Technology Applications in Cancer Care: Opportunities for Safety Synergies

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Abstract

Characterized by the highly technologic interventions which currently comprise cancer treatment, this complex and fast-paced care environment is itself potentially hazardous for both patients and caregivers working there.

Indeed ‘hospital acquired’ infections in patients, medication errors and the known side effects of some novel treatments have spawned the highly visible ‘patient safety movement’. Less visible however, is the risk to health those same hazards impose on the men and women who work there.

A case- in- point is the hazard presented by the highly toxic, anti-cancer drugs. Possessing both acute and chronic side effects, including carcinogenicity, these drugs are none-the-less beneficial to the patients requiring treatment. This risk-benefit calculus does not yield the same result however for healthy caregivers inadvertently exposed during cancer care work duties.

Many of these agents are contained in pressurized vials requiring multi-step, manual manipulation by personnel to prepare patient ready formulations. These tasks present opportunities for dosing errors as well as environmental and personnel contamination with toxic drug.

Several novel technology applications will be presented which have recently been introduced to contain drug aerosol during dose preparation and alternatively, an automated engineering design which minimizes dosing errors and mitigates the health threat to patients and workers from these agents during drug preparation will be described. Other still unresolved drug delivery challenges seeking engineering solutions to enhance safety for patients and workers will also be discussed.

Keywords: Cancer treatment, Safety, Anti-cancer chemotherapy

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