ABC'S OF POST-MI TREATMENT

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The number of drugs for treatment and prevention of recurrent events for acute myocardial infarction (AMI) continues to escalate. These medications (evidence-based therapies **proven effective)** are additions to standard recommendations for diet, exercise and smoking cessation and should be given before hospital discharge.

ABCDE'S of AMI TREATMENT:

A - Antithrombotics:

Aspirin 81-325mg daily – Treat indefinitely. (Aspirin is generally believed to decrease events by 25%.)

Clopidogrel (Plavix) 75mg daily – Treat for at least one year based on the results of CURE.[1] [2] (Clopidogrel was associated with a further 20% relative risk reduction in the composite endpoint of CV death, MI or stroke on top of aspirin.)

B - Beta-blockers: A recent review of beta-blocker post AMI showed treatment was associated with 40% improvement in survival.[3] This particular review suggested that which specific beta-blocker chosen has little influence on mortality. The dosages proven effective in the studies are recommended, and most recommend treatment indefinitely:

Atenolol (Tenormin) 100mg daily
Metropolol (Lopressor in divided dosage or Toprol XL) 200mg daily)
Propranolol (Inderal in divided dosage or Inderal LA 180-240mg daily)
Carvedilol (Coreg) 25mg 2x daily

C – Converting enzyme inhibitors: A recent meta-analysis[4] showed a 7% mortality reduction with early use, avoiding 1 death per 200 patients. The landmark HOPE trial[5] done with ramipril 10mg, was associated with a 22% reduction in its primary endpoint comprised of MI, stroke or death, showing long-term benefit. (If you treat 1000 patients over a 4-5 year period, 170 events could be prevented.) Most experts recommend titrating to dosages used in the studies and continuing treatment indefinitely. (Greater benefit is seen in the higher-risk patients, i.e., those with LV dysfunction.)

Ramipril (Altace) 10mg daily
Quinapril (Accupril) 40mg daily
Captopril (Capoten) 50mg 3x daily
Enalapril (Vasotec) 10mg 2x daily
Lisinopril (Zestoril or Prinivil) 10-35mg daily
Trandolapril (Mavik) 4mg daily

"The practice of medicine ought to based on solid, scientific evidence, not on assumptions or extrapolations. Therefore it seems prudent to recommend that patients requiring ACE inhibitor therapy be prescribed one that has been proven effective and safe."[6]

D – Diet and **D**o not smoke programs

E – Exercise programs

S – Statins: A meta–analysis[7] of 16 statin trials with simvastatin, pravastatin, and lovastatin in 29,000 patients decreased LDL-C by 30% and total cholesterol by 22%. The following reductions were demonstrated:

- Risk of stroke by 29%
- Risk of total mortality by 22%
- CV deaths by 28%

This risk reduction was similar for men and women and for the elderly and middle-aged.[8] Recent data in acute coronary syndrome has

shown early benefit of statins.[9] Given the potential short-term benefit, the definite longer-term benefit, and the apparent absence of harm (no significant early or long-term risk when monitored appropriately), statin treatment should be a part of the plan for all patients before they are discharged from the hospital following an acute coronary event.

All of these treatments are associated with long-term benefit and frequently the medications show early benefit. To obtain these substantial benefits, treatment should be initiated before discharge when these patients are most amenable.

Despite the overwhelming evidence that secondary prevention therapies reduce mortality in patients with established coronary heart disease (CHD), both physician acceptance and compliance pose the greatest challenge to effective treatment. Initiation of chronic drug treatment programs in individuals without symptoms can be a difficult barrier for both physician and patient to cross. Exaggerated news reports about the dangers of these medical treatments, and the pharmacists' over-emphasis of side effects, can further confuse the issue. Economics is another major obstacle.

In the absence of immediately identifiable need (improved outcomes are a long-term result), the prevailing practice is to avoid possible complications and increased costs. This results in a collective failure to substantially reduce the risk of recurrent events and death among patients with CHD.

To address this issue, a **C**ardiac **H**ospital **A**therosclerosis **M**anagement **P**rogram (CHAMP) focused on utilization of aspirin (results of CURE not out yet), beta-blockers, angiotensin converting-enzyme (ACE) inhibitors and statin therapy in addition to standard diet and exercise counseling before hospital discharge in patients with AMI.[10] Dr. Gregg Fonarow and his colleagues compared treatment rates and clinical outcomes in the two-year periods before and after CHAMP was implemented.

Results:

- Medication use increased as follows: aspirin from 68% to 92%, ACE inhibitors from 6% to 58%, beta-blockers from 12% to 62%, and statins from 65% to 86%.
- Patients achieving LDL-C $\leq$ 100 mg/dL rose from 6% to 58%.
- There were significant reductions in recurrent MI, hospitalizations, cardiac mortality and total mortality.

Conclusion: The CHAMP program (hospital-based before discharge) achieved a substantial increase in the ABCDE'S (treatment proven to decrease mortality) of post AMI care resulting in significantly improved clinical outcomes.

"The key to a reduction in recurrent cardiovascular events and improved survival is to provide patients with immediate and thorough treatment before they leave the hospital" said Fonarow. "These results are so striking that this approach should become the standard of care."

Further support comes from two other recent reports. The first, from Dr. D.A. Wood, of the National Heart and Lung Institute, London, and colleagues reported their experience with a 12-week cardiac prevention and rehabilitation program.[11] Their conclusion was that lifestyle, risk factor, and therapeutic targets can be achieved in most patients with a hospital–based program, and therefore a corresponding reduction in morbitity and mortality can be expected as long as these results are sustained.

The second, a retrospective observational study of > 25,000 MI patients in Ontario, found that long-term outcome after MI is influenced by whether a patient is cared for in a teaching hospital, but is not by the hospital's rate of revascularization procedures.[12] The key to improved outcomes, explains Dr. D.A. Alter, is

that teaching hospitals make better use of evidence-based therapy. "As physicians we have placed too much emphasis on the effectiveness of revascularization procedures. Although obviously they are important for some patients, they really don't make a large difference in the overall population of MI patients."

The higher rate of revascularization procedures in hospitals with facilities could be compared to the Mark Twain quote, "To a man with a hammer, every nail looks like it needs driving." "We have to look beyond procedures," Alter stresses. "The use of evidence-based therapies, the intensity and the follow-up care are perhaps as important, if not more important than revascularization procedures themselves in driving differences in outcomes."

Conclusion:

The CHAMP program achieved a significant increase in the use of medications proven to decrease mortality in the post AMI population. The proportion of patients reaching LDL-C goals increased and clinical outcomes improved. All data support the concept of initiating these therapies at the time of diagnosis (before discharge). This should be the standard of care.

The prospects for effective drug management of the post AMI patient have never been better. The development of a systemic, coordinated educational program to improve quality of care appears to be the answer (just remember your ABC'S). More problematic is the question of how to ensure patients can pay for such treatment on a global basis. Clopidogrel, which now joins the pantheon of post AMI discharge medications, and, although reducing total medical costs, may add another $3 per day to patient costs…but that's another *Heartbeat.*

Special Guest Editor: Gregg C Fonarow, MD
Associate Professor of Medicine, UCLA Division of Cardiology

Mario L. Maiese DO FACC maiese@dnamail.com
Heartbeats are available at www.newsrounds.com under "cardiology".

Update to *Heartbeat* 57:
Recommendation # 5 (Last page) "In acute ST elevation (**transmural** Q wave MI…"

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