Europe's device therapy use for heart failure doubles 2004-2008, some countries have low uptake

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The use of implantable devices for the treatment of heart failure increased "enormously" in Europe between the years 2004 and 2008, but there still remain large differences between countries, according to a study reported today (30 November) in the *European Journal of Heart Failure* (1). The findings suggest that there is an underuse of devices in many of the 15 countries surveyed (2).

The investigators note that the prognosis of heart failure - by far the single biggest reason for acute hospital admission - has not been improved by the introduction of new medical treatments in recent years, with continuing high rates of mortality and morbidity. Thus, while drug therapy is still the mainstay of treatment, "relatively few new approaches have proven beneficial," they write.

However, the use of device therapy, in particular the implantable cardioverter defibrillator (ICD) and an advanced pacemaker more usually referred to as cardiac resynchronisation therapy (CRT), has gained increasing acceptance and is now being used on a large scale as an adjunct to traditional drug treatment(3). Indeed, some reports have described these two devices as a revolution in heart failure. One important study cited in the most recent guidelines on heart failure suggested that implantation of an ICD was associated with a 23% reduction in all-cause mortality(4).

The present analysis found that throughout the 15 European countries the number of ICD implantations increased substantially, from 80/million population in 2004 to 140/million in 2008. The highest rate of ICD implants was in Germany (264/million in 2008), followed by Denmark and the Netherlands. The lowest number of implants was observed in Spain (63/million), Portugal (68/million) and the UK (74/million).

The use of CRT implants also rose substantially, from 46/million in 2004 to 99/million in 2008, an increase of 115%. This increase was mainly explained by more use of devices which combine heart failure CRT and ICD therapies (CRT-D). A study reported at this year's ESC Congress in Barcelona (MADIT-CRT) found that CRT combined with ICD decreased the risk of heart failure events even in relatively asymptomatic patients (with a 34% reduction in the risk of all-cause mortality or heart failure)(5).

The use of ICD (either alone or as part of a CRT-D device) has now become standard therapy for many patients with symptomatic heart failure, and is a Class I recommendation in the 2008 ESC Guidelines. The investigators thus note its relatively low use in some countries such as Spain or the UK. They cite one study suggesting "a big gap between the number of patients who fit the criteria for ICD implantation . . . and the number who actually get such a device".

Based on their calculation on a heart failure prevalence rate of 2-3% in the general population, the investigators estimate that around half of them would potentially have an indication for an ICD - or 10,000 per million population. However, the present data suggest that only around 250 per million population are actually receiving an ICD today - just 2.5% of those thought eligible.

Noting that cost and different healthcare systems may explain some of

the discrepancies in usage, the study's first author, Professor Dirk van Veldhuisen from the University of Groningen, the Netherlands, says: "It is difficult to speculate why we see such a low rate of use in countries like Spain or UK. However, while some studies have found an added benefit from device therapy in heart failure, others have not - and we still have no clear cost-benefit analysis of their more widespread use. Certainly, implantable devices are expensive, and, if we follow the guidelines, the cost implications will be substantial."

More information:

1. Van Veldhuisen DJ, Maass AH, Priori SG, et al. Implementation of device therapy (cardiac resynchronization therapy and implantable cardioverter defibrillator) for patients with heart failure in Europe: changes from 2004 to 2008. Eur J Heart Fail 2009; doi:10.1093/eurjhf/hfp149

2. Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK. Data is provided from each of these countries.

3. Cardiac resynchronisation pacemakers and defibrillators for treating heart failure, which have evolved from conventional pacemakers, aim to correct abnormal contractions of the heart's ventricles. More than half of the mortality associated with heart failure is because of sudden cardiac death - and the most important predictor of SCD is left ventricular dysfunction, the underlying cause of heart failure. The use of device therapy (either ICD or CRT in combination with an ICD) aims to correct dyssynchrony and prevent sudden cardiac death.

4. Bardy GH, Lee KL, Mark DB, et al. Amiodarone or implantable cardioverter-defirbrillator for congestive heart failure. N Engl J Med 2005; 352: 225.

5. Moss AJ, Hall WJ, Cannom DS, et al. Cardiac-resynchronization therapy for the prevention of heart-failure events. N Engl J Med 2009; 361: 1329-1338.

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