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Blood Volume Monitoring Protocol in a Pediatric Dialysis Unit

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Introduction: Pediatric hemodialysis patients are at risk for development of severe left ventricular hypertrophy. Hypertension and chronic volume overload are significant risk factors for development of LV hypertrophy. Estimating and achieving dry weight in pediatric HD patients is a difficult process due to pediatric patients' growth on dialysis that is not seen in the adult population. Through the use of noninvasive monitoring of the hematocrit, a more accurate method of estimating the dry weight has been established.

Rationale: At Levine Children's Hospital, our goal is to improve the overall health of chronic hemodialysis patients in the pediatric dialysis unit by implementing an evidence based protocol to optimize dry weight and volume control. Goals include decrease in intradialytic symptoms, accurate documentation of dry weight assessments each month, standardized blood volume monitoring (BVM) protocol using the hematocrit monitor, and documentation of ultrafiltration rate changes which will include rationale for these changes based on BVM.

Methods: We implemented a standard BVM protocol and frequent dry weight assessments. Measurements include percent decrease in intradialytic symptoms, percent of dry weight assessments performed each month at a minimum and percent of time the standardized BVM protocol is used with patients receiving ultrafiltration.

Results: This protocol was implemented in July 2010 and to date we have shown that 100% of patients cared for in the pediatric dialysis unit who are being ultrafiltrated are placed on the BVM protocol. In terms of blood pressure control, we have seen that 50% of eligible patients have documented improvement in pre-dialysis blood pressure readings. Review of intradialytic symptoms has shown a decrease from 12 % of patients with documented intradialytic symptoms (nausea, vomiting, hypotension, dizziness, muscle cramps, etc.) to 7.6%.

Conclusions: Ongoing analysis will confirm these preliminary findings leading to our goal to improve the overall health of our chronic pediatric hemodialysis patients.

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