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DEVELOPMENT OF AN ISOLATION BED FOR PATIENTS UNDERGOING MIBG TREATMENT FOR NEUROBLASTOMA

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Purpose:

Neuroblastoma carries a grim prognosis with cure rates of only 25-30% in children >18 months of age with metastatic disease. Treatment with targeted radioactive metaiodobenzylguanidine (MIBG) shows a decrease in tumor burden and remission; however, the children become ‘radioactive’ for a three to five-day period and requiring strict isolation. The radiation poses a risk for health care workers, family members, and the patient.

Methods:

Focused observations of children being cared for during treatment with MIBG identified four key problem areas. These were researched and validated through further observations and engagements with patient, families and clinical staff. A multi-disciplinary team of nuclear physicists, safety experts, architects, engineers, physicians and nurses participated in a brainstorming event. Participants were educated about the key issues then generated solutions for treatment. These solutions were evaluated for feasibility and impact then advanced by the design team.

Results:

Over a hundred solutions were generated in the key areas of safe urine disposal, hands-free delivery of the radioactive drug, comprehensive room design and the ‘isolation bed’. The final design includes a protected urine collection system, Geiger counter, IV pump, and retractable “awning” shield to allow transport. These features are combined into a thematic bed equipped with audiovisual capabilities to facilitate patient-family interaction.

Conclusions:

The designed bed specifically allows a patient to remain in isolation while allowing the medical staff and family to safely interact with the child. In addition, the bed allows a safe method of egress for the patient should the patient require evacuation from the hospital or transfer to an area of higher acuity of care. The principles of the isolation bed can be applied to other disease processes - including isolation for immunosuppressed patients as well as patients requiring respiratory isolation (i.e. H1N1 patients).

NOTES: