

ISHE ISSUES

Publication by and for the
Healthcare Engineering Industry

Q1 2005

FEATURES IN THIS ISSUE

Elkhart General Hospital Opens \$65 Million Expansion
Using Commissioning To Make Sure Your Facility Works
Preventing UPS Battery Failures
DocuNet Improving Communications Within Design Industry
The Safety Corner
The Hospital of the Future

FEATURE ARTICLE:

***Elkhart General Hospital Opens \$65 Million Expansion
...see page 4***



***CHFM Certification is coming to the Midwest
Healthcare Conference & Trade Show***

...see page 19



*Featured Contributors
and Sponsors*



Proceed with confidence.



Table of Contents

FEATURES

- 4 Elkhart General Hospital Opens \$65 Million Expansion
- 5 Using Commissioning To Make Sure Your Facility Works
- 6 Preventing UPS Battery Failures
- 9 DocuNet Improving Communications Within Design Industry
- 10 The Safety Corner
- 14 The Hospital of the Future

NEWS

- 18 Free Training Behavioral Health Awareness for Terrorism and Disasters April 4-5, 2005.
- 19 Midwest Healthcare Engineering Conference & Trade show Agenda
- 19 Certified Healthcare Facility Manager (CHFM) Examination

Wanted: Articles

If you would like to contribute an article and photos to the next issue of ISHE Insights, please contact Steve Thurston at sthurston@indy.rr.com. Materials would be due by May 16.

ISHÉ ISSUES

Publication by and for the
Healthcare Engineering Industry

Indiana Society for Healthcare Engineering Board of Directors

PRESIDENT

William Matthews
Methodist Hospitals for Southlake Campus

VICE PRESIDENT

Wayne Fairburn
St. Vincent Hospitals & Health Services

TREASURER

Victor Detienne
St. Vincent Hospitals & Health Services

SECRETARY, ADVOCACY LIAISON, ASHE LIAISON

Tim Adams
Bloomington Hospital & Healthcare System

NORTHERN DISTRICT CHAIRMAN

Brent Bartholomew
Ball Memorial Hospital

NORTHERN DISTRICT VICE CHAIRMAN

Mike Scott
Kosciusko Community Hospital

SOUTHERN DISTRICT CHAIRMAN

Randy Wilcox
St. Vincent Hospital

SOUTHERN DISTRICT VICE CHAIRMAN

Ron Shake
Sullivan County Community Hospital

IMMEDIATE PAST PRESIDENT

Marc Hyde
St. Francis Hospital and Health Centers
Beech Grove, IN

ASSOCIATE BOARD MEMBER

Stephen J. Thurston
Energy Consultants Inc.

PUBLISHED BY

Stephen J. Thurston
V.P. Business Development
C.M. Buck & Associates

DESIGN AND PRODUCTION

Stevens & Stevens LLC

About ISHE ISSUES

ISHE ISSUES is a quarterly publication by and for the Healthcare Engineering Industry.

Our goal is to promote communication between members and to facilitate the exchange of information for the betterment of our Society and of our Members.

ISHEweb.org's goal is to promote communication between members and to facilitate the exchange of information to those interested in becoming a member. You also have access to an electronic copy of ISHE ISSUES, our quarterly newsletter, as well as an updated Calendar of Events. For more information, log on to isheweb.org.

Opinions expressed in articles are those of the authors, not necessarily those of the Advisory Board of membership.

Credo

The members of ISHE continually strive to live up to motto, "Quality Healthcare Through Engineering Excellence."

That quality and excellence is best achieved in an environment of teamwork and cooperation between the professionals entrusted with attaining the overall goals of healthcare organizations and of the individual institutions that we serve.

That a continuing program of skills enhancement is important, and participation of individuals working together will improve the standards and performance of all in the group.

That the application of advancements in our field, coupled with conscientious attention to the costs of operation is necessary to achieve maximum efficiency in the carrying out of our duties.

That we have responsibility to the public to provide safe and dependable institutions dedicated to the highest ideals of patient care, and to foster this image in community relations.

That the collective interchange of knowledge and experience, couple with the individual integrity of the membership, will make ISHE an effective means of advancing its members in their profession.

Mission Statement

The mission of the Indiana Society for Healthcare Engineering is to promote the professional role of the healthcare engineering professional and advance the development of health care engineering through effective communication, educational opportunities and establishment of professional standards.

Elkhart General Hospital Opens \$65 Million Expansion



The Main Entrance of the West Wing opened on January 17 and is more than a pretty new place on the Elkhart General Hospital campus. The \$65 million, 181,680 square-foot expansion consists of three levels, one below ground and two above. It provides a new main entrance, lobby and admissions center for the hospital and centralization of many services for its patients, particularly women. The building will deliver some of the newest technology in health care.

The first floor will house the Bone Health Clinic, Urinary Continence Clinic, Menopause Clinic, Fibromyalgia self-help classes, LifeSteps Weight Management classes, Postpartum Depression Counseling, Women’s Resource Center, and massage therapy.

Another major program on the first floor is the Breast Care Center, which will be the first in the State of Indiana to offer Full Field Digital Mammography to all women. The benefits of this new technology include faster examination times, reduced radiation doses, and reduced likelihood of being called back for additional images.

All the Hospital’s Women’s Services are relocating to the West Wing, including a second floor Maternity Center with 36 Labor-Delivery-Recovery and Post-partum (LDRP) beds which allow the entire birthing experience to take place in one room. The Maternity Center includes a well baby nursery, an eight-bed Neonatal Intensive Care Unit, and a state-of-the-art infant protection system. C-sections are performed on the same floor, which minimizes disruption to the overall birthing experience.

The lower level of the new wing involves an expanded and renovated Cancer Center, particularly the Radiation Oncology Center, a project designed to provide patients and their families with the best experience possible during what can be particularly sensitive times. The Lower Level also contains a completely new Ambulatory Infusion Center, a courtyard with fountain, and a Cancer Learning Center.

With long range planning in mind, the new building was designed to grow vertically. It is constructed to accommodate a total of ten stories of replacement facility, should it become necessary in the future.

PROJECT TEAM

CONSTRUCTION MANAGER
Pepper Construction Company of Indiana

ARCHITECT
Earl Swensson Assoc.

OWNER’S REPRESENTATIVE
AMDC Corp.

STRUCTURAL ENGINEER
KSI Structural Engineers

MEP ENGINEERS
Phoenix Design Group

CIVIL ENGINEER
DLZ

BUILDING EXCAVATION
Fox Contractors Corp.

BUILDING CONCRETE/FOUNDATIONS
Weigand Construction

ARCHITECTURAL PRECAST CONCRETE
Gate Precast Company

MASONRY
Ramenda Masonry

STRUCTURAL STEEL & MISC. STEEL
St. Joe Valley Structural Steel

CARPENTRY
Gibson Lewis, LLC

MEP
Shambaugh & Son, LP

ELECTRIC
Koontz-Wagner Electric



Using Commissioning To Make Sure Your Facility Works



“If something should malfunction, it is essential that back-up systems are in working condition. Commissioning assures the systems work before a project is considered complete.”

INDIANAPOLIS – A lot of time and money goes into designing and building or renovating a facility. While facility owners budget for those costs, they often don’t think about setting aside dollars to make sure they’re getting what they are paying for. Sometimes, owners may not even know what to look for or the right questions to ask.

That’s causing an increasing number of facility owners to hire commissioning agents, who walk through projects, test equipment, take measurements and make sure the project meets all the specifications outlined in the plans.

Commissioning is a process to provide documentation of system performance goals, such as energy performance, equipment maintenance and staff preparedness. It involves a testing process that helps make sure system performance meets established goals. The documentation also serves as a reference that benefits owners in the future as they prepare and plan for system maintenance and testing. The commissioning agent also can provide a step-by-step guide for system operation.

Using a commissioning agent does not mean you don’t trust your designer or contractor. It’s simply a way to make certain each part of the project is done properly, which can help prevent costly repairs in the future.

“With so much at stake as far as patient care is concerned, everything should work properly in healthcare facilities,” said Mike Castor, a senior associate at BSA LifeStructures and director of commissioning. “If something should malfunction, it is essential that back-up systems are in working condition. Commissioning assures the systems work before a project is considered complete.”

Castor has performed commissioning for numerous healthcare facilities throughout the Midwest, but commissioning isn’t exclusive to healthcare projects. Castor recently served as the commissioning agent for the construction of two temporary swimming pools inside an NBA arena for the FINA World Swimming Championships.

“No matter what the project is, facilities owners want a guarantee,” Castor said. “While it means adding a little to the budget up front, it will save time and money in the long run.” BSA LifeStructures is the largest full-service, Indiana-based architecture and engineering firm and is a national leader in designing healthcare, education, research and technology facilities. For more information on BSA LifeStructures, visit its Web site at www.bsalifestructures.com.

Preventing UPS Battery Failures



© 2004 Jackie Shumaker

When do batteries fail?

By definition, batteries only fail when you need them.

If you observe that batteries are getting weak in your flashlight or tape player, you replace them. The batteries have reached the end of their useful lives but they haven't failed yet. If you don't replace them, they will fail when you need them.

The same logic applies if you replace your car battery as soon as you notice that it's struggling. If you ignore the warning symptoms and later find a dead battery when you need to drive to work, that's a failure.

The batteries in your Uninterruptible Power System are no different in concept. The symptoms of impending failure, however, are more difficult to judge. It requires specialized equipment and frequent measurements to identify a weak battery.

The frustrating part of UPS battery failure is that hospitals usually don't need the batteries very often or for extended discharges. Most medium-to-large hospitals have backup generators that are able to assume the full facility load within ten seconds. So the UPS batteries are usually only needed for ten seconds at a time during utility outages and for one or two seconds during the monthly generator testing. With few exceptions, that's when the batteries will fail.

Why do batteries fail?

Batteries store energy in the form of a reversible chemical process. This process can be reversed a finite number of times (charge/discharge cycles) before failure occurs. Failure happens when either the internal electrolyte dries out or there is a problem involving the plates, posts or seals.

The battery's internal chemistry is affected by ambient temperature. In temperatures above 65°F, the chemical processes are accelerated. A warmer battery will yield more energy during discharge but the cell electrolyte tends to dry out more quickly.

UPS batteries are more vulnerable to failure than batteries used at telephone central offices. The telephone company will configure 24 cells in series (nominal 48 VDC) per battery string, and use multiple strings in parallel for redundancy. The redundant battery strings give protection against the failure of any single battery in any one string. By contrast, UPS manufacturers typically use 240 cells in series (nominal 480 VDC) per battery string, with just enough battery strings to support the load. Without redundancy, a single weak cell will cause the UPS battery to fail at the very beginning of the next utility outage.

The UPS itself puts more stress on batteries than telephone systems do. The charge and discharge rates are higher, so UPS batteries tend to have thinner plates with more active surface area. Sudden discharges put mechanical stress on the plates. Furthermore, there is typically a lag between UPS input and output. When your medical imaging equipment suddenly demands a big slug of power, or when the UPS needs to carry the facility load for one second during generator testing, the UPS output inverter cheerfully supplies the load. However, the UPS input rectifier usually responds more slowly as it converts incoming utility power to DC power for the battery. The instantaneous difference must come out of the battery, and the process is very similar to a charge/discharge cycle in its erosion of battery lifetime.

For all these reasons, UPS battery lifetimes average between 36 and 48 months. At the three-year point, typical UPS batteries should be removed and replaced with new batteries.

Can failures be prevented?

Most battery failures can be prevented. A conscientious facility manager can take steps to detect and replace weak batteries before they fail.

The first line of defense is a battery monitoring system. A good system will detect and trend the condition of every single battery, beginning with the baseline data at system startup. During subsequent operation, each battery's condition will constantly be compared to its baseline and to other batteries in the string. The system software should notify the technician if one or more jars begins the characteristic "death march" (rapid impedance rise), which indicates that a cell is drying out. The second line of defense is a trained technician to monitor the monitor. When a defective battery is observed by the monitoring system, the technician must call in the battery specialists to replace the defective battery jar(s).

Note that the first and second lines of defense will increase your overall system costs without reducing the cost of battery replacements. If anything, you will replace the batteries more frequently as you strive to prevent failures.

A different approach is to configure the UPS system to add redundancy. You can do this by adding another battery string in parallel. However, if the redundant battery string is

purchased from the same battery vendor at the same time as the basic battery string, there is a strong likelihood that both will fail at the same time for the same reason. You will still need monitoring to detect impending failures, and your costs will be higher all around.

A redundant technology

Our favored approach is to employ a different type of technology when adding redundancy. Instead of two battery systems with identical failure mechanisms, we recommend adding flywheel systems to your battery-based UPS.

Flywheels store energy in the form of rotational inertia. Since they are mechanical devices, they are relatively immune to ambient temperature excursions. Unlike a battery, the flywheel



We are ready to help you battle rising utility costs and manage your risks. From assuring that you are on the right and best rates to helping you manage consumption we are your ally. We'd like to share with you how we have helped other companies save money and operate more efficiently. We can help you become the superhero of your hospital.

ENERGY CONSULTANTS INC

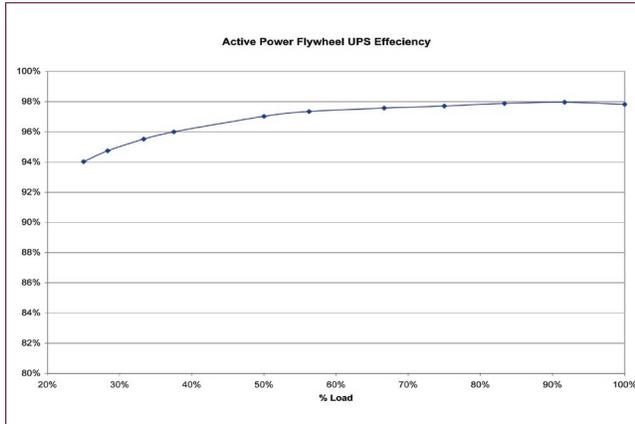
Carmel, IN 46032

317-870-7190

www.energyconsultants.org

dklippel@energyconsultants.org

sthurston@energyconsultants.org



is not consumed by the charge and discharge process. With regular maintenance and periodic bearing changes, a flywheel should last 15-20 years without replacement.

Commercially available flywheels will provide 15-30 seconds of UPS backup, more than enough to allow the backup generators to start and assume the load. Should the generators fail to start, the batteries can assume the load and provide a few minutes for a technician to investigate and hopefully remedy the problem. Flywheels not only complement battery technology, they can help extend the battery's working lifetime. A flywheel system can be set to discharge at a higher-than-nominal voltage, so it protects the battery from the quick hits caused by intermittent heavy loads. During a utility outage, the flywheel would also carry the entire UPS load until the generator started and assumed the load.

It is difficult to quantify the improvement in battery life expectancy that flywheels might provide. There is some amount of manufacturing variability from jar to jar. These variations become exaggerated over time, especially when batteries are employed in the long series strings typical of UPS applications. Experience says that at least one jar in 40 will develop high impedance and need replacement during the first 18 months of operation, regardless of whether a flywheel system is in parallel with the battery string.

The advantage of using flywheels plus batteries is that the facility manager can observe both technologies side by side before the batteries reach the end of their useful lives. At that point, he or she can make an informed decision whether to continue replacing batteries or to go exclusively with flywheel backup.

A different technology

For a new UPS installation, you have a different set of choices for avoiding battery failures. If you have a strong relationship with an existing UPS vendor, you can purchase that vendor's UPS with a flywheel energy storage system instead of battery storage. This is especially attractive if floor space is limited. Flywheel energy storage systems are smaller than battery cabinets of the same power rating. A 500 kW flywheel system occupies just five linear feet of wall space. Up to four flywheel systems can be paralleled for capacity, redundancy, maintainability and extra backup time.

Another option is to purchase a UPS that has flywheel energy storage integrated into the basic UPS module. In addition to their smaller footprint, integrated flywheel UPS systems are significantly more efficient. A typical flywheel UPS has 97% end-to-end efficiency compared to 93% for a typical battery-based UPS or conventional UPS with flywheel cabinets. If your electric utility charges \$.07 per kilowatt hour, your energy savings would be more than \$6000 per year at 300 kVA/240 kW and approximately \$20,000 per year at 900 kVA/720 kW.

In some localities, the improved efficiency allows the customer to apply for energy-conservation rebates from their local utility companies. Even without rebates, a hospital should publicize the upgrade to flywheel UPS systems as a statement of commitment to energy conservation.

Our experience has been that hospitals favor the integrated UPS/flywheel approach. The lifecycle cost is significantly lower, and the overall system is more reliable than the alternatives. Best of all, the batteries never fail.

As the TV ads warn, your results may vary. Ask your local flywheel/UPS vendor for a quote to see if your improved operating costs will justify the flywheel's slightly higher installed cost.

By John Sears

John Sears is Product Marketing Manager for Active Power in Austin, TX. Outside of Indiana, call 512-744-9246. Inside Indiana contact Stephen Thurston at C.M. Buck & Associates, 317-293-5704.

C.M. Buck & Associates, inc.

DocuNet Improving Communications Within Design Industry

The success and demand for up-to-date, wireless communications has helped fuel the growth of DocuNet, a project management software system developed by Indianapolis-based Design Media Connections.

DocuNet increased its business in 2004 by 50 percent by offering an easy-to-use software program that's making communications effortless for the design and construction industry.

Created in 1999, DocuNet provides "real-time" access to project information through the Internet.

"The endless games of phone tag or waiting on e-mail attachments to provide drawings or information about projects is eliminated with this program," said Jim Kiefer, Director of Design Media Connections. "It stores everything from meeting minutes to drawings."

DocuNet was created to bring AEC firms the technology needed to monitor, maintain and provide up-to-the-minute project information through wireless communications. It's already paying off in big ways for clients, whether a client is working on a \$50,000 project or a \$900 million project. Users simply access the site through the Web on their PCs – there's no need for special equipment. The system is

password-secured, and users can have varying degrees of access depending on their scope of work.

Most DocuNet users are engineering, architecture and construction firms specializing in healthcare and higher education. Current healthcare and education-related projects using DocuNet include St. Francis Hospitals and Health Centers, Major Hospital, the biomedical engineering building at Purdue and the Center for Medical Education, a collaborative project between Notre Dame and Indiana University.

DocuNet's potential is not limited to healthcare and higher education, however. Some nonprofit organizations, including the U.S. Green Building Council, have used DocuNet to provide more efficient communications to its members.

"Clients have been pleased with the time and money they save using the service," Kiefer said. DocuNet cuts the need for meetings, delivery and printing expenses. It also offers up-to-the-minute information, improves communication among project partners and offers a secure setting for document storage.

For more information, visit www.dm-online.com, or contact Jim Kiefer at 317.819.2022.

Keep an eye out for ISHE E-Issues the second Wednesday of each month!

ISHE E-ISSUES
E-Newsletter by and for the Healthcare Engineering Industry

Time Change for the Golf Outing
The time for the golf outing planned for Thursday, May 13 at Hillcrest Golf Course at Batesville, IN has been changed to 11:30 am with a four-course tasting off every seven minutes. The cost for golf will be \$35 for 18 holes and \$15 for a cart. There are some rooms available at the Farm Thursday evening for those who attend the golf outing. Please notify us via e-mail if you are planning to play golf and indicate if you would like to stay at the Farm Thursday evening.

Meeting	Location	Date
Spring Meeting	Hillman, Reynolds Farm, Batesville, IN	May 14 - 15, 2004
Western District President Meeting	Ball Memorial Hospital, Muncie, IN	August 27, 2004
Eastern District President Meeting	Stevens Memorial Hospital, Ellettsville, IN	August 21, 2004
Midwest Healthcare Regulatory Conference and Trade Show and Trade Show	Omni Plaza Hotel, Indianapolis, IN	November 9 - 11, 2004

EVENTS

- Spring Meeting: Hillman, Reynolds Farm, Batesville, IN, May 14 - 15, 2004
- Northern District Summer Meeting: Ball Memorial Hospital, Muncie, IN, August 27, 2004
- Southeast District Summer Meeting: Stevens Memorial Hospital, Ellettsville, IN, August 21, 2004
- Midwest Healthcare Engineering Conference and Trade Show: Omni Plaza Hotel, Indianapolis, IN, November 9 - 11, 2004
- ISHE Board Meeting (includes 2005 board members): Drexel and Cooper 15th, December 2004

SPONSORS

- BRENNER & SWILLEY
- BSA
- UNIVERSITY ASSOCIATES, LLC
- ROUTLEDGE

2004 © ISHE is a not-for-profit member organization of the Institute of Healthcare Engineers. If you would like to update your email address or see your email communications from ISHE please call or email us. Please help us by returning this card to us via postal mail at ISHE@ballstate.edu or contact us via postal mail at ISHE@ballstate.edu

Indiana Society for Healthcare Engineering
P.O. Box 10122
Indianapolis, IN 46210-0122

THE SAFETY CORNER

ISHÉ and Safety Management Group are excited to bring you a one-year series of topics related to safe work practices in a healthcare setting. The safety related articles will be captured in our new section entitled “The Safety Corner”. This month we focus our attention on the effective implementation of an Interim Life Safety Measures Program. The 2005 series will also include a look at the new NFPA 70E Electrical Standard, a preview of an Effective Web Based Safety Training Program, and will conclude in the fall issue with a discussion on Facilities Maintenance Safety. I hope you enjoy this month’s article!

Zero Disruptions to Patient Care & Hospital Operations is the goal of an effective ILSM (Interim Life Safety Measures) program. Prior to defining the 3-step approach, let’s take a quick look at some definitions and how they apply to the program we will discuss.

Life Safety Measures are health and safety measures that are put in place to protect the safety of patients, visitors, and staff who work in the hospital. In simple terms we are talking about things like exit signs and pathways to an egress point, fire protection systems including smoke detectors, fire suppression, fire extinguishers and fire alarm systems, smoke barriers, emergency evacuation plans, in addition to many other items that contribute to the well being and safety of occupants in the hospital or healthcare facility. The word Interim comes into play when construction or maintenance activities will have an impact on the life safety systems in the hospital, thus requiring an Interim plan to address the deficiencies created

“A 3 Step Approach to an Effective ILSM Program”

by the work activity. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) developed Interim Life Safety Measures (ILSM) to protect the safety and health of patients by compensating for hazards caused by Life Safety Code deficiencies or construction activity.

In the remainder of this article, we will discuss a 3-step program that will help you control the work that is taking place in your facility that may have an impact on the life safety of your patients, staff, and visitors.

Pre Construction/Project Assessment Tool

The first step you should consider is the implementation of a pre-project assessment tool. The intent of this tool is to help you identify any Life Safety System impairments that may



occur during the construction or maintenance activity. Prior to beginning the project, representatives from the hospital safety staff along with the group performing the work (maintenance or contractor), and the hospital project manager, will walk through the planned work area and complete an assessment tool. The walk through will help the project team to identify and plan for safety issues that may impact hospital operations and life safety before beginning actual construction or maintenance work activities. The assessment tool helps the team by asking the following questions:

1. Will any egress pathways or exits be altered or obstructed?
2. Will access to emergency services be restricted or rerouted, or will access for emergency responders be impaired or restricted?
3. Will any fire detection or alarm systems be impaired?
4. Will any part of the fire suppression or sprinkler system be impaired?
5. Will any smoke/fire walls, doors, or assemblies be compromised?
6. Will the fire safety of personnel in adjacent areas be affected?
7. Will it be necessary to install temporary construction partitions?
8. Will the project result in the accumulation of debris and/or materials and increase the combustible load in the work area?
9. Will the project activity include significant ignition sources (ex: cutting, welding, soldering, or other activities utilizing an open flame)?
10. Will the project activity present any other safety-related hazards?

Answers to these questions are used to develop a plan to address life safety code deficiencies. All participants of the assessment, including the affected department in the hospital, will review this plan and sign off prior to commencing the maintenance work or construction project. Once the assessment is complete, the information is loaded into an ILSM database, to efficiently manage the information. The ILSM assessment is a living document and will include updates as the project progresses.

ILSM Compliance Checklist

OK, the assessment is complete and the project is underway. The next step is to monitor compliance with the Interim Life Safety Measures that have been implemented. The ILSM Compliance Checklist is a tool that can be used to assist you with monitoring and documentation of project ILSM performance.

I recommend a daily walk of the project to evaluate compliance. However, if your schedule does not permit a daily walk, at a minimum you should walk and document your observations weekly. Remember, you are in control. If you do not have time to walk the project everyday, require your contracted partner to monitor and document observations daily. Establishing your expectations for the ILSM program early in the project will pay off over the long run.

When developing your checklist, you should make your observations and monitor the following points:

1. Monitor to ensure exits are free and unobstructed. Also, make sure the construction area exits are inspected daily and the contractor maintains an egress log.
2. Monitor to ensure access to emergency services and that entrance and exit discharges are unobstructed. Encourage your contractors to avoid propping or wedging open doors; this is an all too common compliance issue in a health care setting.
3. Monitor your exterior access and make sure that you have clear access for police, fire, and other emergency responders.
4. Monitor the fire alarm system and ensure it is in working order. Where deficiencies are noted, ensure a fire watch is provided. Make available additional fire extinguishers and ensure personnel are trained in the healthcare policy for fire extinguisher use.
5. If temporary construction partitions have been installed, ensure they are maintained to resist the passage of smoke and dust.
6. Monitor the smoking policy and ensure personnel working in your facility comply with the requirements to smoke and use tobacco products in designated areas that have been set up on the exterior of the building.

7. Monitor housekeeping conditions and ensure construction debris is removed promptly. Ensure equipment, tools, and materials are stored inside the construction zone and not in the hallway or in public areas.
8. Review all temporary exit signs and project signs and ensure signs are maintained in a good condition.
9. Monitor evacuation routes, access control, and require emergency information to be updated as conditions change.
10. Monitor hot work operations and ensure the facility hot work procedure is implemented. Require contractors to train fire watch personnel.
11. Inspect fire extinguishers as required and ensure access to extinguishers is not obstructed. Require contractors to clearly identify extinguisher locations.

An effective ILSM program also includes a training program for the contractors working in your facility. I suggest tracking and trending the information you have collected from your observations. Trending the data, allows you to focus your training program on issues in need of improvement. Sharing this data with the contractors and facilities maintenance personnel will help facilitate continuous learning and achieve improvement.

ILSM Closeout Procedure

Up to this point, we have done a nice job starting the project and monitoring work activities and conditions as the project progressed. Now it is time to turn the space over to the user group. Prior to doing this, we want to make sure that all life safety deficiencies have been corrected. Consider documenting this on a closeout checklist.

The closeout checklist is a good way to close out maintenance and construction work and document that the project is ready to be turned over. The following points should be covered on your checklist:

1. Require all exits to be free and unobstructed.
2. Ensure all exit signs are operational and installed as designed. Require the contractor to remove all temporary signs installed during construction.

3. Ensure all access to emergency services are restored.
4. Require documented maintenance acceptance testing for smoke/sprinkler systems when the project has modified or installed new systems.
5. Ensure the area is equipped with the appropriate number of fire extinguishers per code and design.
6. Require contractors to remove all construction materials and equipment.
7. Ensure all emergency evacuations signs are installed and updated.
8. Require all ceiling tiles to be installed.
9. Ensure space is cleaned and ready for occupancy.
10. Require any other safety related hazards or conditions to be removed prior to accepting the area.

The closeout checklist should be completed when all parties who participated in the pre-project assessment are available to make a final walk of the project. When developing your checklist consider designing questions that require each to be answered affirmatively prior to allowing the space to be occupied.

An effective ILSM program will contain all three of the programs that we have discussed – preplanning, implementation, and closeout. Once you have developed your program, make sure that you kick the program off with a comprehensive training program. The success of your program depends on how well you communicate the importance of the ILSM program to the individuals whose work impacts the life safety of the patients, staff, and visitors in your facility.

For additional information on this program, please feel free to contact me anytime.

Thinking Safety,

Randy Giesecking

Safety Management Group

randygiesecking@smgindy.com

ISHE is ready to celebrate 50 years for the association ... and higher sales for you!



Choose from one of these three sponsor packages or the individual items. The sponsor packages are an incredible value!

Fax this form today to 317-726-1175 or mail it to ISHE c/o Stevens & Stevens LLC, 6315 N. Delaware St., Indianapolis, IN 46220.

PLATINUM

Cost: \$4,915

- *ISHE Issues Magazine*: Your half-page B&W ad in every issue
- *ISHE E-Issues Blast Email*: Your logo with a link to your web site included in every issue
- *ISHE E-Issues Blast Email*: Your own feature item (up to 75 words) with a link to your web site in three issues
- *ISHE Web Site*: Your logo with a link to your web site on home page in the top Platinum Sponsors group
- *ISHE Online Directory*: Your logo with a link to your web site on the main search form page
- *ISHE Online Directory*: Your company included in search results for as many categories as you wish to choose *
- *Plus recognition at ISHE meetings and events!*

GOLD

Cost: \$2,915

- *ISHE Issues Magazine*: Your quarter-page B&W ad in every issue
- *ISHE E-Issues Blast Email*: Your web site address included in every issue as part of the Gold Sponsors listing
- *ISHE E-Issues Blast Email*: Your own feature item with a link to your web site in one issue
- *ISHE Web Site*: Your logo with a link to your web site on home page in the Gold Sponsors group
- *ISHE Online Directory*: Your company included in search results for up to 10 categories *
- *Plus recognition at ISHE meetings and events!*

SILVER

Cost: \$1,315

- *ISHE E-Issues Blast Email*: Your web site address included in every issue as part of the Silver Sponsors listing
- *ISHE Web Site*: Your logo with a link to your web site on home page in the Silver Sponsors group
- *ISHE Online Directory*: Your company included on search results for up to 5 categories *
- *Plus recognition at ISHE meetings and events!*

INDIVIDUAL ITEM PRICES

- ISHE Online Directory*: Your company included on search results for resource categories. Price: \$100/category *
- ISHE E-Issues Blast Email*: Add your company logo and link in the Featured Sponsor area. Price: \$125/issue
- ISHE E-Issues Blast Email*: Your own feature item (up to 75 words) plus a link to your web site. Price: \$450/issue
- ISHE Issues Magazine*: Half-page B&W ad. Price: \$565/issue
- ISHE Issues Magazine*: Quarter-page B&W ad. Price: \$290/issue
- ISHE Web Site*: Your logo with a link to your web site on home page. Price: \$750

Yes, I want to increase my sales!

Name: _____

Address: _____

City: _____

State: _____

Zip Code: _____

Phone: _____

Email: _____

Sponsorship Package:

- Platinum*
- Gold*
- Silver*
- Individual Items* (check items you would like in the above list)

Payment Information:

- Credit Card* Visa Mastercard
- Check*

Credit Card #: _____

Expiration Date: _____

Signature: _____

Print Name: _____

* ISHE will contact you for your selections

The Hospital of the Future



Introduction

*The following article, **The Hospital of the Future**, serves as the basis for consideration of master planning, design and preconstruction value engineering relative to health care facility development. The narrative describes the changing nature of the health care industry, its effect on facility design criteria, and ultimately on new construction (or renovation) costs. When the leadership of health care organizations contemplates development, growth or revitalization, the implementation process at its onset must include careful planning, thoughtful design and intensive cost analysis. What follows is submitted as food for thought to those leaders faced with moving forward into a new era of health care facilities management...as they consider **The Hospital of the Future**.*

The Hospital of the Future.

Health care systems have experienced significant financial and organizational transitions in the past several years. As a result, successful hospital systems are shifting toward more consolidation and less fragmentation of programs and services. The “hospital of the future” will be characterized by expensive, high technology space; multiple owners bound together through shared management contracts; and with greater connectivity to local retail channels. The hospital of the future must remain efficient and effective to assure the successful fulfillment of its primary mission: the care of patients and their families.

The Changing Business of Health Care

Enhanced Focus on Absolute Core Competencies

For the majority of hospitals, the focus will steadily evolve toward the provision of care, and perhaps little else. Continued tight margins coupled with increased service expectations will force significant outsourcing of such support services as hospitality services, facility maintenance, provision and management of materials, and administration of information and records. In the advanced adaptation, the provision of clinical teams of physicians, nurses, and professional technician support may be the only core asset the New Generation hospital brings to the equation

Increasingly Bimodal Clinical Operations

The hospital of the future must accommodate both a greater proportion of high-acuity critical care beds and a greater proportion of sophisticated ambulatory care capability. Both are complex modalities, but with totally different patient flow and institutional support requirements. The inpatient services that traditionally represent the middle band of acuity will decline as institutional stays for these cases move to alternative and lower-cost ambulatory and home settings. The same will be true of ambulatory care, with simpler visits being handled in off-site venues, and such technologies as remote monitoring and Web contact allowing for home care while living with serious chronic disease.

The Primary Purview of Hospitals

Acute/critical care beds and complex diagnostic and treatment technologies will remain heavily the domain of hospitals, with large and/or well-financed physician groups continuing their long-standing tradition of ownership of ambulatory D&T programs along a moving boundary line. Given no major changes in the basic payer architecture for many years, this boundary line will be defined by the reimbursement attractiveness of the day.

Greater Integration with Retail Distribution Channels

As the move toward increased ambulatory technology capability (portable monitoring; screening) meets growth in consumerism, new distribution channels will be elaborated through the retail sector. Pharmacies, national fitness or spa chains, and large full-service retailers such as Wal-Mart will provide venues through which health care of varying degrees can be distributed. This unbundling of traditional hospital services could have an effect similar to that of niche retail players' impact on full-service department stores.

Change in Capitalization and Asset Ownership

Hospitals will seek more and different sources of capital to sustain necessary redevelopment. Outright building ownership will become less essential to providers as buildings become viewed as rapidly changing technological means to provide the core competency of delivering health care.

The Future of Hospital Design

More Flexible/Adaptable Building Infrastructure



In high-technology buildings (inpatient, D&T, research), providers will invest in more robust building infrastructure to allow greater flexibility in future uses. Specifically, investment

will be made in larger bay spacing, greater floor-to-floor eight and/or interstitial space, greater floor loading, and higher HVAC capacity to allow more flexibility in future uses. To offset the higher costs of developing such space, repetitive room types (patient rooms, interventional spaces such as catheterization labs) will have more generic “footprints,” providing more flexibility to accommodate a range of clinical applications. Such

infrastructure will support movement of more equipment, activities and interventions to the bedside as technology permits. More technology will move to the patient; the patient will move less.

More Modular Building Complexes Around

Circulation-Organizing Principles

Future hospitals will be built along more modular lines, organized around a unifying circulation core such as a mall, atrium, or spine to allow for different construction types and to separate growth paths for different functions, such as beds, D&T, officing, logistics and ambulatory care, or research. Priority acute care growth spaces over the next 10 years will likely be for diagnostic and treatment, emergency department, and beds, with research space an added priority for academic institutions. Ambulatory care will continue to migrate to “lighter-weight” buildings and settings, except where higher risk and/or resource requirements require connectivity to the hospital setting. These complexes will also be developed to be scaleable, with excess capacity readily converted to other uses.

Shorter, Faster Building Replacement/Replenishment Cycle

The idea of the 50-year-hospital physical plant is dead. Demand will continue to escalate for health care facilities to meet rapidly morphing technologies, changing populations and consumer tastes, new care delivery models, and higher environmental and IT requirements. Even the most flexible new hospital designs will not be able to sustain 50 years of successful modification at today's rate of change. Health care should look to the building cycle of the hospitality industry to anticipate the pace of change and replenishment that will be competitively required—a cycle of 25 years or less as the average useful lifespan of a building.

Anticipating Shorter Building Lifespans

We will see more use of less-costly construction techniques, more sustainable and re-usable building materials, and more use of “lighter weight” ambulatory and office-occupancy buildings to off-set the high cost of inpatient and diagnostic/treatment spaces. Speed of building replenishment or total replacement will also be critical to maintaining market momentum and avoiding operational disruption and related lost revenue.

Greater Levels of Amenities

Increased amenities will be critical for several reasons, chiefly to support both higher levels of ambulatory care and greater numbers of family and visitors in inpatient settings (a factor of larger family size in some segments of the population). Furthermore, the drive toward more patient-centered and consumer-friendly environments will affect both modalities. In those markets with sufficient wealth, we also expect expansion toward spa-level settings supported by direct out-of-pocket payment.

Healing Environments



Current trends toward integrative medicine will escalate, supported by the convergence of consumer demand and continued development of scientific evidence around improved outcomes, or at least psychic satisfaction. This will be seen in a host of environmental concepts, including natural light, gardens, and water effects.

Increased Security

Today, hospitals remain fairly open institutions to their publics, relatively simple to enter and with few barriers to moving around even more critical areas of the facility. The impact of September 11, 2001, recent seismic and weather events as well as changing U.S. demographics will increase demand for more building security systems.



Increasing Patient Room Size

In the last ten years we have seen ever-increasing patient room sizes to accommodate the larger patient beds, the increasing numbers and types of bed-side equipment required for patient care, and the accommodation of family members as part of the care delivery team.

Whereas patient rooms developed in the 1970's and early 1980's may have been 11 feet wide, it is not unusual to find new-generation patient rooms at close to 15 feet wide. Whereas in older facilities, nursing units were typically developed using a 10% private room mix, new-generation nursing units are at least 50% private if not 100%. In upcoming years the design guidelines adopted by most states may well mandate 100% private rooms.

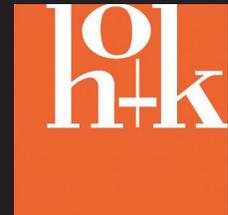
Increasing Nursing Unit Size

Whereas the numbers of beds in nursing units developed in the 70's and 80's ranged from the low twenties to upwards of 50 beds per unit, modern staffing, administrative, operational and construction cost forces are causing trends toward larger nursing units.



“Universal Room” vs. Universal Room Size

A number of hospitals throughout North America are trending toward the development of a Universal Room patient care model – a room in which the patient stays throughout their stay and to whom technologies and staff come to deliver care. A benefit of these larger room sizes is their inherent flexibility to be easily reconfigured from an acute care configuration to an intensive care configuration. In an ICU configuration, patient visibility is critical and often takes precedence over



patient and family privacy; the benefit of patient privacy in acute rooms, however, is well understood. Adequate strategies must be developed to allow both needs to be met. The acute care patient room at LAC+USC Medical Center, for instance, has been developed (room dimensions, gas, plumbing and data locations) to allow easy reconfiguration into an ICU configuration.

Decentralized Care Giver Support – Caregiver Team as Functional Unit

Concurrent with clinical and care delivery models resulting in larger patient rooms and nursing units, hospitals are under increasing pressure to minimize operational and materials costs and to maintain adequate nursing support at a time when qualified nurses are increasingly difficult to attract and to retain. The realization in New Generation nursing units is that the caregiver team (RN and LPN as the core) is the functional design unit; materials, dietary, pharmacy and computer / medical records support is decentralized to within close proximity of the numbers of patients that one caregiver team will support. This may range from a functional “pod” of 2 patient rooms in ICU to “pods” of 8-12 in acute care units. A certain amount of flexibility is required to allow for staffing models based on work shifts; a certain level of “centralized decentralization” is required to assure operational efficiency.

Changing Technology and Equipment

The long timelines for design and construction of health care projects represent a relative eternity when compared to the development time of diagnostic and treatment technologies. We recognize that it is in the best interest of clinicians and

administrators to delay the commitment to certain “built-in” and other major equipment types until just prior to installation. Through this delay-in-decision, the hospital is assured of the latest technology at the best prices. However, the architecture that will support this equipment needs to be developed and optimized early in the design process in order to capture the best construction cost estimates. We recommend a number of development strategies:



- Include major equipment manufacturers early in the design process to understand the development direction of their individual pieces of equipment.
- Plan the size, location and configuration of procedure rooms to generically accommodate numerous manufacturers’ requirements.
- Allow later contractual flexibility to customize the room once equipment commitments have been made.
- Develop structural and systems flexibility that will ease later equipment installation.
- Assume a “wired” facility that will allow an easy transition from hard-wired to wire-less technologies.

For more information contact Will Roess, Group Vice President, Operations Director, The HOK Planning Group at 937-341-6735.

Free Training Behavioral Health Awareness for Terrorism and Disasters April 4-5, 2005.

If you could not make the training in Warsaw or Richmond, here is the next opportunity in Terre Haute.

Dear Colleague;

The Indiana Division of Mental Health and Addiction, Office of Addiction Prevention and Emergency Management is offering a two-day training on Behavioral Health Awareness for Terrorism and Disasters. This training will be held April 4-5, 2005. The training will be held in Terre Haute Indiana, at the Hulman Memorial Student Union located at Indiana State University, Fifth and Chestnut Streets. The training will be held in the Dede II Room. This training will begin at 8:00 am and will end at 4:00 pm each day. Parking is available. Information about Parking at Indiana State may be found at: www.indstate.edu/hmsu/parking or by calling (812) 237-3818.

This training program is designed for mental health, substance abuse and public health personnel who will actively participate in disaster preparedness and response, health care providers including hospital-based personnel, first responders, law enforcement personnel, fire, EMS professionals, and county emergency managers.

Behavioral Health Awareness for Terrorism and Disasters is a two-day, high-intensity training experience that will provide to the participant information on the following; Behavioral Health, Terrorism, Disaster, Stress Response, Individual Response to Extreme Events, Self-Care, Community Response to Extreme Events, Disaster/Emergency Worker Support, Disaster Survivor Intervention, Special Populations, Substance Abuse, and Cross-Cultural Issues.

Behavioral Health Awareness for Terrorism and Disasters will also address organizational and leadership issues such as Public Fear and Panic Reactions, Surge Capacity, Behavioral Triage, Dealing with Agitated Citizens, Maintaining Ongoing Services, Meeting the Needs of Victims' Families, and how Indiana is preparing.

The instructors for this training are Brian W. Flynn EdD, and James M. Shultz MS, PhD. Dr. Flynn is the Associate Director, Center for the Study of Traumatic Stress, United States Uniformed Health Services. Dr. Flynn retired from the Public Health Services as the Assistant U.S. Surgeon General in 2002. Dr. Flynn was the lead federal official for disaster behavioral health from 1980-2002. He was the point person for behavioral health response at 9/11 Ground Zero, Oklahoma City, and Kenya/Tanzania embassy bombings. Dr. Shultz is the Director of the Center for Disaster Epidemiology & Emergency Preparedness (DEEP Center) and the Co-Director, of the Center for Hispanic Disaster Training at the University of Miami School of Medicine.

The Indiana Division of Mental Health and Addiction will be providing this training at no cost. Lunch will be on your own. There are restaurants near by. Please contact Andrew P. Klatte at the Indiana Division of Mental Health and Addiction, for more information or if you plan on attending. Seating is limited. To register please email or call Mr. Klatte, he can be reached at aklatte@fssa.state.in.us <<mailto:aklatte@fssa.state.in.us>> or by telephone at 317-232-7935 or by cell at 317-431-7464. Please provide the names of those who will be attending and what agency you are from.

Andrew P. Klatte
Indiana Division of Mental Health and Addiction
Office of Addiction Prevention and Emergency Management
402 West Washington W353
Indianapolis Indiana 46204
317-232-7935 Phone
317-431-7464 Cell Phone

Midwest Healthcare Conference Agenda

Monday, October 31, 2005

- 8:00 a.m. – 4:45 p.m. Registration**
9:00 a.m. – 10:15 a.m. General Session
10:30 a.m. – 12:00 p.m. Concurrent Sessions:
 Optimum Temperature and Humidity Control in Surgery
 New Tech Trends in Healthcare Lighting
- 12:00 p.m. - 1:30 p.m. Lunch on Own**
1:30 p.m. – 3:00 p.m. Concurrent Sessions:
 Managing Hospital Emergency Power Systems in 2005
 New NFPA 70E – Electrical Safety in the Workplace
- 3:15 p.m. – 4:45 p.m. Concurrent Sessions:**
 What's Your Energy Performance Rating
 How to Perform and Document Risk Assessments
- 5:00 pm – 8:00 pm Exhibit Decorator to set Exhibits**
5:30 pm – 7:30 pm CHFM Study Group

Tuesday, November 1, 2005

- 7:30 a.m. - 5:00 p.m. Registration**
7:30 a.m. - 8:00 a.m. Continental Breakfast
8:00 a.m. - 9:15 a.m. Concurrent Session:
 Understanding & Accepting Your New Construction Project
 Life Safety Code Specialist Survey Activities
- 9:30 a.m. – 11:00 am Concurrent Session:**
 Requirements and Management of Fire & Smoke Barriers
 Wireless, the Utility of the Future
- 11:00 a.m. – 3:00 p.m. Exhibits/Lunch**
3:15p.m. – 4:45 p.m. Concurrent Session:
 Hospital of the Future
 ASHRAE Workshop
- 5:00 p.m. – 5:45 p.m. Local/State Chapter Meetings**
6:00 p.m. - 6:30 p.m. Reception
6:30 p.m. - 8:00 p.m. Awards and Dinner
8:00 p.m. - 11:00 p.m. Monte Carlo Casino/Auction

Wednesday, November 2, 2005

- 8:30 a.m. - 10:00 a.m. General Session**
10:15 a.m. - 12:00 p.m. Concurrent Sessions:
 Sustainability in Healthcare
 Overcoming Infection Control Challenges in Construction
- 12:00 p.m. – 1:00 p.m. Lunch on Own**
1:00 pm – 4:30 pm CHFM Examination



Certified Healthcare Facility Manager (CHFM) Examination



A special administration of the Certified Healthcare Facility Manager (CHFM) Examination is being offered by the AHA Certification Center at 1:30 p.m. on Wednesday, November 2, during the Midwest Healthcare Conference. Interested individuals must apply by September 21, 2005. Walk-ins are not allowed to test. Begin by downloading the CHFM Candidate Handbook and Application from www.aha.org/certification (Click on the CHFM logo) or by calling AMP to order a copy. The Handbook includes eligibility requirements, a complete content outline for the Examination, sample test items, an application and instructions for completing the application.

Looking for study materials? Consider ordering the CHFM Self-Assessment Examination. Developed by the AHA Certification Center, the 100-item practice test mirrors the Examination in content, difficulty and cognitive level. For information on how to order, visit www.aha.org/certification.



Indiana Society for
Healthcare Engineering
P.O. Box 40727
Indianapolis, IN 46240-0727

Gold Sponsors:



Silver Sponsors:

