Evaluation of Benefits Associated with Chemotherapy Dose-Banding Practices

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Historically, chemotherapeutic agents have been dosed based on body weight or body surface area (BSA), while also accounting for patient specific factors such as age, renal and/or hepatic function, and individual tolerability. Dose-band is a method of dosing which standardizes weight, BSA, and area under the curve dosing. Dose-band within the accepted 10% range has shown non-inferiority for efficacy outcomes and is supported by the Hematology/Oncology Pharmacy Association and the American Society of Clinical Oncology. Benefits of dose-banding:

- Reduces calculation and measuring errors, and overall improves safety of prescribing, preparation, and administration.
- Allows for certain chemotherapy agents with extended stability, such as 5-fluorouracil, to be compounded in advance.
- Reduces drug waste and serves as a cost saving measure.
- The current policy at Parkview Health supports the use of up to 10% rounding of prescribed doses for many monoclonal antibodies and up to 5% for all chemotherapeutic agents.
- The chemotherapeutic agents chosen for investigation have been previously studied for their dose-banding eligibility.

A retrospective chart review was conducted at Parkview Cancer Institute and Parkview Wabash Hospital outpatient infusion clinics from June 1st, 2019, to May 31st, 2021. Prespecified dose-banding tables were created.

Inclusion: Any dose of 5-fluorouracil (ambulatory pumps or syringe), gemcitabine, carboplatin, cisplatin, cyclophosphamide, etoposide, irinotecan, leucovorin, oxaliplatin, or paclitaxel administered.

Exclusion: Doses given as part of a research protocol Doses which did not have a patient weight or height recorded within three days prior to administration.

Outcomes: Primary outcome: The percent of doses that fall within the 10% rounding parameter when using pre-specified dose bands. Secondary outcomes:

- Quantity of unique doses administered versus quantity of unique doses using dose bands
- Theoretical medicinal savings in milligrams and dollars
- Predicted impact on workflow efficiency

The percent of doses within 10% of the predetermined dose were calculated. For each dose, the predetermined dose was rounded to the nearest 5% and each dose was assessed to determine whether it fell within the 10% range of the predetermined dose.

Results: Dose rounding has been adopted and used in a large community hospital during the last 4 years. The current policy at Parkview Health supports the use of up to 10% rounding for many monoclonal antibodies and up to 5% for all chemotherapeutic agents.

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