

Short Communication

The Appointment of a Huntington's Disease Nurse Specialist has Reduced Admission Rate and Improved Admission Quality

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Abstract. We aimed to determine if the appointment of a Huntington's disease (HD) nurse specialist has influenced inpatient admission rates and admission quality at Auckland Hospital. We collated HD inpatient admission data for the 32 months before and after her appointment and compared the quality of cognition, mood, speech/swallowing and safety assessments between admissions where the nurse was and was not involved. After the appointment of the HD nurse there was a 51% reduction in average monthly HD admission rates ($p=0.0009$). HD admissions specifically related to HD decreased by 54% ($p=0.005$). There was also an improvement in the quality of admissions.

Keywords: Huntington disease, nurse specialist, nurse practitioner, hospital admissions

Huntington's disease (HD) is an inherited neurodegenerative disorder manifesting psychiatric, medical and social problems. HD patients and their families therefore require input from multiple services including psychiatry, neurology, rehabilitation, and community support groups.

Auckland City Hospital has developed a multidisciplinary HD service caring for over 150 patients. The HD Association has records of a similar number of symptomatic patients seen in the community. The total prevalence is therefore approximately 30 per 100 000, nearly 3 times the usually quoted upper range [1] and only about a third as prevalent as multiple sclerosis [2].

An HD nurse was appointed to work within the liaison psychiatry department in the Auckland District Health Board (ADHB) catchment area in July 2007. The appointee's main role was to be the first point of contact for patients and families with HD in

the community, to generate and implement biopsychosocial nursing management plans and to provide clinical education for caregivers of patients affected by HD. Secondly the role involved facilitating clinic appointments, inpatient admissions and accessing other auxiliary services. The nurse was closely supervised by the neuropsychiatrist and had ready access to the neurologist involved in the HD service.

In our case we were able to appoint someone with a broad range of relevant skills. The individual had previously trained and worked as a psychiatry nurse and social worker; she had extensive experience with a community Huntington's clinical service and was working for the local Huntington's disease association at the time.

Our hypothesis in performing this audit was that the appointment of the HD nurse would have decreased the total number of admissions, reduced the average length of stay and improved the quality of admissions.

This effect is important to quantify with nurse specialists becoming increasingly prevalent within New Zealand hospitals. However, apart from two studies

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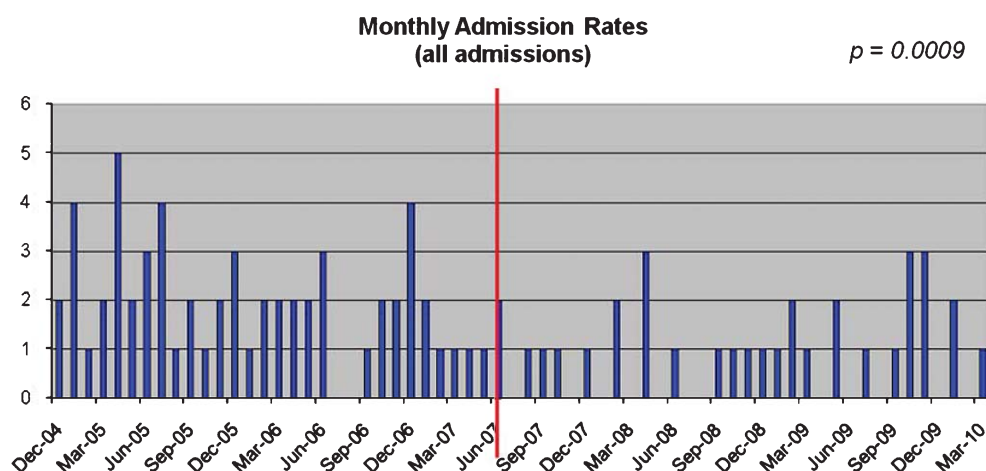


Fig. 1. Monthly HD admission rates for the 32 months before and after the appointment of a HD nurse specialist.

which show that specialist nursing services cost-efficiently reduce hospitalizations from rest homes [3] but are not effective in reducing bronchiectasis complications, [4] there is very little literature on the effect of specialist nurses and none at all regarding Huntington's disease specialist nurses.

Auditing of this health resource is important to assess its effectiveness and identify areas for improvement. By reducing the need for inpatient admissions and improving the quality of these admissions significant health resources could potentially be saved.

To identify patients with HD, we searched through all hospital inpatient admissions in the Auckland District Health Board computerised discharge database from January 1995 till March 2010. We included any patients whose discharge summary included HD as a primary or secondary diagnosis. We then compared the monthly admission rates and length-of-stay of those identified HD patients before and after the appointment of the HD specialist nurse. It was 32 months between the date she was appointed and the date of our audit (February 2009) so we compared the data for that period with the 32 months prior to her appointment.

Obviously, patients with HD may still require hospital admissions for illness unrelated to their HD diagnosis; we hypothesised that the effect on hospital admissions would be less pronounced amongst such admissions. Investigators, blinded to whether an admission was before or after the HD nurse started, classified them as being related or unrelated to HD. Examples of admissions related to HD included falls and aspiration pneumonia; admissions for things such as acute appendicitis were considered to be unrelated.

The quality of admissions was assessed for the period after the HD nurse started. We compared the admissions where the HD nurse was involved with those where there was no evidence of her involvement. Admissions were rated as to whether there were adequate assessments of the following four areas considered relevant in HD: cognition; mood; speech and swallowing; and, general safety for discharge. This was performed by neurology trainees, blinded to the purposes of the study, who read the inpatient notes for evidence these issues had been assessed and addressed. A separate person (DB), blinded to these results assessed whether the HD nurse was involved in each admission based on the referral letters, clinical notes and discharge summaries from each admission.

Statistical analysis was calculated using two-tailed Student T test or Fisher exact test with p values of less than 0.05 considered significant.

29 patients with a diagnosis of HD were identified, average age 55. In total there were 63 admissions in 21 patients in the 32 months prior to the appointment of the HD nurse specialist. In the 32 months after the appointment there were 31 admissions in 15 patients. 10 patients were admitted in both periods. Thus the mean rate of admissions per month fell from 1.9 admissions per month prior to the appointment of a HD nurse specialist to just 0.97 afterwards, a 51% reduction ($p = 0.0009$) (Fig. 1).

With respect to admissions that were adjudged to be specifically HD related: there were 35 such admissions in the 32 months prior to the HD nurse appointment which decreased to 16 afterwards giving a 54% reduction in the average monthly rate from 1.1 admissions

Table 1

Percentage of admissions where the above assessments were performed in admissions where the Huntington's nurse was involved and not involved * $p < 0.05$, $^{\dagger}p < 0.0005$, Fisher exact test

	Cognition*	Mood*	Speech [†]	Safety [†]
Not involved ($n = 22$)	14%	0%	5%	18%
Involved ($n = 9$)	56%	33%	78%	89%

per month to just 0.5 ($p = 0.003$). As expected there was less of a change (46%) in the number of admissions considered unrelated to HD which did not quite reach statistical significance ($p = 0.07$).

In addition, the average length of stay dropped from 4.3 to 2.5 nights after appointment of the HD nurse specialist though this trend did not reach statistically significance ($p = 0.17$) probably due to a few outliers in each group with long stay lengths increasing the observed variance.

To be sure that the change in admission rate and duration was not due to just one or a few patients having a marked reduction in admission or length of stay we looked at admission frequency per patient and showed that the reduction was just as much amongst patients who had one admission as amongst the patients with multiple admissions and for one day admissions as long admissions (data not shown).

With regard to the 31 admissions that occurred after the HD nurse was appointed, there was written documentation of her involvement in 9 (this is likely to be an underestimate as verbal or phone advice might not have recorded in hospital notes). There was a marked and strongly statistically significantly better quality of recorded care for these nine admissions, in all four areas that we prospectively set out to test. This was most evident in the assessment of speech and swallowing and of general safety (Table 1).

Overall 62% of patients were admitted from their own home, 29% from rest home and 9% from private hospital. There was no difference before and after the HD nurses appointment. In 98% of admissions patients were discharged back to their original residence and again this was not different between the two epochs. This shows that the decrease in admissions was not due to patients being put in a higher level of care.

The appointment of a half time HD specialist nurse was associated with a halving of hospital admissions amongst HD patients from around two admissions per month to just one admission per month in this retrospective study.

While our study is limited in that it was retrospective and so dependent on hospital records recorded for other purposes we have no reason to believe that the hospital records are likely to be subject to recall bias. It is also possible that the appointment of the nurse at that time was coincidental and that there are other confounding factors which produced this change. We have attempted to address these in a number of ways. Firstly we found that the reduction was most marked amongst those admissions directly related to Huntington's disease and its complications suggesting a specific and causal effect of the nurse's employment.

Secondly, in case the HD admission rate reduction might be due to an across-the-board reduction in hospital admission rates we compared it to Parkinson's disease (PD) admission rates using exactly the same methodology and found that, in fact that PD admission rates increased from 45.5 to 50.8 per month in the same period.

Thirdly we showed that the reduction in admission rates was accompanied by an improvement in admission quality. Our study shows that where there was evidence of nurse involvement all four assessments were performed more rigorously; in particular speech/swallowing and safety assessments were shown to be performed more rigorously when the HD nurse was involved. We conclude that the decreased admissions is likely to be due to the appointment of the HD nurse.

The length of inpatient stay was also nearly halved after appointment of a HD nurse. This trend did not reach statistical significance but, taken with the data presented on admission quality, it is unlikely to be a random observation. Combining this with the reduction in admission rates we calculate that on average there was a reduction of 69 admission nights per year after the appointment of the HD nurse. Based on the average cost of \$NZ615 per night of admission we estimate around \$42,000 has been saved each year.

It would be possible to achieve a reduction in admissions simply by discharging patients to more expensive higher level care facilities. However our data on admission source and discharge destination shows that this was not the case. It is far more likely that the decrease in HD patient admissions was due to better outpatient care and support. We also think that the hospital admissions actually observed after the HD nurse's appointment were likely to be more appropriate.

Even given the limitations our study's retrospective and uncontrolled nature we would recommend other hospitals consider employing a specialist HD nurse as the quality of care is likely to improve and the cost

of appointing such a person is likely to be offset by admissions saved.

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