



Nurse management of cardiovascular risk factors in rheumatoid arthritis

Silvia Garcia-Diaz and Hèctor Corominas

Abstract

Rheumatoid arthritis (RA) is a chronic, multi-system inflammatory disease. The incidence and prevalence of RA varies considerably between geographic areas and over time; the prevalence of RA in adults aged >20 years in Spain is around 0.5% (Carmona et al, 2002). People with RA also have extra-articular manifestations, presenting an increased cardiovascular morbidity and mortality risk; therefore, cardiovascular risk screening and management strategies are necessary in individuals with RA. The importance of interventions in the management of people with RA and cardiovascular risk factors is recognised by the European League Against Rheumatism (EULAR) recommendations (Peters et al, 2010). Rheumatology specialist nurses are well placed to include routine cardiovascular risk assessment for people with RA attending clinic, and to provide educational interventions to reduce cardiovascular risk, such as smoking cessation, weight loss, eating a balanced, low-fat diet and exercising regularly.

Key words: Rheumatoid arthritis ■ Risk reduction behaviour ■ Advanced nursing practice ■ Prevention and control

According to a study in Spain (Aviña-Zubieta et al, 2008), individuals with RA have an increased standardised CV mortality ratio that ranges between 1.6 and 1.7, which is independent from the traditional CV risk factors. This meta-analysis of observational studies, which included over 100 000 people, suggested that people with RA are about 50% more likely to die from CV disease compared with age- and sex-matched people in the general population; although this is an international estimate, this also applies to the UK population (Aviña-Zubieta et al, 2008). In a German study the prevalence of people with RA at high CV risk was found to be 12% (Willers and Hahn, 2011), and a Spanish study found the prevalence to be 11% (Gomez-Vaquero et al, 2012).

Treatment of RA is multidisciplinary and involves medication to control the disease, such as disease-modifying anti-rheumatic drugs or biological therapies; some medications are currently being used in trials to evaluate the inflammatory hypothesis of reducing the incidence of heart disease. Regular follow-up appointments focus mainly on the control of the disease and routine blood tests, physiotherapy, joint protection, health education, self-management and psychosocial support. In these behavioural strategy interventions, patient education is an integral part of the nurse-led care strategy, in which the nurse plays a key role in supporting the individual with RA across this complex pathway (Garcia Diaz, 2007). Moreover, patient education has shown efficacy in reducing risk factors contributing to CV disease (Puig-Girbau et al, 2011).

Evidence of the role of the rheumatology specialist nurse

Rheumatology nurse-led care is emerging as an effective model for the management of symptoms, the prevention of risks and the maintenance of well-being among people with chronic rheumatic disease (Ndosi et al, 2011).

The Musculoskeletal Services Framework (Department of Health, 2006) specifically mentions that rheumatology specialist nurses

Rheumatoid arthritis (RA) is a multi-system inflammatory disease characterised by the presence of a destructive polyarthritis with a predisposition for affecting the peripheral joints (Hakim et al, 2006). It most commonly presents in the sixth and seventh decades and it is three times more likely to occur in women than in men (Oliver and Silman, 2009); however, incidence equalises among the sexes after women reach menopause (which is also when women become more likely to develop heart disease). The incidence and prevalence of RA vary considerably between geographic areas and over time. The incidence rate of RA in southern European countries has been reported as 0.01–0.02% (Guillemin et al, 1994; Drosos et al, 1997), and the prevalence of RA around the world is between 0.3–1.2% (Carmona, 2002).

According to the EPISER study (National Survey on the Prevalence of Rheumatic Diseases in Spain) in 2000 (Carmona et al, 2002), the prevalence of adults aged >20 years with RA in Spain is around 0.5% (extrapolating this data to the population in 2000, there were around 150 000–200 000 cases of RA in Spain). The annual incidence worldwide ranges from 0.2 to 0.4 new cases per 1000 people; to date, there are no studies on the incidence rate of RA in Spain (Carmona, 2002). In the UK population, the prevalence of RA is usually quoted as 1% of the adult population; the incidence varies by age, but the overall incidence has been estimated at 50/100 000 for women and 25/100 000 for men (Humphreys et al, 2012).

The evolution of the course of RA is unpredictable, and approximately 20–80% of people affected will have moderate to severe functional incapacity 10–20 years from onset (Sanmarti and Kanterewicz, 2010). These patients usually have extra-articular manifestations and a reported cardiovascular (CV) morbidity and mortality (Panoulas and Kitas, 2008; Cooney et al, 2011; Lemmey, 2011), as well as an increased rate of both acute myocardial infarction and ischaemic stroke (Semb et al, 2010).

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(RSNs) are necessary to run monitoring clinics and provide patient education and support to facilitate self-management. There is convincing evidence for positive patient outcomes from rheumatology specialist nursing clinics. According to Hill (2007), there were six randomised controlled trials that showed the effectiveness of RSNs; individuals in the intervention groups (run by RSNs) had significantly less pain, showed greater levels of knowledge and were significantly more satisfied with care than those without RSN support.

In a recent systematic review of studies that included 1036 patients with RA, osteoarthritis or fibromyalgia, nurse-led care consistently matched or surpassed the quality of care provided by rheumatologists, family doctors and multidisciplinary teams (Ndosi et al, 2011); indeed, the authors concluded that nurse-led care in individuals with RA was associated with increased patient knowledge.

Definition of nurse-led care

Nurse-led care is defined as an extended model of care, where nurses manage their own patient caseloads and perform nursing interventions, such as monitoring patients' signs and symptoms, providing education, giving psychological support and referring appropriately (Ndosi et al, 2011). Nurse-led care is distinct from nurse-coordinated or nurse-managed services, and is provided by nurses responsible for case management, which includes: comprehensive patient or client assessment; developing, implementing and managing a plan of care; clinical leadership; and decision-making to admit or discharge. Patients or clients will be referred to nurse-led services by nurses, midwives or other healthcare professionals, in accordance with collaboratively agreed protocols. Such care requires enhanced skills and knowledge, and the nurse will need preparation in both the clinical and management aspects of the role. Such nurses will be practicing at an advanced level and may be working in approved specialist or advanced practice roles (National Council for the Professional Development of Nursing and Midwifery, 2003).

CV disease, risk factors and their management in people with RA

One of the most important problems in the management of RA is the presentation of a chronic inflammatory state; this is considered to be a driving force for accelerated atherogenesis as a result of endothelial dysfunction, leading to increased thickness and plaque formation

in carotid arteries, and fatal or non-fatal myocardial infarction and stroke (Panoulas and Kitas, 2008; Peters et al, 2010; Bisoendial et al, 2011). Other major clinical CV risks in people with RA include:

- A high level of C-reactive protein, which has been recognised as an independent risk factor in the general population. Goodson et al (2005) showed that the baseline level of C-reactive protein was a predictor of all-cause mortality, and specifically of CV mortality, in patients with inflammatory polyarthritis in a 10-year period following the onset of RA
- Positivity for disease markers, such as rheumatoid factor or anti-cyclic citrullinated peptide antibodies (Lopez-Longo et al, 2009; Finckh et al, 2012)
- The duration of the disease, which has also been associated with increased incidence of CV events and CV mortality in patients with RA (Gonzalez-Gay et al, 2007; De Groot et al, 2010)
- Adverse effects of some anti-rheumatic medications, which might also be responsible

for the increased prevalence of atherosclerosis in RA (Atzeni et al, 2010). It is interesting to note that non-steroidal anti-inflammatory drug use does not appear to be associated with an increased CV mortality in patients with inflammatory arthritis (Goodson et al, 2009).

In addition, multi-factorial CV disease in RA has been shown to be partially genetically determined; several of the RA susceptibility genes may contribute to the excess CV disease morbidity and mortality in RA. It has also been reported that changes in the lipid profile may occur in individuals up to 10 years before the diagnosis of RA, indicating a potential genetic link between RA and dyslipidaemia (Toms et al, 2011).

For all the above reasons, CV risk screening and management strategies are of paramount importance among people with RA. Originally such strategies were developed for the general population and are based on CV risk score calculators such as the Systematic COronary Risk Evaluation (SCORE; Conroy et al, 2003; Figure 1), which is used mostly in Europe.

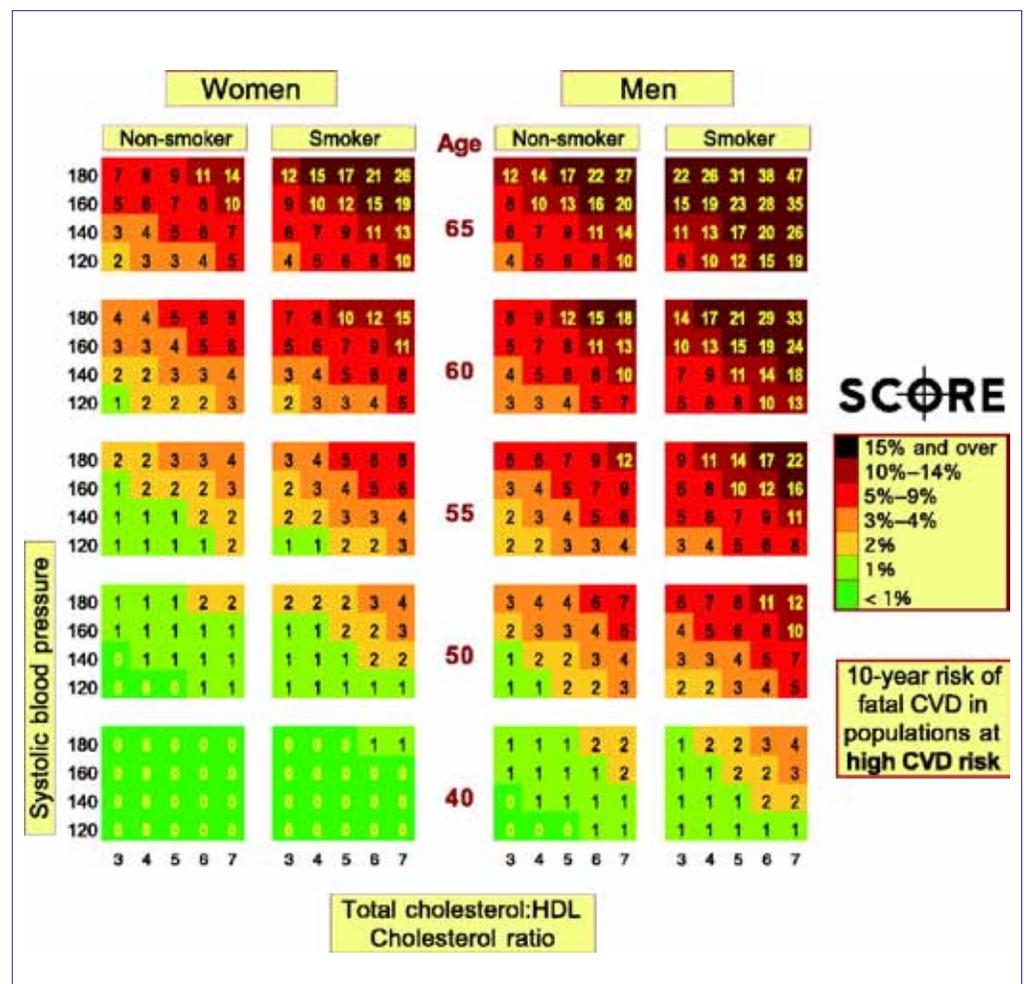


Figure 1. SCORE (Systematic COronary Risk Evaluation) chart for use in high-risk European regions; chart based on total cholesterol:high-density lipoprotein cholesterol. Reproduced from Conroy et al (2003). ©Oxford University Press, 2013



The European Cardiology Society's fourth joint task force (Lizcano-Alvarez et al, 2011) also recommends the use of the SCORE system to stratify the CV risk and be able to identify populations who are most at risk. For the general population, there are two methods for estimating CV risk: the Framingham Risk Score (D'Agostino et al, 2001) and the Reynolds Risk Score (Ridker et al, 2007). However, there is a need for the development of a data-driven method to estimate CV risk validated for patients with RA (Liao and Solomon, 2013).

Currently, the European League Against Rheumatism (EULAR) recommends CV risk management in patients with RA (Peters et al, 2010). This risk assessment should be performed annually for all patients with RA; this should take into account that if no national or local guidelines are available, CV risk management in these patients should be calculated by using the SCORE function and applying a multiplier factor of 1.5 to those who meet some clinical criteria. This is called the 'modified' SCORE (mSCORE), which was introduced by Gomez-Vaquero et al (2012). The multiplication factor should be used when the person with RA meets two of the following three criteria:

- Disease duration of >10 years
- Rheumatoid factor or anti-cyclic citrullinated peptide positivity
- Presence of certain extra-articular manifestations.

Moreover, total cholesterol/high-density lipoprotein cholesterol ratio should be applied when the SCORE model is used, as this ratio is an important prognostic indicator for future CV disease and appears to be the most stable marker of lipid-associated risk in RA (Peters et al, 2010).

According to Gomez-Vaquero et al (2012), the calculation of the mSCORE should ensure that more RA patients with high CV risk receive CV prevention. The CV risk factors described by Gonzalez-Gay et al (2007) were: smoking history (encompassing both current and former smokers); hypertension (blood pressure >140/90 mmHg on two different occasions performed on different days); dyslipidaemia (total cholesterol \geq 5.2 mmol/L); diabetes mellitus (two fasting plasma glucose levels >6.9 mmol/L); and obesity (body mass index (BMI) >30 kg/m²). Moreover, low BMI (defined as <20 kg/m²) in people with RA has been reported to increase the risk of death by CV disease (Khan et al, 2010).

The first principle of management is to assess and control all components of total CV risk. This includes appropriate evidenced-based

counselling with regard to smoking, physical activity, nutrition, weight and blood pressure (Peters et al, 2010). Therefore, behavioural lifestyle changes, such as maintaining correct body weight, smoking cessation, moderation of alcohol consumption, routine exercise and consumption of a diet rich in fruits and vegetables and low-fat products, are the basis of CV prevention (Guitard-Sein-Echaluce et al, 2006); this is despite the challenge of diet (aiming for an ideal BMI of <23 kg/m²) and exercise in patients with RA (Panoulas and Kitas, 2008).

Metsios et al (2009) observed that physically inactive people with RA had a significantly worse CV risk factor profile (higher systolic blood pressure and elevated total cholesterol) when compared with physically active people with RA. Panoulas and Kitas (2008) believed that exercise and maintaining an appropriate body weight may be harder for individuals with RA as a result of their physical limitations, such as pain and restriction of movement, and therefore they require appropriate encouragement and resource provision to support these necessary lifestyle modifications. In this process, the nurse plays a key role in educating, motivating and planning healthy individualised strategies.

Classic CV risk factors and RA itself should be more actively controlled in these individuals, and effective management must involve prevention of CV risk (Khan et al, 2010). Therefore, a nurse-led intervention can have beneficial effects on the achievement of improving individuals' medication self-efficacy and adherence, CV risk factor reduction and/or targets in people with RA.

Nursing evidence in CV risk factors

Studies evaluating the efficacy of nurse-led care prevention interventions to decrease CV risk among individuals with RA are limited. In the UK, educational material such as patient information leaflets explaining CV disease for people with RA have been developed (John et al, 2011). In addition, there are several studies in which nurse-led CV risk factor interventions provided improvements in individuals' medication self-efficacy and adherence, CV risk reduction and/or targets in people with diabetes (Wallymahmed et al, 2011), symptomatic vascular disease (Sol et al, 2008) and stroke (Ellis et al, 2005); nursing intervention produced modest reductions in blood pressure in spite of not modifying the overall risk factor control (Sol et al, 2008). Also, the study published by Ireland et al (2010) showed reductions in blood

pressure and increased levels of self-efficacy in medication and adherence.

A recent study showed that brief interventions (defined as an individual counselling session about unhealthy habits, which lasted about 15 minutes and included at most two follow-up counselling sessions) were effective in decreasing excessive alcohol consumption and in attaining cessation in smoking (Kuninkaanniemi et al, 2011). Furthermore, intensive interventions, such as a minimum of 15 minutes of counselling and more than three routine follow-up visits, had a significant influence on individuals' nutrition index (Kuninkaanniemi et al, 2011).

Jiang et al (2007) showed in a randomised controlled trial that individuals in the intervention group demonstrated a significantly better performance in walking, diet adherence and medication adherence, a significantly greater reduction in serum lipids, including triglycerides, total cholesterol and low-density lipoprotein, and significantly better control of systolic and diastolic blood pressure at 3 months; most of these positive impacts were maintained at 6 months' follow-up.

Nevertheless, most of the studies found in the literature showed low internal validity as a result of small sample sizes, provision of short follow-up periods, inclusion of inconsistent outcomes measures and design of unclear and poorly defined nursing interventions (Halcomb et al, 2007).

An expert panel of RSNs from several European countries convened to identify current needs in the management of chronic rheumatic inflammatory arthritis, including those with RA (Van Eijk-Hustings et al, 2011); in addition, a research agenda was established to define the contribution of the nurse in the prevention of co-morbidities. Therefore, the authors hypothesise that a nurse-led intervention based on counselling and lifestyle advice can have beneficial effects on the CV risk factor reduction and/or targets in individuals with RA.

Theoretical framework: self-efficacy, self-management and empowerment

The nurse-led care prevention intervention proposed in some of the above studies derives from several well-known theoretical influences in health promotion and disease prevention. These are focused on increasing self-efficacy and achieving self-management and empowerment of the individual. The concepts composing this theoretical framework are the basis for providing the preventive nursing interventions that affect behaviour change in

individuals with chronic conditions such as RA. It has been proven that a prerequisite of successful and sustained vascular risk reduction is the active participation of individuals at high risk, who need to become confident in their ability to adhere to medication and to sustain lifestyle changes in daily life (Sol et al, 2008).

Self-efficacy, a major concept in social cognitive theory, is described as the confidence that individuals have in their ability to change their behaviour and achieve goals (Bandura, 1998). Individual self-efficacy in any specific behaviour may be increased through provision of:

- Exposure to mastery experiences (successful challenging experiences)
- Vicarious learning (modelling or observing others performing similar tasks)
- Receiving physiological feedback following achievement of the behaviour of interest (physiological signs)
- Verbal persuasion (receiving positive feedback) (Bandura, 1998).

From this theoretical perspective, what people believe and feel affect how they act (Ireland et al, 2010). Self-efficacy is an important pre-condition for successful self-management and behavioural change (Bandura, 1998; Sol et al, 2008). An improved self-efficacy leads to better self-management outcomes, increases life-expectancy, reduces the use of medical services (Marks et al, 2005) and modifies health behaviour (Van Jaarsveld et al, 2005).

Self-management relates to the tasks that an individual must undertake to live well with one or more chronic conditions. These tasks include gaining confidence to deal with medical management, role management and emotional management (McGowan, 2005). Lorig (1993) emphasised that self-management is:

‘...aimed at helping the participant to become an active, not adversarial, partner with healthcare providers, and that [it] is not an alternative to medical care.’

According to Robbins et al (1998), empowerment is the process by which individuals and groups gain power, access to resources and control over their own lives. An empowered person is one who has the knowledge, skills, attitudes and self-awareness necessary to influence his or her own behaviour and that of others to improve the quality of his or her life—empowerment being an outcome of patient education. Empowerment is a patient-centred, collaborative approach where professionals

and patients are equals, and is fundamentally an outcome of patient education (Funnell and Anderson, 2004). More recently the emphasis is on co-creating health and shared decision making in the UK.

Motivational interviewing is an approach that facilitates self-management by assisting the person to identify discrepancies between beliefs and actions, and to participate in the recognition and adoption of care goals (Rollnick and Miller, 1995).

Limitations

The SCORE system includes only traditional CV risk factors (not inflammatory markers), and this may underestimate CV risk in RA. This is an important distractor that may misdirect the assessment of CV disease in people with RA and may lead to under-classifying high-risk groups. Therefore, healthcare professionals may consider measuring traditional risk factors and inflammation together in the future; in the meantime, there is a lack of a validated method to estimate CV risk for patients with RA (Liao and Solomon, 2013).

Studies have shown that the inflammation and treatment associated with RA can modify the levels and change the nature of how CV disease risk is conferred compared with the general population (Liao and Solomon, 2013). Therefore, one of the challenges of managing the traditional CV risk factors is that the factors themselves can be simultaneously affected by inflammation and treatments for RA.

Conclusions — implications for practice

Although the greater CV risk in individuals with RA is acknowledged, limited attention has been paid to detecting and managing CV co-morbid conditions, such as hypertension and dyslipidaemia; early identification, adequate CV risk management and ongoing monitoring of risk factors are mandatory to

reduce the excess CV risk.

The first principle of management is to assess and control all components of total CV risk; however, estimating CV risk still remains a challenge in RA (Liao and Solomon, 2013). This includes appropriate evidenced-based advice with regard to smoking, physical activity, nutrition, weight and blood pressure (Peters et al, 2010). Therefore, a nurse-led care intervention aimed at improving CV risk factors may persuade individuals with RA to change their behaviour in terms of stopping smoking, controlling their weight, having a balanced, low-fat diet and practising routine exercise. This may suggest that these behavioural changes are possible, and that these strategies should be taken into account around the world as an essential part of non-pharmacological treatment for individuals with RA; thus a nursing input would be appropriate for individuals with RA.

This reflection may also suggest the need to develop overall policy and positional guidelines for individuals with RA in secondary prevention for healthcare professionals in Spain. As most of one of the author’s (SG-D’s) rheumatology clinical experience has been gained in the UK, a suggestion that these guidelines are needed in the UK could be taken into consideration as well. If RSNs are not sufficiently confident to give CV risk reduction advice, more local educational programmes should be provided to facilitate the spread of these measures. This may improve the management of CV risk factors in these individuals. Nurses should actively take part in this policy-making process and be an integral part of the advisory committee.

It is believed that these findings may be suggestive of the development of evidence-based practice in nurse-led care. BJN

Conflicts of interest: none.

KEY POINTS

- n Rheumatoid arthritis (RA) is a chronic, multi-system inflammatory disease presenting an increased cardiovascular (CV) morbidity and mortality
- n CV risk screening and management strategies are necessary in individuals with RA
- n European recommendations (Peters et al, 2010) recognise the importance of interventions to reduce CV risk factors in individuals with RA
- n Nurse-led clinics should include a routine CV risk assessment with educational nursing interventions to reduce CV risk factors in individuals with RA
- n Rheumatology specialist nurses can help educate individuals with RA change their behaviour in terms of smoking cessation, weight loss, healthy eating and regular exercise to reduce their CV risk



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