

## HUMANS &amp; SOCIETY

# Clovis spearpoints absorbed shock

Chipping away part of weapon's base kept tip from snapping

BY BRUCE BOWER

Ancient North Americans hunted with spearpoints crafted to absorb shock.

Clovis people, who crossed from Asia to North America about 13,500 years ago, fashioned stone weapons that slightly crumpled at the base rather than breaking

Research on stone replicas of spearpoints (two at right) used by Clovis people suggests that points fluted at the base absorbed shock, preventing tip breakage while hunting. Three casts of actual fluted Clovis points are on the left.



at the tip when thrust into prey, say civil engineer Kaitlyn Thomas of Southern Methodist University in Dallas and colleagues. The Clovis crumple rested on a toolmaking technique called fluting, in which a thin groove was chipped off both sides of a stone point's base, the researchers report in the May *Journal of Archaeological Science*.

Computer models and pressure testing of replicas of fluted and unfluted Clovis points support the idea that fluted bases worked like shock absorbers, preventing tip breakage. Slight compression and folding of stone at the base of fluted points after an impact did not cause enough damage to prevent the points from being reused, the scientists say.

"Fluted Clovis points have a shock-absorbing property that increases their durability, which fit a population that needed reliable weapons on a new, unknown continent," says archaeologist

and study coauthor Metin Eren of Kent State University in Ohio. While Clovis people weren't the first New World settlers (*SN*: 6/11/16, p. 8), they roamed throughout much of North America, traveling great distances to find food and move among seasonal camps, Eren says.

Computer models run by Thomas, Eren and colleagues indicated that fluted points increasingly divert pressure away from the tip and toward the base as physical stress grows. Computerized, 3-D versions of fluted Clovis points exposed to high-impact pressure crumpled at the base, leaving the tip intact. Unfluted replicas, however, frequently broke at the tip.

Comparable results emerged when the researchers tested 60 fluted and unfluted stone replicas of Clovis points in a viselike machine that applied precise pressures.

Fluted Clovis points may have been attached to handles or shafts in ways that also enhanced their resilience, Eren says. But no such handles have been found.

Previous finds suggest that as many as 1 in 5 Clovis points broke as fluted sections were prepared. If all goes well, it takes 40 to 50 minutes to produce a

## BODY &amp; BRAIN

# Data back ban of artificial trans fats

Heart attack, stroke cut by New York eatery restrictions

BY AIMEE CUNNINGHAM

Taking artificial trans fats off the menu reduces hospitalizations for heart attack and stroke, a new study suggests. The findings portend large public health benefits after a ban on artificial trans fats begins in the United States in 2018.

After some counties in New York restricted the fats' use, hospital admission rates for heart attacks declined 7.8 percent more in those counties than in counties without restrictions, researchers report online April 12 in *JAMA Cardiology*.

"This is the first study that links a trans fats ban to a reduction in heart

disease and stroke in large populations," says nutritional epidemiologist Frank Hu of the Harvard T.H. Chan School of Public Health. "The evidence from this study indicates that implementation of a nationwide ban on trans fats will reduce heart disease and save many lives."

Heart disease causes 1 in every 4 deaths in the United States. Coronary heart disease, the most common kind, kills more than 370,000 people each year. Past research finds that eating foods containing artificial trans fats, also called trans-fatty acids, increases the risk of coronary heart disease. Among other effects, consuming these fats leads to higher levels of low-density lipoprotein cholesterol, or "bad" cholesterol, a component of artery-clogging plaque. Artificial, or industrial, trans fats occur in vegetable oils that are partially hydrogenated. Foods typically made with these oils include deep-fried fast foods, baked goods, crackers and margarine.

Beginning in 2007, New York City restricted artificial trans fats in food bought at restaurants and other eateries. A number of New York counties followed suit over the next several years, providing a chance to examine changes in cardiovascular health, says study coauthor Eric Brandt, a Yale University internist.

Brandt and colleagues analyzed 11 counties that restricted artificial trans fats and 25 counties that did not. The researchers looked at hospital admission rates for heart attack or stroke from 2002 to 2013. Heart attack and stroke admissions already were trending down before the restrictions due to improvements in medication and treatment.

At least three years after the artificial trans fats restrictions took effect, admission rates for heart attacks and strokes combined dropped an additional 6.2 percent in restricted counties versus nonrestricted counties. For every 100,000 people, there were 43 fewer heart attacks

fluted Clovis point, Eren estimates.

Fluting techniques became increasingly elaborate until the practice was abandoned around 9,500 years ago. At that time, familiarity with North America's landscapes and stone sources triggered a shift to making unfluted spearpoints designed to kill more effectively, but not necessarily to last, Eren suspects. Some of those stone points may have been intended to shatter on impact, creating shrapnel-like wounds, he says.

Searching for signs of crumpling and crushing on the bottoms of early and later fluted Clovis points could help researchers see if the tools always worked as shock absorbers, says archaeologist Ashley Smallwood of the University of West Georgia in Carrollton.

Researchers have previously proposed that fluting was a stylistic twist with no practical impact, was a way for toolmakers to advertise their skills and suitability as mates, or was part of prehunt rituals. The new work offers a practical explanation for fluting's popularity that deserves further study, says archaeologist Daniel Amick of Loyola University Chicago. ■

and strokes. This drop is beyond that expected by population trends alone.

In restricted counties, hospital admission rates for heart attacks alone also declined more than in nonrestricted counties, probably due to the artificial trans fats restrictions. Stroke rates alone also dropped in counties with the restriction, but that may not have been primarily related to the trans fat policy, Brandt says.

Along with previous work tying the consumption of trans fats to coronary heart disease, "it's a very powerful nail in the coffin for industrial trans fats," says cardiologist Dariush Mozaffarian of Tufts University in Boston.

The Food and Drug Administration, which has determined that partially hydrogenated oils are no longer "generally recognized as safe," has ordered food manufacturers to ensure products are free of these oils by June 2018. This will effectively eliminate artificial trans fats from the U.S. food supply, Mozaffarian says. ■

## BODY & BRAIN

# No autism link to antidepressants

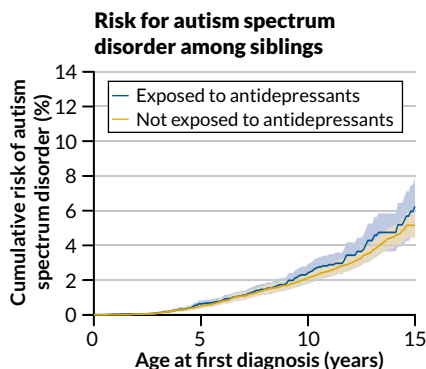
Studies may reassure pregnant women treated for depression

BY AIMEE CUNNINGHAM

Taking antidepressants during pregnancy does not increase a baby's risk of autism or attention-deficit/hyperactivity disorder, two large studies suggest. Genetic or environmental influences, rather than prenatal exposure to the drugs, may have a greater influence on whether a child will develop these disorders. The studies appear in the April 18 *JAMA*.

Clinically, the message is "quite reassuring for practitioners and for mothers needing to make a decision about antidepressant use during pregnancy," says psychiatrist Simone Vigod of Women's College Hospital in Toronto, a coauthor of one of the studies. Past research has questioned the safety of expectant moms taking antidepressants (*SN*: 6/5/10, p. 22).

"A mother's mood disturbances during pregnancy... impact the health of mothers and their children," says developmental pediatrician Tim Oberlander of the University of British Columbia in Vancouver. About 1 in 10 women develop a major depressive episode during pregnancy. "All treatment options should be explored. Nontreatment is never an option," says Oberlander, who coauthored a commentary in the same issue of *JAMA*.



**Sib similarity** Kids exposed to antidepressants in the womb and their unexposed siblings had essentially the same risk for developing autism, a new study shows.

Previous studies indicated that antidepressant use came with developmental risks for offspring: autism spectrum disorder, ADHD, premature birth and poor fetal growth. "The key question is whether those risks are due to the actual medication," says psychologist Brian D'Onofrio of Indiana University Bloomington, whose group authored the other study.

Both studies relied on big samples. D'Onofrio's team looked at over 1.5 million Swedish children born from 1996 to 2012 to nearly 950,000 mothers. More than 22,000, or 1.4 percent, of these kids had mothers who reported using antidepressants, mostly selective serotonin reuptake inhibitors, in the first trimester.

The researchers compared siblings in families in which the mother used antidepressants in one pregnancy but not another. Siblings had essentially the same risk for autism, ADHD and poor fetal growth whether they were exposed to antidepressants in the womb or not.

When looking at antidepressant use only, without accounting for other possible influences, "children have roughly twice the risk of having autism if the mother takes antidepressant medication during the first trimester," says D'Onofrio. "But that association goes completely away when you compare siblings." Although it's not clear exactly what's responsible for the increased risk, "our results suggest that it is actually not due to the medication itself," he says.

Vigod and colleagues studied women who qualified for public drug coverage in Ontario, Canada, from 2002 to 2010. Of 35,906 children born in that group, mothers took antidepressants in 2,837 of the pregnancies. The team compared exposed children with their unexposed siblings and found no link between autism risk and antidepressant use.

"The use of sibling matches in both studies is a very innovative way to account for genetics and a shared environment," says Oberlander. "We can't ignore the fact that there are shared genetic mechanisms that might relate autism and depression. The genetic reason that brought the mom to use the drug may say more about the risk of autism in the child." ■