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**Difficulties encountered in hospital falls prevention research**

SIR—We congratulate Healy and colleagues on their recent publication in *Age and Ageing* on the prevention of falls in the hospital setting [1]. As researchers in this field we appreciate the difficulties faced when attempting to implement falls prevention interventions and conduct research in this challenging setting with little or no additional funding. Previous trials of similar size investigating the effectiveness of targeted, multiple intervention strategies in hospital have not always been successful [2, 3]. Possible confounding factors in these trials have included changes in falls reporting practice, poor compliance with intervention regimens and limited staff time to complete additional work. To overcome these difficulties is certainly an achievement.

The discussion identified several potential biases that may have confounded these results, including inter-subject differences. The problem of inter-ward differences was not discussed. The randomised controlled trial is considered the ‘gold standard’ of experimental designs, partly because of its ability to ensure that groups being compared are relatively comparable from the outset providing that sufficient numbers have been recruited [4]. This trial was described as a cluster-randomised trial of matched pairs of wards, yet there was a significant difference in fall rates during the pre-intervention phase between control and intervention wards. If patient characteristics were ‘broadly similar’, then differences between control and experimental wards must be considered as a reason for this non-equivalence. This is a difficulty of randomising wards rather than individuals. Randomising hundreds of patients to control and intervention groups within same wards not only ensures relative consistency of baseline patient characteristics, but also levels of patient exposure to differing ward characteristics (e.g. levels of ‘usual care’ and fall reporting practices) during the trial. Randomising only eight wards (despite attempts to match them) means that inter-ward differences have a much larger potential to bias results. For this reason, the comparison of pre-intervention to post-intervention fall rates on the intervention ward is more likely to represent the value of the intervention in this trial.

A second difficulty in interpreting these results lies in the statistical analysis. When using ‘relative risk’ statistics to compare fall rates, one must consider the units in which time is measured. In their study Healy *et al.* [1] compared 319 control group falls over 16,577 patient-days to 180 intervention group falls over 15,951 patient days, both in the post-intervention period. This produced a relative risk of 0.59 (95% CI=0.49−0.70), a result that was calculated using the formula for relative risk in the cited text [5]. However, had the same time data been measured in patient-years (1 patient-year = 365 patient-days), the relative risk would have been 0.92 (95% CI=0.85−0.99). In fact, the larger the units in which time is measured, the closer to the null the result becomes, and vice versa. This statistical technique was not intended for event rate data [5]. As data were not available on an individual patient level, a time-series approach may have been more appropriate.

**Reply**

SIR—We are very grateful for the comments made by Terry Haines and Keith Hill, which are very helpful in highlighting problems common to most ward-based falls intervention studies. We agree with most of the points raised.

The two earlier trials cited were not successful in reducing reported falls rates, and were similar in size but not identical in method to our study. Our study used individually targeted risk factor reduction rather than the standard intervention (pink sticker, pink wristband, etc.) utilised for patients identified as high risk by O’Connell and colleagues [1]. It also differed from the pilot study reported by Oliver and colleagues [2] in that in our study no numerical scoring tool was used to identify which patients should be considered to be at high risk of falls, which may have an impact on the difficulty raised of limited staff time to complete additional work.

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