INSIDE:
4 Cutting-edge treatment improves prostate cancer cure rate
5 Using data to provide personalized cardiac care
6 Caring for patients with ARDS
Until recently, neurologists had limited time to treat acute stroke because restoring blood flow to the brain had to occur within the first six hours after symptoms began. The limited timeframe meant patients in rural areas, or those who woke from sleep following stroke, may not have received optimal treatment in time.

But that’s changed – dramatically. A recent breakthrough in stroke treatment has expanded the “golden window” for lifesaving blood clot removal and treatment. Now neurologists have up to 24 hours to treat some stroke patients, which can mean the difference between full recovery and permanent disability, or even death. To say it’s groundbreaking is an understatement.

This latest development is the result of recent studies – including those at Providence St. Vincent Medical Center – using advanced imaging technology that helps differentiate between brain tissue that is irretrievably lost and tissue that can be saved with restored blood supply.

Ischemic strokes, which are caused by a clot that travels to the brain and blocks off blood supply, account for up to 85 percent of all strokes. The other type of stroke is caused by a hemorrhage that occurs after a blood vessel ruptures, resulting in bleeding around the brain.

Providence St. Vincent was among 38 hospitals participating in one of two recent clinical studies (DAWN and DEFUSE 3) that resulted in new time-to-treatment protocols. The DAWN study provided significant evidence supporting thrombectomy treatment between six and 24 hours after stroke onset. The DEFUSE 3 study was a randomized phase III multi-center controlled trial of patients with acute ischemic anterior circulation strokes due to large artery occlusion treated between six and 16 hours of stroke onset with endovascular thrombectomy therapy versus control (i.e., clot retrieval versus medical management).

Our stroke team at the Providence St. Vincent Joint Commission Comprehensive Stroke Center and the Providence Portland Primary Stroke Center used imaging software to quickly evaluate brain blood flow of incoming stroke patients. The software analyzes perfusion CT or MRI scans. Areas of patients’ brains that appear as purple reveal tissue that is damaged beyond repair, while areas that are green show decreased blood flow. These areas of the brain still can be saved.

The results of the DEFUSE 3 study offered compelling evidence that clot removal with a mechanical device up to 16 hours after stroke...
provides benefit. Of the patients screened in the DEFUSE 3 study, 50 percent qualified for clot retrieval. Out of those patients, 45 percent who underwent thrombectomy were independent at three months, while only 17 percent who did not receive treatment achieved that same level of function.

The DEFUSE 3 results complement those of the DAWN study, which was reported in 2017. Both studies were published in the New England Journal of Medicine and received a level I-A recommendation by the American Heart Association and American Stroke Association.

While extending the window for treatment will save lives and improve outcomes, the adage “time is brain” is just as important as ever. The faster a stroke patient receives treatment, the greater the benefit. Everyone should know the signs of stroke and call 911 if stroke symptoms occur.

Acute stroke treatment has changed dramatically in the past two decades. Prior to 1996, there was no treatment. Since then acute strokes caused by blood clots have been treated with clot dissolving medications and devices to remove the clot. Now we have dramatically extended the time window in which patients can be treated. Yet there still is much work to be done to prevent stroke, increase the number of people who can be treated acutely, and improve recovery after stroke. Providence Stroke Center provides the highest level of stroke care and continues to participate in critical research to prevent stroke—the No. 1 cause of adult disability in the United States.

Results of the DAWN and DEFUSE 3 Acute Stroke Treatment Trials

The recent presentation and publication of the DAWN and DEFUSE 3 acute ischemic stroke treatment clinical trials already have changed the way we think about acute stroke treatment. This means we can deliver acute treatment to a new group of patients for the disease that is the No. 1 cause of adult disability in the United States.

The era of acute ischemic stroke treatment began in the United States in June 1996 with the FDA approval of intravenous alteplase for patients presenting stroke within the first three hours from symptom onset.

However, based on studies published in 2014, it was demonstrated for the first time that for intracranial large vessel acute embolic occlusion, thrombectomy devices to remove clots could effectively reduce the disability of stroke when treating up to six hours.

All of these acute stroke treatments used time as the only metric for determining whether a stroke patient could be treated. The development of MRI and CT perfusion imaging enabled investigators to study patients up to 24 hours based on the hypothesis that the degree of hypoperfusion correlates with the ability to salvage tissue (Figure 1).

The DAWN clinical trial evaluated patients in the six to 24 hour time window with intracranial internal carotid or proximal middle cerebral artery embolic occlusions with very small core areas of infarction as identified on CT or MRI perfusion imaging. Results were published in the New England Journal of Medicine on Jan. 4, 2018.

The DEFUSE 3 clinical trial evaluated patients with intracranial internal carotid or proximal middle cerebral artery embolic occlusions with penumbra/core ratios of 1.8 or greater with a core infarction of 70 mL or less. This study was stopped early based on presentation of the DAWN study.

Both of these studies enrolled patients with large vessel anterior circulation strokes who were randomized to standard medical management versus thrombectomy. Of patients treated with thrombectomy in DAWN, 49 percent were independent at three months versus 13 percent in those receiving medical management only. In DEFUSE 3, 45 percent of patients who underwent thrombectomy were independent at three months versus 17 percent of those medically managed.

The American Heart Association and American Stroke Association issued a level I-A recommendation supporting thrombectomy in these extended time windows. The concept of early symptom recognition and EMS activation for stroke has not changed.

The new guidelines mean that more patients will be treated based on clinical presentation rather than a strict time cutoff alone—potentially saving lives and reducing patient disability.
Cutting-edge brachytherapy treatment improves prostate cancer cure rate

More than 161,000 American men will be diagnosed with prostate cancer this year, and nearly 27,000 will die of the disease. Providence Cancer Institute experts now have state-of-the-art technology that brings the promise of a cure to more men with prostate cancer.

The new radiotherapy technique is called high-dose rate temporary robotic brachytherapy, or HDR. Providence is the first health system in Oregon to offer this treatment.

Research shows that a higher radiation dose improves prostate cancer cure rates. The new HDR brachytherapy technique allows physicians to more accurately increase the radiation dose within the prostate without the need for radiation safety precautions.

We’re very pleased to add HDR brachytherapy to existing therapies in treating men with prostate cancer at Providence. This new technique offers more flexibility in planning and in consistently achieving high-quality implants. Better quality implants mean better outcomes for patients and a reduced risk of side effects.

A 2017 study found that the HDR technique simultaneously improves radiation dose to the prostate and reduces dose to nearby normal tissues when compared to the traditional technique of low-dose rate permanent radioactive seed prostate implant.

With real-time HDR planning, computer software allows physicians to better tailor the radiation dose precisely at the time of the temporary implant. Because the radioactive source is temporary with HDR, there is no risk of migration of the radioactive seed after the procedure.

Another significant benefit of the new HDR brachytherapy technique is that there are no radiation safety precautions for patients and families. This is particularly meaningful to men with young children, grandchildren or pregnant family members. With a traditional low-dose rate seed implant, the tiny radioactive seeds emitted radiation for several months and radiation safety precautions were needed.

In addition, the new HDR technique allows physicians to treat men with more advanced prostate cancers who would not be eligible for a traditional LDR seed implant. Finally, recent research studies suggest that some men treated with brachytherapy may be able to eliminate or reduce their need for hormone therapy.

The new high-dose brachytherapy technique is offered at Providence Cancer Institute with physicians from The Oregon Clinic Radiation Oncology division.

Learn more at ProvidenceOregon.org/HDRBrachy.
Going big to go small: Using data to provide personalized cardiac care

One of the most promising new strategies in cardiac care is using (big) data sets to create personalized (small) care for our Providence Heart Institute patients.

Using computers and advanced analytics, we’re analyzing data from millions of electronic medical records to develop new strategies that prevent heart disease and find treatments that provide personalized, more optimal heart care.

This is the work and vision of the new Center for Cardiovascular Analytics, Research and Data Science (CARDS). The center was launched in mid-2017 on the Providence St. Vincent Medical Center campus and is funded in part by a generous $2 million gift from Tim and Mary Boyle of Portland, Ore. CARDS serves as the data hub for cardiovascular registries throughout the seven-state Providence St. Joseph Health System.

Why is cardiac research important?
Cardiovascular disease continues to be the No. 1 cause of death in the United States for both men and women. By 2035, it’s projected that nearly half of the U.S. population will have some form of cardiovascular disease, costing more than $1.1 trillion a year.

Types of research CARDS is pursuing
Here are examples of the type of work we’re doing at CARDS:
• Developing predictive analytic tools to identify patients at risk for recurrent cardiac events
• Measuring longitudinal outcomes and incorporating them into research and care
• Detecting higher cost treatments that add little value to the care provided
• Identifying treatment disparities among diverse populations related to cardiovascular conditions

This data can help us evaluate the rapidly growing array of diagnostic and therapeutic tools; close gaps in our knowledge about which interventions actually improve outcomes; increase responsiveness to patients’ perspectives; and reduce treatment disparities among gender, racial and social groups.

Large data sets also help us understand who is most likely to benefit from specific therapies – an important move away from a “one-size-fits-all” approach.

How this affects providers and their patients
While much of the work done by CARDS is focused on acquiring new knowledge using existing data sets, efforts also are underway to acquire outside data sets that help us better understand national gaps in care. Such sources include claims data, census data, and even data from apps and social media.

We also are actively engaging health care systems outside of Providence St. Joseph Health, as well as non-traditional partners, to identify innovations in cardiovascular care. All of this will help the medical community deliver better care through changes in the way we practice.

Follow the numbers
“Because we serve thousands of patients and have long-standing experience in research, we’re in a great position to create care that delivers the best possible outcomes. We know our data contains hidden treasures. We want to uncover it and put it to use.”

– TY GLUCKMAN, M.D.
Caring for patients with ARDS: New critical care strategies at Providence

Acute Respiratory Distress Syndrome, or ARDS, is a severe and complex disease process with limited treatment options and a high mortality rate. However, recent data indicates that survival rates for patients with ARDS improve in large volume centers – such as the new Providence ARDS Center that opened in early 2018 at Providence Portland Medical Center – providing specialized expertise and the latest treatments.

What is ARDS?
ARDS affects patients across the entire age spectrum, is frequently seen in patients with pneumonia including those with influenza and other respiratory infections, and does not discriminate based on patient baseline health. ARDS accounts for about 10 percent of all ICU admissions nationally.

Despite advances in care, mortality rates remain high and range from 30 percent for those with mild ARDS to 46 percent for those with severe ARDS. Patients with ARDS die from progressive hypoxia or multi-system organ failure.

ECMO as effective therapy
As treatment of ARDS has matured, the complexity of managing these patients has increased exponentially. Extracorporeal Membrane Oxygenation, or ECMO, has been used successfully to support patients with severe ARDS. During ECMO, the patients’ blood is removed from the body via a very large cannula, is run through an external oxygenation circuit and then is returned to the body through another cannula.

How Providence cares for ARDS patients
There are 36 beds in the Providence Portland Medical Center Critical Care Unit dedicated to expanding support for critically ill patients with respiratory failure.

The Providence ARDS Center with ECMO provides:
• 24/7 coverage by pulmonary and critical care board-certified intensivists
• 24/7 direct access to an ARDS/ECMO specialized physician
• ARDS survival numbers that exceed national averages
• The largest dedicated medical ICU with ECMO capability in Oregon
• An ARDS-network trial center, at the cutting edge of ARDS therapy
• An Extracorporeal Life Support Organization (ELSO) member hospital

Resources for providers
ARDS physicians can be reached through a single phone call at 503-216-5864 (LUNG). They can help assess and manage patients with ARDS, as well as help arrange transfer for specialized ARDS care and consideration of ECMO.

For more information, visit: ProvidenceOregon.org/ecmo.
**Referral Resources**

When your patients need advanced care, our specialists are right at your fingertips.

**Call toll-free 844-ASK-PROV (844-275-7768) for:**
Nonurgent consults and referrals, 8 a.m. to 4:30 p.m., Monday-Friday

**More resources**

- **General information**
  503-574-6595
- **Integrative medicine**
  East Portland: 503-215-3219
  West Portland: 503-216-0246
- **Home medical equipment**
  503-215-4663
- **Home services**
  503-215-4321
- **Hospice**
  503-215-2273
- **Neurodiagnostic services**
  503-215-3095
- **Regional lab services**
  503-215-6660
- **Rehabilitation services**
  503-574-6595

**Providence.org/oregon**

---

**noteWorthy**

**Dave Underriner leaves Providence after 35 years; joins Kaiser Permanente in Hawaii**

After 35 years serving Providence in a variety of leadership roles, Providence Oregon Chief Executive Dave Underriner has taken a new position as regional president for Kaiser Foundation Health in Hawaii.

Theron Park, chief executive, Oregon delivery system, is serving as interim chief executive, and a national search is underway for Underriner’s successor.

**Providence Portland cardiac rehab is open: Refer patients to 503-215-1310**

Providence Heart Institute has expanded its Basecamp Cardiac Prevention + Wellness services and now offers phase II cardiac rehabilitation at Providence Portland Medical Center. Primary care physician referral is required for patients to participate.

For more information, visit ProvidenceOregon.org/heart.

**New “Brain Academy” provides latest in neuroscience education resources**

Brain Academy, part of Providence Brain and Spine Institute, offers comprehensive neuroscience education resources for our providers and community partners. Visit BrainAcademy.providence.org. In addition, here are upcoming CME opportunities for primary care providers:

- **Movement disorders symposium**
  June 27 (7:30 a.m. to 12:30 p.m).
  Providence St. Vincent Medical Center, Souther Auditorium
  9205 SW Barnes Road, Portland, Ore.

- **Neuroscience knowledge for the primary care professional**
  Nov. 29-30 (7:30 a.m. to 4:30 p.m.), Urban Studio
  935 NW Davis St., Portland, Ore.

For more information, visit Providence.org/brain and click on "Events."

**Future physicians to benefit from largest gift in Providence Milwaukie history**

A record-setting $1.5 million gift will help train future physicians at Providence Milwaukie Hospital. The generous gift will be used to create The Robert W. Franz and Elsie Franz Finley Endowed Chair for Family Medicine Residency. Since its inception, the program has trained more than 100 family medicine specialists.

**Providence cancer expert named endowed chair for clinical research**

Providence Cancer Institute’s Brendan D. Curti, M.D., has been named the first recipient of the Robert W. Franz Endowed Chair for Clinical Research.

Dr. Curti’s research and clinical interests include OX40 clinical development, interleukin-2-based combinations – including radiation, adoptive T cell immunotherapy and novel checkpoint combinations – and oncolytic viruses.
That’s why we created **ASK PROV**. When your patients need advanced care, our specialists are at your fingertips.

Call toll-free **844-ASK-PROV (844-275-7768)** to connect with a Providence-employed or affiliated specialist for nonurgent consults and referrals. Available 8 a.m. to 4:30 p.m., Monday-Friday.