



# Organisation of Thrombosis & Hemostasis (T&H) Service How Does it Function in Stockholm?

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## Abstract

Hemostasis is an important part of human body homeostasis and therefore both congenital and acquired hemostatic disorders need to be properly diagnosed and treated. However, organization of thrombosis & hemostasis (T&H) service (sometimes also called Hemophilia & Thrombosis) is not unified around the world. Despite some attempts to suggest both clinical and laboratory curriculums for health care practitioners within the field it is still not always clear to which department and professionals to turn, when being in need of advice for proper laboratory and clinical approach. Usually T&H service may fully or partially belong to different health care providers from laboratory & transfusion medicine to hematology, general medicine, cardiology or even vascular surgery departments. This author suggests that it is of importance that service is performed by those who are most experienced and knowledgeable, irrespectively of the clinical placement. The most appreciated is the Anglo-Saxon model present in many British and USA centers as separate units which include both laboratory diagnostics and clinical service. Proper organization of T&H service is of importance not only for the patients, health-care providers and taxpayers but also enables development of high-quality research.

This model was also present in two most comprehensive Swedish T&H centers (Malmö and Stockholm) but nowadays clinical and laboratory parts belong to different clinics/departments.

In Stockholm the clinical part of the T&H service belongs to the Hematology Clinic. One smaller out-patients anticoagulant clinic is located in the large hospital south of the city. Specialized registered nurse (RN) takes care about newly diagnosed patients with thrombosis and follow up other Warfarin and DOACs treated patients (e.g. atrial fibrillation and mechanical valves). The main clinical part is situated in the New Karolinska Hospital in the north part of the city taking care of patients with both bleeding and thrombosis. Hemophilia comprehensive center offers live-long service for patients with congenital bleeding disorders from Stockholm and entire Sweden north of Stockholm. Consulting service (including 24/7 on-call) is available for

both Karolinska Hospital in-patients as well as for other health care providers in Stockholm County but also for the rest of Sweden. This service is provided together with children coagulations specialists. Several adult medical doctors (MDs) with different specialist backgrounds and pediatricians with sub-specialization in the coagulation medicine together with several RNs are partly or full time employed by the hospital.

Laboratory part of T&H service belongs to the Clinical Chemistry which is a part of Karolinska University Laboratory a part of Medical Diagnostic Karolinska situated in the six hospitals within Stockholm County. Routine coagulation tests (PT, APTT, fibrinogen, D-dimer, antithrombin and Anti-Xa) are available in all six hospitals as 24/7 service performed by registered biomedical scientists (BMSs). Physician and biochemist/engineer are support through Matrix organization. Specialized coagulation includes some 24/7 available tests (FVIII, vWF, Multiplate platelets function etc.) while the rest of specialized service includes full thrombosis/thrombophilia (e.g. AT, PC, PS, lupus anticoagulant) and bleeding disorders (e.g. hemophilia A & B, von Willebrand disease, platelet function disorders) investigations including genetic testing. This service is performed by specialized BMSs also supported by MD and biochemist/engineer. MD is also responsible for the written interpretation of laboratory findings.

Despite belonging to different clinics/departments both clinical and laboratory T&H services at Karolinska University Hospital are closely associated with everyday informal contacts and several formal meetings during the week (including once a week doctor rounds).

In conclusion, even if clinical and laboratory parts of T&H are physically separated and belong to different clinics/departments it would be desirable that T&H service functionally, albeit informal, represent a common single unit. Such an approach offers best potential care to the patients with bleeding and thrombosis, helps the structurization of the health-care system and also contributes to the excellence in the research.

