This is the published version


Available from Deakin Research Online

http://hdl.handle.net/10536/DRO/DU:30073145

Reproduced with the kind permission of the copyright owner

Copyright: 2014, Royal Australasian College of Physicians
Nurse-led clinic: effective and efficient delivery of assessment and review of patients with hepatitis B and C

M. L. Biddle,¹ N. R. Adler,¹ M. Heath,² S. Streat,² M. Wardrop² and J. P. Watson¹,²

¹School of Medicine, Deakin University and ²Liver Clinic, Department of Medicine, Barwon Health, Geelong, Victoria, Australia

Key words
nurse-led clinic, hepatitis C virus, assessment, hepatology service.

Correspondence
Marian Biddle, School of Medicine, Deakin University, Pigdons Road, Waurn Ponds, Vic. 3216, Australia.
Email: biddle.marian@gmail.com

Received 12 November 2013; accepted 15 February 2014.
doi:10.1111/imj.12400

Abstract

Background: Hepatology and gastroenterology services are increasingly utilising the skills and experience of nurse practitioners and nurse specialists to help meet the increasing demand for healthcare. A new nurse-led assessment clinic has been established in the liver clinic at Geelong Hospital to utilise the expertise of nurses to assess and triage new patients and streamline their pathway through the healthcare system.

Aim: The aim of this study is to assess quantitatively the first 2 years of operation of the nurse assessment clinic at Geelong Hospital, and to assess advantages and disadvantages of the nurse-led clinic.

Methods: Data were extracted retrospectively from clinical records of new patients at the liver clinic. Quarterly 1-month periods were recorded over 2 years. Patients were categorised according to the path through which they saw a physician, including missed and rescheduled appointments. The number of appointments, the waiting time from referral to appointments and the number of ‘did-not-attend’ occasions were analysed before and after the institution of the nurse-led assessment clinic. The Mann-Whitney rank sum test of ordinal data was used to generate median wait times.

Results: There was shown to be a statistically significant longer waiting time for physician appointment if seen by the nurse first. The difference in waiting time was 10 days. However, there was also a reduction in the number of missed appointments at the subsequent physician clinic. Other advantages have also been identified, including effective triage of patients and organisation of appropriate investigations from the initial nurse assessment.

Introduction

In 2012, 230 000 Australians were estimated to have chronic hepatitis C virus (HCV) infection, all with complications ranging from early liver disease to HCV-related cirrhosis.¹ It is calculated that between 321 000 and 836 000, people will be living with HCV infection by the year 2020.² The exact number will depend largely on transmission patterns particularly through intravenous drug use.² The prevalence of complications related to HCV infection, such as cirrhosis, liver failure and hepatocellular carcinoma, is predicted to triple by 2020.³ Further, up to 207 000 Australians are estimated to be living with chronic disease from hepatitis B virus (HBV).¹ The increase in HBV-related cancer may double or even triple by 2017.⁴ Demands for treatment will inevitably increase and consequently, so will the demands on physicians and hepatology clinics that assess, manage and follow-up patients infected with HCV and HBV.

Griffiths and colleagues maintain that the traditional doctor–patient consultation process is not sustainable in the context of increasing patient numbers.⁵ The role of the nurse is expanding within the modern healthcare system, providing nurses with increasing accountability and autonomy. Since being introduced in the UK, the nurse practitioner has become a key professional resource in the outpatient care of patients with chronic disease.⁶ While nurse practitioners in the UK work autonomously, prescribing medications and managing long-term patients, nurses in primary care in Australia receive ongoing supervision and support from medical practitioners. The role has still allowed nurses to expand their scope of practice in the primary care setting as well as specialty clinics, such as
diabetes education, cardiology, sexually transmitted disease screening. McAfee shows the positive effect of nurse-led clinics in gastroenterology where patients with end-stage liver disease have improved compliance, education and outcomes.

While nurses and doctors have distinct roles in healthcare delivery, their contribution synergistically leads to enhanced patient care. Qualitative data indicate that patients consider nurse assessment an acceptable model of care. In light of this, an approach in which nurses work closely with medical practitioners has been adopted at Barwon Health in the Geelong region of Victoria, Australia. Established in 2010, the purpose of the nurse-led clinic is to assess the patient, identify required investigations, complete screening questionnaires and provide patient education. It is also hoped that this clinic would drive efficiency within the service by facilitating patient flow and maximising attendance.

At Barwon Health’s Liver Clinic, the physicians’ primary role is centred upon the treatment of viral hepatitis and the medical management of any complications resulting from the disease process or the treatment. The nurses play a multifactorial role in the nurse assessment clinic and therefore, there are many potential benefits to the initial nurse appointment. The nurses play a vital role in assessing patients’ suitability for treatment. The nurses ensure relevant investigations are completed before the patients’ appointments with the physician. It had long been a frustration of the physicians that standard tests are not carried out prior to a consultation, resulting in the inefficient use of consultation time and the need to re-book the patient for a subsequent appointment. Moreover, those patients requiring rapid assessment can be fast tracked by the nurse to see a physician. Conversely, those who fail to attend on multiple occasions will not go on to a physician appointment.

Furthermore, the nurses are able to assess the social needs of patients by using established screening tools, such as an alcohol questionnaire and subsequently, identify need for social services. It is intended that such assessments are more comprehensive than previously completed by the physicians who are often limited by time constraints. Patients with specific psychiatric needs can also be identified early in the treatment process by the initial nurse assessment and referred to psychiatric services. This drives efficiency within the service as patients are triaged according to individual factors. Finally, the nurse-led clinic offers education and counseling regarding the natural history and treatment options for those infected with HBV and HCV.

The aim of this study was to assess quantitatively the first 2 years of operation of the nurse assessment clinic at Geelong Hospital. The study specifically evaluates whether new patients, who are seen by the nurse-led clinic, are seen by the physician sooner than those who are not seen at the nurse-led clinic.

**Methods**

Data were obtained retrospectively from 262 clinical records at the Liver Clinic at Geelong Hospital. Four 1-month periods per year were recorded at 3-month intervals over 2 years. New patients during the 1-month period were included in the study. The number of appointments, the waiting time for appointments and number of ‘did-not-attend’ occasions were analysed before and after the institution of the nurse assessment clinic.

Each patient was categorised according to the path through which they saw a physician at the liver clinic, including missed and rescheduled appointments (see Fig. 1). Category A reflects the time prior to the existence of the nurse assessment clinic and consists of those who attended the physician on the first available appointment without missing or rescheduling the appointment. Category D contains those who attended a nurse clinic appointment as scheduled and subsequently attended a physician appointment as scheduled. Comparing only these patients eliminates variables, including circumstances that may extend the time to a physician appointment. Such conditions include missed or rescheduled appointments, referral to other services following nurse assessment or discharge from clinic without physician review. Direct comparison can be made between categories A and D with confidence that the result is not influenced by these factors, which mostly exist beyond the clinic’s operation. After exclusion of other categories, the resulting number of subjects remaining in the study is 100 (category A n = 32, category D n = 68).

The primary outcome measure in this study was the number of days from referral to appointment. These ordinal data given in discrete number of days was directly compared in categories A and D. Since ordinal data are not normally distributed, median values are more indicative of central tendency than mean values, as outliers will skew calculations of averages. The Mann–Whitney rank sum test of ordinal data was used to generate median wait times.

**Results**

Patients in category A had a median wait time of 220.5 days, while patients in category D had a median wait time of 231 days. There was shown to be a greater waiting time for physician appointment if seen by the nurse first. This time, difference was statistically significant ($P = 0.033$, Table 1, Fig. 2).
The rate of those who did not attend either their first appointment with a nurse or their appointment with a physician was also assessed (categories C and L). Before the institution of the nurse clinic, there was a 35.21\% (25/71) non-attendance rate to initial physician appointments. Since the introduction of the nurse assessment clinic, 32.98\% (63/191) of patients failed to attend the initial appointment. The difference in non-attendance was not significant, \( P = 0.848 \) from a Chi-squared test of association. The percentage of those who attended the nurse clinic appointment on schedule and were subsequently scheduled for a physician appointment but failed to attend was 17.33\% (13/75). This shows that patients who attended the nurse assessment clinic demonstrated a significant improvement in attendance in comparison to those who attended appointments with physicians only \( P = 0.023 \). The proportion of new patients who were eventually seen at the physician clinic through the two pathways was 64.79\% (46/71) for referrals to the physician and 49.13\% (85/173) for referrals to the nurse-led clinic. Of those who were assessed in the nurse clinic, 12 were referred to other services or to the general practitioner.

Table 1 Comparison of categories A and D in time to physician appointment in days

<table>
<thead>
<tr>
<th>Category</th>
<th>n</th>
<th>Mean days to appointment</th>
<th>Median days to appointment</th>
<th>Minimum no. of days to appointment</th>
<th>Maximum no. of days to appointment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>38</td>
<td>191</td>
<td>220.5</td>
<td>1</td>
<td>393</td>
</tr>
<tr>
<td>D</td>
<td>62</td>
<td>262</td>
<td>231</td>
<td>62</td>
<td>586</td>
</tr>
</tbody>
</table>

Figure 1 Schematic diagram outlining pathway to physician appointment.

Figure 2 Box-plot comparing categories A and D in time to physician appointment in days.
Discussion

While the data demonstrate a statistically significant difference in wait time to a physician appointment, seeing a nurse between the time of referral and this appointment may be of benefit through engagement with the service and access to education and services. In the context of 230 days, 10 days may not be of any concern for patients, as in the meantime they are connected with the service through the nurse-led clinic and may have access to other services as required.

The delayed time to physician appointment in category D may be explained by those who attend the nurse assessment clinic still requiring further investigations before an appointment with the physician is then made. In this instance, whereas previously, patients had an appointment with a physician before having obtained test results, they may now have a longer wait time but more effective consultations at the physician clinic. Some patients were seen at the nurse assessment clinic and were deliberately scheduled for appointment in up to 12 months time for any number of reasons, including unwillingness to engage in the service and pending commitment to treatment. Others may have been referred to other services, such as social work or psychology services as a matter of priority for the patient. Failure to differentiate such patients is identified as a limitation of this study.

One important benefit of the nurse assessment clinic has been to reduce the number of missed appointments at the physician clinic. Some reasons for missed appointments are found to be fear of the outcome of the consultation and concerns about the treatments being offered. A study by Roberts and colleagues demonstrated that patients perceive that reminders through text message, phone call or email may improve attendance at initial appointments, as would a refundable fee to be returned to the patient on attendance. While these initiatives are recognised in the literature and currently do not occur through the Liver Clinic, patients who do attend the nurse assessment appointment in the first instance may find that their fears are allayed. The nurse-led clinic has positively impacted efficiency within the hepatology services at Barwon Health as physician appointments have a greater attendance rate and patients seen by a physician have already been comprehensively assessed.

Patient satisfaction has been demonstrated in a pilot study comparing a nurse-led diabetes clinic to a physician-led clinic where 100% of respondents surveyed perceived receiving improved care at the nurse-led clinic, describing it as individualised, patient-centred and lifestyle-based in its approach. Patients preferred nurse-led care as it provided continuity and flexibility in appointment times. Within gastroenterology services, specifically HCV treatment clinics, patients perceive the information provided and psychological support from nurses positively. Nurses can also provide practical support, such as liaising with psychiatric services and social work, as many patients may have comorbid psychiatric issues or are unable to work. Education is a large proportion of preparing a patient for treatment, particularly regarding side effects, reducing risk factors for transmission and potential complications of chronic HCV infection. Some studies have demonstrated that nurses deliver patient education as effectively as physicians. These are potential benefits of the nurse-led clinic, thus further qualitative research is warranted to determine patient satisfaction with engagement with the nurse-led clinic at Barwon Health. Moreover, further research in the form of a prospective multicentre trial should evaluate medication compliance and patient outcomes from nurse-led assessment clinics in the field of hepatology.

Conclusion

The nurse-led clinic at the Geelong Hospital has led to an increase in attendance at the subsequent physician appointment, suggesting an improvement in the efficiency with which the physicians are able to provide assessment and treatment for those infected with HCV and HBV. While there was an increased time to physician appointment for those who attended the nurse-led clinic of 10 days, there may still be an advantage in accessing the nurse-led clinic. Further research should be aimed at qualitatively assessing patients’ perception of the service provided by the nurse-led liver clinic at Barwon Health.

Acknowledgements

We thank Dr Stephen Lane (Research Fellow in Statistics, School of Medicine, Faculty of Health, Douglas Hocking Research Institute) for his invaluable advice in the preparation of this manuscript. We also thank our physician colleagues in the Geelong liver clinic for their assistance in facilitating the establishment of the nurse-led clinic and their cooperation during this study.
References