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Radiation exposure, emergency department usage, and the impact of parental health literacy on a cohort of pediatric hydrocephalus patients in Detroit

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Title: Radiation exposure, emergency department usage, and the impact of parental health literacy on a cohort of pediatric hydrocephalus patients in Detroit

Abstract: Hydrocephalus is a significantly morbid long-term disease. While working with patients for another study we became aware of significant radiation exposure and emergency department usage in this patient population. For this study we quantified this usage; additionally, in an IRB approved study we collected health literacy data from the patients parents to see if it was correlated with either of these measures. A survey was sent to the 129 families for whom contact information was available. Complete data from a cohort of 110 patients was used. A survey response rate of 8% was obtained. Patients averaged 12.96 (± 16.02 SD) emergency room visits, 18.73 (± 21.35 SD) CT-head scans, and 52.48 (± 52.68 SD) head x-rays. This is equivalent to an average radiation dose of 37.99 mSv. The average parent respondent had earnings between \$75,000-99,999, a masters degree, and considered themselves experts in hydrocephalus and shunt malfunctions. As a group, health literacy was rated as poor on a validated health literacy instrument. Given the small number of responses we will take extreme caution in interpreting the relationship between emergency department usage rates and health literacy scores. In conclusion, our study demonstrates that hydrocephalus patients have high emergency department usage rates, are exposed to clinically significant amounts of radiation, and have parents who overestimate their own health literacy. Future educational interventions could target improving parental health literacy to see if a corresponding decrease in emergency department visits can be obtained.