

Good evening. I'm doctor Ned Calonge, and I'm the Chief Medical Officer for the Colorado Department of Public Health and Environment, and Colorado's State Epidemiologist. I am an associate professor of family medicine and of preventive medicine and biometrics at the University of Colorado Health Sciences Center. I am board certified in Family Practice and in Preventive Medicine. I am the chair of the US Preventive Services Task Force, an independent group of experts convened and supported by an agency of the US Department of Health and Human Services and charged by Congress to review the scientific literature and make evidence-based recommendations to physicians regarding effective preventive services. I am here tonight to speak in favor of continuing community water fluoridation in Pagosa Springs.

I would like to start by describing what it means to be evidence-based. In medicine and public health, it means to use the quality and preponderance of scientifically credible research evidence to make decisions for the benefit of our patients and our communities. To be scientifically credible, research must be of high quality, and free of sources of bias that will lead the investigators to make an erroneous conclusion. In the published medical literature, research goes through rigorous peer review by other scientists to help assure that study results are valid. The preponderance of evidence is achieved by reviewing the entire body of research on a subject, considering the quality of each study, and coming to a conclusion based on what can be scientifically proven.

Every single legitimate, detailed, rigorous review of fluoridation by nationally and internationally recognized scientific bodies have concluded that community water fluoridation is effective in reducing dental caries in the population, is safe, and is cost effective.

Let me start with evidence of efficacy. There are four modern systematic reviews of the scientific literature on the efficacy of fluoridation.

In 2000, the National Health System Centre for Reviews and Dissemination at the University of York in Great Britain published a systematic review of 295 research articles and concluded that fluoridation of water was effective, that it provided benefit in addition to other approaches to using fluoride to prevent dental caries, and that there was no good evidence of harm from fluoridation.

. In 2001, the Centers for Disease Control and Prevention published the report of the Fluoride Recommendations Work Group, made up of non-federal volunteer dentists and other dental science experts. This group reviewed 270 separate scientific citations in reaching their conclusion that community water fluoridation is a safe, effective, and inexpensive way to prevent dental caries, and that it should be continued and, in fact, extended.

In 2002, the Task Force on Community Preventive Services, an independent panel of experts in community health interventions convened by the CDC but in no way affiliated with the fluoride working group, reviewed 202 articles as they evaluated a number of community interventions to promote oral health. They concluded that there was strong evidence that fluoridation is effective in reducing the cumulative experience of dental caries within communities.

In 2004, based on yet another, independent review of the medical literature, the US Preventive Services Task Force recommended that preschool children who did not have fluoridated water should receive fluoride supplements, acknowledging that fluoridation of community water supplies and fluoride supplementation were safe and effective ways to prevent dental caries, with the benefits outweighing the risks.

Of the 21 fair to good studies of efficacy, done between the years of 1945 and 2000, all but one study showed significant decreases in dental caries after instituting community water fluoridation, and the one exception had known problems in measuring baseline rates. The older studies, done prior to the development of fluoride toothpaste and other supplements, showed reductions of 50%, the newer studies, even as recent as 2000, showed additional community benefit even after the introduction of other fluoride sources with an average reduction of 30%. On average, we expect every seventh child raised in a community with fluoridated water will reach 18 years of age free of cavities due solely to water fluoridation.

There were actually nine studies in communities where fluoridation was stopped, afterwards dental caries increased by an average of 18%. The sum of these studies is undeniable—fluoridation of water prevents dental decay and promotes oral health, and there are benefits to the population, both poor and well-off families, that exceed the benefits of fluoride delivered through the health and dental care systems. There is also good evidence that fluoridated water prevents dental caries in older adults.

What about evidence of safety? Community water fluoridation is safe.

There have been 29 studies looking for a negative effect on bone health. Looking across studies, there is no evidence of increase in fractures or other bone problems in people living in communities with fluoridated water. On the other hand, you should know that in medical care we use fluoride supplementation as a treatment for osteoporosis, to prevent fractures in people with thin bones.

There have been 26 studies looking at a link with cancer. Overall, the studies in humans find no association between cancer and community fluoridated water. All but one animal studies have found that no dose, including levels tens of thousands of times higher than those in fluoridated water, are associated with cancer in any animals. There has been one

rat study with a small increase in bone cancer but no researcher has been able to duplicate the results.

Opponents of fluoridation have tried to link fluoride with genetic diseases such as Down syndrome, and with other conditions including lower intelligence, infant mortality, sudden infant death, and Alzheimers --but multiple credible studies have been unable to demonstrate any association.

We have more studies on water fluoridation than almost any medicine you can take today or any environmental exposure, and have more data on it's safety--29 studies that overall found no detriment to bone health and 26 that overall found no link with cancer. There is simple no credible health harm associated with fluoridation at the levels known to promote oral health.

Finally, fluoridation is cost-beneficial. Every study, even those in smaller communities, demonstrate that your community will spend less money overall because of averted dental care than you will spend on fluoridating your water supply. Quite honestly, having my own teeth with fewer hours in the dental chair is worth much more than the money alone. But I ask you to think of your residents who don't even have the means to afford appropriate dental care. You are protecting them, as well as those who are better off.

While I may seemed outnumbered here by the opponents of fluoridation, please know that supporters of fluoridation are legion and surveys show that Americans who support fluoridation far outnumber those opposed. With respect to those dissenters present, the list of those scientific, governmental, and professional organizations supporting fluoridation have much greater validity, at least in my mind, than do those who oppose fluoridation without a science base. Fluoridation is recommended and endorsed by the US Public Health Service, the Centers for Disease Control and Prevention, the US Department of Health and Human Services, the Task Force on Community Preventive Services, the US Preventive Services Task Force, the National Institutes of Health, the Institute of Medicine, the World Health Organization, the American Dental Association, the American Association of Pediatric Dentistry, the American Academy of Pediatrics, the American Academy of Family Practice, the American Medical Association, and every US Surgeon General since 1950.

Finally, there has been a suggestion that fluoride in drinking water harms livestock. After searching the literature for days, I could not find a single report of community water fluoridation causing or contributing to acute or chronic fluoride poisoning or other illness in any livestock, including horses. Now, it is true that just as in humans, very high levels of fluoride may cause problems in livestock. However, every study I could find related this to exceedingly high natural levels in water, or other sources including feed, pesticides and fertilizers. Again, in the whole of the US, I could find no single report from a credible scientific source of livestock illness of any kind attributable to the controlled fluoridation of community drinking water.

I've discussed the pathology report on the horse in question with veterinary scientists at CSU, who told me they disagree with Dr. Krook that the horse in question had chronic fluoride poisoning. The Merck Manual of veterinary medicine states that fluoride does not impact livestock until bone levels reach 4 to 6 thousand. The lowest reported level of fluoride in bone that I could find causing any symptoms was a single case report in a horse with a level over one thousand. The pathology report, which I reviewed, stated that the bone tested from the horse in question was 718, well below the 4 to 6 thousand in the textbooks and below the lowest level reported in the published literature. In fact, nowhere in the report does Dr. Krook actually say that fluoride contributed to the ill health of this horse, and admits that there is not a single other report like this that he knows of. Remember, this is after 60 years of community water fluoridation. Being a former horse owner, I do have sympathy for the losses and problems the Justis' have endured. However, based on all available science, I am certain that community water fluoridation had nothing to do with the demise of this horse, and this opinion is supported by the veterinary science researchers and DVMs at the vet school at Colorado State University.

My job for the state is to do everything I can to promote better health for all the people in Colorado. I came down here because, to be quite honest, there is no easier or less expensive or better intervention a community can undertake that has a greater track record of benefiting the health of a community than the fluoridation of drinking water. I think it would be a tragedy for your community to take a 60 year step backwards in public health, based on misinformation and unwarranted fear.