

Women's Health *REPORT*

A QUARTERLY PUBLICATION OF WOMEN'S HEALTH DIETETIC PRACTICE GROUP

ESTABLISHING THE 4TH TRIMESTER *By Alison Stuebe, MD, MSc*

The following article is adapted from the 2016 FNCE® presentation sponsored by the Women's Health DPG and presented by this author and Lindsey N. Hurd Reeves, MS, RD, LDN, IBCLC, CD (DONA).



Dr. Alison Stuebe completed her obstetrics and gynecology residency at Brigham and Women's Hospital and Massachusetts General Hospital in Boston. She completed fellowship training in maternal-fetal medicine at Brigham and Women's, and she earned a Masters in Epidemiology from the Harvard School of Public Health. She is currently an Associate Professor and board-certified maternal-fetal medicine subspecialist at the University of North Carolina (UNC) School of Medicine and Distinguished Scholar of Infant and Young Child Feeding at the Gillings School of Global Public Health. In the clinical arena, she is Medical Director of Lactation Services at UNC Health Care, and she works with an interdisciplinary team of faculty and staff to enable women to achieve their infant feeding goals. Her current research focuses on the role of oxytocin in women's health and postpartum depression and on developing models for holistic care of families during the "fourth trimester."

added postpartum challenges, including a higher risk of birth by cesarean section, and a higher risk of wound infection.⁵ They are also less likely to initiate or sustain breastfeeding,⁶ and are at risk of retained gestational weight gain.³ Women whose pregnancies are complicated by GDM face a markedly higher risk of developing type 2 diabetes.⁷ This risk is not limited to women who are diagnosed with GDM; Retnakaren and colleagues found that women with gestational impaired glucose tolerance, defined by having only one abnormal value on the 100-gram oral glucose tolerance test, were at increased risk of metabolic syndrome in later life.⁸

The Fourth Trimester

Dietitians can play a central role in mitigating these risks and improving outcomes across two generations by working with women in the months following childbirth. This "fourth trimester" is often neglected, as friends, family, and healthcare providers focus on the newborn. And yet, mothers navigate numerous challenges in these early weeks, recovering from birth while adjusting to plunging hormones, sleep deprivation, and the care and feeding of the newborn. This has long been identified as a high-risk period. In 1975, Sheila Kitzinger wrote:

"From a metabolic standpoint, pregnancy ends not with birth, but with weaning." – Patrick Catalano

Obesity, Metabolic Disease & Maternal Health

Rates of overweight and obesity continue to increase among women of childbearing age,¹ with attendant risks for mothers and children.²

Women who enter pregnancy overweight or obese face higher rates of fetal anomalies; these anomalies are less likely to be detected on ultrasound, because, as one of my former patients once told me, "Dr. Stuebe, your ultrasound machines are not designed for the full-figured woman!" Furthermore, a high pre-pregnancy

body mass index (BMI) is associated with a higher risk for gestational diabetes (GDM), gestational hypertension, and preeclampsia, as well as fetal death, stillbirth, and infant mortality.³ With the rising prevalence of obesity, type 2 diabetes is now more common among pregnant women than type 1 diabetes.⁴

Women who are overweight based on their BMI experience

*There is a fourth trimester to pregnancy, and we neglect it at our peril. It is a transitional period of approximately three months after birth, particularly marked after first babies, when many women are emotionally highly vulnerable, when they experience confusion and recurrent despair, and during which anxiety is normal and states of reactive depression commonplace.*⁹

Considering these increased demands, numerous cultures enshrine traditions of support for the mother-infant dyad, including diet, activity restrictions, and care and support for the new mother.¹⁰ However, the United States is one of only four countries in the world without any provision for paid parental leave. In a recent Department of Labor study, 1 in 5 employed women returned to work within 10 days of birth.¹¹ Early return to work is much more common among low-income families, who cannot afford unpaid time off. As a result, as Burtle and Bezruchka write, "The lack of policies substantially benefitting early life in the United States constitutes a grave social injustice: those who are already most disadvantaged in our society bear the greatest burden."⁷ In the absence of universal, job-protected, paid leave, clinical strategies to improve maternal and child health must function within the context of early return to work.

Alongside financial constraints that require return to work, women in the US face multiple physical and emotional challenges (Figure 1), ranging from painful intercourse to stress and

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FROM THE CHAIR Catherine Sullivan, MPH, RDN, LDN, IBCLC, RLC



Dear WH Members,

What an honor it has been to serve as your Women's Health DPG Chair over the last year. I would be remiss if I did not acknowledge what a polarizing year it has been for many. I am a "glass half full" type of person so I am pleased that women's health issues have received some much needed attention and have brought out a new generation of advocates. I am looking forward to continuing to actively engage with new, emerging and advanced nutrition professionals around the issues that matter most to our DPG.

I would like to thank our Executive Committee, Susan DuPraw (Academy DPG Manager), and Heather Goesch (Past-Chair) for their enormous support over the last year as I simultaneously transitioned to a new leadership role in my organization. They have been extremely kind and patient. I know that Katie Leahy will carry the torch forward with enthusiasm and passion.

This double issue is packed with excellent articles and resources from our talented members! I would like to congratulate Dr. Alison Stuebe, one of our featured authors, on her selection as 2018 Vice President/President Elect to the Academy of Breastfeeding Medicine. It was such an honor to have her as one of our featured speakers at FNCE® 2016 and I am sure you will enjoy her follow up article on the 4th Trimester.

Lastly, I would like to acknowledge longtime Executive Committee member, reimbursement representative, and ambassador for our DPG, Rita Batheja for her leadership over the years. Rita was recently recognized as Distinguished Dietitian of Long Island, Visionary Award winner for the Dietitians in Integrative & Functional Medicine Practice Group, and she was selected as an Academy Medallion Award winner. Our membership is comprised of so many visionary leaders, please share your good news with us! Enjoy the rest of your summer!

Best, Catherine

FROM INCOMING CHAIR Katie Leahy, MS, RDN, LD



Welcome WH DPG membership to the 2017- 2018 commencement! I look forward to meeting and getting to know each of you, and seeing our practice group flourish over the next year.

I am elated to announce for those of you joining us at FNCE® this year, you will not be disappointed. Our Women's Health DPG Spotlight Session titled "PCOS: Beyond Hormones and Hot Flashes: Nutrition Interventions for Women Later in Life" features Angela Grassi, MS, RDN, LD and Dr. Lynn Monahan Couch, DCN, MPH, RDN, LDN, and will present current research on the unique hormonal and metabolic changes that occur as women with PCOS age, as well as the results of a study on the beliefs, behaviors and barriers to self-management care in older women with PCOS.

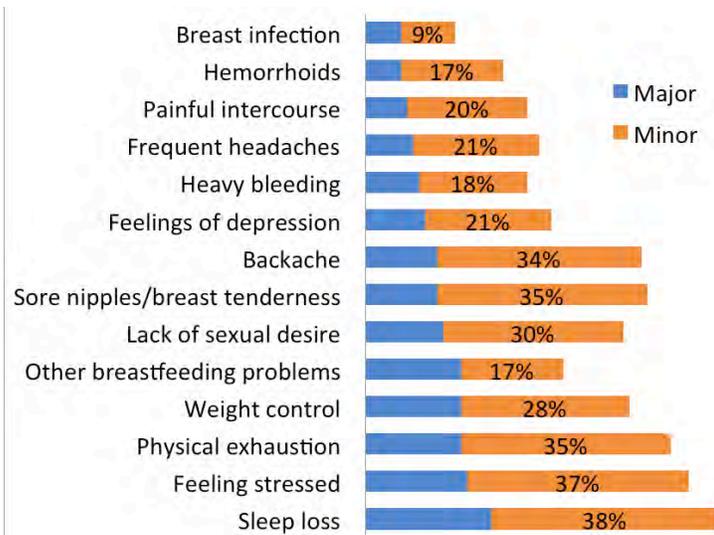
For those of you that will not be present at FNCE®, don't you worry; throughout this membership year we will offer many more opportunities for involvement, newsletters, webinars, and related events! Check us out on the [WH DPG website](http://www.womenshealthdpg.org), and follow us on [Facebook](https://www.facebook.com/womenshealthdpg), [Twitter \(@WomensHealthDPG\)](https://twitter.com/womenshealthdpg), and [Pinterest](https://www.pinterest.com/womenshealthdpg).

I would like to extend an enormous and very grateful thank you to Catherine Sullivan, MPH, RD, LDN, IBCLC, FAND, for her past and present dedication and expertise she contributes to the WH DPG. Catherine will now serves as your Immediate Past Chair.

We have so many amazing, active volunteers who serve our DPG. Thank you to all of you for your dedication and service. If you are interested in getting more involved within our group or have any questions please reach out to us at info@womenshealthdpg.org.

Warm Regards, Katie

FIGURE 1: Problems in the first 2 months postpartum



Source: Listening to Mothers III: New Mothers Speak Out <http://j.mp/NMSpeakOut>

sleep loss. Efforts to engage women to eat a healthful diet and be physically active must consider these challenges; it's difficult to prepare healthy meals while exhausted or to exercise when coping with frequent headaches. Other logistical issues can also interfere: For example, in the ongoing Patient-Centered Outcomes Research Institute (PCORI)-funded patient-engagement project,¹² one breastfeeding mother reported that she had not started exercising because she did not have an appropriately fitting sports bra, and she wasn't able to buy one because she was worried she would leak milk when she was fitted for a new bra.

Addressing these intersecting needs is further disrupted by the "siloed" nature of health care for the mother-infant dyad. This problem is particularly challenging for breastfeeding, as successful breastfeeding requires integrated management of the mother and infant. However, care is often divided among maternal, pediatric, dietetic, and lactation providers. Lactation consultants are highly skilled at managing what I like to call the "oroboobular interface," but they are typically not trained or licensed to diagnose and treat maternal or infant health conditions, or assess nutritional issues, that may influence breastfeeding. Maternal health providers may have limited breastfeeding training, and therefore may defer management of breastfeeding concerns to the infant's provider, while the infant's provider may not have maternal health expertise. Additional subspecialists, such as maternal mental health providers and family planning specialists, may focus on their area of expertise, without considering the impact on the mother-infant dyad as a whole. Rather than this segmented approach, mothers need care that considers multiple intersecting domains (Figure 2). This integrated approach has the potential to improve health and wellbeing across the two generations.

An Integrated Approach: Breastfeeding and Maternal Metabolic Disease

The need for such an integrated approach is evident in associations between maternal metabolic disease and breastfeeding. Exclusive breastfeeding for the first 6 months is recommended by all major medical associations,¹³⁻¹⁵ and is associated with important health outcomes. Infants who are not breastfed face increased risks of otitis

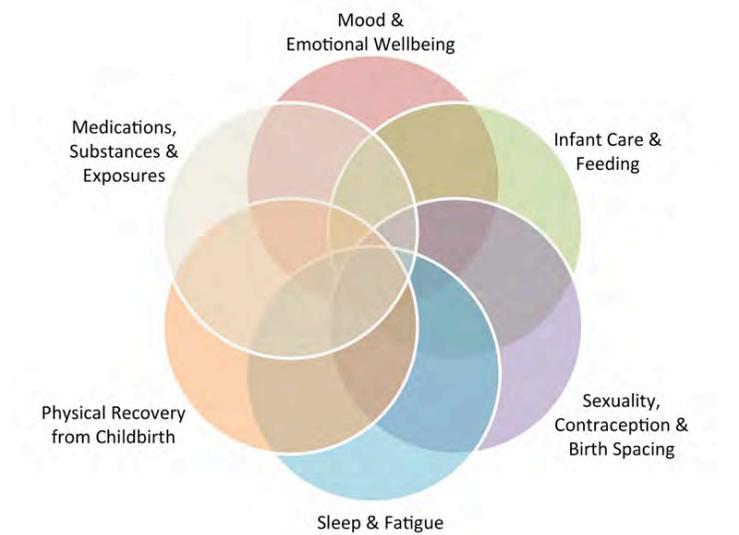
media, gastroenteritis, lower respiratory tract infections, childhood leukemia, sudden infant death syndrome, and necrotizing enterocolitis.¹⁶ Thus, enabling women to achieve their infant feeding goals is a major public health priority.

Exclusive breastfeeding also imposes a substantial metabolic load on mothers, requiring about 500 kcal per day.¹⁷ This metabolic load is evident in population studies, which find that curtailed breastfeeding is associated with increased retained gestational weight gain.¹⁸ Moreover, in longitudinal studies, shorter lifetime breastfeeding duration is associated with higher risk of diabetes,¹⁹ hypertension,²⁰ and myocardial infarction.²¹ Gunderson et al. found similarly protective associations between breastfeeding duration and both metabolic syndrome²² and type 2 diabetes²³ among women with GDM, suggesting that breastfeeding support may be an effective strategy to reducing metabolic risk in this already at-risk population.

Several mechanisms may link breastfeeding duration with metabolic wellbeing. The Reset Hypothesis holds that metabolic changes during pregnancy, including accretion of adipose tissue, insulin resistance, and hyperlipidemia, occur in part in anticipation of the metabolic demands of lactation.²⁴ If breastfeeding does not occur, or is curtailed, maternal metabolism does not "reset" to its pre-gravid state, leading to lifetime disease risk. However, it is also plausible that underlying metabolic disease predisposes women to breastfeeding difficulties, making successful breastfeeding a marker for metabolic health.²⁵ Higher pre-gravid BMI is associated with reduced duration of full and any breastfeeding in multiple studies,^{26,27} and women with higher pre-gravid BMI are more likely to experience delayed lactogenesis.²⁸

Moreover, emerging evidence suggests that insulin resistance may be a risk factor for low milk production²⁹. In a translational study, expression of protein tyrosine phosphatase, receptor type F (PTPRF), which interferes with insulin signaling, was associated with maternal insulin resistance and low milk production.³⁰ And notably, two commonly recommended herbal galactagogues, Goat's Rue and Fenugreek, affect glucose metabolism.²⁹ An ongoing study is evaluating whether metformin, an agent originally derived from Goat's Rue,³¹ is an effective agent to improve milk production in women with evidence of insulin resistance.³²

FIGURE 2: Care model that addresses multiple intersecting domains of maternal-infant health



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Studies to date have not tested whether dietary measures, such as modified carbohydrate or low glycemic index diets, can impact milk production. However, such diets have improved insulin sensitivity and reduced adiposity among women with type 2 diabetes and polycystic ovary syndrome (PCOS), suggesting a possible benefit for overall maternal health.³³

We recently reported results of a pilot study to improve breastfeeding duration among women with gestational diabetes as part of a Nutrition, Exercise, and coping Skills Training (NEST) intervention.³⁴ The breastfeeding intervention included a prenatal class with a registered dietitian / international board-certified lactation consultant addressing the importance of breastfeeding for maternal health, and weekly text messages to encourage women to initiate and sustain breastfeeding. The intervention significantly increased exclusive and any breastfeeding rates during follow-up, suggesting that targeted support for women at metabolic risk may be effective.

For women who have established breastfeeding, evidence suggests that exercise and moderate caloric restriction does not interfere with milk production.³⁵ A targeted weight loss of ½ to 1½ pounds per week is reasonable, avoiding dropping intake below 1500-1800 kcal per day. When initiating exercise, it may be helpful to address other intersecting concerns such as postpartum stress, urinary incontinence, and selection of a supportive bra.

Conclusion

The fourth trimester is a dynamic and challenging time for mothers, and the current US society generally lacks a strong cultural tradition of support during this critical period. Dietitians can partner with other health professionals to ensure that each mother-infant dyad receives holistic, woman-centered care that considers multiple intersection issues and concerns. Such support can improve health outcomes across generations.

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Email publications@womenshealthdpg.org for more information.

BREASTFEEDING IMAGERY THROUGH THE YEARS

As the Academy celebrates 100 years, the WH DPG continues to celebrate the history of women's health and nutrition. In this issue we highlight images of breastfeeding including features from the Prints and Photographs Division of the US Library of Congress.

Thank you to WH DPG Editorial Team Member and Social Media Coordinator Miri Rotkovitz for gathering these images.

Many Japanese woodcut prints depict breastfeeding mothers; the two below show evolving fashions, and the contrast between those preferred by their Japanese and American subjects.



Title: Yamauba breast feeding Kintaro Japanese woodcut circa 1801-1806

Creator(s): Kitagawa, Utamaro, 1753?-1806, artist <http://hdl.loc.gov/loc.pnp/pp.print>

This photo, of an Inuit mother, points to the historical normalcy of both tandem nursing and breastfeeding toddlers alongside younger babies.



Title: "Mickaninies Kow-Kow" (circa 1904)
Copyrighted by Frank H. Nowell. <http://www.loc.gov/pictures/item/91794617/>

In this photograph, taken about two and a half decades after emancipation, an African American mother nurses her baby while her young child leans at her side.



Title: A free lunch / Niagara Falls, New York (circa 1890)
Creator(s): Barker, George, 1844-1894, photographer <http://www.loc.gov/pictures/item/91787500/>



Title: Amerikajin no zu Portrait of Americans (circa 1860-1870)
Creator(s): Utagawa, Yoshitora, active 1850-1870, artist Chadbourne collection of Japanese prints (Library of Congress) <http://www.loc.gov/pictures/item/2002700292/>

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BREASTFEEDING IMAGERY THROUGH THE YEARS Continued from page 5

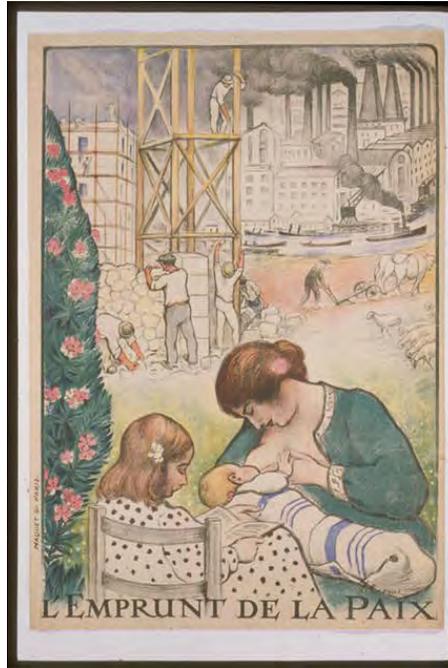
This photo depicts both maternal multitasking and child labor – while the mother hulling berries was evidently allowed to bring her baby to work, her young children were also working by her side.



Title: A mother hulling berries while she nurses her infant. Her other children sit beside her, also at work. Little Mabel Cuthrie [i.e., Guthrie?], 4 yrs. old started working last year. Location: [Seaford?, Delaware?] (circa 1910)

Creator(s): Hine, Lewis Wickes, 1874-1940, photographer <http://hdl.loc.gov/loc.pnp/pp.print>

Breastfeeding was used as a motif in French posters during WWI, and in the post-war period. A wartime poster showed a soldier holding a young child, while his wife nursed an infant in the background. This postwar poster shows a mother nursing while men rebuild the nation.



Title: L'Emprunt de la Paix (The Peace Loan, circa 1920)

Creator(s): Lebasque, Henri, 1865-1937, artist

Date Created/Published: Paris : Maquet, Gr., [1920]

eat right. Academy of Nutrition and Dietetics

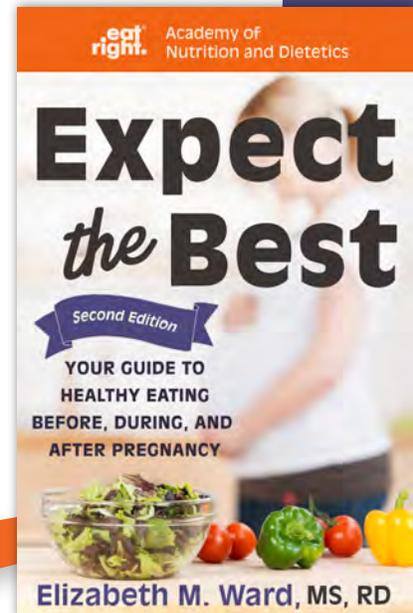
HEALTHY YOU, HEALTHY BABY

Expect the Best: Your Guide to Healthy Eating Before, During, and After Pregnancy, Second Edition

Elizabeth M. Ward, MS, RD

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Trans Fatty Acids in Midpregnancy are Associated with Preeclampsia and Infant Birth Weight

Featured article: Grootendorst-van Mil NH, Tiemeier H, Steenweg-de Graaff J, Jaddoe VW, Steegers EA, Steegers-Theunissen RP. Maternal midpregnancy plasma trans 18:1 fatty acid concentrations are positively associated with risk of maternal vascular complications and child low birth weight. *J Nutr.* 2017;147(3):398-403. doi: 10.3945/jn.116.239335.

Improving pregnancy outcomes and promoting appropriate intra-uterine growth are key to reducing maternal and child morbidity and mortality. Nutrition is particularly important in pregnancy to support the rapid growth and development that occurs during this time. In adults, consumption of trans fatty acids (TFAs) contributes to negative health effects, such as increasing risk of coronary heart disease.¹ In pregnant women, TFAs have been found to cross the placenta and transfer to the fetus.² Thus, examining the effects of TFAs on pregnancy outcomes may be key in identifying modifiable factors that may improve outcomes.

This issue's Research Brief features a study by Grootendorst-van Mil, et al.³ published earlier this year in the *Journal of Nutrition*. The aim of this study was to examine associations between midpregnancy plasma trans 18:1 fatty acid (t18:1) concentrations and the risk of vascular-related pregnancy complications in mothers and newborns.

Data for this study came from the Generation R Study, a prospective birth cohort among pregnant women in the Netherlands. This study was designed to identify early environmental determinants of growth, development, and health, and included women with births between 2002 and 2006. This study period was uniquely positioned during a time of industry efforts to reduce TFAs in foods, thus providing an opportunity to also examine effects of TFA intakes and concentrations over time. The primary outcomes examined were pregnancy induced hypertension (PIH), preeclampsia, infant birth weight, and placental birth weight.

Information on PIH, preeclampsia, infant birth weight, placental weight, and gestational duration was obtained from midwifery and hospital registries. Information on potential confounders was obtained from questionnaires at enrollment in early pregnancy. These factors included maternal age, national origin, education level, parity, smoking, alcohol use, and folic acid supplementation. Maternal BMI was calculated using weight and height measured at enrollment in early pregnancy. Maternal hemoglobin and hematocrit were measured at enrollment, and plasma fatty acid concentrations, including trans 18:1 fatty acid (t18:1), arachidonic acid (AA), and docosahexanoic acid (DHA), were measured mid-pregnancy.

In statistical analyses, the determinant maternal midpregnancy plasma t18:1 concentrations was used as a continuous variable. Multivariable linear regression and logistic regression models were used for analyzing continuous and dichotomous outcomes, respectively. Potential time trends between plasma TFAs and birth weight were explored given the TFA food content reduction during the period of the study. Associations of t18:1 with AA and DHA were examined to test whether these fatty acids could explain any of the outcomes investigated. Furthermore, hemoglobin and hematocrit concentrations were adjusted for in some analyses to explore a possible role of plasma volume expansion in the associations.

In this study, 6,695 women were included. Mean age was approximately 30 y, most were primiparous and had higher education attainment. Mean BMI was 24-25 kg/m². Most women had spontaneous vaginal deliveries, mean gestational duration was approximately 40 weeks, and mean birth weight was 3.4 kg.

A higher maternal midpregnancy plasma t18:1 concentration was associated with lower birth weight (p=0.001) and placental weight (p=0.03). Similarly, higher t18:1 concentrations was associated with a higher risk of a small-for-gestational age (SGA) infant (adjusted OR: 1.31; 95% CI 1.07-1.6; p=0.01). Higher t18:1 concentrations were also associated with an increased risk for preeclampsia (adjusted OR: 1.5; p=0.02) but not PIH (adjusted OR: 1.21; p=0.27).

As expected, maternal plasma t18:1 concentrations decreased from 2001 (median 3.87 mg/L; 95% range 1.89-7.82 mg/L) to 2005 (median 2.47 mg/L, 95% range 1.43-4.73 mg/L). However, there was no significant interaction between t18:1 concentration and the year of infant birth; i.e. the association did not change over time.

Although plasma t18:1 concentrations were inversely associated with maternal AA and DHA, adjusting for AA and DHA in the analyses did not change the associations between t18:1 and the outcomes. Similarly, adjusting for hemoglobin and hematocrit levels also did not change the results.

Strengths of this study include its prospective nature for measuring exposures and outcomes as well as the timing of the study during a "natural experiment" of industry initiative to decrease TFA content in foods. A major limitation is that maternal plasma t18:1 was measured only once; it is possible that this midpregnancy time point was not the most relevant periconceptional period to measure this biomarker in terms of impact on outcomes. As with any observational study, residual confounding of unmeasured sociodemographic and lifestyle factors cannot be ruled out.

The authors concluded that, based on their findings, higher maternal midpregnancy plasma t18:1 concentrations were associated with lower birth weight, lower placental weight, and increased risk for SGA and preeclampsia. Importantly, although the t18:1 concentrations in pregnant women decreased over time from 2001 to 2005, the association with adverse outcomes in the women and the infants was unchanged. Thus, even at low TFA intakes, adverse pregnancy outcomes remain. This finding supports previous scientific evidence that there is no safe level of TFA intake.⁴ Dietitians who work in the fields of pre- and peri-conceptional care should advise women to avoid consuming foods that contain TFAs because of the risk for adverse outcomes.

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Marisa Moore is a registered dietitian nutritionist, communications and culinary nutrition expert. Her practical approach to providing credible food and nutrition information and strategies is regularly featured in the nation's leading media outlets.

She is a consultant to food and nutrition companies and contributing editor for *Food and Nutrition Magazine* and contributor to *People* magazine, *US News and World Report* and the *Huffington Post*. Before launching her consultancy, Marisa worked as an outpatient dietitian, corporate nutritionist for a restaurant chain and managed the employee worksite nutrition program at the US Centers for Disease Control and Prevention (CDC). This gives her well-rounded experience.

Using a food-first, mostly plant-based approach, Marisa helps people eat better one morsel at a time. A past national media spokesperson for the Academy of Nutrition & Dietetics, Marisa is a trusted food and nutrition expert and has been quoted nearly 5,000 times in major media outlets. TV media outlets include the *Dr. Oz Show*, *Today*, *NBC Nightly News* and regular appearances on *CNN* as well as a host of print media including *The New York Times*, *Washington Post* and *Wall Street Journal*, *Oprah Magazine* and *Health.com*. Be it an all day video shoot, local or national morning show or brief live stream, Marisa loves being on camera sharing practical tips and strategies.

Whether you began your nutrition career in a medical clinic or less traditional setting, chances are you didn't fathom the role online media and communications would play in your work. Being a strong communicator in today's competitive marketplace is a powerful asset. Whether you're a veteran registered dietitian or newly minted nutrition and dietetics practitioner, understanding where nutrition communications has been and where it's going can help strengthen your professional position.

Where We've Been

From home economists to the first registered dietitians in practice in hospitals, nutrition communications was once more of a monologue than a dialogue. Going back in time, you'll find a variety of well-crafted brochures about what to eat during times of scarcity and details on medical nutrition therapy, followed by a shift towards more preventive and wellness-focused nutrition advice.

Historically, nutrition professionals were limited to talking to whom ever was in earshot, from a room full of people at a conference to media interviews via radio or television. Though opportunities in broadcast media were limited, nutrition communications pioneer Carolyn O'Neil, MS, RDN, LD, of the new blog *Happy Healthy Kitchen*, led the way reporting on food and travel on *CNN* for years – earning three James Beard Foundation Awards in the process. She also appeared as the “Lady of the Refrigerator” and nutrition expert on Alton Brown's former *Food Network* TV show, *Good Eats*. O'Neil's active engagement with a variety of media and entertainment outlets opened doors in nutrition communications for many dietitians to come.

Where We Are

Today, things have shifted. Nutrition communication takes on a variety of forms. It has surpassed the one-room or printed-brochure model of yesteryear. Even if you are speaking to one group of people, chances are someone will capture a photo or short video of the presentation to share online. It is non-stop.

We continue to communicate both face-to-face with our colleagues and clients, and virtually through online conferencing apps to free up valuable time. More and more registered dietitians are media savvy, delivering evidence-based messages via traditional media outlets like TV, radio, and print. New media outlets like social media platforms, mobile apps, podcasts, videos and live streaming are more prevalent than ever and continue to grow.

Communication is no longer a one-way street. It's about connecting with your audience (often referred to as your “tribe” or “community”) and talking with them, not at them. These valuable connections will help to amplify your message. Nutrition and dietetics practitioners who have already established a thriving and engaged platform (including blogs, branded websites or social media accounts) can use these avenues to educate others, attract new business, and sell products. These avenues provide an opportunity to share messages locally and globally.

In reality, however, sometimes coming up with creative ways to reach people and promote our profession falls by the wayside. Marketing and branding are not always included in nutrition and dietetics curricula, which can put us at a collective disadvantage. We, as a profession, were slow to adopt food blogging and photography, social media and other forms of communication. With so many tools and resources available, now is an ideal time to show the world what we can do.

The good news is that people seem to be interested in seeing what's real and relatable. That means you don't necessarily have to spend excessive money or time developing content. If you have a smartphone and a YouTube, Facebook, Instagram, or Snapchat account, you have everything you need to broadcast yourself.

Continued on page 9

4 GREAT RESOURCES FOR IMPROVING COMMUNICATIONS SKILLS

Working with the Media Handbook (Must be logged in as Academy member to view). <http://www.eatrightpro.org/resource/career/career-development/marketing-center/working-with-the-media-hanbook>

Social Media and the Dietetics Practitioner: Opportunities, Challenges and Best Practices. Offers great guidance on social media best practices and disclosure guidelines. <http://www.eatrightpro.org/resource/practice/position-and-practice-papers/practice-papers/practice-paper-social-media-and-the-dietetics-practitioner>

DPGs: Nutrition Entrepreneurs, <https://nedpg.org/> and **Dietitians in Business and Communications**, <http://www.dbconline.org>. Both have resources, webinars, or subgroups that will help with building communications skills

Dietitians on the Blog Facebook Group. Resource for connecting with fellow dietitians bloggers. <https://www.facebook.com/groups/dietitiansontheblog/>

Where We're Going

To get a sense of where nutrition communications may be headed, I asked our nutrition communications pioneer, Carolyn O'Neil, and new media expert, Regan Jones, RD and owner of ReganMillerJones, Inc, for their thoughts.

Jones: "I truly believe nutrition communications is heading into an even more visually integrated realm with a special focus on video integration. While the written word will never go away, you can't ignore Mark Zuckerberg predicting that Facebook will be 'mostly' video within five years.

The challenge is helping RDNs overcome both their fears about video and the barriers to seeing video integration opportunities that are easy to adopt. While my focus at the moment is on helping RDNs who want to produce video content, there are so many other ways to integrate video into their businesses -- from whiteboard instructional videos on a diet plan, to video ads to promote their practice, to video conferencing, and more.

The message is not that we should feel stressed about the 'need' to push toward video integration, but rather be inspired and excited to see how this now easily accessible part of technology can bring our message to life and engage our customers and clients in ways we've never done before."

O'Neil: "The timeless secret to effective nutrition communications is to connect with your audience. This is and always will be true. If you can identify the 'what's in it for me?' benefits of choosing a more healthful diet, then you will get people's attention, and that allows for the teachable, reachable moment."



Congratulations to WH DPG member Marjorie G Magness, RDN for 50 years of membership in the Academy of Nutrition and Dietetics and for her service to the profession!

Marjorie graduated from Hood College in Frederick, MD and completed a dietetic internship at Medical College of Virginia in Richmond. While her husband was in the Air Force she lived and worked in Great Falls, Montana; Colorado Springs, Colorado; Anchorage, Alaska; Cheyenne, Wyoming; and Plattsburgh, NY. She now resides in Soldotna, Alaska.

Most of her career has been as a renal dietitian, counseling hemodialysis clients about their challenging diets. The developments of IV iron, activated Vitamin D, and EPO have helped in her field.

"The health of women is improved by having excellent nutrition along with exercise. Enjoying delicious, well prepared meals is a key. I believe nutritionists should continue to expand their scope of practice by being able to develop their own nutritional prescriptions. Flexible rather than rigid meal plans are essential to successful counseling." – Marjorie

Given the ever-increasing importance of nutrition communications, we can work to develop our own skills while celebrating those who are leading the way today. How exciting is it that not one, but three registered dietitians won James Beard Media Awards in 2017: Ellie Krieger for her book, *You Have it Made: Delicious, Healthy, Do-Ahead Meals*, and Sidney Fry and Carolyn Williams, both for their health journalism. Countless others have figured out how to connect with an audience and make a positive impact with stellar content. And so can you!

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<https://www.jamesbeard.org/awards/search?categories%5BBook%5D=1&categories%5B-Broadcast+Media%5D=1&categories%5BJournalism%5D=1&categories%5BLeadership%5D=1&ranks%5BWinner%5D=1&year=2017&keyword=>

Practice Paper of the Academy of Nutrition and Dietetics: Social Media and the Dietetics Practitioner: Opportunities, Challenges, and Best Practices. *J Acad Nutr Diet.* 2016;116:1825-1835

Carolyn O'Neil – Interviewed via email on 4/17/17
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Happy Healthy Kitchen

Regan Miller Jones - Interviewed via email on 4/17/17
reganmillerjones@gmail.com
ReganMillerJones, Inc

 Academy of Nutrition and Dietetics

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SPOTLIGHT: Academy 100 Years



Lisa Dorfman, MS, RD, CSSD, LRD, LMHC, FAND
Year Joined: 1983
Practice Area(s): Communication/Consulting

How has the field of nutrition changed in your practice area since you first joined the Academy?

More opportunities, as pioneers we laid the foundation for thinking outside the counseling box and now graduates are running with it! Also practice has become more integrative; RDs are now also practicing as fitness, culinary and mental health experts.

How would you like to see nutrition for women's health practiced in the future? Proactive preventive services, perinatal, peri-menopausal included for free for all women regardless of insurance coverage or not.



Jamie Stang, PhD, MPH, RDN
Year Joined: 1983
Practice Area(s): Education

How has the field of nutrition changed in your practice area since you first joined the Academy?

There are many more opportunities for RDNs now and the profession has expanded beyond traditional clinical dietetics. Now RDNs are also trained in areas such as business and entrepreneurship; policy, systems and environmental change (population health) strategies;

advocacy; and informatics. This has helped to expand the scope of practice for RDNs and assure that our profession is at the forefront of health care.

What do you know now that you wish you had known earlier in your career?

When I started practicing in dietetics, I did not appreciate how difficult it can be for people to make behavior changes when they live in environments that don't support healthy eating and active living. I was too focused on assuring they had adequate intake of specific nutrients or followed specific diets and missed the big picture of the impact that social determinants of health have on nutritional status. I think I would have been a more effective nutrition counselor if I had that mindset earlier in my career.



Miriam Erick, MS, RDN, CDE
Year Joined: 1979
Practice Area(s): Clinical

How has the field of nutrition changed in your practice area since you first joined the Academy?

More recognition of malnutrition in patients

What do you know now that you wish you had known earlier in your career?

How much nutrition education doctors receive in medical school and how it is standardized. This way it would be easier to create dialogues.



Rita K Batheja, MS, RDN, CDN, AFMCP, FAND
Year Joined: 1971
Practice Area(s): Private Practice

How would you like to see nutrition for women's health practiced in the future?

I wish more and more RDNs would look into the Integrative and Functional Medicine aspect which is the wave of the future and what the public is looking into. They are sick and tired of conventional practices.

What do you know now that you wish you had known earlier in your career?

How to find the root cause of issues and how to treat individuals with compassion and care.



Gail C. Frank, DRPH, RD, CHES
Year Joined: 1971
Practice Area(s): Education

How has the field of nutrition changed in your practice area since you first joined the Academy?

When I first joined the Academy 45 years ago, my first employment was 100% research. It seemed all RDs had just one focus and one focus only. Today, my active practice is a blend of education with program management, research and communication

daily. This demonstrates diverse and multiple levels of skill. Many RDs today function effectively in several areas of expertise.

What do you know now that you wish you had known earlier in your career?

Be confident of your knowledge and training. Lead based on what you know; otherwise, do the research to find, and then communicate the correct answer to peers and the public.



Roger A Shewmake, PhD, LN, FAND
Year Joined: 1985
Practice Area(s): Clinical

How has the field of nutrition changed in your practice area since you first joined the Academy?

Through efforts of the Academy we now see more participation in the decision making process of healthcare by the professional nutritionist. We have a long way to go but evidence-based medicine continues to increase the awareness of nutrition's key influence in healthcare.

How would you like to see nutrition for women's health practiced in the future?

We need to see more highly trained nutrition experts employed in clinics to insure more comprehensive health care. We have too many clinics that do not have even part time nutrition specialists seeing patients. Assumptions have been made in the past that healthcare providers (physicians, nurses, etc) have adequate nutrition knowledge and experience.

Continued on page 10



Ginger Carney, MPH, RD, LDN, IBCLC, FAND
Year Joined: 1976
Practice Area(s): Clinical

How would you like to see nutrition for women's health practiced in the future? I would love to see more RDNs working in the field of women's health. A focus on nutrition and healthy eating needs to start in a woman's youth to promote health and well-being throughout her life. This will assure the best outcome for her growth and development,

fertility, pregnancy, lactation, and into her older years. Because a woman is so important to family life, it is important for her to maximize her health in body and mind. The RDN can contribute greatly to a woman's quality of life which will benefit all of our society.

What do you know now that you wish you had known earlier in your career?

I think it would have been helpful to know about all the resources available for me as an RDN. The Women's Health DPG, along with other DPGs, and the Academy in general offer much to support and propel any dietitian's career. I also did not realize how much public policy affects our profession. I now understand that it is important to become involved in the legislative process and to take an active role in positively impacting and supporting the profession.



Maryam Nabavi, MS, RD
Year Joined: 1984
Practice Area(s): Clinical

How has the field of nutrition changed in your practice area since you first joined the Academy? It is amazing to see that Registered Dietitians have become part of health care working closely with health care providers in all aspect of health care. I appreciate that RDs are known as nutrition experts, and physicians work closely with

them. In the past at one of my first jobs, I was told not to see a patient until their doctor asked me to.

How would you like to see nutrition for women's health practiced in the future?

I hope every women has access to health care. I hope women have access to work closely with an RD. I also hope to see that OB providers refer patients for preconception nutrition counseling pregnancy and postpartum. It would be ideal that health care providers have an RD working closely with them to collaborate in their patient's care in the prevention of chronic health issues.

Rita Amstadt, MS, RD, LD
Year Joined: 1981
Practice Area(s): Clinical

How has the field of nutrition changed in your practice area since you first joined the Academy? Many more options for employment, but fewer staff members to do the same work. The knowledge base is also much larger. It's much harder to find RDs willing to take on offices and other responsibilities in our local dietetic association. The greater opportunities for continuing education are helpful but I think fewer take advantage of networking at local meetings.

What do you know now that you wish you had known earlier in your career?

Interviewing skills.



Alyce Thomas, RD
Year Joined: 1980
Practice Area(s): Clinical

How has the field of nutrition changed in your practice area since you first joined the Academy? I joined the Academy in 1980 when I worked as a relief dietitian in a hospital. Since my area of specialty was prenatal nutrition, other than the WIC Program, there weren't many opportunities to practice in this area. Now, women not only have

direct access to RDs, but the delivery of nutrition has skyrocketed in a myriad of venues including telehealth, the internet, Skype, Twitter, etc. Also, the emphasis was not on women's health, which was odd since dietetics is a primarily female field of study.

How would you like to see nutrition for women's health practiced in the future?

I would like to see more emphasis on nutrition in the between years - after childbearing and before the gerontological stage of life. An example would be the impact of nutrition on menopause.

ACADEMY SECOND CENTURY

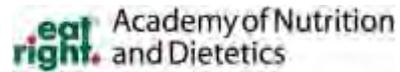
The Academy is charting a new vision for the future, grounded in an extraordinary commitment to collaboration, a focus on service and an emphasis on accelerating the progress towards solving the greatest food and nutrition challenges of the 21st century — creating a world where people and communities flourish because of the transformational power of food and nutrition. The Academy has shown its commitment to the future of the profession by undertaking the development of the Second Century vision. The whole Academy — every member, every supporter, every Foundation donor — has a part in shaping the future of the second century. Throughout the multi-year process, the Academy will ensure members are informed and, most importantly, engaged — understanding why their contribution matters.

Whether members give back by sharing their energy, passion and knowledge towards shaping the new future of the Academy, or they donate to the Second Century initiative through the Foundation and the innovative projects that will expand and build upon its current programs and priorities that advance the profession, members are essential to the process and are the future of the Academy.

Thank you to the following WH DPG members who have donated to the Second Century Initiative and we encourage all of our members to make a contribution to the future of the profession:

- Denise A Andersen, Lucille Beseler, Lois L Bloomberg
- Diane M Enos, Romilda Grella, Donna S Martin, Monique M Richard,
- Barbara J Visocan, Lisa Eaton Wright, Elisa Zied

Future Practice HOD Fact Sheet



House of Delegates

Spring 2017

For over a decade, the Academy has collectively worked towards a vision of future education and practice that will elevate the profession and its practitioners. Some areas such as nutrition and dietetics education and practice competencies have already begun shifting to this vision, and other changes will be implemented over the next several years and decades. In addition, the Academy has just now entered its Second Century further emphasizing the importance of elevating the nutrition and dietetics profession.

Meeting Objectives:

Delegates and Meeting Participants will be able to:

1. Share current efforts underway by the Academy and its organizational units to identify and meet the needs of the Second Century workforce.
2. Create a vision of a Second Century workplace.
3. Generate ideas to close the gap between current and future practice.
4. Recognize skills and professional development needed for current and future practitioners.

Mega Issue Question

How can credentialed nutrition and dietetics practitioners elevate the profession, expand opportunities, and enhance practice for the Second Century?

Introduction

The Academy, the Council on Future Practice (CFP), Accreditation Council for Education in Nutrition and Dietetics (ACEND) and Commission on Dietetic Registration (CDR) have each investigated the current and future landscape to determine education and practice opportunities.

Realities

- One of the themes in a supplement from the CDR Workforce Demand Study noted, “Too many in the profession see dietetics as a job rather than a profession and are not ready to step up to the challenge of change.”
- There is a shortage of health workers globally, while demand for health services jobs are expected to increase.
- RDNs are the mostly highly trained nutrition practitioners and represent a workforce of 100,000 credentialed professionals. Yet, they are underrepresented in careers in global health, resulting in an unfulfilled potential to accelerate progress in improving nutritional status of all people around world.
- Advancing entry level educational requirements for the RDN and NDTR will have implications in areas such as scope of practice, standards of practice, professional regulations, reimbursement, and professional competence.

Without an adequate supply of credentialed nutrition and dietetics practitioners, the competitive space for registered dietitian nutritionists (RDN) may be challenged.

“If the profession is not moving forward, it is being left behind.”

Adapted from the 2013 CFP Consensus Report

The [CFP Visioning Report 2017: A Preferred Path Forward for the Nutrition and Dietetics Profession](#) was recently released and consisted of input from Academy members, CDR credentialed nutrition and dietetics practitioners, Academy organizational units, CFP think tank members, and Academy external organization liaisons. The change drivers identified in the report are listed on the right. Each change driver provides opportunities for the dietetics practitioner now and in the future. The recommendations within the report are not meant to be all-inclusive, but rather specific, actionable items that can be pursued in the next 10-15 years to advance the profession.

CFP Change Drivers

1. Food Becomes Medicine in the Continuum of Health
2. Aging Population Dramatically Impacts Society
3. Accountability and Outcomes Documentation Become the Norm
4. Population Health and Health Promotion Become Priorities
5. Consumer Awareness of Food Choice Ramifications Increases
6. Embracing America's Diversity
7. Technological Obsolescence is Accelerating
8. Creating Collaborative-Ready Health Professionals
9. Tailored Healthcare to Fit my Genes
10. Simulations Stimulate Strong Skills

Stakeholder Feedback

ACEND interviewed stakeholders representing healthcare administration (pharmacy, nursing), deans of allied health colleges, employers of less traditional roles (communications, marketing, and management), physicians, educators in allied health graduate programs, and researchers regarding their needs with employment of current and future practitioners. Below are the themes that emerged from these interviews.

ACEND's Environmental Scan with Stakeholders

- There is an increased focus on disease prevention and integrative healthcare, and the need for more knowledge in emerging areas such as genomics, telehealth, behavioral counseling, diet order writing, and informatics.
- This work requires that health care professionals work more interprofessionally.
- Employers indicated the need for improved communication skills in nutrition and dietetics practitioners and an improved ability to understand the patient's community and cultural ecosystem.
- Practitioners need to be able to read and apply scientific knowledge and interpret this knowledge for the public. Employers also expressed a desire for stronger organizational leadership, project management, communication, patient assessment, and practice skills.
- Many of the stakeholders identified gaps in current competencies in areas of research, communication, leadership/management skills, cultural care, interprofessional work, basic food and culinary preparation, and sustainability.
- Employers indicated that more time might be needed in the preparation of future nutrition and dietetics practitioners to assure application of knowledge and demonstration of skills needed for effective practice.
- Stakeholders identified the importance of associate and bachelor level prepared graduates for roles in community health, wellness, and management.
- Employers identified the need for preparing undergraduates with transferable skills in leadership, business and management, and expressed the need for faculty prepared at the doctoral level.

Area	Credentialing	Education
Process Changes	<ul style="list-style-type: none"> CDR changed the degree requirement for dietitian registration eligibility, from a Baccalaureate degree to a Master’s degree, effective January 1, 2024. 	<ul style="list-style-type: none"> ACEND proposed a model for future nutrition and dietetics education with new graduate level standards to prepare generalist and specialist dietitians for these future roles.
Current Updates	<ul style="list-style-type: none"> CDR launched the Essential Practice Competencies. These are applicable to all credentialed nutrition and dietetics practitioners. By the 2020 cycle, all credentialed nutrition and dietetics practitioners will be on the competency-based system. 	<ul style="list-style-type: none"> In 2016, ACEND released a first draft of standards and opened a public comment period. The public comments were reviewed. In February 2017 ACEND released a revised draft of <i>the Future Education Model Accreditation Standards for Associate, Bachelor and Master Degree Programs in Nutrition and Dietetics</i>.
Practitioner Action Items	<ul style="list-style-type: none"> Learn more about the Essential Practice Competencies. Seek higher levels of continuing education that advance skills and practice. 	<ul style="list-style-type: none"> Stay informed by reading the ACEND UPdate. **The current dialogue will focus on future practice, but it is important for practitioners to understand the work being done in the areas of education.

Strategic Direction

- The Essential Practice Competencies are just one step in preparing the profession for the changing landscape, trends, and other forces driving practice.
- Practitioners are seeking opportunities to advance practice and expand services. Many active projects and initiatives support this need.
- Credentialed nutrition and dietetics practitioners can help fulfill the changing needs in society.
- The Academy continues to build an organizational infrastructure to help advance the profession and the Second Century work.

The Academy is entering its Second Century and there are many exciting opportunities to advance the profession. Six Second Century opportunity categories have been identified.

Six Second Century Opportunity Categories		
<p>Food and Nutrition Security Ensure all people have reliable access to culturally appropriate, nutrient-dense food and clean water now and in the future by building resilient food systems and prioritizing actions to prevent and divert wasted food throughout the value chain.</p>	<p>Prevention and Health Care Improve health outcomes and decrease health disparities by accelerating the shift to a preventive health care model and using new technologies to individualize nutrition care.</p>	<p>Global Workforce Capacity Grow the number of trained nutrition professionals and dietitians globally, and embed nutrition knowledge broadly to increase nutrition capacity and reach global health goals.</p>
<p>Environment, Behavior, and Choice Create a culture and environment that support health and wellness through relevant and appealing solutions for all places where people spend their time – home, work, schools, and communities.</p>	<p>Research and Standards Implement models of trusted, public-private collaboration to accelerate high-quality nutrition research, metrics and standards creation, and open-access platforms for curating research and reporting outcomes.</p>	<p>Investment Accelerate progress and explore collaborations to drive investment in nutrition outcomes.</p>

The HOD Backgrounder, including references for above content, is available at:

www.eatrightpro.org/resources/leadership/house-of-delegates/about-hod-meetings

(Eat Right Pro > Leadership > House of Delegates > About HOD Meetings > Spring 2017 HOD Meeting Materials)

Find contact information for your delegate at: www.eatrightpro.org/leadershipdirectory



Congratulations to longtime Academy and WH DPG Member

Rita K Batheja, MS, RDN, CDN, AFMCP, FAND, for making history this centennial Academy year as the recipient of three major professional awards.

Rita has been a member of the Academy for over 40 years. She has served in numerous leadership roles at the local, state, and national levels

for the Academy as well as in other organizations. It is clear from her volunteer positions that diversity, public relations, public policy, reimbursement, mentoring and member services are some of her favorite and most time consuming activities to move the profession forward. She is a champion for Medical Nutrition Therapy (MNT) coverage and

reimbursement. Her legislative activities date back to 1996, when she lobbied for licensure in New York.

Rita personally has met with over 200 local and national lawmakers including past US presidents. She mentors RDNs, NDRTs, interns, and students and encourages them to take action and request support for MNT as well as other initiatives important to RDNs. She was the founder of the Indian American Dietetic Association, Ethnic Networking Group of the Academy of Nutrition and Dietetics and is very active in the Asian Indian Community where she volunteers with numerous health organizations.

Rita currently serves as the Reimbursement Coordinator for the WH DPG and gives tirelessly to the profession. We are so proud of you Rita!



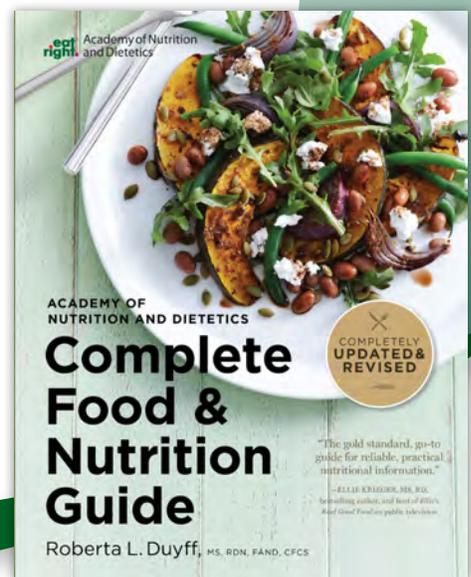
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Alyssa Knoernschild is a degree candidate for a Masters in Nutrition, Healthspan and Longevity at the University of Southern California's Davis School of Gerontology. She hopes to pursue a career in outpatient nutrition and eventually would like to open a private practice. In her spare time, she enjoys cooking, running and hiking.

Introduction

According to the Academy of Nutrition and Dietetics, human milk is the optimal form of nutrition for infants, providing the nutrients required for healthy development and growth.¹ It is recommended that infants are breastfed exclusively through the age of 6 months, and that breastfeeding is continued, along with the introduction of complementary food items, until at least the age of 1 year.¹ In spite of these recommendations, globally only 43% of infants between birth and 6 months of age are exclusively breastfed.² Formula is often used in place of, or as a supplement to, human milk for various reasons, including concerns about infant weight gain, personal preference, and/or lactation difficulty. However, there are many qualities of human milk that cannot be replicated in formula substitutes.¹ While human milk has many nutritive functions for infants, it also provides non-nutritive functions. One such function is the development of the intestinal microbiome, which has great importance in a variety of health outcomes such as immunity and pathogenesis.³ This article examines current research on how early feeding practices influence the development of the infant intestinal microbiota and the potential health implications that may result.

Bacterial Colonization

Recent research has shown that formula-fed infants develop a much wider diversity in microbiome colonization,⁴ whereas breastfed infants develop a healthier, more stable flora colonization pattern.⁵ Exclusive or supplementary use of formula has been associated with intestinal microbiome colonization in infants that closely matches that of adults, demonstrating increased pro-inflammatory bacteria and gut permeability,⁶ which can result in increased susceptibility to infection.⁷ In a study by Fan et al.,⁵ fecal samples of formula-fed infants indicated predominant bacterial colonization with *Enterobacteriaceae* (56.3%), *Streptococcus* (14.83%), and *Lactobacillus* (4.12%); while the dominant bacteria in breastfed infants were *Veillonellaceae* (32.44%) and *Enterobacteriaceae* (21.15%). Breastfed infants are shown to have higher amounts of *Bifidobacteria* and *Lactobacilli* in comparison to formula-fed infants^{5,8} – two bacteria that are considered beneficial, are present within healthy intestinal tracts, and are found in the majority of the population.⁹ *Bifidobacteria* give rise to a variety of antimicrobial agents that act against pathogenic Gram-negative and Gram-positive organisms.¹⁰ *Lactobacilli* also produce antimicrobial agents.¹⁰ Other types of bacteria are considered pathogenic⁸ *Clostridium difficile*, for example, has been shown to cause diarrhea in children, and a study by Penders et al.⁸ found that formula-fed infants had higher levels of *C. difficile* than breastfed infants.¹¹

An important factor to consider in intestinal flora colonization is the ratio of beneficial to pathogenic bacteria. Breastfed infants were found to have more *Bifidobacteria* than those who were formula-fed – 6.63% in breast fed infants vs. 1.29% in formula-fed infants.⁵ This indicates that breastfed infants had higher ratios of beneficial to

pathogenic bacteria populations. In another study by Penders et al., researchers found that intestinal bacteria in breastfed infants was predominantly *Bifidobacteria*, with lower levels of *E. coli*, *C. difficile*, and *B. Fragilis* in comparison to formula-fed infants.⁸ However, other studies have shown that there were similar amounts of *Bifidobacteria* among breastfed and formula-fed infants¹², indicating the need for more research and highlighting the complex nature of the developing infant microbiome.

Breast milk provides a constant source of bacteria for microbiome development, and contains microbes from over 100 different groups of bacteria.¹³ The bacteria in breast milk changes throughout the course of lactation, meaning that different colonization patterns may prevail throughout infant development.⁴ The increased prevalence of *Bifidobacteria* in breastfed infants in many of these studies may be the result of oligosaccharides in breast milk, which provide energy for beneficial bacteria.

Health Implications

The microbiome is important for protecting the body from harmful pathogens, promoting a healthy immune system, and aiding in digestion to make nutrients available to the intestinal brush border.¹⁴ It also plays a role in allergic responses¹⁵ as well as auto-immunity¹⁶ later in life. In relation to intestinal health, a study by Guaraldi et al.¹⁷ indicated that breastfeeding is associated with a variety of positive health outcomes for infants throughout life. During infancy, breastfeeding has been associated with decreased incidence of diarrhea, as well as decreased incidence of necrotizing enterocolitis,¹⁷ and a lower risk of gastrointestinal infections.¹⁸ Sudden infant death syndrome (SIDS) may also be less common in breastfed infants, and some research suggests that breastfed infants may develop higher IQs in childhood.¹⁸

Longer-term effects include decreased incidence of autoimmune diseases, cardiovascular disease, celiac disease, allergies during childhood, and inflammatory bowel disease.¹⁷ Diseases such as eczema and Parkinson's may also be related to abnormal colonization of the gut microbiome.⁴ Thompson (2012) found that intestinal microbiome patterns can impact long-term adipose development and energy absorption.¹³ Breastfeeding is associated with decreased childhood obesity rates, and decreased risk of type 2 diabetes.¹⁸ *Bifidobacteria* specifically has been associated with decreased incidence of obesity and allergy development,⁴ as well as improved glucose tolerance.¹³ Alternatively, formula feeding has been associated with decreased insulin sensitivity in obese children.¹⁹ However, a recent meta-analysis of 10 large trials showed no significant predictive relationship between intestinal microbiota composition in individuals and risk for obesity.²⁰ The conflicting outcomes of recent studies show the complexity of environmental and nutritional influence on the infant microbiome.

Infant Formula

For infants who may rely on formula as the primary source of nutrition, or as a supplement to breast milk, the addition of pre- and probiotics may be beneficial in the development of a healthy intestinal microbiome. Penders et al.⁸ concluded that infants who were fed formula supplemented with fructooligosaccharides and galactooligosaccharides had higher levels of *Bifidobacteria* in comparison to infants fed formula without these additions. In a study by Vendt et al.,²¹ researchers explored the addition of probiotic *Lactobacillus rhamnosus* GG to infant formula, and the effect on infant growth.

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Results showed that infants fed this formula, in comparison to standard formula, experienced increased growth and earlier colonization with *Lactobacillus*.²¹ In other studies, infants fed formula containing prebiotics developed intestinal microbiomes that were more similar to those of exclusively breastfed infants.²²

The safety and tolerance of prebiotic formulas has been explored in a variety of studies. Piemontese et al.²³ examined the supplementation of infant formula with oligosaccharides, which are the components of breast milk believed to modulate the development of healthy microbiota in breastfed infants. Oligosaccharides are also important in immunity, with the ability to mimic epithelial cell carbohydrates, acting as decoy receptors to bind pathogens within the intestinal tract, preventing adhesion, and ultimately aiding in immune response efficacy.⁴ The supplemental (prebiotic) formula in this study contained neutral oligosaccharides and pectin-derived acidic oligosaccharides in order to closely match the natural make-up in breastmilk. The results showed that infants fed these formulas achieved growth rates that were not significantly different from infants fed control formula.²³ As demonstrated in other similar studies, their growth was within normal range and showed linear ponderal and head circumference growth rates that were similar to standard European growth references.²³ While various studies have shown that breastfed infants have higher rates of incremental growth during the first 6 months of life, this study demonstrates that this particular supplemented formula does not negatively impact growth rates among formula-fed infants.

The study by Piemontese et al.²³ also showed that gastrointestinal tolerance was similar between control formula-fed infants and those fed the prebiotic formula. In agreement with other studies, stool consistency was affected, with the supplemental formula group having stool consistency closer to that of breastfed infants, i.e., a higher number of loose, soft stools as opposed to the harder stools of control formula-fed infants. This is important to note, because harder stools may cause discomfort for infants.²³

Similar results were found in a study by Vlieger et al.²⁴ in an examination of the safety and tolerance of supplementation with *Bifidobacterium animalis ssp. Lactis* (*Bifidobacterium Bb-12*) and *Lactobacillus paracasei ssp. Paracasei* (*L. casei CRL-431*) as prebiotics in infant formula. The study showed that the supplemented formula had no negative impact on infant growth rate or infant behavior for newborns up to 6 months of age. Stool consistency was softer among infants fed the prebiotic formula, and bowel movement frequency was increased.²⁴ Overall, the formula was well-tolerated, safe and, as noted in the study by Piemontese et al.,²³ may aid in constipation symptoms associated with formula feeding.

Conclusion

Infancy is a critical period for the colonization of intestinal flora.²⁵ While there are a variety of factors that have been shown to influence the colonization patterns of the intestinal microbiome, including antibiotic exposure, mode of delivery (cesarean section vs. natural birth), and mother's diet,⁸ it is clear that infant feeding methods have a strong influence. While more research is needed to fully understand the interplay of factors influencing the development of the microbiome and its role in disease risk, there is a notable difference between the bacteria found in breastfed infants and formula-fed infants. Breastfed infants seem to show increased colonization of beneficial bacteria genera. Conversely, formula-fed infants, as demonstrated

in multiple studies, are colonized with bacteria that may be more pathogenic and show colonization patterns that are generally present later in the lifespan.

The microbiome plays a central role in health outcomes throughout the lifespan. Evidence shows that intestinal colonization patterns resulting from early breastfeeding may be protective against a variety of negative health outcomes, including diabetes and autoimmune diseases. The altered microbiomes that are associated with formula feeding may place formula-fed infants at greater risk for developing many different pathologies, such as inflammatory bowel disease and necrotizing enterocolitis. As dietitians, it is our role to inform our clients about the benefits and risks of formula feeding in comparison to breastfeeding. Encouraging those mothers who are able to breastfeed appears to be the best option for optimal infant health, despite the need for more conclusive studies demonstrating clear correlation between microbiome colonization and short-term versus long-term health outcomes. As for infants that require formula feeding, it is imperative we continue research into the development of formulas that more closely mimic the composition of breast milk to ensure that these infants can benefit from natural microflora colonization patterns and decrease risk for negative health outcomes. Based on current research, formulas including pre- and probiotics appear to provide the most benefit for formula-fed infants, and may allow for healthier microbiome development.

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THE MONTREAL DIET DISPENSARY: Birthplace of Modern Prenatal Nutrition Care



A Q&A with Jackie Demers, Dt.P., Executive Director, Montreal Diet Dispensary

No history of women's health nutrition would be complete without discussing a groundbreaking Canadian nonprofit called the Montreal Diet Dispensary.

Started in 1879, the original mission of the Dispensary was to provide nutritious meals

to people facing medical or financial hardship in Montreal. In the 1950s, under the leadership of dietitian Agnes Higgins, the Dispensary became a pioneer in prenatal nutrition care. Specifically, Higgins devised a protocol for reducing low birth weight centered on provision of healthy foods, nutritional counseling, and extended support to expectant mothers. To this day, the Dispensary uses the "Higgins Method" to help thousands of families annually.

To learn more about the Dispensary's history and its innovative work, the Women's Health Report reached out to Jackie Demers, Dt.P. (the equivalent of RDN in the US), who is currently the Executive Director of the Dispensary.

Jackie Demers graduated from McGill University in 2005, with a bachelor's degree in dietetics. She joined the Montreal Diet Dispensary to implement the program of low-cost healthy cooking and infant nutrition workshops. That same year she took over data analysis for the cost study of the Nutritious Food Basket program in various Montreal neighborhoods. She was also trained in the Higgins Method© and counseled low-income pregnant women on an individual basis for four years. She then coordinated the Nourishing Life Program, an information and online training service for community workers, and finally became Executive Director in January 2015.

The Dispensary has a strong history in the field of dietetics. What do you think are the major contributions that the organization has made to the field?

Demers: The Dispensary developed an evidence-based practice before it was trendy. Historically, until the 1950s, professionals were so scared of maternal morbidity and mortality during delivery that they would recommend low weight gain and the use of diuretics. This resulted in low birth-weight babies with their own increased morbidity and mortality.

The Dispensary's prenatal nutrition interventions on the other hand, promoted adequate maternal weight gain, were documented, standardized, and analyzed, ultimately providing solid evidence for increased intake for expectant mothers. This new, data-based intervention spearheaded by Alice Higgins overturned decades of dangerous recommendations and promoted nutrition care for mothers and babies. That care, in turn, benefits the whole community. Indeed today we have evidence that reducing low birth-weight is the first level of prevention for a wide array of social and health inequities.

How have dietitians been an integral part of the leadership and operation of the Dispensary? How has the role changed over the years?

Demers: In the 1920s, Jean Crawford and Ann Garvock were the first dietitians to be hired as directors. They understood the importance of teaching people how to improve their situation in addition to providing food assistance.

Garvock implemented all sorts of activities and strategies to help low-income families of Montreal deal with limited budgets, health conditions, and other barriers to good nutrition. These activities included the distribution of food, dietary counseling, group sessions, cooking lessons, and publication of cookbooks. In 1932, the Dispensary began publishing a weekly food price list – a precursor of the Nutritious Food Basket analysis in Canada.

Higgins, the dietitian who developed the Higgins Method©, focused the Dispensary's efforts on the period of pregnancy as the best way to break the cycle of poverty. Her rigorous research set the stage for international recognition of the importance of prenatal nutrition. The studies she and her successor, dietitian Marie-Paule Duquette, published convinced Québec's government to include prenatal nutrition care as an essential first-line community health service. This evidence also inspired initiatives like the US Supplemental Nutrition Program for Women, Infants and Children (WIC) and the Canadian Prenatal Nutrition Program.

Higgins and Duquette also implemented a training program on the Higgins Method© and prenatal nutrition for health professionals. Moreover, Duquette made the Dispensary a leader in promoting and actively supporting breastfeeding.

Today, the Dispensary is consolidating its approach as "social nutrition," to address various health determinants with a main focus on nutrition. As a result, dietitians have a central role in helping women take charge of their lives and the well-being of themselves, their babies, and their families.

What is the Higgins Method©, and how does it promote positive outcomes for pregnant women and their babies?

Demers: The Higgins Method© is a nutritional intervention that promotes nutritional rehabilitation of pregnant women, and healthy weights for babies at birth. It involves the science and art of counseling.

Among the specifics on the scientific side:

- Every other week, the dietitian performs an on-site food intake interview to assess nutritional intake for the past 2 weeks
- A corrective allocation of extra calories and protein based on specific risk factors for low birth-weight babies (e.g., under weight before pregnancy, significant stress, poor obstetrical history, low weight gain during pregnancy, etc.)
- Distribution of 1 liter of milk, 1 egg, and 1 multivitamin per day for the pregnant woman

The art of counseling includes:

- Making positive recommendations to improve food habits
- Making the baby "real" and creating motivation in the mother-to-be using facts about the baby and emotional engagement
- Believing in the mother's ability to improve her situation

What projects or initiatives is the Dispensary currently involved in? Why did the organization choose to pursue those projects now?

Demers: Our major goals now are to refine the concept of social nutrition, consolidate services accessible to low-income pregnant women, and illustrate the results, in terms of both health and social change. We are also pursuing our program Nourrir la Vie – Nurturing Life, which provides information, teaching tools, and internet-based training for community workers involved with low-income pregnant

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THE MONTREAL DIET DISPENSARY Continued from page 18

women or young families. Finally, we are working on a reference document about ethnic food habits and beliefs for professionals working with immigrants.

Where do you see the organization headed in the future? What health and nutrition needs do low-income women and their families most need help with?

Demers: In Montreal, low-income families make up a substantial portion of the population. We estimate that up to 1 in 4 pregnancies occur in a context of poverty. By working with more partner organizations, leading the way in social nutrition, and coordinating health-care and community services, we hope to ensure the well-being of all low-income women. The Dispensary will therefore work to better understand the changing needs of the women it serves, and how communities can improve access to social and nutrition services. Like all pregnant women, each low-income pregnant woman needs not just food, but also support to build confidence, gain knowledge, change behaviors, and become the mother she hopes to be for her child.

On a larger scale, since low birth-weight is the first of many disparities linked to poverty, the Dispensary believes that reversing this trend has the power to improve society as a whole. Therefore, one of the organization's main objectives moving forward is to ensure that its approach is not only client-centered individually (between the client and the dietitian or other healthcare professional), but aware of and adaptable to the target population's needs—all while retaining the aspects of the intervention necessary to produce good results.

WH DPG SPRING WEBINAR SERIES By Maya Feller, MS, RD, CDN, CLC

During the spring of 2017 we had the pleasure of hosting three webinars for members of both the WH DPG and the Academy at large.

In early February, Dee Prat, RDN, LD presented the informative webinar "Tele- Nutrition: Dietitians Re-think the Delivery of MNT." In attending, participants learned the importance of telehealth as an innovative way to provide patients access to medical nutrition therapy.

Cara Brumfield and Adrianna Logalbo presented our next webinar later that same month titled "The First 1,000 Days: The Nutritional Health of America's Moms, Infants and Toddlers." Cara is the US Policy and Partnership's Coordinator and Adrianna is the Managing Director of 1,000 Days. This webinar highlighted the importance of sufficient and adequate nutrition during the first 1,000 days of a child's life. Speakers noted "...[the time] from a woman's pregnancy to her child's second birthday offer[s] a unique window of opportunity to build healthier and more prosperous futures. [It is during this window that] how well or poorly a child is nourished has a profound impact on her ability to grow, learn and thrive. Unfortunately, too many American women and young children suffer from obesity, food insecurity, unhealthy diets, and low rates of breastfeeding. [These occurrences] can have long-term consequences not only for a child but also for her family, her community, and society as a whole."

Our final webinar came in March, hosting speaker Angela Grassi, MS, RDN, LDN. Angela presented current research and case studies focused on polycystic ovary syndrome (PCOS), examining updates, nutrition strategies and lifestyle treatments. She also discussed metabolic complications associated with PCOS, and the role of MNT in its treatment and management. To view recordings of these three webinars, go to <http://womenshealthdpg.org/webinars>.

Which Dispensary programs have been particularly successful? What contributed to their success?

Demers: Nutrition counseling has been very successful; it's scientifically proven to reduce low birth-weight rates in low-income populations. Over the years, other activities like prenatal group sessions, breastfeeding workshops, knitting clubs, and cooking classes have also contributed to the well-being of families. Adapting to the changing population and environment and being conscious of new science to support interventions could help explain the success of Dispensary services. Finally, the passion of the Dispensary's staff and our client-centered approach are crucial to positive outcomes.

What tips or best practices can you share with dietitians working in WIC clinics or in perinatal nutrition?

Demers: Regardless of your client's situation, you must get to know her, listen to her, and find positive changes and tools to help her. As a society, we tend to ask a lot from people living on a low income. We want them to implement strategies that even people with extensive knowledge, skills, and financial means can find challenging. A pregnant woman wants the best for her baby, and this is a great motivator that should be utilized to generate positive change.

The WH DPG Spring Webinar Series will return in January of 2018. We are already calling for topics of interest and presenters for these upcoming education sessions. Please send an email with topics or interest in presenting to membership@womenshealthdpg.org.

Thank you for your continued support, and we hope you join us next year for another exciting webinar series.



Member Media Spotlight

Did you catch WH DPG Webinar Coordinator Maya Feller, MS, RD, CDN, CLC sharing recipes for healthy grab and go breakfast with Robin Roberts on Good Morning America? The segment aired on July 10th and we are so proud of her! Congratulations Maya for expertly representing the profession! [Check out the video if you missed it.](#)

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