrassing situation could have been well avoided had there been better communications between the departments involved.

Working collectively between Infection Control and the Engineering department is therefore an essential function when addressing ventilation issues. The sharing of monitoring reports, testing results, infection data and policies and procedures is highly recommended for establishing processes that best fit each organizations site-specific needs. It is also important to recognize that each department serves individual roles in assuring a reasonable, common sense approach to defining policies and procedures while also assuring a safe environment. Engineering is responsible for the design, installation and monitoring of high-risk ventilation systems and Infection Control defines the acceptable parameters. Consider the analogy where Engineering is like a highway cop measuring the speed of cars with his radar gun and Infection Control is the courtroom judge. If a highway patrolman started issuing tickets to every vehicle whose speed was only in excess of 2 miles an hour over the speed limit, would the judge be welcomed to the flood of appeals that would invade their court? Highly unlikely. However this is why Infection Control has to be realistic in their approach toward Engineering's monitoring of ventilation issues and be willing to allow flexibility when creating / approving procedures that are not so rigid that would prove unreasonable to live up to. This cannot be achieved unless there is a sharing of the current polices and procedures as well as the documentation related to ventilation issues.

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Recognizing there will always be variables that affect ventilation in high risk areas within the hospital requires healthcare organizations to consider adopting practices that will achieve full "buy in" by both infection Control & Engineering and this can be effectively achieved with the risk assessment process.

In order to avoid the possible negative outcomes during survey related to ventilation issues, it is important to recognize the value of your own policies and procedures and validating your practices via the risk assessment process to defend your organization-specific protocols should you be challenged by surveyors. To effectively manage and document this risk assessment process here are some steps you may wish to consider:

1. Establish a team to create a list of high risk ventilation areas. This team should consist of Engineering, Infection Control, Safety, Operating Room, Lab and SPD Management. Using the list defined by your State's requirements would serve a good starting point but be sure to remember that these are only "design" criteria so your list may be expanded to include other areas not noted by the State.
2. Define a risk rating for each location using a simple method such as High, Medium or Low risk.
3. Determine whether to monitor and/or test each location based on the risk rating and define the frequency for said testing.
4. Identify in writing all the various measures currently in place as well as those proposed measures for validating the high risk location. For example if the operating rooms and SPD are already monitored on your Building automation system, take account of this. Also, if you are currently doing some level of testing such as a daily negative pressure test of an isolation room when in use, engaging outside contract providers to conduct annual, semiannual, quarterly air balance reports, monitoring and replacing of filters, etc. Take credit for ALL that you currently do to support the acceptability of your program so that surveyors are less likely to challenge it.
5. Have the team review the documentation and results for the above practices as well as existing policies and procedures defining set parameters for temperature, humidity, pressure relations and air changes. Solicit the team to recommend any possible changes to said practices and policies and procedures and assure that they agree to establish a response plan to address the "what if?" factor. In other words, what if the temperature is lowered beyond the set parameters? Does Engineering need to notify Infection Control, Safety, etc. What if it is only for a few minutes? Defining a duration period for allowable fluctuations is highly recommended. Does Infection Control really want to be called at 2 AM every time the humidity in the OR is measured at >60%?
6. Assure that site-specific validation is confirmed during this assessment process by having Infection Control come to the table with valid statistical data to substantiate that your rate of infections are well within the national averages. They should have readily accessible data since they must perform their own risk assessment as defined within TJC's Infection Control standards.
7. Record the minutes of your meetings and document the risk assessment process as detailed as possible. (A sample summary table can be found on pages 8 & 9 in the center of this issue) Once you have defined acceptable and sound policies and procedures, submit the results in summary for the approval of your Safety / EOC Committee and Infection Control Committee.

This risk assessment process can be easily adopted by any organization but not only will it lesson the intimidation of possible negative consequences during survey, but it also allows key members within the organization to establish processes that make sense to the site-specific needs of the organization as well as familiarize themselves with any potential conflicts with existing processes. For one New York based hospital system, this proved an invaluable tool in identifying drastic differences between Engineering and Infection Control policies and eventually settled issues related to when and where to monitor and test for temperature, relative humidity, pressure relations, etc. The summary table provided within the center of this issue serves as illustrative evidence on the decisions made by the risk assessment team.

SHOULD YOU BE CONCERNED?

The Joint Commission recently published a list of required Environment of Care documentation, encouraging Healthcare organizations to collect and organize copies of all their Utility and Fire Safety testing documentation in hopes that this information is readily available to illustrate evidence of compliance prior to the surveyor coming on site.

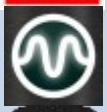
Although not mandatory at present, it does make sense to assure your organization has all their documentation in order in advance of your next survey. That is after all the true definition of continuous readiness. Why waste the surveyor's time in the field and cause possible frustration when he/she has to muster through piles of paperwork when you can have all your testing documentation collected and available for review online 24/7 via an electronic collection system and accessible from any computer with internet access.

At the present time most testing is performed by outside service providers, and some is performed in-house. Your contract service providers often submit their results electronically, while in-house testing is most often recorded on paper, which can be converted to electronic format for ease of uploading into our new software.

While we doubt that The Joint Commission will provide an electronic portal such as the eSOC for the submission of this required documentation, our software will enable your organization to provide surveyors with a log-in that will allow them to view only.

TSIG's new software is called ROPET—Repository of Physical Environment Testing and has four modules as follows:

FAST-All Fire Alarm Testing



EPST-All Emergency Power System Testing

ELST-All Emergency Lighting System Testing

MGST-All Medical Gas System Testing

The product will be available on the SaaS model (Software as a Service) for a minimal annual subscription fee, which will include educating the client's on its use and updates as required by changes in the standards / requirements.

For more information or a demo, please contact Noam Aberbach at 212 420 8724 x 238, or aberbachn@tsigconsulting.com

INSPECTION AND TESTING OF ESSENTIAL ELECTRICAL SYSTEMS

By Tom Lyons

The 2000 edition of NFPA 101, Sec. 7.9.2.3 requires that emergency generators be installed, tested and maintained in accordance with NFPA 110, Standard for Emergency and Standby Power Systems. Chapter 2 of NFPA 101 references the 1999 edition of NFPA 110.

Facilities that fall under Chapters 18 & 19 of the 2000 edition of NFPA 10, and afford treatment locations where patients require the use of life-support systems (e.g. hospitals, nursing homes with residents on ventilators) must also meet the maintenance and testing provisions of the 1999 edition of NFPA 99, Standard for Health Care Facilities [see NFPA 101- (2000 edition), New Healthcare Sections 18.2.9.2, 18.2.10.2, 18.5.1.2 and 18.5.1.3 and Existing Healthcare 19.2.8, 19.2.9.1, 19.2.10.1 and 7.8, 7.9, 7.10]. Provisions dealing with maintenance and testing of emergency generators can be found in the 1999 edition of NFPA 99, Sec. 3-4.4. This section starts out by referencing NFPA 110, but also deals with such issues as:

- Testing intervals
- Test conditions
- Personnel qualifications
- Maintenance and testing of circuitry
- Maintenance of batteries

In order to follow the requirements in NFPA 99 and NFPA 110, you need to know the classification systems used by those standards:

NFPA 99 treats emergency generators as part of an Essential Electrical System (EES), which is defined as, “A system comprised of alternate sources of power and all connected distribution systems and ancillary equipment, designed to ensure continuity of electrical power to designated areas and functions of a health care facility during disruption of normal power sources, and also to minimize disruption within the internal wiring system.” [see NFPA 99(1999 edition), Chapter 2, Definitions].

NFPA 99 breaks essential electrical systems down into three categories – Type 1, Type 2 and Type 3. Basically, the services provided by a facility determine the type of EES required as follows:

- NFPA 99(1999 edition), Sec. 12-3.3.2 requires essential electrical systems in hospitals to conform to Type 1 system requirements.
- NFPA 99(1999 edition), Sec. 16-3.3.2 requires essential electrical systems in nursing homes to conform to Type 2 system requirements. By exception, however, Type 3 systems are allowed in nursing homes that do not provide life support (e.g. ventilators).
- For a more detailed description of these three types of systems, see Chapter 3 of NFPA 99(1999 edition).

NFPA 110, on the other hand, treats emergency generators as part of an emergency power supply system (EPSS).

a. There are two important definitions to keep in mind [see NFPA 110(1999 edition), Chapter 2]:

- Emergency Power Supply (EPS): “The source of electric power of the required capacity and quality for an emergency power supply system (EPSS), including all the related electrical and mechanical components of the proper size and/or capacity required for the generation of the required electrical power at the EPS output terminals.”

Where a generator set is used for peak load shaving or operated during a power outage, such use is allowed to be substituted for a routine monthly test, provided the generator is operated in accordance with the standards and the appropriate data is recorded.

Continued on next page

A further explanation can be found in the Appendix [see NFPA 110(1999 edition), Sec. A-2-1]: "For rotary energy converters, components of an EPS include the following: prime mover, cooling system, generator, excitation system, starting system, control system, fuel system, and lube system, if required."

- Emergency Power Supply System (EPSS): "A complete functioning system of an EPS coupled to a system that can consist of conductors, disconnecting means, and over current protective devices, transfer switches, and all control, supervisory, and support devices up to and including the load terminals of the transfer equipment needed for the system to operate as a safe and reliable source of electrical power."

b. NFPA 110 breaks emergency power supply system's down into two categories – Level 1 and Level 2. Once you know the NFPA 99 classification of your emergency generator (i.e. Type 1, Type 2 or Type 3), that standard tells you where your generator fits into NFPA 110. NFPA 99(1999 edition), Sec. 3-4.1.1.4 specifies that:

- Type 1 and Type 2 essential electrical system power sources shall be classified as Level 1 generator sets per NFPA 110.
- Type 3 essential electrical system power sources shall be classified as Level 2 generator sets per NFPA 110.

Maintenance and testing – Applicable standards

Requirements for routine maintenance and operational testing of emergency generators can be found in:

- Chapter 6 of the 1999 edition of NFPA 110
- Sections 3-4.4, 3-5.4 and 3-6.4 of NFPA 99(1999 edition)

Maintenance and testing – General

1. Maintenance and testing is critical to the continued reliability of your emergency generator and must be performed in accordance with manufacturer's recommendations, instruction manuals, and the minimum requirements of NFPA 110 and the authority having jurisdiction (AHJ) [see: NFPA 110(1999 edition), Section 6-1.1].
2. Your organization should have at least two sets of instruction manuals for all major generator components. One set should be kept in a secure, convenient location near the equipment. The other set should be kept in a different secure location [see: NFPA 110(1999 edition), Section 6-2.1]. These manuals must, at a minimum, contain the following:

- Detailed repair instructions
- An illustrated parts list and part numbers
- Illustrated and schematic drawings of electrical wiring systems, including operating and safety devices, control panels, instrumentation and annunciators.

3. Special tools and testing devices necessary for routine maintenance must be available for use when needed [see: NFPA 110(1999 edition), Section 6-2.3].
4. Routine maintenance, inspection and operational testing of the emergency generator and associated components must be overseen by a properly trained person [see NFPA 99 (1999 edition), Sec. 3-4.4.1.1(b)3; NFPA 110(1999 edition), Sec. 6-4.7]. Evidence of such training should be kept in the designated employees' personnel file. In the absence of a properly trained person on-site, an outside vendor may need to be contracted to oversee the performance of all or part of these services.
5. The standards do not establish a specific date and time of day for required testing. Those are to be determined by management and are typically scheduled so as to provide minimum disruption of facility operations.

Weekly inspections

To meet federal certification and state licensure requirements, healthcare facilities must inspect their emergency generators weekly [see NFPA 110(1999 edition), Sec. 6-4.1]. At a minimum, this weekly inspection should include a check of the following:

1. Fuel (check main and day tank fuel supply levels; day tank float switch; piping, hoses and connectors; operating fuel pressure; and for any obstructions to tank vents and overflow piping
2. Oil (check for proper oil level and oil operating pressure; lube oil heater)
    - Engine oil level can be checked with the unit stopped or running on many engines; otherwise, it should be checked with the unit stopped
    - Oil operating pressure should normally be above 40 psi
3. Cooling system (check coolant level, water pump(s), jacket water heater, belts, hoses, fan)
4. Exhaust system (check drain condensate trap and for possible leakage)
5. Battery system [look for possible corrosion; check specific gravity, electrolyte level (a level between 1250 and 1275 is acceptable) and battery charger]
6. Electrical (conduct a general inspection of wiring and connections; check circuit breakers/fuses)
7. Prime Mover/Generator (Check for debris, foreign objects, loose or broken fittings; check guards and components; look for any unusual condition of vibration, leakage, noise, temperature or deterioration

NOTE: This is not an all-inclusive list. The equipment manufacturer may have additional maintenance requirements that will likely include monthly, quarterly, semi-annual and annual inspections and checks.

Monthly testing

1. To meet federal certification and state licensure requirements, healthcare facilities must exercise their emergency generators under load at least monthly [see NFPA 110(1999 edition), Sec. 6-4.1]. There are a number of ways to comply with this requirement:
    a. The base requirement is that generators be exercised for a minimum of 30 minutes using one of the following methods [see NFPA 110(1999 edition), Sec. 6-4.2]:
        i. Under operating temperature conditions and at not less than 30 percent of the generator's nameplate kW rating. A 100 kW generator, for example, would need to be exercised under a load of at least 30 kW to meet this requirement.
            - Normal operating temperatures are set by the manufacturer. Something to consider when scheduling your monthly tests is that your particular generator may not reach operating temperature in 30 minutes (Warm-up and cool-down times do not count toward the required 30 minutes) and that running the generator for short periods of time may be harmful to the engine. You also want to make sure that the generator runs long enough to ensure that all engine parts are properly lubricated.

        ii. Loading that maintains the minimum exhaust gas temperatures recommended by the manufacturer (it is unlikely that minimum exhaust gas temperatures will be reached if the generator isn't carrying a load equivalent to at least 30 percent of the generator's nameplate kW rating).

    b. An alternate method is also provided for diesel-powered generators that do not meet the testing requirements outlined in 1.a above. This could occur when, for example, a large generator in relation to the load is installed (e.g. either to account for the largest motor connected to the generator or to accommodate future expansion of the facility). Such generators can be exercised monthly with the available load and exercised annually with supplemental loads at 25 percent of nameplate rating for 30 minutes, followed by 50 percent of nameplate rating for 30 minutes, followed by 75 percent of nameplate rating for 60 minutes, for a total of 2 continuous hours [see NFPA 110(1999 edition), Sec. 6-4.2.2].also a waiver option is available from CMS in the August 30, 2013 S&C letter 13-58 which allows for a 90min (1hour 30 minutes) test as long as you meet the provisions of NFPA 110 (2010 edition) Sec. 8.4.2.3 and NFPA 110 (1999 edition) operational inspections and testing provisions.

    c. For gasoline-powered, natural gas-powered or propane-powered generators that do not meet the testing requirements outlined in 1.a above, it will likely be necessary to add more load to the generator or conduct a load bank test to comply with testing requirements (a load bank is, typically, a mobile piece of equipment that simulates the actual electrical load the generator is intended to power). Where equivalent loads are used for testing, it's important to note that such loads are required to be automatically replaced with the emergency loads in case of failure of the normal power [see NFPA 110(1999 edition), Sec. 6-4.2.1].

SAMPLE Medical Center Ventilation Risk Assessment PER NY STATE REQS

NEW | EXISTING HEALTHCARE

Area Description	AIA / FGI 2010		AIA 1996-1997				RISK H/M/L	MONITOR AIR CHANGES	MONITOR TEMP / HUM YES/NO	MONITORING FREQUENCY	PERFORMED BY (1)	TEMP FLEX	RH FLEX
	ACH	neg/pos	ACH	neg/pos	TEMP	RH							
Operating Room - Surgery / CC	20	+	15	+	68-73 (20-23)	30-60	HIGH	SEMI	YES	CONTINUOUS*	ENG-M BAS	ADOS	(+/-) 10 w 8/24hrs
Delivery Room - Surgery / CC	20	+	15	+	68-73 (20-23)	30-60	N/A	N/A	N/A				
Xray (Cardiac Cath) - Ancillary	15	+	15	+	-	-	HIGH	SEMI	YES	CONTINUOUS*	ENG-M BAS	-	-
Newborn Nursery - Suite - Nursing	6	0	6	0	75(24)	30-60	N/A	N/A	N/A				
Recovery Room - Surgery / CC	6	0	6	0	75(21)	30-60	HIGH	NO	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
Critical / Intensive Care - Surgery / CC	6	+	6	0	70-75(21-24)	30-60	HIGH	NO	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
Intermediate Care - Surgery / CC	6	0	No Design	No Design	-	-	MED	NO	NO	NO	N/A	-	-
Newborn Intensive Care - Surgery / CC	6	+	No Design	No Design	68-73 (20-23)	30-60	HIGH	CONTINUOUS	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
Iso Room - Protective Environ. - Nursing	12	+	12	+	75(24)	-	HIGH	CONTINUOUS	YES	NO	N/A	(+/-) 5° w 8/24hrs	-
Iso Room - Infectious Airborne - Nursing	12	-	12	-	75(24)	-	HIGH	CONTINUOUS	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	-
Iso Room - Ante Room - Nursing	10	+/-	10	+/-	-	-	MED	NO	YES	CONTINUOUS	ENG-M BAS	-	-
Patient Room - Nursing	6	0	2	0	70-75(21-24)	-	LOW	CONTINUOUS	NO	NO	N/A	(+/-) 5° w 8/24hrs	-
LDR Room - Recovery - Nursing	6	0	2	0	70-75(21-24)	-	N/A	N/A	N/A				-
LDR - Recovery - Postpartum - Nursing	6	0	2	0	70-75(21-24)	-	N/A	N/A	N/A				-
Patient Corridor - Nursing	2	0	2	0	-	-	LOW	NO	NO	NO	N/A	-	-
Toilet - Nursing	10	-	10	-	-	-	LOW	NO	NO	NO	N/A	-	-
Exam Room - Diag. / Treatment	6	-	6	0	75(24)	-	LOW	NO	NO	NO	N/A	(+/-) 5° w 8/24hrs	-
Medication Room - Diag. / Treatment	4	+	4	0	75(24)	-	LOW	NO	NO	NO	N/A	(+/-) 5° w 8/24hrs	-
Pharmacy - Ancillary	4	+	4	0	-	-	LOW	SEMI	YES	CONTINUOUS	ENG-M BAS	-	-
Treatment Room - Surgery / CC	6	0	6	0	75(24)	-	HIGH	NO	NO	NO	N/A	(+/-) 5° w 8/24hrs	-
Trauma Room - Surgery / CC	15	+	15	+	70-75(21-24)	45-60	HIGH	NO	NO	NO	N/A	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
Endoscopy Room - Surgery / CC or Diagnostic / Treatment	15	+	6	0	68-73 (20-23)	30-60	HIGH	CONTINUOUS	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
Endoscopic Instrument Process - Diagnostic / Treatment	10	-	No Design	No Design	-	-	MED	NO	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
Bronchoscopy Room - Surgery / CC	12	-	12	-	68-73 (20-23)	30-60	HIGH	CONTINUOUS	YES	CONTINUOUS	ENG-M BAS	(+/-) 5° w 8/24hrs	(+/-) 10 w 8/24hrs
ER Waiting Room - Surgery / CC	12	-	No Design	No Design	-	-	MED	NO	YES	ANNUAL	ENG-M PM	-	-
Triage - Surgery / CC	12	-	No Design	No Design	-	-	MED	NO	NO	NO	N/A	-	-
Radiology Waiting Room - Surgery / CC	12	-	No Design	No Design	-	-	LOW	NO	NO	NO	N/A	-	-
Procedure Room - Surgery / CC	15	+	No Design	No Design	-	-	MED	NO	YES	CONTINUOUS	ENG-M BAS	-	-
X-Ray Room - Diag. / Treatment	6	-	6	0	70-75(21-24)	30-60	LOW	NO	NO	NO	N/A	(+/-) 5° w 8/24hrs	-
X-Ray / Image Waiting Room - Diag. / Treatment	12	-	No Design	No Design	75(24)	-	LOW	NO	NO	NO	N/A	(+/-) 5° w 8/24hrs	-

Approved per Infection Control & EC Committee

Per CMS Ref: S&C: 13-25-LSC & ASC

RH of ≥20 Percent Permitted in Anesthetizing Locations: The Centers for Medicare & Medicaid Services (CMS) is issuing a categorical LSC waiver permitting new and existing ventilation systems supplying hospital and critical access hospital (CAH) anesthetizing locations to operate with a RH of ≥20 percent, instead of ≥35 percent. We are also recommending that RH not exceed 60 percent in these locations.

ADOS= At Discretion of Surgeon (footnote a. of ASHRAE Table)

Laser Eye Room - Surgery / CC	15	+	No Design	No Design	-	-	N/A	NO	N/A				-
Phys.Therapy (Hydro) - Diag. / Treatment	6	-	6	-	n/a	-	N/A	NO	N/A				-
Soiled Utility (workrm) - Diag. / Treatment	10	-	10	-	-	-	LOW	NO	NO	NO	N/A	-	-
Clean Utility (workrm) - Diag. / Treatment	4	+	4	0	-	-	LOW	NO	NO	NO	N/A	-	-
Autopsy Room - Ancillary	12	-	12	-	n/a	-	MED	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Darkroom - Ancillary	10	-	10	-	-	-	LOW	NO	NO	NO	N/A	-	-
Nonrefrigerated Body Holding - Ancillary	10	-	10	-	-	-	MED	NO	NO	NO	N/A	-	-
Bedpan Room - Service	10	-	10	-	-	-	LOW	NO	NO	NO	N/A	-	-
Bathroom / Toilet - Service	10	-	10	0	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Jan Closet / Housekeeping - Service	10	-	10	-	-	-	LOW	NO	NO	NO	N/A	-	-
Sterilizer Equipment - Sterilizing / Supply	10	-	10	-	-	-	MED	NO	NO	NO	N/A	-	-
ETO-Sterilizer Room - Sterilizing / Supply	10	-	10	-	n/a	as-so	MED	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	
Sterile Storage - Sterilizing / Supply	4	+	4	0	-	(MAX) 70	MED	SEMI	YES	CONTINUOUS*	ENG-M BAS	(+/-) 5" w.g./24hrs	-
Soiled Linen/ Trash Room - Service	10	-	10	-	-	-	LOW	NO	NO	NO	N/A	-	-
Lab - General - Ancillary	6	-	6	0	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Nuclear Med - Ancillary	6	-	6	-	n/a	-	MED	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Pathology - Ancillary	6	-	6	-	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Cytology - Ancillary	6	-	6	-	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Biochemistry - Ancillary	6	-	6	+	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Histology - Ancillary	6	-	6	-	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Microbiology - Ancillary	6	-	6	-	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Serology - Ancillary	6	-	6	+	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Glass Washing - Ancillary	10	-	10	-	n/a	-	LOW	NO	NO	NO	N/A	(+/-) 5" w.g./24hrs	-
Lab - Sterilizing - Ancillary	10	-	10	-	-	-	MED	NO	NO	NO	N/A	-	-
Food Prep - Service	10	0	10	0	-	-	MED	NO	NO	NO	N/A	-	-
Ware Washing - Service	10	-	10	-	-	-	MED	NO	NO	NO	N/A	-	-
Dietary Storage - Service	2	0	2	-	-	-	LOW	NO	NO	NO	N/A	-	-
Laundry - General - Service	10	-	10	0	-	-	MED	NO	YES	CONTINUOUS	ENG-M BAS	-	-
Soiled Linen - Sorting & Storage - Service	10	-	10	-	-	-	MED	NO	YES	CONTINUOUS	ENG-M BAS	-	-
Clean Linen - Storage - Service	2	+	2	0	-	-	MED	NO	YES	CONTINUOUS	ENG-M BAS	-	-
Anesthesia Gas Storage - Surgery / CC	8	-	8	0	-	-	LOW	NO	NO	NO	N/A	-	-
Soiled / Decontam - Sterilizing / Supply	6	-	6	-	as-n/a-as	-	MED	SEMI	YES	CONTINUOUS*	ENG-M BAS	(+/-) 5" w.g./24hrs	-
Clean Workroom - Sterilizing / Supply	4	+	4	+	n/a	as-so	MED	SEMI	YES	CONTINUOUS*	ENG-M BAS	(+/-) 5" w.g./24hrs	(+/-) 10 w.g./24hrs

REQUIRED FOR ANY NEW CONSTRUCTION OR HVAC REPLACEMENT SYSTEMS

REQUIRED FOR EXISTING CONSTRUCTION PRIOR TO 2010

SAMPLE VENTILATION RISK ASSESSMENT

CDC Health Advisory for Cleaning, Disinfecting and Sterilizing Reusable Medical Devices

by Dean Samet, CJCS, CHSP

In their September 11, 2015 Health Alert Network, the Centers for Disease Control and Prevention posted a CDC Health Advisory for an immediate need for healthcare facilities to review procedures for cleaning, disinfecting, and sterilizing reusable medical devices. Recent media reports describe instances of patients being notified that they may be at increased risk for infection due to lapses in basic cleaning, disinfection, and sterilization of medical devices. These events involved failures to follow manufacturers' reprocessing instructions for critical (e.g., surgical instruments) and semi-critical items (e.g., endoscopes for upper endoscopy and colonoscopy, and laryngoscope blades) and highlight the need for healthcare facilities to review policies and procedures that protect patients.

Healthcare facilities should arrange for a healthcare professional with expertise in device reprocessing to immediately assess their reprocessing procedures. This assessment should ensure that reprocessing is done correctly, including allowing enough time for reprocessing personnel to follow all steps recommended by the device manufacturer. The following actions should be performed:

Healthcare facilities should provide training to all personnel who reprocess medical devices.

- Training should be required and provided:
  - ◊ Upon hire or prior to provision of services at the facility
  - ◊ At least once a year
  - ◊ When new devices or protocols are introduced, including changes in the manufacturer's instructions for use during the device's life cycle
- Personnel should be required to demonstrate competency with device reprocessing (i.e., trainer observes correct technique) prior to being allowed to perform reprocessing independently.
- Healthcare facilities should maintain current documentation of trainings and competencies.
- If the healthcare facility hires a contractor for device reprocessing, the facility should verify that the contractor has an appropriate training program and that the training program includes the specific devices the healthcare facility uses.
- Copies of manufacturers' instructions for operating and reprocessing each type of reusable device should be readily available to staff and inspectors. This file should include instructions for use of chemical disinfectants.

Healthcare facilities should regularly audit (monitor and document) adherence to cleaning, disinfection, sterilization, and device storage procedures. Audits should assess all reprocessing steps, including:

- ◊ Performing prompt cleaning after use, prior to disinfection or sterilization procedures
- ◊ Using disinfectants in accordance with manufacturers' instructions (e.g., dilution, contact time, storage, shelf-life)
- ◊ Monitoring sterilizer performance (e.g., use of chemical and biological indicators, read-outs of sterilizer cycle parameters, appropriate record keeping)
- ◊ Monitoring automated endoscope reprocessor performance (e.g., print out of flow rate, time, and temperature, use of chemical indicators for monitoring high-level disinfectant concentration)

Continued on next page

- ◊ Audits should be conducted in all areas of the facility where reprocessing occurs.
- ◊ Healthcare facilities should provide feedback from audits to personnel regarding their adherence to cleaning, disinfection, and sterilization procedures.

Healthcare facilities should allow adequate time for reprocessing to ensure adherence to all steps recommended by the device manufacturer, including drying, proper storage, and transport of reprocessed devices.

- Considerations should be made regarding scheduling of procedures and supply of devices to ensure adequate time is allotted for reprocessing.
- Healthcare facilities should have protocols to ensure that healthcare personnel can readily identify devices that have been properly reprocessed and are ready for patient use (e.g., tagging system, storage in a designated area).
- Healthcare facilities should have policies and procedures outlining facility response in the event of a recognized reprocessing error or failure. Healthcare personnel should assess the cause of the error or failure and the exposure event in order to determine the potential risk of infection. The procedure should include how patients who might have been exposed to an improperly reprocessed medical device would be identified, notified, and followed.
- Individuals responsible for infection prevention and reprocessing at the healthcare facility should be consulted whenever new devices will be purchased or introduced to ensure that infection control considerations are included in the purchasing decision as well as subsequent implementation of appropriate reprocessing policies and procedures and to ensure that the recommended reprocessing equipment is available at the healthcare facility.
- Healthcare facilities should maintain documentation of reprocessing activities, including maintenance records for reprocessing equipment (e.g., autoclaves, automated endoscope reprocessors, medical washers and washer-disinfectors, water treatment systems), sterilization records (physical, chemical, and biological indicator results), and records verifying high-level disinfectants were tested and replaced appropriately.
- Healthcare facilities should follow manufacturer recommendations for maintenance and repair of medical devices that are used to perform reprocessing functions as well as medical devices that are reprocessed. If healthcare facilities contract maintenance and repair of these devices to third-party vendors, healthcare facilities should verify that these vendors are approved or certified by the manufacturer to provide those services.

The Centers for Disease Control and Prevention (CDC) and U.S. Food and Drug Administration (FDA) are alerting healthcare providers and facilities about the public health need to properly maintain, clean, and disinfect or sterilize reusable medical devices. Recent infection control lapses due to non-compliance with recommended reprocessing procedures highlight a critical gap in patient safety**.** Healthcare facilities (e.g., hospitals, ambulatory surgical centers, clinics, and doctors' offices) that utilize reusable medical devices are urged to immediately review current reprocessing practices at their facility to ensure they (1) are complying with all steps as directed by the device manufacturers, and (2) have in place appropriate policies and procedures that are consistent with current standards and guidelines.

Examples of relevant guidance include CDC's Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 available at http://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf; and guidance from the Association for the Advancement of Medical Instrumentation (AAMI), available at http://www.aami.org/standards/index.aspx. Health care administrators should work with their infection prevention personnel and accreditation organizations to ensure that all recommendations are properly implemented to protect patients and personnel.

The Anatomy and Physiology of Healthcare Facilities Management

By Ode Keil

The words facilities management or maintenance are used dozens of times a day in any hospital across the United States. They are usually associated with a request for repair of some part of the physical environment or management of the temperature, humidity or other environmental variable.

Is repairing something or adjusting some environmental variable really what facilities management is about? I believe it is not. Those actions are tasks that are part of a group of activities that manage the image of the physical environment of the hospital. That image is an important part of delivering a quality patient experience and employee satisfaction.

The anatomy of managing the image of the physical environment is made up of a group of functions. They include facilities management, clinical engineering, safety, security, environmental services, grounds management and design and construction. These related functions make up an ecosystem that each part of a healthcare organization draws from according to its particular needs. A large academic medical center requires more diverse and more intense services from each function than an outpatient primary care center or a business operations office building. If each draws the correct mix of services from each function they are maintained to a qualitatively equal standard. The services each draws from the anatomical functions is the physiology of the facilities management

An ecosystem is a related group of functions that works as a living entity. It has the capability of delivering sustaining resources, intervening when disease or decay affect it and the capability to adapt to changes in the environment in which it functions. The anatomy of the facilities management ecosystem is fairly simple. The physiology is not.

The physiology consists of humans, machines and procedures and controls. The physiology has to be designed around the needs of the healthcare or business services housed in the physical environment. The physiology accounts for the exterior and interior physical environment. The design is developed from an understanding of the needs of the occupants and the dependencies that exist between the physical environment and the services housed in the environment.

For example, an operating room requires clean air, cleanable surfaces on all six sides of the cube that make up the room, access to many electrical, data and medical gas outlets, and other resources to support the patient, surgeon, nursing and technical staffs that perform procedures in the room. These services require a complement of electrical and mechanical systems designed and managed to meet codes and standards.

Over time the physiology has evolved from basic to complex. The basic physiology was fairly static. It required a high level of human activity over the course of everyday – 24/7/365. The complex physiology requires far less human intervention as it comes equipped with sensors, analytical software and controllable components. Working in concert the sensors make decisions many times a minute. These decisions are used to adjust the performance of the system without sending a human being with a tool to make an adjustment and wait for a time to determine if the desired effect is achieved.

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The complexity is a permanent part of the physiology. As it becomes more and more complex one of the challenges of facilities management is to avoid adding complications to it. Complications are changes to the physiology designed to fix a symptom or respond to a complaint. They introduce parameters the overall system cannot adjust against. Over time the complications erode the capabilities of the physiology to the point it is no longer capable of effectively adapting to daily demands.

The art of managing this ecosystem is twofold. The first is setting up the system appropriately. The second is allowing the system to perform as designed. If the setup is not appropriate it cannot be managed by constant tweaking. The setup must be repeated to allow the equipment, controls and software to perform as designed.

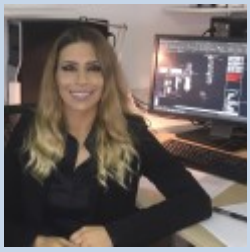
Facilities management is striving for knowledge. The knowledge is essential for understanding whether the environment is appropriate for all who use it. Generating knowledge is an inherent part of the physiology. In modern buildings the knowledge is generated by the equipment and systems through the use of sensors and applications that process data to determine if desired conditions are being maintained and managed. The knowledge includes conditions to which the system cannot adjust. When the operators are informed they can act to do what the equipment cannot.

The symbiosis of men and machines is evolving at a rapid rate. The ability of machines and control systems to generate and act on knowledge is moving forward very quickly. In healthcare it is less developed than in many manufacturing industries. We are catching up in a hurry. The next generation of healthcare facilities managers will have many more machines capable of “thinking” and adapting to changing conditions. As the capability of machines continues to displace more and more tasks previously performed by people the facilities manager will have more opportunities to use knowledge to optimize more and more aspects of the entire ecosystem.

From Our CEO

There are a great many people who work behind the scenes at TSIG that our clients and readers rarely have a chance to physically come face to face with, but whose efforts I am sure are well appreciated by not only you, but to our organization as a whole. It is for that reason why I am proud to announce two of our office staff who have recently received promotions for their dedicated service and unequalled commitment to providing excellence in our client deliverable. So much so, that I feel compelled to include their photos so all our readers can place a name to their face and feel free to extend your congratulations to them the next time you may come in contact with them via phone or email.

Daniela Carrillo has been promoted to Vice President of TSIG Software Enterprise, who will be responsible for managing TSIGWorks, our Building Maintenance Program (BMP) software and our Repository of Physical Environment Testing (ROPET) hosting service and our Environment of Care (EC) Rounding software.



Olga Villegas has been promoted to Vice President of TSIG Accreditation Support, who will be responsible for managing our AutoCAD Team while directly overseeing the direct link for necessary documentation to field staff for preparation and delivery of all Statement of Conditions (SOC), AutoCAD and EC deliverables.




TSIG Consulting is pleased to introduce our new strategic partner

Architectural Preservation Studio, PC

Architectural Preservation Studio is a full-service design professional service corporation founded in 2015 by a collaboration of architects, preservationists, exterior envelope and material conservators. We are a Women Business Enterprise certified by the WBENC and one of the nation's leaders in historic preservation, with advanced expertise in facade restorations and exterior envelope repairs. Our professional staff has collaborated for the past 35 years and has completed hundreds of projects with individual construction costs ranging from $100,000 to well over $50 million.

Architectural Preservation Studio assists clients in determining the condition of their building's exterior envelope. Elements that can be inspected include:

- Exterior Walls
- Roofs and Bulkheads
- Copings
- Parapets
- Cornices
- Fire Escapes
- Guardrails
- Communication Equipment
- Canopies
- Balusters
- Windows
- Window Guards
- Balconies
- Flagpoles
- Signs

Architectural Preservation Studio offer the following professional services:

- Condition Assessments
- Roof Investigations and Thermography
- Leak Investigations
- Drawings and Specifications
- Façade/Envelope Repairs
- Window Replacements
- Design of New Roofing Systems
- Construction Administration
- Materials Testing
- Cost Estimating
- 3D Laser Scanning
- Peer Review

Architectural Preservation Studio's representative hospital clients include:

- Mount Sinai Health System
- NY-Presbyterian Hospital
- NY-Presbyterian Columbia University
- NY-Presbyterian Queens
- New York City Public Health Labs
- SUNY Downstate Medical Center

We have offices in New York, New Jersey, and Connecticut and are available to consult on hospitals across the United States.

212.477.7976 / info@preservationstudio.com / www.preservationstudio.com




TJC Survey Process and Agenda Revisions
by Dean Samet, CJCS, CHSP

The Joint Commission (TJC) clarified expectations regarding on-site evaluations of Life Safety and Environment of Care compliance in a September 2015 EC News article. TJC also updated their Survey Activity Guide (SAG) to include a Life Safety and Environment of Care - Document List and Review Tool.

One significant change is that hospital staff must be available to assist the Life Safety Surveyor with document review immediately upon arrival so that the surveyor may provide and achieve a thorough and efficient facility assessment. To help staff prepare for this initial document review, the SAG has been updated with a Document List Review Tool which is designed to help organizations in conducting continuous compliance readiness efforts and show selected documents that will be reviewed by the Life Safety Code Surveyor. Note: Other Environment of Care and Life Safety documents may be requested by surveyors on an as needed basis throughout the survey.

"Life Safety and Environment of Care – Document List and Review Tool"

Standard LS.01.01.01: Buildings serving patients comply with the NFPA 101 (2000 edition); EP's 1-4
Standard LS.01.02.01: Interim Life Safety Measures (ILSM); EP's 1-14
Standard EC.02.03.01: Hospital Manages Fire Risk – Fire Response Plan; EP's 9 & 10
Standard EC.02.03.03: Fire Drills; EP's 1-5
Standard EC.02.03.05; Fire Protection and Suppression Testing and Inspection; EP's 1-20
Standard EC.02.05.07: Emergency Power Systems are Maintained and Tested; EP's 1-10
Standard EC.02.05.09: Medical Gas and Vacuum Systems are Inspected and Tested; EP's 1-3.

The Life Safety Survey Agenda has also been revised to include more detail on the activities that will be conducted by the Life Safety Code Surveyor. George Mills, MBA, FASHE, CEM, CHFM, CHSP, director of engineering for The Joint Commission, spoke during the July 2015 Annual Conference of the American Society for Healthcare Engineering in Boston. Included in his talk were some changes in the survey process whereby the Life Safety Code Surveyor will start by:

1) Reviewing the Statement of Conditions (SOC) and Plans for Improvement (PFIs)
2) Reviewing any existing [CMS] waivers or [TJC] equivalencies
3) Going to operating rooms, assessing ventilation & checking for pressure differentials
4) Performing Life Safety Code building tour for rest of the first day.
Note: Per the July 2015 SAG update, the building tour will be continued during remaining survey days including an Environment of Care Session and an Emergency Management Session.

Upon arrival by the surveyor, an escort will be needed to take him/her to the main fire alarm panel to verify that it is functional. The surveyor will then meet with an organization staff member(s) to become oriented to the layout of the building. This activity is greatly facilitated if the organization has current floor plans / drawings available that display the required building Life Safety features. Other documents needed for this session include your organization's:

- Policies and procedures for Interim Life Safety Measures (ILSMs)
- Written fire response plans
- Evaluations of fire drills conducted for the past 12 months
- Maintenance records for fire protection and suppression equipment
- Maintenance records for emergency power systems
- Maintenance records for piped medical gas and vacuum systems

A detailed listing of these documents can be found at http://www.jointcommission.org/life_safety_code_information_resources/ as well as on the *Joint Commission Connect* extranet site.)

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TSIG News

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WHAT OUR CLIENTS SAY ABOUT TSIG:

TSIG and Jerry Stewart are a great fit for our organization. Jerry's knowledge, expertise and interpersonal skills are key and much appreciated to help lead us to success. Thank you for the ease of scheduling to meet the needs of our projects and the excellent quality of service delivered.

Carol Ann Jenkins, MPH, FACHE
Director, Accreditation and Survey Readiness
All Children's Hospital, Inc.