

## **087: CAN DISEASE STATE MANAGEMENT DELIVER ON ITS POTENTIAL IN RURAL AREAS – EVIDENCE FROM A COUMADIN CLINIC INITIATIVE**

*Schmelzer J.R., Hillman M. A., Berg R.L.*

### **Objective:**

Evaluate the performance of a newly established, nurse-managed, telephone-based Coumadin clinic designed to improve clinical indicators and health outcomes for patients receiving anticoagulant therapy whose care is managed by cardiologists practicing in a multi-specialty physician group practice.

### **Methods:**

Disease state management programs have been developed as part of broader efforts to better manage resource utilization of chronically ill individuals, reduce unnecessary costs, and improve health outcomes. In the US, most of these efforts have been initiated within health plans and HMOs and have focused on reducing costs. Relative few studies have examined the potential opportunities to organize similar initiatives aimed at fee-for-service populations and the challenges they present, particularly in rural areas.

In this study, we assess the effects of a telephonic, nurse-managed initiative designed to improve clinical and health utilization outcomes for high-risk patients that require anticoagulant therapy. Key clinical and patient health outcomes included 1) the level of anticoagulation control achieved; 2) the frequency and severity of anticoagulant-related health events, primarily hemorrhagic and thromboembolic events; and 3) related health care utilization, including emergency department and inpatient hospital utilization for both anticoagulant-related events and overall utilization.

We specified and tested a series of research hypotheses related to the expected impact of the Coumadin clinic across these outcome measures, using data from two groups of patients undergoing anticoagulant therapy. The study group consisted of 408 subjects, including 185 Coumadin clinic patients and 223 randomly selected control subjects; all subjects had entered the maintenance therapy phase. We observed study subjects for a total of 359 person years of observation time within a total study period that extended from January 1, 1998 through October 31, 2001. During the study period, all study subjects were receiving care by cardiologists and had entered the maintenance phase of their therapy.

A combination of analytic approaches was used to test study hypotheses. Levels of anticoagulant control were analyzed using ANOVA techniques. Cox proportional hazard models were developed to analyze anticoagulant-related adverse health events that required urgent care, emergency care, and/or inpatient care. Separate models were estimated for urgent/emergency care, inpatient care, and combined urgent/emergency/inpatient care. Poisson regression models were developed for analyses of urgent care/emergency department and inpatient events resulting from all causes.

### **Results:**

Coumadin clinic study subjects achieved higher levels of anticoagulant control relative to the comparison group. They had a statistically higher average number of Prothrombin tests (9.1 tests/subject) than comparison group subjects (6.8), despite having much shorter average study observation periods (8.7 months vs. 12.1 months). The average percentage of INR values within the therapeutic range among Coumadin clinic subjects was 73.7% compared to 60.4% in the comparison group ( $P < .000$ ). Coumadin clinic study subjects also spent a higher average percentage of their treatment time (77.4%) within the target therapeutic range compared to control subjects (59.1%) ( $P < .000$ ).

Importantly, large and statistically significant differences were found in overall urgent care, emergency and inpatient care for the study groups. Overall inpatient event rates differed by nearly 29 hospitalizations per 100 person years ( $P = .014$ ) between study groups, with lower rates (41.5/100 person years) achieved by the Coumadin clinic group. These differences in

inpatient event rates resulted in approximately \$271,000 in savings (2000 US dollars) for every 100 person-years of clinic enrolment compared to usual care.

**Conclusions:**

Properly managed disease state management initiatives can yield significant improvements in both clinical and patient health utilization outcomes even for high-risk patients living in less densely settled rural areas. A significant challenge for public policymakers is how to realize the potential benefits of such programs where substantial disincentives to their development exist as it does in the US.