



Suzan Carmichael

Professor (Research) of Pediatrics (Neonatology), of Obstetrics & Gynecology (Maternal Fetal Medicine) and, by courtesy, of Health Research and Policy (Epidemiology)

Pediatrics - Neonatal and Developmental Medicine

Bio

BIO

Dr. Carmichael is a perinatal and nutritional epidemiologist and Professor of Pediatrics at the Stanford University School of Medicine. Her research focuses on finding ways to improve maternal and infant health. Exposure themes include nutrition, social context, care, environmental contaminants and genetics. Outcome themes include severe maternal morbidity, stillbirth, birth defects, and preterm delivery. She is particularly interested in understanding the intersectionality of these varied types of exposures and outcomes and how they interact to impact health and health disparities, for the mother-baby dyad, in domestic as well as global health settings.

ACADEMIC APPOINTMENTS

- Professor (Research), Pediatrics - Neonatal and Developmental Medicine
- Professor (Research), Obstetrics & Gynecology - Maternal Fetal Medicine
- Professor (Research) (By courtesy), Health Research & Policy
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Lechner Fellowship, Texas A&M University (1984-88)
- A.J. Bryan Scholarship, Kaiser Fellowship, U.C., Berkeley (1993-94)
- Regents Fellowship and Kaiser Fellowship, U.C., Berkeley (1994-95)
- Warren Winkelstein Epidemiology Award, U.C., Berkeley (1996)
- Public Health Citation, Public Health Service, DHHS (1997)
- F. Clarke Fraser New Investigator Award, Teratology Society (2005)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Faculty Fellow, Stanford Center for Population Health Sciences (2017 - present)
- Member, Science Advisory Board, Developmental and Reproductive Toxicant Identification Committee, OEHHA, State of California (2015 - present)
- President, Society for Pediatric and Perinatal Epidemiologic Research (2015 - 2016)
- Epidemiology Section Editor, Cleft Palate-Craniofacial Journal (2014 - 2017)
- Associate Editor, Annals of Epidemiology (2009 - present)

PROFESSIONAL EDUCATION

- PhD, U.C., Berkeley , Epidemiology (1996)
- M.S., U.C., Davis , Int'l Agricultural Development (1992)

- B.S., Texas A&M University , Nutrition (1988)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Carmichael is a perinatal and nutritional epidemiologist and Professor of Pediatrics at the Stanford University School of Medicine. Her research focuses on finding ways to improve maternal and infant health. Exposure themes include nutrition, social context, care, environmental contaminants and genetics. Outcome themes include severe maternal morbidity, stillbirth, birth defects, and preterm delivery. She is particularly interested in understanding the intersectionality of these varied types of exposures and outcomes and how they interact to impact health and health disparities, for the mother-baby dyad.

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Can Liu, Elizabeth Wall-Wieler

Publications

PUBLICATIONS

- **Risk Factors for Maternal Readmission with Sepsis.** *American journal of perinatology*
Foeller, M. E., Sie, L., Foeller, T. M., Girsen, A. I., Carmichael, S. L., Lyell, D. J., Lee, H. C., Gibbs, R. S.
2019
- **Rate and causes of severe maternal morbidity at readmission: California births in 2008-2012.** *Journal of perinatology : official journal of the California Perinatal Association*
Girsen, A. I., Sie, L., Carmichael, S. L., Lee, H. C., Foeller, M. E., Druzin, M. L., Gibbs, R. S.
2019
- **Asthma medication use and risk of birth defects: National Birth Defects Prevention Study 1997-2011**
Howley, M. M., Papadopoulos, E. A., Van Bennekom, C., Van Zutphen, A. R., Carmichael, S. L., Munsie, J. W., Herdt, M. L., Browne, M. L.
WILEY.2019: 365-66
- **Severe maternal morbidity and postpartum mental health-related outcomes in Sweden: a population-based matched-cohort study** *ARCHIVES OF WOMENS MENTAL HEALTH*
Wall-Wieler, E., Carmichael, S. L., Urquia, M. L., Liu, C., Hjern, A.
2019; 22 (4): 519-26
- **Factors Associated with Timeliness of Surgical Repair among Infants with Myelomeningocele: California Perinatal Quality Care Collaborative, 2006 to 2011.** *American journal of perinatology*
Kancherla, V., Ma, C., Grant, G., Lee, H. C., Shaw, G. M., Hintz, S. R., Carmichael, S. L.
2019
- **Severe Maternal Morbidity Among Stillbirth and Live Birth Deliveries in California.** *Obstetrics and gynecology*
Wall-Wieler, E., Carmichael, S. L., Gibbs, R. S., Lyell, D. J., Girsen, A. I., El-Sayed, Y. Y., Butwick, A. J.
2019
- **The ARRIVE Trial: Interpretation from an Epidemiologic Perspective.** *Journal of midwifery & women's health*
Carmichael, S. L., Snowden, J. M.
2019
- **Prenatal and postnatal inflammation-related risk factors for retinopathy of prematurity** *JOURNAL OF PERINATOLOGY*
Goldstein, G. P., Leonard, S. A., Kan, P., Koo, E. B., Lee, H. C., Carmichael, S. L.
2019; 39 (7): 964-73

- **Sociodemographic, health behavioral, and clinical risk factors for anotia/microtia in a population-based case-control study** *INTERNATIONAL JOURNAL OF PEDIATRIC OTORHINOLARYNGOLOGY*
Ryan, M. A., Olshan, A. F., Canfield, M. A., Hoyt, A. T., Scheuerle, A. E., Carmichael, S. L., Shaw, G. M., Werler, M. M., Fisher, S. C., Desrosiers, T. A., Natl Birth Defects Prevention Stud
2019; 122: 18–26
- **The role of genetic variation in DGKK on moderate and severe hypospadias.** *Birth defects research*
Richard, M. A., Sok, P., Canon, S., Brown, A. L., Peckham-Gregory, E. C., Nembhard, W. N., Carmichael, S. L., Ehli, E. A., Kallsen, N. A., Peyton, S. A., Davies, G. E., Patel, A., Zamilpa, et al
2019
- **Racial and ethnic disparities in severe maternal morbidity prevalence and trends** *ANNALS OF EPIDEMIOLOGY*
Leonard, S. A., Main, E. K., Scott, K. A., Profit, J., Carmichael, S. L.
2019; 33: 30–36
- **Stillbirth and Live Birth at Perivable Gestational Age: A Comparison of Prevalence and Risk Factors** *AMERICAN JOURNAL OF PERINATOLOGY*
Carmichael, S. L., Blumenfeld, Y. J., Mayo, J. A., Profit, J., Shaw, G. M., Hintz, S. R., Stevenson, D. K.
2019; 36 (5): 537–44
- **Sociodemographic, health behavioral, and clinical risk factors for anotia/microtia in a population-based case-control study.** *International journal of pediatric otorhinolaryngology*
Ryan, M. A., Olshan, A. F., Canfield, M. A., Hoyt, A. T., Scheuerle, A. E., Carmichael, S. L., Shaw, G. M., Werler, M. M., Fisher, S. C., Desrosiers, T. A., National Birth Defects Prevention Study
2019; 122: 18–26
- **Comparing Usual Dietary Intakes Among Subgroups of Mothers in the Year Before Pregnancy** *PUBLIC HEALTH REPORTS*
Carmichael, S. L., Ma, C., Feldkamp, M. L., Shaw, G. M., Natl Birth Defects Prevention Stu
2019; 134 (2): 155–63
- **Fish consumption prior to pregnancy and pregnancy outcomes in the National Birth Defects Prevention Study, 1997-2011** *PUBLIC HEALTH NUTRITION*
Benjamin, R. H., Mitchell, L. E., Canfield, M. A., Hoyt, A. T., Lai, D., Ramadhani, T. A., Carmichael, S. L., Case, A. P., Waller, D., Natl Birth Defects Prevention Stud
2019; 22 (2): 336–43
- **Survival of infants with spina bifida and the role of maternal prepregnancy body mass index.** *Birth defects research*
Pace, N. D., Siega-Riz, A. M., Olshan, A. F., Chescheir, N. C., Cole, S. R., Desrosiers, T. A., Tinker, S. C., Hoyt, A. T., Canfield, M. A., Carmichael, S. L., Meyer, R. E.
2019
- **Re: Unexpected term NICU admissions: a marker of obstetrical care quality?** *American journal of obstetrics and gynecology*
Snowden, J. M., Carmichael, S. L., Klebanoff, M. A.
2019
- **Effects of team-based goals and non-monetary incentives on front-line health worker performance and maternal health behaviours: a cluster randomised controlled trial in Bihar, India.** *BMJ global health*
Carmichael, S. L., Mehta, K., Raheel, H., Srikantiah, S., Chaudhuri, I., Trehan, S., Mohanty, S., Borkum, E., Mahapatra, T., Weng, Y., Kaimal, R., Sivasankaran, A., Sridharan, et al
2019; 4 (4): e001146
- **Prenatal and postnatal inflammation-related risk factors for retinopathy of prematurity.** *Journal of perinatology : official journal of the California Perinatal Association*
Goldstein, G. P., Leonard, S. A., Kan, P., Koo, E. B., Lee, H. C., Carmichael, S. L.
2019
- **The contribution of maternal characteristics and cesarean delivery to an increasing trend of severe maternal morbidity** *BMC Pregnancy and Childbirth*
Leonard, S. A., Main, E. K., Carmichael, S. L.
2019; 19 (16)
- **Racial and ethnic disparities in severe maternal morbidity prevalence and trends.** *Annals of epidemiology*
Leonard, S. A., Main, E. K., Scott, K. A., Profit, J., Carmichael, S. L.
2019

- **The contribution of maternal characteristics and cesarean delivery to an increasing trend of severe maternal morbidity.** *BMC pregnancy and childbirth*
Leonard, S. A., Main, E. K., Carmichael, S. L.
2019; 19 (1): 16
- **Risk of severe maternal morbidity in relation to prepregnancy body mass index: Roles of maternal co-morbidities and caesarean birth.** *Paediatric and perinatal epidemiology*
Leonard, S. A., Carmichael, S. L., Main, E. K., Lyell, D. J., Abrams, B.
2019
- **Gestational Weight Gain and Severe Maternal Morbidity at Delivery Hospitalization.** *Obstetrics and gynecology*
Leonard, S. A., Carmichael, S. L., Abrams, B.
2019; 134 (2): 420
- **Comparing Usual Dietary Intakes Among Subgroups of Mothers in the Year Before Pregnancy.** *Public health reports (Washington, D.C. : 1974)*
Carmichael, S. L., Ma, C., Feldkamp, M. L., Shaw, G. M.
2018: 33354918821078
- **A machine learning approach to investigate potential risk factors for gastroschisis in California.** *Birth defects research*
Weber, K. A., Yang, W., Carmichael, S. L., Padula, A. M., Shaw, G. M.
2018
- **Teratology society position statement on surveillance and prevalence estimation of neural tube defects.** *Birth defects research*
Kancherla, V., Carmichael, S. L., Feldkamp, M. L., Berry, R. J.
2018
- **Prepregnancy maternal body mass index and venous thromboembolism: A population based cohort study.** *BJOG : an international journal of obstetrics and gynaecology*
Butwick, A. J., Bentley, J., Leonard, S. A., Carmichael, S. L., El-Sayed, Y. Y., Stephansson, O., Guo, N.
2018
- **Impact of post-collection freezing delay on the reliability of serum metabolomics in samples reflecting the California mid-term pregnancy biobank METABOLOMICS**
La Frano, M. R., Carmichael, S. L., Ma, C., Hardley, M., Shen, T., Wong, R., Rosales, L., Borkowski, K., Pedersen, T. L., Shaw, G. M., Stevenson, D. K., Fiehn, O., Newman, et al
2018; 14 (11)
- **Fish consumption prior to pregnancy and pregnancy outcomes in the National Birth Defects Prevention Study, 1997-2011.** *Public health nutrition*
Benjamin, R. H., Mitchell, L. E., Canfield, M. A., Hoyt, A. T., Lai, D., Ramadhani, T. A., Carmichael, S. L., Case, A. P., Waller, D. K., National Birth Defects Prevention Study
2018: 1-8
- **Severe maternal morbidity and postpartum mental health-related outcomes in Sweden: a population-based matched-cohort study.** *Archives of women's mental health*
Wall-Wieler, E., Carmichael, S. L., Urquia, M. L., Liu, C., Hjern, A.
2018
- **An application of data mining to identify potential risk factors for anophthalmia and microphthalmia.** *Paediatric and perinatal epidemiology*
Weber, K. A., Yang, W., Carmichael, S. L., Lupo, P. J., Dukhovny, S., Yazdy, M. M., Lin, A. E., Van Bennekom, C. M., Mitchell, A. A., Shaw, G. M., National Birth Defects Prevention Study
2018
- **Stillbirth and Live Birth at Periviable Gestational Age: A Comparison of Prevalence and Risk Factors.** *American journal of perinatology*
Carmichael, S. L., Blumenfeld, Y. J., Mayo, J. A., Profit, J., Shaw, G. M., Hintz, S. R., Stevenson, D. K.
2018
- **Application of machine-learning to predict early spontaneous preterm birth among nulliparous non-Hispanic black and white women.** *Annals of epidemiology*
Weber, A., Darmstadt, G. L., Gruber, S., Foeller, M. E., Carmichael, S. L., Stevenson, D. K., Shaw, G. M.
2018
- **Residential agricultural pesticide exposures and risks of preeclampsia.** *Environmental research*

- Shaw, G. M., Yang, W., Roberts, E. M., Aghaeepour, N., Mayo, J. A., Weber, K. A., Maric, I., Carmichael, S. L., Winn, V. D., Stevenson, D. K., English, P. B. 2018; 164: 546–55
- **Dietary factors and pediatric multiple sclerosis: A case-control study** *MULTIPLE SCLEROSIS JOURNAL*
Pakpoor, J., Seminatore, B., Graves, J. S., Schreiner, T., Waldman, A. T., Lotze, T. E., Belman, A., Greenberg, B. M., Weinstock-Guttman, B., Aaen, G., Tillema, J., McDonald, J. C., Hart, et al
2018; 24 (8): 1067–76
 - **Nutrient intake in women before conception and risks of anophthalmia and microphthalmia in their offspring.** *Birth defects research*
Weber, K. A., Yang, W., Carmichael, S. L., Shaw, G. M., National Birth Defects Prevention Study
2018; 110 (10): 863–70
 - **Women's periconceptional diet and risk of biliary atresia in offspring.** *Birth defects research*
Carmichael, S. L., Ma, C., Van Zutphen, A. R., Moore, C. A., Shaw, G. M., National Birth Defects Prevention Study
2018
 - **Chemical Contaminants in Raw and Pasteurized Human Milk** *JOURNAL OF HUMAN LACTATION*
Hartle, J. C., Cohen, R. S., Sakamoto, P., Barr, D., Carmichael, S. L.
2018; 34 (2): 340–49
 - **Maternal body mass index and risk of intraventricular hemorrhage in preterm infants.** *Pediatric research*
Pai, V. V., Carmichael, S. L., Kan, P., Leonard, S. A., Lee, H. C.
2018
 - **Occurrence of Selected Structural Birth Defects Among Women With Preeclampsia and Other Hypertensive Disorders** *AMERICAN JOURNAL OF EPIDEMIOLOGY*
Weber, K. A., Mayo, J. A., Carmichael, S. L., Stevenson, D. K., Winn, V. D., Shaw, G. M.
2018; 187 (4): 668–76
 - **Residential Agricultural Pesticide Exposures and Risks of Spontaneous Preterm Birth** *EPIDEMIOLOGY*
Shaw, G. M., Yang, W., Roberts, E. M., Kegley, S. E., Stevenson, D. K., Carmichael, S. L., English, P. B.
2018; 29 (1): 8–21
 - **Congenital heart disease complexity and childhood cancer risk.** *Birth defects research*
Collins, R. T., Von Behren, J., Yang, W., Carmichael, S. L., Reynolds, P., Fisher, P. G., Shaw, G. M.
2018; 110 (17): 1314–21
 - **Impact of post-collection freezing delay on the reliability of serum metabolomics in samples reflecting the California mid-term pregnancy biobank.** *Metabolomics : Official journal of the Metabolomic Society*
La Frano, M. R., Carmichael, S. L., Ma, C., Hardley, M., Shen, T., Wong, R., Rosales, L., Borkowski, K., Pedersen, T. L., Shaw, G. M., Stevenson, D. K., Fiehn, O., Newman, et al
2018; 14 (11): 151
 - **Antioxidant Consumption is Associated with Decreased Odds of Congenital Limb Deficiencies** *PAEDIATRIC AND PERINATAL EPIDEMIOLOGY*
Pace, N. D., Desrosiers, T. A., Carmichael, S. L., Shaw, G. M., Olshan, A. F., Siega-Riz, A., Natl Birth Defects Prevention Stud
2018; 32 (1): 90–99
 - **Contribution of dietary intake to relapse rate in early paediatric multiple sclerosis** *JOURNAL OF NEUROLOGY NEUROSURGERY AND PSYCHIATRY*
Azary, S., Schreiner, T., Graves, J., Waldman, A., Belman, A., Guttman, B., Aaen, G., Tillema, J., Mar, S., Hart, J., Ness, J., Harris, Y., Krupp, et al
2018; 89 (1): 28–33
 - **Characteristics of women with multiple postpartum hospital admissions**
Girsan, A. I., Sie, L., Carmichael, S., Foeller, M. E., Druzin, M. L., Lee, H. C., Gibbs, R. S.
MOSBY-ELSEVIER.2018: S461–S462
 - **Thyroid Medication Use and Birth Defects in the National Birth Defects Prevention Study** *BIRTH DEFECTS RESEARCH*
Howley, M. M., Fisher, S. C., Van Zutphen, A. R., Waller, D. K., Carmichael, S. L., Browne, M. L., Natl Birth Defects Prevention
2017; 109 (18): 1471–81
 - **Maternal Exposure to Nitrogen Dioxide, Intake of Methyl Nutrients, and Congenital Heart Defects in Offspring** *AMERICAN JOURNAL OF EPIDEMIOLOGY*

- Stingone, J. A., Luben, T. J., Carmichael, S. L., Aylsworth, A. S., Botto, L. D., Correa, A., Gilboa, S. M., Langlois, P. H., Nembhard, W. N., Richmond-Bryant, J., Shaw, G. M., Olshan, A. F., Natl Birth Defects Prevention
2017; 186 (6): 719–29
- **Social disadvantage and the black-white disparity in spontaneous preterm delivery among California births** *PLOS ONE*
Carmichael, S. L., Kan, P., Padula, A. M., Rehkopf, D. H., Oehlert, J. W., Mayo, J. A., Weber, A. M., Wise, P. H., Shaw, G. M., Stevenson, D. K.
2017; 12 (8): e0182862
 - **Maternal prepregnancy body mass index and risk of bronchopulmonary dysplasia.** *Pediatric research*
Carmichael, S. L., Kan, P., Gould, J. B., Stevenson, D. K., Shaw, G. M., Lee, H. C.
2017
 - **Air pollution, neighborhood acculturation factors, and neural tube defects among Hispanic women in California** *BIRTH DEFECTS RESEARCH*
Padula, A. M., Yang, W., Carmichael, S. L., Lurmann, F., Balmes, J., Hammond, S. K., Shaw, G. M.
2017; 109 (6): 403-422
 - **What factors are related to recurrent preterm birth among underweight women?** *journal of maternal-fetal & neonatal medicine*
Girsen, A. I., Mayo, J. A., Wallenstein, M. B., Gould, J. B., Carmichael, S. L., Stevenson, D. K., Lyell, D. J., Shaw, G. M.
2017: 1-19
 - **Maternal underweight and obesity and risk of orofacial clefts in a large international consortium of population-based studies** *INTERNATIONAL JOURNAL OF EPIDEMIOLOGY*
Kutbi, H., Wehby, G. L., Uribe, L., Romitti, P. A., Carmichael, S., Shaw, G. M., Olshan, A. F., DeRoo, L., Rasmussen, S. A., Murray, J. C., Wilcox, A., Lie, R. T., Munger, et al
2017; 46 (1): 190–99
 - **Maternal Smoking, Alcohol, and Caffeine Exposures and Risk of Hypospadias.** *Birth defects research*
Carmichael, S. L., Ma, C., Shaw, G. M.
2017; 109 (14): 1127–33
 - **Temporal Relationship of Onset of Necrotizing Enterocolitis and Introduction of Enteric Feedings and Powdered Milk Fortifier.** *American journal of perinatology*
Vaks, Y., Birnie, K. L., Carmichael, S. L., Hernandez-Boussard, T., Benitz, W. E.
2017
 - **Postpartum readmission and severe maternal morbidity in California**
Girsen, A., Lee, L. C., Carmichael, S. L., Foeller, M., Druzin, M. L., Gibbs, R.
MOSBY-ELSEVIER.2017: S112
 - **An Investigation of Connections between Birth Defects and Cancers Arising in Adolescence and Very Young Adulthood.** *The Journal of pediatrics*
Von Behren, J., Fisher, P. G., Carmichael, S. L., Shaw, G. M., Reynolds, P.
2017; 185: 237–40
 - **Maternal Stressors and Social Support and Risks of Delivering Babies With Gastroschisis or Hypospadias.** *American journal of epidemiology*
Carmichael, S. L., Ma, C., Tinker, S., Shaw, G. M.
2017; 185 (12): 1240–46
 - **Folic acid fortification and prevalences of neural tube defects, orofacial clefts, and gastroschisis in California, 1989 to 2010.** *Birth defects research. Part A, Clinical and molecular teratology*
Yang, W., Carmichael, S. L., Shaw, G. M.
2016; 106 (12): 1032-1041
 - **Women's prepregnancy underweight as a risk factor for preterm birth: a retrospective study.** *bjog-an international journal of obstetrics and gynaecology*
Girsen, A. I., Mayo, J. A., Carmichael, S. L., Phibbs, C. S., Shachar, B. Z., Stevenson, D. K., Lyell, D. J., Shaw, G. M., Gould, J. B.
2016; 123 (12): 2001-2007
 - **Maternal Autoimmune Disease and Birth Defects in the National Birth Defects Prevention Study** *BIRTH DEFECTS RESEARCH PART A-CLINICAL AND MOLECULAR TERATOLOGY*
Howley, M. M., Browne, M. L., Van Zutphen, A. R., Richardson, S. D., Blossom, S. J., Broussard, C. S., Carmichael, S. L., Druschel, C. M.
2016; 106 (11): 950-962

- **Gene variants as risk factors for gastroschisis.** *American journal of medical genetics. Part A*
Padula, A. M., Yang, W., Schultz, K., Tom, L., Lin, B., Carmichael, S. L., Lammer, E. J., Shaw, G. M.
2016; 170 (11): 2788-2802
- **Inflammatory biomarkers and spontaneous preterm birth among obese women.** *journal of maternal-fetal & neonatal medicine*
Wallenstein, M. B., Jelliffe-Pawlowski, L. L., Yang, W., Carmichael, S. L., Stevenson, D. K., Ryckman, K. K., Shaw, G. M.
2016; 29 (20): 3317-3322
- **Maternal diet quality before pregnancy and risk of childhood leukaemia** *BRITISH JOURNAL OF NUTRITION*
Singer, A. W., Carmichael, S. L., Selvin, S., Fu, C., Block, G., Metayer, C.
2016; 116 (8): 1469-1478
- **Gastroschisis and maternal intake of phytoestrogens** *AMERICAN JOURNAL OF MEDICAL GENETICS PART A*
Wadhwa, E. L., Ma, C., Shaw, G. M., Carmichael, S. L.
2016; 170 (8): 2078-2082
- **Joint effects of genetic variants and residential proximity to pesticide applications on hypospadias risk.** *Birth defects research. Part A, Clinical and molecular teratology*
Carmichael, S. L., Yang, W., Ma, C., Roberts, E., Kegley, S., English, P., Lammer, E. J., Witte, J. S., Shaw, G. M.
2016; 106 (8): 653-658
- **Body Mass Index Change between Pregnancies and Risk of Spontaneous Preterm Birth.** *American journal of perinatology*
Riley, K. L., Carmichael, S. L., Mayo, J. A., Shachar, B. Z., Girsen, A. I., Wallenstein, M. B., Gould, J. B., Stevenson, D. K., Shaw, G. M.
2016; 33 (10): 1017-1022
- **Maternal prenatal intake of one-carbon metabolism nutrients and risk of childhood leukemia** *CANCER CAUSES & CONTROL*
Singer, A. W., Selvin, S., Block, G., Golden, C., Carmichael, S. L., Metayer, C.
2016; 27 (7): 929-940
- **Elevated body mass index and decreased diet quality among women and risk of birth defects in their offspring.** *Birth defects research. Part A, Clinical and molecular teratology*
Carmichael, S. L., Yang, W., Gilboa, S., Ailes, E., Correa, A., Botto, L. D., Feldkamp, M. L., Shaw, G. M.
2016; 106 (3): 164-171
- **Elevated body mass index and decreased diet quality among women and risk of birth defects in their offspring** *BIRTH DEFECTS RESEARCH PART A-CLINICAL AND MOLECULAR TERATOLOGY*
Carmichael, S. L., Yang, W., Gilboa, S., Ailes, E., Correa, A., Botto, L. D., Feldkamp, M. L., Shaw, G. M.
2016; 106 (3): 164-171
- **Lower rate of selected congenital heart defects with better maternal diet quality: a population-based study.** *Archives of disease in childhood. Fetal and neonatal edition*
Botto, L. D., Krikov, S., Carmichael, S. L., Munger, R. G., Shaw, G. M., Feldkamp, M. L.
2016; 101 (1): 43-49
- **Residential agricultural pesticide exposures and risks of selected birth defects among offspring in the San Joaquin Valley of California.** *Birth defects research. Part A, Clinical and molecular teratology*
Carmichael, S. L., Yang, W., Roberts, E., Kegley, S. E., Brown, T. J., English, P. B., Lammer, E. J., Shaw, G. M.
2016; 106 (1): 27-35
- **Effects of race/ethnicity and BMI on the association between height and risk for spontaneous preterm birth** *AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY*
Shachar, B. Z., Mayo, J. A., Lee, H. C., Carmichael, S. L., Stevenson, D. K., Shaw, G. M., Gould, J. B.
2015; 213 (5)
- **Air Pollution, Neighbourhood Socioeconomic Factors, and Neural Tube Defects in the San Joaquin Valley of California** *PAEDIATRIC AND PERINATAL EPIDEMIOLOGY*
Padula, A. M., Yang, W., Carmichael, S. L., Tager, I. B., Lurmann, F., Hammond, S. K., Shaw, G. M.
2015; 29 (6): 536-545
- **Effects of race/ethnicity and BMI on the association between height and risk for spontaneous preterm birth.** *American journal of obstetrics and gynecology*
Shachar, B. Z., Mayo, J. A., Lee, H. C., Carmichael, S. L., Stevenson, D. K., Shaw, G. M., Gould, J. B.

2015; 213 (5): 700 e1-9

- **Prepregnancy Obesity and Risks of Stillbirth** *PLOS ONE*
Carmichael, S. L., Blumenfeld, Y. J., Mayo, J., Wei, E., Gould, J. B., Stevenson, D. K., Shaw, G. M.
2015; 10 (10)
- **Heightened risk of preterm birth and growth restriction after a first-born son** *ANNALS OF EPIDEMIOLOGY*
Bruckner, T. A., Mayo, J. A., Gould, J. B., Stevenson, D. K., Lewis, D. B., Shaw, G. M., Carmichael, S. L.
2015; 25 (10): 743-747
- **Periconceptional changes in weight and risk of delivering offspring with conotruncal heart defects.** *Birth defects research. Part A, Clinical and molecular teratology*
Carter, E. H., Carmichael, S. L., Birnie, K., Yang, W., Lammer, E. J., Shaw, G. M.
2015; 103 (10): 843-846
- **Next steps for birth defects research and prevention: The birth defects study to evaluate pregnancy exposures (BD-STEPS)** *BIRTH DEFECTS RESEARCH PART A-CLINICAL AND MOLECULAR TERATOLOGY*
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