Flu season leads to spike in e-visits at MUSC

Doctors say electronic visits help keep virus from spreading

By Helen Adams
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Doctors at MUSC Health are seeing a spike in flu-related e-visits, which are up more than 200 percent over last flu season. Emergency medicine specialist Edward O’Bryan, M.D., says they help keep the virus from spreading.

“We don’t want people to have to go to their doctor’s office if they have the flu, because they can give it to people in the waiting room. Or if you think you have the flu and you don’t, guess where you’re going to pick it up? The waiting room.”

He’s encouraging people who think they have the flu but aren’t sick enough to be in the hospital to consider e-visits or video visits.

E-visits are available to people who already have an MUSC Health connection and a MyChart account. Once they log in to MyChart, they’ll see the e-visit option. Click on it, and the session launches. The cost is $25. The patient can choose “flu” from the list of diagnosis options, then select from a list of symptoms.

Emergency medicine doctors such as O’Bryan regularly check for incoming evisit requests and respond by email within a few hours, sending prescription orders to the patient’s pharmacy if needed. E-visits are available 24 hours a day. There have been about 100 flu-related e-visits since the new year.

Video visits are for people who have not seen an MUSC Health doctor or nurse within the last three years but do have insurance. They’re available on a more limited basis, O’Bryan said, typically from 11 a.m. to 1 p.m., during the time people are usually taking a lunch break, if they’re at work and have time to do the visit.

O’Bryan said diagnosing the flu via technology instead of in person works well, and patients don’t need to be swabbed for a formal flu test for doctors to know what they likely have.

“Charleston County is running low on flu swabs anyway. If you get the swab, guess what percent accurate that swab is? Sixty percent,” O’Bryan said.

“The truth is, it’s a matter of us using our best clinical judgment to decide whether you have the flu, and we feel like to a very high degree of certainty, we can tell you whether you have the flu just based on your clinical symptoms and treat you appropriately for it.”

And the MUSC Health doctors are local, he said, unlike the doctors available through national video visit websites. The Lowcountry doctors are nearby and easy to reach if the patient needs more help.

South Carolina has had more than five weeks of widespread flu activity this flu season, according to the Department of Health and Environmental Control. Two

See Flu on page 15

Photo by Sarah Pack

Dr. Edward O’Bryan is one of the emergency medicine specialists who treats e-visit patients.
Jan. 29 — Segment #1
Topic: Stem Cell Research Update
Guest: Dr. Stephen Duncan, professor and chair in the Department of Regenerative Medicine and Cell Biology at MUSC. Duncan will talk about stem cell research.

Jan. 29 — Segment #2
Topic: Preconception Planning & Pre-existing Medical Conditions
Guest: Dr. Scott Sullivan, professor of obstetrics and gynecology and director of the Division of Maternal-Fetal Medicine at MUSC. Sullivan will discuss preconception planning to help reduce pregnancy risks and complications for women with pre-existing conditions.

Feb. 12 — Segment #1
Topic: Cognitive Behavior Therapy for Sleep Problems
Guest: Dr. Andrea Rinn, a physician in the Department of Pulmonary, Critical Care and Sleep Medicine and medical director of the MUSC Sleep Lab. Rinn will talk about cognitive behavioral therapy to improve sleep.

Feb. 12 — Segment #2
Topic: Injury Prevention in Children and Teens
Guest: Dr. Keith Borg, associate professor of pediatrics and emergency medicine. Borg is a pediatric emergency physician at MUSC Children’s Health and will speak about injury prevention during childhood.

Feb. 19 — Segment #1
Topic: Vascular Dementia
Guest: Dr. Nicolas Milano, assistant professor of neurology and a cognitive behavioral neurologist. Milano will discuss vascular dementia, which is the second most common cause of dementia in people over age 65 (Alzheimer’s disease).

Feb. 19 — Segment #2
Topic: Pathology Reports and Cancer Diagnosis
Guest: Dr. David Lewin, professor of Pathology and Laboratory Medicine and director of gastrointestinal pathology. Lewin will talk about the role that pathology tests play in cancer diagnosis and determining treatment.

Feb. 26 — Segment #1
Topic: Helping Children Cope After a National Tragedy
Guest: Dr. Rochelle Hanson, director of the family and child program at the MUSC National Crime Victims Research and Treatment Center. Hanson will discuss helping children feel safe in the aftermath of tragedy in the world.

Feb. 26 — Segment #2
Topic: Lupus
Guest: Dr. Gary Gilkeson, professor of medicine, microbiology and immunology at MUSC. Gilkeson will discuss the diagnosis, treatment and research related to lupus.
New way of drawing blood gets dramatic results

Mechanical device, staff education lower contamination rates

An MUSC study found the use of a mechanical initial specimen diversion device and staff education led to a nearly fourfold decrease in contaminated blood cultures that was sustained over 20 months.

Results of the emergency department research were presented at the Institute for Healthcare Improvement National Forum by lead study author Lisa Steed, Ph.D., MUSC Department of Pathology and Laboratory Medicine professor.

“Working on this study and seeing such strong results speaks to the great things that can happen for patients when clinicians join forces on these issues,” Steed said. “Blood cultures and the accuracy of those cultures are incredibly important in making sure that patients are getting the right care at the right time and with the right process in place.”

Blood cultures help doctors figure out whether patients have serious and potentially life-threatening blood infections such as sepsis. Blood draws can become contaminated with bacteria-containing fragments of a patient’s skin that enter the needle during the blood collection process.

Studies have shown conventional techniques can lead to false positives. That can mean more blood has to be drawn and the patient stays longer in the hospital and may get antibiotics that aren’t really needed.

The mechanical initial specimen diversion device used in the study, called Steripath, is a sterile, closed blood culture collection system that diverts, sequesters and isolates the first 1.5 to 2 milliliters of blood — the portion known to contain contaminants — during the blood draw.

“We’ve seen a significant reduction of blood culture contaminations in our emergency department by using this device, along with education and training,” said Danielle Scheurer, M.D., MUSC Health chief quality officer. “By lessening the chances of contaminating a specimen, we increase our accurate diagnoses and treat patients with real infections. This in turn leads to decreased antibiotic use and allows us to help mitigate the ongoing, nationwide problem of antibiotic resistance from over or improper use.”

The study, funded by MUSC Health, also showed that using a mechanical initial specimen diversion device, or ISDD, could reduce costs and use staff time more efficiently. Researchers suggested that MUSC would have saved $744,955 if the ISDD had been used for every blood draw in the emergency department during the study, based on a conservative estimate ($4,850) for the cost of a contaminated culture.

This image from a video shows how a mechanical initial specimen diversion device works, isolating blood and keeping fragments of skin from contaminating it.

Call for Peggy Schachte Research awards

A call for nominations is underway to all MUSC faculty for the 2018 Peggy Schachte Research Mentor Award. The purpose of this award is to encourage and support the advancement and achievements of others as successful investigators and for whom research mentorship has been a major commitment over a significant period of time.

This award shall be presented at the annual MUSC Faculty Convocation in August and will include a monetary award.

MUSC faculty, fellows, students and staff may submit nominations. The nominating package must include a letter from the nominator summarizing the nominee’s background and achievements as a research mentor, CV and other information.

The deadline to submit applications (pdf file) is March 25, 2018.
Neuropsychiatric changes possibly linked to strep

Docs say a team approach is needed for complex, difficult-to-diagnose disorders

BY HELEN ADAMS
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Doctors at MUSC Children’s Health are working together to refine their approach to evaluating children suspected of having PANDAS, or pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections.

Developmental-behavioral pediatrician Michelle Macias said it’s a controversial condition that requires a team approach. “We have an interdisciplinary team where we evaluate kids with a combination of developmental, learning and behavioral/mental health problems. On a few occasions, we have considered PANDAS or PANS as a potential exacerbating factor of the child’s presentation.”

According to the National Institute of Mental Health, a child may be diagnosed with PANDAS when he or she suddenly develops obsessive compulsive disorder and/or tics after a strep infection, or when OCD and tic symptoms suddenly get worse after strep. The strep infection may involve strep throat, perianal strep or scarlet fever.

Why would strep cause neuropsychiatric changes? The NIMH reports that strep bacteria hide from the immune system by putting molecules on their cell walls that look like molecules from other parts of the body, including brain tissues.

When the immune system finally spots the strep bacteria, it goes on the attack. The trouble is, it may not just target the invader – it may also attack molecules in the brain that the strep was mimicking. And that, according to the NIMH, may cause OCD, tics and other symptoms.

Macias said if a child has PANDAS, the appearance of those symptoms is usually dramatic. “The diagnosis involves an abrupt onset and episodic course of symptoms. It’s partially a diagnosis of exclusion. Any diagnosis that doesn’t have clear-cut symptoms/symptom cluster, to call it a syndrome, it’s always going to be controversial.”

PANDAS is a subset of PANS, which stands for pediatric acute-onset neuropsychiatric syndrome. While PANDAS is linked specifically to strep, PANS has a longer list of potential triggers, including infections and metabolic disturbances. Both PANDAS and PANS are suspected of causing some children to suffer from depression, emotional lability, anxiety or restrictive eating patterns.

Treatments include antibiotics, if there’s still an infection, along with cognitive behavioral therapy and psychiatric medications.

Macias said doctors from multiple areas at MUSC Health are involved with considering the best approaches, including specialists in psychiatry, developmental pediatrics, rheumatology, infectious diseases and neurology.

“I always want to empathize with the parents and respect where the parents are coming from. These kids are having major problems, so if there’s anything that could help attenuate symptoms, the parents would want to do it. No matter what, these symptoms still have to be treated. So if the child has OCD or tics or whatever problem – that still needs to be treated. The question is the etiology, and that’s what is so unclear.”

Humanitas submissions extended to Feb. 1

Humanitas, MUSC’s campuswide publication that features paintings, drawings, photography, prose and poetry, has extended its submission deadline to Thursday, Feb. 1.

Humanitas is calling all members of the MUSC community to submit their original works of art and literature for the upcoming XXII volume in 2018.

All MUSC students, staff and faculty are invited to submit during this open submission period.

Each submission will be judged by a diverse editorial board who will cast their votes on submissions.

Participants are reminded to not put their name on submitted texts as submissions are read anonymously.

Submit your work at https://redcap.musc.edu/surveys/?s=CJFLNLFXRX. For questions, email samuel@musc.edu.
Women Physicians Day

National Women Physicians Day, recognized on Feb. 3, salutes and celebrates the contributions of women physicians who care for men, women and children in their communities.

The following are some comments and recognition honoring MUSC physicians for their work and dedication to others by patients and colleagues:

Sara Giordano, M.D.
Hematology/Oncology
Physician of the Month

I work with Dr. Giordano, who specializes in breast cancer. Dr. Giordano contacted me from Chicago where she was attending the ASCO conference. A new treatment had just been presented for a hard-to-treat form of breast cancer, and she had a patient in mind that needed this treatment. She asked me to work right away to obtain insurance approval and to notify the patient. When I spoke with the patient and told her that Dr. Giordano had thought of her specifically while away in Chicago at a large medical conference, she was so touched she had to hand the phone to her sister. This level of caring is 100 percent Sara Giordano. She is one of the most caring and passionate physicians I have ever worked with, and that is just as important for every patient's recovery, as much as the treatment she prescribes.

—Nominated by: Katrina Landers, financial coordinator, Specialty Care East Cooper

Christine Carter-Kent, M.D.
Pediatric Procedure Area
Physician of the Month

I am honored to nominate our medical director of the pediatric procedure area, Dr. Carter-Kent, for the physician of the month award in recognition of her outstanding leadership and tireless efforts in supporting our unit, her patients, and their families. She is a compassionate, kind–hearted and caring physician that handles stressful situations and gets patients to relax when others cannot.

Her professional approach definitely helps to increase MUSC and the PPA's success rates. Her abilities allow her to work with patients of all ages in the PPA and her effectiveness knows no age bracket. The feedback I receive from her patients has always been positive and glowing. Her practice is centered on making sure each and every patient can get the exact care they need with a smile and true concern... and sometimes even an NFL jersey.

A patient of Dr. Carter-Kent loves the NFL, so she recommended we have an NFL day the next time the patient came in for his procedure. We did just that. NFL jerseys, footballs, and a celebration all served to boost this little guy's spirits. Truthfully it was a fun day for all the patients and the whole staff.

But what is also worth mentioning is how the efforts of one person, one particular person, can truly make a difference in a child's life. We are proud to work alongside her.

—Nominated by: Zeh Wellington, OR charge nurse, Perioperative Services

See WOMEN on page 15

Dr. Sara Giordano receives her Physician of the Month award with her Hematology/Oncology colleagues.
She is among many women physicians at MUSC recognized in February for National Women Physicians Day.
Research mentor honored with WSI Advancement of Women Award

By Mikie Hayes
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When Lynn Schnapp, M.D., director of the Division of Pulmonary, Critical Care, Allergy and Sleep Medicine, was named the 2017 Women Scholars Initiative Advancement of Women Award recipient, few if any were surprised. Since coming aboard in 2014, the substantive impact Schnapp has made, not only in her division but enterprise-wide, has drawn a great deal of positive attention.

Dozens attended the Dec. 15 event in Colcock Hall to share in the festivities, as Schnapp was presented with the prestigious award and a reception in her honor followed. Congratulatory sentiments and professional anecdotes were shared by many. Compliments and terms of praise were plentiful and included descriptions such as pace setter, mentor, role model, feisty and committed.

Carol Feghali-Bostwick, Ph.D., chair of the Women Scholars Initiative, welcomed guests and kicked off this year’s celebration. She praised those who established the WSI, particularly thanking Rosalie Crouch, Ph.D., and Darlene Shaw, Ph.D., for their “amazing leadership over the years,” as well as noting the continued and generous support of Vice President for Academic Affairs and Provost Lisa Saladin, Ph.D., the 2016 award recipient. Feghali-Bostwick credited these leaders for paving the way for the continued advancement of women at MUSC. “The WSI has been successful because of the unique model that these women established,” said Feghali-Bostwick. “It is actually run by committees made up entirely of faculty, both men and women, who volunteer their time. Without them, we could not organize all the programs and initiatives that we do. The WSI is committed to the advancement of all faculty at MUSC, which is why we organize all these activities.”

She also thanked the nomination committee, which serves under the leadership of MA McCrackin D.V.M., Ph.D., Department of Comparative Medicine, and Gayenell Magwood, Ph.D., RN, College of Nursing. She highlighted the integrity they bring to bear and their fair and unbiased approach in terms of reviewing all nomination packages.

“They’ve done an amazing job getting us to this day,” she said.

Dee Ford, M.D., and Alice Boylan, M.D., professors in the Division of Pulmonary, Critical Care, Allergy and Sleep Medicine, nominated Schnapp for the award.

Ford offered heartfelt comments about her champion.

“I have a list here of all the many things Lynn has done to help develop individuals that are under her purview in some way. I was reflecting on it, and trying to determine what is the one sentence that really sums it all up, and that is, for Lynn, she always consistently tries to identify individuals and programs and ways in which she can help,” she said.

Ford said that whether it’s professional development and the advancement of individual faculty, nominating staff or nursing leadership for various awards, mentoring an individual on a one-on-one basis or contributing to national level programs to advance women faculty, Schnapp is tenacious and unwavering in her commitment to those endeavors.

She enumerated the many things Schnapp has done for faculty at MUSC, from mentoring and promotions to recruitments and personal recommendations.

See Award on page 14
Meet Johan

Johan Zamoscianyk

Department and how long at MUSC
Adult ED; 11 years

How are you changing what’s possible at MUSC
By using my talents to help treat our patients

Pets
Dixie, Emmy, Sugar, Kira and Ollie

Something you’re looking forward to in 2018
My 54th birthday

Favorite football team
Buffalo Bills

Who in history would you like to meet and why
NASA astronaut and U.S. Sen. John Glenn — It’d be nice to listen to him talk about his 36-year return to space in 1998.

Favorite quote
“If it looks like a duck and quacks like a duck, it’s a duck.” – Robin Cook
Compassion and patience avert possible tragedy

Meducare EMT has life-changing experience

By Mikie Hayes
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People often say they were at the right place at the right time. But sometimes being there just is not enough. Every so often there is a barely perceptible voice that people hear, urging them to take the next step – the step that leads to a happy ending.

Such was the case for Connor Roberson in the wee hours of the morning on Jan. 10. Roberson, a Meducare EMT, works from 7 p.m. until 7 in the morning, part of the dedicated team that transports patients by ambulance and helicopter, 24/7.

On this particular shift, Roberson was on the sixth level of the President Street garage preparing the helipad for an imminent arrival. In approximately 12 minutes, a patient was due in from Beaufort. There was little time to spare. It was his night to secure the helipad, ensuring nothing could prevent the helicopter from landing safely. Just a few days earlier, the roof had been blanketed in salt and sand so helicopters and cars could navigate icy conditions.

It was around 3:30 a.m., and out of the corner of his eye, Roberson caught a glimpse of a person midway across the roof – a guy in a hoodie, sitting on the sidewalk, by the wall. It was a young man, he decided, probably in his early 20s. The guy was just hanging out, earphones in, listening to his iPod, seemingly in his own little world.

Roberson wasn’t overly concerned. Still, he knew he’d better get him off the roof; the helicopters kick up whatever is around when they land, and he didn’t want him to get hit by flying debris.

So he shouted, “You’re going to want to head downstairs. You don’t want to be up here when the helicopter lands.”

The young man replied with an OK.

But he didn’t move. Roberson wasn’t sure why. Perhaps he didn’t understand that a helicopter was about to land feet away.

That’s when something told him to walk over and check on him.

“When you see someone alone – well, you don’t know why someone is sitting near a helipad all by himself in the middle of the night.”

When Roberson got to about 30 feet from the hooded figure, like a jackrabbit, the young man hopped up on the ledge of the wall. In seconds, he precariously balanced himself on top of the two-inch metal guardrail. Six stories high. A harrowing sight.

**Not always what it seems**

In the span of 30 seconds, everything had changed for Roberson.

“I froze in my steps. I realized I could be experiencing the last moments of someone’s life.”

“Whoa, man, what are you doing?” I asked him. He just looked at me and waved.”

Roberson knew something bad was going on. It was clear the young man’s intention was to end his life.

“I was not going to let that happen on my shift.”

“What’s the deal?” he asked the guy calmly.

“Why are you on the guardrail?”

“I just don’t want to live anymore,” the young man admitted. “I can’t do another day.”

“Let’s sit down and talk about this,” Roberson pleaded. “There’s nothing going on that we can’t get through.”

The young man crouched down, still balancing on the narrow guardrail.

“My name is Connor. I’m an EMT. What’s your name?”

“I’m Ben.” (Not his real name.)

“How old are you, Ben?”

“I’m 15.”

Roberson wasn’t expecting it to be a kid. That hit him hard.

“Hey man; why are you up here? Why are you trying to do this?”

Ben explained he was having family problems. He also wasn’t fitting in at school and having other troubles as well. Nothing seemed to be going his way.

“These were things that many of us went thorough in middle or high school. General feelings of not belonging,” Roberson said.

“But he was thinking of taking his life over them.”

Ben continued to tell Roberson what was bothering him.

“I told him, ‘There is so much more. You’ve only got a few more years left at school. You haven’t given it enough time.’ But I couldn’t convince him that he was missing out on stuff. He was convinced he’d gotten as far as he could go and couldn’t handle being around for another day.”

Roberson had keyed up the microphone on his hip, so the dispatcher on the other end would realize something was happening on the helipad.

The gravity of the situation weighed heavily on Roberson.

“It’s a lot to deal with. You’re analyzing, processing and listening. You’re trying to figure out the best way you can help this person, and at the same time, not put yourself in danger.”

By this time, he was only about 10 feet away from Ben.

“My main goal is to get him away from the guardrail – by any means possible. If I have to tackle him and pull him away from the wall, that’s what I have to do.”

But he would not let Roberson get any closer. Every time he would advance, Ben would get stand back up on the guardrail.

“I say to him, ‘I’m here all night. I’m here until 7 a.m. I will talk to you as long as it takes, but you have to come down and sit on the sidewalk with me.’ I’m thinking, it’s not just about him jumping; it could be the wind up there, or ice, or something that accidentally causes him to fall.”

**A change of plans**

The dispatcher heard part of the conversation and understood how perilous things were.

At this point, the helicopter was on final approach. Maybe three minutes away – too close for comfort, Roberson concluded.

Things with Ben were not yet secured enough for the chopper to land.

He told Ben that he needed to talk to someone on the other end of the microphone to make sure the helicopter didn’t land there.

Ben nodded.

“I’m trying to do 15 things at one time.

See Rescue on page 9
I’m trying to work my way closer to him. I’m trying to talk to him. I’m trying to talk to dispatch. I’m trying to talk to the helicopter. The dispatcher is trying to talk to Public Safety. Public Safety is trying to talk to me. There was a lot going on. It’s hectic at this point.

“I got on the radio and waved off Meducare 1 from its approach. They would need to land at the alternative location. The EC 135 is no small helicopter and strong winds come off that thing. I worried winds could knock him off that guardrail. That was not a risk I was willing to take.”

Ben started to come down.

By this time, Public Safety had five officers on the roof, advancing from different points of entry. An ambulance was stationed below. As officers began to approach, Ben immediately jumped back up on the guardrail. Roberson assured them that “he had this,” and they pulled back.

Any time someone would try to get close, Ben would hop back up. Off and on, off and on.

By now it’s past 5 o’clock in the morning, and below-freezing temperatures were unforgiving.

“I was frozen,” Roberson said. “My hands were blue. I’m pretty sure my lips were blue. I was shivering. I know he was freezing. He was only in a hoodie and sweat pants.”

“I tried to instill in him a hope that there was a different way that he could go about life. I told him the issues that have brought him to this point are issues we can work together to fix. ‘I promise you,’” he assured Ben, “‘we can work this out – we can get you the help you need if we can come to an understanding.’

Ben said, “OK Let’s just sit here and talk.”

But as he teetered back and forth above the ledge, Roberson said, “If we’re going to talk, you have to get down off that guardrail.”

Ben slowly climbed down. The two sat together. And talked.

The situation led to a heavy response from first responders. City of Charleston police and fire departments and Charleston County EMS were now there, too.

“Our dispatcher had pulled out all the stops. It means a lot to me to know how well they coordinated and how much they care about the employees. You don’t know what any person is going to do. They are already doing things that are out of the scope of what is a reasonable action.”

But Ben never exhibited any aggressive behavior toward Roberson.

“He was just sad, down on his luck and depressed. He just didn’t think he would have a very favorable outcome in this world. He wasn’t mad at the world.”

Roberson learned that Ben loves to run. He described him as a healthy, active, fit kid. Ben told Roberson that he actually rode his bike from his house to MUSC.

“He just kept talking, trying his best to connect with the 15-year-old. At only 24 himself, Roberson showed wisdom and compassion beyond his years.

“I have no formal negotiator training. I just have an innate ability to talk to people and find out more about them and connect with them. We talked about things that we loved.”

Ironically, they bonded over a shared dislike of school. “I told him that I didn’t like school either,” he said with a laugh. “I told him the greatest days of my life were when I got an early in and an early out.”

Roberson told Ben that while he attended the University of South Carolina for one semester, he had taken a first responders class. He loved it and realized he wanted to do that.

He’d found his path and explained to Ben that life offers many paths. “You don’t have to strive for the things other people want. You can live an alternative lifestyle and be just as successful. Look at me, I didn’t finish college, but I have a stable job, and I love what I do. I told him there are other ways to do things – he is almost 16 and so close to making some serious gains in his life.”

Meaningful progress

For a good hour, Ben shared his feelings with a man who only two hours before had been a complete stranger, but now, a trusted confidante.

CPD was also up on the roof by this time, and Ben became self-conscious, realizing how many people were there to help him. He was moved by the fact that people who didn’t even know him could care so much about him.

“Look,” Roberson said, knowing this had to come to an end. “You love running, right? Why don’t we go over to the Wellness Center and crank out a mile on the track?” Ben liked that idea.

Finally, the police negotiator and a PS officer made their way up, and Ben was calm enough to accept them. Roberson asked the officers if he could stay with Ben.

“We hooked our arms through each other’s and walked
Two faculty join National Academy of Inventors chapter

MUSC’s local chapter of the National Academy of Inventors held its annual ceremony to induct its newest members Jan. 17.

NAI proudly recognizes individual inventors for their contributions to the science community. This year, two new inductees, as well as two honorary inductees, were recognized as top innovators.

**2018 NAI National Fellows**

**Trusk**

Thomas Trusk, Ph.D., research associate professor, Department of Regenerative Medicine and Cell Biology

**Ruscito**

Joseph Ruscito, Ph.D., former MUSC ZIAN engineer, now working in the private sector

Two inductees joined fellows of the MUSC Chapter of the National Academy of Inventors at the group’s gathering Jan. 17. They include (front row): Drs. Nancy DeMore, from left, Yuri Peterson, Sarah Ball and Steve Tomlinson; (center row) Drs. Rupak Mukherjee, Mike Caputo, Michael Yost, Perry Halushka; (back row) Dr. Thomas Trusk, MUSC President Dr. David Cole and Dr. Barb Rohrer.

**2018 NAI Honorary Inductees**

- Ragan DuBose-Morris, Ph.D., Center for Telehealth
- Sarah Ball, PharmD, Department of General Internal Medicine

**DuBose-Morris**
Cancer overrides the circadian clock to survive

Misfolded proteins cause disruptions in circadian rhythm, contributes to tumor growth

By Sver Aune

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Tumor cells use the unfolded protein response to alter circadian rhythm, which contributes to more tumor growth, Hollings Cancer Center researchers at MUSC find. A key part of the circadian clock opposes this process, according to a paper published online Dec. 11 in Nature Cell Biology.

For tumors to grow and spread, cancer cells must make larger than normal amounts of nucleic acids and protein, so they can replicate themselves. Yet in both normal and cancer cells that increase their synthesis of protein, a small percent of those proteins do not fold properly. When that happens, the cell activates its unfolded protein response (UPR), which slows down the making of new proteins while the misfolded proteins are refolded. Eventually, the buildup of misfolded proteins becomes toxic and leads to cell death. However, cancer cells have learned to use the UPR to slow protein synthesis when needed, in order to handle the backlog of misfolded proteins. This helps them survive in conditions that would kill normal cells.

This pattern of adaptation is often seen in tumor cells, according to J. Alan Diehl, Ph.D., the SmartState Endowed Chair in Lipidomics, Pathobiology and Therapy at the MUSC Hollings Cancer Center and senior researcher on the project. "What a tumor cell is doing is taking a pathway that's already in the cell and using it to its advantage," said Diehl.

Yet it was not clear exactly how cancer cells were able to use UPR activity to influence circadian rhythm. Diehl’s group found that the UPR and circadian rhythm are linked together to lead the clockwork of the cell and also that cancer cells use the UPR to manipulate the circadian clock in ways that allow them to survive conditions that are toxic to normal cells.

To start, Diehl and his fellow researchers formulated a new idea based on what was known about protein synthesis in the cell. First, as they knew, the UPR is altered in tumors, and second, cells establish a circadian rhythm to regulate metabolism by producing levels of certain proteins that rise and fall in coordination with natural cycles of light and dark. Third, other scientists had observed that circadian rhythm is altered in tumor cells. Since protein production is tied to circadian rhythm, Diehl’s group asked if misfolded proteins might change circadian rhythm in cancer cells.

In their first set of experiments, Diehl’s research team used chemicals to activate the UPR in osteosarcoma cells. They found that, when activated, the UPR changes levels of an important protein called Bmal1, which is a transcription factor that rises and falls during cycles of light and dark. As it does, it regulates the expression of major circadian rhythm genes. When cells were exposed to cycles of light and dark, Bmal1 levels peaked during dark hours. But when the UPR was chemically activated, Bmal1 stayed low during both light and dark phases, which caused a phase shift in the expression of circadian genes. When one of the main parts of the UPR machinery was absent in cells, the phase shift did not happen.

Next, the group found that the UPR functions much like a “middleman” between light-dark cycles and the ability of cells to establish a circadian rhythm from those cycles. Levels of the circadian protein Bmal1 continued to decrease, as the UPR was increasingly activated. In rodents that had their light-dark cycles suddenly reversed, Bmal1 stopped rising and falling - a clear sign that their circadian rhythms were disrupted. Shifts in light exposure activated the UPR in those rodents’ cells.

But what does that mean for the development of cancer?

The team found that patients with breast, gastric or lung cancers survived longer when they had higher levels of Bmal1 protein. In myc-driven cancers, the UPR was causing the loss of Bmal1 protein, which caused the tumors to grow. Myc-driven tumors lost circadian rhythm, whereas normal cells maintained it. Conversely, high levels of

See Rhythm on page 13
Drinking data show harsh reality of binge boozing by young, old

New treatments can help, using genetics, behavior for care

By Helen Adams
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“It’s almost a hidden epidemic.”
That comes from a worried Raymond Anton, M.D., an alcohol abuse treatment and research specialist at MUSC. He’s referring to a recent study described in JAMA Psychiatry, showing the rates of alcohol use, high-risk drinking and alcohol use disorder all rose sharply between 2001 and 2013.

“Even among young people, the rates of binge drinking are going up, and the rates of women drinking heavily are more like men than they ever were, accelerating. Older people, too,” Anton says.

“Everybody sees it all the time. Everybody has a relative, friend or business associate who has an alcohol problem, and for the most part, they don’t want to talk about it. The opiate epidemic has gotten a lot more attention. But if you take the number of alcohol related deaths, it’s way more than deaths from opiates, and people aren’t talking about it.”

He’s trying to change that by not only pointing out the problem but also highlighting the growing array of personalized solutions for people who want to cut back on or stop drinking alcohol.

Binge Boozing

The statistics from the JAMA study, which looked at the National Epidemiologic Survey on Alcohol and Related Conditions, are pretty stunning. Comparing drinking data from 2001 and 2002 with data from 2012 and 2013:
- Alcohol use rose by about 11 percent
- High risk drinking climbed by almost 30 percent
- The rate of alcohol use disorder jumped more than 49 percent

High risk for women was four or more drinks a day at least once a week, and for men it was five or more drinks a day at least once a week. To qualify as having alcohol use disorder, a person has to meet certain criteria spelled out in the Diagnostic and Statistical Manual of Mental Disorders.

So why were there such big increases? There’s no single answer.

The researchers behind the study speculated that widening wealth inequality and race may be factors, leading to stress and discrimination for some people, triggering more drinking.

Anton points to other possible factors. “As baby boomers retire, they have more time for cocktail parties and might act like adolescents again. Women have undergone major changes, too, in recent decades. As they seek equality across a spectrum of social and economic life, alcohol consumption seems to tag along for some of them.”

He says drinking is socially acceptable for many people and encouraged by the companies that profit from sales of alcohol. “That has caused people to put their heads in the sand when it comes to seeing heavy drinking as a public health problem.”

And the reality is, most people who have tried alcohol don’t have a problem with it. “While 90 percent of Americans have sampled alcohol sometime in their lives, the vast majority control their drinking,” Anton says.

“Despite solid scientific evidence that has existed for 30 years, many people continue to see heavy alcohol use and alcohol use disorder as a failing of will.”

It’s not, Anton says. “Science shows it is clearly an acquired brain disease, likely rooted in heredity and genetics.”

Researchers say the increase in the number of people who drink too much alcohol, including women, older adults, racial and ethnic minorities and people who are socioeconomically disadvantaged, is now so high that it’s a public health crisis.

Scientific Solutions

Scientists at MUSC are finding new ways to pinpoint what causes people to be vulnerable to alcohol use disorder and which treatments work best.

“We’re developing a new treatment paradigm for which medication you should use based on both behavioral traits and genetic structure,” Anton says. “We know considerably more than we did 20 years ago about the brain chemistry and its areas that are affected by alcohol, and how all this leads to craving and relapse. Having that information, we can begin to tailor medication to help people stop drinking and not relapse if they want to stay abstinent.”

Yes, he said “if they want to stay abstinent” on purpose.

“We need a harm reduction approach in addition to a full abstinence approach,” Anton says.

“I chair a public-private work group that’s trying to better understand how reduced alcohol consumption during treatment can improve people’s health and lives. We hope to have discussions with the Food and Drug Administration to have it consider a reduction in drinking approach as a goal for medication clinical trials.

“The vast majority of people participating in our alcohol clinical trials over the past 20 years do not have a goal of abstinence but really want to control their drinking. This is reflective of the population at large, and pharmaceutical companies are more likely to develop medication if that’s an endpoint, because that’s what the market is calling for,” Anton says.

He says a combination of medication and counseling has the greatest impact. “That’s way more acceptable to the vast majority of people who cannot afford or just don’t want a 28-day inpatient rehab program that for many does not work well once they leave.”

Anton says people who struggle with alcohol have a chronic condition, comparable to hypertension or diabetes, and doctors should recognize that. “It requires a different mindset. You might have to be on medication for a sustained period of time, or go on and off like you would for many other diseases.”

As the JAMA Psychiatry study shows, the problem is growing. Anton says researchers continue to develop new, better ways to help. “The treatment of alcohol use disorders will be very different 10 years from now.”
Bmal1 overtook the UPR, thereby allowing protein synthesis to continue, which was toxic to tumor cells. In this way, Bmal1 directly encourages protein synthesis. This is the first study showing that human cancer suppresses circadian rhythm by controlling protein synthesis through Bmal1. Cancer cells survived longer by using the UPR to suppress Bmal1 and short-circuit their circadian rhythms. These results are important for human biology, according to Yiwen Bu, Ph.D., a postdoctoral scholar in Diehl’s laboratory and first author on the paper. “Every single normal cell in our body has circadian oscillation,” said Bu. “We showed that resetting the circadian rhythms in cancer cells slows down their proliferation.”

Still, do changes in light-dark cycles contribute to the development of cancer in humans? It is not yet clear in patients if circadian shifts contribute to changes in the UPR and if that, in turn, contributes to the development of cancer. But these results could help clinicians boost the effectiveness of current cancer treatments, Diehl said.

According to their research, resetting circadian rhythm in cancer cells may slow down cancer cell proliferation.

“Physicians are beginning to think about timing delivery of therapies in such a way that, say, if we deliver a drug at a certain time of day, we’ll get better on-target effects on the cancer and less toxicity in the normal cells,” he said.
Award  Continued from Page Six

“Lynn consistently looks for opportunities for professional development for her faculty – male and female – whether they are research-based, clinical-based or education-based. Anything she can do to help the individual develop, she tries to plug them in and takes a hands-on and constructive approach.”

Ford also described Schnapp’s renowned presence on the national scene, notably receiving the Elizabeth A. Rich, M.D. Award through the American Thoracic Society.

“I feel incredibly grateful to have such an inspiring leader and committed person that we value, respect and trust,” Ford said. “That is a very precious thing.”

Chairman of the Department of Medicine, Don Rockey, M.D., shared warm congratulations.

“Lynn has been fantastic since she’s been there. She was the first division chief I hired and the first woman division chief in the Department of Medicine. She is an absolute pace setter – as we now have three women division chiefs. Lynn set a great example. Lynn set an example. The word I would use for Lynn is altruistic. She always wants to talk about what she can do to advance the careers of others. She loves to see other people be successful. I couldn’t be more tickled with our first new division chief standing here today.”

Laughter ensued as Schnapp ascended the staircase at Colcock Hall to address her guests, playfully adding, “I’d like to thank my producers.”

“This is really meaningful to me,” she said with all seriousness. “Of all the things we do in our lives, I think helping the next generation and helping develop faculty, fellows, staff, all of our team members is why I took this position to give me that opportunity, and it continues to get me to work every day. It gives me joy and satisfaction.”

Schnapp reminded guests that while everyone has a number of stresses in their lives these days, and there can often be a lot of negativity, there is also much to be grateful for.

“I think it’s really important to step back and really think about the joy the jobs that we do brings us. My team brings me joy on a daily basis, occasionally a little stress, but joy on a daily basis. I feel very privileged to do what I do every day. I really appreciate it.”

Dr. Lynne Schnapp and the team from her research lab.

The College of Health Professions hosted “A Taste of Diversity: A Cultural Celebration” event mid-January with approximately 150 participants including students, faculty and staff in the CHP Atrium. Six caterers participated and featured different cultural cuisines including soul food, Indian, Japanese, Italian, Mexican and Greek. A local musician provided entertainment, and flowers were provided through Tiger Lily Florist. MUSC Student Programs and Student Diversity’s Dr. Dante Pelzer provided welcoming remarks. Also, the college’s new recruitment video was previewed by everyone present.

MUSC WSI Women Faculty Award Recipients

• Dr. Etta Pisano (2012) Dean, College of Medicine
• Dr. Kathleen T. Brady (2013) Vice President for Research; Department of Psychiatry & Behavioral Sciences
• Dr. Rosalie Crouch (2014) Former Vice President for Academic Affairs and Provost; MUSC Storm Eye Institute—Department of Ophthalmology
• Dr. Darlene Shaw (2015) Chief Institutional Strategy Officer
• Dr. Lisa Saladin (2016) Vice President for Academic Affairs and Provost
• Dr. Lynn Schnapp (2017) Division Chief, Pulmonary, Critical Care, Allergy and Sleep Medicine
RESCUE  Continued from Page Nine

Dr. Hudspeth’s BUNDT award stands for bright, unbelievable, never-stops, dedicated and thorough. She treats all of her patients as if they were her own family. She is a dedicated department chair and medical director for 7B who is very invested in her intraprofessional team.

—Nominated by: Melinda Biller, RN, 7B nurse manager and team

PATIENT COMPLIMENTS FEATURING FEMALE PHYSICIANS

Parents of twins would like to thank the many people involved in the care of their twins during their long hospital stay. The patients’ mother states the expertise of the staff in helping diagnose her son has changed the course of his life. The parents state they are hopeful for a normal life with their children, which would have never been possible without MUSC. They would particularly like to thank Laura of the Special Care Nursery for attempting to feed the twins and Dorothea Jenkins, M.D., Department of Pediatrics, for listening to them and devoting so much of her time to providing the most appropriate care for their children.

A patient would like to thank MUSC for the excellent care provided to her. She states a few people stood out during her admission. She would like to thank Camelia Marculescu, M.D., Infectious Diseases Division, Jessica Cook, M.D., hospitalist, and Shruti Puri, M.D., Infectious Diseases Division, for their care, taking the time to explain her treatment in a way that she could understand, for never talking over her and for including her in the conversations about medications and treatments.

Department of Pediatrics’ Dr. Christine Carter-Kent was honored for her leadership and patient care.

A patient who had a needle biopsy and would like to recognize Laura Roberts, M.D., Department of Anesthesia, for her care. The patient states she suffers from myasthenia gravis and Roberts was very precise and careful in her approach in anesthesia, secondary to her condition. The patient states she was very impressed with the care she received from Roberts.

A patient claimed she has never had a physician treat her with so much respect and carefully listen to her concerns as a parent as she did at MUSC. She spoke of Sarah Mennito, M.D., Department of Pediatrics.

“This situation is a shining example of how well members of our team adapt when the pressure is on. Connor Roberson’s actions in this situation were beyond thoughtful, disciplined and empathetic, they were at the very core of the concept surrounding the term heroic.”

He just hopes it was a turning point in Ben’s life. He’s grateful he was there to help.

“You can go to school for this kind of work, but you don’t learn anything until you hit the streets. No textbook can prepare you for telling someone their loved one is gone or taking care of someone at the end of their life. We never interact with someone who is having a good day. So whenever you have a chance to help somebody or to instill some kind of a positive difference in their lives, it’s the most important thing you can do in your job. That experience is second to none. You can’t put a price on helping somebody come down off a precipice of ending his life before it really began.”

to the ambulance together and headed off to the emergency room.

It was 6:30 in the morning, and the crisis was averted. A young life saved by someone who listened to the small voice.

“I felt like I was there for a reason. I’m usually focused on other things, but the first time I looked at him, there was just something, I felt like I had to go talk to him. Something different seem right. Something in my head just kept telling me I needed to go talk to him.”

Roberson is hopeful that Ben is doing well. He wonders about him frequently. He knows Ben’s parents were relieved he was safe and very happy to see him.

Even with all he did that fateful night, Roberson balks when someone calls him a hero or coworkers tell him they couldn’t have done what he did. His supervisor, Michael Ries, was fully looped-in as the morning’s events unfolded. The Medicare coordinator praised Roberson’s composure, quick thinking and good judgment in saving the teenager from the most dire of situations.

Michelle Hudspeth, M.D.
Pediatrics-Hematology/Oncology
Nothing BUNDT the Best MUSC Nursing

SCIENCE Communication Forum
March 9, 2018

The Office of the Vice President for Research and the Office of Communications and Marketing have joined forces to host an enterprise-wide Science Communication Forum on March 9, 2018. This full-day Forum will empower researchers and physician-scientists to advocate for their science with a variety of audiences—sponsors, policymakers, journalists, the public and other scientists.

SONYA H. DUHE’, PH.D.
KEYNOTE SPEAKER
Sonya F. Duhe, Ph.D., serves as vice president for the Office of Communication at Loyola University New Orleans. Her research emphasis is applied broadcast research and science journalism, including risk and crisis communications.

SCIENCE COMMUNICATION USING
SOCIAL MEDIA
Learn practical tips on how you can contribute to the scientific dialogue on social media and how to practice safe social media.

PITCHING YOUR RESEARCH CONCEPT
Discover strategies from MUSC communication experts to construct your key message into a “pitch” that can be given in the duration of a typical elevator ride.

ENGAGING POLICYMAKERS
Uncover how meeting with policymakers can be a valuable opportunity to educate them on the impact of your scientific research in a compelling manner.

WORKING EFFECTIVELY WITH
JOURNALISTS
Learn from a panel of journalists—what they look for in a story, how to develop your message, what to do when a reporter calls, and what to expect during an interview.

MARK YOUR CALENDAR!
academicdepartments.musc.edu/research/science-forum

Sponsored by: Office of Research Development & Public Affairs & Media Relations
The MUSC Transplant Center was one of four hospitals presented with an Excellence in Donation (EID) award at the South Carolina Hospital Association meeting for trustees, administrators and physicians last fall. The EID awards, presented annually, recognize efforts in the fields of clinical excellence and community outreach in support of organ, eye and tissue donation. The center was recognized for its 2017 Donate for Life advocacy campaign, which included the Garden of Life pinwheel display in the MUSC Horseshoe.