

## CASE ANECDOTES, COMMENTS AND OPINIONS

### “I Need Help”—A mnemonic to aid timely referral in advanced heart failure



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A common grievance of advanced heart failure services worldwide is late referral of patients for consideration of advanced heart failure therapies such as cardiac transplantation and left ventricular assist devices (LVADs). Late referral of heart failure patients increases the risks of right heart failure, renal and liver dysfunction, pulmonary hypertension and often cardiac cachexia.<sup>1</sup> These factors are associated with poorer outcomes after advanced heart failure therapies, or can result in patients being considered too unwell to undergo these treatments.<sup>1-3</sup>

The ideal time to refer patients for consideration of advanced heart failure therapies is when they progress from having stable heart failure to *advanced* heart failure. The “I Need Help” acronym (Table 1) encompasses many of the core components for defining advanced heart failure, as recommended by the American and European Heart Failure Guidelines and Consensus Statements.<sup>1,4</sup> It is designed to be a simple and easy to remember mnemonic to aid in timely referral to (or at least discussion with) an advanced heart failure service. Contact should be initiated if a heart failure patient has any of the risk factors described.

The components of the “I Need Help” acronym are all risk factors that have been proven to increase all-cause mortality in heart failure patients (Table 2, with representative references).<sup>5-13</sup> The extent of renal and liver dysfunction, and the degree of natriuretic peptide increase and diuretic requirement that should raise concern and trigger referral is not well defined. As such, precise cut-offs for alarm are not listed for these continuous variables.

The “I Need Help” mnemonic aims to change referral patterns toward “too early” rather than “too late” or “not at all.” This would be a worthwhile shift as a referral made too



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early can simply be redirected or delayed until a more appropriate time-point, with individually tailored management advice delivered in the interim. In stark contrast, a referral made too late can result in a patient being considered too unwell for transplantation or LVAD implantation, or lead to a high-risk rescue procedure with increased morbidity and mortality potential. An increase in time-appropriate referrals to advanced heart failure services should result in more patients having access to life-saving treatment options that may not be available at other cardiac centers.

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**Table 1** “I Need Help”—Markers of Advanced Heart Failure

<b>I</b> <u>I</u> notropes	Previous or ongoing requirement for dobutamine, milrinone, dopamine or levosimendan
<b>N</b> <u>N</u> YHA class/ <u>N</u> atriuretic peptides	Persisting NYHA Class III or IV and/or persistently high BNP or NT-pro-BNP
<b>E</b> <u>E</u> nd-Organ Dysfunction	Worsening renal or liver dysfunction in the setting of heart failure
<b>E</b> <u>E</u> jection Fraction	Very low ejection fraction <20%
<b>D</b> <u>D</u> efibrillator shocks	Recurrent appropriate defibrillator shocks
<b>H</b> <u>H</u> ospitalizations	More than 1 hospitalization with heart failure in the last 12 months
<b>E</b> <u>E</u> demia/ <u>E</u> scalating diuretics	Persisting fluid overload and/or Increasing diuretic requirement
<b>L</b> <u>L</u> ow blood pressure	Consistently low BP with systolic <90 to 100 mm Hg
<b>P</b> <u>P</u> rognostic medication	Inability to up-titrate (or need to decrease/cease) ACEI, B-blockers, ARNIs or MRAs

ACEI, angiotensin-converting enzyme inhibitor; ARNI, angiotensin-receptor neprilysin inhibitor; BNP, B-type natriuretic peptide; BP, blood pressure; MRA, mineralocorticoid receptor antagonist; NT-ProBNP, N-terminal pro-b-type natriuretic peptide; NYHA New York Heart Association.

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**Table 2** Markers of Increased All-cause Mortality in Heart Failure Patients

Authors	Study	Journal, year	Findings
Pocock et al <sup>5</sup>	MAGGIC	<i>Eur Heart J</i> , 2013	NYHA Class III/IV, increasing creatinine, low EF (esp < 20%), not prescribed ACEI/ARB/ $\beta$ -blocker
Barlera et al <sup>6</sup>	GISSI-HF	<i>Circ Heart Fail</i> , 2013	NYHA Class III/IV, decreasing eGFR, low EF (esp < 16%), elevated NT-proBNP
Allen et al <sup>7</sup>	CHARM	<i>Eur J Heart Fail</i> , 2009	Elevated bilirubin
Lee et al <sup>8</sup>	EFFECT-HF	<i>Am J Med</i> , 2009	Increasing heart failure hospitalizations
Poole et al <sup>9</sup>	SCD-HeFT	<i>N Engl J Med</i> , 2008	Appropriate and inappropriate ICD shocks when EF < 35%
Levy et al <sup>10</sup>	SHFM	<i>Circulation</i> , 2006	Increasing NYHA class and diuretic requirements, absence of ACEI/ARB/ $\beta$ -blocker/MRA
Lee et al <sup>11</sup>	DIG	<i>Am Heart J</i> , 2006	Systolic blood pressure < 100 when EF < 45%
Solomon et al <sup>12</sup>	CHARM	<i>Circulation</i> , 2005	Low EF (esp < 22%)
Abraham et al <sup>13</sup>	ADHERE	<i>J Am Coll Cardiol</i> , 2005	In-hospital use of milrinone or dobutamine (compared with nitroglycerin or nesiritide)
Anand et al <sup>14</sup>	Val-HEFT	<i>Circulation</i> , 2003	Elevated BNP, failure to decrease BNP at 4 and 12 months <sup>a</sup>

ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin-receptor blocker; BNP, B-type natriuretic peptide; EF, ejection fraction; eGFR, estimated glomerular filtration rate; ICD, implantable cardioverter-defibrillator; NYHA, New York Heart Association; MRA, mineralocorticoid receptor antagonist; NT-proBNP, N-terminal pro-B-type natriuretic peptide.

<sup>a</sup>End-point of all-cause mortality plus first morbid event in this study.

## References

1. Yancy CW, Jessup M, Bozkurt B, et al. ACCF/AHA guidelines for the management of heart failure. *Circulation* 2013;128:e240-327.
2. Mehra MR, Canter CE, Hannan MM, et al. The 2016 International Society for Heart Lung Transplantation listing criteria for heart transplantation: a 10-year update. *J Heart Lung Transplant* 2016;35:1-23.
3. Kirklin JK, Naftel DC, Pagani FD, et al. Seventh INTERMACS annual report: 15,000 patients and counting. *J Heart Lung Transplant* 2015;34:1495-504.
4. Metra M, Ponikowski P, Dickstein K, et al. Advanced chronic heart failure: a position statement from the Study Group on Advanced Heart Failure of the Heart Failure Association of the European Society of Cardiology. *Eur J Heart Fail* 2007;9:684-94.
5. Pocock SJ, Ariti CA, McMurray JJV, et al. Predicting survival in heart failure: a risk score based on 39372 patients from 30 studies. *Eur Heart J* 2013;34:1404-13.
6. Barlera S, Tavazzi L, Franzosi MG, et al. Predictors of mortality in 6975 patients with chronic heart failure in the Gruppo Italiano per lo Studio della Streptochinasi nell'Infarto Miocardico-Heart Failure Trial. *Circ Heart Fail* 2013;6:31-9.
7. Allen LA, Felker M, Pocock S, et al. Liver function abnormalities and outcome in patients with chronic heart failure: data from the Candesartan in Heart Failure: Assessment of Reduction in Mortality and Morbidity (CHARM) program. *Eur J Heart Fail* 2009;11:170-7.
8. Lee DS, Austin PC, Stukel TA, et al. "Dose-dependent" impact of recurrent cardiac events on mortality in patients with heart failure. *Am J Med* 2009;122:162-9.
9. Poole JE, Johnson GW, Hellkamp AS, et al. Prognostic importance of defibrillator shocks in patients with heart failure. *N Engl J Med* 2008;359:1009-17.
10. Levy WC, Mozaffarian D, Linker DT, et al. The Seattle Heart Failure Model. Prediction of survival in heart failure. *Circulation* 2006;113:1424-33.
11. Lee TT, Chen J, Cohen DJ, et al. The association between blood pressure and mortality in patients with heart failure. *Am Heart J* 2006;151:76-83.
12. Solomon SD, Anavekar N, Skali H, et al. Influence of ejection fraction on cardiovascular outcomes in a broad spectrum of heart failure patients. *Circulation* 2005;112:3738-44.
13. Abraham WT, Adams KF, Fonarow GC, et al. In-hospital mortality in patients with acute decompensated heart failure requiring intravenous vasoactive medications. *J Am Coll Cardiol* 2005;46:57-64.
14. Anand IS, Fisher LD, Chiang YT, et al. Changes in brain natriuretic peptide and norepinephrine over time and mortality and morbidity in the Valsartan Heart Failure Trial (Val-HeFT). *Circulation* 2003;107:1278-83.