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Clinical Engineering: Invaluable Contribution in Modern Hospital Management

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Today's hospitals are complex institutions requiring highly qualified managers to run critical operations not only within their facilities, but also across the national or regional healthcare system they belong. Apart from the prerequisites for expertise on health care systems management and special skills to operate hospitals in an efficient, cost effective and safe way, managers must deal with an exceptional high number of diverse professionals, that should apply teamwork, in a well-coordinated manner, in order to deliver the most precious service: health care.

Out of the almost one hundred specialties existing in a modern hospital environment, Clinical Engineering is a specialty which is often not receiving the recognition it deserves. In today's hospital environment, which is dominated by technology, clinical engineering professionals are amongst the most valuable contributors for hospital management. In fact, during the last fifty years, medical technology is reshaping the way health care is delivered in a continuous accelerating pace and its reliable management is the cornerstone to safely pass the benefits deriving from its use, directly to the patients.

Clinical engineering departments, (CEDs) are responsible for the overall hospital's health technology management (HTM), during all stages of the operational life cycle of medical equipment, starting from procurement and ending with decommissioning. Tasks that CEDs daily perform or are involved in, within the scope of their responsibilities, include: -Planning of new equipment acquisition, preparing technical specification for call of tenders, assessment of offers, acceptance testing, user training and put in service during the procurement process, -Keeping an updated inventory, -Follow service contracts, monitor or perform quality control and safety testing protocols, Preventive and Corrective maintenance, Vigilance and Decommissioning of obsolescence or overpassed technologies.

Today, using computerised medical equipment management systems, CEDs can provide direct information on medical equipment inventory, a series of costs associated to purchase and use of medical technology, data on quality and safety controls performed, maintenance, repair actions and many others, resulting to several (standard or customised) key performance indicators (KPIs), which are very critical for evidence-based management. Apart from HTM, clinical engineers are the most suitable employees to address medical devices' regulations issues, participate in health technology assessment (HTA) and the deployment of its findings.

From managers' perspective, which are responsible to take evidence based and timely decisions on purchasing new equipment, decommissioning old, or overpassed and adopt innovative medical technologies, considering hospital's infrastructure, human resources, and budgets restrictions, CEDs are the most appropriate collaborators, to provide adequate input on such important issues.

Another very critical domain is patient safety. Many studies, published during the last 20 years, revealed a high-risk for patients related with adverse events when being

hospitalized. In most of the cases, it is due to “medical errors” which in a big percentage, could be avoided. Although a large part is attributed to drug administration and complex operation under emergency circumstances, several of them is due to medical technology failures or misuse. Clinical engineering plays a key role in reducing the medical devices related adverse events, through better safety and quality controls, preventive and corrective maintenance, user training and implementation of a reliable medical devices vigilance system.

However, despite their critical role in improving the efficiency, safety, cost effectiveness and quality of care, it is difficult to even find Clinical Engineers in the list of professionals that work in a hospital! For example, in a list with more than 90 professionals working in NHS hospitals, including many that don't have direct contact with patients, but considered vital for the efficient running of a hospital, Clinical or Biomedical Engineers are not included!!

Successful management of hospital's processes must demonstrate tangible results in patient care improvement. For example: lower death rates among emergency patients, reduction of days of stay, increased access to high tech services, reduction of medical technology maintenance costs, are some of them, most of which are medical technology depended.

This is why, Clinical Engineers that are responsible for the whole life cycle of medical devices in the hospital, can provide an invaluable contribution in modern hospital management.