ated with improved neurological outcomes (RR 2.01 of ambulation) and changed the need for other surgical interventions in offspring such as ventriculoperitoneal (VP) shunting (RR 0.48), surgery for tethered spinal cord (RR 6.15) and Chiari malformation (RR 0.26). We accounted for adverse outcomes due to prenatal surgery including maternal pulmonary edema, oligohydramnios, abruption, membrane rupture and hemorrhage as well as fetal loss. Moreover, we included unintended risks for future pregnancies after prenatal surgery including preterm birth, uterine rupture, abnormal placentation, cesarean hysterectomy and adverse offspring outcomes associated with these complications. The primary outcome was the incremental cost-effectiveness ratio (ICER). An ICER less than $100,000/QALY gained was considered cost-effective. Univariate sensitivity analyses and Monte Carlo simulations were performed to assess the robustness of our results.

RESULTS: Our model predicts that every 100 fetal myelomeningocele repairs result in a cost savings of $3,135,557, and an improved quality of life with 64 QALYs gained. We estimate the ICER to be $48,993 per QALY gained. Furthermore, we estimate that for every 100 prenatal repairs, QALYs are increased by 96 for the neonates with myelomeningocele but maternal QALYs are reduced by 23 and future sibling QALYs are reduced by 9. In univariate sensitivity analysis, the model was most sensitive to the cost of prenatal compared to postnatal surgery and the cost of postnatal neonatal care. In the Monte Carlo analysis, prenatal surgery was cost-saving in 55% of simulations, and cost-effective in 72%.

CONCLUSION: Prenatal myelomeningocele repair is cost-effective compared to postnatal myelomeningocele repair under a wide-range of circumstances.

21 The use of an interactive computer program to enhance patient understanding of genetic screening and diagnostic concepts: a randomized trial

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OBJECTIVE: Many studies have demonstrated the lack of understanding that patients have with regard to genetic screening and diagnostic concepts. The objective of this study was to determine whether an interactive computer program could improve patient knowledge, specifically with regard to genetic screening and diagnostic concepts.

STUDY DESIGN: In this randomized trial, women between 14 and 26 weeks gestation were assigned either to the obstetrical standard of care (i.e. provider-based counseling) or to augmented counseling with an interactive computer program. This program was designed specifically to convey information about genetic screening and diagnosis, and was interactive both in that it provided opportunities for women to receive immediate feedback about whether they had content knowledge about key concepts, and also in that it allowed women, through the use of an avatar, to more extensively explore topics of interest. Women were administered a 24-item questionnaire that assessed their content knowledge regarding relevant concepts immediately and 2-4 weeks after their randomized exposure. Power analysis revealed that 150 participants were necessary to demonstrate 7% difference in content knowledge between the groups.

RESULTS: The 150 women enrolled were randomized equally between the two groups. Women in the two groups were similar with regard to demographic characteristics. Patients randomized to the video counseling arm correctly answered a significantly greater proportion of questions than those randomized to the standard-of-care arm (70% (SD 15%) vs. 42% (SD 16%), $p<.001$) on the immediately administered questionnaire. 123(82%) participants were re-administered the questionnaire 2-4 weeks later; those women who had been randomized to the video-counseling arm continued to correctly answer a significantly greater proportion of questions about genetic concepts relevant to their obstetric care (62% (SD 17%) vs. 49% (SD 20%), $p<.001$).

CONCLUSION: A patient-directed interactive computer program may help providers to convey relevant information about genetic screening and diagnostic concepts.

22 Folate dysregulation and the development of hypoplastic left heart syndrome

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OBJECTIVE: Methionine is a folate related metabolite which plays a crucial role as a methyl donor, important for numerous cellular functions including the control of gene expression. Recent animal and limited human data suggest an association between abnormal maternal folate metabolism and some fetal CHDs. We analyzed newborn methionine levels in hypoplastic left heart (HLH) cases to determine whether distributed folate metabolic abnormality was associated with HLH development.

STUDY DESIGN: Methionine concentration was prospectively measured by the Michigan Department of Community Health as part of the newborn screening program and stored in a database. A total of 89 non-syndromic chromosomally normal HLH cases and an equal number of normal matched controls constituted the study group. The mean (SD) methionine levels, gestational age (GA) at birth, birth weight, number of hours between birth and blood sampling, maternal age, maternal and paternal race and pregnancy plurality were compared between groups. Ttest and Mann-Whitney U-tests were used to compare groups. Stepwise logistic regression analysis for prediction of HLH status was performed based on methionine concentrations, and the above confounding variables.

RESULTS: The mean (SD) gestational age at delivery were 38.0 (2.0) and 38.1 (1.9) weeks in cases vs. controls, $p=0.94$. There was no significant difference between groups in any other parameters listed above except for methionine. Mean (SD) methionine levels were higher in the HLH vs. normals [37.4 (18.6) vs. 31.7 (8.4) ng/ml respectively, $p=<0.009$]. Stepwise logistic regression analysis revealed newborn methionine levels to be independently associated with HLH; OR (95% CI)= 1.05 (1.016 1.086), $p=0.004$.

CONCLUSION: Based on a large number of non-syndromic HLH cases, we provide evidence of dysregulated programming of the folate/methylation pathway in newborns. Testing was performed soon after birth and so reflects fetal status. Further investigation into the role of maternal folate abnormality and fetal HLH and in particular any potential benefits of folate prophylaxis appears warranted.

23 Can sonographer education and image review standardize image acquisition and caliper placement in 2D ultrasounds? Experience from the NICHD Fetal Growth Study

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OBJECTIVE: To describe the experience of using intensive education and image review to credential experienced sonographers to perform standardized 2D ultrasounds of fetal biometry as part of the ongoing multi-center prospective NICHD Fetal Growth Study.

STUDY DESIGN: Participating sonographers were required to attend a multi-day education session that included didactic and hands-on training in a standardized approach to image acquisition and caliper placement. All sonographers were required to submit 15 standardized scans (5 in each trimester). Each scan was independently reviewed by two experienced reviewers. Images within each scan were scored to assess quality, plane, caliper placement, and - when relevant - quali-