

**Title: Description of HAT and AMS services**

**Description: Supplemental text for Development of multidisciplinary anticoagulation management guidelines for patients receiving durable mechanical circulatory support by Levesque, Lewin, Rimsans, Sylvester, Coakley, Melanson, Mallidi, Mehra, Givertz, Connors in Clinical and Applied Thrombosis/Hemostasis**

**Description of HAT**

The Hemostatic Antithrombotic Stewardship (HAT) service is an inpatient consult team implemented to promote safe and effective use of clotting factor concentrates and antithrombotic agents.<sup>1</sup> It is an interdisciplinary team comprised of a pharmacist, hematology attending, and a medical director. The service is staffed Monday through Friday by a clinical pharmacist with a hematology attending available 24/7 for consults. The HAT service focuses on: (1) management of heparin-induced thrombocytopenia (HIT), (2) management of hemophilia patients requiring concentrated clotting factors, (3) oversight of anticoagulation in patients on extracorporeal membrane oxygenation (ECMO) and (4) management of anticoagulation for LVAS patients during admissions. Through implementation of this service, we have demonstrated improved patient care and a positive economic impact exceeding the cost of this program by almost six-fold.<sup>2,3</sup>

The HAT pharmacist doses daily antithrombotic regimens for LVAS patients. Daily recommendations are documented in our centralized electronic anticoagulation management software (DAWN AC, 4S Information Systems, Ltd), so that all care providers are aware of the recommendations. For weekend dosing, the HAT pharmacist documents a note in the electronic health record (EHR) with antithrombotic recommendations based on the current INR, INR goal and trend, and known upcoming procedures (e.g. planned heart catheterizations). Plans are contingent upon the patient's clinical status and may be altered by the primary team and covering pharmacist as needed. A daily email is sent to the covering Hematology team, inpatient pharmacists, and ambulatory AMS pharmacists, including a list of

all admitted LVAS patients, recently discharged LVAS patients, and detailed plans for LVAS patients on intravenous (IV) direct thrombin inhibitors (DTIs) outlining the goals of care (treatment of HIT vs suspected LVAD thrombosis) and the plan for transitioning off IV DTI therapy. For LVAS patients requiring interruption or temporary reversal of anticoagulation for procedures or surgical interventions, HAT will also provide recommendations for INR reversal based on the target INR, patient and procedure specific risk-factors for bleeding and thrombosis, periprocedural bridging if appropriate, and available reversal agents.

When patients are discharged, the HAT pharmacist communicates directly with the AMS pharmacist to provide hospitalization details including any changes to the antithrombotic management plan such as initiation/discontinuation of antiplatelet agents, bridging plan if needed to facilitate discharge, new interacting medications, bleeding or thrombotic events, upcoming procedures, and changes in INR targets. The HAT pharmacist communicates transition of care plans such as next INR draw and home care services if applicable. If there are complications prohibiting safe management (e.g. travel to a laboratory), the HAT and AMS pharmacists will develop an appropriate discharge plan for anticoagulation management.

### **Description of AMS**

The AMS is a pharmacist-run ambulatory clinic that manages approximately 3,000 patients on oral anticoagulation under a collaborative drug therapy management (CDTM) agreement secondary to a referral from an attending physician. Of the 3,000 patients, we average approximately 65 active LVAS patients. Our CDTM agreement allows institutionally credentialed pharmacists to write prescriptions for anticoagulants and reversal agents (e.g. phytonadione), and order related labs. Our clinic is comprised of medical co-directors, pharmacy leadership, 9.5 full time equivalent pharmacists, 1 administrative assistant, and 4 pharmacy interns. The medical director and pharmacy leadership oversee both the HAT and AMS services to provide continuity for staff and patients.

The AMS pharmacist is responsible for all aspects of a patient's anticoagulation management including coordinating visiting nurse and home draw services, providing warfarin dosing based on INRs, developing peri-procedural management plans, and educating patients and their families on lifestyle and medication management considerations while on anticoagulant therapy. All LVAS patients are considered high-risk and receive same-day communication from the pharmacist on the scheduled day of testing regardless of whether the INR resulted by the end of the business day. If the INR is not assessed as anticipated, the pharmacist will call the patient to determine the cause of the missed INR and make plans for a re-test date and provide interim dosing recommendations. All dosing and adherence information is communicated with the AHD/MCS team and are available in the EHR.

In addition to a centralized, collaborative approach to anticoagulation management and standardized practice guidelines, an additional strength of our program is the ability to document all anticoagulation-related events for both inpatient and outpatient encounters in a common EHR for transparency to all providers. This allows for smooth transitions of care between the inpatient and outpatient practice areas. Detailed anticoagulation-management plans are documented by either the HAT or AMS team in our electronic anticoagulation management software. The last three encounters are then available via a link in our EHR that is visible to all providers. Reports are generated using this system to track quality assurance data such as TTR, critical INRs, and safety event data (e.g., bleeding and clotting).

## References

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