



DUE Quarterly

DRUG USE IN THE ELDERLY

January 2011

PROMOTING MORE EFFECTIVE MEDICATION USE BY SENIORS

The art of managing seniors with HF

Heart failure (HF) is a complex syndrome. Signs and symptoms can be non-specific in the elderly. Common symptoms include breathlessness and decreased exercise capacity, with increased difficulty performing daily activities. This “slowing down” is often attributed to aging and/or other co-morbidities. There is no single test to rule in or out HF.

Atypical symptoms include:

- Symptoms of delirium
- Cognitive impairment
- Sudden functional decline/falls
- Sleep disturbances, nocturia or nocturnal incontinence
- Dyspnea (less common in sedentary patients)

HF prevalence is higher in the elderly; 8% vs 2.3% in the general population. It is the number one cause for hospitalization in the elderly.

Mortality is also high; 50% mortality at five years. Admission to hospital has 10% mortality at one month and 30% at one year.

Common HF precipitants include:

- Poor diet/non-adherence to recommendations
- Medications (NSAIDs, corticosteroids, non-dihydropyridine CCBs)
- Infection
- Co-morbidities
- Ischemia
- Arrhythmias
- Disease progression

HF management

Self-care and education are cornerstones of management. This includes:

- Sodium restriction (<2 g/day)
- Daily weights (2 lb gain in 1-2 days and 5 lbs in a week is significant)
- Fluid restriction to 1.5-2 L/day
- Regular exercise as tolerated (30-45 minutes, 3-5 times per week)
- Smoking cessation

Few clinical trials have included patients more than 75 years old.

Integrated multidisciplinary care has improved outcomes. Whenever possible, a referral to an HF clinic is recommended.

Where available, indications for referral to an HF clinic include:

- New onset HF
- Recent HF hospitalization
- HF associated with ischemia, hypertension, vascular disease, syncope, renal dysfunction or other multiple co-morbidities
- HF of unknown etiology
- Intolerance to recommended drug therapies
- Poor compliance with treatment
- First-degree family members if family history of cardiomyopathy or sudden cardiac death

Patient and caregiver education regarding prognosis and disease progression are paramount in planning for end-of-life care.

Health professionals should be aware of the following:

- Elderly patients’ taste alterations affect use of salt.
- Seniors living in assisted-living facilities may have little control over diets.
- Referral to a dietitian can assist in addressing food preferences.
- Mobility issues should be considered when initiating weight monitoring. Digital scales may be considered in those with poor vision.



NEXT ISSUE

- Diabetes update

DUE Quarterly offers expert opinions – not ACP-AMA guidelines or evaluations of drug use.

Pharmacotherapy

While HF affects a predominately elderly population, few clinical trials have included patients more than 75 years old.

HF medications tend to be under-used and under-dosed in the elderly.

- The elderly are more likely to be treated with “symptom-modifying” rather than “disease-modifying” medications when compared to their younger counterparts.

Elderly patients with HF are at a higher risk for adverse drug events because of:

- Physiologic alterations of age, including drug pharmacokinetic and dynamic changes
- Physiologic alterations of advanced HF
- Co-morbidities resulting in increased medication burden and increased risk of drug interactions

The general approach to pharmacotherapy in HF is the same. However, a greater level of caution should be exercised.

- Lower doses and longer titration intervals, “start low, go slow.”
- “Target” doses used in clinical trials may not be obtainable in the elderly.
- Titrate every 2-4 weeks versus 1-2 weeks.
- A low dose is better than no dose.
- Closely monitor electrolytes and creatinine.
- Pharmacists should be involved in performing comprehensive medication reviews for all patients with HF to focus on minimizing medication burden, preventing adverse effects, avoiding drug interactions and identifying issues with adherence. Educating patients about their medications is important.

Goals of therapy are similar with younger counterparts.

- Reduce symptoms
- Increase exercise tolerance
- Improve quality of life
- Decrease hospitalizations
- Prevent or slow disease progression
- Improve survival

However, rank order may differ with quality of life outweighing quantity.

Cornerstones of therapy: ACE inhibitors and beta-blockers

Both ACE inhibitors and beta-blockers are considered first-line agents and should be considered in all patients.

- If possible, both should be initiated and titrated concurrently.
- Treatment benefits (decreased mortality, hospitalizations and symptoms) are similar to younger populations in both classes of medications.

First-line therapies

➤ ACE inhibitors

Initiation/titration

- ACE inhibitors are first-line treatment for NYHA class I-IV.
- Most ACE inhibitors are cleared by the kidney. Given many older adults have decreased renal function, this may result in an adverse drug event (ADE) at lower doses than those used in clinical trials. Additionally, this may limit titration.

Adverse effects

- Review other medications that may increase potassium (e.g., potassium supplements, ARBs) or result in renal dysfunction (e.g., NSAIDs, COX2-I) and reassess if necessary.
- Enquire (and document) about a baseline cough prior to initiating, as cough may be a symptom of HF. Should an ACE inhibitor cough present, every effort should be made to maintain therapy. Many patients are able to tolerate this cough. Decreasing the dose and switching the ACE inhibitor may help as well.

Tips for counselling

Tips for dealing with symptomatic hypotension:

- ACE inhibitors and diuretics have additive effects on blood pressure. Continually reassess diuretic dose to maintain minimum effective dose (euvolemia) and facilitate titration on ACE inhibitors.
- Reassess all other medications that may have additive effects on lowering

blood pressure, especially those that are considered “non-essential.”

- Consider staggering dosing of anti-hypertensives (a.m. and p.m. dosing) to minimize peak blood pressure-lowering effects.
- Orthostatic hypotension may be more likely observed in the morning.

➤ Beta-blockers

Initiation/titration

- Beta-blockers are first-line treatment for NYHA Class II-IV HF.
- Start very low and increase dose slowly.
- Initiate only when stable and euvolemic.
- May be initiated after a recent exacerbation provided the patient is stable and euvolemic.
- Avoid reducing diuretic doses (unless ADE) when initiating or titrating as additional beta-blockers may temporarily worsen HF secondary to the drug’s negative inotropic effects.

Adverse effects

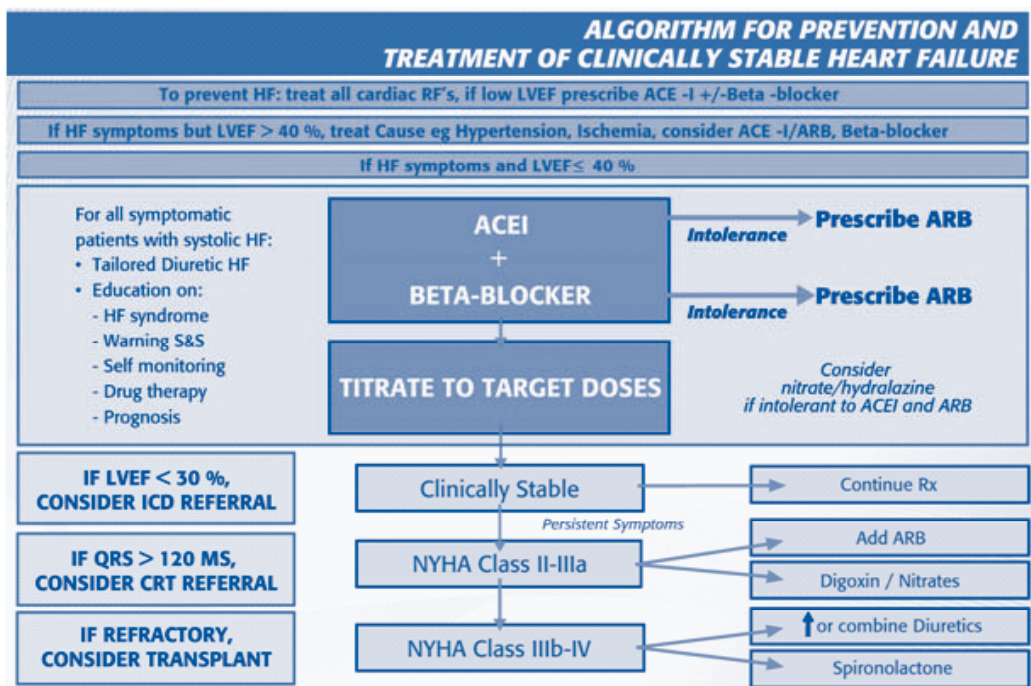
- Elderly patients may be particularly sensitive to the effects of beta-blockers, including orthostatic hypotension, sick sinus syndrome and higher levels of AV nodal dysfunction.
- COPD is not a contraindication to beta-blocker therapy. Cardio-selective beta-blockers should be considered in these patients.
- Beta-blockers should not be abruptly discontinued and should be maintained during acute exacerbations if possible.
- Elderly patients are particularly sensitive to the additive effects of rate-controlling agents. Monitor carefully when using other rate-controlling agents (e.g., digoxin, amiodarone, sotalol, etc.) in combination with beta-blockers.

Tips for counselling

- Counsel patients that they may initially feel worse when starting a beta-blocker for a few weeks while they are getting used to the medication, but their symptoms should improve in the long term.

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Practically speaking . . .



Arnold JMO, Liu P, Demers C, et al. Canadian Cardiovascular Society consensus conference recommendations on heart failure 2006: Diagnosis and management. *Can J Cardiol* 2006; 22(1): 23-45

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Monitoring for ACE inhibitors and beta-blockers

- Blood pressure (supine, seated and standing) should be monitored at every visit as elderly patients are particularly susceptible to orthostatic hypotension.
- Asymptomatic hypotension (e.g., SBP < 100 mmHg) is acceptable.
- An ECG should be done at baseline and as clinically indicated.
- Heart rate should be measured at every visit.
- A heart rate of ≥ 50 beats per minute is acceptable, as long as it is asymptomatic.
- Serum creatinine should be measured at baseline, and 1 week after initiation and dose increases of ACE inhibitors.
- A 30% increase in serum creatinine is considered acceptable when initiating an ACE inhibitor.
- If stable, consider monitoring every 3-6 months. The clinical course of HF is variable; more frequent monitoring may be warranted.

- Serum potassium should be measured at baseline, and 1 week after initiation and dose increases of ACE inhibitors.
- Look for trends in serum potassium. Generally a potassium < 5.5 mmol/L is acceptable
- Always enquire about dietary sources of potassium. Some salt substitutes contain high levels of potassium. Referral to a dietitian may be warranted. Common high potassium culprits: baked potato, orange juice, tomato juice and bananas.

Second-line medications

Refer to Table 1 on page 4 for second-line medications.

References available upon request.

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We'd like your feedback . . .

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Table 1: Second-line medications for the management of HF in seniors

	Angiotensin Receptor Blockers	Diuretics	Spironolactone	Digoxin
Initiation/ titration	<ul style="list-style-type: none"> Indicated for ACE inhibitor-intolerance (cough or angioedema) 	<p>Indicated in all patients with fluid overload (elevated jugular venous pressure, peripheral edema, pulmonary edema, etc.).</p> <ul style="list-style-type: none"> Never to be used as monotherapy. Maintain euvoolemia with lowest possible dose. Reassess frequently. Loop diuretics achieve better diuresis (furosemide). Hydrochlorothiazide is weaker and less effective with GFR < 30 ml/min). Metolazone combination (synergistic with loop diuretics) may be required. Use combination therapy intermittently. 	<p>Spironolactone indicated in NYHA III-IV AFTER stabilization with ACE inhibitors and beta-blockers.</p> <ul style="list-style-type: none"> Start at 12.5 mg/day and titrate slowly to 25 mg if tolerated. Review other medications that may increase potassium (potassium supplements, ARBs, etc.) and renal dysfunction (e.g., COX-2 inhibitors, NSAIDs) and reassess if necessary. 	<p>Digoxin should be considered in NYHA II-IV HF with persistent symptoms on maximal medical therapy. It can also be used in those patients with concurrent atrial fibrillation.</p> <ul style="list-style-type: none"> Lower doses should be used as a post-hoc analysis if the DIG trial demonstrated an increase in mortality with levels > 1.5 nmol/L. While levels are not routinely recommended, if done, the recommended range (rough levels) for treating HF is 0.6-1.3 nmol/L. Elderly patients may experience digoxin toxicity at “therapeutic” levels.
Adverse effects	<ul style="list-style-type: none"> Combination with ACE inhibitor in NYHA III with persistent symptoms despite standard treatment (decreases hospitalization) Routine combination of ACE inhibitor and ARB NOT RECOMMENDED ADE (hypotension, hyperkalemia and renal dysfunction) may outweigh benefits 		<ul style="list-style-type: none"> Avoid Spironolactone if: <ul style="list-style-type: none"> The baseline potassium is > 5.0 mmol/L. GFR < 30 mL/min Concurrent therapy with other nephrotoxic drugs (e.g., NSAIDs). Concurrent potassium supplements. 	<ul style="list-style-type: none"> Digoxin is renally cleared and, therefore, dosage adjustments are required for renal dysfunction.
Monitoring (applies to all interventions)	<ul style="list-style-type: none"> More frequent monitoring in combination therapy Monitor BP supine and standing each visit Address orthostatic hypotension if symptomatic SBP <100 acceptable IF asymptomatic 	<ul style="list-style-type: none"> Combination therapy requires frequent renal and electrolyte monitoring. 	<ul style="list-style-type: none"> Serum creatinine at baseline and 3 days-1 week after dose increase. Every 1-3 months if stable. Address clinical changes related to diarrhea and dehydration, which may predispose to renal dysfunction and hyperkalemia. 	<ul style="list-style-type: none"> Heart rate should be assessed at every visit. Digoxin levels should not be ordered routinely. A level can be ordered to assess an initial dose (1-2 weeks after initiating given digoxin’s long half-life). Subsequent level should only be used if toxicity is suspected. Potassium levels should be monitored closely while on digoxin as hypokalemia can predispose patients to arrhythmias.
Tips for counselling		<ul style="list-style-type: none"> Patients should be counselled to expect an increase in urination. Often patients will intentionally “skip” doses of diuretics if they are travelling or are worried that they may not be able to locate a bathroom in a timely fashion. Patients should be questioned about these symptoms and concerns and given strategies to help cope and improve adherence (e.g., do not “skip” the diuretic entirely, but rather take the dose when the patient gets home). 		