A proposal for interdisciplinary, nurse-coordinated atrial fibrillation expert programmes as a way to structure daily practice

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Introduction
Atrial fibrillation (AF) is a frequently occurring arrhythmia that is independently related to increased morbidity and mortality. In particular, AF is associated with complications such as ischaemic stroke, systemic thrombo-embolism, and heart failure, leading to increased hospitalizations.1 Atrial fibrillation, therefore, has a major impact on healthcare systems, which is likely to expand in an ageing population.1,2,3

Although AF can occur asymptptomatically, two-thirds of the patients experience symptoms. The management of AF is, besides stroke prevention, predominantly focused on controlling symptoms and on improving quality of life (QOL).1,2,4 Symptom profile and burden can vary over time, both within and between patients. Consistent symptom assessment and follow-up are therefore important. Moreover, evidence-based guidelines facilitate clinicians in obtaining positive patient outcomes.1,2,4,5 Nonetheless, guideline adherence in practice is often poor,7 leading to suboptimal symptom control, reduced benefit from proven treatments on morbidity and mortality, and inappropriate healthcare resource use.

Recognizing that symptom management and improving guideline adherence are important both for patients individually and for the impact on healthcare systems globally, it is mandatory to develop and implement more efficient ways to deal with AF.6,8,9 However, the best model for implementing AF care is still unclear. This article presents our viewpoint regarding optimized AF management by comprehensively addressing (i) the main goals to be achieved; (ii) the related requirements for AF management programmes to achieve those goals; (iii) our position that nurses should have an important coordinating role in such programmes; (iv) the implementation of such programme in practice; and (v) which outcomes should be targeted to evaluate effective deployment.

What do we aim to achieve in atrial fibrillation management?
Atrial fibrillation care should be organized to achieve clearly defined outcomes.10 As AF management is aimed at reducing symptoms and preventing severe complications,2 care should primarily focus on outcomes such as lower symptom burden, increased QOL, and decreased morbidity and mortality. However, healthcare system factors should also be targeted, e.g. optimizing access for patients despite limited physician time, or preventing unplanned hospitalizations, readmissions, and emergency care visits.

Hence, the ideal strategy should commit to a continuous improvement in delivering care by focusing on all relevant AF management outcomes and thus achieving the best possible effect of care. Effectiveness, cost-effectiveness, and impact of delivered service should be assessed by measuring outcomes in practice, to make evaluation and continuous adjustments possible.

What are requirements of an atrial fibrillation management programme to tackle the atrial fibrillation epidemic?
Implementation of evidence-based guidelines is critical. The term ‘implementation’ is often used to indicate ‘dissemination’, i.e. the

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process of reaching professionals. Real implementation, however, means conversion of guidelines into practical workflow models that guarantee their application in individual patient care. The latter is usually not addressed in a systematic way, but forms the focus of the AF management programmes that we describe here.

The most effective way to accomplish systematic implementation of guidelines into daily care is still unclear. Other areas in cardiology, like heart failure clinics, have developed experience in dedicated comprehensive disease management programmes. We believe that such a programme, in which different professionals collaborate, is also essential to provide guideline-based AF management. An AF programme can integrate protocolized diagnostics, management of anticoagulation, rate and rhythm control, and treatment of co-morbidities. Throughout, patients are educated, empowered, trained, and provided with self-management counselling, which contributes to improved outcomes in terms of cardiovascular hospitalization and death.

Advocacy for nurse-coordinated atrial fibrillation management

Many components of an integrated management approach are not purely medical, but consist of communication and education. Physician time is limited and expensive, often focusing on essential aspects of diagnosis and treatment but less on non-medical aspects, leading to suboptimal guideline implementation. A dedicated person is needed to coordinate all aspects of care. First experiences with AF programmes show that a devoted Clinical Nurse Specialist (CNS) can play a critical role in coordinating interdisciplinary practice. Clinical Nurse Specialists in heart failure clinics have proved to be effective. Nurse-coordinated care allows better to systematically assess patients and implement the multifaceted approach adherent with guidelines. Clinical Nurse Specialists have more time for patients than physicians and are more easily accessible, and thus constitute the natural pivot of communication. Clinical Nurse Specialists, frequently Masters-trained, can act more than in an executive role but also as change agent, because they have research skills and knowledge of healthcare improvement processes. They are capable of coordinating multidisciplinary teams in developing, implementing, and evaluating new strategies that meet the expectations of healthcare entities.

A ‘nurse-coordinated atrial fibrillation expert programme’ addresses five cornerstones in practice

Comprehensive assessment

Detailed assessment is critical for patient stratification and allocation towards an appropriate and tailored management plan. The CNS can perform a global cardiovascular risk assessment and can check for systematic screening of underlying diseases. Awareness of symptoms is not a good discriminator of presence or severity of AF and therefore difficult to use as a risk-related predictor of complications. The latter should be based on the CHA2DS2-VASc score for stroke and HAS-BLED bleeding risk score. Nevertheless, symptom control is a separate ‘driver’ of AF management and a key factor for patients’ QOL. Relation between symptoms and AF, however, is not always obvious, because other cardiovascular conditions and AF risk factors can cause similar symptoms. Changing AF patterns also contributes to the complexity of its assessment. Hence, sound symptom assessment is needed to determine whether therapies aimed at reducing symptoms are needed and effective. Atrial fibrillation-specific tools to systematically assess patient symptoms should be developed, evaluated, and integrated. Implementing risk and symptom scoring tools in a software decision support system could further improve application of guideline recommendations, as discussed below.

Systematization of medical care

The entire assessment, coordinating diagnostic work-up, treatment plan developing, and setting up proper follow-up are time-consuming. Systemization is critical to avoid unnecessary or unwanted variability in care provision. On the basis of comprehensive assessment and in dialogue with the supervising physician, CNSs can define and propose an interdisciplinary guideline-based management plan. To systemize the whole AF management process, CNSs can develop and use evidence-based practice protocols adapted to a specific healthcare institution. Furthermore, (digital) clinical pathways should be developed and implemented into the

Figure 1 Cornerstones of interdisciplinary AF expert programmes.
hospital information system, both for outpatient and in-hospital patients, to support the disease management programme and to enhance the quality of care by improving outcomes, promoting safety, increasing satisfaction, and optimizing the use of resources. Clinical pathways attempt to increase efficiency by organizing the care-delivery process into analyseable steps and are one means of supporting the systematic use of evidence-based recommendations. Implementation in hospitalized heart failure patients showed better guideline-adherence, decreased mortality rates, shorter hospital stays, and less readmission after discharge. The CNS can play a key role in development and execution of such pathways, as full advantage can only be taken if the process is governed by a ‘process care taker’. Pathways allow continuous surveillance of clinical outcome indicators and can be used for auditing, standardizing, and improving the organization of care.16

Education
Better patient education is needed. At least one-quarter of patients does not understand and cannot explain AF. One in four physicians experiences lack of time to educate the patients.17 Nevertheless, education is effective since it leads to active patient participation and improved outcomes.7 Clinical Nurse Specialist may be the best guarantee that education is provided. Clinical Nurse Specialists have the competence to assess patients’ educational needs, and can provide personalized education about pathophysiology of AF, treatment options, and action plan, including addressing psychosocial challenges. As education is not a one-way process, assessing whether a patient is receptive is important. ‘Testing knowledge’ and ‘adaptation of education level’ should therefore be integrated in the AF care programme. By the CNS competence to use evidence-based education strategies and to create a learning environment that facilitates patients’ self-reflection and self-management, the programme will obtain positive behavioural changes. The CNS can direct patients to existing educational material and patient organizations, and can create new educational materials using a variety of formats including written and interactive computer applications. Group education sessions can also be efficient to inform and facilitate peer support. Furthermore, to pursue continuous quality improvement, the CNS commits to lifelong learning and uses feedbacks to improve effectiveness of the educator role.18

Coordination of care
Physicians consider AF difficult and time-consuming to manage. Cardiologists rated AF as the third most demanding and the second most difficult condition to manage.17 Even for a trained specialist, many aspects of assessment and communication are time-consuming. Failure to address those aspects may negatively affect the quality of care.7

Therefore, an AF programme may be more effectively and efficiently organized by a CNS, who coordinates implementation of the management plan by being a liaison between patient, family, referring physicians, and other caregivers. The CNS can plan and coordinate concerted action by various caregivers, and can provide education, information, and specific instructions regarding their responsibilities. As a central contact person, the CNS can be reached concerning management questions by both in- and outpatient caregivers and patients themselves, leading to improved access.

Evaluation of care plan execution
A critical aspect should be evaluation of care plan execution. The CNS can be responsible for continuous follow-up of the management plan, focusing mainly on compliance issues, adherence to follow-up, changes in risk profiles, symptom improvement, and on satisfaction. Monitoring predefined outcomes pertinent to the care plan can serve as an ideal evaluation method to check whether it is effective and well implemented. On the basis of these outcomes, care plan adjustments can be made.

Overall importance of software and clinical pathways
Using a software program containing guideline-based management advice is recommended, as it can be a meaningful tool to support the five cornerstones. It guides physicians and CNSs through the care process. Moreover, it serves as an electronic patient record (medical history, diagnostic tests, etc.), is able to determine an individual patient profile (based on type of AF, stroke risk, bleeding risk, symptoms, etc.), and proposes the most appropriate guideline-based management plan to implement. It is, however, important to adapt it to local practice, both medically and logistically, to optimize its impact. At both the University Hospitals of Maastricht and Leuven, such a software program, which directs medical therapy based upon patient’s profile and clinical guidelines, has been implemented and shown to effectively increase guideline-adherence both by physicians and by CNSs.9,12,13

Interdisciplinary clinical pathways put the whole care process (from comprehensive assessment to evaluation of care plan execution) into concrete terms and translate it into actual care. It is known for its ability to expedite patient care while optimizing healthcare resources. Moreover, a digital clinical pathway with full integration of nursing and physician documents reduces variations in clinical practice, improves standard of care, and facilitates guideline implementation by medical teams. It prevents duplication and allows physicians and nurses to spend more time on disease management. Such personalized care also improves patient satisfaction.16

How can nurse-coordinated atrial fibrillation expert programmes be structured?
It is our position that the CNS should be a central contact person in AF patient care under the supervision of a cardiologist or electrophysiologist. Figure 2 displays how different disciplines could be structured around the patient. The CNS could act as recipient for intra- and extramural consultation requests and could see patients in preparation of clinic visit evaluation by the physician (‘nurse-coordinated’: upper panel). Alternatively, the evaluating physician delegates tasks to the CNS in the work-up and management of a patient (‘nurse-assisted’: lower panel). The supervising physician defines guideline-based management plan, in collaboration with a CNS and a patient. This usually is finalized during a clinic visit.
The CNS is responsible for plan implementation, patient education, and coordination of care and follow-up in conjunction with the referring physician.

Inspired by earlier work, we developed a flowchart detailing assessment and care process of patients in the AF programme, from consultation request until follow-up (Figure 3). This flowchart should be seen as a blueprint, a starting guide for development and implementation of AF programmes. It should be adapted according to institutional needs and requirements.

**Outcomes to evaluate effectiveness of atrial fibrillation expert programmes**

Because ‘outcome assessment’ is crucial in evaluating effectiveness of clinical interventions, it is important to determine outcomes sensitive to implementation of AF programmes. Currently, no consensus exists on which outcomes should primarily be assessed.
Covering the whole spectrum of possible AF management-related outcomes, different classifications can be used to identify relevant outcomes. Currently, a study is in progress at the University Hospitals of Leuven, in which an international expert panel is established and consulted with respect to outcomes pertinent to mortality, morbidity, QOL, patient and caregiver experience, process evaluation, and economic consequences. Different outcomes will be ranked in the order of importance. Such lists can form the basis of ‘benchmarks’ to evaluate effectiveness of AF programmes or other interventions. We have mapped some tentative process and clinical outcomes that have already been measured, evaluated, or considered in literature, to the structural design of the AF expert programmes shown in Figure 3.

Effectiveness studies of AF nurse-led management interventions are scarce, especially with mortality as endpoint. Nevertheless, they suggest that such programmes provide facilitated access to medical care, deliver more efficient coordinated care, and improve guideline adherence and health outcomes.
Conclusions

As there is a growing need for putting guidelines into practice, many initiatives will be coordinated over the coming years. We have argued here for nurse-coordinated AF expert programmes, but other approaches are imaginable. It is important that effects of such approaches are evaluated in a standardised way, by measuring universal outcomes. We call upon researchers and clinicians who are setting up AF expert programmes, to report on their efforts and to evaluate their effectiveness. Dialogue and communication will be vital to find solutions to tackle the AF epidemic most efficiently. The present article aims to start this process.

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