Beyond Health Insurance: Evaluating Access to Care for Depression

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Background: The Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA) final rules were issued in November 2013 with an effective date of July 2014. The act expands the 1996 law to include coverage for treatment of alcohol and substance abuse. Employers and health insurance companies offering mental health care benefits can place no more restrictions than that for other medical/physical conditions. What continues to be absent is mandatory mental health coverage for all insurance plans. Access barriers to receive depression diagnosis and treatment persist when such coverage is not required. Examine access to mental health care services for those with depression by comparing and contrasting accessibility based on type of insurance (private, Medicaid, Medicare, dual eligible).

Methods: The Medical Expenditure Panel Survey (MEPS) data for 2010 and 2011 will be used for analysis. Persons ages 18 and older that are available for survey collection throughout each year will be included. ICD-9-CM diagnosis codes will be used to identify persons with depression from the medical conditions file. Mental health care services examined will include psychotherapy counseling and antidepressant medication fills. Multivariate logistic and multiple regression models will be employed to explore the relationship between type of insurance and mental health care services provided.

Results: Approximately 1,700 and 1,800 depression cases have been identified in 2010 and 2011 respectively. Women account for 70% of these cases. Preliminary results indicate statistical differences in number of antidepressant fills between insurance types, especially relative to those having Medicare or dual eligibility. Other treatments for depression may be impacted by the type of insurance.

Conclusions: The results of this analysis may provide baseline analysis related to access for depression treatment not addressed by health insurance coverage for ACA or MHPAEA.

Work in progress

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Pregnancy-Enhanced Changes in Membrane Potential are Not Driven by Pregnancy-Enhanced Ca2+ Signaling in Uterine Artery Endothelial Cells (UAEC)

Authors: Roxanne E. Alvarez, (PhD Candidate), Derek S. Boeldt, Bikash R. Pattnaik, Ronald R. Magness, and Ian M. Bird

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Background: ATP-stimulation causes Pregnant-UAEC to respond with a robust sustained phase Ca2+ entry and corresponding enhanced nitric oxide (NO) production, in contrast to the response of cells derived from non-pregnant ewes. Recently we have observed greater changes in cell membrane potential (Vm) and so the question of a possible role for up-regulated activity of Vm-sensitive Ca2+ channels to support NO production arises. Prior results show Ca2+ enhancement and changes in Vm are dose-dependent on ATP concentration, and correlations exist between [Ca2+]i and Vm. Our intent is to determine if there is a causal relationship via KCa channels by observing if blocking the sustained-phase Ca2+ enhancement will eliminate corresponding changes in Vm.

Methods: Passage 4 P-UAEC were grown in 35mm glass bottomdishes to 100% confluence. Cells were loaded with Fura-2 AM and DIBAC4(3) and imaged simultaneously for [Ca2+]i and Vm. Protocol: ATP-stimulation (100µM):30min, wash/recovery:20min, 2-APB (50µM) treatment:10min, repeat ATP-stimulation:30min. Change in Vm and respective changes in [Ca2+]i burst and area under the curve were calculated for cells as dish averages.

Results: 2-APB eliminated the ATP-stimulated sustained-phase Ca2+ entry as well as a majority of the initial [Ca2+]i peak, but the corresponding change in Vm was not significantly altered compared to ATP alone. 2-APB reduced the percentage of cells showing 2 or more [Ca2+]i bursts from 86% down to 5% (P<0.001), and reduced total [Ca2+]i above baseline by 90% (30min)P<0.001. However, the net change in Vm was -15mV with or without 2-APB treatment.

Conclusion: Enhanced sustained-phase Ca2+ is not a driving force for P-UAEC to undergo Vm hyperpolarization in response to ATP-stimulation, but P-UAEC Vm hyperpolarization may still be an intrinsic factor that enables the cells to enhance [Ca2+]i bursting (as long as Ca2+ entry is not blocked). Supported by NIH grants HL079020, HD41921.

Completed work
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Cyclic Nucleotide Inhibition Diminishes the Phosphorylation and Expression of Cx43 and eNOS in Uterine Artery Endothelial Cells from Pregnant Sheep

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Background: Vascular endothelial gap junctions (GJ) are intercellular channels that direct cell-cell communication by facilitating the diffusion of signaling molecules (e.g. cAMP, cGMP, Ca2+). During pregnancy the coordination and synchronization of endothelial cell responses (e.g. vasodilation) are essential to ensure adequate perfusion for nutrient and oxygen delivery to the placenta and fetus. Vasodilation modulates uterine blood flow through elevations in the potent endothelial-derived vasodilators prostacyclin and nitric oxide that function via cAMP and cGMP, respectively.

Previously we showed that the GJ protein Cx43 plays a vital role in cell-cell communication via intracellular Ca2+ -mediated activation of endothelial nitric oxide synthase (eNOS). In pregnant uterine artery endothelial cells (P-UAECs) we demonstrated that cAMP increases Cx43 phosphorylation at Ser365 whereas cGMP increases eNOS phosphorylation at Ser635. Hypothesis: Inhibition of cAMP and cGMP-mediated pathways will reduce the Cx43 and eNOS phosphorylation at their respective stimulatory sites. The aim of this study was to investigate the effects of SQ 22536, an adenyl cyclase inhibitor, and ODQ, a soluble guanylyl cyclase inhibitor, on basal and agonist stimulated Cx43 and eNOS expression in cultured P-UAECs.

Methods: P-UAECs were pretreated with nucleotide cyclase inhibitors SQ22536 and ODQ (0.1-100uM) followed by treatment with vehicle or 100 umol/L of ATP, Forskolin, or DETA/NO (NO donor).

Results: ELISA showed that SQ22536 and ODQ abrogated (P<0.01) cAMP and cGMP productions, respectively. Western blotting revealed that SQ22536 decreased (P<0.05) ATP and Forskolin-induced elevation in cAMP and Cx43 phosphorylation. SQ22536 decreased DETA/NO induced eNOS phosphorylation. In addition, ODQ decreased (P<0.05) ATP elevations in cGMP and DETA/NO elevation in eNOS phosphorylation.

Conclusions: These results verify previous reports that the cAMP is important for Cx43 phosphorylation and cGMP is important for eNOS phosphorylation. These results also suggest that phosphorylation of Cx43 eNOS involve cross talk between cGMP/PKG and cAMP/PKA pathways. HL49210, HD38843, HL87144, HL117341, R25GM083252.

Completed work

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Infertility and Assisted Reproductive Technology Outcomes in Women with Inflammatory Bowel Disease

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Background: It is currently unknown whether the reasons for infertility in women with inflammatory bowel disease (IBD) differ from those for the general population. Outcomes in women with IBD who undergo assisted reproductive technology (ART) have not been described. We conducted a retrospective study of women with IBD and infertility at UW Hospitals & Clinics to determine the etiology for infertility and the efficacy rate of ART in this patient population.

Methods: Female patients with ICD-9 codes for Crohn’s disease (CD), ulcerative colitis (UC) and infertility seen within our institution between 2002 and 2012 were identified. Data pertaining to demographics, IBD diagnosis, obstetric history, infertility evaluation, infertility treatment, and infertility treatment outcomes were abstracted.

Results: Of 74 patients identified, 13 patients were confirmed to have both IBD and infertility (17.6 %). The mean patient age was 32 years and mean IBD disease duration was 8.7 years. BMI on average was normal (mean 26 ± 7). 69% of patients had CD and 31% had UC/IC. A history of surgery for IBD was found in nearly 70% of patients. After infertility evaluation, 77% of patients were not found to have a definite cause of their infertility. 53% of patients underwent ART. Of these patients 60% percent achieved pregnancy ending with successful live births.

Conclusions: 77% of women this study did not have a definite cause for their infertility as compared to 15% in the general population. Of the remaining patients, all were found to have tubal factors as the cause of their infertility suggesting that maintaining tubal patency particularly for women with CD undergoing small bowel resection is important for future fertility. We found comparable rates of ART success among women with IBD compared to reported national averages, suggesting that most women with IBD and infertility are reasonable candidates for ART.

Completed work

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Social Inequalities, Anger, and Inflammation in the MIDUS National Sample: Does Race Matter?

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Background: To investigate racial differences in the influence of anger on the relationship between education and inflammation in African American and White middle-aged adults. Anger was previously found to moderate the link between educational status and interleukin-6 (IL-6) and fibrinogen (FBG) among White adults. However, higher status African Americans experience more anger-provoking situations and receive less health benefit from higher education than do their White counterparts, thus there may also be racial differences in the interplay of anger and educational status on inflammatory biology.

Methods: Participants (N = 1,200; 43.0% male; 18.5% African American) were from the Midlife in the U.S. (MIDUS) Study. Educational attainment and self-reported anger were obtained via survey assessments, and a fasting blood sample following an overnight clinic visit was used to determine IL-6 and FBG.

Results: African American respondents reported more anger expression (anger-out) and lower anger control than White respondents. Anger-out predicted higher IL-6 and FBG among African American respondents with higher education, whereas trait anger and anger-out positively predicted IL-6 and FBG more strongly in White respondents with lower education.

Conclusion: There are significant racial differences in reported anger and its association with inflammatory markers. For African Americans, pro-inflammatory effects were more salient among those with high anger and higher education, in contrast to Whites who evinced a stronger effect of anger when of low educational status. The findings underscore the racial differences in the benefits and consequences of educational attainment, and how social inequities are manifest in inflammatory physiology.

Completed work

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Feasibility of a Web-based Intervention in Breast Cancer Patients

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Background: The Internet is frequently used by breast cancer patients seeking information about their treatment options. However, internet access and literacy vary widely. Our objective was to evaluate the feasibility of delivering online information to breast cancer patients in the setting of a clinical trial and assess for disparities in care.

Methods: Stage 0-3 breast cancer patients were emailed links to web-based information following their diagnosis. A validated questionnaire was completed prior to their first surgical consult assessing breast cancer knowledge, treatment goals, time spent reviewing the links, education history, and baseline Internet use.

Results: To date, 46 women have been approached, with five ineligible. Seven declined due to issues related to access to or comfort with the Internet (n=5), and due to emotional distress (n=2). Non-participants citing internet access/comfort issues had a median age of 73 [63-81] years. 35 have enrolled (76%). Median participant age was 57 (29-78) years. 65% had at least a college degree, 29% had some college, and 6% had high school or less. Internet use was described as multiple times daily (68%), once daily (23%) or a couple of times per week (9%). The median time between study email and surgeon consult was 4 (1-13) days. 79% reviewed the emailed material (62% for >1 hour, 31% for 15-60 minutes, 7% for <15 minutes). Cited reasons for no review included no access to internet following receipt of emailed links (n=2), not receiving study email (n=1), insufficient time before surgeon visit n=1), finding it unnecessary (n=1) and unknown (n=1). No relationship was observed between likelihood to review websites and age, education or Internet use.

Conclusion: We determined that delivery of Internet breast cancer information via email is feasible, as we were able to successfully enroll 76% eligible women. Specific challenges included spam filters blocking study emails and short intervals between diagnosis and surgeon consult. Additionally, older patients were more likely to decline participation due to lack of comfort with or access to the Internet. Final study analysis will determine the impact delivery of this online information has on women’s experience with breast cancer surgery decision-making.

Work in progress
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Race, Place, and Gestational Weight Gain among NC Teen Mothers: A Multilevel Investigation

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Background: Few studies examined disparities in gestational weight gain (GWG) in which African-American adult mothers were more likely to gain outside of IOM guidelines than White mothers. The limited studies that examined GWG disparities among teen mothers yielded mixed results, and no studies to date examined disparities in context of socioeconomic characteristics. Given these research gaps, this study investigated racial disparities in inadequate GWG among teen mothers in North Carolina in context of neighborhood socioeconomic status.

Methods: Birth cases for 7,923 African-American and White teens from the NC State Center of Health Statistics were geocoded and linked to census-tract information from the 2010 US Census and the 2007-2011 American Community Survey. A “neighborhood risk” index was created through principal component analysis. Multilevel models were used to identify racial differences in GWG outcomes across census-tracts when controlling for maternal demographics (age, marital status, medical risk factors, prior pregnancies), smoking, prenatal care use, and neighborhood risk.

Results: African-American teen mothers had a higher likelihood of inadequate GWG in comparison to White teen mothers across census-tracts (OR=1.76, p<.001). Teen residents of areas of high neighborhood risk had a higher likelihood of inadequate GWG than teens that lived in low neighborhood risk census-tracts (OR=1.39, p<.001). Racial disparities remained significant when controlling for neighborhood risk, maternal demographics, smoking, and prenatal care use (p<.001).

Conclusions: Although many studies indicate the need to focus on reducing excessive GWG for mothers, these unique study findings support the need to address inadequate GWG for teen mothers in context of race and place of residence. Future studies could further explore GWG disparities and pregnancy nutritional intake for teen mothers. Prenatal care, nutritional education, and other interventions for teen mothers could be further explored in order to address GWG disparities and subsequently improve birth outcomes for these mothers.

Work in progress

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Preliminary Research on the Cost-Effectiveness of Maternal Weight Reduction in Decreasing Adverse Maternal and Fetal Health Outcomes

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Gestational weight gain above the current Institute of Medicine (IOM) recommendations has been shown to increase the risk of inappropriate fetal growth, obstetric complications, hypertensive disorders, and likelihood of caesarean section. Women who gain weight above the IOM guidelines put themselves and their infants at greater risk for health complications during gestation, delivery, the postpartum period, and into an infant’s adulthood. Our hypothesis was that limiting maternal weight gain to the amount recommended by the IOM would minimize adverse maternal and fetal health outcomes during pregnancy and should cause a patient’s medical expenses to decrease. The current study used patient data from UW Health electronic health records. Results showed that the prevalence of caesarean deliveries increased when weight gain exceeds the range recommended by the IOM. A caesarean patient’s health expenses increase by an average of 50% compared to total maternal and newborn care payments for vaginal birth. These preliminary results on the prevalence and costs of caesarean delivery suggest further research is needed to determine how excess gestational weight gain impacts medical expenses. Planned research includes examining the occurrence and cost of adverse health outcomes associated with excess gestational weight and evaluating how beneficial weight gain preventive treatments could be in improving maternal and fetal health outcomes. Future research will examine whether preventing excessive gestational weight gain can decrease these risks to the extent that preventive medicine would be cost effective.

Completed work

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Increasing Mild Cognitive Impairment Screening Participation among African Americans

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Background: Timely detection of Mild Cognitive Impairment (MCI) in African Americans is key to reducing racial disparities in Alzheimer’s disease prevention. The Theory of Planned Behavior states that beliefs about controllability and perceived risk of a contracting a disease predict engagement in prevention behaviors such as MCI screening.

Methods: A mixed methods approach was used to address questions about African American participation in MCI screening. Questionnaire data examined participant beliefs about controllability and perceived risk of MCI. The final sample included 98 African Americans (61.2% female) and 35 whites (68.6% female) matched by age and education (3:1). Nine additional African Americans were interviewed using a semi-structured interview. The final qualitative sample contained six female participants.

Results: The multivariate model revealed race to be a significant predictor of outcomes (Wilks Λ=0.91 (2,130), p = 0.003); however, between-subject effects revealed significant differences between African Americans and whites with regards to controllability beliefs (F=9.46, p = .003). A mean controllability score of 7.88 was reported for African Americans (SE = 0.59) and 11.43 for whites (SE = 0.99). The Consensual Qualitative Research (CQR) approach was used to analyze interview data. Comments strongly reflected the Extended Parallel Process Model (EPPM) in that screening participation was a message participants either accepted or rejected. Acceptance appeared to be a function of high perceived risk factors (i.e. susceptibility, severity of symptoms) and high perceived efficacy (i.e. controllability). Belief in treatments, trust in the healthcare system, self-efficacy, and family support were important contributors to perceived efficacy. Message rejection was caused by sources of fear (e.g. stigma, potential consequences) that undermined efficacy and masked perceived risk.

Conclusions: Both whites and African Americans perceive themselves to be at equal risk for memory loss, African Americans believe they have significantly less control over the course of the disease than whites. The qualitative results reveal potential interventions to increase African American beliefs about controllability.

Work in progress

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The Influence of the Doctor-Patient Relationship on Willingness of African Americans to Discuss Memory Loss with Health Care Professionals

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Background: Research indicates most dementia diagnoses are made in primary care settings, and African Americans are less likely than whites to discuss symptoms of early memory loss with doctors. This often delays a diagnosis until symptoms are too severe to be ignored. Cultural mistrust and misconceptions about normal aging are two well-documented contributing factors. This paper investigates the influence of patient’s expectations of physician response and expectation of quality of future medical care on the willingness of African Americans to discuss memory symptoms with their doctors.

Methods: Two hundred thirty-one (231) African Americans attending community events responded to questions assessing beliefs about memory disorders. A stepwise regression analysis was used to compare family support, perceived benefits, patient expectations of provider response to memory loss, and expectations of the quality of future medical care to predict willingness to report memory symptoms to physicians.

Results: A multiple regression model tested the likelihood of reporting MCI symptoms to providers based on family support, perceived benefits, the expected responses of medical professionals, and expectations of future care following a diagnosis of MCI. The overall model was significant, F (4, 223) = 10.62, p < .0005. adj. R²=.147. The following factors significantly predicted a person’s willingness to discuss memory loss symptoms with their doctors: family support (p<.005), perceived benefits (p<.05), expectations regarding the quality of future care (p<.005), and expectations of being ignored after diagnosis (p<.05).

Conclusions: Study results indicate that patients’ expectations of health care provider response and quality of future care are predictive of willingness to discuss memory symptoms. This suggests that increased attention to provider/patient relationships, and open discussions about early symptoms of memory loss, is one route to increasing willingness of African Americans to discuss memory loss with health care providers.

Work in Progress

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CLA as a Src Inhibitor: An Innovative Approach to Rescue Endothelial Function in Preeclampsia

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During pregnancy, uterine artery endothelial cells (UAEC) adapt to increase agonist-stimulated sustained Ca2+ burst responses, resulting in an increase in vasodilator production. Enhanced vasodilation increases blood flow to the uterus. This pregnancy adaptation is attributed to an increase in Connexin (Cx) 43 gap junction function. Aberrant adaptation can result in hypertensive diseases of pregnancy, like preeclampsia (PE). We mimic PE-like endothelial cell dysfunction using TNFα, a Src-activating cytokine elevated in PE. Our previous studies show TNFα phosphorylates Cx43 at the Src sensitive site Y265 leading to closure and disassembly of Cx43, and loss of sustained Ca2+ bursting. We have also shown this TNFα-stimulated loss of Ca2+ bursts is recovered when pretreated with the Src inhibitor PP2. We have evidence that the organic food component 10,12 CLA is able to block Src activity. Our objective is to test the ability of 10,12 or 9,11 CLA to rescue Ca2+ burst function in UAECs from near term pregnant ewes (P-UAEC) pretreated with TNFα. P-UAECs were loaded with Fura-2 dye and imaged to record ATP stimulated (100uM, 30 min) Ca2+ bursts. We repeated this measure after pretreatment with TNFα or TNFα and CLA combined. 10ng/mL TNFα for 1hr pretreatment inhibited ATP stimulated Ca2+ bursts (~63% of control p<0.001) in PUAEC. 50uM of 10:12 CLA recovers Ca2+ bursts in TNFα pretreated cells (~88% of control p<0.94) to levels near control (~90%). 50uM of 9:11 CLA has limited rescue of Ca2+ bursts in TNFα pretreated cells (~80% of control p<.05). In conclusion, TNFα inhibits gap junction function but CLA has the ability to restore Cx43 function. CLA 10,12 isomer is able to rescue Ca2+ burst function more effectively than the 9,11 isomer in TNFα pretreated cells, suggesting 10,12 CLA could potentially be used as an effective agent to treat PE and PE-related endothelial dysfunction. Funded by NIH HD38843

Completed work
Contact: ahankes@wisc.edu
The Importance of Pleasure: Patterns of Male Condom among 15-24 Year-Old Young Women and Men in the U.S.

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Background: Despite interest in promoting young adults’ consistent condom use, no nationally-representative studies explore associations between condom practices and condom-associated pleasure reduction, especially for young women.

Methods: Using the 2006-10 National Survey of Family Growth, a nationally representative study of reproductive health administered by the CDC, we analyzed data from heterosexually active, non-sterile 15-24 year-olds (1,905 women, 1,659 men). Logistic regression documented associations between condom use at last sexual episode in the last month and socio-demographic and psycho-sexual controls, including the following question: “What is the chance that if you/your partner used a condom during sex, you would feel less physical pleasure?”

Results: 45% of young women and 55% of young men reported condom use at last sex. Though proportionately more men than women reported a “good” or “certain” chance condoms would reduce pleasure (34% versus 14%), pleasure attitudes were significantly linked to condom practices for both genders. In multivariate models, pleasure-related attitudes had stronger effects on condom use than all other control variables. Compared to those who said condoms were unlikely to reduce physical pleasure, those who said condoms were likely to reduce pleasure were six to seven times less likely to have used a condom at last sex (ORs= .23 for women, .25 for men [p<.001]).

Conclusion: Perceptions about how condoms reduce sexual pleasure may shape young adults’ condom practices even more than socio-demographic or sexual history factors. Young women, too, have sexual experiences with condoms, which influence condom use practices as well as young men’s. Clinicians and educators may wish to advise clients to try a variety of condoms types, sizes, and/or lubricants to minimize sexual interference.

Completed work

Contact: jahiggins2@wisc.edu
Estrogen Alters Stat5 isoform Expression in Mammary Epithelia, Which Modifies Cellular Behavior

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Epidemiologic studies have linked prolactin (PRL) to the promotion and progression of breast cancer. PRL signaling is known to activate signal transducers and activators of transcription 5a/b (Stat5a/b). Although Stat5a/b are highly homologous proteins, they have been shown to regulate different genes. Stat5a mediates most of the physiologic actions of PRL in the mammary gland and is considered a positive prognostic factor in breast cancer, while Stat5b induced migration and invasion of aggressive breast cancer cell lines in vitro. We recently reported that inhibition of estrogen receptor (ER) signaling using ICI 182,780 (ICI) significantly increased Stat5b and reduced Stat5a expression and nuclear protein in mammary tumors of NRL-PRL/TGF-α female mice. Previous studies indicate that estrogen elevates Stat5a levels in pubertal female mice. These data suggest that estrogen alters the balance between Stat5a and Stat5b. We hypothesize that estrogen increases the ratio of Stat5a:Stat5b in mammary epithelia, which influences the outcome of PRL signaling. To test this hypothesis, we are utilizing both a normal mouse mammary epithelial cell line (HC11) and a mouse mammary tumor cell line (TC11) generated from a NRL-PRL carcinoma. We show that the Stat5a:Stat5b ratio was significantly higher in differentiated HC11 compared to TC11 cells. The latter showed a significantly higher ratio of Stat5b to Stat5a. Treatment with 17β-estradiol significantly increased Stat5a protein levels, while ICI treatment significantly increased Stat5b protein levels in both cell lines. 17β-estradiol increased β1 integrin transcripts, while decreasing α6 integrin transcripts in both cell lines. 17β-estradiol also significantly increased E-Cadherin transcripts, while ICI significantly decreased its levels in HC11 cells. E-cadherin was undetectable in the TC11 cell line. Parathyroid hormone-like hormone (Pthlh), a marker of invasion in breast cancer, was significantly increased by ICI in both HC11 and TC11 cell lines. Our results indicate that 17β-estradiol increases Stat5a in both normal and tumor mammary epithelia, which in turn leads to more differentiated and less invasive phenotype, while ICI increases Stat5b leading to a more aggressive phenotype. It is therefore essential to evaluate how Stat5a/b are regulated in the mammary gland to further elucidate the role of PRL in breast cancer progression.

Work in progress

Contact: fjallow@wisc.edu
To Tell or Not to Tell: Factors that Influence Disclosure of Depression Symptoms among a Racially and Ethnically Diverse Group of Women

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Background: Depression is a major public health problem. Healthcare providers are more likely to initiate depression treatment when patients disclose symptoms or directly request help. Efforts to encourage and facilitate symptom disclosure among women with depression are likely critical for improving treatment outcomes in this population. This qualitative study aimed to examine facilitators and barriers to disclosing depression symptoms to providers among a racially and ethnically diverse group of women.

Methods: 24 adult women with depression were recruited from a mid-size Midwest city for interviews to evaluate decision making about depression care from the patient’s point of view. Interviews were recorded, transcribed verbatim, and coded by 2 reviewers for interpretation using NVivo software. Themes were developed using content analysis.

Results: 10 white, 5 black, and 4 Hispanic women between age 18-58 (mean 40.5) were interviewed. Participant’s PHQ-8 scores ranged from 3-24 (mean 14.7; scores ≥10 identify current depression). The identified facilitators to disclosure included external contextual factors (family history of depression and social support), patient-provider relationship factors (connectedness, receptiveness, and continuity), internal beliefs and attitudes (desire for help, disclosure will lead to action, and something can be done), and provider approach (asking questions and opening conversation). Identified barriers included external contextual factors (aspects of the physical environment and disruptions in care), patient-provider relationship factors (lack of connectedness and discontinuity), internal beliefs and attitudes (feeling ashamed, uncertainty about treatment process, and fear of being labeled) and provider response (focused on other issues, overwhelmed or uncomfortable).

Conclusions: The disclosure of depression symptoms is often necessary for the receipt of accurate diagnosis and appropriate treatment. What emerged from this study is how potentially modifiable aspects of the patient-provider relationship as well as women’s beliefs about the likelihood of receiving and the effectiveness of treatment influenced women’s willingness to disclose depression symptoms.

Work in progress

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Pregnant and Postpartum Women’s Perceptions Surrounding Weight Gain in Pregnancy in Dane County, Wisconsin

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In the United States, forty percent of pregnant women are either overweight or obese, with women of lower socioeconomic status and minority women disproportionally affected. In response to increasing gestational weight gain and evidence associated with negative outcomes, the Institute of Medicine published revised guidelines on gestational weight gain in 2009. Using a cross-sectional self-reported survey design, this study describes perceptions about weight gain among pregnant and postpartum women residing in Dane County, Wisconsin. The study found that the 246 participants were highly educated and knowledgeable about gestational weight gain and the effects on maternal and fetal outcomes, and had low to moderate barriers related to healthy eating, and participating in physical activity and exercise. Household income was a major barrier to healthy eating. The majority reported being counseled regarding weight management by their healthcare provider, but few women were offered the opportunity to meet with a dietitian. Almost half of women residing in Dane County are considered overweight or obese, creating an urgent need for initiatives to promote healthy weight for women during and after pregnancy. Results can be used to help develop targeted interventions to promote healthy weight gain for women during and after pregnancy.

\textit{Completed work}

Contact: Laura.Kwitek@uwmf.wisc.edu
O-Methylated Metabolites of Catecholestrogens and Catecholamines Induce Similar Angiogenic Responses in Uterine Artery Endothelial Cells Derived from Pregnant Sheep

Authors: Rosalina Villalon Landeros¹, Graduate Student, S. Omar Jobe¹, Gladys E. Lopez, Jing Zheng, and Ronald R Magness¹,²,³

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Background: During pregnancy, uterine angiogenesis and uterine blood flow (UBF) is regulated by estrogens and estrogen metabolites. We previously reported that 4-hydroxyestradiol (4-OHE) and 4-Metoxysteradiol (4-ME), which is synthesized directly from 4-OHE by catechol-O-methyltransferase (COMT), induce a pregnancy-specific angiogenic response in uterine artery endothelial cells (P-UAECs). We also reported that catecholamines (norepinephrine and epinephrine) induce an angiogenic response in P-UAECs. It is unknown whether normetanephrine and metanephrine, which are synthesized from these catecholamines by COMT, induce similar proliferation in P-UAECs. Given the structural homology between normetanephrine and metanephrine with the catechol moiety of 4-ME, we hypothesized that normetanephrine and metanephrine will also have pregnancy-specific mitogenic activity in P-UAECs.

Methods: Dose responses were performed using validated passage 4 P-UAECs at ~70% confluence, and treated with/without normetanephrine or normetanephrine (0.1nM, 1nM, 10nM and 100nM). Cell proliferation was measured using the BrdU proliferation assay. Angiogenic responses in P-UAECs to these catecholamine metabolites were compared to proliferation responses to 4-ME, norepinephrine, and epinephrine.

Results: We observed significant dose responses where both normetanephrine and metanephrine at 10-100 nM concentrations exhibited mitogenic effects in P-UAECs increasing (P<0.05) P-UAEC proliferation up to a 1.5 fold of control. This proliferation was similar to the mitogenic responses we observed with 4-ME, norepinephrine, and epinephrine treatments.

Conclusions: To our knowledge this is the first observation of any biologic response of the catecholamine metabolites, classically considered biologically inactive. This novel observation demonstrates a convergence and importance of COMT-mediated estrogen and catecholamine metabolism to maintain angiogenesis. This may confer a distinct evolutionary advantage for maintaining UBF and thus fetal survival in the face of stress-mediated catecholamine release in fight or flight situations. HL49210, HD38843, HL87144, HL117341, R25GM083252.

Work in progress
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Death of a Child and Parental Wellbeing in Old Age: Evidence from Taiwan

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Background: The death of a child is one of the most traumatic events that a parent can experience. The psychological and physical consequences of bereavement are well established, and the consequences are more severe for mothers than fathers. However, little is known about whether the gender of a deceased child affects parental wellbeing. Although the death of a child is a particularly traumatic event in all cultures, we would expect that parental responses to the death of a son versus a daughter would vary by their culture's preference for male or female children. We investigate (a) the extent to which the death of an adult child affects parental wellbeing in old age and (b) how the deceased child’s gender may moderate the association.

Methods: We use data from four waves (1996, 1999, 2003, and 2007) of the Taiwanese Longitudinal Study of Aging (TLSA) to investigate how the death of a son or a daughter differentially affects mothers’ and fathers’ wellbeing in old age, which is measured by depressive symptoms and self-rated health.

Results: We find that for mothers, a son’s death is associated with an increase in depressive symptoms and a decline in self-rated health, but fathers’ health is not adversely affected by a son’s death. There is little evidence that a daughter’s death has a negative effect on either maternal or paternal wellbeing.

Conclusion: We situate these findings within their social and cultural contexts (gender inequality in socioeconomic status and son preference) and discuss social policies that would reduce gender and health inequality.

Completed work

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Education of Family Members and Trajectories of Depressive Symptoms among Older Adults

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Background: The benefit of education on individual’s psychological wellbeing is well-documented, yet few studies have moved beyond the individual to investigate family-level resources, such as the education of parents, spouses, or adult children. We investigate (1) the extent to which the educational attainments of family members—father, spouse, and adult children—are associated with the depressive symptoms of older adults and (b) whether there are gender differences in these patterns.

Methods: We use five waves (over 16 years) of a nationally representative sample of 4,716 Taiwanese aged 50+. Multilevel growth curve models are used to examine the associations between education of family members and the intercept and the age slope of CES-D scores.

Results: Having a more educated father is associated with lower levels of depressive symptoms, but the association disappears when taking the respondent’s own education into account. Including spouse’s education substantially attenuates the association with respondent’s education. A similar pattern is evident when children’s education is added to the model. The association between family members’ education and depressive symptoms appears to be the strongest for children’s education, although its strength gradually weakens as the respondent ages. The relationship between a respondent’s schooling and depressive symptoms vary significantly by gender, with a larger association for women than men. The pattern remains significant even after controlling for father’s and spouse’s education. However, with the inclusion of children’s education, the gender difference in the association between a respondent’s education and depressive symptoms was no longer significant. There is no evidence that benefits of family member’s education differ by gender.

Conclusion: The observed relationship is not necessarily causal, but it underscores the potential importance of children’s education for psychological wellbeing in old age. We discuss possible mechanisms underlying the association between adult children’s education and the psychological wellbeing of their elderly parents.

Work in progress

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Increases in Blood Glucose in Older Adults: The Effects of Spousal Health

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Background: The death or illness of a spouse negatively affects a partner’s health, but little is known about the effect on blood glucose (glycemic) levels. The lack of such research is surprising because (1) type 2 diabetes is common among people aged 65 and older, (2) glycemic control is vital to preventing or delaying the onset of diabetes and its complications, and (3) diabetes-related morbidity and mortality and related health care expenses burden individuals, health care systems, and society as a whole. This study investigates (1) the extent to which a spouse’s declining health or death is associated with changes in the glycemic levels of older adults and (2) whether there are gender differences in the association.

Methods: Data come from a nationally representative longitudinal sample of 597 Taiwanese (aged 54 to 90). Using two types of longitudinal multiple regression models (lagged dependent variable and fixed effects), we estimate changes in spousal health and death of a spouse to predict changes in glycosylated hemoglobin (HbA₁c) levels over a six-year period.

Results: A decline in spousal health is associated with increased HbA₁c levels for women, but not for men. The death of a healthy spouse is associated with increased HbA₁c levels for both genders.

Conclusions: Stressful life transitions may compromise the glycemic levels of older adults. Losing the benefits of marriage and taking on caregiving responsibilities may interfere with women’s maintenance of their own health.

Completed work

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The Relationship between Mental Health, Social Pressures and Criminality in Three Literary Texts

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The fairly new field of motherhood scholarship is an interdisciplinary one—one that allows for research that marries literature and mental health. Alongside the field’s growth is the emergence of the 21st century motherhood movement—a social movement that puts mothers’ needs at the center of research, education and activism. It is within these contexts that the current research is placed. This project is an attempt to understand the relationship between social pressure to be a “good mother,” criminality and mental health as represented in novels, science fiction, memoirs and fantasy. It is believed that in the U.S., every three days (at least) a mother kills her child. And while our first impulse is to judge, condemn the mother to life in prison or death row, such judgment does not change the reality that filicide is a regular occurrence in our society. In an attempt to address such an important issue, this research is interested in exploring the relationship between the social systems that shape motherhood and their effects on women’s overall behavior and mental health. It makes the case that many criminal acts against children do not begin with “bad mothering.” Rather, such acts can be a reflection of the oppressive conditions under which women have to mother, conditions that induce “madness” and deviance.

Work in progress
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An Endogenous Aryl Hydrocarbon Receptor Ligand Inhibits Proliferation of Human Fetoplacental Endothelial Cells

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Aryl hydrocarbon receptor (AhR), a ligand-dependent transcription factor, is a classic receptor of 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD). It is well established that perinatal exposure of TCDD increases fetal and neonatal mortality and decreases litter sizes, which in part could be via suppressing the placental vascular remodeling. However, AhR knockout in mice also leads to similar adverse phenotypes in the fetus and newborn as TCDD does, indicating a critical role of AhR in fetal and neonatal growth and development. We have reported the expression of AhR in human fetal tissues and in human placental endothelial cells. To examine the physiological roles of AhR in fetoplacental vasculature, we determined the effects of 2-(1'H-indole-3'-carbonyl)-thiazole-4-carboxylic acid methyl ester (ITE, a non-toxic, endogenous AhR ligand which is likely derived from tryptophan and cysteine via the condensation reaction) on placental endothelial proliferation and migration in vitro using human umbilical cord vein (HUVE) & artery (HUAE) cells as cell models. Methods: Cell proliferation and migration were assayed. Cell cycle progression was analyzed by flow cytometry. Western blotting was used to quantify changes in AhR levels. Real-Time PCR was used to determine mRNA expression of CYP1A1, CYP1B1. Results: ITE at 1 μM and TCDD (serves as a control) at 10 nM inhibited (p < 0.05) HUAE and HUVE cell proliferation without affecting the cell cycle progression. ITE and TCDD inhibited (p < 0.05) HUAE, but not HUVE cell migration. ITE and TCDD decreased (p < 0.05) AhR protein levels and increased CYP1A1 and CYP1B1 mRNA in HUVE and HUAE cells, indicating activations of AhR. Conclusions: These data indicate that ITE and TCDD inhibit HUVE & HUAE cell proliferation and while they suppress only HUAE, but not HUVE cell migration, implying differential angiogenic regulation of ITE and TCDD in HUVE and HUAE cells. Thus, upon activation by its endogenous ligands, AhR may suppress placental endothelial growth, preventing abnormal angiogenesis in placentas.

Work in progress
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Building a Community-Academic Partnership to Promote Healthy Weight in Wisconsin Women

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Background: Excess weight before and during pregnancy is increasingly common, disproportionately impacts low-income and minority women, and results in tremendous health burdens. There is an urgent need for initiatives to promote healthy weight for low-income, minority women before, during, and after pregnancy. Effective obesity prevention will require broad-based, coordinated efforts beyond the scope of traditional health care practice. Our long-term vision is to create innovative nutrition and physical activity programs for women planning and during pregnancy that are offered in partnership between community partners and academic health care practitioners.

Methods: We developed a collaborative partnership involving key stakeholders in a defined geographic area with significant cultural diversity, low economic status, and health disparities. Partners include health care providers, researchers, community organizations, health care administrators, public health workers, and community advocates. Together, we developed and implemented an asset-oriented, multi-component strategy to identify existing resources and determine need for additional evidenced-based, sustainable, and culturally appropriate interventions. Partnership strategies included regular coalition meetings, a community-academic partnership retreat, asset mapping, and interviews with community leaders and community members.

Results: We identified over 100 existing community resources for reproductive-aged women and their children. Yet there is clear need for better coordination to reduce duplication of services and improve women’s access to the services they need. Where gaps exist, we have identified mutually agreeable, feasible, evidence-based, community approaches that could be implemented.

Conclusions: Sustainable community-academic partnerships can be developed to identify and implement obesity prevention and intervention strategies for reproductive-aged women.

Work in progress

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Enlisting Social Support for Memory Screening Participation in African Americans

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Background: Social support has emerged as a vital factor in improving interest in timely detection of Alzheimer’s disease (AD). Examining the process through which African American's obtain social support for evaluation may lead to increased willingness to seek out memory screening thereby ensuring inclusive prevention efforts.

Methods: This study utilized a mixed methods approach to address questions about enlisting social support. Questionnaire data were used examine participant access to social support and their beliefs about family and friend endorsement of memory evaluation. The final sample included 98 African American (61.2% female) and 35 white (68.6% female) participants who were matched (3:1) on age and education. Nine African American’s independent from the questionnaire sample (six women) participated in a semi-structured interview.

Results: One-way ANOVA analysis demonstrated no difference between African American and white participants in access to social support (F = .192, p = .662); however, white participants (Mean = 3.4) believed their family and friends would be significantly more supportive of memory evaluation than their African American counterparts (Mean = 2.9; F = 7.503, p = .007). The Consensual Qualitative Research (CQR) methodology used to analyze the interviews revealed that participants considered when to enlist social support and from whom to obtain it. The participants identified factors influencing these considerations such as trust in others and cultural perceptions about memory loss. Eighty-nine percent of the participants indicated this process could produce positive outcomes such as support for memory screening participation.

Conclusions: The results suggest that African Americans are less likely to believe others will support memory screening participation; however, the qualitative analysis shows positive outcomes are dependent upon complex factors. Efforts to educate and reduce memory loss stigma among African American communities could increase their willingness to enlist social support for memory screening.

Completed work

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Parent Social Networks, Mental Health, and Educational Disadvantage of Children in Poverty

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Background: This paper evaluates the promise of parent social networks for reducing social class inequality in mental health problems among young children. I estimate the causal effect of one property of parent social networks, intergenerational closure, on internalizing problem behaviors for a nationally representative sample of 1st graders.

Methods: To address potential confounding and selection bias, I develop a theoretically motivated propensity score model predicting levels of intergenerational closure, operationalized as how many of their child’s classmates’ parents that they know. I find that knowing an additional parent reduces internalizing problem behavior score by about 4% of a standard deviation. I then explore whether family engagement programs promote intergenerational closure for parents in a sample of 3,000 families in 52 high poverty schools enrolled in a randomized field experiment of Families and Schools.

Results: Together (FAST), a popular family engagement program. I show that FAST successfully builds parent social networks, though a complex pattern emerges that has contradictory implications for parents: while the program successfully engages and builds strong networks for families that are initially socially isolated, program effects are largest in school communities that have large, strong parent networks to draw upon. Finally, I simulate alternative counterfactual scenarios involving the potential effects of family engagement programs on social class inequality in children’s mental health. I show that, although it builds strong parent networks, implementing FAST in schools would do little to improve children’s mental wellbeing generally and its impact on social class inequality in mental health would be negligible, even if the program targeted high poverty schools.

Conclusion: Although FAST increases intergenerational closure by an amount larger than average differences between middle class and poor families, the impact is not enough to benefit children’s mental health in a meaningful way. However, a larger increase in intergenerational closure could have significant benefits for children.

Completed work

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Variations in the Delivery of Multidisciplinary Breast Cancer Follow-up Care


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Background: Significant variation exists surrounding the delivery of breast cancer follow-up. Given that the number of different types of oncologists (medical, radiation, surgical) participating in follow-up is associated with follow-up frequency, we hypothesized that inherent challenges associated with coordinating multidisciplinary care contributes to observed variations. The objective was to examine patterns of multidisciplinary breast cancer follow-up, focusing on the distribution of visits over time.

Methods: We used the SEER-Medicare database (2000-2006) to identify patients who underwent breast conservation for stage I-III breast cancer (n=12,139). Follow-up frequency was defined as the number of visits over total time. Provider type was identified using Medicare specialty provider codes and American Medical Association Masterfile. Visit distribution was quantified using the coefficient of variation (CV) for time between oncologist follow-up visits. Ordinal logistic regression identified patient characteristics associated with more (low CV) versus less (high CV) regular visits.

Results: Median visit frequency was 3.0 (1.3-9.4) visits/year. 67% with high-visit regularity received follow-up from a single oncologist type, versus 8% with low-visit regularity. The number of types of oncologists involved in follow-up had the greatest association with low-visit regularity (odds ratio of 7.4 [6.7-8.3] and 15.4 [13.6-17.6] for two and three oncologist types, respectively).

Conclusions: Using a novel means of quantifying the regularity of clinic visits, we determined that follow-up with more than one oncologist is directly associated with more disordered breast cancer follow-up. Future research should focus on who provides breast cancer follow-up as a means of improving care and decreasing disparities.

Work in Progress

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The Roles of Perceived Parental Refugee Trauma and Family Conflict in the Psychological Well-Being of Adult Children of Vietnamese Refugees

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This study examined the roles of perceived parental refugee trauma and family processes in the psychological well-being of adult children of Vietnamese refugees living in the United States. The primary research questions included: a) how is perceived parental refugee trauma related to the current negative and positive well-being of adult children of Vietnamese refugees; and b) how do family conflict, positive family processes with father and mother, and acculturation and enculturation relate to perceived parental refugee trauma and to current negative and positive well-being of adult children of Vietnamese refugees. Participants included 209 U.S.-raised adult children of Vietnamese refugees (age M = 24.51 years, SD = 4.73; 63% women) who completed an internet-based survey. To answer the research questions, data were analyzed using structural equation modeling techniques. Results suggested no direct links between psychological well-being and perceived level of parental refugee trauma. Positive well-being was positively related to positive family processes with mother and negatively related to family conflict. Negative well-being was positively associated with family conflict. Acculturation, enculturation, and family conflict were associated with perceptions of parental refugee trauma and experiences. In addition, more than one-third of participants had depression symptomatology scores above the clinical cut-off.

Work in progress

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Activation of eNOS Phosphorylation State and NOx Production via ER-α and ER-β in Uterine Artery Endothelial Cells

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Background: Uterine endothelial nitric oxide (NO) production is partly responsible for the maintenance of vasodilatation during physiologic states of high circulating estrogen levels such as pregnancy[1-4]. Endothelial Nitric Oxidize Synthase (eNOS) has several phosphorylation sites that correlate to its activity state and NO production[5-8]. However, it is unknown if eNOS regulation dependents on ER-α and/or ER-β. We hypothesize that ER-α and ER-β are capable of altering eNOS phosphorylation patterns and increase NO production.

Methods: Endothelial cells were treated with 1) vehicle or increasing concentrations of E2β; 2) or E2β for 0-30 minutes; 3) or pre-treated with inhibitor, ICI-182,780. eNOS phosphorylation changes at Ser635, Ser1177 and Thr495 were evaluated via Westernblotting. 4) Endothelial cells were treated with E2β, ATP, PPT or DPN and analyzed for total NOx production. E2β treatment increased stimulatory phosphorylations Ser635 and Ser1177 and decreased Thr495 phosphorylation.

Results: The increased in eNOS phosphorylation at Ser635 was blocked by ICI-182,780 pre-treatment. Surprisingly, E2β and ICI-182,780 decreased the inhibitory phosphorylation at Thr495. Phosphorylation at Ser635 and Ser1177 were increased starting at 5 minutes of E2β treatment; while the phosphorylation Thr495 was reduced after 30 minutes. Lastly, E2β, ATP, PPT and DPN treatments increase total NOx production starting at 10 minutes; peaking at 30 minutes.

Conclusion: These data support the hypothesis that 1) E2β-induced eNOS activation via its phosphorylation state in a dose and time-dependent manner; however the inhibitory phosphorylation seemed to occur through an ER-independent mechanism and 2) NOx production is shown to increase by the activation of either ER-α or ER-β.

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Work in progress
Hyperandrogenism is Associated with NAFLD and Metabolic Risk in Both Normal and Overweight Adolescent Girls

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Background: In adult women, hyperandrogenism connotes increased risk for metabolic syndrome and up to 3 times greater risk of non-alcoholic fatty liver disease (NAFLD) compared to obesity alone, a difference attributed to elevated androgens. It is unclear whether elevation in androgens in adolescents infers a similar increased risk. Compare androgen levels to markers of metabolic syndrome and NAFLD in adolescent girls.

Methods: Cross-sectional study of 103 females (11-14 yrs). Fasting glucose, insulin, ALT, total testosterone, free testosterone, sex hormone binding globulin (SHBG), BMI were measured. Hepatic (HFF), quantified using proton density fat fraction MRI. Hepatic steatosis (HS) = HFF > 5.5%. Normal weight (NW) = BMI < 85%tile (n=58). Overweight (OW) = BMI ≥ 85%tile (n=45).

Results: Mean age of NW 12.6±1. OW 12.5 ±1. HS seen in 26% of OW. HOMA-IR correlated with SHBG: NW r=0.27, p=0.04; OW r=0.61, p<0.001) and free testosterone: (NW r=0.26, p=0.05; OW r=0.30, p=0.01). HFF correlated with SHBG: (NW r=-0.42, p=0.001; OW r=-0.54, p<0.001) and with free testosterone in OW (r=0.36, p=0.02). ALT correlated with free testosterone in OW (r=0.32, p=0.03). Subjects with HS and a free androgen index above the median had higher mean HFF and ALT compared to those below the median. HFF Mean 18.0 vs 10.2, p=0.02. ALT 45.2 vs 22.2, p=0.01.

Conclusion: In adolescent girls, insulin resistance (IR) and HFF correlate with an increase in androgens prior to development of hyperandrogenemia. The strong correlation of SHBG with IR and HFF in normal and overweight adolescents suggests hepatic IR may develop prior to obesity and may serve as an early indicator of disease risk. In girls with HS, higher androgens are associated with disease severity suggesting that androgens may play a role in progression of NAFLD in adolescent girls.

Completed Work
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Acceptability of Long-Acting Reversible Contraception (LARC) among Young, Socially Disadvantaged Women in Dane County

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Increased use of long-acting reversible contraception (LARC) such as IUDs and implants could help to significantly reduce unintended pregnancies in the US. However, few women in the US currently use LARC methods. Despite growing research interest in LARC methods, most studies have focused on provider- versus client-level barriers to LARC. This study addresses the gap in research by exploring barriers and facilitators to LARC use among young women in Madison. We will pay particular attention to how women’s willingness to use LARC may be affected by their relationship status, sexuality, and predisposed fertility concerns. We have completed conducting 6 focus groups with women ages 20-29 in the community to discuss their attitudes toward LARC. Additional interviews we held with 12 women who have used LARC will hopefully help us better understand their decision making process in choosing LARC methods. The information we receive in the study could help to develop clinical and educational messages to increase LARC uptake and to further research on LARC acceptability.

Work in progress

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Socioeconomic Status and Health in a National Study of Adults (MIDUS)

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The relationship between socioeconomic status (SES) and higher risk for type 2 diabetes and related diseases is well-established. We investigated the link between SES over the lifecourse and diabetes and metabolic syndrome in a national sample of middle-aged and older adults (MIDUS). We examined whether the relationship between SES and health depended on psychosocial vulnerability and resilience factors and whether there were gender differences in these associations. We confirmed that SES over the lifecourse was associated with adverse health outcomes but there was also evidence for buffering effect for psychological well-being, particularly among women.

Work in progress

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The Impact of Social-Political Environment on the Health of Latino/a's

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Latino/a children are the largest and fastest-growing minority group under 18 years of age. Furthermore, a large proportion of these children are growing up in immigrant families. The combination of minority and immigrant status magnifies issues of health and well-being for this group, making them particularly vulnerable to health disparities. Yet, the factors that contribute to the positive health development of Latino/a children and their families are not well known. The literature on the social determinants of health has focused on the environmental and neighborhood effects on health. Little attention, however, has focused on the impacts that hostile social-political climate has on Latino/a health. This manuscript examines how anti-immigrant policies affect the physical health of Latino/as. Merging two unique datasets: sum of anti-immigrant policies by state and, a Robert W. Johnson Center for Health Policy nationally representative sample of Latinos, we estimate a series of ordered logistic and logistic regressions to understand how anti-immigrant legislations are affecting the health of Latinos. Our modeling approach takes into consideration the socio-political, familial, cultural, and personal contexts that make up the Latina/o experience which is widely overlooked in datasets that treat Latinos as a homogenous ethnic group. Preliminary findings suggest that for each additional anti-immigrant law enacted, the probability of reporting good health decreases by 2 percent, holding all else constant. Regarding the racial factors that are important when studying Latinos, we find that dark skinned U.S. citizens report worse health than light skinned non-citizens, a finding that is yet to be discussed in the literature. The implication and significance of this work has tremendous impacts for policy makers, health service providers and researchers interested in reducing health disparities among minority populations.

Work in progress

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Long-Term Hypoxia (LTH) Attenuates ACTH-induced Expression of Scavenger Lipoprotein Receptor, 3-Hydroxy-3-Methylglutaryl-Coenzyme A Reductase, and Hormone Sensitive Lipase

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Background: In the late gestation ovine fetal adrenal cortex, cholesterol is derived from plasma LDL as well as de novo synthesis. The LTH fetal adrenal cortex exhibits major differences in cortisol synthesis in response to ACTH compared to controls. We hypothesized that expression of LDLR, SCARB1R, HSL or HMG-CoARd is differentially regulated by ACTH in the LTH fetal adrenal cell (FAC).

Methods: LTH pregnant sheep were maintained at high altitude (3,820 m) from day 30 to near term. On days 138-141 fetal adrenal glands were collected from LTH and age-matched, normoxic control (CONT) fetuses. Dispersed FACs (2.5 x10⁵ cells/tube; in duplicate) were challenged with 10⁻⁸M ACTH. Basal, and ACTH-treated FACs were collected at 18 hours, and qRT-PCR was used to measure mRNA for SCARB1R, LDLR, HMG-CoARd, and HSL (fg mRNA/12.5 ng RNA).

Results: Basal mRNA for SCARB1R, LDLR, HMG-CoARd, and HSL were not different between CONT and LTH FACs. In response to ACTH, mRNA was significantly increased (p<0.05) in CONT FACs (SCARB1R: Basal: 0.69 ± 0.08 vs. *ACTH: 1.80 ± 0.51; LDLR: Basal: 2.36 ± 0.27 vs. *ACTH: 5.60 ± 1.63; HMG-CoARd: Basal: 5.35 ± 0.49 vs. *ACTH: 12.28 ± 3.00; HSL: Basal: 0.12 ± 0.01 vs. *ACTH: 0.22 ± 0.05). ACTH treatment did not increase SCARB1R, LDLR, HMG-CoARd, and HSL in the LTH FACs.

Conclusion: LTH FACs have compromised capacity to respond to ACTH for increasing cholesterol ester uptake via HDLs, de novo synthesis or liberation. The attenuated capacity to respond to ACTH may provide a mechanism limiting further cortisol secretion in the LTH group. (NIH grants HD31226, P20-MD001632).

Work in progress

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