

# Ready for Ebola

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(Photo: Jay Dunn/The Salinas Californian)

The reality is astronomically low that a person infected with Ebola will turn up at a local emergency room. But the Ebola threat is enabling Monterey County hospitals to strengthen responses and better prepare for any number of dangerous diseases.

Whether it is produce customers from Asia, visiting students attending either the Monterey Institute of International Studies or the Naval Postgraduate School, or the hordes of tourists flocking to fabled Carmel or the Big Sur coast, the Central Coast attracts visitors from around the world. And, any pathogen that might be stowing away with them.

Hospitals find themselves chasing a moving target as they prepare for the remote possibility that an Ebola patient will enter their doors. The extraordinary fatality rate of Ebola – 50 to 80 percent, depending on the strain – requires an exceptional level of training, technology and precautions.

On entering a human, Ebola attaches to a cell, hijacks the cell's own processing systems, and forces the cell to create more Ebola virus. The cell explodes, sending new Ebola virus flying throughout the rest of the body.

Ebola also confuses the body's immune system. By the time the immune system responds, it does so on overdrive, which weakens blood vessels. Incredibly leaky blood vessels along with abnormal clotting lead to death from low blood pressure after blood loss and multiple organ failure.

It's not hysteria; preparing for the worst is a best practice hospitals anywhere can ill afford to ignore. Texas Health Presbyterian Hospital Dallas is a clear example of what can happen when clear-cut protocols are not in place or are ignored.

There have been no reported cases in Monterey County that have prompted Ebola protocols, according to the Monterey County Health Department.

## Drill, baby, drill

Which is why at Community Hospital of the Monterey Peninsula Ebola protocols are flexible enough to incorporate shifting recommendations from both the state and the federal Centers for Disease Control and Prevention. Constant staff communication and training are key.

"It is constantly changing terrain out there," said Dr. Steven Cabrales, vice president of medical affairs at CHOMP. "We have a daily huddle to make sure we are up to date on all the different changes."

The Peninsula hospital drills at least once a week to increase preparedness for the arrival of an Ebola patient, and the types of drills vary depending on whether the patient presents in the emergency room, by ambulance or even if a mom-to-be walks into the family birth center complaining of flu-like symptoms. Influenza and Ebola can present in similar ways at the onset of symptoms.

"Our approach has been, one, develop a policy or continue to refine the policy that we have, and, two, practice them," Cabrales said. "That's been the key to what I believe is a successful preparation."

These shifting CDC recommendations not only cause hospitals to continually update their Ebola protocols, but they also require nurse education and training to be malleable, said Carla Spencer, nursing director for the Emergency Department at Salinas Valley Memorial Hospital.

"We, as the health care team, have to be flexible with those changes and then change our plan accordingly," Spencer said.

## Critical first step

An initial protocol for all hospitals has nothing to do with biology, rather travel itineraries. When patients present in ERs with symptoms that include headache, diarrhea, nausea, vomiting and abdominal pain, the first question asked is whether they have travelled to West Africa in the last 21 days – the incubation period for the virus – or have been exposed to other people who have travelled there.

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An advisory sign outside the emergency room at Community Hospital of the Monterey Peninsula on Thursday. (Photo: Jay Dunn/The Salinas Californian)

Questionnaires don't just ask about contact with people from West Africa, but also bats or rodents from the region, as well as history of any fevers.

At SVMH, signs reading "Ebola Outbreak" over a map of West Africa greet visitors at every hospital entrance. In the emergency room, a security guard just inside the main door presents patients with a card, printed in both English and Spanish, asking if they've recently traveled to Africa.

"We hand these cards out to every single person," said Debra Johnson, the hospital's director of Infection Prevention and Control – regardless of why they've come to the ER.

If so, the patient would be ranked high on what's called the "index of suspicion for Ebola." These patients would be escorted to the hospital's isolation room or unit – all three area hospitals are equipped with isolation rooms that provide extremely limited contact with health-care staff and no contact with other patients. Simultaneously, trained medical staff will be in an ante-chamber donning personal protective equipment, or PPE.

Travel destinations may seem a little over the top, but Nik Greenson, an ER physician at SVMH, pointed out that a patient's travel history is key to differentiating the early symptoms of Ebola from more common diseases like influenza. And that history can only be cleared up by conversation.

Greenson, who's also worked with infectious diseases like Sudden Acute Respiratory Syndrome and tuberculosis, recalls a patient presenting with a peculiar set of symptoms. Doctors were stumped until a medical student chatted with the patient and learned he had recently traveled to southern Mexico. Only then did his symptoms make sense: he had malaria.

"Spending a lot more time with patients can really pay off," Greenson said.

While the individual hospital's Ebola protocol is being executed, the Monterey County Department of Health will have been notified and will immediately be on scene helping to coordinate responses.

Ebola is not easy to contract, not like influenza virus that can spread through the air via moisture droplets from coughing or sneezing, as well as from hand-to-hand contact. Ebola can only be spread with contact with an infected person's blood or other bodily fluid, which is what makes it particularly dangerous to health-care staff.

### Suiting up for battle

PPE suits are common among large teaching hospitals or hospitals designated as infection control centers, but for community hospitals, the high-tech apparatus is less common. Yet they are the first line of defense to protect health-care workers from contracting the virus.

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In training for possible Ebola cases, nurse Erica Sanborn, left, base hospital coordinator at Community Hospital of the Monterey Peninsula, helps her colleague Susan Burnell, a clinical nurse educator, put on a PAPR, a powered air purified respirator. (Photo: Jay Dunn/The Salinas Californian)

"It's a great time for all of us to practice the standard droplet precaution [non-Ebola] exposure donning and doffing of the gear," said Cabrales, the CHOMP executive. "We are trying some fun, innovative methods. You'll put on your gear and then get smeared with some chocolate sauce to show you if you contaminated yourself as you take the gear off."

The California Nurses Association/National Nurses United, a nurses' union, has called for more continuous training for nurses and mandates on advised personal protective equipment. But, training takes time and equipment supplies are small. At Salinas Valley Memorial Hospital, nurses have started their training for the possibility of an Ebola patient with the new PPE available.

"I don't know how we could prepare any better. We're trying to get the training. We're trying to get the information out to the nurses. And we're going to get them the practice with the equipment so that everyone is more comfortable," said Vanessa Lockard, a nurse in the SVMH emergency room.

SVMH nurses in the intensive care unit, emergency department, and critical care will be trained to don and doff the Center for Disease Control and Prevention approved PPE with head to toe coverage, she said.

"The three most important things that health care workers need to do when dealing with a potential Ebola patient," said Monterey County Health Officer Edward L. Moreno, "are screening, isolation, and using proper PPE, or personal protective equipment."

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In training for possible Ebola cases, Mauricio Mendez, an ER tech at Community Hospital of the Monterey Peninsula, helps his colleague Susan Burnell, a clinical nurse educator, put on a second layer of gloves. Burnell is wearing a PAPR, a powered air purified respirator. (Photo: Jay Dunn/The Salinas Californian)

These Ebola-specific PPE kits include: impermeable gowns, coveralls, and aprons; boot covers; gloves; face shields and hoods; N95 respirators; powered-air purifying respirator systems and ancillaries; and disinfecting wipes. An N95 respirator is designed to achieve a very close facial fit and very efficient filtration of airborne particles, according to the U.S. Food and Drug Administration. In addition to blocking splashes, sprays and large droplets, the respirator is also designed to prevent the wearer from breathing in very small particles that may be in the air.

A few of the emergency department nurses at SVMH received training with this non-standard PPE last week and more training is planned. The PPE protects the wearer's skin, airways and mucus membrane.

"You name it, we're protected against it when we put this on correctly," Lockard said.

Local hospitals are instituting a best-practice buddy system for the intricate process of donning and doffing the PPEs. Buddies make sure their partners do not miss any steps and can coach them through potentially hazardous situations.

### Hospital limitations

Dr. Gary Gray, the chief medical officer at Natividad Medical Center, said the county trauma center is equipped and ready for the off chance of receiving an Ebola-stricken patient. But there are hospitals regionally that are far better equipped to treat these seriously ill patients.

Gray said NMC's Ebola management plan continues to be refined based on CDC guidance for initial detection and management of suspect or confirmed cases. Signs have been placed around the hospital asking potential patients and visitors to notify hospital staff immediately if they have traveled to Guinea, Sierra Leone, or Liberia in West Africa.

For high-risk patients, a 72-hour blood test can reveal whether the virus or its antibodies are present in the body. But all agree that it would increase positive outcomes if the patient were transferred to a hospital with special equipment and technology to care for the critically ill patients.

Meanwhile, training continues for at-risk employees at potential patient entrance points throughout the NMC, including outpatient clinics.

After stabilizing patients from immediate threats – dehydration from blood loss and diarrhea, for example – they would be immediately transferred to major regional hospitals for the remainder of their care.

Cabrales, from CHOMP, said they do not have enough gear for the long term. Community Hospital has informed the county health department that supplies are on back order for weeks and possibly months.

"We are currently looking at opportunities to work collaboratively with other hospitals in the area or state to make sure that if something happens that we will be immediately provided with the appropriate gear," Cabrales said.

The California Department of Public Health has distributed guidance to hospitals on transport protocols. Two weeks ago University of California Medical Centers announced the five centers in its system have been identified as "priority hospitals." The centers are located in Davis, San Francisco, Los Angeles, San Diego and Irvine.

### **Ebola not the biggest risk**

It's easy to worry that California may import its first Ebola case sometime soon. After all, "Ebola is very contagious; but the fear and anxiety about the disease are much more contagious," said Nik Greenon, emergency room physician at SVMH.

Far more worrisome to health officials are the easily transmissible diseases already here.

According to the doctors, nurses and other health officials interviewed for this story, the state's biggest infectious disease threat isn't Ebola; it's the flu. It may be a common disease, knocked out by most healthy immune systems, but every year it still manages to kill hundreds of Californians.

Moreno said the best way to keep healthy this season is to get a flu shot. And if you do get the flu, try not to pass it on.

"If you are sick, stay home from work, and if your kid's sick, keep them home from school," he said.

According to the CDPH, during the 2013-14 flu season, California intensive care units admitted 1,224 flu cases in patients under the age of 65. About a third died. Twelve of those ICU cases were in Monterey County, according to the county health department, with eight deaths – a fatality rate of two out of three.

To temper those numbers, however, consider that to even be admitted to a hospital ICU with a case of the flu, a patient is likely to have serious secondary health problems, such as cardiac problems or a compromised immune system, which would bolster the fatality rate.

In the best possible scenario, Monterey County will never see a case of Ebola. Even if that happens, said Moreno, the MCPH officer, the extra precautions would still have been worth it.

"People ask why we're spending so much time looking at Ebola when we don't even have a case here," he said. "It's an opportunity for us to educate ourselves."

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