Immunome Research

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Mini Review

Experience Sharing on Healthcare Facility Commissioning

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ABSTRACT

The uncontrolled proliferation of aberrant cells in the body is known as cancer. May affect any body tissue and take many distinct forms in different parts of the body. Damaged cells proliferate, divide, and spread abnormally instead of self-destructing as they should resulting in cancer. When a cell is severely injured and unable to heal itself, it goes through a process known as apoptosis, or programmed cell death. Cancer is that disease that can grow in any part of the body. One of the most common cancers in women is breast cancer and for men is prostate cancer. Both men and women are affected by lung cancer and colorectal cancer in large numbers. The growing body of knowledge about cancer's development and progression can be exploited to generate more precise diagnostics and/or less hazardous cancer treatments.With the artificial information is advancing, cancer treatment is becoming more precise and accurate, likewise, with cutting edge technology, healthcare facilitate can be equipped more effectively to support healthcare provider to work more efficiently, however, new healthcare facility commissioning process should be safety and quality-oriented activities which validate and document the performance of not only facility but system as well, during the process commissioning team will verify to see if the original or defined objective and criteria are met.

Keywords: Hospital commissioning; Facility commission; Clinical commissioning

INTRODUCTION

The most important goal of cancer treatment is to cure the disease followed by palliation. Where the sickness has progressed to the point where a cure is no longer possible. Treatment varies greatly based on the type and stage of cancer as well as the patient's overall condition. Surgery, radiation, and chemotherapy are the most prevalent therapies. Targeted/biological therapies, hematopoietic stem cell transplants, angiogenesis inhibitors, cryosurgery, and photodynamic therapy are some of the other options. Every treatment has risks, benefits, and side effects to consider.

LITERATURE REVIEW

Guangzhou Concord Cancer Center (GCCC) is a comprehensive cancer hospital specializing in cancer diagnosis and treatment, prevention, research, and training, in addition to proton therapy expertise.

A 4 billion RMB project located in Sino-Singapore Guangzhou Knowledge City, GCCC is a 400 inpatient beds facility, developed with support from Sun Yat-sen University Cancer Center, The University of Texas-MD Anderson Cancer Center, and Mayo Clinic.

The leadership team is committed to delivering internationally advanced cancer programs with patient-centered designs which utilize the "3H" concept of Hotel, Home, and Holistic to provide a healing environment. Focusing on service excellence and compassionate care, the professional team will be with patients every step in the fight against cancer.

From the initiation of design to the completion of commissioning and handover to operational teams, the project is centered on quality. Every effort is made to ensure the hospital in not only safe for patients, but for family members, visitors, as well as staff.

Hospital commissioning is the systematic approach to improve overall facility performance, effectiveness, and establish ongoing maintenance. Major areas of focus include indoor air quality and comfort, energy efficiency, as well as maximizing the wellbeing, health, welfare, and productivity of all occupants in this brand-new building.

Commissioning activities are not linear or independent processes; they start in early during planning, design, and construction phases. Overall hospital commissioning is divided into two major process,

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facility, and clinical operations. Facility commissioning includes the inspection of building features and functions as welling testing the performance of building systems. Clinical operational commissioning mainly focuses on human activities, mainly through simulation of business and clinical workflow processes.

In addition of management and programming commissioning, it is also important to prepare hospital operational procedures, therefore, operation team need to discuss hospital policies outline with project steering team as early as possible.

As for staffing and training should be in liaison with local authorities and organizations based on the hospital scope of services and opening strategies.

Other considerations like develop of a public relation strategy is important part of commissioning and should be managed by public relation personnel all these activities should be in coincide with key milestones in a project. Opening ceremony should be considered and planned carefully ahead of time.

The process of hospital commissioning extends beyond direct Testing, Adjusting, and Balancing (TAB) in addition to traditional inspections [1-3]. The process begins during the project design phase and continues 6 months into full operations. It is a component of project management, involving the efforts of multi-disciplinary teams. Collaboration and communication between the project owner, design professionals, construction managers and commissioning teams is critical to ensure the best outcome from commissioning processes. During facility commissioning, all physical aspects of the new building and environment are examined to confirm they achieve the outcome of shareholder expectations. Clinical operation commissioning evaluates workflow processes through the simulation of real-world scenarios that focus on medical workflows involving people, goods, information, and equipment [4-6]. These simulations are everyday processes that occur through the facility, thus testing and stressing the entire system in a way that resembles real world hospital operations as close as possible. By testing various processes with weekday and weekend staffing fluctuation, the commissioning team can verify staff readiness and identify potential risks and improvement opportunities. Naturally, some issues are resolved immediately, while complex and critical ones may require a failure mode effect analysis tool to redefine the process and test again.

There are few key principles to follow before the activation of hospital commissioning:

A. Define core terminology to avoid misunderstanding and confusions.

B. Identify specific measurable performance criteria or standards to which the hospital will comply.

C. Form a commissioning team, including these specific roles: facility commissioning leader, commissioning coordinator, fixture furniture and equipment coordinator, engineer coordinator, infection preventionist, quality officer, operation officer, and design professionals.

D. Align occupancy requirements and schedules.

E. Develop a systematic approach for testing of building performance.

F. Verify and document the discovered defects in a tracking log.

G. The project director shall ensure there is a documented process in place that allocates responsibility for the management of the identification, reporting and rectification of defects and omissions during the defects rectification period. And in our case, we used online defect tracker to record all the variances and have a clear protocol for escalating process for efficiency.

H. Effectively transfer the building to operation teams by the using of checklists and proper filing systems.

I. Project director should also make sure there is a proper process for project financial closure other than project completion which normal happens right after acquires building temporary occupancy permit.

There are various ways that the commissioning process benefits future hospital operations and maintenance personnel. The commissioning process measures and verifies a clear performance baseline. It initiates data collection and trending tools to track the ongoing performance of commissioned systems while also offering staff experience in ongoing maintenance and optimization of system performance. Finally, commissioning ensures that primary and secondary systems work properly in tandem, saving facility staff months or even years of troubleshooting.

Proponents of the hospital commissioning are cognizant of short-term investment costs in the process but

Highlight the long-term gains of reduced energy costs and less frequent occupant complaints. To optimize the commissioning process, issues discovered during handover and walk- through inspection are logged in a defect tracker and rectified based on a clear system of prioritization.

Planning for healthcare facility commissioning can start as early as the design phase. Therefore, it is important for designer and project steering committees to work closely with the commissioning team so that the owner's project requirements and acceptance expectations are assessed and fulfilled. The owner's project requirement should also include project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. It is important to update the owner's requirements along the duration of the project to ensure that that the focus of the clinical teams during commissioning is clear during acceptance.

It is also key to orient hospital leadership to commissioning metrics. As clinical operations begin, operational leaders can then contribute by evaluation rounding to capture additional opportunities for future improvement that promote a positive patient experience and staff satisfaction.

Common challenges and suggestions:

A. Construction schedule delays make functional testing difficult.

B. Floor completion is discordant with Mechanical, Electrical and Plumbing (MEP) system.

C. Sub-contractors need close engagement and direction.

D. Miscommunication and misunderstanding between engineering teams and owner's requirements and expectations leads to project delays.

E. Operation teams should align with the construction team regarding temporary occupancy requirements as early as possible.

F. The owner needs to define the level of effort required during facility commissioning.

G. Cost is directly proportional to scope.

H. The owner needs to identify systems which needed to be checked, e.g., we identified 14 systems and created a checklist for convenience of the facility commissioning team.

I. Critical systems include medical gas, the nurse call system, pneumatic tube, and fire alarm should be tested with the 3rd party to verify the systems making sure they are safe and functioning as clinical team expected.

J. MEP commissioning is the standard and should comply with local regulations.

K. Activate commissioning team involvement as early as possible.

L. Biomedical engineering should contribute to construction scheduling based on medical equipment installation requirements.

M. The owner should define clear requirements for successful outcome-based owner's project requirement before commissioning starts.

N. The owner needs to identify commissioning agency, or a partner not just based on cost, but also acknowledge commission is a professional service that needs multi-disciplinary teams' efforts.

DISCUSSION

Commissioning checklist is a useful tool to be put into use throughout the whole processes making sure all aspects are covered; we also developed a simulation evaluation tool to identify gaps and potential to improve opportunities.

CONCLUSION

The future of cancer treatment is to provide patients with ever more individualised care. Doctors are starting to suggest therapeutic alternatives based on the genetic changes that occur in a particular tumour. The genomic tumour evaluation is a revolutionary new diagnostic method that studies a patient's tumour genetically to determine the mechanism that produced the disease. A more tailored approach to cancer treatment could arise from genomic tumour screening.

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