OVERVIEW

I. Executive Summary

Politicians and healthcare leaders in Denmark have called for the development of a "world-class" emergency care delivery service that delivers uniformly high quality care to all people, regardless of the time or place of their presentation to the healthcare system. HMFP believes that with the right vision, planning, resources and leadership, this is achievable.

HMFP was asked by the Region to assess the current emergency care delivery system and regional plans for modifying that system in accordance with recommendations from Sundhedsstyrelsen (the Danish National Board of Health). In conjunction with this review we were also asked to:

- propose a strategy for developing training programs for physicians and nurses to staff the future fælles akut modtagelse (FAM), and
- develop recommendations for optimizing the implementation of the proposed future FAM and related aspects of the emergency care delivery system.

We undertook an assessment of the current emergency care system in partnership with the members of the Regional emergency care project committee. This assessment was based on a review of structural, process and outcome data made available by the Region, published reports on emergency care delivery by Danish Regional and National healthcare bodies, other publicly available data, plus observation of the three different sectors that provide emergency care: the pre-hospital ambulance system, primary care sector and hospital sector. We visited facilities, met with emergency care providers, educators, leaders, healthcare administrators and policy makers. We also had some limited opportunities to observe the delivery of care and to interview private citizens about their impressions of the current state of affairs in emergency healthcare.

The data that we were able to obtain and base our assessment and recommendations on are limited. Besides our own direct observations during the days of our visit, the data provided to us by the Region consist primarily of structural indicators with a very limited amount of usable process and outcome data.

Our review of the emergency care system in Region Nordjylland revealed a number of strengths in each of the three emergency care sectors, as well as opportunities for improvement.

The Danish mobile intensive care units represent one of the best examples that we have seen of advanced prehospital emergency care delivery to out-of-hospital patients with life threatening conditions who require immediate life saving intervention on-scene.

Via the vagtlæge system, Danish general practitioners provide an unparalleled level of access to physician evaluation, advice and treatment for patients with non-life threatening emergencies outside of normal office hours and facilitate their access to further care in the hospital system when that proves necessary.

Many of the hospital inpatient specialty departments have developed systems that provide world-class emergency care for selected patient groups. In particular, the partnership between Interventional Cardiology and the ambulance system whereby patients with STEMI (ST elevation myocardial infarction) are diagnosed via telemedicine and

transported directly to cardiac catheterization is impressive. Most impressive is that this state-of-the-art, exceptional quality system is uniformly available everywhere in the country.

Some of the opportunities for improvement we identified have already been targeted by national and region policy makers for future initiatives; others have not.

The interface between out-of-hospital (ambulance and primary care) and in-hospital emergency care (akutmodtagelse) has been recognized by national and regional policy makers as being the weakest link in the chain of emergency care delivery. The major issues here are:

- inexperienced physician trainees without supervision are responsible for initial care of potentially very sick patients,
- too many entry points into the hospital exist for acute, undifferentiated patients, leading to high variability in the initial management,
- no single physician group currently possessing the requisite knowledge and skills to independently provide high quality initial management of all emergency patients entering the hospital system, and not enough specialists available to implement an effective, multi-specialty staffing model.

Under the current system, some categories of emergency patients appear to receive good care, while others do not. Patients who are clearly ill and have a clear diagnosis seem to receive good care because they are rapidly recognized and transferred directly to the inpatient hospital departments that are able to provide definitive care. Patients who are clearly not significantly ill are referred to the primary care sector, where they are cared for within an appropriate time frame. However, patients who are moderately ill appearing and who have an unclear diagnosis or multiple diagnoses appear to be at significant risk under the current system of not receiving timely, appropriate evaluation and treatment.

These patients are typically referred to one of many possible hospital akutmodtagelse units where their initial care is provided by inexperienced physician trainees without supervision by experienced senior physicians. This creates many opportunities for variability in care, including delays in diagnosis and treatment as well as others errors in management. When in doubt about the management of individual patients, inexperienced physician trainees appropriately tend to admit patients to the hospital, rather than send them home. This may explain, in part, the 2 – 3 fold higher per capita rate of acute hospital admissions in Denmark compared to the United States.

Insuring high quality of care irrespective of time or location (*"høj kvalitet uanset tid og sted"*) has been identified by national and regional policy makers as the number one reason for reforming the emergency care system.

While the current Danish emergency care system clearly contains many excellent features, we believe that bringing this system to a higher level, in which uniformly excellent care is provided throughout the region, will require a number of substantive changes in how emergency care is organized, delivered and managed, in particular in the hospital-based emergency care sector.

The organization and staffing of the future FAM are of central importance to addressing many of the issues outlined above.

We endorse the operational model proposed by Sundhedsstyrelsen in which the future FAM serves as a single portal of entry for all undifferentiated acute patients (except for certain specifically defined patient groups).

We do not believe that a multi-specialty physician staffing model is either feasible or compatible with the long term delivery of high quality emergency care under this consolidated FAM model and recommend the development of an emergency physician and emergency nurse role to primarily staff the FAM in the future. The clinical care model for the FAM and scope of practice of these new providers needs to be specifically defined. Specifically, the interfaces with other hospital departments and providers must be clear in order to develop competency based education and training programs to prepare individuals for success in these new and challenging clinical roles. Emergency Medicine curricula and post-graduate medical education programs from numerous countries can serve as models for future Danish emergency physician and nurse training programs. A certification mechanism for training program graduates by an appropriate certifying body will serve to establish credibility for this new clinical role.

Multi-specialty staffing will of course be necessary during the initial transition period while an emergency physician and nurse workforce is being developed. This will ideally be implemented initially as a "fagområde" training for doctors with prior specialty training in other areas. Given the general lack of specialist physicians however, we believe that a long term strategy of requiring physicians to first complete training in one specialty and then pursue additional training in emergency medicine, will further decrease the desirability of this area of clinical practice as well limit the needed production of new specialists in other clinical disciplines.

For the FAM model to succeed, these positions must be made sufficiently desirable so that talented, ambitious individuals will consider "giving up" their primary specialty. Only such motivated individuals will take ownership of these new clinical roles and embrace the difficult work of creating these new departments that can deliver high quality emergency care. In order to establish the academic and professional legitimacy that is likely necessary to attract such individuals, we believe that emergency medicine (akutmedicin) will need to be eventually recognized as a medical specialty, in accordance with world-wide trends.

The clinical care model for the future FAM and the role for the akutlaege in staffing the future FAM, which have been tentatively proposed by the Regions, are based on a number of assumptions about future patient volumes, acuity and case mix that are unlikely to be accurate, based on current data. The current model for the FAM assumes that 30% - 40% of the existing skadestue patient volume will be able to be shifted to the primary sector. This would result in a FAM patient population that is relatively smaller, but with higher average acuity than the current volume of emergency patients cared for by the combined hospital akutmodtagelser and other units receiving acute patients. It is anticipated that the FAM will be able to manage patients for up to 48 hours with significant involvement of other hospital specialists, and then discharge a significant percentage without admission to the hospital.

Trends in the primary care sector point towards a likely shortfall in the number of primary care physicians over the next 5-10 years, with the result that as many as 18% of the population in Region Midtjylland and 37% of the population in Region Nordjylland could be without a primary care physician by the year 2011. Many of these patients will likely

turn to the vagtlaege system for a portion of their primary and urgent care needs, which could easily lead to the vagtlaege system being overwhelmed and possibly collapsing.

Steps need to be taken to prevent this from occuring, but also to be prepared in the event that the vagtlaege / primary care system is overwhelmed. The future FAM needs to be organized in such a way, and its staffed adequately trained to be able to safely and effectively manage a high patient volume of mixed acuity and case mix. This means that the future akutlaege will need to possess a knowledge base and skill set that allows them to function quickly, accurately and largely independently of other specialists in the clinical environment of the FAM. This will require an educational training standard for akutlaeger that closely models the discipline of emergency medicine.

Coordination of emergency care efforts across sectors is necessary to minimize redundancy and maximize standardized care delivery across sectors. This will help insure a patient-centered approach to emergency care; the current system is organized and functions more like three separate systems than a single integrated system. We see several important issues here:

- There appears to be limited coordination of patient care activities between sectors / departments: for example, the entirely separate clinical operations of the vagtlæge konsultation and skadestue/AMA; the completely separate dispatch and operation of ambulance units (MICU) and mobile VL units.
- There appears to be little or no coordination of gathering and analysis of emergency patient encounter data between sectors and departments: ambulance system, primary sector, hospital sector, different hospital departments providing emergency patient care.
- There appears to be overlapping or unclear roles and responsibilities in a number of areas throughout the emergency care system: for example, who is responsible for 112 dispatch-associated medical assessment and decision making (medical personnel vs. police)? Who is responsible for evaluation and treatment of out-of-hospital patients who do not require hospitalization (MICU physicians vs. mobile VL)? Which physician specialists are responsible for initial management of emergency patients in the hospital?

Knowing when the desired level of quality in emergency care delivery is achieved requires that it be <u>defined</u> and <u>measured</u>. There are several major challenges here:

- The Danish Quality Model represents a state-of-the-art strategy for development of healthcare quality standards and guidelines, but DQM standards to date have focused only minimally on hospital based emergency care and not at all on emergency care delivered outside of the hospital sector. As a result there is no "system-wide" or "cross-sectoral" framework for emergency care quality.
- Individual studies report good quality of care within specific sectors and departments at specific points in time. However, these quality reviews in many cases do not appear to factor in the transfers between sectors and departments that routinely occur due to the highly distributed nature of the emergency care system. Likewise, there appears to be very little on-going "quality monitoring" with regard to emergency care delivery whereby specific process or outcome

indicators are routinely measured, analyzed and reported to overseeing agencies.

- Accessibility, reliability, and level of detail of healthcare data were identified as major problems during our assessment. The implementation of quality improvement efforts, system administration and planning requires that healthcare data be easily accessible and reliable.

The recommendations related to the development of emergency physician and nurse training programs, as well as other recommendations for further improving the quality and efficiency of emergency care delivery across the system are summarized below.

1. Develop on an inter-regional collaborative basis, coordinated training programs for physicians and nurses who will staff the future FAM.
2. Seek recognition of a "fagområde" in emergency medicine ("akutmedicin") initially and simultaneously start the process for establishing a specialty in emergency medicine within five years.
3. Develop a certification mechanism in parallel with the training programs for emergency physicians and nurses that will serve to verify the acquisition of new knowledge and skills as well as reinforce and demarcate the scope of practice of the emergency physician and nurse for the entire medical community.
4. Commit to a common inter-regional vision for the FAM organization and operation with parallel regional and hospital leadership structures that coordinate their activities.
5. Appoint a dedicated leader or coordinator for regional FAM development whose primary role is to oversee the development of the network of FAM at designated hospitals and insure that this moves forward in accordance with the expectations of Regional healthcare and political leaders.
6. Invest sufficient resources and personnel time to insure the successful development of the new emergency care delivery system.
7. Select a single designated FAM hospital within the Region to serve as a pilot project for FAM implementation; implement FAM units at subsequent hospitals based on the initial experience at the pilot hospital.
8. Adopt the organizational model for the FAM proposed by Sundhedsstyrelsen, whereby all of the existing "akutmodtagelse" functions for the hospital patients are merged into one department that functions as the single portal of entry to the hospital for acute and undifferentiated patients (except for specific well defined patient groups with clear indications for definitive care that is available on an inpatient department).
9. Clearly define the model of clinical care to be provided in the future FAM in order to demarcate the extent of patient care provided in the FAM by FAM personnel and what patient care will be provided in other departments and services that interface with the FAM, such as the inpatient specialty admitting services, the prehospital ambulance services, and the vagtlæge konsultation.

10. Clearly define the roles and scopes of clinical practice of FAM physicians and nurses in the context of the model of clinical care in the FAM described above and base these on the discipline of Emergency Medicine.
11. Implement a standardized triage algorithm for the initial evaluation of all akut and undifferentiated patients arriving at FAM hospitals.
12. Locate the vagtlæge konsultation at each designated FAM hospital in the region adjacent to the FAM and closely coordinate its operation with the FAM, so that patient care, patient satisfaction, vagtlæge productivity and satisfaction as well as resource utilization is optimized.
13. Coordinate the medical screening of patients with psychiatric complaints between the FAM and the psychiatric akut modtagelse.
14. Involve the FAM leadership at the hospital level in the planning process for renovation and new construction of FAM facilities.
15. Establish or designate a Regional Office for Healthcare Informatics with responsibility for developing a central registry for tracking all emergency patient encounter activity from all sectors within the Region.
16. Develop a standardized set of information that is gathered on all emergency patient encounters regardless of sector (hospital, prehospital, primary sector) and including all patient contacts as well as telephone contacts, so that relevant information can be centrally registered, stored and analyzed at the Regional level.
17. Adopt a standardized set of patient medical data that is documented during patient visits in the FAM and move toward the use of standardized forms for documenting these at all FAM hospital.
18. Develop a standardized electronic patient medical record that is compatible with electronic medical records in the other emergency services that interface with the FAM (prehospital, hospital-based and primary sector).
19. Develop patient data tracking and decision support tools to facilitate the delivery of high quality emergency care in the region's FAM.
20. Work with IKAS to develop an interlocking set of quality standards and guidelines for the FAM, ambulance service and vagtlæge system, which defines a cross-sectoral quality framework for uniformly excellent emergency care regardless of where or when patient seeks emergency care.
21. Develop specific clinical guidelines for the FAM along with indicators for tracking implementation and methodology for monitoring their results.
22. Fund the establishment of an independent research effort to study the impact of implementation of the FAM model.
23. Expand and develop the role of the AMK as the Lead Agency for regional oversight for all prehospital care including alarmcentral with responsibility for coordination of dispatch, prehospital medical operations, communications, education of personnel, and quality monitoring.

24. Improve dispatch strategies for the physician ambulance to more accurately target patient calls that require immmediate physician assistance.
25. Explore the development of First Responder initiatives where Police, Fire or other public safety personnel receive training in basic first aid, CPR and the use of semi-automatic external defibrillators (SAED), and are equipped with the basic equipment to perform these simple, proven, life-saving interventions that require only minimal training to perform effectively.
26. Explore possibilities for extending the hours of operation for the vagtlæge telefonvisitation and konsultation system from 16 hours per day to 24 hours per day and discontinue the mobile vagtlaege service.

These recommendations are described in further detail in the body of the report.