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RISK ASSESSMENTS

Many current codes and standards have evolved an approach to safety where the requirements are based on specific risks associated with a particular building and function. This allows facilities to apply the most resources to the areas where the risk is greatest. This risk-based approach to safety requires a high level of planning and coordination. Since each code uses different terms, or requires different documentation, this document intends to provide clarity.

Risk assessments create a foundational understanding of how the built environment should respond to the hazard identified. They are specific to a unique combination of a particular location and a particular function. This approach may allow relaxed requirements in low risk areas and increased requirements for higher risk areas. To substantiate this, there must be an inventory of the physical environment and range of hazards associated with the function of that area. A multi-disciplinary team that looks at the environment from different perspectives is needed. Risk assessments should be developed early in the design process. There must be a commitment to revisit and re-assess the risk assessment to ensure that the conclusions are the same.

CRS will not require every project to submit formal documentation of a risk assessment. New buildings, new licenses, or projects that fundamentally change the nature of the patients or operation of a facility need a comprehensive analysis of risk. These risk assessments must be reviewed and approved by CRS. Risk assessments that affect the design/construction of a licensed building are listed below, arranged by the code or standard that mentions them.

NFPA 99	FGI Guidelines	NFPA 101
Medical Gas	Safety Risk Assessment	Fire Safety Evaluations
Electrical Equipment	-Infection Control	
-Gas	-Patient Handling	
-Electrical	-Fall Prevention	
Hyperbaric Systems	-Medication Safety	
-HVAC	-Behavioral Health	
-Plumbing	-Patient Immobility	
	-Security Risks	
	Disaster Plans	

NFPA 99, the Healthcare Facilities Code

Risk Assessments. NFPA 99 uses a four-tier categorization of risk based on the likelihood of human injury. This system is used to individually analyze each of the building systems described in the subsequent chapters. That is, a facility can have a Category 1 medical gas system, but a Category 3 heating system.

- Category 1 – Failure of systems is likely to cause major injury or death of patients or caregivers
- Category 2 – Failure of systems is likely to cause minor injury to patients or caregivers
- Category 3 – Failure of systems is not likely to cause injury to patients or caregivers, but can cause patient discomfort
- Category 4 – Failure of systems have no impact on patient care

There are two main approaches to determining the categorization of a system. Traditionally, hospital owners and designer assume a hospital will be the highest level of risk (Category 1). This approach is still allowed. This decision allows designers to quickly move on a design. Also, a Category 1 building will have the flexibility to support a wide range of risks. The potential downside is increased initial cost.

Alternatively, facilities can opt to analyze each system component (every electrical outlet, chiller, medical gas pipe, etc.) and assess the risk individually. This allows a scaleable approach, but requires much more effort to develop. This approach also requires continual reassessment and may limit the function of the building. Practically, a design project may contain a mix of these approaches. One good tool for organizing a very detailed risk assessment can be found on the American Society for Healthcare Engineering's website: http://www.ashe.org/resources/riskassessmenttool.shtml

Wet Procedure location assessment. This is a very specific risk assessment relating to the provision of isolated power in operating rooms. While this is a component of the electrical systems risk assessment, a different set of questions are asked. One good tool for this can be found on the American Society for Healthcare Engineering's website: http://www.ashe.org/resources/wetloctool.shtml

When to submit NFPA 99 risk assessments

	Med Gas	Electrical	Equipment		Systems	
			Gas	Elec.	HVAC	Plumbing
Generator Replacement	N	Y	N	N	*	N
Upgrades to EES System	N	*	N	N	*	N
Renovation OR Suite	*	*	*	*	*	*
Renovation entire floor	Y	Y	*	*	*	*
Finish replacement	N	N	N	N	N	N
Building Addition	Y	Y	*	*	*	*
New Building	Y	Y	*	*	Y	Y

Legend:

N No - do not provide during CRS review

Y Yes – provide during CRS review

***** Maybe - contact CRS reviewer

Note: you always consider the impacts to these systems during any projects and document significant decisions.

The FGI Guidelines

Safety Risk Assessment (SRA). The SRA is a broad term for multidisciplinary, documented assessment process intended to proactively identify hazards and risks and mitigate underlying conditions of the built environment that can contribute to adverse safety events. The SRA evaluates underlying conditions that contribute to an unsafe environment based on the following components:

- Infection Control (ICRA)
- Patient Handling and Movement (PHAMA)
- Patient Fall Prevention
- Medication Safety
- Behavioral and Mental Health
- Security Risks

The FGI prescribes a multidisciplinary team, whose membership varies on the particular component listed above. This team could include:

- Frontline clinical caregivers
- Facility management staff
- Performance/ Improvement experts
- Safety specialist
- Security specialist(s)
- Infection preventionists
- Architects, designers, and/or engineers
- Human factor specialists

One important resource for completing the safety risk assessment is the on-line tool provided by the Center for Healthcare Design found here.
https://www.healthdesign.org/sra/about/guide

Infection Control Risk Assessment (ICRA).

The ICRA is a multidisciplinary process that assesses the impact of the built environment on infection control. The ICRA is divided into two parts: the assessment of the planned product (the design) and an assessment of the patients during construction. Historically, the term "ICRA" has been used to describe the measure that you use to prevent infections caused by construction.

> **The Design ICRA** would include an assessment of the infrastructure, patient flow, cleaning and waste removal systems. Specifically this would describe: the number and location of handwashing stations, need for Airborne Infection Isolation (AII) rooms, choice of finishes, etc.
>
> **The Construction ICRA** deals with infection control risk mitigation recommendations (ICRMRs) would include instructions for how to protect patients during renovation. Specifics would include: location of dust and vapor barriers; method of exhausting dirty construction air; procedures for working in sensitive areas. **Phasing plans.** These may be part of the construction documents, but if not, a timeline that identifies key points at which any particular area will be used is required. This should be created by the design team with input from clinical and operational staff.

Emergency Operations plan.

While not part of the Safety risk assessment, the FGI describes the development of a comprehensive Emergency Operations Plan. Every licensed hospital should have a plan for dealing with events that will affect it's operation. Facilities that plan prolonged operations will have more robust plans and support equipment vs. facilities that will cease function. Comprehensive plans will include responses to fire, weather, security, environmental, oceanic, volcanic, seismic, chemical, biologic, radiological, nuclear, transportation, political, and energy disasters. Many of the infrastructure systems described in NFPA 99 are engineered to support facilities during these events.

While this is a requirement of the FGI there is significant overlap with state licensing and federal certification requirements. This plan should be created by a team of medical, administrative, facility, safety and security staff with interaction from local and state planning agencies. CRS requires a copy of your plan with a new facility or building is built, and an update when significant changes are made.

When to provide FGI risk assessments

	Design ICRA	Construction ICRA	PHAMA	Fall Prevention	Medication Safety	Behavioral Health	Security
Patient Room							
Renovation ICU Unit							
Behavioral Health Unit							
Bariatric Unit							
Emergency Department							
Patient Lifts							
Finish Upgrades							
Building Addition							
New hospital	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**

Legend:

N No does not need to be submitted for CRS review

Y Yes submit to CRS for review

***** May need to be submitted, contact CRS reviewer

Note: you always consider the impacts to these systems during any projects and document significant decisions.

NFPA 101, The Life Safety Code

The Life Safety Code allows several alternates for evaluating fire and life safety systems. There is a performance chapter (Chapter 5) and there is a fire/life safety valuation procedure described in NFPA 101A. Both of these approaches may be appropriate in certain circumstances. Since NFPA 101 is adopted across several jurisdictions, the use of either approach should be identified very early in the design process and be closely coordinated across multiple jurisdictions. If you identify that you want to use one of these approaches, contact CRS as soon as possible.