Collaboration, innovation, advanced technologies and progressive therapies are the earmarks of a successful liver care program. The Swedish Liver Center is that kind of comprehensive program. Hepatologists and transplant surgeons at the center diagnose and treat the full range of hepatobiliary disease, including conditions caused by:

- Viral, bacterial and parasitic infection
- Neoplasia
- Toxic chemicals
- Alcohol consumption
- Poor nutrition
- Metabolic disorders
- Cardiac failure

Hepatologists and advanced practice nurses who provide liver disease management at the center operate at the forefront of their specialty. They employ advanced technology, such as transient elastography (FibroScan®), which allows many patients to avoid invasive liver biopsies. Additionally, they have been pioneers and advocates in addressing the growing concern for screening for and treating hepatitis C. In 2016, the center launched a systemwide effort to identify (continued on page 2)
individuals at high risk for hepatitis C by utilizing the health maintenance module of the Swedish electronic medical record platform (Epic). A dedicated specialty pharmacy offers patients with hepatitis C access to the latest direct-acting-antiviral (DAA) drugs, such as Harvoni® and Viekira Pak®, which have been shown to have cure rates greater than 95 percent.

Liver Transplant
In 2012, Swedish became one of only four adult liver transplant centers for all of the Pacific Northwest. Since the center opened, transplant surgeons have performed more than 100 liver transplants. Through the Swedish Liver Care Network, the transplant team at Swedish partners with its sister hospital, Providence Sacred Heart Medical Center in Spokane, Wash., to facilitate transplant care for patients in Eastern Washington. Rather than traveling to Seattle on multiple occasions, transplant patients are assessed and receive ongoing follow-up care locally, while only traveling to Seattle intermittently for evaluation and for the transplant procedure.

A Regional Resource
In the six years since it first opened its doors, the Swedish Liver Center has seen extraordinary growth. Most recently it has focused its efforts on integrating and coordinating liver care across multiple Swedish and Providence Health & Services hospitals. This integration has made it possible to standardize the delivery of services, advance interdisciplinary research and education, and establish evidence-based best practices and treatment guidelines for common liver ailments, such as hepatitis C, fatty liver disease, liver cancer, and pre- and post-liver transplantation.

In less than a decade, the Swedish Liver Center has become a respected regional resource for physicians seeking specialized care for their patients with liver disease. Call 206-215-1437 to refer or consult on a patient.

### Swedish Liver Transplant Program

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-organ liver transplants since program inception in 2012</td>
<td>86</td>
</tr>
<tr>
<td>Liver + another organ transplants since program inception in 2012</td>
<td>18</td>
</tr>
<tr>
<td>Total liver transplants since 2012</td>
<td>104</td>
</tr>
</tbody>
</table>

### Liver Transplant Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Swedish Observed</th>
<th>Swedish Expected</th>
<th>U.S. Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>One-Year Post-Transplant Outcomes</strong>&lt;br&gt;(July 1, 2013 and December 31, 2015)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult (18+) graft survival&lt;br&gt;(based on 39 single-organ transplants)</td>
<td>94.87%</td>
<td>92.48%</td>
<td>89.52%</td>
</tr>
<tr>
<td>Adult (18+) patient survival&lt;br&gt;(based on 37 single-organ transplants)</td>
<td>97.30%</td>
<td>94.42%</td>
<td>91.57%</td>
</tr>
<tr>
<td><strong>Three-Year Post-Transplant Outcomes</strong>&lt;br&gt;(January 1, 2011 and June 30, 2013)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult (18+) graft survival&lt;br&gt;(based on 19 single-organ transplants)</td>
<td>94.74%</td>
<td>84.36%</td>
<td>80.48%</td>
</tr>
<tr>
<td>Adult (18+) patient survival&lt;br&gt;(based on 18 single-organ transplants)</td>
<td>100%</td>
<td>85.13%</td>
<td>83.43%</td>
</tr>
</tbody>
</table>

#### Pain Services

and occupational therapists, pain therapists, a pain psychologist, a relaxation therapist and a nursing educator provide the program’s integrated services. The team meets weekly to ensure continued collaboration, progress evaluation and adjustment of management goals. After completing the program, patients follow up with the team to review their progress.

Pain management specialists at Swedish Pain Services are available for consultations and referrals. For additional information, please call the clinic that is most convenient for your patient (see page 3 for locations and telephone numbers).
A 64-year-old retired teacher presented with chronic neck and shoulder pain. After multiple cervical spine surgeries, including a C7-T1 fusion, injections and medication trials, relief was minimal, her sleep was affected and her function had deteriorated. She reported significant activity intolerance and limited sitting tolerance for the last 12 months, and she was unable to work or pursue activities outside her home.

A preliminary diagnosis suggested her severe chronic left scapula pain might be consistent with referred pain from thoracic spine. MRI showed thoracic upper through mid-segment disc degeneration, with some vertebral body bone marrow changes at T3. Nothing suggested cervical radicular process or facet radiation of pain from cervical spine, although testing was limited due to cervical fusion. We noted some dural tension on testing, so we could not rule out proximal nerve root dural tension related to surgical scarring.

We ordered an MRI of her left shoulder to rule out intra-articular pathology. Imaging showed a superior labral tear with anterior and posterior extension, and mild chronic clavicular degenerative joint disease. There was no evidence of rotator cuff tear. She also completed a general health psychology intake interview, which found significant levels of pain related to catastrophizing, poor pain-coping strategies and depressive symptoms.

During consultation, we discussed:

- Her goals
- Expected progression of her pain management program, focusing on improving activity tolerance, psychosocial functioning and sleep
- Relationship between affective distress and sensitization of the nervous system and ongoing chronic pain
- A gabapentin trial during her pain management program, and adjustment of antidepressant and sleep medications

She enrolled in our four-week functional restoration program (three ½-day sessions/week), including:

- Physical therapy to integrate scapular strengthening and shoulder stabilization with pain treatment
- Occupational therapy to assess functional activities aggravating her shoulder pain, and to provide ergonomic tips, pacing techniques and activity integration
- Behavioral health interventions (cognitive behavioral therapy, mindfulness stress reduction, relaxation training, and other body monitoring techniques) to reduce tension, stress and pain
- Nursing education about nutrition, sleep hygiene, neuroplasticity of chronic pain and flare-up management

The patient participated in group and individual sessions, made progress on shifting to self-management and did psychology homework, including cognitive coping skills. During the initial weeks, she continued to experience short windows of improved pain control following strength exercises, reporting that pain returned within one to two hours. She also reported increased pain and mood disruption during weekends when she was less engaged in the program.

After ongoing application of new pain-management skills, her baseline pain scores improved, flare-ups were less frequent and debilitating, and her aerobic capacity increased dramatically. At four weeks, the patient had:

- Completed sleep and nutrition self-assessments
- Discussed customizable pain flare plans and begun personal pain flare strategies
- Received handouts with lecture notes
- Become more mindful of posture and alignment, body mechanics, pacing concepts, increasing activity tolerances and therapeutic movement
- Begun a home exercise program of daily stretching and strengthening exercises, and an aerobic program at her local gym (treadmill walking and pool exercises)

After completing the program, the patient was pleased with her progress. She appreciated her deeper understanding of chronic pain and the life-changing tools that were helping her manage it more effectively.
Minimally Invasive Procedures to Correct Children’s Urologic Conditions

The thought of surgery in an infant or young child — and a lengthy recovery in the hospital and at home — makes most parents anxious and somewhat fearful. However, today’s minimally invasive and robotic-assisted procedures use precise instrumentation that allows surgeons to complete the procedures through “key-hole” incisions. In addition to smaller incisions, other benefits include lower risk of infection, less pain and shorter recovery times. Pediatric urologists at Swedish use robotic-assisted techniques to correct various urological conditions in infants, children and teenagers including:

- **Ureteropelvic junction obstruction (UPJ):** A blockage at the junction between the kidney pelvis and the ureter causing hydronephrosis.
- **Vesicoureteral reflux (VUR):** Reflux from the bladder to the kidneys leading to infections.
- **Urachal abnormalities,** such as persistent patency or infections.
- **Congenital kidney abnormalities,** such as duplicated collection systems (two ureters), which can cause obstruction or urine reflux.

Surgery is usually the last step, rather than the first. A thorough evaluation by a pediatric urologist to determine if the child even needs surgery comes first. If the child has pain, infection or loss of kidney function, the specially trained pediatric urologists at Swedish are able to offer laparoscopic, robotic-assisted or open procedures.

“For adults, minimally invasive techniques clearly offer multiple advantages,” says Devon C. Snow, M.D., a pediatric urologist at Swedish. “In children, however, we use smaller incisions even for open procedures, so it’s not always immediately evident which approach is best. I consider it a privilege to be able to offer parents multiple options, so together we can determine the best treatment for their child.”

To refer or consult on a pediatric patient, please call Swedish Pediatric Specialty Care at 206-215-2700 (Seattle) or 425-313-7088 (Issaquah).

Ultrasound Becomes a Diagnostic Tool for Rheumatology

Ultrasound technology is the latest diagnostic enhancement in the field of rheumatology. Meghan E. Greenfield, M.D., and Uche M. Obih, M.D., two rheumatologists at the Swedish Center for Comprehensive Care, specialize in the use of ultrasound to evaluate patients for joint damage, soft tissue pathology, or tendon inflammation, tears or ruptures. Drs. Greenfield and Obih also perform ultrasound-guided injections and monitor disease activity and progression in patients who have a rheumatoid arthritis diagnosis.

Ultrasound, as an alternative to MRI, is an efficient and cost-effective method that enhances both patient care and the patient experience. Because it is real-time diagnostic imaging, evaluation and treatment planning can occur consecutively during the same patient visit.

To refer or consult on a patient who might benefit from an ultrasound evaluation, please call 206-386-9500. Referring physicians should specify “ultrasound evaluation” or “ultrasound-guided injection” in the referral.

Image 1. The red Doppler signal indicates locations of inflammation associated with wrist synovitis.

Image 2. Using ultrasound to guide needle placement (top left) for carpal tunnel injection ensures precise delivery of the anti-inflammatory.

When to Refer to Swedish

Swedish pediatric urologic services are available in two locations. Please select the location that is most convenient for your patient’s family.

**Pediatric Specialty Care — Seattle**
1101 Madison (Madison Tower), Suite 800, Seattle, Wash. 98104
Phone: 206-215-2700 • Fax: 206-215-2702

**Pediatric Specialty Care — Issaquah**
751 N.E. Blakely Dr., 5th floor, Issaquah, Wash. 98029
Phone: 425-313-7088 • Fax: 425-313-7173

Ultrasound-guided joint, carpal tunnel and trigger finger/thumb injections
Joint, soft tissue and tendon inflammation/pain
Suspected rotator cuff pathology
Multimodal Pain Management for Knee Replacement Surgery

Surgery creates pain. Getting ahead of the pain, however, is an important way of improving outcomes. Poorly managed pain or opioid-dependent pain management can result in undesirable side-effects, such as nausea and vomiting, respiratory depression, urinary retention and constipation. All of these side effects, especially in patients who have multiple co-morbidities, will increase the risk of complications and readmission.

Pre-emptive, multimodal pain management for patients undergoing knee replacement surgery has made a significant difference in patients' lengths-of-stay and recovery times, and has reduced the use of opioid pain medications and opioid-related adverse events, and improved the overall patient experience.

As the name suggests, multimodal pain management is a multi-faceted approach that targets pain before, during and after knee replacement surgery and uses a variety of medications that affect various sites of the pain pathway.

**Pre-operative:** Prior to surgery, the patient receives an oral pre-operative “pain cocktail,” which includes an anti-inflammatory medication, a nerve stabilizer, an analgesic and possibly a long-acting narcotic.

**Intra-operative:** The anesthesiologist usually administers a spinal anesthetic, rather than general anesthesia, which reduces the risk of bleeding, blood clots and nausea. The patient also receives two additional IV anti-nausea medications. Additionally, prior to closing, the surgeon injects a local anesthetic pain cocktail into the soft tissues around the knee.

**Post-operative:** In the recovery room, the anesthesiologist uses ultrasound imaging to place a peripheral nerve catheter into the adductor canal of the thigh, and attaches this to an elastic pump for continuous infusion of a local anesthetic to the sensory nerves of the knee.

Generally, patients who have had knee replacement surgery with multimodal pain management have zero-to-limited pain one day post-surgery. They are discharged with the catheter and pain pump, and receive instructions about when they can remove the catheter.

Orthopedic surgeons at Swedish perform more than 2,300 knee replacement surgeries each year. For more than six years, they have used multimodal pain management for knee replacement surgery.

For more information about the use of multimodal pain management, or to refer a patient for evaluation for partial or total knee replacement, please call toll free 1-800-SWEDISH.

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Case Study: One Patient — Two Total Knee Replacements, Two Pain-Management Approaches

*James P. Crutcher, M.D., Orthopedic Physician Associates, and Medical Director, Swedish Orthopedic Institute*

Dorothy is a 66-year-old female with bilateral knee arthritis. Her right knee was more symptomatic than her left. She tried nonoperative management of her knee pain with over-the-counter anti-inflammatory medications and physical therapy. These helped some, but her knee pain became progressively worse. She received two cortisone injections which gave her good pain relief, but the benefit lasted only four weeks. X-rays showed complete loss of cartilage in the right knee joint.

After consulting with Dorothy, she elected to undergo right total knee replacement surgery at the Swedish Orthopedic Institute (SOI) in July 2012. The anesthesiologist administered a pre-operative “pain cocktail,” and at the conclusion of the surgery, I injected a long-acting local anesthetic into the soft tissues around the knee.

Dorothy experienced minimal pain for the first 24 hours after her surgery. On the first postoperative day, the local anesthetic wore off and we started Dorothy on narcotic medication to control her pain. Following discharge from the hospital, she had physical therapy and eventually experienced an excellent outcome from her knee replacement surgery.

Four years later, Dorothy returned to SOI for a left total knee replacement. The anesthesiologist administered the same spinal anesthetic, rather than general anesthesia, which reduces the risk of bleeding, blood clots and nausea. The patient also receives two additional IV anti-nausea medications. Additionally, prior to closing, the surgeon injects a local anesthetic pain cocktail into the soft tissues around the knee.

In the recovery room, the anesthesiologist uses ultrasound imaging to place a peripheral nerve catheter into the adductor canal of the thigh, and attaches this to an elastic pump for continuous infusion of a local anesthetic to the sensory nerves of the knee.

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(continued on page 6)
Multimodal Pain Management Case Study  (continued from page 5)

pre-operative pain cocktail and I again intra-operatively injected a long-acting local anesthetic. This time, however, the anesthesiologist initiated additional pain management while Dorothy was in the recovery room. Using ultrasound imaging, the anesthesiologist precisely placed a very small catheter into the thigh next to the nerves that sense pain in the knee. An elastic balloon pump attached to the catheter continuously delivered a local anesthetic at a slow rate to provide pain relief for three and a half days.

“I couldn’t believe the difference this time,” Dorothy said. “I felt very little pain from the moment I arrived in my room until the time I went home.”

Dorothy was discharged home the day after surgery with the portable pain pump attached to the peripheral nerve catheter. After the third day at home when the pump had stopped infusing the local anesthetic, Dorothy easily removed the nerve catheter from her leg. She experienced a little more discomfort after the catheter was removed, but it was minor and required only a few additional pain pills. The nerve catheter had blocked the worst of the postsurgical pain, which typically occurs during the first three days. As a result, Dorothy required very little pain medication and felt much better throughout the entire postoperative period.

Anesthesiologists at the Swedish Orthopedic Institute now place a peripheral nerve catheter in most postoperative total knee replacement patients. This approach to pain management has led to a more rapid recovery and return to home for these grateful patients.

Figure 3. Post-operative right total knee arthroplasty.
Figure 4. Post-operative second total knee arthroplasty.
Figure 5. Post-operative view of both patellas.

Swedish Supports Primary-care Providers in the Battle Against Obesity

Weight may be one of the most awkward – albeit necessary – conversations a primary-care provider must have with a patient. This is especially true if the patient is new and you are trying to establish a relationship, or he or she has many medical issues to address.

The Centers for Disease Control reports that more than one-third of U.S. adults are obese (BMI of 30 or greater), and many more are overweight. Equally alarming is the statistic that 17 percent of children in the United States are either overweight or obese. While there are various opinions as to the reason for the significant increase of obesity in the United States, it is important for us, as health-care providers, to collectively acknowledge that we have a responsibility to help fight this epidemic.

The current issue of HealthWatch, Swedish’s consumer newsletter, includes an article about obesity, the medical consequences of this growing epidemic and treatment options that are available at Swedish. The article’s intent is to let readers know that it is never too late to lose weight.

The list of medical complications of obesity is lengthy: sleep apnea; stroke; heart; lung and liver disease; gallstones; cancer; diabetes; pancreatitis; arthritis; inflamed veins (often with blood clots); gout; and abnormal menses and infertility in women. If we don’t reduce obesity, our practices will be strained and the downstream cost of medical care will continue to climb.

Primary-care providers are the frontline in the battle against obesity. They know their patients, see them regularly and arguably have the strongest connection with them. It is that relationship that can be leveraged and may have the greatest influence.

Swedish supports primary-care providers by offering both surgical and non-surgical solutions for patients who are overweight or obese and experiencing serious health conditions associated with their weight, or have been unsuccessful losing weight on their own.

Working together, we can turn around the obesity epidemic. To refer or consult on a patient, please call Swedish Weight Loss Services at 206-215-2090.
Mako™ Now Used for Total Knee Replacement

The Swedish Orthopedic Institute has successfully used Mako™ robotic-arm assisted technology for partial knee replacements for the past six years. In November 2016, the manufacturer selected Swedish, an early adopter and leader in the use of this technology, as one of four sites on the West Coast — and the first site in the Pacific Northwest — to offer Mako for total knee replacements. This provides patients with degenerative knee disease an alternative to traditional knee replacement surgery.

“It is exciting for us to now offer this innovative technology for all of our knee replacement patients,” says James P. Crutcher, M.D., an orthopedic surgeon with Orthopedic Physician Associates and medical director of the Swedish Orthopedic Institute. “Mako provides precision alignment and stability, whether a patient requires partial or total knee replacement. Up until now we could use robotic-assisted technology for partial replacements, but had to rely on manual instrumentation for our total knee replacement patients.”

Mako is robotically-assisted surgery that offers a high level of accuracy for joint resurfacing and replacement. The key benefits include patient-specific treatment plans with 3-D modeling derived from CT scans. This enables accurate pre-surgical planning of the implant size, orientation and alignment. When integrated with the surgeon’s skilled hands, Mako provides precise real-time intraoperative balancing of knee ligaments, which optimizes stability and range of motion, and promotes a more natural feeling knee for the patient.

Swedish surgeons use Mako at First Hill (partial/total) and Issaquah (partial). As a knee arthroplasty procedure, Medicare and most private health insurers cover Mako. To consult or refer a patient for evaluation for a Mako total or partial knee replacement, please call 1-800-SWEDISH.

Services for Kids with Special Needs

Children with special needs are VIPs at Swedish. The Pediatric Therapy Services team includes highly skilled pediatric physical and occupational therapists and speech-language pathologists. They work together to address the children’s needs and help them maximize their potential to play, learn and engage at home, school and in the community.

Each child receives a personalized care plan based on his or her needs. All therapy sessions include direct treatment and parent/patient education. Call 206-386-3592 for consultations and referrals.

Swedish Pediatric Therapy Services specializes in therapy for:
- Autism
- Communication, language, gross motor and developmental delays
- Feeding difficulties
- Conditions related to premature birth
- Oral-motor deficits
- Orthopedic conditions
- Sensory processing disorders
- Sports injuries

Swedish Health Services
Quick Reference

1-800-SWEDISH
www.swedish.org
Referral Services: 1-855-448-8094

Ballard
5300 Tallman Ave. N.W.
Seattle, WA 98107-3985

Cherry Hill
500 17th Ave.
Seattle, WA 98122

Edmonds
21601 76th Ave. W.
Edmonds, WA 98026

First Hill
747 Broadway
Seattle, WA 98122

Issaquah
751 N.E. Blakely Dr.
Issaquah, WA 98029

Mill Creek
13020 Meridian Ave. S.
Everett, WA 98208

Redmond
18100 N.E. Union Hill Road
Redmond, WA 98052

Swedish Medical Group
600 University St., Ste. 1200
Seattle, WA 98101

DocTalk is produced by Swedish Health Services for educational purposes. We invite readers to share their comments and offer suggestions for future topics by contacting us at DocTalk@swedish.org. Archives of articles and case studies previously published in DocTalk, as well as DocTalk videos, are available online at www.swedish.org/DocTalk.

Case studies are provided with the consent of the patient or with personal health information removed or altered in order to protect patient privacy.
One-Stop Referral Assistance

Swedish Referral Services offers clinical practices a single point of contact to help transition patients to the appropriate specialties within Swedish Health Services, or to Swedish affiliate or partner specialists. The program has been designed to take the confusion out of referring and to reduce the time referral coordinators spend locating appropriate specialty care for their patients.

Swedish Referral Services supports providers worldwide – ensuring patients can easily and expeditiously receive the care they need. The program is also a resource for cruise lines that frequent the Port of Seattle, facilitating timely access to necessary medical care for crew members and passengers.

A dedicated referral team facilitates the transfer of patient information, tracks the referral process and maintains a communication link with referring physicians or their referral coordinators. Providers may request a particular specialist, or the Referral Services specialist will work with the Swedish triage team to evaluate the patient’s medical records, and then forward the referral to the appropriate clinic or physician.

Referrals: Referrals are accepted via secure fax, phone or a secure online referral form at www.swedish.org/refernow. Please complete the online referral form at www.swedish.org/refernow or call 1-855-448-8094, and then fax the pertinent medical records to 206-320-2655.

Urgent Hospital Transfers: The Swedish Transfer Center is a service reserved for physicians who need to admit a patient to a Swedish hospital. The Transfer Center offers:

- Streamlined patient transfers seven days a week and 24 hours a day
- Access to all acute-care specialties
- Admissions to Swedish’s Ballard, Cherry Hill, First Hill and Issaquah campuses
- For adult patients, call toll free 1-866-470-4BED (1-866-470-4233)
- For pediatric admissions to Swedish First Hill, call 206-969-7500. For pediatric admissions to Swedish Issaquah, call 206-969-7337.

For more information about Swedish Referral Services or to print additional references for your physicians and referral coordinators, please go to www.swedish.org/referral or call 1-855-448-8094.

CME Course Listing – April — June 2017

Physicians from across the region and around the world come to Swedish Medical Center’s Continuing Medical Education (CME) courses to learn about new research and innovative treatment techniques.

For times and locations, go to www.swedish.org/cme or call 206-386-2755.

3rd Annual Hepatology Update
Apr. 28-29

11th Annual Cerebrovascular Symposium: Interdisciplinary Care of the Stroke Patient
May 11-12

Annual Oncology Symposium: Innovations in Gynecologic Cancer Care – Prevention to Survivorship
May 12

R3 Talks – Selected Infectious Disease Topics: An Update for the Primary-Care Provider
June 2

7th Annual Pacific Northwest Head and Neck Cancer Symposium: Updates on Parathyroid and Salivary Glands
June 9

Epilepsy Update
June 16

Swedish Medical Center is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. Both online CME for credit and recorded CME for viewing without receiving credit are available at www.swedish.org/cme. Join our email list: www.swedish.org/CMEProfile

If you do not want to receive DocTalk, please send an email to DocTalk@swedish.org

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