

### Also In This Issue

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- New method finds tumors' genetic 'fingerprint'

### Discovery could allow pain management without numbness, paralysis

Massachusetts General Hospital

A type of pain management that doesn't paralyze you or make you numb – yet totally blocks your pain – is now within reach. As a result, childbirth, surgery, and trips to the dentist might be less traumatic in the future, thanks to researchers at Boston's Massachusetts General Hospital (MGH) and Harvard Medical School.

Researchers injected a substance called QX-314, a normally inactive derivative of the local anesthetic lidocaine, along with capsaicin, the active ingredient in hot peppers, into rats near their sciatic nerves in their hind limbs, causing them to lose the ability to feel pain in their paws. But they continued to move normally and react to touch.

General and local anesthetics work by interfering with the excitability of all neurons, not just pain-sensing ones. Thus, these drugs produce dramatic side effects, such as loss of consciousness in the case of general anesthetics or temporary paralysis for local anesthetics.

The new method makes use of a protein found in the membranes of pain-sensing neurons that creates a

*Continued on the next page* 

*Dear Reader,*

*The topics explored in this issue of the Health Update include developments at the WorldCare Consortium hospitals relating to new pain management strategies, genetic advances in treating cancer, and a novel device for spinal surgery which makes it less invasive, less painful and even reversible.*

*Sincerely,*

*Rebika Shaw,*

*Regional Director, Corporate Communications*

## HEALTH NEWS

### Device provides better flexibility after stenosis surgery

From *UCLA Healthcare*

A new device to treat spinal stenosis allows a faster recovery and greater mobility after surgery compared to the fusions that traditionally have been required for some spine surgeries.

Instead of permanently fusing vertebrae with metal rods and screws and therefore restricting movement, surgeons can use a device called the Anatomic Facet Replacement System (AFRS). This device attaches to two adjacent vertebrae, providing them with a movable joint that mimics the spine's natural joint.

Spinal stenosis develops when narrowing in the spine puts pressure on the spinal cord or attached nerves. The standard treatment is a decompression procedure in which bone is removed from the affected vertebra to make room for the spinal cord and nerves. However, this weakens the joint between vertebrae, and sometimes leads to the need for spinal fusion.

"Joining the vertebrae with the AFRS adds stability but does not impair mobility as spinal fusion does," explains Jeffrey C. Wang, M.D., co-director of the UCLA Comprehensive Spine Center at Santa Monica-UCLA Medical Center and Orthopaedic Hospital. The device is now offered at UCLA, one of only five centers in the nation participating in a pilot study.

"Surgeons have always had to weigh the need for adequate nerve space against the risk of losing spine mobility when deciding how much bone to remove when treating spinal stenosis," Dr. Wang says. "With AFRS, we can feel free to remove as much bone as necessary to treat the stenosis without having to balance that against the desire to avoid a fusion procedure."

Because AFRS does not require a bone graft, surgeons can perform the procedure using a smaller incision. As a result, patients can expect to have less postoperative pain and a faster recovery. In addition, the AFRS procedure is reversible. If the patient's condition worsens over time, surgeons can remove the device and perform a spinal fusion.



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## Pain Management (continued)

channel so molecules can enter and exit the cell. But a "gate" typically blocks this opening. The gate opens when cells are exposed to heat or capsaicin. Thus, bathing pain-sensing neurons in capsaicin leaves these channels open, but non-pain sensing neurons are unaffected because they do not have this channel-forming protein.

The method then takes advantage of the lidocaine derivative QX-314. Unlike most local anesthetics, QX-314 can't penetrate cell membranes to block the excitability of the cell. But when the gates guarding the channels in pain-sensing neurons disappear due to the capsaicin, QX-314 can enter the cells and shut them down.

"Eventually this method could completely transform surgical and post-surgical analgesia, allowing patients to remain fully alert without experiencing pain or paralysis," says Clifford Woolf, M.D., Ph.D., of MGH. "In fact, the possibilities seem endless. I could even imagine using this method to treat itch, as itch-sensitive neurons fall into the same group as pain-sensing ones."

## New method finds tumors' genetic 'fingerprint,' which may help guide treatment

From Brigham and Women's Hospital

Using new DNA sequencing technology, researchers from Brigham and Women's Hospital (BWH) in Boston, Massachusetts, can identify the unique genetic mutations of a patient's cancerous tumor. This approach may dramatically improve therapeutic decisions for cancer patients.

The researchers obtained the genetic sequences of all of the expressed genes in tumors from four patients with mesothelioma,

an asbestos-caused cancer of the lung. Three to four novel genetic mutations were found in each tumor, none of which had been implicated in cancer in previous studies.

"We found that each tumor had its own unique genetic mutation, sort of like its own fingerprint," says David Sugarbaker, MD, chief of the division of thoracic surgery at BWH and a pioneer in mesothelioma research. "One truly encouraging aspect of our findings is after spending a year and a half to develop the methodology and software...new tumors can be analyzed over the course of about a month. Knowing which genes are mutated opens the

door to better understanding and the discovery of more targeted and effective patient-specific treatments in real time."

This approach points the way for individualized analysis of patient tumors, thereby encouraging discoveries that have tremendous potential to guide therapy and highly refine individual patient care.

"Ultimately, every patient's tumor will be directly sequenced to determine its mutations and optimal treatment, just as we now identify the cause of an infection before selecting the best antibiotic to treat it," he adds.

# NEWS ON WORLDCARE

**WorldCare partners with Segunda Opinión, Colombia** – The Colombian community now has access to second opinions through WorldCare's new partnership with Segunda Opinión de Colombia S.A., a company aimed at assuring that its customers and their physicians receive the highest quality medical support in order to help them make the most appropriate and timely decisions about their medical care. Segunda Opinión began offering WorldCare Second Opinions in Colombia in July through well-known insurer Royal & SunAlliance, financial company Financiera Compartir and the Organización Ardila Lule.

## "Quality of services and human relationship"

## Patient Perspective

*"... I feel much better...[and] together with my doctor, shall keep in touch with the consultant for any further inquiry concerning my disease...I seize this opportunity to thank the WorldCare staff for the quality of their services and the human relationship they have with the patient."*

## About WorldCare

The global health care community has trusted WorldCare since 1994, when it became the first company to offer physician-referred, patient-specific, second opinion e-consultations (telemedicine) for serious illnesses. WorldCare benefits patients around the world by providing access to top physicians, cutting edge medical practices and best medical advice through highly specialized electronic medical opinions from the best medical centers in the United States.

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