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Sustainable Pediatric Hospital Facilities in Africa – Operational Solutions in Rwanda

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Abstract

This paper presents common problems that met hospitals in Africa in terms of hospital hazardous wastes, waste management, delays at particular energy supports, and good operation at energy grids. Operational solutions are presented for pediatric hospital facilities especially for young people, pediatric units so as to mitigate the environmental health risks, that there are at hospitals in Africa at particular developing countries like the |situation that exist in Rwanda. Useful results are presented supporting green designs for sustainable hospitals in Africa that will be useful to stakeholders for safe working environments at hospitals in Africa and public health protection. In the end useful recommendations as well as relative effective green solutions are discussed for sustainable urban hospitals in Rwanda which could support medical tourism facilities for neighborhood regions, creation of new jobs and opportunities in regional development.

Keywords: sustainable pediatric hospital facilities, public health, waste management, renewable resources, clean technologies, medical tourism, green development.

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1. INTRODUCTION

Theatre team[1] that work in the surgical suite has deal with several different types of hazards, including waste materials, expanding of gas[2] and riskychemicals[3]. Almost, Africa hospitals has exceeds the number of patients that increases number of blood pathogen contamination, hazardous chemical, sharps injuries. The doctors, nurses and biomedical engineers[2] decides to work together for support of safety and precautionsin order to reduce rate infection: the anesthetic gas and vapor which leak in operating surgery room, surgery team is potentially exposed to the waste anesthetic gases and risks of occupation air and blood pathogen[3] within a healthcare pediatric hospital facility, compressed gases are usually either fixed piped gas system or individual cylinders of gases may include fire hazard depending on gas contents, explosion and toxicity[3]. The surgery team be exposed to possible hazardous chemical found and used in the surgical area typically during mixing, preparation in operation room. These may include paracetic acid used in cold sterilant machines. An acrylic cement like substance used to secure prostheses to bone during orthopedic surgery waste anesthetic gas[3]. The diathermy and electro surgery machines leakages of electrons. The article provides the drawback of surgery equipment with personnel protective personnel protective, scoping the biomedical technicians limit intervention in rule hospital of Africa[4]. Due to post COVID-19 era is needed more support for children that injured by several accidents, diseases and also by COVID-19. Also special support in electricity consumption is needed due to the use of special electronic devices for indoor pediatric clinic rooms so as to support children in good breathing due to COVID-19.

2. METHODOLOGY

Due to children visits at pediatric hospital units special care should exist for the good operations management at particular indoors and outdoors around the pediatric hospital sites. The surgery team has to use an anesthetic gas detectors system operating surgery unit and surgery tools[5][6].

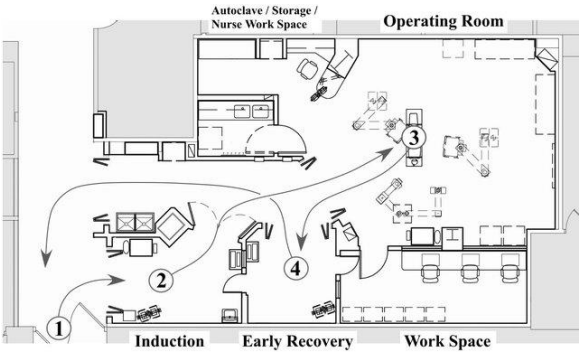

Fig. 1. Ground plan and flow diagram of patient movement through the Operating Room of the Future[7].

To detect the radiation dose of fluoroscopy and x-ray fixed and mobile equipment. Biomedical engineershave to assess radiography equipment,to supervise theappropriate waste gas clearingcontainsaccumulating and get rid of waste gases, detecting and correcting leaks, considering work practices and efficiently ventilating the theater unit[3].The biomedical engineering team verified appropriate personal protecting equipment(PPE) of expected contact of blood pathogen[3].

Fig. 2. Mobile operating tabletop, transporter, and fixed base column used to facilitate rapid movement of anesthetized patients between areas in the Operating Room of the Future[7]. Moreover, the Pediatric Physiotherapy Department's devices should operate properly at indoors and outdoors in emergencies and should have good operation with other hospital units [13, 19, 20]. Hence, children that have been injured by several accidents could be recovered in time using proper supported electronic facilities.

3. DISCUSSION

For both facilities at indoors and outdoors the good project management is needed in terms of maintenance and continuous electric power consumption support in terms of medical devices and associated technologies, refrigerators. Renewable resources and green designs should be supported in order to be preferred efficient economic hospital designs with medical tourism, alternative types of tourism, providing proper solutions for people with disabilities. Emerging technologies with renewable resources should be supported for electric energy production and consumption. In this way electric power could be consumed properly at indoors and outdoors sites so as to cover proper electric power needs for particular pediatric hospital units and department facilities. Good hospital building designs are needed in terms of safety and environmental health [10, 11, 12, 13, 14, 15]. Hence, relative measures should exist so as to mitigate particular risks related to environmental health, pediatric hospital epidemiology and infection control at indoor and outdoor places [18, 19, 20].

Moreover, the surgery team else takes care use portable smoke evacuators and suction room systems inline filters[3], the radiation of effects of mobile c-arm and mobile and x-ray equipment overdose the orthopedic and clinic team[8]. Special scheduled measures should exist in terms of environmental health, safety, green operational designs, project management and community health, public health protection.

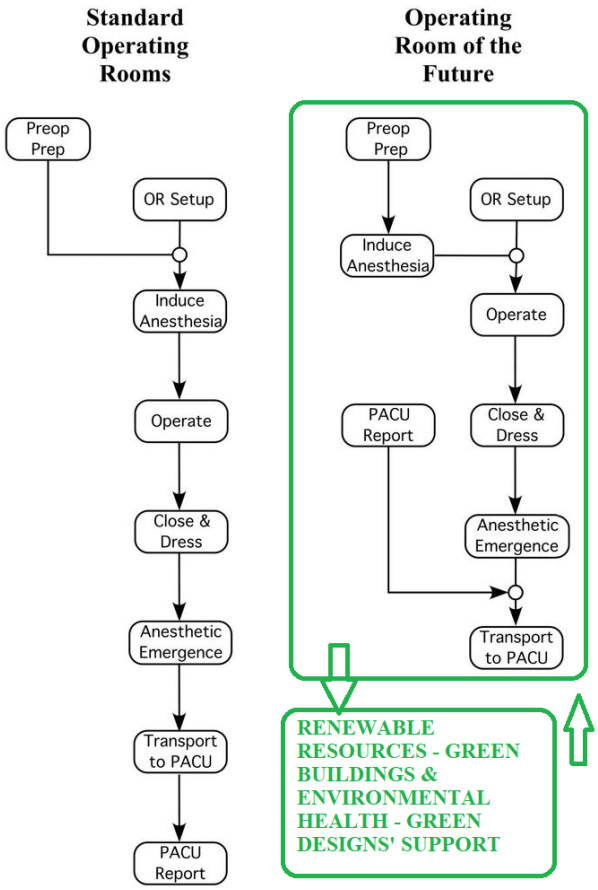

Fig. 3. Flow diagrams of the surgical process in standard operating rooms and the Operating Room of the Future[7].

Proper are needed in terms of hygiene measures, environmental health and proper construction designs at community health centers for public health protection [10, 13, 15, 16, 17].

Moreover, integrated community health facilities should be used applying proper design for alls not only in emergencies but also for safe indoor, outdoor spaces in post COVID-19 era [11, 12, 13, 14]. Also proper safe logistics facilities should be used for integrated community health facilities and public health protection.

4. CONCLUSIONS

Based on the above presented working study analysis there were found that the lack of hazard protection origins major issue among the rural African hospital problems[9]. Special healthcare support should exist for safety and good environmental health for young mothers and their babies during their scheduled visits at pediatric hospital units. Special care should exist for babies suffering in cases that the radiation during injuries operation of their mothers even the patients and clinical team exceed the weekly overdose for measure that international atomic energy and radiation conformed[8].

Based on the above should exist relative measures so as to mitigate particular risks related to pediatric hospital units and infection control at indoor and outdoor place. Furthermore, proper decision making and actions should take place not only for qualitative environmental health at hospitals but also for public health protection.

Future research could exist discussing other that will include clean safe indoor, outdoor environments at hospital pediatric facilities, health and safety topics for public health protection.

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