The University of Iowa
College of Dentistry & Dental Clinics

IOWA

FLUORIDE and BONE DEVELOPMENT STUDY NEWS

FEBRUARY 2015

OUR 23rd YEAR

We hope you had a great holiday season and wish you all the best for a Happy New Year!

It's been a year since we last updated you and it's been quite busy for us here at the Iowa Fluoride Study! We would like to thank all of our families for their ongoing commitment to the Study.

This is the Iowa Fluoride Study's 23rd year since recruitment started and we would like to look back at how much we have accomplished, thanks to you! Without the time and energy you and your families have dedicated to completing questionnaires and attending dental and bone exams, we would not be here today. Thanks again!

The Numbers!

The numbers are amazing; look what we have accomplished together!

698	Five-year dental exams
630	Eight-year dental exams
552	Thirteen-year dental exams
464	Seventeen-year dental exams
45,234	Completed and returned questionnaires
3,650	Activity monitor studies
979	Parent bone exams
471	Five-year bone exams
539	Eight-year bone exams
483	Eleven-year bone exams
489	Thirteen-year bone exams
419	Fifteen-year bone exams
381	Seventeen-year bone exams
311	Nineteen-year bone exams

MANY SCIENTIFIC ARTICLES HAVE BEEN PUBLISHED!

The research team continues to be very busy analyzing study data and writing up the results for submission to major scientific journals in several disciplines. We have been quite successful in having scientific articles published in the past 12 months, as listed below.

Chankanka O, Levy SM, Marshall TA, Cavanaugh JE, Warren JJ, Broffitt B, Kolker JL. The associations between dietary intakes from 36 to 60 months of age and primary dentition non-cavitated caries and cavitated caries. *Journal of Public Health Dentistry.* 2014. PMID: 23134446.

Francis SL, Letuchy EM, Levy SM, Janz KF. Sustained effects of physical activity on bone health: Iowa Bone Development Study. *Bone* 2014 Jun; 63:95-100. PMID: 24632502.

Hong L, Levy SM, Warren JJ, Broffitt B. (2014). Infant Breast-feeding and Childhood Caries: A Nine-year Study. *Pediatric Dentistry* 36(4): 342-347.

Janz KF, Letuchy EM, Burns TL, Eichenberger Gilmore JM, Torner JC, Levy SM. Objectively measured physical activity trajectories predict adolescent bone strength: Iowa Bone Development Study. *British Journal of Sports Medicine.* 2014; 48:1032-1036. PMID: 24837241.

Levy SM, Warren JJ, Phipps K, Letuchy E, Broffitt B, Eichenberger-Gilmore J, Burns TL, Kavand G, Janz K, Torner JC, Pauley CA. Effects of life-long fluoride intake on bone measures of 15-year-olds: a prospective cohort study. *Journal of Dental Research,* 2014 Apr; 93(4):353-359. PMID: 24470542.

Liu Y, Jin D, Li C, Janz KF, Burns TL, Torner JC, Levy SM, Saha PK. A robust algorithm for thickness computation at low resolution and its application to *in vivo* trabecular bone CT imaging. *IEEE Transactions on Biomedical Engineering,* 201; 61(7):2057-2069. PMID: 24686226.

Polk DE, Geng M, Levy S, Koerber A, & Flay BR (2014). Frequency of daily tooth brushing: predictors of change in 9- to 11-year old US children. *Community Dental Health.,* 31(3), 136-140.

Shaffer JR, Carlson JC, Stanley BOC, Feingold E, Cooper M, Vanyukov MM, Maher BS, Slayton RL,Willing MC, Reis SE, McNeil DW, Crout RJ, Weyant RJ, Levy SM, Vieira AR, Marazita, ML (2014). Effects of enamel matrix genes on dental caries are moderated by fluoride exposures. *Human Genetics,* Springer Publishing. DOI 10.1007/s00439-014-1504-7.

Stanley BOC, Feingold E, Cooper M, Vanyukov MM, Maher BS, Slayton RL, Willing MC, Reis SE, McNeil DW, Crout RJ, Weyant RJ, Levy SM, Vieira AR, Marazita ML, Shaffer JR. Genetic association of MPPED2 and ACTN2 with dental caries. *Journal of Dental Research*, 2014; 93(7):626-632. PMID: 24810274.

Zeng Z, Shaffer JR, Crout R, Feingold E, Weeks DE, Cuenco KT, Keun M, Weyant RJ, Wang T, McNeil D, Levy SM, Marazita ML, Broffitt B. Genome-wide association study of primary dentition pit-and-fissure and smooth surface caries. *Caries Research,* 2014 Feb 18; 48(4):330-338. PMID: 24556642.

Meet the Staff

Heather Pallister

Heather has worked in the study in various capacities since nearly the beginning. She even recruited some of you right after you were born! Her role with the Iowa Fluoride Study has evolved from study recruiter, to data management and questionnaire editor, to her current position of scheduling for the clinical research unit (CRU) and obtaining city water samples. Heather graduated from The University of Iowa with her bachelor's degree in Dental Hygiene, is married and has a 12 year old daughter and an 8½ year old son. In her spare time, she likes spending time with family and friends, exercising, and shopping. She said, "It has been AMAZING how fast time has gone and it's been fun 'watching' you all grow up!!" Heather truly enjoys working with all of the wonderful Iowa Fluoride Study families and staff!!

Barb Simon

Barb has worked with the Iowa Fluoride Study (IFS) since its beginning. She helped to conduct a pilot study and entered the first data as each participant was recruited. As the 6-week surveys came in, each water source was entered and coded. Barb began sending out samples from wells, municipal waters, filtered sources, and out-of-state entries in order to a have a fluoride value to assign to each child. The water procurement expanded as the participants attended some 155 daycares and preschools, 1,101 schools (including elementary, middle, and high schools) and now many colleges. In addition, water has been collected from 1,059 cities in both the U.S. and abroad. Barb sees to it that each water source is tested annually. She has seen many subjects for visits and feels as if she knows them all personally. There are a lot of stories she can relate about the IFS, its advances and events. If anyone has a question on the team, Barb is our point person.

Barb and her husband Rich have been married 51 years and live on a farm growing grain and sheep. They have 3 children and 3 grandchildren. All of this, plus the IFS, keeps her very busy. In her free time, she enjoys gardening vegetables and flowers, working with her dogs, riding with Rich on the Harley, taking the Model A to parades, but most of all, spending time with her family.

Who would have ever thought that a request for a 4-year commitment would continue for 23 years?

Sasha Usacheva

Sasha is a new research assistant for the Iowa Bone Development Study. She has been working in Dr. Janz's lab to help recruit study participants and collect accelerometer data. Sasha is from Iowa City, Iowa, went to City High School and graduated from the University of Iowa with a B.S. in Human Physiology in 2013. In her free time, she enjoys traveling and exploring new places with her fiancé, spending time with family and friends, and teaching her puppy, Winston, new tricks!

Lori Vick

Lori is a new research assistant for the Iowa Fluoride and Bone Development Study. She has been working with Dr. Levy's team in Preventive and Community Dentistry and enjoys all aspects of her work, from meeting participants in the clinical research unit to data management. Lori is a southeast Iowa native; she is married, has a busy family life, and is a PhD nursing student.

CURRENT HAPPENINGS

Study participant ages range from 19¾ - 22¾ years. This past summer, we launched our new 8th wave questionnaires using Qualtrics™. Participants electing to complete their questionnaires electronically are sent a link to their email. Then the questionnaires can be completed and submitted using the online format. Thanks to you, we have had a very successful 8th wave launch. Participants preferring to receive the questionnaires by mail, continue to have this option as well. Dr. Janz's team collected accelerometer data this fall and will do so again next fall. We're also continuing to collect questionnaire data by mail every 6 months and we use that information to identify water sources, track fluoride exposures, and assess dietary patterns. We continue to be very successful with all aspects of the studies because of your great participation!

ELECTRONIC QUESTIONNAIRES

When you come in for an age 19 visit, you will notice that we have changed the format for a few of the questionnaires that you complete. Two of the questionnaires are now completed on the computer using the Qualtrics™ survey software. One of the questionnaires about "Physical Activity" was previously completed on paper. The other is an entirely new questionnaire about "Lifestyle" that covers thoughts on diet, exercise and the influence of others on both of these topics. The Research Assistant will load the questionnaires for you, give some brief instructions and allow you time to complete them. We hope you enjoy this new format for this part of your visit!

GRANT *Status*

Because the Iowa Fluoride Study and Iowa Bone Development Study are such unique studies and you have all continued to participate so well, we are fortunate to have been able to receive several major grants to continue the studies. The Iowa Bone Development Study has received more than $15 million in total funding and the Iowa Fluoride Study has received more than $8 million in funding. However, because only 10-15% of federal grants are funded, we are always working very hard to continue to apply for new grant funds to keep things going.

We received a major National Institutes of Health (NIH) grant supplement in September 2011 to keep the Bone Study going and to conduct the age 19 exams, including the new advanced densitometry technologies and analytical approaches. We had support for age 17-18 dental examinations from grants from the Roy J. Carver Charitable Trust and the Delta Dental of Iowa Foundation.

We resubmitted and revised a major competitive renewal grant application in July 2014 to hopefully support age 23 examinations, with an anticipated start date in the summer of 2015. However, although the evaluation and scoring of the application improved from the first submission, the results of the review are not favorable enough for us to receive funding this year. Therefore, we will be working all winter to prepare a major new grant application to be submitted this spring/summer to support age 24 exams beginning in 2016. Also, we received a new two-year grant award for $302,000.00 from the NIH in August 2014 to conduct detailed statistical analyses relating fluoride, dietary, and other factors to new cavity rates from age 13 to 17.

Thank you

for your continued participation making the studies' successes possible!

WEBSITE

Check out our website to find background information about the study, a list of publications and news articles related to this study. All of this would not be possible without your participation over the last 23 years!

www.dentistry.uiowa.edu/preventive-fluoride-study

The University of Iowa
College of Dentistry & Dental Clinics

Dental Science Building N340
Iowa City, Iowa 52242-1010
Toll Free (888) 857-7038

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THANK YOU

... for your continued participation in our studies.
We hope to keep receiving grant funding to continue working with you over the next few years!
As always, we will keep you informed.

Spring is just around the corner…

Funding for this newsletter was provided by a research grant from the National Institute of Dental and Craniofacial Research