Found: Most Cost-Effective Down Syndrome Test

VITALS

Major Finding: Overall, the contingent screening test showed a cost-effectiveness ratio of $26,833 Canadian dollars per case of DS. The next most cost-effective test was the serum integrated screening test, but the incremental cost-effectiveness ratio (ICER) between the serum integrated screening and contingent screening tests was $3,815 Canadian dollars for every DS birth detected.

Data Source: A cost-effective study of Down syndrome screening tests based on a computer model including 110,948 pregnancies.

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Contingent screening for prenatal Down syndrome was the most cost-effective stratagem, compared with other screening protocols, based on data from a computer simulation study of 110,948 pregnancies.

Several screening options are available in Canada and the United States, but data to help clinicians choose among the tests are limited, wrote Dr. Jean Gekas of the Centre Hospitalier de l'Université Laval in Quebec City, and colleagues.

The researchers used a computer model to analyze a virtual population of 110,948 pregnant women based on the demographic, genetic, and Down syndrome (DS) phenotype characteristics of the local population in Quebec. The tests included were the combined test, triple test, quadruple test, integrated test, serum integrated test, sequential screening test, contingent screening test, and amniocentesis for women aged 35 years and older (Am. J. Obstet. Gynecol. 2011;204:175.e1-8).

"The contingent strategy seems to be the most cost effective and is associated with an attractive rate of procedure-related euploid miscarriages and unnecessary terminations," they wrote. "Moreover, this screening option provides a majority of women with reassurance early in gestation and may minimize costs by limiting retesting."

Overall, the contingent screening test showed a cost-effectiveness ratio of $26,833 Canadian dollars per case of DS. The next most cost-effective test was the serum integrated screening test, but the incremental cost-effectiveness ratio (ICER) between the serum integrated screening and contingent screening tests was $3,815 Canadian dollars for every DS birth detected.

The combined test, currently popular in the United States and Canada, had a slightly higher cost-effectiveness ratio of $47,358 Canadian dollars than does the contingent test, but it allowed 91% of women to be reassured in the first trimester, they said.

Similar results on major outcomes including false positives, unnecessary terminations, and DS pregnancies were observed for contingent tests and several other screening tests. But the contingent screening test was associated with one of the lowest rates of procedure-related miscarriages (10). The contingent test also allowed 78% of patients to be reassured in the first trimester.

The combined test was associated with the highest rate of DS pregnancies in the first trimester (90%), and the highest rates of procedure-related euploid miscarriages (71) and unnecessary terminations (24). The combined test was the most expensive of the tests that followed screening strategies, most likely due to the requirement of a nuchal fold transparency test, and the high rate of false positives and subsequent unnecessary terminations associated with it, Dr. Gekas and associates said.

The computer model showed that the integrated test had the lowest rate of procedure-related miscarriages. However, widespread use of the integrated test would prevent women from being reassured in the first trimester, they noted.

The study was limited by the lack of prospective data and the potential inability to generalize the results across countries, they said. However, "it is unlikely that a large-scale prospective clinical trial comparing these eight screening approaches could rapidly be organized across North America." ■