Rehabilitation Improves Survival in Sickest Patients After Liver Transplantation

Inpatient rehabilitation improves outcomes in the sickest patients after liver transplantation, researchers at Baylor Institute for Rehabilitation (BIR) found. Even though liver patients undergoing inpatient rehabilitation displayed greater morbidity than home-discharged patients during their immediate post-transplant course, both groups had similar long-term survival rates at one year after transplant.

While previous studies have shown a positive correlation between liver transplants and quality of life, the impact of inpatient rehabilitation in the sickest transplant patients had not been studied. Sheena Bhuva, MD, PGY4, Chief Resident in Physical Medicine and Rehabilitation at Baylor Institute for Rehabilitation and Hepatologist Sumeet Asrani, MD, MSc, Clinical Associate Professor at Texas A&M, investigated the research question. Bhuva presented the findings at the 2016 Association of Academic Physiatrists' Conference in February.

Rehabilitation Focuses on Functional Outcomes

Morbidity in patients receiving liver transplants is on the rise, as noted by higher Model End-Stage Liver Disease (MELD) scores (documented in the annual Scientific Registry of Transplant Recipients report). The MELD score is a composite of several factors including total serum bilirubin, total serum creatinine and prothrombin time and provides clinicians with a three-month mortality estimate.
To optimize outcomes and reduce complications that may decrease quality of life and increase the risk of readmission, clinicians at Baylor Institute for Rehabilitation strive for immediate patient mobilization once the patient is medically stable.

A MELD score of 25 or greater indicates a poor prognosis, and MELD scores in the 30s indicate near-exponential increases in patient mortality. For example, while a MELD score of 20 is associated with approximately a 29 percent mortality rate, a MELD score of 30 carries a mortality rate of about 55 percent. A MELD score of 38 has an 80 percent mortality rate.

To optimize outcomes and reduce complications that may decrease quality of life and increase the risk of readmission, clinicians at Baylor Institute for Rehabilitation strive for immediate patient mobilization once the patient is medically stable.

“We focus on patients’ functional outcomes and how to get them stronger,” Bhuva says. To accomplish this, the physiatrist works collaboratively with other physicians and physical therapists, occupational therapists and speech pathologists to improve functionality in the patient population.

Clinicians at Baylor Institute for Rehabilitation use Functional Independent Measure (FIM) scores to measure outcomes in transplant patients. The FIM score is graded on a 7.0 scale and assesses 18 items: 13 related to motor function and five to cognitive function. These items include self-care, bowel and bladder management, and locomotion.

According to Dr. Bhuva, in addition to assessing FIM parameters, physiatrists also address comorbidities that predominate in liver transplant patients such as hepatic encephalopathy, pre-existing functional issues in stability, nutritional deficiencies, and management of mobility-compromising side effects from transplant medications, such as peripheral neuropathy and myopathy.

**Similar Survival Rates for Rehab Patients Despite Greater Morbidity**

Recognizing a positive correlation between liver transplant and quality of life, Drs. Bhuva and Asrani conducted a retrospective chart review of data from patients treated at Baylor Institute for Rehabilitation from 2004 through 2014 with MELD scores of > 25 at the time of transplant, those who are considered higher risk with a poor prognosis. Of the 309 patients screened, 262 met the initial criteria of a MELD score of 25 or greater; 194 were discharged home from Baylor University Medical Center while 68 were discharged to Baylor Institute for Rehabilitation.

Of the patients studied who were admitted to Baylor Institute for Rehabilitation, 44 percent were in ICU prior to transplant. Only 21 percent of the patients discharged directly from the acute care hospital to home had been in the ICU. Drs. Bhuva and Asrani also found that Baylor Institute for Rehabilitation patients had higher mean MELD scores than patients discharged home—33 as opposed to 30—and longer acute stays—21 days versus 12. Despite being sicker, long-term outcomes for Baylor Institute for Rehabilitation patients closely mirrored those of less sick patients directly discharged home. Home-discharged patients averaged a 95 percent one-year survival rate; the one-year survival rate for
patients discharged to Baylor Institute for Rehabilitation was 94 percent.

**Looking Ahead**

Asrani points out that while post-transplant rehabilitation previously received limited recognition, the importance of rehabilitation for liver transplant patients has gained momentum in recent years.

“One misconception is that all liver patients are extremely sick by the time they receive transplant, but not all liver patients are sick,” Asrani says. “Some go home and don’t need rehabilitation at all. That said, the number of sicker patients at time of transplant is increasing over the last decade. Our study shows that sicker patients do benefit from rehabilitation.”

However, according to Dr. Bhuva, not all patients actually qualify for acute inpatient rehabilitation. Medicare and Medicaid coverage limitations may exclude patients with liver disease to meet requirements for admitting patients with “compliant” diagnoses. Patients who would benefit from intense rehabilitation at an acute inpatient rehabilitation hospital may be discharged instead to a skilled nursing facility, where they will not receive the necessary rehabilitation.

Liver transplantation should be considered a compliant diagnosis because patients have such positive outcomes in rehabilitation, Dr. Bhuva says. “It should be an integral part of care after discharge in the sickest patients.”

The next step will be to investigate whether patients admitted to rehabilitation have fewer readmissions, lower overall costs, fewer infection-related complications and improved quality of life within the first year after transplantation.

**A MESSAGE FROM**

**The Medical Director**

*Ami J. Wilson, MD*

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**Brushing Up on New Medicare Rules**

The Department of Health and Human Services has a goal of having 90 percent of Medicare fee-for-service payments tied to quality or value by 2018. One should conclude that physicians and other clinicians will get paid differently in the years ahead. Various proposals are developing that place accountability for the quality and cost of care in the hands of the health care providers.

Since the repeal of the dysfunctional Medicare Sustainable Growth Rate (SGR) in April 2015, health care providers have been gearing up for the Medicare Access & CHIP Reauthorization Act of 2015 (MACRA) with its Merit-Based Incentive Payment System (MIPS) and Alternative Payment Models (APMs), now known as the Quality Payment Program (QPP). Although the MACRA final rule has yet to be published, MACRA is expected to offer multiple pathways with varying levels of risk and reward to tie Medicare Part B payments to value. Current estimates indicate the vast majority of clinicians will be eligible only for MIPS, given the high-stakes nature and labor intensity of participating in advanced APMs. A key concept is that physicians and other practitioners will receive positive, negative or neutral adjustments to payments in the future, depending on their performance on weighted categories around quality, resource utilization, clinical practice improvement and meaningful use of certified electronic health record technology.

Originally, reporting MACRA-required performance data was set to begin in January 2017, leaving many physicians scrambling to understand the basics of a complex rule with financial consequences. Fortunately, as of this writing, the Centers for Medicare and Medicaid Services (CMS) will offer flexible options for both full reporting starting January 2017 and a more relaxed “pick your pace” reporting approach throughout the calendar year.

This sweeping change to Medicare Part B payments has been years in the making, given the historical shortcomings of the SGR and the potential conflicts that arise around volume-based payments without ties to metrics. Challenges with implementation of MACRA are almost certainly ahead of us, so it’s imperative that clinicians stay directly involved with CMS and national professional organizations to help drive the course for the future.

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Physical Therapy Effective Noninvasive Option for New Mothers, Women in Their 20s and 30s

Approximately 20 million people in the United States have some form of urinary incontinence (UI), with the majority being women. “When cystoceles or bladder prolapses progress, women who are younger or postpartum in their 20s and 30s may believe surgery is the only option, but research shows otherwise,” says Valerie L. Bobb PT, DPT, WCS, ATC at Baylor Institute for Rehabilitation. “In fact, nearly 50 percent of all bladder surgeries fail within five years because the surgery treats the symptoms without addressing the underlying issue of muscle weakness and lack of coordination.”

Kegel Exercises Ineffective Monotherapy
Seventy percent of the UI patients at Baylor Institute for Rehabilitation are younger women who have developed stage I or II prolapse within a year postpartum. They experience leaking when picking up their children and engaging in independent activities of daily living. Physical therapy proves the most effective treatment in women with stage II prolapse.

While bladder retraining and pelvic floor exercises are first-line treatments for UI, many women unsuccessfully attempt to self-treat with Kegel exercises. Because Kegel exercises strengthen the levator ani in isolation, they do not train the muscles to work in coordination with other muscles in order to restore functionality.

Improved Outcomes for UI and Related Conditions
Physical therapists examine patients for scar tissue impeding excursion of the full muscle. They provide education to help patients resume normal activities and exercise through bladder training that helps restore the full range of motion needed for micturition. This includes retraining the timing reflex that diminishes during delivery.

Physical therapy offers additional advantages beyond cost containment and noninvasiveness, Bobb says. “Studies show that 70 percent of women with back pain also have urinary incontinence, and many of these patients also have hip pain,” she says.

Commitment Key to Successful UI Rehabilitation
In addition to participating in outpatient therapy, performing home exercise is crucial to long-term maintenance. Compliance remains the biggest barrier, so Baylor Institute for Rehabilitation therapists streamline home programs to facilitate patient commitment and improve outcomes. Bobb says the small changes patients see in a relatively short time frame helps patients commit to regular at-home therapy.

“Our biggest take-home for physicians and the public is that urinary incontinence is thought to be normal, but it’s not. Unfortunately, physicians may not receive training in medical school to refer patients, so it’s important physicians know this service is available.”

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Self-Management Programs Can Be Effective Among Individuals With Mobility Impairment

The growing number of people who live with disability has driven demand for solutions that help to complement primary care with self-management options. Incorporating self-management techniques may benefit patients with limited mobility who face comorbidities such as pain, depression and fatigue.

“We have an interest in guiding effective strategies to help people self-manage their health across their lifespan,” says Simon Driver, PhD, Director of Rehabilitation Research and Ginger Murchison Chair in Traumatic Brain Injury Research at the Baylor Institute for Rehabilitation.

**Review of Disabled Patients Shows Promise for Self-Management**

Driver and Katherine Froehlich-Grobe, PhD, Associate Director of Research, conducted a comprehensive review of more than 5,000 studies published between January 1988 and August 2014 investigating the management of comorbidities such as depression, fatigue, pain, anxiety, bowel issues and skin issues faced by people with mobility impairment.

Dr. Driver and Dr. Froehlich-Grobe identified 50 articles focusing on pain (n=40 articles), depression (n=25), and fatigue (n=7) as primary or secondary outcomes of self-management intervention in the second phase of their focused review. Some studies overlapped and addressed more than one comorbidity.

Various self-management approaches were examined in patients with depression, with mixed results. For example, about 50 percent of studies indicated a positive impact of self-management on depression, while 50 percent noted no significant change. Patients used numerous self-management techniques including cognitive behavioral therapy, exercise, relaxation techniques and medication.

More published studies have addressed pain, but similar to depression, these studies varied greatly in terms of intervention type, location, treatment duration and persons administering therapy.

“Self-management has been found to have a positive effect on reducing pain, and has been successfully implemented in multidisciplinary environments, online, and in community-based settings,” Froehlich-Grobe says. Fatigue studies yielded similar results but interventions generally resulted in larger effect sizes.

“In patients living with chronic pain, fatigue, or depression that’s difficult to treat with traditional approaches, self-management strategies may provide additional benefit,” Froehlich-Grobe says. “Findings show that programs can successfully be delivered by nurses or trained lay persons.”

Froehlich-Grobe notes the outcomes are based on patients’ self-reporting and advises clinicians to establish a methodology to standardize patient reporting.

**Lack of Data in MS, Spinal Cord Injuries**

Driver and Froehlich-Grobe’s findings revealed that, despite growing evidence supporting self-management of pain, depression and fatigue in patients with limited mobility, most studies focus on arthritis and chronic back pain, while fewer studies examine self-management interventions in patients with conditions such as multiple sclerosis and spinal cord injuries.

“While self-management is promising, the current evidence is characterized by substantial variability in design and intervention,” Driver says. “A greater opportunity lies in how we address and define outcomes over time so that interventions meet the needs of the target audience.”

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We hear the words “critical thinking” frequently in the medical teaching environment and consider one’s ability to think critically a key element of being a talented clinician in the complex world of medicine. Simplistically, critical thinking involves active rather than passive participation, a healthy dose of skepticism and the ability to consider concepts and ideas that are not one’s own to come to valid conclusions. The ancient Socratic method to this day remains one of the top ways to develop critical thinking.

Consider the following: If a teacher’s PowerPoint lecture does not promote learner engagement or interaction, studies show that retention of the material is a dismal 10 percent or less. Perhaps even more notable is that even a highly motivated medical learner has an attention span of only 10 to 16 minutes.

These facts have prompted Tom Cox, PsyD, Director of Faculty Development and Research, Baylor Scott and White Health–North Division, to develop a new didactic presentation guideline designed to promote critical thinking in medical education while maximizing retention and capitalizing on limited attention spans. Dr. Cox’s research reveals that today’s resident physicians have a mantra of, “Don’t teach me what I can read in a book. I want to know what is in your head,” a concept that lends itself nicely to Socratic teaching.

Dr. Cox’s presentation guidelines are fundamentally different than traditional lecture set-up and require the teacher to relearn some new skills. The suggested format is as follows:

1) Present information in 20-minute modules instead of traditional 50 to 60 minute increments.

2) Allow only three to four objectives per module.

3) Apply “check your learning” assessments at the mid-point of the module.

4) Finish with a “case-based scenario” at the end of the module.

“Case-based teaching lends itself well to Socratic methods in that it takes encoded learning to a much deeper and more memorable level for processing,” Dr. Cox observes. “When one teaches in smaller increments and builds upon existing knowledge, following up with case studies improves both conceptual and experiential applications of learning,” he says. For example, when the teacher prepares a module on the latest techniques for spasticity management in a stroke patient with a complementary case study, the learners can visualize the concept and take that concept to practice. When a learner employs the learning modalities of conceptualization, experientialism and visualization, memory recall can be improved to up to 70 percent.

Medical education is frequently compared to drinking from a fire hydrant, especially with the booming pace of change in medical knowledge. Despite the massive amounts of information coming forward, the learner still needs a smaller slice of information per session than has been traditionally provided to them in didactic sessions of the past. Rita Hamilton, DO, Physical Medicine and Rehabilitation Residency Director at Baylor University Medical Center, says, “This has been one of most impactful lessons for our residency program to learn going forward. We have to help teachers and learners understand that what is perceived as doing less in a teaching session ends up actually being much more productive at the end of the day.”
Improved Health Literacy Positions Patients to Understand and Manage Their Own Care

Low health literacy contributes to poor understanding of medications, diagnosis and warning signs, leading to more emergency department visits, hospital readmissions and worse health for patients. In order to improve outcomes for rehabilitation patients, a team of clinicians at Baylor Institute for Rehabilitation (BIR) is examining strategies to increase health literacy.

“We want to help patients understand their conditions so they can go home better able to manage them,” says Anne Woolsey, MS, clinical research coordinator for Baylor Institute for Rehabilitation.

Deficits in Health Literacy
Health literacy seems like a simple concept to understand, but Woolsey says “the challenge is translating the concept into established processes of care.” The data shows that many hospital systems are falling short.

A 2013 study published in the Journal of Health Communication revealed that while nurses reported that 68 percent of their patients had adequate health literacy, only 22 percent actually did. The issue has been studied by the federal government; in a 2006 report using 2003 data, the Department of Education’s National Assessment of Adult Literacy found that only 12 percent of American adults had “proficient” health literacy; 53 percent had “intermediate” health literacy and 36 percent had “basic” or “below basic” health literacy, indicating that an estimated 9 in 10 Americans have limited understanding of health information and how to use it. In the 2010 National Action Plan to Improve Health Literacy, the U.S. Department of Health and Human Services reported that “two decades of research indicate that today’s health information is presented in a way that isn’t usable by most Americans.”

Clinicians can often see the patient disconnect firsthand.

“In healthcare, we tend to think that because we reviewed information one time, that we’ve gone over it and patients should understand. That’s not the case,” says Merri Leigh Johnson, PT, DPT, NCS, director of the Physical Therapy Neurologic Residency Program for Baylor Institute for Rehabilitation.

Strategizing for Better Understanding
The health literacy team at Baylor Institute for Rehabilitation started with one specific population—stroke patients—and thought about how to create meaningful educational materials that are clear, concise, and sensitive to cultures and languages. The result was a booklet that blends clear text, checklists, graphics and spaces for patients to write journal notes. “Everything in that publication is geared toward helping patients understand their stroke and prevention of recurrent stroke,” says Molly Trammell, PT, clinical specialist for Baylor Institute for Rehabilitation.

For example: One page combines stroke symptoms with graphics to help readers easily identify signs of stroke and what they should do. Another page outlines how life might change after a stroke and offers easy, measurable steps patients can take to outline their goals, communicate their needs and feel better.

Soon, the publication will be vetted with focus groups made up of patients and family members for readability and clarity. By starting small and examining what works, the health literacy team hopes to rework patient education materials for other patient populations. Efforts are also underway to arm clinicians with tips for improving health literacy.

In a separate study, the team is measuring health literacy for patients diagnosed with traumatic brain injury and orthopedic injury, as well as the health literacy of their caregivers. Later this year, their research will expand to all patients and their caregivers, offering further insight into how to improve health literacy among all rehabilitation patients.

“As an inpatient rehab hospital, we have time on our side to not only teach our patients and caregivers, but to assess their understanding and adjust accordingly,” Woolsey says. “We have a real opportunity to help them go home and better manage their care and conditions.”

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RESEARCH UPDATES

The Latest News in Grants, Publications and Research

Grants

- Baylor Rehab was recently awarded funding from the Patient Centered Outcomes Research Institute (PCORI), to compare current sleep apnea identification tests in patients with traumatic brain injury and improve rehabilitation participation and outcomes. Led locally by neuropsychologist Marie Dahdah, PhD, the study, which is led by the Tampa Veteran’s Hospital, will start in the Fall of 2016 and includes 6 other healthcare systems across the country.
- The Workout on Wheels Internet Intervention (WOWii), funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), utilizes a novel, web-based platform to deliver a physical activity intervention to individuals who have experienced SCI. Phase 1 of the project has been completed and involved people with SCI reviewing and providing input and guidance on changes to the intervention website. The study team is currently working to update the website and will pilot test the program during the Fall of 2016.
- The Group Lifestyle Balance project, funded by the Centers for Disease Control and Prevention, tests the effectiveness of adapting an evidence-based weight loss program for individuals with mobility impairment. 68 individuals were randomized to either an experimental or wait-list control group and the experimental group completed the one-year lifestyle intervention in the summer of 2016 with the wait-list control group finishing January 2017. The team, led by Dr. Froehlich-Grobe, is presenting preliminary findings from the study at the annual meeting of the American Public Health Association in Denver, CO.
- The North Texas Traumatic Brain Injury Model System team continues to work on the project supported by NIDILRR. In its final year of support, the project is focused on comparative effectiveness research in TBI treatment with members of the team presenting at the annual meeting of the American College of Rehabilitation Medicine in Chicago, IL.

Select Publications and Presentations


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