Oregon's food safety pioneer, William Keene, brilliant, dogged and quirky, dies at 56

By Lynne Terry, The Oregonian

The first reports of illness trickled in, just as they always do, to the offices of William "Bill" Keene, Oregon's top food safety sleuth. The outbreak involved a potentially deadly strain of E. coli. Keene and his colleagues sprang into action, interviewing victims on the phone. What had they eaten? Where? When?

They quickly pinpointed local strawberries as the likely culprit. But in 2011, when the outbreak hit, no one had ever heard of strawberries carrying E. coli O157:H7. How could that happen?

Keene had a theory: contaminated deer droppings. So, he tromped through the strawberry fields in Yamhill County, collecting pellets. Turns out they were contaminated with E. coli O157:H7.

Keene was right, as usual.

A brilliant scientist, a man who mentored many and transformed the way food safety investigations are done nationwide, Keene is gone. He passed away Sunday afternoon after a two week bout with acute pancreatitis caused by gallstones. **He was only 56**.

His family, friends and colleagues coast-to-coast are devastated. At least one of his co-workers in the Oregon Public Heath Division, where Keene was senior epidemiologist, stayed home Monday to grieve. Others dragged themselves around the office, teary eyed. Most found it difficult to grasp that he's gone.

"I think we're all pretty much in denial," said **Dr. Katrina Hedberg**, Oregon's state epidemiologist.

A long **Oregon Public Health Division** statement that listed Keene's numerous accomplishments summed him up as an individual of "superior intelligence, uncompromising candor, dry wit and quirky personality."

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He grew up in a middle-class family with four siblings in the Seattle area. His older brother, Dr. David Keene, a Los Angeles-area pediatrician, said Keene was ever mischievous, even surprising his mother by being born during a snowstorm in the bathroom. During high school, Keene treated himself to several graduations by donning the appropriate cap and gown and marching across various high school stages with his name on a card, having it read out loud.

His real alma mater was Shorecrest High School outside Seattle where he was president of the graduating class and a member of a bagpipe band. He later went to Yale

University, earning a bachelor's degree in anthropology in 1977. He thought he wanted to work in the field, but after two years in India and Pakistan researching rhesus monkeys, he decided he didn't want to spend his days in sweltering climates.

He returned to the states and landed a job as a lab technician at the **University of California at San Francisco**. That led to an interest in parasites. He started graduate school at **Johns Hopkins University** in Baltimore, intending to study parasitology but ended up transferring to the**University of California at Berkeley**. In 1989, he graduated from Berkeley with a doctorate in microbiology and a masters in public health.

A year later, he was hired by the Oregon Health Division as an epidemiologist. He was promoted to senior epidemiologist in 2003, keeping that position to the end of his life.

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He made his mark early and often, revolutionizing food-borne outbreak investigations. In the past, epidemiologists interviewed the ill people about what they had eaten. They also questioned a similar number of healthy people as a control; if one food popped up among the patients but not the control group, they knew they had nailed their culprit.

Keene adopted a radical approach that shaved days, even weeks off the investigation by using survey data instead of interviewing healthy people. If four out of four of ill people had eaten bagged spinach, for example, but only 10 percent of those surveyed had done so, the scientists knew that the spinach had caused the outbreak.

This method meant epidemiologists could crack outbreaks much more quickly. But it wasn't immediately snapped up by federal authorities. In fact, the Centers for Disease Control and Prevention balked at first.

"He really pushed the frontiers forward," said **Dr. Paul Cieslak**, head of communicable disease at Oregon Public Health Division. "Eventually, the rest of the country followed suit."

Keene also created a nine-page survey, filled with lists of foods and questions about restaurants and other places where people may have picked up a bug. This "shotgun" questionnaire, as Keene called it, systematized outbreak investigations. Developed in Oregon, it, too, spread to other health departments across the country.

"He was the one who showed that you could do these (investigations) in a systematic way even in a state that wasn't loaded with resources," said **Dr. Robert Tauxe**, deputy director of food-borne, water-borne and environmental diseases at the CDC.

Keene spent hours in front of his computer, crunching numbers, but he also rolled up his sleeves and trudged through muddy fields, collecting scat, or when needed he waded knee deep in lakes, scooping up contaminated water to test for pathogens.

He told colleagues, they had three missions in their work: protect the public; learn something new and have fun just as long as they didn't skimp on the first two.

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He always had a ready pot of tea for visitors in his office, which was crammed with jars and packages that once contained contaminated food: tubs of Nestlé Toll House cookie dough, Clif bars, a bottle Odwalla apple juice, boxes of Austin peanut butter crackers, a can of **Castleberry chili**, a package of Townsend Farms frozen berry blend.
This "Outbreak Museum" represented a history of the outbreaks he spent his career cracking. It also reflected his quirky personality.

Michael Osterholm, head of the Center for Infectious Disease Research and Policy at the University of Minnesota, said Keene's unconventional approach was shaped, in part, by his anthropological training.

"A lot of people in epidemiology are high-powered statistical experts who can maneuver data very easily," Osterholm said. "That kind of expertise is important. But Bill, while capable of doing that, took a step back and looked at the world in a way an anthropologist would. He asked how it all fit together and what had occurred."

Once he solved a case, he spread the word, informing colleagues, federal health officials, even company executives. He'd call chief executive officers personally to tell them that one of their products was making people sick. He'd also phone the food safety chief at Costco, even in the middle of the night, to tell him about tainted food.

Many epidemiologists hesitate to speak out publicly. Not Keene, though it occasionally got him into trouble.

In 2011, **Del Monte Fresh Produce** threatened to sue him and the Oregon Public Health Division over an investigation linking Salmonella cases to the company's cantaloupes. The case was eventually dropped.

"He felt very strongly that part of food safety is accountability and he didn't hesitate to name companies if he thought they were part of an outbreak," said Tauxe, of the CDC. "Now we usually name names, too."

Besides his work at the Oregon Public Heath Division, Keene was a consultant with the World Health Organization. He took unpaid leave and used vacation time to create infectious disease surveillance systems in Sudan, Thailand, Pakistan, Iran, Indonesia and India. He authored 40 publications, made dozens of presentations and won a number of awards.

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Keene met his wife, Elise Gautier, when they were both at Yale. They recently celebrated their 30th anniversary. The couple enjoyed camping and hiking and were known for their "Portland Film Society" screenings in their yard in Southwest Portland of old black and white movies.

He's survived by his wife; sisters, Pam Keene and Beverly Keene; brother Dr. David Keene; and nieces and nephews.

A celebration of his life is being planned by colleagues. People are expected to come from afar.

Though he died relatively young, he accomplished a lot, said **Dr. David Fleming**, public health officer of King County, Wash., who originally hired Keene at Oregon Public Health.

"Oregon and the country were very lucky to have him on our side as long we did," Fleming said.

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