EVALUATION OF EQUIPMENT PROCUREMENT PROCESSES IN TWO RADIOLOGY DEPARTMENTS IN NORTH EASTERN NIGERIA

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ABSTRACT

Background: Quality control is a set of technical activities intended to maintain standard of practice in diagnostic radiology. It involves the measurement and control of equipment performance against a set standard. Therefore, a successful quality control practice starts from equipment procurement.

Objective: To evaluate the status of equipment procurement process of the study locality against World Health Organization recommended standard on procurement exercise.

Materials and methods: A cross sectional research design was carried out and data on equipment procurement were collected from the radiology departments of two tertiary hospitals in the North-Eastern Nigeria. The two tertiary hospitals were labeled centre A and B for ethical reasons. The status of equipment procurement process used in the study centres were evaluated against the recommended standard for equipment procurement using adopted WHO equipment procurement checklist. The checklist comprises of columns and rows containing the recommended seven elements of equipment procurement process. These elements are; technology assessment, device evaluation, planning and needs assessment, procurement, installation, commissioning and monitoring. Procurement documents at the study centres between 2017 and 2019 were visually checked for compliance to the WHO recommendations on equipment procurement and data obtain were presented on tables

Results: The results of the study showed there were no technology assessment, device evaluation and monitoring in the equipment procurement process at centre A and B. The compliance observed were in planning and needs assessment, procurement, installation, and commissioning.

Conclusion: The equipment procurement process of this study does not comply to the international established standard on radiology equipment procurement. Therefore, the radiology equipment used in the study centres could be exposed to challenges of poor equipment procurement exercise which may include frequent equipment breakdown, large number of unserviceable equipment in some centres and long down time when faults developed

Keywords: Radiology, Quality control, equipment procurement

INTRODUCTION

Quality control is a set of technical activities intended to maintain standard of practice in diagnostic radiology [1, 7,8,11]. It involves the measurement and control of equipment performance and service delivery in radiology department [1,13,14,15]. Generally, medical device such as radiology equipment are important in the diagnosis and treatment of disease conditions as well as patient rehabilitation [2,3,9,10, 12]. Recognizing this fact, the World Health Assembly, in May 2007 adopted a resolution known as WHA60.29 [2]. The resolution covers issues with regards to inappropriate deployment of medical device and the need to set standard in the selection and management of such devices[3,4,5,6]. Hence, WHO [2] recommended a guideline for equipment procurement in the healthcare sector, known as procurement process resource guide; a WHO medical device technical series. It outlined seven steps of procurement process as follows: technology assessment; device evaluation; planning and need assessment; procurement;

installation; commissioning; and monitoring. If technology assessment was not dully followed, there would be a tendency of poor procurement exercise [4, 5]. Consequently, the procurement status of x-ray equipment of this study was assessed using the WHO [2] procurement guideline.

MATERIALS AND METHODS

A cross sectional research design was carried out and data on equipment procurement were collected from the radiology departments of two tertiary hospitals in the North-Eastern geo-political region of Nigeria. The two tertiary hospitals were labeled centre A and B for ethical reasons. The status of equipment procurement process used in the study centres were evaluated against the recommended standard for equipment procurement using adopted WHO equipment procurement checklist. The checklist comprises of columns and rows containing the recommended seven elements of equipment procurement process. These elements are; technology assessment, device evaluation, planning and needs assessment, procurement, installation, commissioning and monitoring. Technology assessment ensures that health policies and plans include the real health benefit of equipment which allows evidence-base-decision-making. Device evaluation ensures reliable assessment of the function and performance of equipment. Planning and needs assessment ensure there is detailed plan for the whole acquisition cycle that includes indicators for monitoring. Procurement ensures that contracts are awarded with agreed costs, timescales and specifications. Installation ensures that the equipment is delivered, installed and ready for initial use. Commissioning ensure that the equipment is ready for routine use, users trained for effective operation and procuring authority informed of successful commissioning. Monitoring ensures there is data base for the equipment, suppliers, processes and facilities, and history of procurement experiences and issues raised. The checklist also contains the following; pre-requisite for each of the elements, the steps to ensure successful completion of each element and the deliverable goal (or output) of each element. Procurement documents at the study centers between 2017 and 2019 were visually checked for compliance to the WHO recommendations on equipment procurement and data obtain were presented on tables. Ethical approval for the study was obtained from the Ethical and Research Committee of the Faculty of Health Science and Technology, Nnamdi Azikiwe University, Nnewi Campus and ethical clearance were obtained at the data collection centres.

RESULTS

The results of the study showed there were no technology assessment, device evaluation and monitoring in the equipment procurement process at centre A and B. The compliance observed were in planning and needs assessment, procurement, installation, and commissioning.

Table 1a: Evaluation of equipment procurement process at centre A

S/N	Procurement element	Compliance
1	Technology Assessment	N
2	Device evaluation	N
3	Planning and need assessment	Y
4	Procurement	Y
5	Installation	Y
6	Commissioning	Y
7	Monitoring	N

KEY: Y = Yes, N = No

Table 1b: Evaluation of equipment procurement process at centre B

S/N	Procurement element	Compliance
1	Technology Assessment	N
2	Device evaluation	N
3	Planning and need assessment	Y
4	Procurement	Y
5	Installation	Y
6	Commissioning	Y
7	Monitoring	N

KEY: Y = Yes, N = No

DISCUSSION

The results of this study show that, the procurement process of both centre A and B, do not involved technology assessment, device evaluation and monitoring. These three procurement elements are crucial to present and future procurement exercise. For not compliance to technology assessment it means the procurement process of the centres lacks evidence-based decision-making before embarking on procurement exercise. For not compliance to device evaluation it means the procurement exercise of the centres lacks reliable assessment of the function and performance of the available equipments. For not compliance to monitoring, it means the procurement exercise of the centres lacks data base of equipments as well as history of procurement experiences and issue rose, which are important for future procurement exercise. The result of this study is in line with a previous study by Okeji [4] *et al* who conducted a study on the assessment of equipment procurement and management policies in radiology centres in Nigeria. The outcome of the previous study [4] showed that in 11 out of 13 hospitals, the radiographers were not involved in the course of planning, acquisition and delivery of the radiology equipment. It therefore, concluded that there was absence of organized policy to involve the end users in the process of equipment procurement in most of the hospitals in Nigeria. The similarities in the result of the present and the previous study on equipment procurement could be a reflection of the fact concerning equipment procurement in teaching hospitals in Nigeria. Some of the implications of lack of adherence to the WHO [2] recommended standard in equipment procurement include; frequent equipment breakdown, large number of unserviceable equipment in some centres and long down time when faults developed [6]. Further implications to the lack of adherence to the recommended standard in equipment procurement practice are; failure in the assessment of equipment performance in comparison with the supplier performance claims of the equipment, as well as technology suitability, cost-effectiveness, forecasting accuracy, procurement processes and patient safety. These are indications of the likelihood of purchase of x-ray equipment that may not fit into the health device needs of the study locality [6].

CONCLUSION

The equipment procurement process of this study does not comply to the international established standard on radiology equipment procurement. Therefore, the radiology equipment used in the study locality could be exposed to challenges of poor equipment procurement exercise which may include frequent equipment breakdown, large number of unserviceable equipment in some centres and long down time when faults developed.

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