and a closer follow-up, or should we dismiss the finding as an event without practical implications? Having established that we need to revascularize the patients with a minimal risk of complications, including any CK-MB elevation, we must be aware that when the elevation is contained within a certain range (we still do not know the exact threshold but it appears to be around three or five times the normal value) the clinical impact of this event will be nil and difficult to see in the practice of each individual physician. As in most clinical conditions, the outcome is also dependent on a number of other clinical variables. For example, a different attitude should be taken towards a small CK-MB elevation in a patient with a low ejection fraction, versus a similar rise occurring in a patient with normal left ventricular function. Integrating the literature into the individual practice and to the specific patient remains the skill of the ‘true practitioner’.

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References

of the health care budget spent on heart failure[2]. Following a considerable increase in age-adjusted hospitalization rates for heart failure in the 1980s and early 1990s, as documented by reports from several countries, recent reports from Scotland and the Netherlands suggest that the tide is turning[3,4]. In these countries, heart failure hospitalization rates appear to be decreasing, concomitant with a decrease in length of stay and in-hospital case fatality rates. Improvements in treatment and management of heart failure patients are likely to have contributed to the observed end to the increase in hospitalization rates[5,6]. Although these observations provide useful information, hospitalizations for heart failure do not, necessarily, reflect the occurrence and prognosis of heart failure in the community, as they relate only to the more severe stages of the syndrome warranting in-hospital evaluation and treatment. Additional studies are required to answer clinically relevant prognostic questions such as: (1) which factors are aetiological involved in worsening heart failure? and (2) is it possible to develop a prognostic score, based on a few easily available patient variables, that adequately identifies those heart failure patients at risk of clinical deterioration? Such studies should include valid assessment of potential prognostic predictors and incident (cardiovascular) events, and, preferably, ‘real world’ patients to ensure generalizability of the results.

Numerous clinical and lifestyle factors have been implicated in the deterioration and (re)hospitalization of heart failure patients[7]. It is generally accepted that a large proportion of heart failure admissions is preventable. Vinson et al., for example, followed a group of 161 elderly patients (mean age 80.5 ± 6.6 years) hospitalized for heart failure; within 90 days 66 (47%) had been readmitted, recurrent heart failure being the reason in 38 patients[8]. More than 50% of readmissions could (theoretically) have been prevented. The success of (nurse led) intervention programmes to reduce readmissions for heart failure relates to modification of these factors[9]. Given the burden posed by hospitalizations for heart failure, there is a surprising lack of prospective studies identifying precipitants of heart failure exacerbations (Table 1)[10–13]. Moreover, only a few attempts have been made to develop a simple prognostic rule applicable to everyday practice[14]. The paper by Cowie et al. in this issue and the recent paper from Tsuyuki et al. form welcome additions to the literature[15,16].

The prospective population-based study by Cowie provides a valuable insight into determinants of (re)admission for heart failure in an unselected group of 332 patients (mean age 75 years, 54% men), newly diagnosed with heart failure either in hospital or at a rapid access heart failure clinic. The primary aetiology of heart failure was coronary artery disease (34%). More than half (173) of the patients (294) at risk for subsequent hospitalization were admitted at least once during an average follow-up of 19 months. Fifty-one percent of the hospitalizations were related to worsening of heart failure, whereas one third was unrelated to heart failure, indicating the importance of co-morbidity in this older patient group. Age and being identified with heart failure as an inpatient was associated with an increased risk of subsequent admission for worsening heart failure. Socio-economic status and other baseline variables, such as left ventricular systolic dysfunction, gender, and blood pressure were not found to be related to (re)hospitalizations for heart failure. Admittedly, the relation between baseline variables and risk of rehospitalization may be obscured by a stronger relation between these variables and mortality (one has still to be alive to be hospitalized). Age, functional class and serum creatinine were independent predictors of mortality.

Increasing age may partly be a marker for other factors related to a poor prognosis, in particular co-morbidity and compliance with medication as well as lifestyle interventions, that were not addressed in the present study. The importance of preventable factors associated with worsening heart failure was demonstrated in the RESOLVD pilot study. Even within the framework of a controlled clinical trial excessive salt intake was felt to be contributing to 22% of episodes of exacerbation of heart failure[16].

Irrespective of whether it is (partly) attributable to, for example, co-morbidity or non-compliance, the prognostic importance of age shown in several studies, indicates that it is wise to target prognostic interventions at elderly patients.

In conclusion, age-adjusted hospitalization rates for heart failure appear to be decreasing, but much room is left for further improvements in the quality of care for patients with heart failure[17]. Patient education to help patients respond appropriately to signs and symptoms of worsening heart failure and to improve adherence to pharmacological treatment, diet and lifestyle advice is important. Likewise much is to be gained by adequate discharge planning, prevention of respiratory infections (immunization), better control of blood pressure and optimization and simplification of drug regimens. Such interventions should preferably be targeted at those at increased risk of worsening heart failure: elderly patients. In addition, identification of other prognostic determinants and further development of simple prognostic scores could be instrumental in efficiently identifying patients with a relatively poor prognosis. Since this
Table 1  Selected studies identifying precipitating factors for worsening/readmission of heart failure

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>n</td>
<td>101</td>
<td>304</td>
<td>435</td>
<td>179</td>
<td>768</td>
</tr>
<tr>
<td>Mean age (SD)</td>
<td>59 (14)</td>
<td>53.1 (1)</td>
<td>69% over 60</td>
<td>75.4 (9.9)</td>
<td>63 (11)</td>
</tr>
<tr>
<td>Men (%)</td>
<td>5</td>
<td>87</td>
<td>53</td>
<td>52</td>
<td>83</td>
</tr>
<tr>
<td>Setting</td>
<td>Large public hospital serving working-class minority population, Chicago</td>
<td>Heart failure unit with cardiac transplant program (Italy)</td>
<td>Secondary and tertiary care hospital with cardiac transplant program, Boston</td>
<td>General community hospital, Berlin</td>
<td>Patients enrolled in RESOLVD pilot study</td>
</tr>
<tr>
<td>Design</td>
<td>Structured interview, physical examination and chart review of consecutive patients hospitalised with acute decompensation of pre-existing heart failure</td>
<td>Worsening heart failure during prospective follow-up of patients undergoing (re)assessment for cardiac transplantation</td>
<td>Chart review of consecutive patients admitted with heart failure</td>
<td>Structured interview and chart review of consecutive patients hospitalised with acute decompensation of preexisting heart failure</td>
<td>Prospective analysis of precipitants of worsening heart failure in patients with heart failure and ejection fraction &lt;40%</td>
</tr>
<tr>
<td>Precipitating factors (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Non compliance drugs/diet</td>
<td>64</td>
<td>15</td>
<td>21</td>
<td>42</td>
<td>29</td>
</tr>
<tr>
<td>Ischemia</td>
<td>6</td>
<td>14</td>
<td>33</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>Inadequate treatment or iatrogenic factors</td>
<td>21</td>
<td>10</td>
<td>–</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Arrhythmias</td>
<td>29</td>
<td>24</td>
<td>8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Miscellaneous factors</td>
<td>27</td>
<td>5</td>
<td>–</td>
<td>6</td>
<td>66</td>
</tr>
<tr>
<td>Uncontrolled hypertension</td>
<td>44</td>
<td>–</td>
<td>15</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>(Pulmonary) infection</td>
<td>12</td>
<td>23</td>
<td>16</td>
<td>–</td>
<td>11</td>
</tr>
<tr>
<td>Unknown</td>
<td>–</td>
<td>9</td>
<td>34</td>
<td>15</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>(not mutually exclusive)</td>
<td>(not mutually exclusive)</td>
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</table>
requires large numbers of patients, pooling of individual studies seems an attractive option. By further optimization of the management of heart failure patients a large number of hospitalizations can be prevented, potentially resulting in an appreciable cost reduction and better quality of life for heart failure patients.

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References


Rhythm control for paroxysmal atrial fibrillation after AV junction ablation: is it worth the effort?

See doi: 10.1053/euhj.2001.2971 for the article to which this Editorial refers

Compared with sinus rhythm, patients with atrial fibrillation suffer from an increased rate of stroke, an increased risk of heart failure and hospitalizations, and were found to have a 1.5–1.9-fold increased mortality risk in the Framingham Heart Study. Given these observations, extensive efforts to maintain sinus rhythm, instead of merely controlling the ventricular rate, is an approach favoured by many physicians. Does the current evidence support this strategy?

Another reason physicians may favour rhythm control is that in studies of antiarrhythmic drugs given for other purposes, return of sinus rhythm is associated with decreased morbidity and mortality. However, the decreased morbidity and mortality occurs in both the antiarrhythmic drug therapy and the placebo arms. Several studies are currently trying to determine whether or not extensive efforts to restore and maintain sinus rhythm result in benefits to...