THE AFIB REPORT

Your Premier Information Resource for Lone Atrial Fibrillation!

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There is now general consensus that atrial fibrillation is an epidemic. While huge and costly efforts are being made to find new drugs to control it, and new ablation and surgical techniques to eliminate it, I am not aware of any serious effort being expended to finding out what is causing the epidemic. To a solution-oriented and practical-minded chemical engineer like myself, this makes no sense at all, but presumably it makes perfect sense to governments, the medical fraternity, and the pharmaceutical industry. Nevertheless, in this issue we report on an effort made by researchers at the Mayo Clinic to determine risk factors for developing atrial fibrillation. By comparing the status of 12 variables vs. incidence of AF in a group of 14,546 individuals between the ages of 45 and 64 years, the researchers were able to develop a score for predicting the risk of developing AF over the next 10 years. The major risk factors were:

- *Age 60 to 64 years* — *8 points*
- *Early coronary artery disease (age 45 to 50 years)* — *5 points*
- *Age 55 to 60 years* — *4 points*
- *Height of 173 cm (5 ft 8 in) or greater* — *4 points*
- *Left ventricular hypertrophy and white race* — *4 points*
- *Early diabetes (between 45 and 55 years)* — *4 points*

Surprisingly, the presence of known AF initiators such as alcohol abuse, recreational drug use, digoxin use, thyroid disorder, hypoglycemia, pheochromocytoma, hyperaldosteronism (Conn's syndrome), electrolyte imbalances, autonomic nervous system imbalances, and inherited AF were not included in the risk score. In any case, it would appear that the Mayo study once again puts "paid" to the assumption that AF is associated with old age when the most important risk factor is age between 60 and 64 years.

Also in this issue, we report that common antiarrhythmic drugs are safe if properly prescribed, we review a new evaluation of stroke prediction scores, a comparison of manual, robotic and cryo PVI procedures, and a Japanese report on what makes afibbers different.

And finally, if you need to restock your supplements, please remember that by ordering through my on-line vitamin store you will be helping to defray the cost of maintaining the web site and bulletin board. You can find the store at http://www.afibbers.org/vitamins.htm - your continuing support is truly appreciated.

Wishing you good health and lots of NSR,

Hans

Highlights

Safety of antiarrhythmic drugs

COPENHAGEN, DENMARK. A team of Danish researchers report the results of a very large study aimed at determining the safety of antiarrhythmic drugs in a group of atrial fibrillation (AF) patients. During the period 1995 to 2004, 141,500 patients were discharged from Danish hospitals with a diagnosis of AF. Of these, 40,823 (28.9%) filled

one or more prescriptions for antiarrhythmic drugs (AADs) – more specifically, flecainide (2.4%), propafenone (2.6%), sotalol (16.5%), and amiodarone (7.3%). Average (mean) dosages of the four drugs were 206 mg/day for flecainide, 411 mg/day for propafenone, 123 mg/day for sotalol, and 287 mg/day for amiodarone.

By the end of 2004, 62,173 members of the study group had died with 11,080 deaths (27.1%) in the group receiving AADs as compared to 51,093 deaths (50.7%) in the group receiving no AAD therapy. The annualized mortality rates in the AAD group were 2.5% for flecainide, 4.25% for propafenone, 5.29% for sotalol, and 7.42% for amiodarone-treated patients. It is worth noting that most deaths occurring in the flecainide and propafenone groups happened after discontinuation of the AAD therapy. Patients treated with amiodarone had a substantially higher incidence (55.6%) of heart disease, congestive heart failure, and previous heart attack than did those treated with flecainide (12.1%), propafenone (20.6%), and sotalol (29.5%).

A multivariable Cox proportional hazard model adjusted for age, gender, comorbidity and concomitant medical treatment showed that AAD treatment was associated with lower mortality than no treatment. The relative risk (compared to no treatment) of therapy with flecainide was 0.38, propafenone and sotalol was 0.65, and amiodarone was 0.94. The researchers conclude that therapy with flecainide, propafenone, sotalol or amiodarone did not increase mortality in a large group of unselected AF patients. They do indicate though that this favourable outcome is likely associated with a careful matching of type of AAD therapy to the patient's comorbidities and age.

In an accompanying editorial, Dr. Jean-Yves Le Heuzey of the Georges Pompidou Hospital in Paris emphasizes that Class 1C drugs (flecainide and propafenone) should be avoided in patients with congestive heart failure, complete left bundle branch block, and/or coronary artery disease. He points out that, while today's cardiologists are perfectly aware of this, this was not the case 20 years ago. He also suggests that the routine prescription of a beta-blocker with Class 1C drugs reduces the risk of inducing 1:1 right atrial flutter.

In a second editorial, Drs. Krishnamoorthy and Lip from the University of Birmingham review a number of previous trials which have found AADs to be associated with increased mortality and conclude, "*The currently available AADs are neither highly efficacious nor completely safe in the treatment of AF patients.*" They also point out that the use of digoxin for rate control increases the risk of death by 42% in patients with persistent AF.

Andersen, SS, et al. Antiarrhythmic therapy and risk of death in patients with atrial fibrillation: a nationwide study. **Europace**, *Vol. 11, 2009, pp. 886-91*

Le Heuzey, JY. The risk of antiarrhythmic drugs in atrial fibrillation: 20 years of controversies. **Europace**, *Vol. 11, 2009, pp. 840-41*

Krishnamoorthy, S and Lip, GYH. How safe is the antiarrhythmic drug therapy in atrial fibrillation? **Europace**, *Vol. 11, 2009, pp. 837-39*

Editor's comment: It is clear that the safety of AADs is still an area of controversy, although the Danish study goes a long way toward proving that AAD therapy is superior to no therapy in AF patients. Of course, in the case of **lone AF** (no underlying heart disease) there is no evidence that Class 1C drugs are dangerous, or associated with increased mortality.

What makes afibbers different?

KURASHIKI, JAPAN. The Kurashiki annual health survey is a prospective, population-based investigation aimed at determining incidence and risk factors for atrial fibrillation (AF) in men and women 40 years or older. The 2006 and 2007 surveys included 30,449 residents who underwent thorough medical examinations including 12-lead electrocardiograms. In the 2006 survey 439 participants were diagnosed with AF leaving 30,010 for follow-up to 2007. A total of 129 men (46.4%) and 149 women (53.6%) were diagnosed with AF at the 2007 survey giving an annual incidence of first diagnosed AF of 0.93%. The incidence increased markedly with age.

At or below the age of 67 years, the incidence was 0.53% for men and 0.15% for women, between 68 and 75 years, male incidence was 1.39% and female 0.65%, while at or over the age of 76 years, the incidence was 1.64% for men and 1.36% for women. In addition to age over 80 years, which was associated with a 57% increased risk of being diagnosed with AF, cardiac disease (coronary artery

disease and heart failure) was a major risk factor associated with a 7.47 times increased risk.

Lower total cholesterol levels were also associated with increased risk as was a decreased glomerular filtration rate (a measure of kidney function). The Japanese investigators suggest that AF and deterioration of kidney function are linked through a common pathway of inflammation. The presence of hypertension and diabetes was not associated with an increased risk of AF and neither was smoking.

Iguchi, Y, et al. Annual incidence of atrial fibrillation and related factors in adults. **American Journal of Cardiology**, *Vol. 106, 2010, pp. 1129-33*

Editor's comment: The overall incidence of newly diagnosed AF of 0.93% a year in this cohort of Japanese citizens is very similar to that found in countries in the Western world. However, basing the presence or absence of AF on one, 12-lead electrocardiogram at rest would seem to me to be highly likely to underestimate the incidence since many cases of paroxysmal (intermittent) AF would likely be missed.

Calcium requirement for men

ADELAIDE, AUSTRALIA. The Recommended Daily Allowance (RDA) for calcium for men in the USA and Canada is 1000 mg/day up to the age of 50 years and 1200 mg/day for men above age 50. In view of recent reports that high calcium intakes may be detrimental, it is obviously important to know if the RDA reflects the actual amounts needed to achieve a steady calcium balance. A group of researches at the Royal Adelaide Hospital now report that the amount of calcium needed to maintain a steady calcium status is 750 mg/day for men below the age of 60 years. They acknowledge that men older than 60 may need more as the ability to absorb calcium declines with age.

The researchers obtained balances for 72 men aged 17 to 59 years and found that net absorbed calcium (the difference between intake and losses through faeces) was equal to the loss through skin (estimated at 40 mg/day) and urine at an average intake of 750 mg/day. In other words, 750 mg/day will maintain calcium status in men under the age of 60 years. It is common practice to add two standard deviations to the actual intake required to neither lose nor gain a nutrient, thus arriving at a RDA of 900 mg/day.

Nordin, BEC and Morris, HA. Recalculation of the calcium requirement of adult men. **American Journal of Clinical Nutrition**, *Vol. 93, February 2011, pp. 442-45*

Comparison of stroke risk estimates

COPENHAGEN, DENMARK. There is no evidence that atrial fibrillation (AF) with no underlying structural heart disease (lone AF), as such, is associated with an increased risk of ischemic stroke. However, if advanced age or specific comorbidities carrying their own independent stroke risk enter the picture, then risk may increase significantly over the risks observed in the general population. Two schemes, the $CHADS_2$ and the CHA_2DS_2-VASc scores, have been developed in order to estimate the effect of age and comorbid conditions on overall stroke risk.

$CHADS_2$ Score

Age 75 years or older – 1 point
Hypertension – 1 point
Diabetes – 1 point
Congestive heart failure – 1 point
History of stroke or TIA – 2 points

CHA_2DS_2-VASc Score

Congestive heart failure – 1 point
Hypertension – 1 point
Age 75 years or older – 2 points
Age between 65 and 74 years – 1 point
History of stroke or TIA – 2 points
Vascular disease – 1 point
Diabetes mellitus – 1 point
Female gender – 1 point

The schemes have been validated in several relatively small studies, but it is still not entirely clear how well they correlate with events in the "real world". A large Danish study now reports on the correlation between stroke risk as predicted by the two schemes and the actual incidence of

thromboembolism (ischemic stroke, pulmonary embolism, and peripheral artery embolism). The annual incidence of thromboembolism was calculated 1, 5 and 10 years after discharge from hospital in a group of 73,538 patients with non-valvular atrial fibrillation. The majority (60%) of patients were 75 years of age or older, 34% had high blood pressure (hypertension), 51% were female, 18% had suffered a previous stroke, and 43% had been prescribed digoxin. None of the patients had been prescribed warfarin at discharge.

At year 5 of follow-up, the actual incidence of thromboembolism corresponding to the risk scores was as follows:

$CHADS_2$ Score	Actual Incidence, %/year
0	1.28
1	3.70
2	5.58
3	10.29
4	14.0
5	12.98

CHA_2DS_2-VASc Score	
0	0.69
1	1.51
2	3.01
3	4.41
4	6.69
5	10.42

It is clear that the stroke risk in afibbers with a core of 0, that is, no accompanying risk factors, is low according to both schemes. However, as stroke risk factors are added, incidence increases significantly. In the $CHADS_2$ score, having experienced a previous thromboembolic event was the most significant risk factor, followed by a combination of diabetes and heart failure, and age 75 years or older. In the CHA_2DS_2-VASc score, a previous thromboembolism was also the most significant risk factor, followed by age of 75 years or older, and a combination of diabetes and heart failure.

The researchers conclude that afibbers with a CHA_2DS_2-VASc score of 0 are truly at very low risk and do not require antithrombotic therapy. NOTE: The score considers age of 65 years or older a risk factor with a score of 1. It also assigns a score of 1 to female gender.

Olesen, JB, et al. Validation of risk stratification schemes for predicting stroke and thromboembolism in patients with atrial fibrillation: nationwide cohort study. **British Medical Journal**, *Vol. 342, January 28, 2011*

Fang, MC. Anticoagulation in people with atrial fibrillation. **British Medical Journal**, *Vol. 342, February 5, 2011, p. 289*

Editor's comment: It is encouraging to see that male, lone afibbers under the age of 65 years with no accompanying risk factors have a very low risk of thromboembolic events and do not benefit from anticoagulation. The study also lends credence to my long-held belief that AF, in itself, is a minor component in overall stroke risk. For example, the risk of experiencing a stroke more than doubles each decade after the age of 55, irrespective of whether AF is also present. Hypertension alone doubles stroke risk, and diabetes is associated with a 2- to 5-fold increase in stroke risk. Furthermore, it should also be kept in mind that only about 15% of all ischemic strokes are cardioembolic – those caused by a clot originating in the left atrium or atrial appendage. In my opinion, nattokinase would be a superior option to warfarin in preventing the fibrin-rich clots involved in cardioembolic strokes.

Finally, while the $CHADS_2$ and the CHA_2DS_2-VASc scores were developed to predict the risk of ischemic stroke only, the Danish researchers used them to predict not only the estimated risk of ischemic stroke, but also the risk of pulmonary embolism and peripheral artery embolism, thus increasing the incidence of events associated with a specific risk score beyond what would have been observed if only ischemic stroke had been considered.

New risk score for development of AF

ROCHESTER, MINNESOTA. The risk of developing heart disease can be estimated using a scheme developed by the Framingham Heart Study and the risk of suffering an AF-related stroke can be estimated by the use of the $CHADS_2$ or CHA_2DS_2-VASc score. Now a group of researchers from the Mayo Clinic reports the development of a scoring protocol for determining the 10-year risk of developing atrial fibrillation in black and white men and women. The study involved 14,546 individuals between the ages of 45 and 64 years of which 27% were black and 55% were women. All participants underwent an extremely comprehensive medical examination at baseline and then three additional

examinations during the 10-year follow-up from 1989-1998. All examinations included 12-lead ECG and incidences of AF were also recorded if patients were admitted to hospital for AF or reported AF in telephone interviews. During the 10 years, 515 study participants developed AF, giving an annual incidence rate of around 0.35%.

By comparing the status of 12 variables vs. incidence of AF, the researchers were able to develop a score for predicting the risk of developing AF over the next 10 years. The most significant risk factors and their corresponding score are given below. Please note that all risk factors refer to status at enrolment.

8 points	Age 60 to 64 years
5 points	Early coronary artery disease (age 45 to 50 years)
4 points	Age 55 to 60 years
4 points	Height of 173 cm (5 ft 8 in) or greater
4 points	Left ventricular hypertrophy and white race
4 points	Early diabetes (age between 45 and 55 years)
3 points	Age 50 to 55 years
3 points	Systolic blood pressure above 160 mm Hg
3 points	Use of hypertension medication
3 points	Current smoker
3 points	Coronary heart disease between ages of 50 and 60 years

The following conditions were associated with a 2 point risk score – systolic blood pressure between 140 and 160 mm Hg, precordial murmur, left atrial enlargement, and heart failure. Risk factors associated with a 1 point risk score were height between 164 and 173 cm (5 ft 5 in to 5 ft 8 in), systolic blood pressure between 120 and 140 mm Hg, former smoker, and age 55 to 60 years. The following variables confirmed no additional risk for AF development – age 45 to 50 years, height less than 164 cm (5 ft 6 in), blood pressure between 100 and 120 mm Hg, never having smoked, and left ventricular hypertrophy (if black). It was also observed that blacks have a significantly lower preponderance to develop AF, so they were automatically given a score of –4 just for their race alone.

Considering all the data collected, the researchers estimate the following actual risks of developing AF over a 10-year period as follows:

Risk Score	Estimated 10-year Risk
1 or less	less than 1%
2 – 6	1%
7 – 8	2%
9	3%
10 – 11	4%
15	11%
19 or higher	greater than 24%

The researchers recognize that the number of patients actually developing AF could be greater than recorded since some participants' episodes may not have been caught on an ECG. They also point out that an individual's risk factors were only measured at baseline. If the individual made major lifestyle changes during the 10-year follow-up, that could obviously affect final outcome. Finally, it is now well known that certain genes can predispose to AF. This was not considered in the survey.

Chamberlain, AM, et al. A clinical risk score for atrial fibrillation in a biracial prospective cohort. **American Journal of Cardiology**, *Vol. 107, 2011, pp. 85-91*

Editor's comment: This study is a good "first stab" at a risk score for developing atrial fibrillation. However, it could likely be improved by including other established risk factors such as alcohol abuse, recreational drug use, digoxin, thyroid disorder, hypoglycaemia, pheochromocytoma, hyperaldosteronism (Conn's syndrome), electrolyte imbalances, frequent consumption of tyramine-containing foods, autonomic nervous system imbalances, and of course, chromosomal abnormalities (inherited AF).

Comparison of manual, robotic and cryo PVI procedures

BRUSSELS, BELGIUM. Pulmonary vein isolation (PVI) is the most common catheter ablation procedure performed in as effort to cure atrial fibrillation (AF). Originally, PVI was performed manually using radiofrequency (RF) energy to create point-by-point lesion sets around the pulmonary vein ostia so as to create a barrier to rogue electrical impulses originating from the veins and thus stop AF in its tracks. More recently, a couple of systems have emerged which use robot mechanisms to guide the ablation catheter based on electroanatomical (CARTO) rather than electrophysiological mapping. Finally, there are now also balloon-shaped catheters available using cryo-energy to create a complete lesion in one go by actually placing the balloon just inside the pulmonary veins or on the edge (antrum) of the vein and left atrium. Using cryo-energy rather than RF energy reduces the risk of post-procedure pulmonary vein stenosis, but increases the risk of phrenic nerve palsy.

Electrophysiologists from Belgium and Italy have compared the efficacy and safety of the three procedures in a group of 94 afibbers (84% male) with an average age of 56 years. The majority (80%) had paroxysmal AF, 17% had the persistent variety, and the remaining 3% had been in AF for more than 6 months and were classified as permanent.

Twenty-nine patients were assigned to the manual RF group (mRF), 35 were assigned to the robotically-guided RF group (rRF), and the remaining 30 underwent cryoablation (cryo). The robotic system used was the *Stereotaxis Niobe II* system using CARTO mapping and a 3.5 mm irrigated catheter. The cryo group was ablated with an *Arctic Front* 28 mm double-walled cryoballoon using electrophysiological mapping. The mRF group was ablated with a 3.5 mm irrigated catheter using a combination of electrophysiological (Lasso) and electroanatomical mapping.

There were no significant differences in the characteristics of patients assigned to the three groups except that 2 of the 3 permanent afibbers were assigned to the mRF group and none were assigned to the cryo group. Both total procedure time and fluoroscopy time were significantly shorter in the cryo group. All patients were examined (with 24-hour Holter monitoring) at 1, 3, 6, and 12 months after the procedure and in the case of symptoms of arrhythmia. After an average 12-month follow-up, 65.5% of the patients in the mRF group, 66.7% of those in the rRF group, and 65.7% of those in the cryo group were free of arrhythmia without the use of antiarrhythmics. Complications were minor and reversible, and the researchers conclude that the three procedures are equally effective and safe.

Sorgente, A, et al. Atrial fibrillation ablation: a single center comparison between remote magnetic navigation, cryoballoon and conventional manual pulmonary vein isolation. **Indian Pacing and Electrophysiology Journal**, *Vol. 10, November 2010, pp. 486-95*

Editor's comment: A one-year success rate of 65% after a single procedure is indeed encouraging and shows impressive progress since the early days of PVI procedures when success rates as low as 21% were not unheard of. The shortening of procedure time with the cryoablation vs. manual ablation (116 minutes vs. 195 minutes) is, of course, highly significant as is the shortened exposure to radiation (40 minutes vs. 66 minutes). The balloon catheter used in the cryo group was 28 mm which probably means that it did not actually enter the pulmonary veins, but produced its lesion set on the antrum of the vein, thus further minimizing the risk of stenosis.

Diabetes associated with poorer ablation outcome

TAIPEI, TAIWAN. Recent research has shown that type 2 diabetes is a risk factor for the development of atrial fibrillation (AF). However, it is not clear why this is so. A team of electrophysiologists from the Taipei Veterans General Hospital now reports that diabetes and impaired fasting glucose alters the substrate in both the left and right atria so as to encourage the arrhythmia. They also observed that patients with abnormal glucose metabolism (diabetes or impaired fasting glucose) were more likely to experience recurrence after catheter ablation of AF than were patients with normal glucose metabolism. The study included 228 patients with symptomatic paroxysmal AF (average age of 52 years with 73% being male). A total of 65 patients (28.5%) had either diabetes (32 patients with average fasting glucose level of 129 mg/dL) or impaired fasting glucose (33 patients with average

fasting glucose level of 109 mg/dL). The only significant differences between the impaired and normal glucose metabolism groups were that the latter group was older (56 vs. 51 years), had a higher average fasting glucose level (average of 119 vs. 87 mg/dL), and glycated hemoglobin (6.2% vs. 5.5%) as well as a larger left atrium (40.1 mm vs. 37.8 mm).

All patients underwent an electrophysiologic study followed by a catheter ablation. The study was carried out in sinus rhythm, while the circumferential pulmonary vein isolation (PVI) procedure was performed after the patients had been provoked into AF. The electrophysiologic study revealed that both right and left atrium total activation times were significantly longer in the abnormal glucose metabolism group and bipolar voltages in both the left and right atria were significantly lower in the abnormal metabolism group. The researchers suggest that the observed intra-atrial conduction delay and the lower atrial voltage may be associated with atrial fibrosis caused by oxidative stress.

All patients were followed up every 1 to 3 months with 24-hour Holter monitoring or 7-day event recording. If AF recurred they were offered a repeat ablation or prescribed previously ineffective antiarrhythmics. After an average follow-up of 18 months, 18.5% of the members of the abnormal glucose metabolism group had experienced AF recurrence (after a 2-month blanking period) as compared to only 8.1% in the normal metabolism group. After adjusting for age, left atrial diameter, left ventricular ejection fraction, and the use of antiarrhythmic medications, the researchers conclude that abnormal glucose metabolism is associated with a 3.2-fold increase in the risk of AF recurrence. They point out that the electrical abnormalities found in the abnormal glucose metabolism group were more pronounced in the "full-blown" diabetes group than in the impaired fasting glucose group indicating that the electrical remodeling observed is a gradual process which may be slowed by lifestyle and diet changes aimed at halting the progression to diabetes.

Chao, TF, et al. Atrial substrate properties and outcome of catheter ablation in patients with paroxysmal atrial fibrillation associated with diabetes mellitus or impaired fasting glucose. **American Journal of Cardiology**, *Vol. 106, 2010, pp. 1615-20*

Editor's comment: The "take home" message of this study is that afibbers with abnormal glucose metabolism are more likely to experience AF recurrence after a PVI procedure than are those with normal fasting glucose levels. The risk of recurrence would seem to increase with the degree of glucose metabolism impairment; therefore making efforts as early as possible to prevent progression is imperative for potential ablatees.

Improved safety of PVI procedures with shorter clotting times

REDWOOD CITY, CALIFORNIA. Anticoagulation during catheter ablation needs to be precisely controlled. Too little anticoagulant (usually heparin) and blood clots may form on the catheter or sheaths, too much and the risk of hematoma and serious bleeding complications increase. The degree of anticoagulation achieved is measured as "Activated Clotting Time" or ACT with increasing values corresponding to increased anticoagulation. The usual target value is 300 to 350 seconds or longer. Now a team of electrophysiologists at the Sequoia Hospital reports that ACT can safely be reduced to 225 seconds if an open tip irrigated catheter is used for ablation.

The Sequoia study covered 1122 ablations performed on 843 patients (average age of 62 years). The majority of patients were male (72%) and 32% had paroxysmal AF, 50% had persistent, and 18% permanent. The ablations were carried out between October 10, 2003 and December 31, 2009. The open tip irrigated catheter was introduced in January 2006 after which the team gradually reduced ACT from more than 350 seconds to about 225 seconds. The percentages of serious procedure-related complications at various ACTs are shown below:

	ACT Range, Seconds			
	< 250	250-299	300-350	> 350
Average ACT	224	272	319	389
Tamponade/pericardiocentesis	0.5%	0.9%	1.5%	2.8%
Arteriovenous fistula	0.4%	0.3%	0.5%	0%
Groin pseudoaneurysm	0.5%	0.6%	0.5%	0%
Hematoma*	0%	0.6%	0%	2.8%
Stroke or TIA	0.2%	0.3%	1.0%	0%
Overall complications	**1.62%**	**3.02%**	**3.57%**	**5.55%**

*requiring transfusion or surgery

The overall complication rate using an open tip irrigated catheter and an ACT of less than 250 seconds (average 224 seconds) compares favourably with rates of 2.7 to 3.9% reported in recent surveys. The authors noted that women tended to have higher blood levels of heparin and higher ACTs than men for equivalent doses of heparin. This could explain why women tend to have more bleeding complications during catheter ablation and calls for greater care in adjusting heparin infusion when women are ablated.

Winkle, RA, et al. Safety of lower activated clotting times during atrial fibrillation ablation using open irrigated tip catheters and a single transseptal puncture. **American Journal of Cardiology**, *Vol. 107, No. 5, March 1, 2011, pp. 704-08*

Editor's comment: The finding that ACT can be safely decreased when using an open tip irrigated catheter is obviously of significant importance and its general implementation should help reduce procedure-related bleeding complications, especially in female ablatees.

A call to action to reduce salt consumption

The American Heart Association (AHA) has issued a call to action to reduce dietary intake of sodium. Excess intake of salt (sodium chloride) is closely associated with high blood pressure (hypertension). Hypertension (recently redefined as blood pressure over 115/75 mm Hg), in turn, is the leading cause of stroke and heart disease. It is estimated that high blood pressure accounts for almost 400,000 preventable deaths each year in the USA alone. Excess sodium also promotes left ventricular hypertrophy, as well as fibrosis in the heart, kidneys and arteries. There is also evidence that excess sodium increases oxidative stress and endothelial dysfunction, and promotes urinary calcium excretion, thus possibly osteoporosis. All in all, excess sodium is a very bad actor indeed!

The AHA recommends a maximum daily sodium intake of 1500 mg/day. The current average intake in the USA and Canada is close of 3500 mg/day. A recent meta-analysis showed that a decrease of 1800 mg/day in urinary sodium excretion would decrease systolic/diastolic blood pressure in hypertensive patients by 5.0/2.7 mm Hg. Even people who are currently not hypertensive can benefit from sodium reduction. It is estimated that reduction to the recommended level of 1500 mg/day would decrease systolic blood pressure by an average of 3.7 mm Hg in people 45 years or younger and by 7.0 mm Hg in those older than 45 years.

The writers of the AHA call to action point out that about 75% of the sodium consumed in the daily diet comes from processed foods whether eaten at home or at a restaurant. An interesting side observation is the fact that the habit of eating out increased by 200% from 1977 to 1995. In summary, the AHA has set a goal of reducing deaths from stroke and cardiovascular disease by 20% by the year 2020. Key components in achieving this is a blood pressure of 120/80 mm Hg or less and a daily sodium intake not exceeding 1500 mg/day.

NOTE: You can use either one of the following two web sites to determine your daily sodium intake:

www.nutritiondata.com
www.fitday.com

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