



AgHealth News

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University of California, Davis

WCAHS/UCSF collaborate on farm worker oral health study

By Angela Hue

Results of a recent survey conducted by the Dental Health Foundation indicate an overwhelming 72 percent of California's Latino grade-school children have some form of tooth decay. Many other studies show that compared to the general Latino population, Latino farm worker children have exceptionally high rates of caries, an infectious disease that can be transmitted and is caused by an imbalance of oral bacteria on teeth and in saliva.

Investigators with the MICASA (Mexican Immigration to California: Agricultural Safety and Acculturation) study, funded by the Western Center for Agricultural Health and Safety (WCAHS), are working in collaboration with UCSF's School of Dentistry to examine factors behind oral health problems among farm worker children. MICASA's most recent oral health study involves a dental exam and questionnaire for women and children in participating households in the Mendota, Calif., area of Fresno County.

The MICASA and UCSF study found that many immigrant caregivers have different beliefs and views on oral health and tooth decay. Since the majority of farm workers in Cali-



At the November 12 Open House of the MICASA project in Mendota, Ginelle Sakima Roberts, UCSF pediatric dentistry resident, is assisted by local resident Rocio Madrigal, who is working on the dental MICASA project.

WCAHS receives \$5.1 million to continue funding ag health and safety programs

As the Western Center for Agricultural Health and Safety (WCAHS) celebrates its 17th year of operation, it has a lot to be thankful for, including receipt of \$5.1 million from the National Institute for Occupational Safety and Health to continue its research and education efforts for the next five years.

Founded in 1990, WCAHS is one of nine agricultural health and safety centers established by the federal Centers for Disease Control to improve health and safety for the nation's farmers, farm workers and consumers.

"This renewal of funding represents not only financial support, but also a vote of confidence in the center's established record in addressing the agricultural health and safety challenges of California and the Western United States," said Marc Schenker, director of WCAHS.

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Oral health *from page 1*

ifornia are immigrants, they were not prepared for the change in diet (e.g., refined foods, candies and sodas) upon entering the United States. Latino parents have misconceptions about the need for oral hygiene, and are unaware of the fact that childhood caries is highly infectious and can be taken care of.

Other barriers of dental treatment come from dentists and insurance policies. Many dentists do not accept young children, let alone take children with Denti-Cal because of the insurance's low reimbursement rates. If the dentists accept Denti-Cal, the options for treatment are extremely limited.

As investigators from MICASA and UCSF's Center to Address Disparities in Children's Oral Health continue to study the extent of oral health problems among farm worker families, new information will help



A highlight of the WCAHS Mendota office open house was the piñata of UC Davis's mascot "Gunrock." Designed and constructed by local MICASA team members Julia Soto, Rosa Iraheta and Maxi Cabrera.

lead to improvement of farm worker health. The investigators hope that this study, along with the rest of MICASA's health studies, will provide a better understanding of the needs of farm workers and lead to changes resulting in healthier farm worker families.

Angela Hue is a third-year student at UC Davis, and a research assistant at the Western Center for Agricultural Health and Safety. For more information on this study or the MICASA program, send an e-mail inquiry to agcenter@ucdavis.edu.

Community Outreach for Research & Education (CORE) activities underway

Over the past six months, Dr. Stephen McCurdy and Elizabeth Noceti DiDio have been reaching out to communities, agencies and campus centers seeking partnerships and areas for collaboration. Many new projects have culminated from these activities.

New advisory board

A new advisory board met on September 24. Members of the team include Robin Baker, Labor Occupational Health Program-UC Berkeley; Linda Garcia, California Endowment; Howard Rosenberg, Agricultural Personnel Management Program-UC Berkeley; Myriam Grajales-Hall, ANR's Spanish Broadcast and Media Services; William Krycia, California

Department of Occupational Safety & Health; Lucia Kaiser, UC Davis Department of Nutrition; Martha Stiles, California AgrAbility Program; Richard Molinar, Fresno County Cooperative Extension; Dr. Rogelio Fernandez, United Health Centers in the San Joaquin Valley; Nayamin Martinez, Binational Center for Oaxacan Indigenous Communities; Abel Serrano, W.O.R.M. AG, Inc; Jillian Hopewell, Migrant Clinician's Network; John Capitman, Central Valley Health Policy Institute-CSU Fresno; Faith Boucher, California State Department of Health & Human Services; and Amy Block Joy, UC Davis Department of Nutrition. Each member has a breadth of expertise and linkages that will create a network for exchanging

information, resources and forming solid partnerships.

Pesticide illness education course

CORE is one of many partners working with the Office of Environmental Health Hazard Assessment (OEHA) to better educate health care providers to recognize, manage and report pesticide-related illnesses in California. CORE's team will develop an online accredited pesticide education course for health professionals. A statewide community outreach plan will promote the pesticide education training for physicians through primary care clinics, medical societies and hospitals.

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Antique machinery illuminates ergonomic advancements

Improvements in the ergonomic design of farming equipment are credited with saving untold numbers of serious agricultural injuries in recent decades. But full understanding of the strides that have been achieved requires perspective on the past. To see where we are, we must remain aware of where we once were. That's why the agricultural machinery collection here at UC Davis is such a valuable resource. And that's why Victor Duraj was drawn to it.

Duraj wears many hats at UC Davis—as associate development engineer and recently also a safety coordinator in the Department of Biological and Agricultural Engineering; volunteer manager of the agricultural machinery collection; outreach coordinator for the Heidrick Western Center for Agricultural Equipment; chair of the California/Nevada Section of the American Society of Agricultural and Biological Engineers; and a Ph.D. student at the UC Agricultural Ergonomics Research Center (AERC).

Since 1996, Victor has worked with Professor Emeritus John Miles on the design, modification and fabrication of interventions for ergonomics research projects. He instructs a computer-aided design laboratory, performs a demonstration lecture for Professor Fadi Fathallah's ergonomics course, provides guidance to undergraduate and graduate students working on ergonomics- and biomechanics-related projects, and maintains a commercial driver's license to assist in projects requiring such a license.

Duraj worked closely with John Miles on the design and fabrication of many of the nursery ergonomics interventions, including pot-carry-

ing handles, workstation changes involving tables, chairs, flooring, drainage, lighting and powered shears. For the wine grape industry, he assisted in the design of a machine for picking up and processing tubs of grapes, as well as making hoe and shovel modifications. For workers in the tree fruit industry, Duraj helped to develop modifications to a pear harvesting platform and alternative ladders (the focus of his Ph.D. dissertation).



Victor Duraj demonstrates an early ergonomic tool used for planting corn.

Duraj was introduced to the Antique Mechanics Club as a student in 1987, and then as an alumnus in 1993 became volunteer manager of the program as president of the Antique Mechanics Society, a registered UC Davis Support Group. The club was established by UC Davis agriculture and engineering students in 1971.

“Tractor restoration is just one exciting aspect of our program that celebrates California's rich agricultural heritage,” said Duraj. “But we do much more than just tractor

restoration. The UC Davis agricultural machinery collection, known around the world, is home to some amazing examples of mechanical ingenuity in early agriculture.”

One of America's earliest gasoline engines, dating back to the mid-1880s, comes to life on reruns of the PBS' *California Heartland*, or at the Antique Mechanics' shop for UC Davis students and visitors to experience. A replica of McCormick's 1831 Reaper was recently operated for the History Channel's *Modern Marvels* “Harvesting” episode on which five UC Davis ag faculty are shown. The recently aired sequel “Harvesting 2”, featuring more UC Davis faculty and Duraj, included operation of the collection's hand powered corn sheller. All of these machines, plus others in the collection, represent improved ergonomics in agriculture in one way or another. Other pieces in the collection are simply examples of great strides forward in productivity and efficiency. Caterpillar Company's serial number one diesel tractor—the first diesel tractor off of the company's assembly line in 1931—sits in the Antique Mechanics' main shop, mostly disassembled and awaiting restoration.

However, the Antique Mechanics program goes far beyond just tractors and equipment. The collection complements the University Library's Special Collections Department, in which one of the most extensive collections of agricultural equipment literature is used by researchers from around the world. Being able to obtain operator or service manuals for tractors and other equipment, sometimes dating to early in the last century makes research and repair that much more

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Community engagement

Investigators from WCAHS are working with the Environmental Protection Agency and the California Department of Pesticide Regulation to measure pesticide air concentrations in Parlier, Calif. A local advisory group composed of members from the community was formed to engage the community in the research process. CORE will be working with the community and collaborators to determine the best way to communicate the results to the community.

Diseases linked to air quality

The Center for Environmental Health and Safety (CEHS) recently submitted its NIEHS grant for renewal. It was perfect timing for WCAHS' CORE team, who met with the CEHS directors and discussed overlapping outreach projects and activities. The combined expertise will optimize outreach and educa-

tion efforts and activities that will be focused on diseases linked to air pollution, neurodevelopment disorders and cancers.

Social marketing toolkit for heat stress

Farm workers and the community will be engaged through focus groups to characterize cultural beliefs and attitudes that may affect risk for heat illness and how to best relay information about prevention. The materials will then be tested in the community for their effectiveness in improving understanding of the risks and prevention for heat illness and used for statewide efforts.

Collaborative outreach

The Public Service Research Program (PSRP) and WCAHS—both centers within the John Muir Institute of the Environment—have recently begun a fruitful collaboration to promote innovative and effective ways to reach communities affected by agricultural and environmental

hazards. PSRP places graduate students into California communities to foster citizen-based learning, engagement and decision making about the environment. Liaisons provide technical, scientific, organizational and educational assistance, with an emphasis on collaborative problem solving and exchange of knowledge. Through these collaborations, a graduate student has begun meeting with community members of Parlier to engage them in the research process and how best to apply research findings from studies on air quality and agricultural issues. A second collaboration with a graduate student, who was trained through the Community Liaison Program, is moderating focus groups for a tractor safety project.

Practical health and safety information

CORE members developed a survey to find out where growers, farm managers/supervisors and farm labor contractors go to get practical health and safety information. This survey primarily addresses access to health and safety training with some emphasis on heat stress, and identifying needs for agricultural safety information. This survey will be pilot tested to obtain the best possible instrument and then administered at farm shows, growers meetings, conferences and workshops.

Connecting with NIOSH centers

CORE will be collaborating with the Southern Coastal North Carolina Center on an intervention pilot project to reduce risk of heat-related deaths and illness among field workers, with a focus on organization of work patterns.

For more information on CORE activities, contact Elizabeth Noceti DiDio at emnoceti@ucdavis.edu.



The 16th Annual Western Migrant Stream Forum *Se Puede Hoy: Sustaining Migrant Communities for a Healthy Tomorrow* took place Jan. 26–28 in Sacramento. WCAHS investigator Dr. Stephen McCurdy served on the planning committee and contributed to the forum, which included post-conference promotor(a) program-focused training sessions. The WCAHS exhibit was of interest to many participants.

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possible and rewarding.

“We provide students an opportunity to learn how to troubleshoot ‘simple’ machinery and to work with a variety of hand and power tools, something that many students welcome after flipping pages in books and tapping keys on computers all week. The most rewarding aspect of Antique Mechanics is seeing the joy of discovery on the faces of students who figure out how a system works and then get it to work, be it an engine, a device, or even a modern hand tool,” says Duraj.

During UC Davis’s annual Picnic Day, the Antique Mechanics bring multiple marvels of mechanical ingenuity to life in the parade and exhibit.

“Picnic Day gives us an opportunity to share our work with thousands



This 1929 CASE Model CO gasoline/kerosene tractor is part of the collection maintained by the Antique Mechanics Club.

of people each year. Many of these people are not familiar with the equipment or what it does,” says Duraj, who is planning to represent the collection in his 20th Picnic Day

parade on April 14.

For more information on ergonomics projects or Antique Mechanics, contact Victor Duraj at vduraj@ucdavis.edu.

Funding from front page

The new federal grant enables the center to continue its wide-ranging research and education projects and to investigate new areas of concern. In addition to conducting research and developing educational programs related to disease- and injury-prevention, the center works to develop effective collaborations among colleges and universities, government agencies, industry and community groups. Current major projects include:

Airborne Particles—Dry farming techniques used in California’s Central Valley result in high levels of airborne particles produced by a variety of farming activities, including field preparation, stubble burning and harvesting. Kent Pinkerton, professor of anatomy, and colleagues are studying the health effects associated with airborne agricultural particles by performing animal-inhalation studies at agricultural sites. Studies

are already underway in the small agricultural community of Parlier to examine the effects of airborne particles in short-term inhalation studies using laboratory rodents in conjunction with an environmental justice pilot program to examine pesticides associated with these inhaled dusts. Future studies on particle exposures will be conducted in the dairy-rich regions of Modesto and Tulare in the San Joaquin Valley.

Farm worker Health study—In this study, researchers are investigating how to best prevent occupational diseases and injuries among hired farm workers and their families. The research team will conduct interviews with about 400 Hispanic farm worker families who live in the Central Valley community of Mendota, Calif. Led by Dr. Marc Schenker and field coordinator Kathleen O’Connor,

the study focuses on occupational risk factors and health behaviors, respiratory function of hired farm workers, and factors that increase the risk of certain health problems in Latino children.

Rapid Assays for Human and Environment Exposure Assessment—This project, led by Professor Bruce Hammock, has three specific aims: 1) to assess new technologies to improve the speed, sensitivity, and robustness of immunoassays for biomarkers of exposure and effect; 2) to develop and implement immunoassays for new target compounds; and 3) to provide analytical support for other WCAHS projects.

Dairy Health—This study, led by Frank Mitloehner, a Cooperative Extension air-quality specialist

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from UC Davis’ animal science department, will look at current dairy practices and determine the amounts of material dairy workers are exposed to over the course of a work shift. Approximately 20 large dairies in Tulare and Merced counties—the two San Joaquin Valley counties with the most dairies—will be monitored

More information about these research projects and other activities of the Western Center for Agricultural Health and Safety is available online at <http://agcenter.ucdavis.edu/>.

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WCAHS Seminar Series

4-5 p.m., 3201 Hart Hall, UC Davis Campus

March 5

Kent Pinkerton, Ph.D.

Director, UC Davis Center for Health and the Environment,
“Agricultural Impacts on Your Brain and Respiratory System”

April 2

Martha Stiles

Director, UC Davis California AgrAbility Project,
“Working with Disabilities Among Farmers, Farm Workers and Ranchers”

May 7

Kathleen O’Connor, Ph.D.

UC Davis School of Public Health Sciences,
“New Approaches for Community-Based Participatory Research Among Central Valley Hispanic Farm Workers”

June 4

Gideon Zeidler, Ph.D.

UC Davis Department of Animal Science,
“Elevating Food Safety Capabilities Using Wireless and Remote Emerging Technologies”

The seminar series is available via video webcast at <http://agcenter.ucdavis.edu/seminar/webcast.php>

Look for the short *AgHealth News* readership survey in the Spring issue. Please submit your comments on the self-addressed, stamped form.