Welcome to the inaugural edition of the Neurosciences Quality Report from PeaceHealth Sacred Heart Medical Center. As medical director of Sacred Heart’s Oregon Neuroscience Institute, I am pleased to provide you with this guide detailing the quality care provided by our Joint Commission-certified Advanced Primary Stroke Center and neurology, neurosurgery and rehabilitation services.

This first publication focuses heavily on our Stroke Center services. As the leading cause of serious long-term disability in the U.S., stroke is a public health emergency that requires immediate attention. And your patients can get the attention they need, close to home and in a health care environment unparalleled in the region.

In 2011, we treated 630 stroke cases – more than any other hospital in the state. Our volumes in 2012 exceeded that number, with Sacred Heart treating 669 stroke cases. Why are volumes important? Clinical studies consistently demonstrate that medical centers treating a higher volume of stroke patients generally have better outcomes.

We offer every stroke treatment service available in Portland. From the first signs of a stroke, our Stroke Alert system – a collaboration with area Emergency Medical Services – notifies our emergency department of your patient’s status. Our team of neurologists and neurosurgeons – including the region’s only endovascular neurosurgeon – can handle any stroke case that comes our way. And the Oregon Rehabilitation Center helps recovering stroke patients return to independent lives.

You, the referring physician, are an important part of this care continuum. Primary care physicians are welcome to attend our monthly stroke case conferences, where neuro experts, hospitalists and emergency physicians work to continuously improve our stroke care. We believe in the importance of sharing our outcomes information with referring physicians and others interested in the Oregon Neuroscience Institute to help guide treatment choices for all neuro patients. We hope you find this information helpful and informative.

Andrew Kokkino, MD
Medical Director for the Oregon Neuroscience Institute

2012 Neurosciences Quality Report
Nationally Recognized Stroke Care Close to Home
Quality is Key
We want you and your patients to be confident in the quality of our neuroscience services. That’s why the Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center presents this report. We believe our quality, depth of experience and multidisciplinary collaboration set us apart in a crowded health care field. When you refer patients to Sacred Heart Medical Center, you give them access to an institution that puts patient care and outcomes at the center of everything we do.

The 2012 Neurosciences Quality Report presents summaries of our treatment trends and approaches, as well as data on patient volumes and outcomes.

For more information about the Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center, visit www.peacehealth.org/shmc/neurosciences/.

In its ongoing pursuit of the highest quality care possible, the Oregon Neuroscience Institute compares its clinical outcomes to external benchmarks from nationally validated sources. PeaceHealth Sacred Heart Medical Center participates in several quality and performance initiatives, including the following:

**Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Survey:** [www.nrcpicker.com](http://www.nrcpicker.com). A standardized survey of hospital patients that captures patients’ unique perspectives on hospital care for the purpose of providing the public with comparable information on hospital quality.

**Get With The Guidelines:** [www.heart.org/quality](http://www.heart.org/quality). The American Heart Association/American Stroke Association’s hospital-based quality improvement program that empowers health care teams to save lives and reduce healthcare costs by helping hospitals follow evidence-based guidelines and recommendations.

**Target:STROKE:** [www.strokeassociation.org/targetstroke](http://www.strokeassociation.org/targetstroke). A national quality initiative of the American Heart Association/American Stroke Association with the goal of improving stroke care. One component of this initiative focuses on improving the timeliness of IV rt-PA administration to eligible patients. The goal set for Target:STROKE is a door-to-needle time within 60 minutes in at least 50% of ischemic stroke patients treated with IV rt-PA.

**American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP):** [www.acsnsqip.org](http://www.acsnsqip.org). Risk-adjusted data collection mechanism that collects and analyzes clinical outcomes data. Hospitals use the collected data to develop quality initiatives and improve surgical care.

**Hospital Process of Care Measures – Surgical Care Improvement Project (SCIP):** [www.hospitalcompare.hhs.gov](http://www.hospitalcompare.hhs.gov). National quality partnership of organizations focused on improving surgical care by significantly reducing surgical complications.

**National Healthcare Safety Network (NHSN):** [www.cdc.gov/nhsn/](http://www.cdc.gov/nhsn/). A voluntary, secure, internet-based surveillance system that integrates and expands legacy patient and health care personnel safety surveillance systems managed by the Division of Healthcare Quality Promotion at CDC to record and analyze health care trends.
More than 40 years of experience and innovation

1976
- Computerized tomography installed at Sacred Heart

1976
- Rehabilitation services were significantly upgraded to benefit patients with head and spinal cord injuries, stroke, amputation and other rehabilitation needs

1976
- The Oregon Rehabilitation Center opens

1983
- The Oregon Rehabilitation Center receives its first CARF accreditation

1985
- First MRI outside Portland installed at Sacred Heart

1987
- First image-guided surgery system for cranial and spinal procedures installed

1990
- Sacred Heart named Level II Trauma Center

1990
- First annual Advances in Clinical Neuroscience Practice conference held

1992
- An Assistive Technology Lab opened as part of the Oregon Rehabilitation Center

1998
- The Joint Commission certifies Sacred Heart as an Advanced Primary Stroke Center; certification renewed in 2008, 2010 and 2012

2006
- The Gamma Knife Center opens, first between Portland and San Francisco

2006
- Sacred Heart at RiverBend opens, with specialty inpatient 36-bed neuro unit

2007
- First annual Advances in Clinical Neuroscience Practice conference held

2008
- The Oregon Rehabilitation Center receives its first CARF accreditation

1980
- 1983
- 1985
- 1987
- 1990
- 1992
- 1998
- 2006
- 2007
- 2008
The Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center is a premier regional provider of neurological, neurosurgical and rehabilitative care in a patient-focused teaching and research environment. The Institute’s work aligns with the hospital’s 76-year commitment to improving the health and wellness of each person in every community PeaceHealth serves.

Our Mission
We carry on the healing mission of Jesus Christ by promoting personal and community health, relieving pain and suffering, and treating each person in a loving and caring way.

Respect · Stewardship · Collaboration · Social Justice
Comprehensive Neurosciences Services
The Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center in Springfield, Oregon, is part of the PeaceHealth system of care. The interdisciplinary team at the Oregon Neuroscience Institute provides comprehensive diagnosis and treatment modalities.

Endovascular Neurosurgery
- Endovascular aneurysm coiling
- Pipeline Embolization Device for large-neck aneurysm
- Endovascular embolization and occlusion of head and neck vessels
- Percutaneous angioplasty of intracranial and extracranial vessels
- Percutaneous insertion of intracranial stents
- Percutaneous atherectomy of intracranial and extracranial vessels
- Posterior laminectomy and discectomy
- Minimally invasive and multi-level fusion
- Cervical lumbar and artificial disc replacement
- Vertebroplasty and kyphoplasty
- Minimally invasive scoliosis correction
- Minimally invasive transthoracic and transoral approaches

Interventional Radiology
- Neuroradiology of the central nervous system
- Brain and spine neuro intervention
- Diagnostic and therapeutic injections
- Vascular Imaging and intravascular intervention
- Cerebral and spinal angiography
- Endovascular clot removal

Brain Procedures
- Open surgery for arteriovenous malformation and aneurysm
- Image-guided craniotomy for tumor resection
- Decompressive hemispherectomies for trauma and stroke
- Frameless image-guided stereotactic biopsy
- Microvascular decompression of the fifth and seventh cranial nerve
- Minimally invasive endoscopic tumor removals
- Third ventriculostomies for hydrocephalus
- Placement of spinal fluid shunting devices for hydrocephalus
- Insertion of brain pressure monitors for treatment of intracranial hypertension
- Percutaneous stereotactic rhizotomy to treat trigeminal neuralgia and other pain disorders
- Treatment of epidural and subdural hematomas for traumatic brain injury
- Treatment of hemifacial spasm
- Treatment of intracerebral hemorrhages using catheter-based, endoscopic or open techniques
- Vagal nerve stimulator placement for seizure disorders
- Skull-base tumor resection
- Gamma Knife for stereotactic radiosurgery

Neurology
- Stroke
- Neurohospitalist and neurocritical care services
- Treatment for traumatic brain injury
- Epilepsy and other seizure disorders
- Movement disorders including Parkinson's Disease, tremor, restless leg syndrome, dystonia and dyskinesia
- Child neurology
- Neuro-oncology
- Neuro-ophthalmology
- Neuromuscular diseases
- Headaches
- Trauma including head injury, spinal cord injury, root injury, plexus injury and peripheral nerve injury

Neurodiagnostic Services
- Awake and sleep electroencephalography (EEG)
- Long-term video monitoring with EEG
- Ambulatory and bedside EEG
- Intraoperative neuromonitoring
- Evoked Potential testing
- Electromyography and nerve conduction studies

Spine Procedures
- Repair of traumatic injuries to the nerves and spinal column at all levels
- Trauma including spinal cord injury, root injury, plexus injury and peripheral nerve injury
- Resection of tumors of the spinal cord and surrounding structures
- Anterior discectomy with fusion
- Anterior corpectomy
- Magnetic Resonance Imaging (MRI)
- Magnetic Resonance Angiography (MRA)
Sacred Heart Medical Center PeaceHealth

Stroke Program Features
Research has shown that when it comes to stroke, a well-organized infrastructure designed to support proven clinical protocols results in improved patient outcomes. The Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center has such an infrastructure in place for stroke care, evidence of our commitment to meet the specialized needs of stroke patients.

For referring physicians and their patients, this means streamlined access to advanced comprehensive diagnostic, treatment and rehabilitation resources for stroke. We are the only hospital in the region to offer patients advanced endovascular care, including stenting and coiling.

Another essential component of stroke care is rehabilitation. Sacred Heart’s Oregon Rehabilitation Center provides inpatients and outpatients high-quality care as they recover from stroke. Oregon Rehabilitation Center is a CARF-accredited facility with outstanding patient outcomes.

The Oregon Neuroscience Institute today comprises a team of neurosurgeons, including an endovascular neurosurgeon, neurologists, neuroradiologists and radiologists, helping to make Sacred Heart a Joint Commission-certified stroke center of excellence.

Features of the Stroke Program at PeaceHealth Sacred Heart Medical Center:

- Twenty-four hour local neurology coverage
- National recognition for door-to-needle time in fourth quarter of 2012
- Neuroradiologists on staff
- Emergency team evaluation with an emergency medicine physician within 15 minutes of any patient exhibiting acute stroke symptoms in the appropriate tPA time window
- Order sets to facilitate the care and treatment of stroke
- Strong communication with Emergency Medical Services (EMS) to ensure that medical personnel are informed when a stroke patient is enroute to Sacred Heart
- Dedicated team of caregivers, including physicians, nurses, technologists and therapists, with expertise in stroke care working together to ensure the best outcomes
- Neurohospitalist and nurse practitioner providing expert care to stroke patients
- Endovascular neurosurgeon with expertise in the latest stroke diagnostic and treatment modalities
- Neuroimaging services, including Perfusion CT and CT Angiography, to rapidly determine if a patient has a burst blood vessel or clot blocking blood flow to the brain
- Imaging studies for acute strokes performed within 25 minutes of a physician’s order, and radiology evaluating images within 20 minutes of completion, with radiology staff available 24 hours a day
- Laboratory services available 24 hours a day
- Quality improvement activities including a registry to track patient treatments and timelines
- Review of the quality of stroke patient care by the stroke program team
- Coordination of care throughout the healing process
- Continuing education offered to staff members involved or interested in the care of stroke patients
- Community education to inform people how to prevent a stroke and recognize its signs and symptoms

Rehabilitation Services
- Rehabilitation for:
  - Stroke
  - Spinal Cord Injury
  - Traumatic Brain Injury
  - Amputation
  - Tumor
  - Joint Replacement Surgery
- Rehab Nursing
- Occupational and Physical Therapy
- Speech and Language Pathology
- Neuropsychology
- Social Work/Care Management
- Dietary, respiratory and spiritual care

- Computed Tomography (CT) perfusion, CT Angiography (CTA)
- Ultrasound
- Limited Fluoroscopy
- X-Ray
- Transcranial Doppler
- Echocardiogram, Transesophageal Echocardiogram (TEE) and Transthoracic Echocardiogram (TTE)
Oregon Neuroscience Institute
at PeaceHealth Sacred Heart Medical Center

Program Overview

Over the past several years, the Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center has expanded its panel of clinicians and services to offer comprehensive, compassionate, collaborative care for the entire spectrum of brain and spine disorders.

This expansion benefits patients and referring physicians through improved service and outcomes. The addition two years ago of the only endovascular neurosurgeon in the region completed Sacred Heart’s ability to treat the entire vascular system. And the opening of a neuro biplane suite enables the use of modern therapies and interventions in the least-invasive manner possible.

Our addition of a neurohospitalist has enhanced our ability to work as a team and made us more responsive to referring physician and patient needs. Supported by a nurse practitioner, the neurohospitalist has facilitated the expansion of acute care management to high-risk neurology patients, including stroke patients.

The Oregon Neuroscience Institute today comprises a team of neurosurgeons, including an endovascular neurosurgeon, neurologists, neuroradiologists and radiologists, helping to make Sacred Heart a Joint Commission-certified stroke center of excellence. Our neurology nursing staff offers healing care in a specialty 36-bed unit with telemetry, EEG and video monitoring capability. And the CARF-accredited Oregon Rehabilitation Center is recognized as a regional center for neuro rehab patients, boasting a team of rehabilitative medicine physicians, neuropsychologists, multidisciplinary outpatient clinics, and a staff of physical, occupational and speech therapists and nurses dedicated to helping patients achieve the highest possible levels of recovery.

2011-2012 Highlights

- Highest volume of stroke patients in state for two years running, with 630 cases in 2011 and another 669 in 2012
- Awarded Get With The Guidelines Gold Plus award for stroke care from the American Heart Association/American Stroke Association
- Achieved Target:STROKE recognition for the fourth quarter of 2012 from the American Heart Association/American Stroke Association for timeliness of IV-tPA administration for appropriate stroke patients
- Blue Cross/Blue Shield Blue Center of Distinction for Spine Surgery in 2011
- Highest craniotomy volume in the region
- CARF-accredited Oregon Rehabilitation Center specializing in neuro cases
- Ongoing research collaboration between physicians and the University of Oregon
- Host of the annual Advances in Clinical Neuroscience Practice conference, an important educational event for physicians, nurses and allied health professionals

Other institute features include:

- Joint Commission-certified Advanced Primary Stroke Center
- Collaboration with the communities we serve
- Use of care plans that are data-driven, evidence-based, multi-disciplinary, and integrated
- Major neurosurgery and trauma referral center for Southern Oregon
- Medical advisory quality council evaluates quality and outcomes
- Access to an array of programs and services to patients and families, from prevention to palliative care
- Facilities and programs designed to provide seamless care and flow to patients and families
- A professionally satisfying environment for clinicians and staff
Collaboration is the Key to Success
A truly multidisciplinary approach

The Oregon Neuroscience Institute combines skilled physicians, experienced staff, dedicated facilities, advanced technology and focused programs to provide a comprehensive resource for the care of any neurological condition.

Referring physicians can be confident in the knowledge that we bring the best minds in the region together to provide outstanding patient care. Examples include:

- Monthly multidisciplinary stroke case conferences
- Monthly multidisciplinary neuro-oncology tumor board
- Monthly neurosurgery morbidity and mortality case conferences
- Regular neuro rounds
- Regular peer review sessions
- Purposeful rounding
- Twice-monthly Rehab conferences

Patient Safety Officer

Board-certified neurosurgeon Andrea Halliday, MD, serves as PeaceHealth Sacred Heart Medical Center’s Patient Safety Officer. In this role, she helps identify opportunities and implement process improvements.

For example, Dr. Halliday recently worked with our spine surgeons to add an extra step in our surgical “Time Out” procedures as an additional safeguard against wrong-site spinal surgery, a best practice that exceeds nationally recognized guidelines.
Patient Satisfaction

Measuring quality should always include a discussion about the level of service that a patient experiences in our care: the amount of time spent with each patient and whether that person is treated with respect, kindness and dignity by all members of the health care team. We take patient satisfaction seriously, and our ongoing efforts to improve our reported levels reflect our commitment to our patients.

The Oregon Neuroscience Institute relies on National Research Corporation (NRC) Picker data to better understand the perspectives of our stroke and neurology/neurosurgery patients using a standardized, objective approach that can be compared to other hospitals in the country.

We take patient satisfaction seriously

Stroke Patient Satisfaction FY 2012

National Research Corporation (NRC) Picker

Overall: Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?

Sacred Heart Medical Center: 78%
NRC Average: 68.1%

Physical Comfort: During this stay, how often did the hospital staff do everything they could to help you with your pain?

Sacred Heart Medical Center: 81%
NRC Average: 76.4%

Respect For Patient Preferences: During this hospital stay, how often did nurses carefully listen to you?

Sacred Heart Medical Center: 79.2%
NRC Average: 70.3%

During this hospital stay, how often did doctors treat you with courtesy and respect?

Sacred Heart Medical Center: 88%
NRC Average: 84.6%

Neurology/Neurosurgery

Patient Satisfaction FY 2012

Overall: Using any number from 0 to 10, where 0 is the worst hospital possible and 10 is the best hospital possible, what number would you use to rate this hospital during your stay?

Sacred Heart Medical Center: 77.3%
NRC Average: 68.1%

Would you recommend this hospital to family and friends?

Sacred Heart Medical Center: 81%
NRC Average: 71.4%

Information and Education: During this hospital stay, how often did nurses explain things in a way that you could understand?

Sacred Heart Medical Center: 70.1%
NRC Average: 71.5%

Patient Safety: Before giving you any new medicine, how often did hospital staff tell you what the medicine was for?

Sacred Heart Medical Center: 70.1%
NRC Average: 74%

Physical Comfort: During this hospital stay, how often did the hospital staff do everything they could to help you with your pain?

Sacred Heart Medical Center: 76.4%
NRC Average: 76.4%

Continuity and Transition: During your hospital stay did doctors, nurses, or other hospital staff talk to you about whether you would have the help you needed when you left the hospital?

Sacred Heart Medical Center: 85.7%
NRC Average: 80.9%

During your hospital stay, did you get information in writing about what symptoms or health problems to look out for after you left the hospital?

Sacred Heart Medical Center: 93.3%
NRC Average: 86.3%
**Stroke Center Program Overview**

*Time lost is brain lost*

Our Advanced Primary Stoke Center program provides multidisciplinary subspecialty care in the diagnosis and treatment of stroke – representing one of the biggest programs in the state of Oregon. There is no stroke treatment service available in Portland that we don’t offer here.

We treated 630 stroke cases in calendar year 2011, more than any other hospital in the state, including Oregon Health & Science University (612) and the two largest Legacy Hospitals in Portland, combined: Legacy Meridian (243) and Legacy Emmanuel (244). Our annual stroke volumes were higher than Providence Portland and Kaiser Sunnyside, as well. Our numbers for 2012 are even higher, with 669 stroke cases treated at Sacred Heart.

Clinical studies have consistently demonstrated that medical centers treating a higher volume of stroke patients generally have better outcomes.

**Stroke Center Volumes** by calendar year

For both Sacred Heart Medical Center campuses

- **Subarachnoid Hemorrhage**
- **Intracerebral Hemorrhage / AVM**
- **Ischemic**

We treated 669 stroke cases in calendar year 2012, more than any other hospital in the state.
Nationally Recognized Quality

Sacred Heart Medical Center received the 2012 American Heart Association/American Stroke Association’s Get With The Guidelines®-Stroke Gold Plus Quality Achievement Award. To receive the award, Sacred Heart achieved 85 percent or higher adherence to all Get With The Guidelines Stroke Quality Achievement indicators for two or more consecutive 12-month intervals and achieved a 75 percent or higher compliance with six of 10 Get With The Guidelines Stroke Quality Measures, which are reporting initiatives to measure quality of care.

These measures include aggressive use of medications such as tPA, antithrombotics, anticoagulation therapy, VTE prophylaxis, cholesterol reducing drugs and smoking cessation, all aimed at reducing death and disability and improving the lives of stroke patients.

Sacred Heart has the only Get With The Guidelines Gold-Plus recognized stroke program in the region.

Median Stroke Patient Length of Stay
Measured in Days

<table>
<thead>
<tr>
<th>Year</th>
<th>Ischemic</th>
<th>Intracerebral Hemorrhage/AVM</th>
<th>Subarachnoid Hemorrhage</th>
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<tbody>
<tr>
<td>2010</td>
<td>3.4</td>
<td>5.6</td>
<td>4.6</td>
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<tr>
<td>2011</td>
<td>3.6</td>
<td>5.7</td>
<td>4.5</td>
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<tr>
<td>2012</td>
<td>3.7</td>
<td>5.7</td>
<td>10.9</td>
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<tr>
<td>2010</td>
<td>4.5</td>
<td>9.7</td>
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<td>2011</td>
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<td>2012</td>
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</table>
Joint Commission Core Measurement Data for Stroke

**VTE Prophylaxis:** Percent of stroke patients who received VTE prophylaxis or have documentation why no VTE prophylaxis was given.

<table>
<thead>
<tr>
<th>Year</th>
<th>PeaceHealth Sacred Heart Medical Center</th>
<th>National Benchmark</th>
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<tbody>
<tr>
<td>2010</td>
<td>91.4%</td>
<td>88.4%</td>
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<tr>
<td>2011</td>
<td>93.3%</td>
<td>91.7%</td>
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<tr>
<td>2012</td>
<td>96.4%</td>
<td>94.2%</td>
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**Antithrombotics at Discharge:** Percent of ischemic stroke patients prescribed antithrombotic therapy at hospital discharge.

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<td>99.7%</td>
<td>98.9%</td>
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<tr>
<td>2012</td>
<td>99.7%</td>
<td>99.1%</td>
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</table>

**Anticoagulation for AFib/AFlutter:** Percent of ischemic stroke patients with atrial fibrillation/flutter who are prescribed anticoagulation therapy at hospital discharge.

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<thead>
<tr>
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<th>National Benchmark</th>
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<tbody>
<tr>
<td>2010</td>
<td>100%</td>
<td>95.6%</td>
</tr>
<tr>
<td>2011</td>
<td>100%</td>
<td>95.9%</td>
</tr>
<tr>
<td>2012</td>
<td>95.9%</td>
<td>95.8%</td>
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</tbody>
</table>

**IV tPA Treatment:** Percent of acute ischemic stroke patients who arrive at hospital within two hours of time last known well and for whom IV tPA was initiated within three hours of time last known well.

<table>
<thead>
<tr>
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<tbody>
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<td>2010</td>
<td>83.3%</td>
<td>73.3%</td>
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<tr>
<td>2011</td>
<td>90.3%</td>
<td>77.3%</td>
</tr>
<tr>
<td>2012</td>
<td>85.3%</td>
<td>83.2%</td>
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</table>

**Antithrombotic Therapy:** Percent of ischemic stroke patients administered antithrombotic therapy by the end of hospital day two.

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<thead>
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<td>95.5%</td>
</tr>
<tr>
<td>2012</td>
<td>97.6%</td>
<td>97.9%</td>
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**Statins at Discharge:** Percent of ischemic stroke patients with LDL>=100mg/dL, or LDL not measured, or, who were on a lipid-lowering medication prior to hospital arrival are prescribed statin medication at hospital discharge.

<table>
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<tr>
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<td>93.6%</td>
</tr>
<tr>
<td>2012</td>
<td>97.5%</td>
<td>95.2%</td>
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</table>

**Stroke Education:** Percent of stroke patients or their caregivers who were given educational materials during the hospital stay addressing activation of emergency medical system, need for follow up after discharge, medications prescribed at discharge, risk factors for stroke, and warning signs and symptoms of stroke.

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<tr>
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<td>92.1%</td>
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</tr>
<tr>
<td>2012</td>
<td>90.8%</td>
<td>92.4%</td>
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</table>

**Rehabilitation Considered:** Percent of stroke patients who were assessed for rehabilitation services.

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</tr>
<tr>
<td>2012</td>
<td>98.0%</td>
<td>98.2%</td>
</tr>
</tbody>
</table>
**Stroke Patient Arrival Patterns**

*at Sacred Heart Medical Center at RiverBend*

**Arrivals to ED by Day of Week (FY 2012)**
Includes only patients admitted via emergency department

**Arrivals to ED by Time of Day (FY 2012)**
Includes only patients admitted via emergency department

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**Percent of Discharged Patients Evaluated by PT, OT, SLP or Rehab**

- **Physical Therapy**
- **Occupational Therapy**
- **Speech Therapy**
- **Rehabilitation Admissions Consult***

*Measurement of Rehabilitation Admissions Consults began in Q1 2012.*

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www.peacehealth.org/shmc
**Stroke Case Study**

**Patient:** A 72-year-old man collapsed at home on Nov. 11, 2011. His wife found him nonverbal and slumped at his desk. Prior to incident, patient had expressed consistent strong desire for non-aggressive therapy at end of life. Wife called 911, and EMS transported patient to Sacred Heart Medical Center at RiverBend.

**Diagnosis:** Neurologist Michael Balm, MD, assessed patient, who had an NIH Stroke Scale score of 20 (moderate/severe range). A CT scan showed acute left M1 cerebral infarction (Image A). Patient’s wife insisted that only standard therapy be applied. She consented to intravenous tissue plasminogen activator (tPA), which was administered in the emergency department.

**Treatment:** After much discussion, patient’s wife consented to intracranial thrombectomy. Endovascular neurosurgeon Erik Hauck, MD, PhD, removed the clot using suction aspiration, resulting in prompt recanalization of the artery (Image B). While still on the table, patient began using words sporadically and moving his right side spontaneously. All devices were removed and the patient was transferred to the ICU for monitoring. The procedure took just over an hour.

**Outcome:** A week later, the patient visited his primary care physician, who noted a remarkable resolution of symptoms and no obvious deficits. The patient’s handshake was firm; he walked without a limp. His neurological exam was intact. He has since been diagnosed with atrial flutter, and ablation was scheduled. “Everyone who has been caring for me has been top notch in every way,” the patient said. “Were it not for my wife’s fast action, and the EMTs and emergency room staff and Dr. Hauck, my story would not be the success story it is today.”

”Everyone who has been caring for me has been top notch in every way,” the patient said.
**Stroke Alert System**

Our Stroke Alert program was developed in collaboration with physicians and emergency medical services agencies. The program enables first responders to transport and treat stroke victims, and minimize the effects of stroke. And strong communication with EMS helps ensure that medical personnel are informed when a stroke patient is enroute to Sacred Heart.

When an acute stroke patient arrives at the emergency department, he or she is triaged into our stroke protocol. The patient is seen by emergency nurses and physicians using CT imaging and lab services to confirm stroke diagnosis and the NIH Stroke Scale to measure severity.

The on-call neurologist and emergency physician evaluate the results of testing and discuss treatment options with the patient and family, including administration of tPA. When certain criteria are met, advanced stroke interventions such as catheter-based blood clot retrieval and arterial stenting are available.

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**Target:STROKE Honor Roll**

- PeaceHealth Sacred Heart Medical Center achieved the American Heart Association/American Stroke Association’s Target:STROKE goal of door-to-needle time of 60 minutes or less for at least 50 percent of eligible patients for the fourth quarter of 2012.

- Of 113 ischemic stroke patients during the quarter, 11 were treated with IV-tPA, and 50 percent of those were treated within 60 minutes.

- The median door-to-needle time for all acute ischemic stroke patients treated with IV-tPA at Sacred Heart was 62 minutes during the quarter.

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**Telestroke Program**

*Telestroke saves time, time saves brain*

Our telestroke program links emergency departments with Sacred Heart's neurology call panel and Advanced Primary Stroke Center expertise 24 hours a day, seven days a week. By harnessing the technology necessary to increase patient access to vital medical services, telemedicine programs are gradually transforming the way health care is delivered.

Scan this code with your SmartPhone for a video telestroke demonstration.
Telestroke Patient Story: Carlton and Arlene Schaffer

Now patients in remote or underserved areas can access quality health care, regardless of location. This capability is especially important in case of stroke, when every minute counts. Stroke survivor Carlton Schaffer of Florence and his wife, Arlene, learned the value of telestroke first hand. Arlene noticed that her husband’s words were slurred and he wasn’t his usual self. She asked him to repeat himself, and then noticed that one side of his mouth was drooping. She immediately recognized the symptoms of a stroke and called 911.

Paramedics took Carlton to Peace Harbor Hospital in Florence. Within five minutes of arrival, Carlton was in a CT scanner, which revealed an occluded left middle cerebral artery, indicated in Image A by the yellow arrow. Soon after, Carlton’s emergency department team wheeled in a flat screen monitor and introduced Carlton to his neurologist, Elaine Skalabrin, MD, at Sacred Heart Medical Center in Springfield.

“I call her my movie star doctor,” Carlton says, referring to the fact that he first met Dr. Skalabrin on a video screen.

Using video technology and a direct link between the two hospitals, Dr. Skalabrin started a telemedicine consult. As Carlton and Arlene sat in the emergency department at Peace Harbor Hospital, Dr. Skalabrin was on screen, talking to both of them, evaluating Carlton’s condition and working with the Florence team to determine the best option to treat his stroke.

Carlton received the clot-busting drug, tPA, to dissolve the clot in his brain and was transported by ambulance to Sacred Heart at RiverBend for additional treatment. Angiogram Image B clearly indicates complete occlusion of the left middle cerebral artery. The Sacred Heart team, including interventional radiologist Dariusz Zawierucha, MD, used the Penumbra system to suction the clot out of the brain and restore normal blood flow. Clot removal was successful, as illustrated in Image C (arrow indicates location of former occlusion).

As a result, Carlton’s stroke was much smaller than it would have been without the treatment.

After the stroke, Carlton underwent rehabilitation at the Oregon Rehabilitation Center at Sacred Heart. Today, he continues to improve, and is able to walk and speak normally, and recently took a cruise with his wife.

“Every moment is precious,” Arlene says. “We have such a full life. We make sure that we do things now instead of putting them off until tomorrow.”
Endovascular Neurosurgery

The future of neurosurgery

Our advanced endovascular neurosurgery program offers the latest minimally invasive, catheter-based approaches to diagnosing and treating complex cerebrovascular disorders, providing more options for patients with complex brain disorders.

Endovascular neurosurgeon Erik Hauck, MD, PhD, is the only specialist of his kind in the region. Between March 2011 and March 2012, he performed a total of 532 procedures, 297 of which were catheter-based, endovascular procedures, including diagnostic angiography and treatment of cerebral aneurysms, arteriovenous malformations and stroke.

Endovascular Procedures

Aneurysm Coiling
A thin platinum wire is threaded through a catheter into the aneurysm. The flexible wire forms coils that conform to the aneurysm shape, blocking blood flow and preventing rupture.

Endovascular Embolization
A catheter is used to introduce glue, an embolization device or other embolizing agent to occlude the malformation and correct abnormal pattern of blood flow.

Erik Hauck, MD, PhD, performs a diagnostic angiogram in Sacred Heart Medical Center’s biplane suite.
**Endovascular Innovation**

Dr. Hauck was the first surgeon in Oregon and among only a handful on the West Coast, to use the Pipeline Embolization Device (PED) to treat a large-necked cerebral aneurysm. When deployed across the opening of an aneurysm, the flexible stent corrects blood flow, allowing the aneurysm to clot and reducing the risk of rupture.

---

**Pipeline Embolization Device**

**Subject:** A 52-year-old woman with a complicated medical history.

**Diagnosis:** Woman had suffered a carotid cavernous fistula, which caused a cerebellar hemorrhagic infarction with severe brain stem compression, a left basal ganglia hemorrhage for which she had a suboccipital craniectomy for evaluation of hematoma, DuraGen duraplasty and C1 laminectomy. Patient also had coiling of her carotid cavernous fistula. She had issues with hydrocephalus for which a programmable ventriculoperitoneal shunt was placed on the right side. She also had a G tube and J tube. Patient had an underlying aneurysm, which was the likely cause of the carotid cavernous fistula.

**Treatment:** The patient was taken to the angio suite on July 28, 2011, and placed under conscious sedation. Groin access was obtained through a single puncture of the right common femoral artery. Dr. Erik Hauck advanced a catheter to the left internal carotid artery. A PED was placed across the neck of the aneurysm, which was located in the cavernous segment of the internal carotid artery. The neck measured 7-8 mm at its widest location. All catheters were withdrawn and the wound was closed with Mynx Vascular closure Device.

**Outcome:** There were no procedure complications. Follow-up revealed stasis of the aneurysm. The patient was released to a rehabilitation facility the next day.

---

**Biplane Intervention Suite**

Sacred Heart’s biplane imaging suite further enhances our ability to care for patients with stroke, vascular disease, aneurysms and other complex neurological conditions. The 3D visualization cuts operating time, which means less radiation, fewer contrast dye injections, and lower likelihood of complications for neuro patients.
Arlen Sage of Springfield was back at work as a truck driver slightly more than a month after he suffered a potentially fatal brain aneurysm.

In fact, Sage, 56, was walking and talking the day after he underwent minimally invasive endovascular brain surgery at Sacred Heart to prevent his aneurysm from rupturing and potentially ending his life.

“All I can tell you is I’m a very lucky man,” Sage said.

Sage was working in his shop one afternoon in December 2010 when he felt a “pop” in his neck, followed by the worst headache of his life. He assumed it was a migraine and went inside to lie down. “When I woke up in the morning, I couldn’t get my balance. The pain in my neck got more and more intense,” he said. “My body was shaking, the pain was so severe.”

Sage’s wife, Cheryl, researched his symptoms online and suspected an aneurysm. She took him to his primary care physician, who referred the couple to McKenzie-Willamette Medical Center for a CT scan. The scan showed possible bleeding in his brain, and he was taken by ambulance to Sacred Heart for treatment.

Endovascular neurosurgeon Erik F. Hauck, MD, PhD, diagnosed Sage with a brain aneurysm on his right carotid artery. Sage’s aneurysm was leaking blood into his brain. Within 30 minutes, Sage was in Sacred Heart’s state-of-the-art neuro biplane imaging suite. Dr. Hauck used the 3D imaging technology to direct a catheter and wire from the femoral artery to the mouth of the 6.6 mm aneurysm. He packed the bulge with platinum coils to prevent additional leakage and potential rupture. The procedure was successful, with no complications.

Sage was discharged from the hospital just eight days after the procedure. He described the experience as painless and simple. Dr. Hauck worked closely with Sage’s family to explain the procedure and keep them informed of his progress. “I’m thankful that RiverBend has the capability and facility to handle this kind of trauma because I don’t think I would have made it to Portland,” Sage said. “I’m just glad they’ve given me a second lease on life to be able to fulfill my destiny.”
Interventional Neuroradiology

Interventional radiologists provide inpatient and outpatient consultative and therapeutic services to neurology and neurosurgery patients at PeaceHealth Sacred Heart Medical Center. Conditions evaluated and treated include ischemic and hemorrhagic stroke, extracranial carotid and intracranial occlusive disease, cerebral aneurysms, arteriovenous malformations and fistula, head and neck vascular malformations, and spine and spinal cord vascular malformations. In addition, adjuvant treatments are provided to assist neurosurgeons in the treatment of brain and spine tumors.

A variety of procedures to manage spinal and sacral pain are also performed, including vertebral augmentation (vertebroplasty) and sacralplasties for symptomatic pathologic and osteoporotic compression fractures, and therapeutic injections for relief of radiculopathy.

The technically demanding nature of this minimally invasive specialty requires appropriate resources for an optimal procedural environment. Sacred Heart has a biplane neurointerventional suite with modern 3D vascular imaging and on-the-fly CT imaging.

Neuroimaging

The use of neuroimaging, particularly CT perfusion, in the assessment of stroke and other cerebrovascular disease continues to be a major focus at Sacred Heart. Accurate imaging of the brain and spine is central to informed discussions in neurologic treatment, whether during preliminary diagnosis and treatment planning, or assessment of a patient’s response to ongoing therapy. Available imaging technologies include:

- Magnetic Resonance Imaging (MRI)
- Magnetic Resonance Angiography (MRA)
- Computed Tomography (CT) perfusion, CT Angiography (CTA)
- Catheter angiography
- Ultrasound
- Limited Fluoroscopy
- X-Ray

Endovascular Procedure Volumes by Calendar Year

![Endovascular Procedure Volumes](chart.png)
Craniotomy and Craniectomy

Neurosurgeons at Sacred Heart have been performing computer-assisted, image-guided brain surgery since 1998 for advanced treatment of brain tumors, epilepsy and other conditions. Our surgeons have successfully treated thousands of patients since that time, using a team approach that leverages the skills and expertise of neurologists, radiologists, anesthesiologists and other specialists.

In 2012, neurosurgeons performed a total of 249 brain surgeries at Sacred Heart. Our team offers a broad spectrum of procedures to treat an array of conditions, including:

- Aneurysm
- Intracerebral hemorrhage
- Epidural and subdural hematoma
- Vascular malformation
- Intrinsic brain tumor
- Skull-based tumor with a special focus on meningiomas and acoustic neuromas
- Intraventricular tumor
- Facial pain and spasm disorders
- Hydrocephalus
- Chiari malformation
- Syringomyelia

Craniotomy/Craniectomy
Patient Volumes
by Calendar Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>209</td>
</tr>
<tr>
<td>2009</td>
<td>205</td>
</tr>
<tr>
<td>2010</td>
<td>166</td>
</tr>
<tr>
<td>2011</td>
<td>220</td>
</tr>
<tr>
<td>2012</td>
<td>249</td>
</tr>
</tbody>
</table>
Gamma Knife

Brain surgery without incision

As one of only two Gamma Knife facilities in the state, we have the ability to provide gold-standard, noninvasive treatment for tumors of the brain and skull base, pain conditions such as trigeminal neuralgia, and deep-seated tumors or arteriovenous malformations.

Using the Gamma Knife, our team of neurosurgeons, radiation oncologists and medical physicists can treat small or inaccessible tumors without making a single incision. The Gamma Knife delivers a precise amount of radiation to a target in the brain, often eliminating the need for multiple sessions. The treatment is designed to generate as large a therapeutic effect as possible within the target while minimizing radiation outside the target. Detailed diagnostic images of the patient's head form the basis for treatment planning. Images are obtained using Magnetic Resonance Imaging (MRI), Computerized Tomography (CT) and angiography.

As a result, Gamma Knife procedures have lower complication rates than open surgery, and treatment is painless and shorter.

Gamma Knife Patient Satisfaction Scores (Percentage)

Question: How satisfied were you with:

<table>
<thead>
<tr>
<th>Category</th>
<th>2011</th>
<th>2012</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall wait time from application to surgery</td>
<td></td>
<td></td>
<td></td>
<td>96.9%</td>
</tr>
<tr>
<td>Program staff courtesy and respect</td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Staff willingness to discuss/answer questions</td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Staff genuine interest in you as a patient</td>
<td></td>
<td></td>
<td></td>
<td>99.2%</td>
</tr>
<tr>
<td>Staff quickness in responding to your calls</td>
<td></td>
<td></td>
<td></td>
<td>97.5%</td>
</tr>
<tr>
<td>Staff attention to your personal needs</td>
<td></td>
<td></td>
<td></td>
<td>98.5%</td>
</tr>
<tr>
<td>Staff ability to explain clearly the program process</td>
<td></td>
<td></td>
<td></td>
<td>99.2%</td>
</tr>
<tr>
<td>Staff coordination of your care within the program</td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
<tr>
<td>Staff ability to support your emotional needs</td>
<td></td>
<td></td>
<td></td>
<td>97.5%</td>
</tr>
<tr>
<td>Staff respectfulness of your need for privacy</td>
<td></td>
<td></td>
<td></td>
<td>97.5%</td>
</tr>
</tbody>
</table>
The spine surgery program at Oregon Neuroscience Institute provides high-quality, comprehensive services to patients whose spinal disorders affect their health and productivity and require surgical intervention.

The clinicians who practice here offer a broad spectrum of therapeutic options, ranging from minimally invasive and multi-level spinal fusion and artificial disk surgery, to percutaneous vertebroplasty, to open complex spinal surgery with instrumentation.

We were named a 2011 Blue Cross/Blue Shield Blue Distinction Center for Spine Surgery. To achieve that honor, we had to demonstrate our commitment to quality care. Our program met objective measures for clinical quality developed in collaboration with expert clinicians and leading medical organizations.

Clinical data from hospitals and registries indicate that Blue Distinction Centers demonstrate better, more consistent overall outcomes with fewer post-procedure complications and lower mortality rates. To be designated a Blue Distinction Center for Spine Surgery, the following types of criteria are evaluated:

- Established acute care inpatient facility, including intensive care, emergency care and a full range of patient support services with full accreditation by a CMS-deemed national accreditation organization
- Experience and training of program surgeons, including case volumes
- Quality management programs including surgical checklists as well as tracking and evaluation of clinical outcomes and process of care
- Multi-disciplinary clinical pathways and teams to coordinate and streamline care, including transitions of care
- Shared decision making and preoperative patient education

Andrew Kokkino, MD, (center) and Charles Stanton, MD, (second from left) perform spinal lumbar fusion on a patient at Sacred Heart.
Spinal Procedure Data
Discharges between November 2011 through October 2012

**Total Surgical Cases**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Level Primary Cervical Fusion</td>
<td>285</td>
</tr>
<tr>
<td>1-2 Primary Decompression for Lumbar Spinal Stenosis</td>
<td>191</td>
</tr>
<tr>
<td>1 Level Primary Discectomy</td>
<td>441</td>
</tr>
<tr>
<td>1-2 Primary Lumbar Fusion with or without Decompression</td>
<td>199</td>
</tr>
<tr>
<td>1-2 Level Revision Lumbar-Thoracic Fusion</td>
<td>9</td>
</tr>
</tbody>
</table>

**Average Length of Stay (Days)**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Level Primary Cervical Fusion</td>
<td>2.7</td>
</tr>
<tr>
<td>1-2 Primary Decompression for Lumbar Spinal Stenosis</td>
<td>2.8</td>
</tr>
<tr>
<td>1 Level Primary Discectomy</td>
<td>2</td>
</tr>
<tr>
<td>1-2 Primary Lumbar Fusion with or without Decompression</td>
<td>3.9</td>
</tr>
<tr>
<td>1-2 Level Revision Lumbar-Thoracic Fusion</td>
<td>3.4</td>
</tr>
</tbody>
</table>

*(Goal: ≤ 3.5 days)*
*(Goal: ≤ 6 days)*

**Spine Surgery Volume Trends**
Our spine surgery volumes have grown steadily in recent years.
Neurology

Neurology patients have access to the region’s leading experts in comprehensive and thorough neurological care.

The neurologists we work with have experience in a variety of areas, including child neurology, epilepsy, movement disorders, neuromuscular disease and neuro-ophthalmology. Other specialties include Parkinson’s Disease, multiple sclerosis, stroke, headaches and other complex conditions that are difficult to diagnose.

The neurology specialists practicing at Sacred Heart diagnose and treat adults and children both in the hospital and in their offices. Our physicians are supported by experienced nursing and therapy teams that focus on improving treatment and optimizing care plans for every patient.

Patients treated at Sacred Heart also have access to collaborative specialty clinics focused on specific conditions, including:

- Transient Ischemic Attack (TIA)
- Parkinson’s Disease
- Muscular Dystrophy

Many of these specialists are also actively engaged in clinical research to contribute to the depth of knowledge in this complex field.

TIA Clinic Helps Prevent Stroke

After a first transient ischemic attack (TIA), the two-day stroke risk can be as high as 8 percent, with a 90-day stroke risk of 10 to 17 percent, making rapid, appropriate assessment by a neurologist critical to patient outcomes. The TIA Clinic at Oregon Neurology Associates, operated in cooperation with PeaceHealth Medical Group and Sacred Heart, addresses the need for timely outpatient evaluation with a two-pronged goal: to provide high-quality, rapid care to TIA patients to prevent stroke and reduce unnecessary hospital admissions. The clinic can be reached at 541-868-ATIA.

Neurodiagnostic Services

Sacred Heart offers the full spectrum of neurodiagnostic studies to facilitate early diagnosis and intervention for complex neurological conditions, including seizure and nerve disorders. Services include:

- Awake and sleep electroencephalography (EEG)
- Long-term video monitoring with EEG
- Ambulatory and bedside EEG
- Evoked potential (EP) testing
- Intraoperative neuromonitoring
- Electrodiagnostic exams, including nerve conduction studies and electromyography (EMG)
Neurohospitalist Program

Neurohospitalist Elaine Skalabrin, MD, works with a team of hospitalists and specialty physicians to facilitate the expansion of acute care management of high-risk neurology patients, including stroke patients. The team provides evaluations to patients in all sections of the hospital and ensures optimal management of emergencies, provides initial evaluations of inpatients and direct, consistent follow-up care.

Dr. Skalabrin trained as both a neurohospitalist and neurointensivist. She is supported by Patty Brisco, ANP, as well as by our neurology and neurosurgery call panels. Consultations range from urgent assessment and treatment of stroke patients in the Emergency Department to referral for evaluation and management of neuromuscular, movement and demyelinating disorders.

The neurohospitalist program at Sacred Heart has raised the bar for neurologic care, with an emphasis on responsiveness, collaboration and a patient-centered approach. Data have shown that care provided by clinicians specializing in neurologic injury in dedicated neuro care units improves patient functional outcome and reduces hospital mortality, length of stay and resource utilization.

Collaboration

The neurohospitalist works closely with specialty physicians and Sacred Heart’s group of general hospitalists.

Hospitalists admit almost all stroke patients to the hospital and play a vital role in providing stroke patient care. While Dr. Skalabrin and her team provide acute neurological care, hospitalists and other specialists attend to the other medical needs of stroke patients.
Oregon Rehabilitation Center

The Oregon Rehabilitation Center (ORC) is an 18-bed unit staffed by rehabilitation nursing staff and located at the University District campus of PeaceHealth Sacred Heart Medical Center in Eugene. Established in 1976, the ORC serves patients who have experienced stroke, spinal cord injury, brain injury, amputation and other general rehabilitation needs.

A team of rehabilitation specialists works with patients and families to design individualized treatment plans. Experts include physicians board-certified in physical medicine and rehabilitation; rehabilitation nurses; occupational, physical and speech therapists; neuropsychologists; social work/care management; and dietary, respiratory and spiritual care. The team holds twice-weekly multidisciplinary care conferences and daily rounding to create and update patient care plans. Staff work with patients and families to maximize functional independence and plan for a successful return to home and community.

CARF Accreditation: The Highest Level of Patient Care

The Oregon Rehabilitation Center is accredited by CARF for Inpatient Rehabilitation Programs for adults, adolescents and children. The accreditation represents the highest level that can be awarded to an organization, and demonstrates our substantial conformance to the standards established by CARF. Accreditation is a rigorous peer review process, with on-site visits from a team or surveyors verifying that programs and services are of the highest quality, measurable and accountable.

Inpatient Rehabilitation Patient Satisfaction FY 2012

Overall, how would you rate the care you received?

<table>
<thead>
<tr>
<th></th>
<th>Sacred Heart</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>96.6%</td>
<td>95.8%</td>
</tr>
</tbody>
</table>

Source: NRC Picker

Outpatient Rehabilitation Services

- Multidisciplinary neuro specialty team, including physical, occupational and speech therapists, as well as neuropsychology services
- Physical therapy team including four physical therapists certified in vestibular rehabilitation, neurologic clinical specialists, wheelchair and seating specialists, and certified LSVT BIG™ and LSVT LOUD™ therapists for Parkinson’s Disease
- Augmentative communication and assistive technology services
- Swallowing assessments and treatment including Modified Barium Swallows (MBS) and Vital Stim
**Persons Served**
by Diagnosis, Gender, and Fiscal Year

FY 2011

![Pie chart showing distribution of persons served by diagnosis and gender in FY 2011.]

- Stroke: 38%
- Brain Injury: 15%
- Spinal Cord Injury: 22%
- Amputees: 3%
- Total Joint Replacement: 7%
- Neurological/Other: 15%

**FY 2012**

![Pie chart showing distribution of persons served by diagnosis and gender in FY 2012.]

- Stroke: 39%
- Brain Injury: 19%
- Spinal Cord Injury: 21%
- Amputees: 1%
- Total Joint Replacement: 8%
- Neurological/Other: 12%

**Average Age and Age Range**
by Diagnosis and Fiscal Year

**Average Length of Stay (Days)**
by Diagnosis and Fiscal Year

**Discharged to:**
- Home Setting
- Long Term Care
- Sub-acute & Rehab
- Acute

PeaceHealth Sacred Heart Medical Center
A stroke stopped parks planning consultant David Reed in his tracks in November 2011. But not for long.

David, 71, and his wife, Kathy, of Springfield, Oregon, were on a weekend getaway in Newport, Oregon. The couple had eaten at a restaurant, and on the way back to the car, David dropped his keys. He bent down to grab them, and when he stood up, “he looked confused to me,” Kathy said. “My mother had just had a stroke in April, so I knew the symptoms,” the elementary school teacher said. “He kept trying to talk to me, but he wasn’t making any sense.”

Someone called 911. A medic approached David, who told her his name and birth year, 1941. A few moments later, another medic spoke to David. His speech had become garbled. “That’s how fast it was happening,” Kathy said.

The ambulance took David to the hospital in Newport, where he was diagnosed with ischemic stroke of the left middle cerebral artery. Kathy insisted he be taken to Sacred Heart Medical Center at RiverBend. “I knew that was the best care he could get,” she said.

Sacred Heart personnel had a bed ready for David when the ambulance arrived. The window of time for administering the clot-busting drug tPA had closed. All they could do was wait.

“The first night was really hard,” Kathy said. “He was so tired, so frightened.”

David’s condition stabilized over the next several days in the hospital, and he was transferred to a skilled care facility. Once he built up his tolerance for therapy, he was transferred to inpatient rehabilitation at the Oregon Rehabilitation Center (ORC). “He couldn’t walk, he couldn’t talk, and he had difficulty with cognition,” Kathy said. Next, David spent the three weeks before Christmas that year in ORC’s inpatient program at Sacred Heart, where he underwent three hours of physical, occupational and speech therapy each day.

“They were really kind and really helpful,” David said, praising the work of his physical therapist in particular. He was home by Christmas, but his therapy didn’t end. He continued to work with the experts at Outpatient Rehab through June 2012, when he was formally discharged from all therapy.

Now retired, David leads an active life. He works out at the gym at Sacred Heart’s Oregon Heart & Vascular Institute four times a week, walking on the treadmill or track or using the stepping machine. He practices Tai Chi twice a week as part of an Oregon Research Institute study into the effects of exercise on stroke survivors. He participates in a book club for stroke survivors at the University of Oregon. And he recently wrote an editorial supporting a local parks bond.

The couple credits the doctors, therapists and staff of the Oregon Rehabilitation Center with David’s amazing recovery. “I can’t tout it enough,” Kathy said. “He just had the most wonderful care. It has made the biggest difference in our lives.”

Learn more about the Oregon Rehabilitation Center at www.peacehealth.org/orc.
Neuro Trauma

Care for our most injured patients

As one of four certified Level II Trauma Centers in the state, PeaceHealth Sacred Heart Medical Center offers the largest, most comprehensive trauma program in the region, with the structure and personnel necessary to care for trauma patients from point of injury to discharge.

We treat the majority of the region’s traumatic brain- and spine-injured cases. The hospital has a board-certified neurosurgeon on site or on call 24 hours a day, seven days a week, prepared to respond within 30 minutes of notification of a neuro trauma patient. Our neurosurgeons have access to radiology imaging from their homes, so they can review images before arriving at the hospital. This allows them to arrive ready to treat our most injured patients.

In 2011, physicians at Sacred Heart treated 1,009 trauma patients suffering from life-threatening injuries or illnesses. In 2012, that number was 1,062. Many of the trauma patients arriving at Sacred Heart have some form of head injury, ranging from mild concussion to acute traumatic brain injury.

A broad panel of neurologists, neurosurgeons and radiologists contribute their skill and expertise to trauma patient care, and our endovascular neurosurgeon is available to provide the latest minimally invasive techniques to diagnose and treat complex cerebrovascular disorders.

Additional Trauma Program Features

- Trauma surgeons respond immediately when called, often arriving at the hospital before the patient
- Reliable, timely access to specialists from all areas of medicine
- Close working relationships with ground and air emergency medical services agencies
- Dedicated trauma rooms in the emergency department
- Weekly trauma rounds, monthly case conferences and oversight from a multidisciplinary trauma committee
- Laboratory services, advanced imaging capabilities and resuscitation life support equipment
- A trauma registry to record and analyze data on all trauma cases for process improvement

**Trauma Registry Volumes**

<table>
<thead>
<tr>
<th></th>
<th>All Trauma Cases</th>
<th>All TBI/Head Injury</th>
<th>Severe TBI*</th>
<th>Spinal Cord Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2010</td>
<td>831</td>
<td>336</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>FY 2011</td>
<td>1009</td>
<td>400</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>FY 2012</td>
<td>1062</td>
<td>485</td>
<td>38</td>
<td>29</td>
</tr>
</tbody>
</table>

*Severe Traumatic Brain Injury (TBI) defined as Glasgow Coma Score less than 9.
Sleep Disorders Center

The Sleep Disorders Center at Sacred Heart at RiverBend is a state-of-the-art facility, accredited by the American Academy of Sleep Medicine. To receive accreditation, a sleep clinic must meet or exceed all standards for professional quality sleep medicine care as designated by AASM. The accreditation process includes detailed inspection of a center’s facility and staff, including an evaluation of testing procedures and policies, patient safety and follow up, and physician and staff training. The facility’s goals must be clearly stated and include plans for positively affecting the quality of medical care in the community it serves.

The center provides comprehensive diagnostic services for patients with suspected sleep disorders, including polysomnograms and home portable testing. Our panel of sleep experts provides treatment for the full range of disorders, including but not limited to:

- Sleep disordered breathing
- Insomnia
- Narcolepsy
- Restless leg syndrome

Our team includes sleep medicine physicians from PeaceHealth Medical Group and Oregon Lung Specialists LLC.

Community Outreach

The Sleep Disorders Center operates a support group called AWAKE, or Alert Well And Keeping Energetic. Initially started for sleep apnea patients, the group has expanded to include all sleep disorders. In sessions led by sleep experts, patients ask questions, confer with one another and find support.

Hypoventilation protocol to identify sleep apnea patients prior to surgery

All patients scheduled for surgery at Sacred Heart are screened for obstructive sleep apnea using the STOP Bang screening tool, an eight-question assessment. The protocol targets the previously untested surgical population, with the goal of addressing the increased risk for complications in surgical patients with apnea. Patients who answer three or more questions affirmatively may be referred to a sleep physician for consultation and possibly a sleep apnea study.
Patient Care

Our neurology nursing staff offers healing care for neurologic patients in a 36-bed unit with telemetry, EEG and video monitoring capability. These valuable technologies provide the constant monitoring necessary to achieve the best possible outcomes for the spectrum of neurological conditions.

Critical Care
The Intensive Care Unit (ICU) at Sacred Heart provides advanced care for patients being treated for a broad range of conditions. The ICU is staffed by a senior and experienced nursing staff and has 24-hour coverage by a physician team. Registered nurses in our ICU are required to obtain certification in Advanced Cardiac Life Support and are encouraged to pursue ongoing training in other areas.

Neurosurgical Operating Rooms
Our dedicated neurosurgical operating rooms are supported by a specialty team of perioperative and operative staff members, including neuro RNs and neuro surgical technicians. The team is highly experienced in the care of patients during complex neurosurgical procedures.

These ORs are equipped with advanced operating microscopes and computerized navigation systems. Intraoperative monitoring of cranial nerves and spinal cord function is routinely performed to protect patients from neurological injury.

Patients in our 36-bed neuro unit receive quality care from our dedicated staff.

PeaceHealth Sacred Heart Medical Center
Oregon Neuroscience Institute Highlighted Research

The following is a partial listing of research and clinical trials by neurologists and neurosurgeons with privileges at PeaceHealth Sacred Heart Medical Center.

HDE-OP-1 Putty (Olympus Biotech Corporation). Summary: The OP-1 Putty is indicated for use as an alternative to autograft in compromised patients requiring revision posterolateral (intertransverse) lumbar spinal fusion, for which autologous bone and bone marrow harvest are not feasible or are not expected to promote fusion. Investigators: Scott Kitchel, MD; Barry Landau, MD.

Albumin in Acute Stroke (ALIAS) Trial: A phase III Randomized Multicenter Clinical Trial of High-Dose Human Albumin Therapy for Neuroprotection in Acute Ischemic Stroke (National Institute of Neurological Disorders and Stroke). Summary: The purpose of the study is to ascertain whether high-dose human albumin therapy confers neuroprotection in acute ischemic stroke over and above the best standard of care. Investigators: Raymond Englander, MD; Elaine Skalabrin, MD; Angela Christianson; Ilka Pearce; Paul Roche.

A Prospective, Multi-Center, Randomized, Controlled Clinical Trial Evaluating the Safety and Effectiveness of NuBac Disk Arthroplasty (Pioneer Surgical Technology). Summary: The purpose of the study is to evaluate the safety and effectiveness of the NuBac Disc Arthroplasty Device in patients with symptomatic degenerative disc disease at L4/5 who have failed a minimum of six months of conservative treatment. The study is a prospective, multi-centered clinical trial in which NuBac will be compared to ProDisc. Investigator: Scott Kitchel, MD.

The ENTERPRISE Vascular Reconstruction Device and Delivery System (Cordis). Summary: The purpose of this HUD is to provide a treatment option for patients with intracranial aneurysms. Investigator: Erik Hauck, MD.

The Neuroform Microdelivery Stent System (Stryker Corporation). Summary: The purpose of this HUD is to provide a treatment option for patients who cannot be treated with open brain surgery. Investigator: Erik Hauck, MD.

Crystal AF (CRYptogenic Stroke And underlying AF) Study (Medtronic, Inc.). Summary: The purpose of the study is to compare the continuous monitoring by the Reveal XT Insertable Cardiac Monitor to standard of care optimal medical treatment in subjects after diagnosis of cryptogenenic stroke. This clinical trial will assess the incidence of atrial fibrillation in subjects with a recent cryptogenic stroke or transient ischemic attack, who are at an increased risk of cardiac arrhythmia and to demonstrate the benefit of timely AF detection for patient care. Investigators: Ramakota Reddy, MD; Raymond Englander, MD.

A Randomized, Double-Blind, Parallel-Group, Placebo-Controlled Phase III Study to Evaluate the Efficacy and Safety of Desmoteplase in Subjects with Acute Ischemic Stroke (International Clinical Research). Summary: The purpose of the study is to evaluate the efficacy of the desmoteplase 90 ug/kg versus placebo in terms of favorable outcome at Day 90 in subjects with acute ischemic stroke. Investigators: Raymond Englander, MD; Elaine Skalabrin, MD; Stephan Thiede, MD; John Grimme, MD; Ashkay Gupta, MD.

Clinical Evaluation of the ReLeaf Analgesic Infusion Catheter and Wound Drain. Summary: The purpose of the study is to evaluate the ability of the Releaf catheter to provide both wound drainage and an effective method of pain relief through continuous local arthrodesis patients. Investigator: Scott Kitchel, MD.

Dense Array EEG Indicators of Delayed Cerebral Ischemia Secondary to Subarachnoid Hemorrhage. Summary: The purpose of this study is to monitor continuous brain function in patients with subarachnoid hemorrhage (SAH) to detect changes that may signal either recovery or worsening of brain function, such as may indicate vasospasm and the danger of delayed cerebral ischemia. Investigators: Raymond Englander, MD; Don Tucker, PhD; Phan Luu, PhD.
Continuing Medical Education

Each year, the Oregon Neuroscience Institute at PeaceHealth Sacred Heart Medical Center hosts Advances in Clinical Neuroscience Practice, a collaborative educational offering for primary care and specialty physicians, physician assistants, nurse practitioners, nurses and allied health professionals. The conference features diverse topics presented by physicians, nurses and other experts who are known locally, nationally and internationally for their expertise in neurology, neurosurgery, neurotrauma and neurocritical care. For information about this year’s conference, visit www.peacehealth.org/cme.

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