Correspondence

Optimised beta blocker therapy in heart failure: is there space for additional heart rate control?

Dear Sirs,

We undertook a similar audit to Russell *et al*.[1] within the heart failure service of a district general hospital auditing the case notes of 96 patients attending over three months. Applying the SHIFT inclusion and exclusion criteria, we identified only seven patients (6.7%) eligible for ivabradine.

Using the SHIFT dataset the number needed to treat to prevent a single hospitalisation due to heart failure was 22.[2] Extrapolating our data, over 12 months, we would expect to identify approximately 28 suitable patients. Treating 28 patients would result in 1.3 less hospitalisations over one year. Achieving this reduction would cost £14,672 a year (or £524 per patient per year[3]). In contrast, the average hospitalisation for heart failure would cost £2,231; making it unlikely to be cost-effective.[4]

The SHIFT study did not demonstrate a significant risk reduction in all-cause mortality (p=0.092), cardiovascular mortality (p=0.128) or death from heart failure (p=0.014).[1] This may be important in the technology appraisal on ivabradine in heart failure currently being undertaken by NICE, due to be published in December.

Conflict of interest

None declared.

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The authors reply

The importance of heart rate control has been clearly defined in heart failure patients. A meta-analysis of beta blocker trials in heart failure patients reported an 18% reduction in mortality for every five beat reduction in heart rate.[1] In this analysis, there was no association between the dose of beta blocker prescribed and the mortality benefit with heart rate reduction. Likewise, a pre-specified analysis of the SHIFT data with respect to the primary end point of cardiovascular mortality or heart failure hospitalisation and heart rate reported lower event rates in patients treated with ivabradine and optimal heart rate control (17.4% vs. 32.4%; p<0.0001 heart rate at 28 days <60 bpm vs. ≥75 bpm respectively).[2]

From the SHIFT trial, ivabradine reduced heart failure death by 26% and this was statistically significant (p=0.0014). However, a more recent post-hoc analysis of heart rate ≥75 bpm (European Medicines Agency licence) demonstrated that ivabradine reduced total mortality vs. placebo by 17% (p=0.01).[3]

The cost effectiveness of ivabradine should be evaluated in terms of quality-adjusted life years (QALY) rather than the 'number needed to treat' (NNT) model proposed by Lim et al. Applying NNT to a time to first event trial makes no allowances for the financial implications of repeat hospitalisation and underestimates the financial benefits of this treatment. Likewise, it does not calculate the improvement in quality or quantity of life with ivabradine. The NNT is also calculated for the duration of the study (22.9 months) and not one year.

Applying a QALY model to the SHIFT data and taking patients with a heart rate ≥75 bpm (licensed by European Medicines Agency) would project a £5,200 lifetime cost per QALY or for heart rate ≥70 bpm £12,423, which is below the NICE threshold of £15,000–20,000.

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Correspondence

A gap between training and provision: a primary-care based ECG survey in North-East England

Dear Sirs,

I read with interest the recent publication by Wolff *et al*.[1] which looked at ECG training in general practice in the North-East of England, and felt that their conclusions were ill-advised. The authors report that general practitioners had low levels of confidence in diagnosing common ECG abnormalities and suggest trained staff should record and interpret ECGs. However, these conclusions are not externally supported.

Regarding the low level of confidence in ECG interpretation, under 70% of GPs with in-house ECG recording and interpretation felt comfortable diagnosing left ventricular hypertrophy (LVH), according to this study.[1] This is in clear contrast to neighbouring Scotland, as most GPs in a cross-sectional study of 123 were able to accurately identify left ventricular hypertrophy (LVH) from assessment of ECGs, a more accurate method of determining association than using confidence.[2] In fact, 57% of GPs achieved a 90% sensitivity of correctly diagnosing LVH on an ECG.[2] Given the training for general practice is identical in Scotland and England, there are unlikely to be major differences in ECG interpretation between GPs in Scotland and those in North-East England.

Secondly, the authors fail to consider erosion of knowledge as a factor in the confidence of diagnosing the named common ECG abnormalities. ECG, though rightly praised by Wolff *et al.* as a "valuable test" in general practice, is not a daily or even regular activity for a majority of GPs. This results in erosion of knowledge over time and contributes to decreased confidence with or without training, which may have happened years ago.[3] Also, considering the economic impact of training GPs nationwide in something as specialised as the ECG, making any hasty determinations on the need for GP training is inappropriate.

Despite these points, I believe Wolff *et al*. highlight an important issue.

Conflict of interest

None declared.

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The authors reply

Katarey raises some interesting points in his letter. We fully agree that one of the weaknesses of our survey was that it collected data on self-reported confidence rather than actual performance which was acknowledged in the discussion. However, we feel that it is wrong to conclude from the findings of Goudie et al. that GP's performance in interpreting ECGs is sufficient.

This study looked at ECG as a pre-referral investigation for patients with suspected heart failure to guide further assessment with echocardiography. GPs were asked to rate the ECGs simply as normal or abnormal and no further interpretation of the ECG was required. Katarey uses the high sensitivity to support his argument but we feel in the context of our survey looking at specific ECG abnormalities, the low specificity of 58% is more telling and corresponds with our result.

Undoubtedly the erosion of knowledge over time is an important factor, not only for ECG interpretation but a problem for the practice of medicine as a whole. This should not be used as an excuse to explain low confidence but is a support for our call for more training, assessment and regular updates. We also take exception with the statement that the ECG is 'not regular activity' for many GPs. Our survey showed that over 34 ECGs per 1,000 patient years were carried out.

One might argue that this is still insufficient but this equates roughly to about 1.5 ECGs per week per GP. The volume of ECGs and the consequences of incorrect recording and interpretation require a more robust approach than has been the case so far. In comparison we do not rely on doctors interpreting mammography with skills they might have picked up in medical school but they require extensive training and performance assessment. Getting it wrong can be devastating just like in ECG (mis)interpretation.

Finally we agree that training all GPs nationwide would be expensive and inappropriate particularly when considering the very thin evidence base to date. This has not been suggested by our article. Two alternative models have been mentioned, making ECG recording/interpretation an enhanced skill but keeping it in general practice and the outsourcing of interpretation to specialist providers. More research is required before firm recommendations can be made.

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