

# Tool Helps Women Decide About Invasive Prenatal Testing

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BY SHERRY BOSCHERT  
San Francisco Bureau

SAN FRANCISCO — A new computerized tool helps pregnant women decide whether they want invasive prenatal testing, Miriam Kuppermann, Ph.D., said during a meeting on antepartum and intrapartum management, sponsored by the University of California, San Francisco.

The tool should be ready for clinical use in 2006, said Dr. Kuppermann of the university.

In a randomized, controlled trial, 496 pregnant women seen at three institutions in the San Francisco Bay area used the computerized decision-assistance tool or viewed a computer version of a *ge-appropriate* brochures that the state requires clinicians to give to all pregnant women. Both were available in English and Spanish. Investigators assessed the impact of the tool or the brochures during three follow-up interviews.

"We do emphasize throughout that the goal of our program is neither to get women to test nor to get them not to test. The goal is to help them make an informed decision that is consistent with their own preferences and values," she said.

Immediately after the computer session, 75% of women using the decision-assistance tool correctly estimated their risk for having a baby with Down syndrome, compared with 5% of women in the control group. A significant difference in knowledge persisted in the second follow-up interview 2 weeks later.

The state pamphlets do not provide an individual's risk for Down syndrome, so the difference in knowledge between groups is not too surprising, but it's nevertheless encouraging to see that a high percentage of women understood their risk for trisomy 21 after using the computerized tool, Dr. Kuppermann said.

Immediately after the computer session, about 50% of women in the intervention group correctly estimated their risk for miscarriage related to prenatal testing, compared with 20% of women in the control group.

This difference in knowledge between groups also persisted 2 weeks later, she said.

The third follow-up interview, con-

ducted at 30 weeks' gestation after any decisions about prenatal testing were made, found that women in the intervention group had less uncertainty about their decisions, reported fewer factors contributing to uncertainty, and had less decisional conflict, meaning they were more comfortable with their decisions.

Women in the intervention group were more likely to undergo invasive prenatal testing, compared with the control group. Women in this group who entered the study very inclined to

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undergo invasive testing were more likely to change their minds during the study and not be tested, Dr. Kuppermann said.

Women who came in with little inclination to be tested were more likely to change their minds and undergo testing.

"So it's working in both directions, which makes me feel good that it's not a biased tool," she said. "We believe that our tool does lead to more in-

formed decisions that better reflect underlying preferences."

The computerized tool first reassures women that most babies are born healthy, but it notes that 3%-4% will have a birth defect and that Down syndrome is one of the defects that can be detected by prenatal testing.

The woman enters her age, answers questions about other risk factors, and then receives an individualized risk presentation. For example, a 36-year-old woman's mid-trimester risk for carrying a fetus affected by trisomy 21 is about 4 in 1,000, so the computer might show her a photo of 1,000 balls, 4 of which are highlighted yellow to represent the risk.

In a "values clarification exercise," the woman answers questions about various aspects of testing scenarios to elicit their value to her, ranging from "absolutely critical" to "not at all important." Based on the woman's responses, the program suggests testing strategies that might fit her values and risks, and it gives summaries of strategies she chooses. "Again, there's no absolute recommendation," Dr. Kuppermann said.

She and her associates now are modifying the tool to include first-trimester screening and testing strategies and models for other genetic tests for prenatal disorders besides Down syndrome. They also are creating a low-literacy version of the tool that relies less on text. ■

# What the Data Show About Common Concerns in Pregnancy

BY SHERRY BOSCHERT  
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SAN FRANCISCO — In the general ob.gyn. practice of Amy Meg Autry, M.D., visits with pregnant patients have evolved from giving equal time to examination and counseling to about 2% to examination and 98% to counseling.

Dr. Autry of the University of California, San Francisco, researched answers to some of their most common safety concerns regarding pregnancy and offered an overview of her findings at a meeting on antepartum and intrapartum management sponsored by the university:

► **Fish.** While eating fish can be good for maternal cardiovascular health and fetal growth and development, fish accumulate methyl mercury in their muscles from industrial pollution, which may cause neurotoxic symptoms in neonates that resemble cerebral palsy.

Only one retrospective study has found severe neurotoxic effects in children born to Japanese women who ate a steady diet of fish with high levels of mercury, even though the mothers showed minimal or no effects of mercury ingestion. Three other studies found neurologic effects in Japanese adults who ate a similar toxic-fish diet or Iraqi adults who ate grain that had been pretreated with mercury.

Two prospective studies produced conflicting results. In one, a diet high in whale blubber was associated with delays in attention, memory, and small-motor function in serial testing of children through age 6 in the Faeroe Islands of Norway. A separate study of residents of the Seychelles Islands who ate 12 meals of fish per week found that they had mercury levels 10-20 times higher than average levels in U.S. residents, yet this exposure produced no long-term neurologic effects. Other prospective studies are ongoing.

A 2004 joint advisory for consumers issued by the Environmental Protection Agency and the Food and Drug Administration recommended that pregnant women not eat shark, swordfish, king mackerel, or tilefish, because they are high in mercury.

The advisory emphasized the positive benefits of fish and stated that pregnant women may eat up to 12 ounces (two average meals) per week of fish low in mercury, such as salmon, shrimp, pollack, and catfish. Canned light tuna has less mercury than albacore tuna. For local fish, consult local and tribal advisories that apply to your area, or limit ingestion to 6 ounces per week.

► **Cheese and hot dogs.** One-third of an estimated 1,500 cases of listeriosis each year in the United States are in pregnant women. They are more susceptible to the infection due to compromised immune systems. One in five pregnant women

with listeriosis experiences a spontaneous abortion or stillbirth.

Although cases of listeriosis in pregnancy are rare and sporadic, it's prudent to avoid high-risk foods such as hot dogs or luncheon meats, unless they've been reheated to steaming. Avoid soft cheeses, refrigerated patés or meat spreads, unpasteurized milk, and raw or undercooked meats.

► **Caffeine.** No data substantiate concerns about adverse pregnancy effects caused by light to moderate caffeine consumption.

Many studies that suggested caffeine may raise the risk for low birth weight, spontaneous abortion, congenital anomalies, or conception delays are poorly designed and demonstrate study bias, she said. Most of these studies were confounded by an association between caffeine intake and cigarette smoking.

► **Alcohol.** Multiple small studies show deleterious effects of drinking even small amounts of alcohol during pregnancy. A 2002 study that followed children from birth to age 6, for example, found persistently smaller head circumferences, height, and weight in children of women who had less than one drink per day during pregnancy. A 2001 study found more aggressive behavior in children of mothers who had one drink

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per week during pregnancy.

► **Hot tubs.** Animal data suggest that maternal hyperthermia (a body temperature of 102 degrees) may lead to first-trimester spontaneous abortion or neural tube defects. A very poorly designed study in human subjects, which was published in 2003, found a higher rate of first-trimester losses in women who used a hot tub more than weekly within 4 weeks of their last menstrual period. A 2005 metaanalysis of 42 studies suggested an 86% increase in risk for neural tube defects if the mother used a hot tub, sauna, or electric blanket and developed a fever.

On average, a pregnant woman's core body temperature will reach 102 degrees after 15 minutes of soaking in 102-degree water or 10 minutes in 106-degree water.

Skip hot tubs in the first trimester, and limit soaking times or water temperature after that, Dr. Autry advised.

► **Exercise.** Getting hot from exercise is okay; there's no evidence that hyperthermia from exercise is teratogenic, she said. Even exercise at high altitudes appears safe.

Exercise helps prevent gestational diabetes and decreases the risk for postpartum depression. Avoid standing still, supine activities, sports that cause falling or heavy contact, and scuba diving, which can cause decompression sickness in the fetus.

► **Hair dye.** All attempts to find an association between hair dye and teratogenic effects or cancer have washed out. Dye if you want to, Dr. Autry said. ■