

Point-Of-Care Home International Normalized Ratio (INR) Monitoring in a Pediatric Cardiology Practice: The Mayo Clinic Experience

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Introduction: INR monitoring by at-home patient self-testing is an effective and safe method for monitoring warfarin therapy in adult patients. Similar data in children and young adults are lacking.

Objectives: To report our center's experience with point-of-care home INR monitoring in pediatric cardiology patients receiving chronic warfarin therapy.

Patients and methods: We reviewed records of all children and young adults (age <25 years) monitored with home INR machines by our Pediatric Cardiology Anticoagulation team and from January 1, 2008 through December 30, 2013.

Results: 37 patients were eligible. The majority (n=19, 53%) received warfarin for a mechanical mitral valve and 7 (19%) for a mechanical aortic valve. Anticoagulation indications for the remaining 11 subjects included bioprosthetic mitral/aortic valves, post-Fontan with arrhythmia and history of thromboembolism, after stent/conduit placement, and dilated cardiomyopathy with low ejection fraction. Therapeutic INR range varied depending on the indication. Mean age at initiation of home INR testing was 12.1 years (SD 6.1 years, Range 0.9-21.9 years). Twenty-five (68%) were female. Subjects used home INR monitoring for a mean of 3.2 years (SD 1.9 years, Range 6 days - 5.3 years). Mean TTR by Rosendaal method was 49.6% (SD 22.9%, range 0-94.7%) and 19 patients (51.3%) had TTR of $\geq 50\%$. Major and minor bleeding complications attributable to elevated INR at or above therapeutic range were defined as per International Society on Thrombosis and Hemostasis. Only one major bleeding event involving intraparenchymal cerebral hemorrhage at INR of 7.4 in a patient with seizure disorder was noted. Of the 12 patients with bleeding complications, five (42%, 5/12) were receiving low dose aspirin concurrently, including the patient with hemorrhagic stroke, while one patient had mild thrombocytopenia. Major and minor bleeding rate were 0.86 and 14.6 per 100-person years, respectively. Thromboembolic complication rate was 0.86 per 100-person years with only one patient experiencing cerebrovascular stroke at a subtherapeutic INR of 1.6.

Conclusions: In adult subjects, point-of-care patient self-testing of INR results in higher TTR, a reduction in major thromboembolism and major hemorrhage and a reduction in all cause mortality compared to conventional management, thus the American College of Chest Physicians 2012 guidelines recommend home INR monitoring for adult patients who are competent and motivated. We report our single institution experience of home INR monitoring with children and young adults on long-term warfarin therapy demonstrating feasibility, safety and effectiveness similar to the adult experience.