Care coordination for patients with cirrhosis: A “win-win” solution for patients, caregivers, providers, and healthcare expenditures

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We receive with great enthusiasm the recently published article by Morando and his colleagues from the University of Padova regarding their experience with a new model of care coordination in the setting of cirrhosis [1]. The burden of chronic disease is greater now than ever. In the absence of a coordinated effort to prevent, diagnose, and better manage chronic disease, we as a society will bear increasing socioeconomic costs over time.

Almost one half of all Americans suffer from one or more chronic diseases [2]. Millions are diagnosed and millions more die annually from a chronic disease. This is a reflection of the changing demographics in the developed world, where mortality from communicable infectious diseases decreases and mortality from non-communicable chronic diseases continues to increase. Enormous scientific advancements in treatment have largely failed to curb this steady rise. Although current health care financing and delivery systems focus on the treatment of acute conditions, 78% of actual healthcare spending is spent on the treatment of chronic conditions [3]. The total burden of chronic diseases on the economy exceeds $1.3 trillion annually; of this amount, $277 billion is spent annually on treatment, with lost productivity totaling $1.1 trillion. At our current pace, by 2023 we can expect a 42% increase in the incidence of chronic disease, totaling $4.2 trillion annually in treatment costs and lost economic output [4].

Chronic liver disease and cirrhosis are leading causes of death in the United States and worldwide. In the United States, an estimated 30,000 new cases of cirrhosis are diagnosed each year, and cirrhosis overall accounts for over 150,000 annual hospitalizations [5]. Treatment costs associated with the sequelae of cirrhosis such as variceal bleeding, ascites, encephalopathy, and hepatocellular carcinoma exceed $4 billion annually, exclusive of estimates of lost economic output [6]. In stark contrast to most other malignancies, hepatocellular carcinoma is increasing in frequency, with associated expenditures doubling from 1988 to 2000 after adjusting for inflation [7]. Given our society’s struggles with metabolic syndrome and obesity, emerging chronic diseases such as fatty liver disease and non-alcoholic steatohepatitis are predicted to become the most common cause of cirrhosis, and will overtake hepatitis C as the most common indication for liver transplantation in the United States by 2030 [8].

Frequent hospital readmissions for management of fluid overload, hepatic encephalopathy, and/or gastrointestinal hemorrhage are commonplace among patients with cirrhosis. A recent study from Volk and colleagues from the University of Michigan found that 69% of patients with cirrhosis had at least one non-elective readmission, with a median time to first readmission of 67 days [9]. In a sobering statistic, 14% of patients were readmitted within one week, and 37% within one month. One patient was readmitted 40 times. 22% of readmissions were found to be possibly preventable. The study concluded that readmission among patients with cirrhosis was common, costly, moderately predictable, possibly preventable, and independently associated with mortality [9].

In recent years, care coordination, or “collaborative care”, has emerged as a highly effective concept that can help reduce readmission rates in patients who are known to be at high risk for readmission. The concept of care coordination has been applied in disorders such as depression, coronary artery disease, congestive heart failure, and poorly-controlled diabetes, with studies generally demonstrating improved control of the underlying diseases [10]. In theory, care coordination by specifically trained personnel should result in fewer readmissions, improved outcomes, and reduced expenditures. However, studies have also suggested that viable programs without a strong transitional care component are unlikely to yield significant savings [11].

Current care of patients with cirrhosis is fragmented and poorly coordinated. While many “evidence-supported” practice guidelines have been published in recent years regarding the common complications of cirrhosis, current literature suggests that patients with cirrhosis often fail to receive these evidence and guideline-supported treatments [6,12]. Furthermore, the hospitalist movement has separated the outpatient physician from the inpatient physician, creating discontinuity at a critical juncture in patient care. A study of physician continuity of care

DOI of original article: http://dx.doi.org/10.1016/j.jhep.2013.03.010.
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between 1996 and 2006 showed that while continuity of care decreased overall, one-third of this decrease was attributed to the increasing involvement of hospitalists [13]. This and many other reasons have made the process of coordinating care perilous and challenging [14].

It is in this context that the study by Morando and colleagues is highly significant [1]. This study represents the first prospective trial in the cirrhosis population comparing the traditional system involving the family physician and punctual consultation to a specialist, with a new coordinated care system involving close monitoring by a specialized team of nurses, physicians-in-training, and hepatologists. The results clearly favor the care coordination model, both in costs and survival. The study demonstrated reduced 30-day readmission (42% vs. 15%), reduced 12-month readmission (71% vs. 46%), reduced 12-month mortality (46% vs. 23%), and a 46% cost reduction overall. An important point to emphasize is that patients with cirrhosis and ascites who are discharged from the hospital following treatment of an acute decompensation represent a unique population for which follow-up and specialist management is highly relevant, as they are predisposed to developing potentially preventable major complications resulting in readmission or mortality. Expertise is needed for early detection and treatment of these complications. The integration of care coordination at this critical juncture likely explains the impressive results of the study; in other diseases the number of cases required to find significant differences is often much higher.

The study is obviously not without its limitations. Understandably, the study was not randomized as it would be difficult to recruit patients for a randomized study in which they would receive either “standard care” vs. orchestrated care from a multidisciplinary team of specialists and nurses. Further, it was not clear whether the specialists involved in the care coordination group provided a standardized level of care or whether certain specialists had disproportionately better outcomes. It has been shown in a previous study of patients with cirrhosis and ascites in the Veterans Affairs Health System that health care quality was higher in patients who received specialist care from a gastroenterologist [12]. In our opinion, a liver-focused gastroenterologist would probably provide higher quality specialty care as compared to a general gastroenterologist. Finally, the study does not include various non-hospital expenses such as nursing home stays and home caregiving, although the overall savings in reducing emergent hospital readmissions should still make this model economically feasible.

Because the management of cirrhosis and other chronic diseases are multidisciplinary in nature and quickly becoming a high policy priority in the era of healthcare reform, improving care coordination should improve the quality and efficiency of care and provide business opportunities for gastroenterologists [6]. At our current institution, we are investigating efforts to integrate a similar model of care coordination in an attempt to reduce readmissions, reduce expenditures, and improve survival. Our coordinator would help coordinate inpatient-to-clinic transitions, call patients on a routine basis to prevent non-elective visits to the Emergency Department, place “smart-scales” in patient homes to monitor body weight remotely, and facilitate interaction with other healthcare professionals. They would also help facilitate transfers to hospice or skilled nursing facilities, especially for patients who are either unsuitable for transplantation due to medical comorbidities or who are unable to undergo transplantation due to technical reasons or due to organ shortage. Patients in this latter category are left in a challenging situation as they may be “too well for transplant”, yet are extremely sick with a decreased quality of life and decreased life expectancy due to the development of other cirrhosis-related complications. Too many die awaiting liver transplantation [15]. In this setting, care coordination would serve an instrumental role in providing the best possible quality of life in the face of a terminal diagnosis, with seamless timely transitions from “listed for transplant” to palliative care [16].

As our healthcare expenditures continue to grow and the burden of chronic disease continues to increase, care coordination is an obvious solution and a “win-win” situation for patients, caregivers, providers, and healthcare expenditures alike.

Conflict of interest

The authors declared that they do not have anything to disclose regarding funding or conflict of interest with respect to this manuscript.

References