Transcranial Doppler Screening of Medicaid-Insured Children with Sickle Cell Disease

Michael T. Abrams, MPH; David G. Bundy, MD, MPH; John J. Strouse, MD, PhD; Carl H. Mueller, MS; Jennifer Smith, MPH; Marlene R. Miller, MD, MSc and James F. Casella, MD

The Hilltop Institute (UMBC); Medical University of South Carolina; Johns Hopkins University School of Medicine; Johns Hopkins University School of Public Health; Children’s Hospital Association

Introduction

Children with sickle cell disease (SCD) are at an increased risk for stroke. Annual Transcranial Doppler (TCD) imaging is encouraged to discern the level of stroke risk and— for those identified as high-risk— enable them to obtain blood transfusions, which may reduce the incidence of stroke. Past studies indicate that such prevention is underutilized. During follow-up, hematology visits markedly increased TCD: AOR= 8.8; CI= 3.7-22.

Objective

To assess whether the mailing of an intervention letter to parents of Maryland Medicaid-insured children with SCD and their primary care physician (PCP) improved TCD screening rates.

Methods

Subjects of this study:
- Were enrolled in a Maryland Medicaid managed care organization (MCO)
- Were aged 2 to 16 years
- Were Maryland Medicaid enrollees from November 2010 to October 2011 (baseline period)
- Had a primary diagnosis of SCD (ICD-9: 282.41, 282.42, 282.6, 282.60, 282.61, 282.62, 282.63, 282.64, 282.68, 282.69)
- Were aged 2 to 15 years
- Were enrolled in a Maryland Medicaid managed care organization (MCO)

Those without TCD in one Maryland Medicaid MCO were targeted by the intervention MCO (N=117) during the intervention period (Int) 2.9% (N=136) 2.8% (N=435) 0.91

Follow-Up Period 175 ± 33 173 ± 40 0.57

Health Services Use

Emergency Department (ED) Visits
- Baseline Period 4.8± 9.6 4.0 ± 6.4 0.37
- Intervention Period 0.60± 1.8 0.44 ± 1.3 0.39
- Follow-Up Period 1.9± 3.5 1.5 ± 3.0 0.25

Inpatient Days
- Baseline Period 1.2± 2.5 1.7 ± 8.0 0.22
- Intervention Period 0.19 ± 0.75 0.22 ± 1.2 0.75
- Follow-Up Period 0.19 ± 0.75 0.22 ± 1.2 0.75

Transcranial Doppler Imaging

Baseline Period 63% 56% 0.02

Intervention Period 14% 8.8% 0.11

Follow-Up Period 20% 19% 0.86

Table: Adjusted Odds of Receiving TCD Screening during Follow-Up Period

Results

Logistic regression showed:
- The mailing had no significant impact: Adjusted odds-ratio (AOR)= 0.69, 95% confidence interval [CI]=[0.35, 1.39];
- Disability increased odds of TCD screening: AOR= 2.62; CI= 1.12, 6.2.
- During follow-up, hematology visits markedly increased TCD: AOR= 8.8; CI= 3.7-22.
- Baseline hematology visits correlated with decreased TCD in follow-up: AOR= 0.37; CI= 0.14, 0.89.

Discussion

- One-time mailing had little apparent impact.
- Link between TCD screening rates and hematologist visits suggests that the procedure is often specialist-driven.
- Link between disability status and TCD screening rates suggests that the procedure is more frequent in higher morbidity cases.
- Transcranial Doppler imaging is more frequent in higher morbidity cases from Tennessee and Texas point to specialized SCD centers achieving higher TCD screening rates.

Limitations

- Non-randomized design.
- Administrative data cannot differentiate between children with HgbS TCD recommended and children with Hgb TCD not recommended.
- Families and PCPs may have mistrusted, ignored, or simply failed to act in response to this one-time mailing. Such communications are more effective when coupled with additional patient and provider support.

Conclusions and Next Steps

- Revising the letter to emphasize a “seek this expert” as opposed to “seek this treatment” message may result in greater positive effect on TCD screening rates.
- Design surveys or other instruments to directly elucidate reasons for avoiding screening.
- Conduct similar studies with more sustained and broader interventions (reminders, calls, etc.)

References

2. National Heart, Lung, and Blood Institute of the National Institutes of Health. Dr. Casella was also supported by a contract from the Maryland Department of Health and Mental Hygiene (Mbh).

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Figure 1. Transcranial Doppler Imaging

Figure 2. Adjusted Odds of Receiving TCD Screening during Follow-Up Period

Table: Adjusted Odds of Receiving TCD Screening during Follow-Up Period

Descriptive Statistics

Transcranial Doppler Imaging

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Recommendations

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Contact Information:

mabrams@hilltop.umbc.edu

Appendix A: Study Design

Transcranial Doppler Imaging.

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