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Research in cardiovascular care: A position statement of the Council on Cardiovascular Nursing and Allied Professionals of the European Society of Cardiology

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Abstract

To deliver optimal patient care, evidence-based care is advocated and research is needed to support health care staff of all disciplines in deciding which options to use in their daily practice. Due to the increasing complexity of cardiac care across the life span of patients combined with the increasing opportunities and challenges in multidisciplinary research, the Science Committee of the Council on Cardiovascular Nursing and Allied Professionals (CCNAP) recognised the need for a position statement to guide researchers, policymakers and funding bodies to contribute to the advancement of the body of knowledge that is needed to further improve cardiovascular care. In this paper, knowledge gaps in current research related to cardiovascular patient care are identified, upcoming challenges are explored and recommendations for future research are given.

Keywords

Research, nursing, allied professionals, policy

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Introduction

Cardiovascular disease (CVD) is the number one cause of death globally. As such, more people die annually from CVD than from any other cause.[1,2] This is despite the fact that improved preventive measures, diagnoses and therapies have resulted in significantly improved survival rates in cardiac patients.[3–5] Major reasons for this discrepancy are the aging population and the higher standard of living. It has been estimated that by 2050 the number of people in Europe above 50 years of age will have risen by 35% while those over 85 years of age will have tripled. In addition, it is projected that one in three elderly people is likely to suffer from a chronic disease or disability, including CVD, which will limit their independence.[6]

In addition to the increasing volume of cardiac patients, current health care faces new possibilities in the area of diagnosis and development of innovative treatment regimes, all resulting in an increasing demand for cardiovascular care. The term 'care' is widely used but can be more precisely defined as 'responsibility for or attention to health, well-being and safety'.[7] With the improvement in medical treatment and the contribution of advanced technical equipment, care for the cardiac patient, with or without comorbidities, has become more complex and involves a broad team of physicians, nurses and many other disciplines such as physiotherapists, dieticians, psychologists and technicians, to mention a few.

To deliver optimal patient care and to support health care staff of all disciplines in the decision-making process, evidence-based practice is a prerequisite. Cardiovascular patient care is provided across a multitude of patient populations in acute and chronic settings and in the continuum of the patient journey from prevention to primary, secondary and tertiary care and, in some instances, to end of life and palliative care. Research in the area of cardiovascular care addresses several areas, with respect to the organisation of care, such as cardiac care units and disease management programmes and with respect to the content of care, e.g. patient education, symptom management, treatment adherence and coping with chronic illness.

Parallel with the increasing need for a robust evidence base for cardiovascular care, an increasing number of opportunities and challenges for the conduct of multidisciplinary research appear. The Science Committee of the Council on Cardiovascular Nursing and Allied Professionals (CCNAP)[8] recognised the need for a position statement to help researchers, policymakers and funding bodies to contribute to the advancement in the knowledge base that is needed to further improve cardiovascular care.

The aim of this paper is to describe global achievements in cardiovascular care research to date and to reflect on upcoming challenges and developments in this area and use this as a basis for future research recommendations.

Upcoming challenges and developments

The population of Europe is aging, owing to low birth rates and increasing longevity. This aging population is accompanied by an associated increase in the prevalence of chronic illnesses, such as CVD, and a concomitant rise in the demands placed on already over-stretched health care resources. The personal burden of chronic CVD can be excessive, with many patients experiencing high levels of physical, emotional and functional distress. Beside the human cost, the financial burden of CVD is substantial, costing the European economy almost 196 billion euros a year. Approximately 54% of these costs were linked directly to health care, 24% to productivity loss and 22% to the cost of informal care provided by family and friends.[9] Therefore, from an individual, national, European and global perspective, there is a call for the efficient organisation of care for the aging population.

In response to this call, the Commission of European Communities[10] has advocated the need for a paradigm shift; (a) from acute hospital care to a more community-based care and (b) from an illness-orientated model to a population health model of care. Currently, the predominant pattern of care across European countries often involves the reactive treatment of sick and hospitalised patients, but future direction demands that we include proactive measures to keep our population healthy and out of hospital for as long as possible. Recovery from any hospital admission should be supported by a network of multidisciplinary community services, allowing patients to return to their pre-existing health status or self-manage their condition within the comfort of their own homes.[11]

Although this paradigm shift is already visible in the management of CVD and CVD risk, the full potential of primary care to positively influence the cardiovascular mortality and morbidity of our population, is yet to be fully realised. An initial, and yet core, requirement for this paradigm shift, is to ensure that the promotion of cardiovascular 'health' and prevention of cardiovascular illness is addressed robustly from cradle to grave and at individual and population levels.

In targeting population health, it is essential that future health promotion and illness prevention measures permeate across all socio-economic groups.[12,13] Given the documented inequity in cardiovascular health and risk factor profile, it is imperative that specific measures are taken to target the cardiovascular health of our more vulnerable citizens, such as minority and immigrant populations, those on low incomes and those with physical or mental health disabilities. For the hospitalised patient, it must be acknowledged that significant advances have been made in the recognition, treatment and prevention of CVD. However, there is still much that can be done to improve the effectiveness and efficiency of care by way of organisational change,

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applying best practice procedures and developing new multidisciplinary cardiovascular models of care.

Restructuring cardiovascular care, and shifting the focus of care, demands the development of specialist multidisciplinary primary and acute care teams. Appropriate representation of key personnel is needed within these teams to help increase the efficiency of service provision, covering a range of medical, nursing, allied health, technical and clerical professionals. Implementing new directions in the delivery of cardiovascular health services means that traditional nurse and allied professional roles may need to be reconfigured to support the patient journey to, in and from hospital, and additional education for a particular speciality may be required.[11]

Societal and workforce needs

From a societal perspective there is a need for efficient organisation of treatment and care for patients with CVD. The number of elderly persons is rapidly growing in Europe as are age-related diseases and disabilities. Several of these diseases and disabilities are the so-called non-communicable diseases, such as chronic obstructive pulmonary disease, heart failure and diabetes. Even if no changes were to occur in the age-specific risks of dying due to these diseases in the future, population growth and aging would still produce large increases in the burden of mortality, morbidity and health care use due to non-communicable diseases.

An aging general population in Europe means more patients to care for, while at the same time there is a decrease in the number of health care professionals. This is partly due to the same reason, aging, but other factors such as low birth rates, migration, reduced working hours, cuts in the work force, early retirement and a tendency of health care providers to leave the profession also play a role.[14,15]

Differences within Europe

A number of key differences that might affect the cardiovascular care research across Europe require consideration.

Education and research training. Education and research training for health care professionals differ, both between countries and between disciplines. The majority of the nursing and allied health professionals are often educated to a bachelor level of degree, or lower, although in some countries advanced levels of education, e.g. master and doctor of philosophy (PhD) level, are available. However, the majority of health care professionals will be consumers, rather than producers, of research and proficiency in the interpretation and application of research evidence in practice which is assumed may be lacking. This might make it more difficult to promote evidence-based practice in their line of work.

The roles of health care staff. The roles of health care staff in daily practice and their level of autonomy differ greatly between European countries. This complicates the implementation of research findings and the interpretation, generalisability, and execution of studies across borders that might otherwise facilitate implementation of evidence practice across Europe.

Health care systems. Health care systems differ between countries in Europe and while public insurance for basic or complete coverage is commonly the base arrangement some countries have complementary private insurance for their citizens. These systems also differ with respect to public provision of services with or without gate-keeping of admission to hospitals.[15]

Migration. Migration within and into Europe is increasing, which has an impact on cardiovascular care and related research. Providing care for patients from diverse cultures requires understanding and an analysis of the influence of culture on patient disease perception and interventions, and a need for translation and psychometric testing of instruments used in care and research. Additional challenges for health care personnel are to provide optimal care despite language barriers and unfamiliarity with cultural values.

Achievements in cardiovascular care research

A considerable amount of research addressing cardiovascular patient care has been completed to date. Reflecting on these achievements, major lessons learned with regard to *what* – the areas studied; *how* – the methods and designs used and; *who* – the teams and funding involved, are summarised below.

What?

Diagnose groups. Strength in cardiac care research can be seen in the contribution to our understanding of the patient's own experience of a specific cardiac condition such as heart failure, cardiovascular prevention, cardiac rehabilitation and arrhythmias. At the same time, several groups seem to have been studied less, e.g. the growing cohort of adults with congenital heart disease and patients undergoing heart transplant or left ventricular assist device implantation. Main research areas have included disease management, patient education and support of self-care, symptom management, rehabilitation/exercise, psychosocial care and quality of life.

Disease management. A series of randomised trials have demonstrated the effectiveness of disease management approaches such as home-based interventions and multidisciplinary clinics. Early on, studies on the effect of disease

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management in heart failure patients were conducted.[16] This approach has subsequently been progressively applied to other patient groups, for example introducing disease management in patients with atrial fibrillation.[17–20] For individuals with congenital heart disease, nurse-led multidisciplinary interventions are currently under development and evaluation.[21]

Patient education and self-care support. The importance of understanding, teaching and supporting patient self-care has gained increasing recognition.[22–29] Research has also contributed to the evidence base of smoking cessation interventions,[30–34] understanding of factors affecting treatment adherence and interventions to improve adherence to medication and lifestyle changes.[35–48] However, current research has often focused on one specific self-care behaviour or on a single patient group.

Rehabilitation/exercise. The evidence base for multidisciplinary cardiac rehabilitation has been growing,[49–54] including research on costs,[55] attendance and adherence,[56,57] and factors that will influence these. This has been instrumental in the development and evaluation of cardiac rehabilitation programmes, including early[58–60] and home-based[61–63] interventions and guidelines, focusing also on adherence,[64,65] outcome measures[66–68] and audit standards.[69]

Physical and psychosocial symptoms. The importance of symptom presentation and interventions to relieve symptoms has been studied in several cardiac patient populations.[70–73] Furthermore, the interrelationship between psychological factors and adverse health outcomes, as well as mechanisms explaining these relations, has been increasingly studied over the last decades. This includes the psychosocial consequences of learning to live with arrhythmia or heart failure or the consequences following a myocardial infarction.[74–77] Other studies focused on adaptation to device treatment such as implantable cardioverter defibrillators, pacemakers and cardiac assist systems.[78–81]

Quality of life. Quality of life has for long been recognised as an important factor in patient care and is probably one of the most studied areas in this field. The research addresses conceptualisation, operational definition, and measurement of quality of life in cardiac patients.[82,83] Measures of quality life have been increasingly important in order to understand how interventions and treatments impact daily life and how to provide optimal care from the patient perspective. As well as a common outcome tool in the patient-centred care research, research has also included developing and evaluating instruments as well as correctly applying the tools, depending on study objective and understanding the relevance of the change in the measure.[84,85] Several other studies address the impact of disease on quality of life of patients and caregivers in different cardiac populations,[86–90] factors related to quality of life[91,92] or interventions to improve health-related quality of life.[93,94]

Summary points

- Research has focused on specific behaviours or on a specific diagnostic group.
- Disease management programmes have been developed but evidence for which programme to select in a specific context is still weak.

How?

Methods and designs. Research in cardiovascular care has used a broad spectrum of designs and methods. Although there are several exceptions in different areas, the majority of studies have used descriptive methods, reporting data from cross-sectional design or qualitative studies. These studies have been helpful to describe phenomena in this area and have brought about tangible advances to the quality of patient care. There are also an increasing number of studies using a randomised controlled design, adding to the evidence base of effectiveness of interventions or organisational models. Although these studies are often small and from a single centre,[95] there are also good examples from large randomised and multi-centre studies in the area of caring research.[96–98] But the number of large multi-centre randomised controlled trials in cardiovascular care is limited, partly due to lack of tradition, international collaborative groups and funding. Most studies do not include long-term follow-up, making it difficult to study causal relationships or addressing changes over a longer time period.

In addition, the use of quality registries as a source is sparse; one reason being that only a few registries have included patient-reported outcomes measures such as experiences of quality of life, symptoms and preferences.

Endpoints. Cardiovascular care research has frequently used the same traditional hard endpoints as in cardiovascular medical trials, e.g. mortality and morbidity. Some examples are: 30-day mortality, one-year survival, long-term survival, recurrence of acute myocardial infarction, or disabling stroke. Using these endpoints, effectiveness of an intervention can be well compared across disciplines. Other outcomes have also been included, such as improved adherence, improved functional status, decreased depression rate, improved perceived control and improved quality of life. However, there is a large variation in tools used for measuring depression or health-related quality of life, making it hard to compare results between studies.

Summary points

- The number of multi-centre studies is sparse, with mainly small sample sizes and sample size calculation lacking.
- Data from quality registries are rarely used.

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- A traditional approach to endpoints is common.
- A large variation in measurement instruments makes comparison between studies difficult.

Who?

Research teams. With the exception of a few larger research groups, most cardiovascular care research in Europe has been conducted as part of a PhD or post-doctoral project. In cardiac research, physicians, nurses and allied health professionals are commonly not equal partners and there is a strong medical focus. Studies in cardiovascular care rarely include multidisciplinary teams, such as psychologists in studies related to depression, behaviour change and psychological support interventions or nutritionists in studies on rehabilitation. This is despite the fact that behavioural interventions in cardiovascular care clearly cut across disciplines. Partnership with patient organisations as well as participation of patient as part of or consultants to the research team is becoming more prevalent in some countries.

Funding. Researchers have generally been relying on scarce funding from governmental sources, heart foundations, charity organisations and industry. Over time, the competition for available grants has increased and the resources available per researcher have decreased. The majority of available funds are located on a national level and support national projects.[99] In addition, funding opportunities between countries differ and while some have identified, and funded, explicit cardiovascular care research, others have no such funding strategy in place.[100]

Over the last few years, international opportunities for support and funding of research in the area of cardiac care have improved. However, the access to larger European Union (EU) funding sources is still limited, partly due to a prerequisite of vast experience in international collaborative research. Though this collaborative research exists, particularly between America, Canada, and Australia, international collaboration is still rare.[101] In Europe, the Undertaking Nursing Interventions Throughout Europe (UNITE) research group of the CCNAP is an example of such a multi country research collaboration that can move research forward to improve cardiovascular care.[36,102–111] The EU has a funding programme for research and innovation, with the upcoming Horizon 2020 programme that is running from 2014–2020 with dedicated funding for projects that address major concerns such as climate change, developing sustainable transport and mobility, or coping with the challenge of an aging population.

Summary points

- Research teams are often small, local and of a single disciplinary nature.
- Funding remains limited.
- International collaboration is generally lacking.

Recommendations for future research

A number of factors have been identified that impact the status of cardiovascular care and might have implications for the future of cardiovascular care research. Recommendations for future research are given with regard to *what* – the areas to study; *how* – the methods and designs to use and; *who* – the teams involved and terms of funding.

What?

Effectiveness of interventions. Developments in health care (e.g. new medical treatments), society (e.g. increasing role of technology), demographics (e.g. increasing number of elderly patients and increasing migration) and economics (e.g. decreasing workforce) invite us to find novel solutions to improve care for cardiac patients and their families. Research is needed to determine the effectiveness and applicability of new interventions. In addition, factors related to the effectiveness need to be studied, such as socioeconomic gradients,[112] cultural issues and organisational aspects. With the prevalence of cardiovascular risk factors on the rise, e.g. obesity, diabetes and hypertension, the focus on primary prevention will need to be intensified to reduce the costs associated with treatment of cardiac disease.[113] Thus, studies on new and creative primary prevention interventions are also needed.

Patient safety. Patient safety, defined as freedom for a patient from unnecessary harm or potential harm associated with health care, is high on the EU policy agenda.[114] Health care errors take place in all settings where health care is delivered and are estimated to occur during 10% of all hospitalisations.[114] This issue has gained increased attention with a focus on the epidemiology of errors and adverse events and how to reduce their frequency. Team composition, prerequisites for team work and smooth interdisciplinary teams have to be investigated to assure quality in patient care.[115]

Continuity of care has a pivotal impact on patient safety and new models of health care including collaboration among those in the circles in which the patient and the family move have to be researched.[116]

Person-centred care. In person-centred care the patient is an active partner in their own care and decision-making process as compared to the traditional approach in which the patient is a passive receiver of medical intervention.[117,118] This model of person-centred care has been shown to advance concordance between care provider and patient on treatment plans, improve health outcomes and reduce costs while still increasing patient satisfaction. At the same time, families and social surroundings of the patient will become more involved, adding an increased burden on informal caregivers. The challenges will be for health care professionals to broaden their scope in the

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practice of person-centred care and to further develop the model, including capturing and documenting patient preferences and sharing decision making with patients and families.[118] Moving from an individualistic to a systematic approach will be necessary.

Summary points

- Studies addressing the cost-effectiveness of cardiovascular care and factors related to such effectiveness are warranted.
- Patient safety has gained special interest as health care has become streamlined, costs are cut and interventions more technically advanced.
- Ethical aspects of selecting and delivering effective patient care need to be included in future research.
- Person-centred care has shown promising results in patient satisfaction and cost-effectiveness, although further research is warranted.

How?

Methods and designs. Qualitative research helps to get the perspective of the individual subject and a systematic evaluation of the understanding of the human nature and transaction with its surrounding environment.[119] This method is essential in order to further describe the patient perspective and form a basis for conducting quantitative and interventional studies. Greater emphasis on integrating data from different qualitative studies might be achieved by qualitative metasynthesis[120] or qualitative meta-analysis. To assess the effects of interventions, well-powered and randomised controlled trials are needed. Furthermore, a combination of several methods, including mixed methods, is recommended. In addition, theoretical development and foundation is needed to increase the coherence of research findings.

Complex interventions. Interventions to improve patient outcomes are mostly comprehensive and include multiple components, which may act both independently and inter-dependently. Thus, it can be difficult to identify the active ingredient of an intervention. Hence, these can be considered as 'complex interventions', needing a specific approach to evaluate their effectiveness. Whereas all evaluations of interventions face practical and methodological difficulties, complex interventions present additional problems: (a) difficulty in standardisation of the design and delivery of the interventions; (b) sensitivity to features of the local context; (c) difficulty in application of experimental methods to service or policy change; and (d) length and complexity linking intervention with outcome. Therefore, a framework for developing and evaluating complex interventions has been developed by the Medical Research Council (MRC) of the United Kingdom (UK).[121] It entails a recursive process where comprehensive preparatory work should be conducted, first including a developmental phase that identifies the evidence base, develops a theory and models processes and outcomes, and second, including a feasibility and pilot-testing phase that tests procedures, estimates recruitment and retention and determines the sample size[121] needed for a definitive trial. The developmental phase is needed to determine whether it can be reasonably expected that the intervention has a worthwhile effect. The feasibility and piloting phase is needed to appraise key uncertainties.[121]

After these preparatory phases, the evaluation of effectiveness can be undertaken. Traditionally, a randomised controlled trial is suggested as the most robust method for evaluating the efficacy or effectiveness of an intervention. For health service research focusing on models of care, this method is best applied via a pragmatic approach that applies the rigour of randomisation and blinding of endpoint adjudication whilst recognising interventional complexities and inability to blind participants from their allocated group.[122] If a conventional parallel group is not feasible or appropriate, alternative trial designs can be considered, such as cluster randomised trials,[123] stepped wedge designs,[124] preference trials,[125] randomised consent designs[126] or *n*-of-1 designs.[127]

Translational research. Translational research is often thought of as combining the knowledge and research efforts of basic science with clinical medicine ('bench to bedside'). However, translational thinking can also be considered as the effort to use research findings in daily practice.

Efforts have been made to move this forward since researchers need to make sure that the wishes of the users of research and patients are met.[128] Research questions need to have relevance to clinicians and patients, and important outcomes should be assessed. Thus, clinicians, patients and the general public should be involved in setting research agendas, and studies should preferably be designed with reference to systematic reviews of existing evidence.[128] To avoid waste in producing and reporting of research evidence[129,130] it is suggested that research funders and researchers seek help from patients and the public in selecting questions to address in research: to find out from patients and the public which outcomes they regard as important; and to review existing evidence systematically before planning new research.[128,131,132]

Longitudinal studies. Due to a better survival rate in most areas of cardiovascular care, there is an increased need to study effects over time which confirms the need for longitudinal studies. However, longitudinal data introduce many complexities and are a challenge to researchers, for example the dynamic behaviour of individuals and systems such

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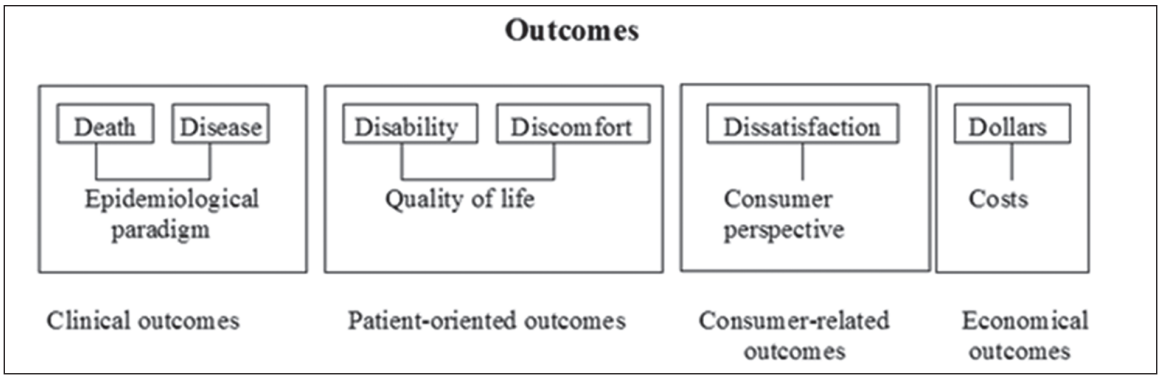

Figure 1. The 6Ds model of health outcomes research.
Source: Reprinted with permission from Radosevich DM and Werni TLK. *A practical guidebook for implementing, analyzing, and reporting outcomes measurement.* Health Outcomes Institute, 1996, p. 1–10.

as society and health care systems. Researchers from different disciplines need to work together and share their ideas in developing theories and analytical methods. Using data from registries might be an opportunity to describe effects of disease, treatment and care over a longer period of time.

Reconsidering endpoints. A broader approach for endpoints can be applied and the 6Ds model of health outcomes research can guide future research. The model (Figure 1) comprises four major perspectives of health care, i.e. the traditional clinical epidemiological paradigm (Death, Disease), the social-psychological paradigm focusing on patient quality of life and functional status (Disability, Discomfort), the consumer perspective (Dissatisfaction), and the economic consequences of health care (Dollars).[133] Patient-oriented and consumer-related outcomes (Figure 1) are frequently used in cardiovascular care research and are commonly referred to as soft end points. However, outcome studies should include all of these six attributes in order to obtain a global and comprehensive representation of the achieved results.

Composite end points increase the statistical power of studies due to more events and reduce the sample size and associated costs, and are increasingly used in clinical trials and observational studies. However, the use of composite end points may inflate the number of events and mask the true effect of an intervention or treatment.[134] One of the more common composite end points in cardiovascular research is 'major adverse cardiac events' which often includes all cause or cardiac mortality, new or repeated myocardial infarction, stroke or need for intervention, but other end points may be added. Composite end points can also be calculated for psychological morbidity by combining the end point of depression and anxiety. These strategies would probably benefit from including translational as well as longitudinal approaches as this would add knowledge about changes over time and in patients of different ages. A more robust (i.e. not requiring end point adjudication) and broader approach is to consider all-cause events. These can also be combined as an 'event-free' end point (e.g. all-cause mortality or all-cause hospitalisation) that can be examined as time-dependent, dichotomous outcomes or considered as a continuous variable (days alive and out-of-hospital).

Summary points:

- A more sophisticated and balanced approach to appropriate research methods is needed.
- More emphasis should be given to the translation from research to future clinical practice in order to enhance patient care.
- A broader view of end points should be considered, allowing for traditional end points, patient-oriented outcomes and composite end points.

Who?

Professionals and interdisciplinary teams. Cardiovascular disease, with its myriad of patient care, public health and global health issues, lends itself to being a possibility for a joint effort both between disciplines and across country borders. In agreeing on a research programme in cardiovascular care, collective expertise, resources and strength could be pooled and a team from basic science, clinical practice, ethics, health policy, epidemiology, psychology and social sciences brought together. This would add substantially to the body of research in cardiovascular care and disease and help to fill the knowledge gaps that exist. Developing such collaboration identifies cardiovascular care research as an effective partner in inter- and multidisciplinary research and provides for research opportunities and benefits. The imperative is to build stronger, incremental programmes of multidisciplinary research where nurses and allied health professionals can be the main drivers. These teams can build robust research programmes and bring continuity to the research programmes by involving students, junior researchers and senior researcher.

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International trials. When designing large multi-centre trials in an international arena, the applicability of the research questions and the implementation of results is an urgent and important question to discuss at an early stage of the planning. While drug intervention studies are generally applicable to large populations, the science of care is, to a higher degree, locally dependent and thus will comprise a challenge to integrate into large international trials. The education and responsibility of professionals might differ greatly between countries and needs to be taken into account. Cultural aspects, means for funding of the health care system and local policies will also have an impact and warrant attention in the study design.

With available technology, practical issues such as distance, costs of communication and need for personal meetings between researchers have been greatly reduced and should today be irrelevant in the discussion of how to create international collaborations. While personal contact has its merits, especially in the start of a project, it is not an absolute necessity and the Internet provides a broad platform for web/live meetings with presentations and direct, collaborative work on documents, such as study plans, ethical board and grant applications. Thus, the future for creating large international trials, seen from the administrative aspect, has great potential for success.

Clinical-based practice. The majority of care is practised in the out-patient clinic with general practitioners. Thus research studies need to expand outside the specialist care in the university/academic environment. Gains can be made if research is performed where the patient is – not where the researcher is. The closer the research can be to where the care is given, meaning the daily practice of the majority of health care providers, the easier it will be to implement the new routine and the faster it will be adopted by the clinicians.

Funding. To improve research capacity and research funding in the area of cardiac care, local, national and international recognition is needed. Some countries have dedicated funding for 'caring research', however, these budgets are under pressure and there is an increasing call for 'caring research' to be multidisciplinary in focus and to be able to compete for general clinical funding possibilities. Future research should extend the multidisciplinary approach. At the same time, researchers in the area of cardiac care need to find a way to access larger EU funding sources by extending international collaborative research and writing highly competitive grant proposals.

Summary points

- Collaboration between disciplines and across country borders is vital.
- Design of multi-centre and international trials should take into account local staff education and responsibilities, health care funding and cultural differences.
- Involving non-academic health caregivers in research will place the focus on issues that concern a majority of cardiovascular patients and expedite implementation of research results in daily care.

Improving research capacity and capability

Research capacity enhances the ability to undertake and disseminate high quality research efficiently and effectively. It includes work at all levels, individual, organisational and institutional, and can be executed by one person or involve collaboration between the levels and/or collaboration between disciplines. In a successful enactment, research capacity should be planned for long-term involvement, be demand driven and contribute to sustainable development. The general concept of effective research capacity is common for most areas of research and includes training in skills and confidence, secured funding, good infrastructure and linkages with contacts and collaborators. To generate sustainability and continuity, the quality of research should be high and lead to an enhanced reputation on an individual and/or group basis. In specific areas of research, it is of importance to ensure that the correct questions are asked, that they are close to practice and that the resulting message is accurate and relevant.

By individual researchers

Researchers have been increasingly successful in initiating research studies and implementing the results in the area of patient care. To improve local, national and international recognition, it might be helpful to actively participate in departmental or institutional activities, such as journal clubs, scientific meetings or research groups and, if they do not exist, to take the initiative to start them and involve colleagues with an interest in cardiovascular patient care research. Other options for an individual researcher are volunteering as a member of scientific boards, heart foundations or medical ethical committees, acting as reviewer for grants and journals and providing expert comments. This will increase the awareness of health care professionals and thereby get recognition, enhance confidence and improve chances for future funding.

On the research group level

Creating linkages is an important way to improve research capacity. National and international societies and working groups have been instrumental in the evolution of cardiovascular care research and are providing an important platform for the sharing of knowledge. A successful example is

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how nurses working with cardiovascular care joined within the European Society of Cardiology (ESC) and in 1991 started the Working Group on Cardiovascular Nursing. Fifteen years later, this group was transformed into the CCNAP[135] that organises EuroHeartCare, holds an annual international scientific meeting, founded and developed the European Journal of Cardiovascular Nursing, supports educational and research activities and provides grants on a European level.

Research capacity can be improved, both in quality and quantity, by creating platforms for the exchange of experience and the discussion of research ideas. It can also be enhanced by promoting and sharing repositories containing resource materials such as databases and registries or EndNote libraries. These platforms can be built within the research group, institution, university or on a much broader basis. Local, national or international conferences, online forums, visiting fellows and face-to-face workshops are opportunities that can be used to create these linkages. There is also an increased call for open access to research data which could enable researchers to answer their research questions from existing data.

On a political level

Research capacity is often measured in performance and mostly seen in dissemination, e.g. in the number and quality of publications, the latter based on the impact factor of the publishing journals. It is also measured in presence and visibility at conferences, which is a way to promote the individual, the research group or the institution, and in accepted grant applications. However, there is reason to believe that nurses and allied professionals involved in research on patient care are limited in where to publish, present their results and apply for grants.[135] While to some degree there is a lack of acceptance of research in the area of patient care, another reason might be lack of confidence in this research group and lack of knowledge on how to present and position their research results.[135]

Concluding remarks

Is it possible for the Science Council of CCNAP within the ESC to make recommendations on the direction for future research in the diverse context of Europe, where each country is faced with different challenges in their health care system? In our opinion, there are some areas that all countries struggle with, including the need for more evidence-based practice. Determination of priorities at an international level can provide the impetus for more focused research in areas where the need for evidence-based practice is most urgent. The EU has recently granted the ESC funds to provide an overview of current roles of national and international research funding (Cardioscape project). To date, those involved in the European caring science research initiative UNITE[136] have worked together since 2001 and published several joint papers.[36,102–111] However, it is now time to build a larger and stronger international consortium of those who can work together. Despite diversity in Europe, the ESC has joint guidelines with agreement on the treatment and care of cardiac patients. This implies that there is a common ground for patient care although there are challenges remaining on a European level to gather evidence on the most optimal ways to deliver care and to fill the gaps in evidence to further improve the guidelines.

Conflict of interest

The authors declare that there are no conflicts of interest.

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