

June 2016

Volume 2 | Issue 3

Delaware Journal of

Public Health

A publication of the Delaware Academy of Medicine / Delaware Public Health Association



DPHA
DELAWARE PUBLIC HEALTH ASSOCIATION

www.delamed.org | www.delawarepha.org

Obesity
as a Disease

page 10

Innovative Zoo Partnership
Lending New Insight into the
Power of Animals to Market
Healthy Food to Kids

page 17

Nutrition
for Seniors

page 24



In this issue

Calendar of Events	3
A Message from the Editor and Executive Director	4
<i>Omar A. Khan, M.D., M.H.S. and Timothy E. Gibbs, M.P.H.</i>	
Welcome from this issue's Guest Editor	5
<i>Allison Karpyn, Ph.D.</i>	
Annual Meeting	6
Undernutrition in Refugee Children	8
<i>Pavitra Krishnamani</i>	
Obesity as a Disease.....	10
<i>Marianne Carter, M.S., R.D., C.H.E.S.</i>	
Separating Nutrition Fact from Fiction	11
<i>Marianne Carter, M.S., R.D., C.H.E.S.</i>	
Weighing In	12
<i>Marianne Carter, M.S., R.D., C.H.E.S.</i>	
Social Marketing Food and Beverage Choices: It's How You Say It	14
<i>Michael Peterson, Ed.D.</i>	
Innovative Zoo Partnership Lending New Insight into the Power of Animals to Market Healthy Food to Kids	17
<i>Allison Karpyn, Michael Allen, Meryl Gardner, Samantha Marks</i>	
Policies that Challenge Food Sustainability and Public Health.....	18
<i>Baylen J. Linnekin, J.D., LL.M</i>	
Preconception Nutrition	20
<i>Karen Antell, M.D., M.P.H., F.A.A.F.P.</i>	
Meeting the New 2015-2020 Dietary Guidelines for Americans	22
<i>Amy Deahl-Greenlaw, RD and Samantha Marks, R.D.</i>	
Nutrition for Seniors	24
<i>Ina Li, M.D.</i>	
From the History and Archives Collection	28
<i>Elizabeth E. Healy, M.P.H.</i>	



COVER

Nutrition is vital to living and maintaining a healthy lifestyle. Poor nutrition can result in a variety of nutrition-related diseases. By fol-

lowing the general guidelines laid out in the food pyramid, you can reduce your chances of developing health issues and enjoy a better quality of life.

The Delaware Journal of Public Health (DJPH), first published in 2015, is the official journal of the Delaware Academy of Medicine / Delaware Public Health Association (Academy/DPHA).

Submissions: Contributions of original unpublished research, social science analysis, scholarly essays, critical commentaries, departments, and letters to the editor are welcome. Questions? Write chealy@delamed.org or call Liz Healy at 302-733-3989.

Advertising: Please write to chealy@delamed.org or call 302-733-3989 for other advertising opportunities. Ask about special exhibit packages and sponsorships. Acceptance of advertising by the Journal does not imply endorsement of products.

Copyright: Copyright © 2016 by the Delaware Public Health Association. Opinions expressed by authors of articles summarized, quoted, or published in full in this journal represent only the opinions of

the authors and do not necessarily reflect the official policy of the Delaware Public Health Association or the institution with which the author(s) is (are) affiliated, unless so specified.

Any report, article, or paper prepared by employees of the U.S. government as part of their official duties is, under Copyright Act, a "work of United States Government" for which copyright protection under Title 17 of the U.S. Code is not available. However, the journal format is copyrighted and pages may not be photocopied, except in limited quantities, or posted online, without permission of the Academy/DPHA. Copying done for other than personal or internal reference use—such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale—without the expressed permission of the Academy/DPHA is prohibited. Requests for special permission should be sent to chealy@delamed.org.

Delaware Academy of Medicine

Board of Directors:

OFFICERS

Daniel J. Meara, M.D., D.M.D.
President

Omar A. Khan, M.D., M.H.S.
President-Elect

Victor L. Gregory, D.M.D.
Vice President

S. John Swanson, M.D.
Treasurer

Omar A. Khan, M.D., M.H.S.
Secretary

Arun V. Malhotra M.D.
Immediate Past President

Timothy E. Gibbs, MPH, NPMc
Executive Director, Ex-officio

DIRECTORS

David M. Bercaw, M.D.

Cynthia A. Gabrielli, D.O.

Eric T. Johnson, M.D.

Joseph F. Kestner, Jr, M.D.

Brian W. Little, MD, Ph.D.

Kathleen W. McNicholas, M.D., J.D.

Joseph A. Napoli, M.D., D.D.S.

John P. Piper, M.D.

Anita P. Raghuvanshi, M.D.

Albert A. Rizzo, M.D.

EMERITUS

Robert B. Flinn, M.D.

Barry S. Kayne, D.D.S.

Leslie W. Whitney, M.D.

Delaware Public Health Association

Advisory Council:

Omar Khan, M.D., M.H.S.
President

Timothy E. Gibbs, M.P.H.
Executive Director

Louis E. Bartoshesky, M.D., M.P.H.

Richard J. Derman, M.D., M.P.H.

Gerard Gallucci, M.D., M.S.H.

Richard E. Killingsworth, M.P.H.

Erin K. Knight, Ph.D., M.P.H.

Melissa K. Melby, Ph.D.

Mia A. Papas, Ph.D.

Karyl T. Rattay, M.D., M.S.

Margot L. Savoy, M.D., M.P.H.

Paul R. Silverman, DrPH

Rob A. Simmons, DrPH

William J. Swiatek, M.A., A.I.C.P.

Delaware Journal of Public Health

Omar Khan, M.D., M.H.S., F.A.A.F.P.

Editor-in-Chief

okhan@christianacare.org

Allison Karpyn, Ph.D.

Guest Editor

Liz Healy, M.P.H.

Deputy Editor

healy@delamed.org

Christian Derr

Image Director

info@christianrderr.com

UPCOMING EVENTS IN DELAWARE

Tuesday, June 28, 2016

June Lunch & Learn: Immunization in the Electronic Age Webinar

Monday July 11, 2016

DCHI Community Forum - Modern Maturity Senior Center - 1121 Forrest Ave., Dover, DE

Monday, August 1, 2016

DCHI Community Forum - Church of the Nazarene - 357 Paper Mill Road, Newark, DE

Tuesday, August 23, 2016

DCHI Community Forum - Middletown Memorial Hall - 27 West Green Street, Middletown, DE

Tuesday, August 30, 2016

4th Annual Addiction Medicine Symposium: The Heroin Epidemic - John H. Ammon Center, Christiana Hospital

Thursday, September 1, 2016

Geriatric Medicine Conference

Monday, September 12, 2016

DCHI Community Forum - Seaford Volunteer Fire Company - Banquet Hall
King & Cannon St., Seaford, DE

Friday, September 16, 2016

Patient-Centered Research for Chronic Kidney Disease

Saturday, October 15, 2016

Delaware Stroke Initiatives "15th Annual Stroke Education Conference" - John H. Ammon Center, Christiana Hospital

Thursday, November 3, 2016

Communicable Diseases Summit - John H. Ammon Center, Christiana Hospital

Friday, November 11, 2016

3rd Annual Military Medicine Symposium - John H. Ammon Center, Christiana Hospital

Thursday, January 19, 2017

Hoopes Medical-Dental Lecture - John H. Ammon Center, Christiana Hospital

For general inquiries about the Delaware Journal of Public Health or possible contributions for upcoming issues, please contact Liz Healy, ehaley@delamed.org

Membership Categories include:

Individual:

Year 1 discount: 75% off \$25, **Year 2 discount:** 50% off \$50, **Year 3 discount:** 25% off \$75, Year 4 and each year after \$99, **6 Year bundled discount rate:** \$315 for a six year membership. Save \$132. **Retired:** \$25 per year. **Student:** \$10 per year.

Apply online at delawarepha.org or email elenz@delamed.org (Liz Lenz) or call 302-733-3952 for more information.

Similar to the APHA, sections serve as the primary professional units of the Association and conduct activities that promote the mission and fulfill the goals of the Academy/DPHA. Sections create a variety of opportunities for member involvement, thus making the the Academy/DPHA experience richer for individuals who have the opportunity to attend and choose to interact with their primary Sections.



DELAWARE
ACADEMY of
MEDICINE



Delaware Academy of Medicine / DPHA

4765 Oglethorpe-Stanton Road
Suite L10
Newark, DE 19713

www.delamed.org | www.delawarepha.org

Follow Us:



The Delaware Academy of Medicine is a private, nonprofit organization founded in 1930. Our mission is to enhance the well being of our community through medical education and the promotion of public health. Our educational initiatives span the spectrum from consumer health education to continuing medical education conferences and symposia.

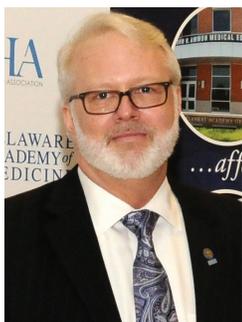
The Delaware Public Health Association was officially reborn at the 141st Annual Meeting of the American Public Health Association (APHA) held in Boston, MA in November, 2013. At this meeting, affiliation of the DPHA was transferred to the Delaware Academy of Medicine officially on November 5, 2013 by action of the APHA Governing Council. The Delaware Academy of Medicine, who's mission statement is "to promote the well-being of our community through education and the promotion of public health," is honored to take on this responsibility in the First State.

On April 21, 2016 the Academy/DPHA held its 86th annual meeting installing a new slate of officers including Daniel J. Meara, MD, DMD as its new president, and hearing a keynote address by Steven Stein, MD on "The Science and Art of cancer drug development in 2016." We honored J. Kent Riegel with the Lewis B. Flinn President's Award, and thanked Arun V. Malhotra, MD for his outstanding service to the Academy for the past two years as its President. Governor Jack Markell was honored with the Public Health Recognition Award. He was introduced by Secretary Rita Landgraf and Omar Khan, MD, President-Elect. Governor Markell spoke eloquently about the need and value of improved public health and prevention, in particular, meeting the unmet need for contraception and birth spacing in our state and country.

See pictures from the annual meeting on the following pages.



Omar A. Khan,
M.D., M.H.S., F.A.A.F.P.
President
Delaware Public
Health Association



Timothy E. Gibbs, M.P.H.
Executive Director
Delaware Academy of
Medicine and the Delaware
Public Health Association

This issue of the *Delaware Journal of Public Health* is about food and nutrition, and we open this edition with the following three quotes:

"Let food be thy medicine and medicine be thy food." –Hippocrates [we're not sure we agree with the second part, but fully on board with the first]

"The doctor of the future will no longer treat the human frame with drugs, rather will cure and prevent disease with nutrition." Thomas Edison [The future is clearly not here yet, since it also requires the population and patients of the future]

"He who takes medicine and neglects to diet wastes the skill of his doctors." Chinese proverb [Amen to that]

These quotes provide the backdrop for what we call the 'irony of imbalance' of food and nutrition in 2016's USA, and we should consider the following as they relate to nutrition in our state and globally. These definitions are provided by the World Health Organization.

Malnutrition refers to deficiencies, excesses or imbalances in intake of energy, protein and/or other nutrients. Contrary to common usage, the term 'malnutrition' correctly includes both under-nutrition and over-nutrition.

Under-nutrition is the result of food intake that is continuously insufficient to meet dietary energy requirements, poor absorption and/or poor biological use of nutrients consumed. This usually results in loss of body weight.

Over-nutrition refers to a chronic condition where intake of food is in excess of dietary energy requirements, resulting in overweight and/or obesity.

In Delaware, under-nutrition is most likely to occur at birth and at end of life, with the exception of certain illnesses and eating disorders, as well as from the results of cancer and cancer treatment.

Our bigger challenges come in the form of over-nutrition where we consume the foods and beverages far in excess of our energy needs, and malnutrition where we consume foods and beverages that are high in sugars and fats, but low in nutritional value.

We hope you will enjoy this issue of the DJPH. We end with a quote from Michael Pollan- 7 powerful words: *"Eat food, not too much, mostly plants."*

Sincerely,

Omar Khan, M.D., M.H.S., F.A.A.F.P.
President

Timothy Gibbs, M.P.H.
Executive Director





Allison Karpyn, Ph.D.
Guest Editor, June 2016

In this issue

On behalf of the Delaware Academy of Medicine and the Delaware Public Health Association, I am honored to act in the capacity as guest editor for this edition of the *Delaware Journal of Public Health*. With gardens in bloom, it is fitting that this edition focuses on nutrition.

Food is a complex and often politically charged topic. Discussions about our food system and how food is produced, manufactured, regulated, marketed and consumed often stimulate robust and contentious debates. While it is clear that we still have a way to go to ensure that all children are able to eat well, a number of new national efforts have been released this year, likely advancing the science, and implementation of the science, for public health.

This year the 2015-2020 Dietary Guidelines for Americans have been formally released in print. While they continue to remind us all that cutting the sugar, saturated fat and salt will be key to a healthy nation, the new guidelines now emphasize overall eating patterns with less of an emphasis on dietary components alone and more recognition for the combinations of foods and drinks people consume. Also released this year, the Interagency Committee on Human Nutrition Research provides researchers a new National Nutrition Research Roadmap articulating 11 research priorities in an effort to support inter-agency and, effectively, inter-disciplinary work across the US.

While it is clear a healthy diet is important for us all, children's diet remains a critical focus of importance. Only 40% of children meet U.S. Department of Agriculture Food Patterns fruit intake recommendations, and only 7% meet vegetable recommendations. No population sub group of children over the age of 5 of any ethnicity or age group meets the Healthy People 2020 total vegetable target, though diet is a key contributor to disparities in many chronic diseases and conditions. Black children are at greatest risk and consume significantly fewer vegetables overall. Similarly concerning, trends show Mexican-American children have had a decreased vegetable intake over the past 5 years. And it is still the case that white potatoes, most often fried or in chip form, account for an average of 30% of a child's total vegetable intake.

As I reflect on the work already happening in Delaware, however, I am encouraged. Our agricultural and health care networks are strong, and efforts to promote and support food security are well established. I am confident that with this robust network of support, new ideas and collaborations will emerge to create an even more dynamic local food system in Delaware.

We hope you will find this edition of the DJPH insightful and thought provoking.

Allison Karpyn, Ph.D.

*Associate Director, Center for Research in
Education and Social Policy
University of Delaware
June 2016*







13



14



15



16



17



18



19



20

1. 86th Annual Meeting at the Gold Ball Room, Hotel du Pont 2. Incoming Academy President, Daniel Meara, MD, DMD and David Paul, MD 3. Eric Johnson, MD and Anand Panwalker, MD share a story with Brian Galinat, MD, MBA 4. Timothy Gibbs, MPH, Executive Director, opens the annual meeting 5. Jan Lee, MD and Barry Kayne, DDS - Past President of the Academy 6. Joseph Kestner, Jr., MD - Past President and Chair of the By-Laws Committee of the Academy 7. J. Kent Riegel, Esq. and wife, Betty Riegel 8. Steven Stein, MD, CMO, Incyte Corporation - 2016 Keynote Address 9. Kathleen McNicholas, MD, JD - Past President and Chair of the Nominations Committee 10. Michael Smith and Mia Papas, PhD 11. President-elect Omar Khan, MD, MHS and Secretary Rita Langraf 12. Patti Christopher, RN and Carol Tavani, MD, MS 13. The presidential gavel is passed from Arun Malhotra, MD to Daniel Meara, MD, DMD 14. 2016 Lewis B. Flinn President's Award Recipient - J. Kent Riegel 15. Secretary Rita Landgraf introduces Governor Jack Markell 16. Reception adjacent to the Gold Ball Room 17. L-R top row: Victor Gregory, DMD; S. John Swanson, MD; Omar Khan, MD, MHS; Tim Gibbs, MPH, NPMc; Joseph Kestner, Jr. MD; Brian Little, MD, PhD; David Bercaw, MD. L-R seated: Kathleen McNicholas, MD, JD; Daniel Meara, MD, DMD; Arun Malhotra, MD; Anita Raghuwanshi, MD; Eric Johnson, MD; and Barry Kayne, DDS Missing from picture: Eileen Grena-Piretti, RN, BSN, JD; Albert Rizzo, MD; Joseph Napoli, MD, DDS; Robert Flinn, MD, and Leslie Whitney, MD. 18. Daniel Meara, MD, DMD, President, Delaware Academy of Medicine 2016-2018 19. Outgoing President, Arun Malhotra, MD accepts a token of appreciation from the Board and Staff of the Academy 20. L - R: Timothy Gibbs, MPH, Executive Director; Gov. Jack Markell, 2016 Public Health Recognition Recipient; Secretary Rita Landgraf; Omar Khan, Md, MHS, President-, DPHA, President-elect, Academy of Medicine; and Arun Malhotra, MD, Immediate Past-President, Academy of Medicine

by Pavitra Krishnamani

Undernutrition

IN REFUGEE CHILDREN



The United Nations High Commissioner for Refugees (UNHCR) defines a refugee as an individual who, owing to a well-founded fear of being persecuted for race, religion, nationality, or membership of a particular social group or political opinion, is outside the country of his or her nationality and is unable or unwilling to seek the protection of that country. Refugees from diverse backgrounds are found all around the world, having given up their homes, belongings, friends and, sometimes, families to live out uncertain futures in foreign lands.

In the ongoing refugee crisis, over 4 million Syrians, persecuted for their political opinion and threatened by a war-torn environment, have fled from their country into the neighboring nations of Lebanon, Jordan, and Turkey. Half of these individuals were under the age of 18 and, to date, there have been over 140,000 children born as refugees. In these countries of first asylum, refugees reside in rented accommodation, housing with relatives, informal settlements, and camps.

Over half of them live below national poverty lines, with the percent of Syrian refugees living in poverty rising from 50 to 70% between 2014 and 2015 in Lebanon^[2]. Children, especially those from

resource-poor regions of the world, are particularly vulnerable to these conditions of poverty that often accompany humanitarian crises. As refugees, they are more likely to be born with a low birth weight, less likely to have access to nourishing food, and more prone to mortality due to diarrhea-inducing infectious disease processes^[3,4].

Understanding that poverty-associated undernourishment challenges that begin during a humanitarian crisis continue onwards as refugees migrate to their eventual countries of resettlement, this literature review seeks to elaborate the reasons for and consequences of undernutrition in refugee children.

Nutrition in Camp Settings

In protracted refugee settings, where refugees spend over 5 years in camps, inadequate nutrition and micronutrient deficiencies are usually a product of poor living conditions. Individuals in these situations often find themselves dependent on humanitarian aid, and their access to a balanced diet with adequate micronutrients is greatly hindered by decreased aid agency funding and problems in the food distribution pipeline^[3].

This was the case for Bhutanese refugees of Nepali origin who fled to camps in Nepal and

India in the early 1990s. Fifteen years later, those in camps in southeastern Nepal were still reliant on food assistance. Commissioned by UNHCR and the World Food Program (WFP), a study in these camps assessed the nutritional status of Bhutanese refugee children between 6 and 59 months of age, evaluating five major health challenges of undernutrition. These included acute malnutrition, chronic malnutrition, low weight, anemia, and angular stomatitis.

It found that around 4% of children had acute malnutrition, with the highest prevalence between 1 and 2 years of age^[5]. This is similar to the lowest estimates in Kenyan camps hosting mostly Somali refugees in 2010 (5%) and to Syrian children in Jordan during the current crisis (5.6%)^[3,7]. The study in Nepal also found a much higher prevalence of chronic malnutrition and low weight, each of which was seen in around a quarter of refugee children. The study found that both of these were exacerbated with age, explaining why stunting is a feature commonly seen in Bhutanese refugee children even after resettlement in the United States.

Riboflavin deficiency was also indicated by an increased prevalence of angular stomatitis and almost half of the children in Nepali camps had anemia, although its prevalence decreased

with age^[5]. Anemia is present in a similar proportion of Syrian refugee children currently living in Jordan^[7]. This can be attributed to an inadequate supply of iron-rich foods, poor breastfeeding practices for infants, and a loss of micronutrients due to increased sanitation-associated diarrheal and respiratory illnesses^[5].

Medecins Sans Frontieres (MSF) cited diarrheal and infectious disease to be a major cause of mortality among children in a South Sudan refugee camp. The head of MSF's mission in South Sudan stated that "the majority of our patients in [...] camps are malnourished children who are further weakened when they contract diarrhea, malaria, or respiratory infections^[4]." A study analyzing water, sanitation, and food provision across refugee camps supported this, finding that an integrated approach is necessary to prevent morbidity and mortality secondary to a lack of sanitation and nutritious food^[6].

Nutrition after Resettlement

The poor nutrition and micronutrient deficiencies that occur in refugee children in camps continues to affect them after resettlement in resource-rich countries like the United States. One study evaluating refugees in the state of Georgia who had previously lived in camps that had experienced an over 5%, and sometimes over 15%, prevalence of acute malnutrition found 16% of the pediatric population to have acute malnutrition after resettlement^[8].

Anemia rates, which had been over 40% pre-resettlement, were also comparable at around 36% after resettlement in the United States [8]. Other studies with larger sample sizes in Massachusetts and Maine found anemia rates to be closer to a quarter of US-resettled children. These analyses also found that resettled children still had intestinal parasites, which could in part explain the ongoing anemia in these individuals^[9, 10].

Discussion

Each refugee registered with UNHCR receives food rations of around 2166 Kcal every day from the WFP^[3]. This is slightly more than the average woman needs to maintain her weight and slightly less than the average man needs to maintain his weight. Because food is often brought to camps over long distances, most fortified and perishable foods, such as fruits and

vegetables, cannot logistically be distributed to refugees. Oftentimes, this leads to food rations that are deficient in micronutrients such as iron, riboflavin, and Vitamin C^[5].

For refugees in Kenyan camps, rations were a primary source of income to be sold and traded for food with a greater variety of nutrients as well as basic necessities, such as clothing and soap, that were not provided regularly^[3]. In Nepal, it was found that restricting refugees' movements to forage for supplemental foods diminishes their ability to access micronutrients that are not available in food rations. Restricting their employment decreased their ability to buy the commodities that those in Kenyan camps traded their rations for^[5].

To offset calorie deficits caused by this type of bartering, MSF staff distributed survival essentials, such as soap, and emergency food rations in the South Sudan camps to which they traveled^[4]. Educating mothers on how to breastfeed also decreased iron deficiency and anemia in infants^[5]. Other interventions to improve water and sanitation infrastructure in camps helps minimize the loss of micronutrients to improve outcomes for those who may already be undernourished^[6].

A study analyzing feeding programs provided for refugees in protracted situations found that 5% of refugee children under the age of five were enrolled in supplementary feeding programs. These programs provide dry, take-home supplementary food rations for individuals with moderate acute malnutrition. 80% of the individuals enrolled in these programs recovered.

However, because of ration sharing, children in the program likely consumed less than adequate calories from the supplement, taking longer than expected to recover. In camp situations where ration selling or trading is preferred, faster recovery can be promoted through more time-consuming and expensive feeding programs that utilize wet or ready to use foods^[11].

Protracted humanitarian crises yield not only refugees, but also internally displaced people (IDP), who face similar challenges with undernutrition. Ugandan IDPs were found to have protein energy undernutrition, susceptibility to diarrheal diseases, and chronic malnutrition resulting in stunting^[12]. However, IDPs do not qualify for large scale humanitarian aid, including food rations provided by the WFP, because they are not granted refugee status.

In the current crisis, more than 7.6 million Syrians have been internally displaced^[2]. And it is not difficult to imagine that many of them, in an already undernourished state, will enter refugee camps in the near future. At some point, several of them, in addition to several of the 4 million individuals who are already refugees, will be in the care of public health programs and health professionals in the United States. Refugee children who are undernourished will most likely come to the United States undernourished, making it imperative that we screen for and address nutritional challenges that could otherwise stunt the physical and cognitive growth of the youngest members of our society.

References

- [2] Sirin SR, Rogers-Sirin L. (2015). The Educational and Mental Health Needs of Syrian Refugee Children. *Washington DC: Migration Policy Institute.*
- [3] International Rescue Committee. (2011). Reducing Malnutrition in Hagadera & Kakuma Camps.
- [4] Medecins Sans Frontieres. (2012). Catastrophic malnutrition in refugee camps. (2012). *Website: Medecins Sans Frontieres.*
- [5] CDC. (2008). Malnutrition and micronutrient deficiencies among Bhutanese refugee children – Nepal, 2007. *Morbidity & Mortality Weekly Report*, 57(14), 370-373.
- [6] Cronin AA, Shrestha D, Cornier N, Abdalla F, Ezzard N, Aramburu C. (2008). A review of water and sanitation provision in refugee camps in association with selected health and nutrition indicators – the need for integrated service provision. *Journal of Water and Health*, 6(1), 1-13.
- [7] UNICEF. (2014). Interagency Nutrition Survey on Syrian Refugees in Jordan.
- [8] Lutfy C, Cookson ST, Talley L, Rochat R. (2014). Malnourished Children in Refugee Camps and Lack of Connection with Services After US Resettlement. *Journal of Immigrant and Minority Health*, 16(5), 1016-1022.
- [9] Hayes EB, Talbot SB, Matheson ES, Pressler HM, Hanna AB, McCarthy CA. (1998). Health status of pediatric refugees in Portland, ME. *Archives of Pediatrics & Adolescent Medicine*, 152(6), 564-568.
- [10] Gelman PL, Radin M, Zhang Z, Cochran J, Meyers AF. (2001). Growth Status and Related Medical Conditions Among Refugee Children in Massachusetts, 1995-1998. *American Journal of Public Health*, 91(11), 1800-1805.
- [11] Doocy S, Tappin H, Haskew C, Wilkinson C, Spiegel P. (2011). Performance of UNHCR nutrition programs in post-emergency refugee camps. *Conflict and Health*, 5, 23.
- [12] Olwedo MA, Mworozzi E, Bachou H, Orach CG. (2008). Factors associated with malnutrition among children in internally displaced person's camps, northern Uganda. *African Health Sciences*, 8(4), 244-252.



Currently an MD Candidate at Thomas Jefferson University, Pavitra Krishnamani graduated with an MS in Global Medicine from USC's Keck School of Medicine in 2014. As a medical student, much of her clinical work in global health has been with Philadelphia's Bhutanese refugee population. In 2015, she served as the Vice President for Refugee Health Partners (RHP) at Jefferson, an organization dedicated to providing resettled refugees with clinical care, preventative health services, educational support, and health advocacy. She has spoken extensively on refugee health, giving several presentations at national conferences, and lecturing at major US universities.



Marianne Carter is the Director of the Delaware Center for Health Promotion, located at Delaware State University. She is a registered dietitian and certified health education specialist with a Master's degree in health education. Marianne writes a bi-weekly column, "Weigh-In" for The News Journal, and has also created several behavior change programs for their readers. Carter participates on numerous Boards, including the Delaware Cancer Consortium and the Delaware Coalition for Healthy Eating and Active Living (DE-HEAL).

Obesity

AS A DISEASE

by Marianne Carter, M.S., R.D., C.H.E.S.

American waistlines are expanding at an alarming rate. In Delaware, obesity rates have doubled over the past 2 decades, going from a rate of 15.1% in 1994 to 30.7% in 2014.

It's a risk factor for myriad conditions including type 2 diabetes, high cholesterol, hypertension, heart disease, stroke, certain cancers, respiratory illness and arthritis.

We're seeing overweight and obese children develop high blood pressure, high cholesterol and type 2 diabetes. What's our next generations' health going to look like when they're in their 50s and 60s?

The costs associated with obesity are exorbitant. In 2008, \$147 billion was spent on direct medical costs associated with obesity. That doesn't include indirect costs, such as lost productivity.

The causes of obesity are extremely complex. Genetics, social, economic, psychological, environmental and physical factors all play a role.

We have an increasing availability of inexpensive, calorically dense foods. Portion sizes have grown. Americans are less active; only about half of adult Delawareans meet the guidelines for moderate physical activity.

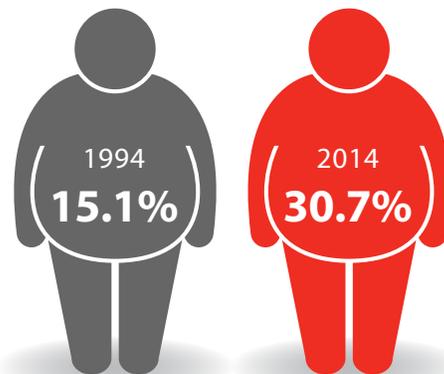
And then there's the dieting industry. Estimates of what consumers spend in their quest to lose weight vary; Marketdata Enterprises put the cost for

2013 at \$60 billion. Sadly, most consumers relying on pills, potions and celebrity endorsements have seen only their wallets slimming down.

It's been 3 years since the American Medical Association adopted a policy that recognizes obesity as a disease requiring a range of medical interventions for treatment and prevention.

But has that policy trickled down to all healthcare practitioners? Most interact with obese patients on a daily basis.

When an individual has hypertension, their medical chart reflects the ICD-9 code associated with that condition. They're counseled about the inherent dangers of not controlling the condition, given information about the role of lifestyle factors in its treatment, and typically prescribed a medication to help control their high blood pressure.



Once the condition is under control, the medication is not stopped. Their chart continues to reflect that they have been diagnosed with the condition. And most likely, all future visits to their health care provider prompt a discussion about their blood pressure numbers.

Perhaps we should be doing the same with overweight/obesity. Ask the next 10 people you encounter what their BMI is, and I suspect the majority won't know.

Yet, it seems that every time that you visit a healthcare provider – be it an allergist or an internist – they put you on a scale. It's a teachable moment to advise patients about their BMI and weight class - healthy, overweight or obese category.

Granted, BMI is not a good predictor of body fat stores in athletes and the elderly, but for the masses it's a useful tool that's readily available in the electronic medical record.

Referring obese patients to a licensed dietitian/nutritionist should become the norm, not the exception. The Centers for Medicare and Medicaid Services will pay for physician-directed intensive behavioral therapy for obesity.

There's a massive amount of misinformation out there about dieting. Many overweight individuals have had multiple failed attempts, leading them to think they can't possibly succeed. Most have relied on fad diets or have attempted drastic changes that are impossible to maintain.

As stated previously, it's a complex disease; but, education plays a critical role. As a licensed nutritionist with close to 40 years of experience, I can attest that most people are clueless where to start and in desperate need of nutrition education.

If we want to get a handle on obesity, we all need to get involved with encouraging individuals to take action that is evidence-based and practical. Healthcare professionals can take a lead role in this endeavor.



Separating Nutrition Fact from Fiction

by Marianne Carter, M.S., R.D., C.H.E.S.

If you need to remodel your kitchen, you bring in an experienced contractor. When your car breaks down, you take it to a trained mechanic.

We rely on qualified and licensed professionals. There's a degree of specialization and training in most disciplines; that's especially true in healthcare.

Orthopedic surgeons aren't going to treat a heart condition, nor would a chiropractor remove a brain tumor. Specific education, training and skill sets are needed.

Sadly, there are individuals trying to cash in on the booming wellness industry by holding themselves out to be nutrition experts, despite limited knowledge or experience in the field.

Fortunately, in Delaware, there's an easy way to discern who is qualified – check to see if that individual is licensed as a dietitian/nutritionist (LDN) by the state.

In order to obtain a license in Delaware, the state requires that an applicant possess a minimum of a baccalaureate degree from an accredited college or university with a major course of study in a nutrition-focused area.

In addition, the applicant must have completed a supervised internship program of no less than 900 hours, successfully passed a national exam, and be current with continuing education requirements.

Nutrition impacts so many aspects of our health - blood pressure, cholesterol, digestion, cancer risk, etc. It's a science requiring a command of anatomy and physiology, biochemistry, food science, behavior modification, etc.

It's also an evolving science; recommendations change as the scientific

evidence is accumulated. Trained nutrition experts are able to separate facts from fads and translate nutritional science into information that consumers can use.

Being qualified to dole out nutrition advice requires more knowledge and skills than simply having personal experience with weight loss or sporting a body with six-pack abs.

Qualified nutritionists base their advice on a host of factors, such as the person's past medical history, diagnoses, lab results, food allergies/intolerances and current medications.

In addition, before providing recommendations, they'll obtain detailed information about food preferences, supplement use, diet history, access to food, budget and cultural preferences.

Providing dietary advice may seem to some to be a benign act. Several states, however, have documented cases of unqualified individuals giving improper nutritional advice, which has resulted in harm and even death.

Consumers are in desperate need of nutrition education. When medical nutrition therapy is needed - an approach to treating medical conditions like diabetes, hypertension and obesity through the use of a specific diet - it's important to ensure that the "nutritionist" you refer patients/clients to is licensed.

Licensure protects the public health by establishing minimum educational and experience criteria for those individuals who hold themselves out to be experts in nutrition.

To determine if someone is licensed, go to the **Delaware Division of Professional Regulation's website** and search under dietitians/nutritionists.

Delaware Health and Social Services, Division of Public Health, Behavioral Risk Factor Survey (BRFS), 1992-2014.

Eric A. Finkelstein, Justin G. Trogdon, Joel W. Cohen and William Dietz. Annual Medical Spending Attributable To Obesity: Payer-And Service-Specific Estimates, *Health Affairs* 28, no.5 (2009):w822-w831.

Marketdata Enterprises, Inc. (2014) *The U.S. Weight Loss Market: 2014 Status Report & Forecast*. Tampa, Florida: John LaRosa.

Weigh In

by Marianne Carter, M.S., R.D., C.H.E.S.

Sugar-sweetened beverages are a major contributor to the obesity epidemic, a crisis that affects 31% of adults and 17% of children in Delaware.

These include regular soda, sweet tea, lemonade, fruit punch, Kool-Aid, some flavored/vitamin waters, energy drinks and sports drinks.

A 12-ounce can of cola contains the equivalent of 10 teaspoons/packets of sugar. The 20-ounce bottle provides a whopping 16-18 teaspoons of sugar. A large 44-oz. cup with your favorite fountain drink provides close to 40 teaspoons/packs of sugar.

Not only are these beverages full of sugar, most are void of nutritional value. Sugary beverages promote tooth decay and the excess calories contribute to obesity. In turn, obesity increases the risk of a host of illnesses such as type 2 diabetes and heart disease.

Once in a while, a serving of soda can fit into a healthy diet. However, if someone is using a can of soda to quench their thirst 1-2 times daily, that additional 150-300 empty calories daily is enough to promote a weight gain of 15 to 30 pounds in a year.

In her award-winning book, *Soda Politics*, Marion Nestle, a professor at New York University, does an excellent job of outlining Big Soda's 'playbook', which reads also verbatim to the tactics used by the tobacco industry.

The American Beverage Association (aka 'Big Soda') refutes research as "junk science", emphasizes personal freedom, and tries to convince consumers that all you have to do is balance your calories with physical activity.

(A 20-ounce bottle of regular soda contains 250 calories, which would require a teen to run for 50 minutes or walk 5 miles to burn those calories.)

They are spending millions to promote a product with zero nutritional value which has been directly linked to obesity. For each additional sugary beverage children consume the risk of obesity jumps by 60% (Ludwig, et. al).

Targeted marketing to young, male, poorly educated, Hispanic or African-American overweight individuals is counteracting all efforts to improve the health of these at-risk populations. And while overall consumption patterns have leveled off, sugary beverages are still a mainstay in many groups.

In January 2015, the Delaware Center for Health Promotion, located at Delaware State University, joined forces with Kent Kids, a coalition of agencies concerned about the health and wellbeing of children and their families.

A campaign called "Rethink Your Drink" was developed which educates residents about the sugar content of these beverages. Funding for this grassroots initiative was provided by Nemours Health and Prevention Services.

A toolkit was developed for worksites/organizations that outlines the issue, as well as provides information about policy changes and healthy vending. Displays were created that illustrate the equivalent amount of sugar contained in beverages.

Residents in Delaware's unhealthiest county are being encouraged to take a pledge to reduce or eliminate their sugary beverage intake over a period of 30 days.

In the past year, over 7,000 residents have had a face-to-face viewing of the sugary beverage display and have heard key messages, including the advice to replace sugary beverages with water.

The displays have been at libraries, schools, worksites, churches, grocery stores and large-scale community events. What is striking is the shock of both adults and children when they view the display.

It's relatively easy to purchase a sugary beverage, calculate its sugar content in teaspoons (divide the grams of sugar by 4) and place a cup with the equivalent teaspoons of sugar next to the bottle.

A picture says a thousand words. This single visual placed in physician offices, clinics, hospital reception desks, fitness centers, etc. would go a long way in educating Delawareans about the importance of limiting their intake of sugary beverages.

It's a simple ask of Delawareans and it will improve the health status of our residents. For more information, contact me at mcarter@desu.edu or 302-857-7309.

NESTLE, M. (2015). *Soda politics: Taking on big soda (and winning)*. NEW YORK: OXFORD University Press.

Ludwig DS, Peterson KE, Gortmaker SL. Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet*. 2001;357:505-8.





Officials from the City of Wilmington, Delaware Health and Social Services, and the Department of Education officially open the Vital Statistics pilot program at the Northeast State Service Center. Second from left: Wilmington Mayor Dennis P. Williams, DHSS Secretary Rita Landgraf, DPH Director Dr. Karyl Rattay, Maridelle Dizon of DPH, Dr. Jaqueline Jenkins of the City of Wilmington, and Tabatha Offut-Powell, chief of DPH's Data and Informatics Section. At far right is state Rep. Stephanie T. Bolden and behind her is Caitlin Gleason of DOE.

DHSS, City of Wilmington open birth certificate pilot program at Northeast State Service Center

On June 7, Delaware Health and Social Services (DHSS) and the City of Wilmington opened a pilot program at Northeast State Service Center to provide birth certificates for families enrolling children in kindergarten. Many Wilmington families said it was a transportation challenge to get to the New Castle County Office of Vital Statistics in Newark or they lacked computer access to order certificates online.

The office at 1624 Jessup St. will be open from 9:00 a.m. to 3:00 p.m. on Tuesdays and Thursdays (and closed from noon to 1:00 p.m. for lunch) through Oct. 27, 2016. Accepted forms of payment: credit/debit card, check, or money order for \$25, payable to the Office of Vital Statistics. Everyone seeking a birth certificate will be served. Visit <http://www.dhss.delaware.gov/dhss/dph/ss/vitalstats.html> for more information or to order documents online.

"One of the most important things we can do as government leaders is to meet communities where they are," Secretary Landgraf said. I thank the City of Wilmington and Mayor Williams for partnering with us to open this pilot office at the Northeast State Service Center."

DPH announces fifth Zika case

A fifth Zika case involving a Delaware resident was announced by the Division of Public Health (DPH) on June 13. All five cases acquired the illness from mosquito bites while traveling abroad and do not involve pregnancy.



Serious birth defects from the bites of Zika-infected mosquitoes were reported in Brazil and other countries. Since Zika can also be spread by men via vaginal, anal, and oral sexual activity, DPH recommends condom use for men diagnosed with Zika virus or who have Zika symptoms for at least six months. The most common symptoms are fever, rash, joint pain, and conjunctivitis (red eyes).

DPH is offering Zika Prevention Kits to pregnant women served at Women, Infants and Children (WIC) clinics and other locations. The kit contains mosquito repellent, condoms, thermometers, and informational brochures. For more information, visit dhss.delaware.gov/dhss/dph/zika.html.

Innovative Safety Technology

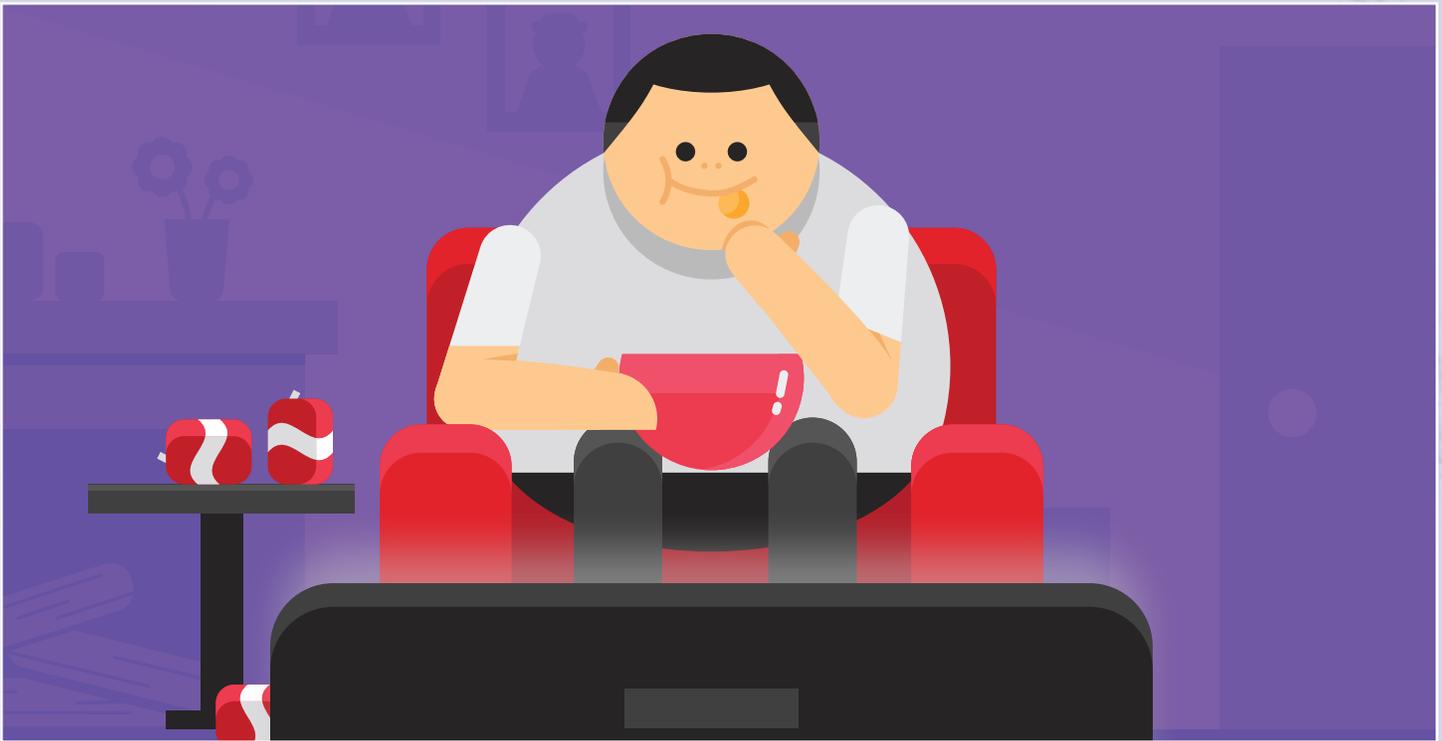


Signal Service, Inc. of West Chester, Pennsylvania displayed their passive detection bike signal at the 2016 Walkable Bikeable Delaware Summit. When the signal system detects cyclists and pedestrians in their lanes, drivers get red lights so cyclists and pedestrians can safely cross. Pictured are Technical Sales Representatives Tom Bailey, left, and Toby Whitmore. Photo by Donna Sharp.



See you at the Delaware State Fair!

DPH will attend the annual Delaware State Fair Health Fair for Kids on Tuesday, July 26, 2016 (Healthy Kids Day) from 9:00 a.m. to 2:00 p.m. on the Delaware State Fairgrounds on Rt. 3 in Harrington, Delaware. The health fair is in the Free Entertainment Tent. For more information, contact Midline Estimable at 302-262-9459 or mestimable@pmgconsulting.net. Photo by Donna Sharp.



Social Marketing Food and Beverage Choices: It's How You Say It

Michael Peterson, Ed.D.
Professor and Chair
Department of
Behavioral Health and Nutrition
College of Health Sciences,
University of Delaware

Junk food and sugary sweetened beverages (SSBs) have come under the ire of health professionals in light of the growing problems related to obesity, diabetes and metabolic disorders. Once considered a treat, something out of the norm, or special to eat or drink; energy dense, nutrient poor foods have become a dietary staple for many. Consumption trends have shown a popular shift towards these food stuffs as demonstrated by SSB consumption for breakfast, snacks, and evening meals, or shopping carts filled with potato chips and soda bottles (Fryar and Ervin, 2013). These trends are not illogical nor are they surprising given that many health professionals also imbibe in these choice foods. What it does demonstrate is that there is a psychology of food that needs to be considered in any public health intervention designed to improve dietary intake behaviors (Cleveland Clinic, 2016; Wansink and Sangerman, 2000).

Social marketing has been one-way public health has tried to curb the unhealthy food and beverage choice problem. Social marketing is the application of marketing principles for the purpose of changing the target individual's behavior (Social Marketing Quarterly, 2016). When it comes to food and beverage choice, popular campaigns such as "Rethink your drink" (CDC 2016) or the guerilla marketing "Soda Sucks" (2016) have taken a messaging approach that people should not consume these products. The messages tend to demonize the product, treating it as a virus or bacteria, or implying the consumer is less than smart about their health by making these "unhealthy" choices. However, consumers do not buy nor consume these products because they are "unhealthy" or because they don't know that they are high in calories and low in nutrients (Dugan 2013). They consume them because they like them. They enjoy the taste,

the feeling, the psychological benefit they get while they consume it (Wansink and Sangerman, 2000). They may even have positive associations with the product based on a past experience, memory, or situation that the product “bubbles up” in to their consciousness. It is not surprising that when public health messages convey that SSBs are not good, the recipient of the message may put up a cognitive defense and reject the message. Hence a message such as “Rethink your Drink” may raise an immediate response of “why?” “I like my drink.” “It makes me feel good.” “I like the taste.” “I like the memory of what the beverage brings to mind.” In addition to these cognitive defenses to the “rethink” message, there is also the implied message of “you don’t know what you are doing.” “You are not smart enough to make health choices, so we have to tell you to stop consuming something you enjoy because it will harm you.” As a result these social marketing approaches have demonstrated at best an increased awareness, but negligible impact on the behavior they have tried to change. When we do not acknowledge the reality of food and beverage choices and the psychology of food, we risk becoming ineffective in our approaches (Wansink 2015), and being perceived as a “self-righteous killjoy.”

In this light the State of Delaware took a different messaging tact to address the over consumption of sweet and sugary beverages via the “One Less Challenge” campaign. The campaign acknowledged that SSBs are enjoyable, they are not the devil personified, and that it is fine to consume them in moderation—a strategy recommended in the most recent scientific literature (Just and Wansink, 2015). The approach also focused on the positive health benefits of drinking less SSBs rather than highlighting the risks of maintaining current SSB consumption. Messaging focused on making only a small change (one less SSB per day) rather than giving up SSBs. At no time or in any way was there an implied “you’re doing it wrong” message. Rather a fun, easy to do, free choice that they could do at any time was provided. Message imagery reflected the evidence-based health benefits of drinking less SSBs (e.g. “I lost 5 pounds by taking the One Less Challenge”), along with the sentiment that they were free to make any beverage choice they wanted without judgment. This approach proved to be highly effective and popular among those exposed to the campaign based on verbatim feedback.

As part of the marketing mix, a point of purchase placement strategy was utilized in the campaign via the positioning of posters, clings, and floor pull-ups by vending machines encouraging consumers to take the “One Less Challenge.” Given that decisions are often made spontaneously when it comes to beverage selection, exposing consumers to the message while they were selecting their beverage increased the saliency of the message. The campaign also worked with the Blind Vendors Association to provide a 50-50 SSB to non-SSB beverage selection choice in each vending machine targeted by the campaign message. This strategy was taken in recognition that we must work **WITH** the beverage industry and associated vendors, rather than in opposition to their needs.

Vending sales data comparing 2014 and 2015 (the year of the campaign) found no significant sales differences, but highly significant changes in the composition of those sales. Consumers chose more non-SSBs during the campaign compared to the same time period in 2014, including the month after the campaign had ended—suggesting a residual impact on beverage choices. This is good news on a couple of levels. First, this campaign approach had a positive impact on beverage selection. Second, private industry was not negatively impacted by this approach. In fact, sales of non-SSBs went up. An oft presented mindset is that public health and industry cannot work together since their goals are seen as competing or not in alignment. Industry wants to sell product—especially popular SSBs, while public health wants to curb unhealthy product accessibility. By presenting a fair choice along with a positive, fun, doable message both private industry and public health won. Sales were maintained while individuals reported less SSB consumption along with a myriad of other healthy behaviors as a by-product of taking the “One Less Challenge.”

Lessons Learned and Implications

Social marketing campaigns that acknowledge and recognize the psychology surrounding food and beverage consumption have a greater likelihood of success.

Messages focusing on the positive health benefits of choosing non-SSBs may have a greater likelihood of success compared to punitive, fear, or paternal messages demonizing SSBs.

By working in collaboration with private industry, recognizing their needs, and avoiding an adversarial approach to food and beverage consumption behaviors, public health has a greater opportunity to make a positive health impact on their target populations.

Freedom of choice is still important when it comes to food and beverages. It is preferable that individuals freely choose to consume a non-SSB than to be forced to do so. Messaging that works within this freedom of choice approach may be more likely to attain longer term behavioral impacts and healthier outcomes than messaging that conveys a paternalistic, fear-based posture.

Freedom of choice related to food and beverages also necessitates that industry be willing to provide a fair choice, with equal opportunity and access for individuals to exercise their freedoms.

Given that the “One Less Challenge” demonstrated that this approach to messaging and public-private collaboration has the potential to make a positive impact on the public’s health what should be done next? The default tact within public health has been for groups to advocate for a soda tax, or demonize soda which can only serve to economically oppress those we are seeking to help, or move them to another beverage with just as much caloric content to satisfy their psychological needs. A more poignant long-term strategy is to begin working with the food and beverage industry to create win-win situations. This may mean embedding health professionals within the industry to influence product development; creating industry sponsored social marketing campaigns that incorporate the lessons learned from this study to better serve the public’s health; or, public health reaching out to industry to create collaborative interventions to reduce SSB consumption while helping

maintain their economic viability. At a practical level, this could include requiring all, or as many vending machines in the State provide a 50-50 balance in SSB/non-SSB offerings; funding worksite, school-based, or store based point-of-sale marketing campaigns that encourage taking the “One Less Challenge” or similarly designed initiatives. Ultimately, we have to understand and work within the realities of human nature, the process of change, the psychology of food, the needs of industry and vendors, and the aims of public health if we will have any lasting success in combating the growing problems of obesity, diabetes and chronic disease.

“Freedom of choice related to food and beverages also necessitates that industry be willing to provide a fair choice, with equal opportunity and access for individuals to exercise their freedoms.”

— Michael Peterson, Ed.D.



Michael Peterson is a Professor and Chair in the Department of Behavioral Health and Nutrition in the College of Health Sciences at the University of Delaware.

He received his Ed.D. in health promotion and education from the University of Kentucky. He has been a contributing researcher and author for numerous projects.

REFERENCES

- CDC (2016) Rethink Your Drink, Available Online: http://www.cdc.gov/healthyweight/healthy_eating/drinks.html
- Cleveland Clinic, (2016) The Psychology of Eating: Available Online https://my.clevelandclinic.org/health/healthy_living/getting_fit/hic_Maintaining_a_Healthy_Weight/hic_The_Psychology_of_Eating
- Dugan A (2013) Fast food still major part of US diet. Available Online: <http://www.gallup.com/poll/163868/fast-food-major-part-diet.aspx>
- Fryar CD, Ervin RB. (2013) Caloric intake from fast food among adults: United States, 2007-2010. NCHS data brief, no 114. Hyattsville, MD: National Center for Health Statistics.
- Just D., Wansink B. (2015). Fast Food, Soft Drink, and Candy Intake is Unrelated to Body Mass Index for 95% of American Adults. *Obesity Science & Practice*, 1(2), 126-130. doi: 10.1002/osp4.14
- Soda Sucks (2016) Available Online: <http://www.whysodasucks.com/>
- Social Marketing Quarterly. (2016) Available Online: <http://www.socialmarketingquarterly.com/learn/>
- Wansink, B. Sangerman, C. (2000). The Taste of Comfort: Food for thought on how Americans eat to feel better. *American Demographics*, 66-67.
- Wansink, B. (2015). Change Their Choice! Changing behavior using the CAN Approach and Activism Research. *Psychology & Marketing*, 32(5), 486-500. doi: 10.1002/mar.20794

Innovative Zoo Partnership Lending New Insight into the Power of Animals to Market Healthy Food to Kids

Allison Karpyn¹, Michael Allen², Meryl Gardner³, Samantha Marks⁴

It is no secret that US children are not consuming enough fruits and vegetables. Recent data show that 60% of children do not eat enough fruit to meet daily recommendations, and 93% of children do not eat enough vegetables.¹

While the exact cause is unclear, industry-driven food marketing efforts aimed directly at children are considerable influences, amounting to \$1.8 billion in expenditures in 2009 alone.² Global brand marketers have utilized animals to help sell their products for decades, and though public health advocates have traditionally focused on educational approaches to improve diet, recent efforts are changing the way that behavioral interventions work.

A new partnership between the Brandywine Zoo and the University of Delaware Center for Research in Education and Social Policy is demonstrating how sectors can work together to solve important problems while at the same time reminding those involved in changing human behavior that we may, indeed, have a lot yet to learn from animal behavior.

Approximately 181 million visitors attend AZA accredited zoos and aquariums each year- a figure greater than the attendance at all NBA, MLB, NHL and NFL games combined. Our own Brandywine Zoo sees 80,000 local visitors annually and beyond animal care, provides a valuable recreational, conservation and educational opportunity for residents.

Psychology tells us that animals are uniquely enticing to humans.³ Indeed, we are biologically wired to react certain ways in relation to animals. When it comes to associated thoughts and feelings it is likely that advertisements with animals place the persuasion process in motion and lessen consumer resistance while transferring positive associations that they have with the animal to the product. Animals have cultural and symbolic meanings that advertisers have for years employed to contribute to a brand's equity.⁴

When it comes to children, research has frequently documented the special relationship that children often have with animals; pets can provide children with a special type of companionship and joy.⁵ For example, in one study kids consistently ranked their pet in the list of "top 10 most special" relationships.⁶ Further evidence suggests that children often seek out their pets as sources of comfort and esteem, and can even prefer cats and dogs to human relationships such as aunts, uncles and grandparents.⁷

Approaches to influence healthy choices have been at the forefront of recent national efforts, many of which are focused on children. For example, strategies which "nudge" students toward healthier choices in the school cafeteria have made headlines as approaches to encourage food products to display playful names that will appeal to children, place healthier products within easier reach, and display produce in bowls to encourage sampling have demonstrated wide-scale appeal and support from the USDA and local districts alike.⁸

In large part due to efforts by the First Lady and the Partnership for a Healthier America, collaboration between industry, government, and academic sectors has brought renewed focus to the role of retail and merchandizing to increase access and consumption of healthy foods. In 2012 for example, Birds Eye announced an agreement with Partnership for a Healthier America (PHA) to spend at least \$2 million annually on marketing vegetables to children.⁹ In this example, "iCarly," Nickelodeon characters were used to promote vegetable consumption.

In 2014, the Produce Marketing Association (PMA) announced efforts to launch an "Eat Brighter!" campaign, where Sesame Street characters are featured on product packaging and in store produce aisles.¹⁰ Early findings show that when the Sesame Street character Elmo promotes broccoli, children's interest in eating broccoli compared to chocolate more than doubled.¹¹

This year, thanks in part to an ACCEL ACE award, new research is underway with the zoo to examine how public health efforts can capitalize on the unique appeal of animals.

A zoo-based animal marketing campaign using a series of animal characters called Tastimals, has been developed to support the promotion of healthy food to foster a fun, healthy association with consuming fruits and vegetables. Early experimental data demonstrate that children are twice as likely to select a produce item when a Tastimal animal character is associated with the product. Building on early findings, a second study is underway to test the characters alongside new family-friendly healthy snack and meal options at the Brandywine Zoo concession stand. Together, we seek to understand the extent to which children's healthy food selections could be driven by an animal association.

We know that changing consumer behavior and diet, is not an easy proposition especially with limited public health dollars. Current efforts to shift the social, cultural and physical environment, however, appear to have had an effect at curbing the obesity epidemic. As we continue to advance the field, finding new ways to maximize reach and minimize costs may reside in new and unlikely partnerships.

1 University of Delaware, Center for Research in Education and Social Policy

2 Delaware Zoological Society

3 University of Delaware, Alfred Lerner College of Business and Economics

4 University of Delaware, Center for Research in Education and Social Policy

References

1. Kim SA, Moore LV, Galuska D, Wright AP, Harris D, Grummer-Strawn LM, Merlo CL, Nihiser AJ, Rhodes DG. Vital signs: fruit and vegetable intake among children - United States, 2003-2010. *MMWR Morb Mortal Wkly Rep* 2014;63:671-676.
2. Kraak VI, Story M. Influence of food companies' brand mascots and entertainment companies' cartoon media characters on children's diet and health: a systematic review and research needs. *Obes Rev* 2015;16:107-126.
3. Jacobs MH. Why Do We Like or Dislike Animals? *Human Dimensions of Wildlife* 2009;14:1-11.
4. Lloyd S, Woodside AG. Animals, archetypes, and advertising (A3): The theory and the practice of customer brand symbolism. *Journal of Marketing Management* 2013;29:5-25.
5. LoBue V, Megan Bloom B, Sherman K, Axford C, DeLoache JS. Young children's interest in live animals. *British Journal of Developmental Psychology* 2013;31:574.
6. McNicholas J, Collis GM. Children's representations of pets in their social networks. *Child Care Health Dev* 2001;27:279-294.
7. Melson LG. *Why the wild things are: animals in the lives of children*. Cambridge, Mass.: Harvard University Press, 2001:viii, 236 p.
8. Hanks AS, Just DR, Wansink B. Smarter Lunchrooms Can Address New School Lunchroom Guidelines and Childhood Obesity. *The Journal of Pediatrics* 2013;162:867-869.
9. Newman AA. Making Children Hanker to Eat Broccoli and Carrots The New York Times, 2012.
10. Miterko K. A Must See: The First Lady, Big Bird, and Billy Eichner Team Up for Eat Brighter! Lets Move Blog, 2015.
11. Kotler JA, Schiffman JM, Hanson KG. The influence of media characters on children's food choices. *J Health Commun* 2012;17:886-898.



Allison Karpyn, Ph.D. is Associate Director of The Center for Research in Education and Social Policy, Associate Professor of Education and Associate Professor of Behavioral Health and Nutrition at the University of Delaware. She also holds adjunct faculty positions at the University of Pennsylvania and Thomas Jefferson University and is an Associate Fellow for the Center for Public Health Initiatives at The University of Pennsylvania. Prior

to joining UD, Karpyn served as the Director of Research and Evaluation at The Food Trust in Philadelphia for 11 years, where her research focused on understanding healthy food purchasing and consumption behavior, especially among children.

POLICIES THAT CHALLENGE FOOD SUSTAINABILITY AND PUBLIC HEALTH

Baylen J. Linnekin, J.D., LL.M

Food Law and Policy Attorney

Adjunct Faculty, Department of Anthropology, American University

Adjunct Professor, School of Law, George Mason University

Our food system is awash in rules. Some of these rules—like those that help keep toxins or harmful bacteria out of the food supply—are vitally important. But many food rules are wasteful and counterproductive.

Rather than combating many of the environmental, economic, and health problems that plague our food system, such rules instead exacerbate these problems. Consider that local laws on the books in many cities around the country prohibit people from growing fruits and vegetables in their yards. If produce can be expensive, and if there are important public-health benefits to be gained from eating more fruits and vegetables, then laws that make it more difficult to grow one's own food are simply counterproductive.

It's terrible rules like these that are the focus of my forthcoming book *Biting the Hands that Feed Us: How Fewer, Smarter Laws Would Make Our Food System More Sustainable*. The book, which will be published by leading environmental publisher Island Press in September 2016, focuses on federal, state, and local laws that hinder sustainable food practices and promote unsustainable practices. While there are many definitions of "sustainability," as I use it in the book the term refers to a set of practices that aspire to maximize the benefits of the food system while minimizing its negative impacts.

Biting the Hands that Feed Us looks at several broad types of rules that hinder sustainability. It explores overly strict food-safety rules that leave little room for many entrepreneurs to produce and market safe food. It also examines laws that promote food waste. And the book discusses rules that prohibit

people from providing food for themselves and their families outside of the commercial sphere—just like in the example above, where laws sometimes prohibit home gardens. Rules like these don't just hinder sustainability efforts. They can also have negatively impact nutrition and public-health outcomes. And those impacts are felt in states across the country—including Delaware.

Consider that the state's cottage food law is one of the most severe in the nation. Cottage food laws, which are on the books in nearly every state, allow home-based food entrepreneurs to make and sell certain homemade foods at farmers markets and elsewhere. They generally allow for the home preparation of what are typically referred to as "non-potentially hazardous" foods, or ones that are generally recognized by food-safety experts as posing no inherent risk to consumers. These include many spice mixes, candies, and baked goods. Items that are generally not permitted under cottage food laws include higher-risk items like baked goods that contain meat or foods that require refrigeration.

According to a 2013 Harvard Food Law & Policy Clinic report, Delaware is one of only four states in the country that only allows people who are farmers to make and sell foods under the state's cottage food law.

Farmers are often too busy with their day jobs—farming—to have the time to devote to other entrepreneurial food pursuits like those envisioned under cottage food laws. On the other hand, the typical cottage food entrepreneur is often a budding chef, stay-at-home parent, or full-time worker who's wowed friends with a flavorful dried-herb mix or sourdough bread but who wants to test out the market for

the mix or the bread before they invest in a large commercial operation. But Delaware law excludes this latter category of entrepreneur. The law may be good for a handful of farmers. "Anyone else wanting to sell homemade goods for a profit is out of luck," notes a recent *Delaware State News* piece. And that means Delaware is missing out on a large segment of the potential market for cottage food sales. Thankfully, though, that may be changing.

Just this month, Delaware's Division of Public Health proposed to expand the state's existing cottage food law to include food sales beyond those made just by farmers. Under the proposed rules, any state resident who registers with the state, pays a small cottage food licensing fee, and agrees to abide by basic food-safety requirements could then sell their non-potentially hazardous foods directly to consumers at farmers markets and other outlets in the state. As the proposed rule states, it would "allow for development of a new business community serving a niche market of customers" in Delaware.

While loosening Delaware's overly burdensome cottage food law is likely to help small food entrepreneurs throughout the state, it's unlikely to hurt food safety. There's no evidence that rates of foodborne illness differ in states with cottage food laws than in those that lack such laws. And if the public-health community is concerned with the prevalence of overly processed foods in our diets, rules that bring more buyers and sellers to farmers markets and that permit the sale of homemade (rather than commercially processed) foods is one way to help Delaware consumers make important changes to their own diets.

While Delaware is home to at least one needlessly burdensome food-safety rule—its existing cottage food law—the state is also, like every state in America, grappling with rules that promote food waste, a term that refers to raw or processed food that is edible but that goes



uneaten and is left instead to rot or spoil. This problem is dramatic in scope. As I describe in *Biting the Hands that Feed Us*, the most recent USDA figures show that Americans wasted 133 billion pounds of food in 2010. But the wasted food is just one part of the problem. Consider all of the land, fuel, pesticides, water, transportation, and labor that it took to produce and transport the wasted food. Consider, too, that wasted food sent to landfills breaks down into billions of tons of potent greenhouse gases every year. The public health implications of the associated consequences of food waste, including needless pesticide use and greenhouse gas creation, are obvious.

Delaware is one state that's been home to efforts to combat this problem. One notable attempt to deal with food waste in the state—a Port of Wilmington composting project—ended in failure in 2014. In 2007, environmentalists in the state criticized the proposed food-waste composting site even before it opened. In 2014, five years after the site opened, the state Department of Natural Resources and Environmental Control ordered the controversial private facility—which was blamed for noxious odors that harmed the quality of life for thousands in the area—to close.

One problem with this failed approach is that efforts to combat food waste are most effective when they prevent food from being wasted in the first place. Can we turn programs that waste food into ones that save it from being wasted? One program that causes widespread food waste in Delaware and in every American state is the USDA's National School Lunch Program. Research shows the program wastes more than \$1 billion worth of food every year. But potential alternatives exist. As I propose in *Biting the Hands that Feed Us*, states, including Delaware, should encourage schools, communities, and families to work together to ensure that 1) food that might be wasted at home instead makes its way into brown bag lunches and 2) food businesses that might otherwise waste healthy, edible food instead provide it to students who can't otherwise afford to bring a brown bag lunch to school. In this way, a program that wastes food like the USDA school lunch program can be turned into one that instead combats food waste.

While Delaware residents can find solutions to combating food waste right at home—as in the case of school lunch—a growing number

are also finding find tasty ways to provide food for themselves and their families right in their own yards. Ownership of egg-laying hens is booming across the country. As I detail in *Biting the Hands that Feed Us*, urban centers like New York, Seattle, and Salt Lake City have recently loosened rules on chicken ownership, thanks to rising demand across the country both for a deeper connection to our food supply and to easier access to farm-fresh eggs, which are an inexpensive way to obtain nutritious protein.

“Together, these examples illustrate that food laws that inhibit sustainability are often equally at odds with efforts to promote nutrition and public health.”

—Jaylen Linnekin, JD, LL.M.

But this trend in poultry ownership is being depressed in Delaware by rules that restrict the practice. Consider that in parts of New Castle County, the most populous county in the state, it's illegal for a person to raise egg-laying hens if they live on less than one acre of residentially zoned land. The rule, which serves to exclude most city dwellers, isn't some ancient relic, either. Just this year, in fact, the town of Bellefonte adopted this county code as its own.

The New Castle County rules fly in the face both of the aforementioned nationwide boom in egg-laying hens and, strangely, with Delaware's current celebration of residential poultry ownership. In fact, the state's agriculture department is currently sponsoring a “Happy and Healthy Chicken Contest,” a photography contest that asks Delaware residents to submit photographs of their happy and healthy “back yard poultry.”

Delaware is home to rules that needlessly limit cottage food sales. It's home—like every state—to rules that encourage food waste and its secondary effects. And the state is home to rules that prevent many residents from gaining cheap protein from their own egg-laying hens.

Together, these examples illustrate that food laws that inhibit sustainability are often equally at odds with efforts to promote nutrition and public health. Delaware is not alone in this respect. As I detail in *Biting the Hands that Feed Us*, many states have similar (and sometimes worse) rules in place. The prevalence of such rules means there is much work that needs to be done. Bad rules must be repealed or fixed. Currently, Delaware is taking steps to fix its defective cottage food law. This is a great first step. But much more needs to be done to ensure that food rules don't restrict efforts to promote sustainability, nutrition, and public health in the First State.

Note: Baylen J. Linnekin is a food lawyer, adjunct law professor, author, expert, and scholar. Learn more about him at <http://www.baylenlinnekin.com>. He is author of the book, *Biting the Hands that Feed Us: How Fewer, Smarter Laws Would Make Our Food System More Sustainable*, at <http://www.amazon.com/Biting-Hands-that-Feed-Sustainable/dp/1610916751/>.

References

- 1 Del. Code Ann. tit. 3, § 100 (2012).
- 2 See, e.g., California Dept. of Pub. Health, Approved Cottage Foods, <https://www.cdph.ca.gov/programs/Documents/fdbCFOfoodlist.pdf>.
- 3 Alli Condra, *Cottage Food Laws in the United States*, Harvard Food Law & Policy Clinic, Aug. 2013, www.chlpi.org/wp-content/uploads/2013/12/FINAL_Cottage-Food-Laws-Report_2013.pdf.
- 4 Matt Bittle, *Delaware Looks to Lessen Limits on Homemade Food Items*, Delaware State News, May 8, 2016, <http://delawarestatenews.net/government/delaware-looks-lessen-limits-homemade-food-items/>.
- 5 Notice of Proposed Rulemaking, Dept. of Health & Human Serv., Div. of Pub. Health, 16 Del. C. § 122(3)(a)(1), May 1, 2016, <http://regulations.delaware.gov/register/may2016/proposed/19%20DE%20Reg%20989%2005-01-16.pdf>.
- 6 Jean C. Burby, Hodan Farah Wells, & Jeffrey Hyman, *The Estimated Amount, Value, and Calorics of Unharvested Food Losses at the Retail and Consumer Levels in the United States*, USDA Economic Research Service, Economic Information Bulletin No. (EIB-121), Feb. 2014, <http://www.ers.usda.gov/media/1282296/eib121.pdf>.
- 7 Jeff Montgomery, *Recycling Company Wants to Compost Out-of-State Food Waste Near Wilmington*, Green Delaware, June 8, 2007, www.greenidel.org/2007/06/08/recycling-company-wants-to-compost-out-of-state-food-waste-near-wilmington/.
- 8 Jeff Montgomery, *Odor-Plagued Compost Plants Ordered to Shut Down*, The News Journal, Oct. 22, 2014, www.delawareonline.com/story/news/local/2014/10/21/odor-plagued-compost-plant-ordered-shut/17674401/.
- 9 Juliana Cohen, et al., *School Lunch Waste among Middle School Students: Implications for Nutrients Consumed and Food Waste Costs*, Am. J. Prev. Med., Feb. 2013, www.ncbi.nlm.nih.gov/pmc/articles/PMC3788640/.
- 10 New Castle County Del. Code., Ch. 4, § 4.02.004, Prohibited animals in certain residential areas, https://www2.municode.com/library/de/new_castle_county/codes/code_of_ordinances?nodeId=PTTICO_CH4AN_ART2ANCO_S4.02.004PRANCEREAR#.
- 11 Town of Bellefonte, Town Commission Meeting Minutes, Jan. 11, 2016, www.townofbellefonte.com/wp-content/uploads/2016/02/TownMeetingMinutes-01-11-16.pdf.
- 12 Delaware Dept. of Agriculture, 2016 Happy and Healthy Chicken Contest, <http://dda.claware.gov/marketing/agphotos.shtml>.



Baylen Linnekin, J.D., LL.M is a food lawyer and an adjunct professor at George Mason University Law School, where he developed and teaches the Food Law & Policy Seminar.

He is also serves as an adjunct faculty member at American University, where he teaches courses on food policy.

Preconception Nutrition

by Karen Antell, M.D., M.P.H., F.A.A.F.P.



Ideally, planning for optimal nutrition during pregnancy begins before conception. However, approximately half of all pregnancies are unintended, and rates in Delaware are among the highest in the nation. In 2011, when women who had recently delivered a baby were asked if they had been trying to become pregnant, 51.3% of the national sample said yes – but in Delaware that number was 43.3%.¹ Women with unintended pregnancies often present later for prenatal care, and may miss opportunities for early screening and intervention to prevent adverse pregnancy outcomes².

Improving nutrition for women of childbearing age may impact future pregnancy outcomes, even if pregnancies are unplanned. Important nutrition-related issues that may impact pregnancy outcomes include obesity and food safety. Additionally, folic acid supplementation is key to neural tube defect prevention in pregnancy. Other important supplements include Vitamin D, calcium and iron. Specific recommendations are outlined in Tables 1 and 3 below.

Table 1. Food safety concerns in pregnancy

Exposure or infection	Clinical concern	Common sources of exposure	Strategies to avoid exposure
<i>Listeriosis</i>	Higher risk of infection in pregnant women. Associated with miscarriage and stillbirth.	Unpasteurized milk and cheese, cold smoked seafood, cold cuts and leftover foods, pate	Drink pasteurized milk, avoid soft cheeses such as Brie and queso fresco, heat hotdogs, cold cuts and leftover foods until steaming
<i>Salmonella infections</i>	Can cause fever, vomiting and diarrhea, leading to dehydration	Raw or undercooked meat, poultry or eggs	Avoid raw or undercooked meat, poultry and eggs, wash cutting/cooking surfaces and utensils in hot, soapy water
<i>Toxoplasmosis</i>	Can cause miscarriage and stillbirth	Raw or undercooked meat or poultry	Avoid raw meat or poultry. Cook meat to 145 degrees F and poultry to 165 degrees F (check with meat thermometer).
<i>Mercury exposure</i>	Can affect fetal neurologic development	Certain types of fish	Avoid shark, swordfish, king mackerel or tilefish. Limit albacore (canned white) tuna to 6 oz per week.

Information from references 3,4,5.

Obesity is an important risk factor for gestational diabetes, hypertensive disorders of pregnancy including preeclampsia, and preterm delivery. Additionally, obesity is linked to higher rates of cesarean delivery and birth trauma and may be a risk factor for childhood obesity and associated health problems. New recommendations for healthy weight gain during pregnancy are based on pre-pregnancy body mass index, or BMI. Table 2 summarizes the weight gain recommendations.

Table 2. IOM Recommended weight gain by pre-pregnancy BMI

Pre-pregnancy BMI	Recommended total weight gain
<18.5	28-40
18.5-24.9	25-35
25.0-29.9	15-25
>= 30	11-20

Information from references 6, 7.

Table 3. Supplements in Pregnancy

Supplement	Benefit	Recommended dosage and source
Folic acid	Prevention of neural tube defects	400 mcg in a supplement to reach goal of 600 mcg total intake per day. In women with prior history of pregnancy affected by a neural tube defect or on anti-seizure medication, the recommended supplement is 4 mg per day. Ideally, supplementation should begin 3 months before conception.
Vitamin D	Important for fetal bone, tooth development	600 IU in supplement, fortified milk, fatty fish (such as salmon)
Iron	Used in production of hemoglobin to carry oxygen to developing fetus	27 mg in supplement or iron-rich foods such as red meat, lentils, soybeans and spinach. Absorption of iron from non-meat sources is improved when consumed with Vitamin C-containing foods such as fruits and vegetables.
Calcium	Important for fetal bone, tooth development	1300 mg per day from dairy foods or supplement; also found in dark leafy greens and sardines
Omega-3 fatty acids	Important for fetal brain development	8-12 ounces of fish or shellfish per week. Recommended fish include shrimp, catfish, pollock, salmon, scallops, sardines, light tuna. May also be taken as a supplement – recommended 650 mg omega-3 fatty acids, of which 300 mg come from Docosahexaenoic acid (DHA)

Information from references 4, 5, 8.

References:

- Centers for Disease Control and Prevention. Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMStat data, <http://www.cdc.gov/prams/pramstat/index.html>. Accessed November 29, 2015.
- Mosher WD, Jones J, Abma JC. Intended and unintended births in the United States:1982–2010. National health statistics reports; no 55. Hyattsville, MD: National Center for Health Statistics. 2012.
- National Institute for Health and Clinical Excellence. Antenatal care: routine care for the healthy pregnant woman. Clinical guideline, CG62. March 2008. <http://www.nice.org.uk/CG62>.
- Nutrition During Pregnancy, AP001, publication of the American College of Obstetricians and Gynecologists, March 2015.
- FAQ001, Nutrition During Pregnancy, publication of the American College of Obstetricians and Gynecologists, March 2015. <https://www.acog.org/-/media/For-Patients/faq001.pdf?dmc=1&ts=20160530T2301142079>. Accessed May 2016.
- Institute of Medicine. Weight Gain During Pregnancy: Reexamining the Guidelines. Report Brief, May 2009. <http://www.nationalacademies.org/hmd/-/media/Files/Report%20Files/2009/Weight-Gain-During-Pregnancy-Reexamining-the-Guidelines/Report%20Brief%20-%20Weight%20Gain%20During%20Pregnancy.pdf>. Accessed May 2016.
- Davies GA, Maxwell C, McLeod L. Obesity in Pregnancy. J Obstet Gynaecol Can 2010. Feb, 32(2):165-73.
- Greenberg JA, Bell, SJ, Van Ausdal W. Omega-3 Fatty Acid Supplementation During Pregnancy. Rev Obstet Gynecol. 2008 Fall; 1(4): 162–169. PMID: PMC2621042.
- Farahi N, Zolotor A. Recommendations for preconception counseling and care. American family physician. Oct 15 2013;88(8):499-506.
- American College of Obstetricians and Gynecologists. The importance of Preconception Care in the Continuum of Women's Health Care. ACOG Committee Opinion. Washington, DC:ACOG, 2005, reaffirmed 2015.



Dr. Antell is a graduate of Yale School of Medicine and completed her family medicine residency at West Suburban Family Medicine Residency in Oak Park, Illinois. In 2008, Dr. Antell joined the Department of Family and Community Medicine of Christiana Care Health System. She also provides obstetric care for the Department of Obstetrics and Gynecology and the Christiana Care OB/GYN Residency Program. She provides patient care at Westside Family Healthcare (an FQHC) and Wilmington Job Corps Center, a vocational training center for adolescents and young adults.

Meeting the New 2015-2020 Dietary Guidelines for Americans

Amy Deahl-Greenlaw, R.D. and Samantha Marks, R.D.

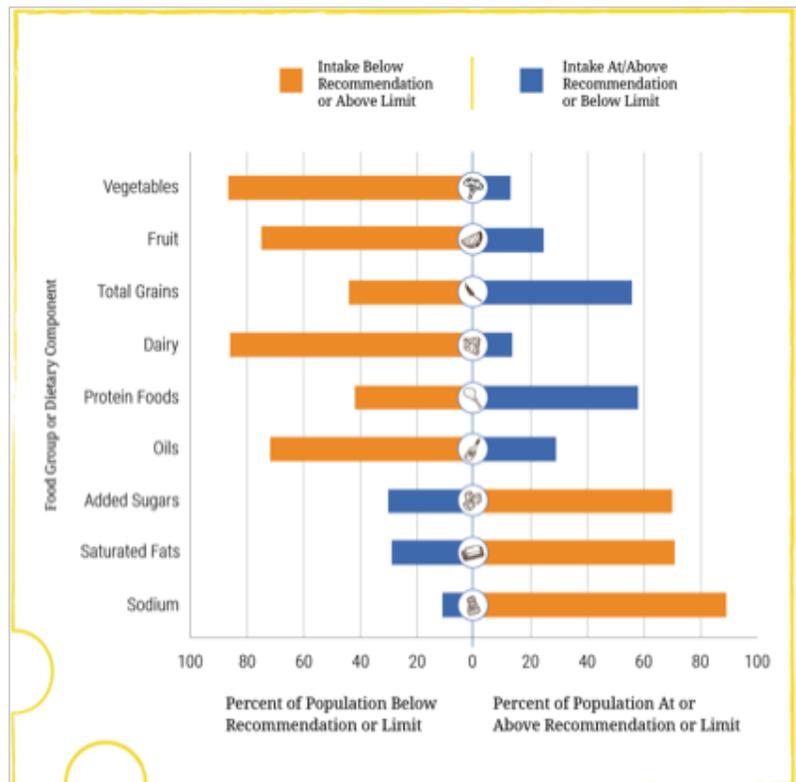
The current American eating pattern is far from what the newly released 2015-2020 USDA Dietary Guidelines recommend. Three-fourths of Americans do not consume an adequate amount of vegetables, fruits, dairy, or oils, while over half of Americans either meet or exceed recommended amounts of grains and protein foods (USDA).

Additionally, America's current eating pattern reveals an excess consumption of added sugar, saturated fat, and sodium, which contribute to the development of chronic diseases like cardiovascular diseases (CVD) and diabetes. About one-half of the country's intake of added sugar come from beverages like soft drinks, fruit drinks, sweetened coffee and tea drinks, and sport and energy drinks (USDA). Saturated fats, a subset of total dietary fat, come mainly from mixed dishes that consist of cheese, meat, or a combination of the two (USDA). Examples include pizza, burgers, sandwiches, rice and pasta dishes, and meat, poultry, and seafood dishes. These mixed dishes, along with soups, account for about half of America's dietary sodium intake. Many high-sodium foods are commercially processed or prepared (USDA).

In addition to highlighting the current eating pattern of Americans, the Dietary Guidelines also present three different healthy eating patterns for Americans: 1- Healthy U.S.-Style Eating Pattern; 2-Healthy Mediterranean-Style Eating Pattern; 3- Healthy Vegetarian Eating Pattern. Overall, these eating patterns aim to reduce the risk of CVD, diabetes, and certain types of cancers including colorectal and postmenopausal breast cancers (USDA).

Vegetable oils like corn and soybean oil are high in polyunsaturated fats and can be incorporated into any of the three eating patterns. The USDA notes that "strong and consistent evidence shows that replacing saturated fats with unsaturated fats, especially polyunsaturated fats, is associated with reduced blood levels of total cholesterol and of low-density lipoprotein-cholesterol (LDL-cholesterol)" (USDA).

"The Healthy U.S.-Style Pattern is based on the types and proportions of foods Americans typically consume,



but in nutrient-dense forms and appropriate amounts", according to the Guidelines. It promotes: eating plenty of colorful vegetables; focusing on whole fruits rather than fruit juices; making at least half of the grains you eat whole grains; choosing fat-free or low-fat dairy product options; and incorporating a variety of lower-fat protein sources. The USDA's newest addition to the guidelines is to limit calories from added sugar to 10% of total daily calories, in the same way calories from saturated fat should not contribute to more than 10% of one's daily calories.

"The Healthy Mediterranean-Style Pattern is adapted from the Healthy U.S.-Style Pattern, modifying amounts recommended from some food groups to more closely reflect eating patterns that have been associated with positive health outcomes in studies of Mediterranean-Style diets", states the Guidelines. This eating pattern promotes a high intake of fruits, vegetables, whole grains, seafood, chicken and turkey, legumes, nuts, and seeds (USDA). It limits dairy products to once or twice per day, and almost completely omits red meats

Average intake/day	Current Intake	U.S. Style Pattern	Mediterranean Pattern	Vegetarian Pattern
Fruit (c-eq)	½ - 1	2	2 ½	2
Vegetables (c-eq)	1 ½	2 ½	2 ½	2 ½
Grains (oz-eq)				
whole (minimum)	0 - 1 oz	3 oz	3 oz	3 ½ oz
refined (maximum)	6 - 7 oz M 4 - 5 oz F	3 oz	3 oz	3 oz
Dairy (c-eq)	1 ½	3	2	3
Protein	6 - 8 oz M 4 - 5 oz F	5 ½ oz	6 ½ oz	3 ½ oz (no meat)
Sodium	3,600 mg	2,300 mg	2,300 mg	2,300 mg
Added sugars (maximum)	12 - 15% of calories	< 10%	< 10%	< 10%

c-eq and oz-eq represent cup-equivalents and ounce-equivalents, respectively

“An eating pattern is more than the sum of its parts; it represents the totality of what individuals habitually eat and drink, and these dietary components act synergistically in relation to health. As a result, the eating pattern may be more predictive of overall health status and disease risk than individual foods or nutrients”, states the new 2015-2020 Dietary Guidelines for Americans.

and sugar-sweetened foods and beverages. While it is higher in overall fat than the U.S. Style, almost all fat comes from healthy sources, including olive oil, fatty fish like salmon, nuts, and seeds. Because the diet incorporates fewer servings of dairy, it may be lower in calcium and Vitamin D, possibly requiring supplementation.

“The Healthy Vegetarian Pattern is adapted from the Healthy U.S.-Style Pattern, modifying amounts recommended from some food groups to more closely reflect eating patterns reported by self-identified vegetarians in the National Health and Nutrition Examination Survey (NHANES)”, the Guidelines explain. This pattern includes more legumes (beans and peas), soy products, nuts and seeds, and whole grains. It contains no meats, poultry, or seafood, and is identical to the Healthy U.S.-Style Eating Pattern in amounts of all other food groups (USDA). This pattern closely follows the same nutrient standards as the Healthy U.S.-Style Pattern, but is somewhat higher in calcium and fiber and lower in vitamin D due to the differences in food selections (USDA).

The three healthy eating patterns offered by the Dietary Guidelines are designed to be flexible in order to accommodate both traditional and cultural foods. Individuals are encouraged to retain the healthy aspects of their eating and physical activity patterns and avoid adopting behaviors that are less healthy (USDA). Professionals can help individuals or population groups by recognizing cultural diversity and developing programs and materials that are responsive and appropriate to their belief systems, lifestyles and practices, traditions, and other needs, states the Guidelines. For more information visit: <http://health.gov/dietaryguidelines/2015/>

REFERENCES

Figure: <http://health.gov/dietaryguidelines/2015/guidelines/chapter-2/current-eating-patterns-in-the-united-states/>
 Quote (in box): <http://health.gov/dietaryguidelines/2015/guidelines/chapter-1/>
 United States Department of Agriculture. (2016). Dietary Guidelines for Americans 2015-2020, Eighth Edition. Retrieved from <http://health.gov/dietaryguidelines/2015/guidelines/>



Amy Deahl-Greenlaw, R.D.N./L.D.N.'s work has largely focused on nutrition education in public health. She spent many years working in federal nutrition programs—specifically SNAP-Education (Supplemental Nutrition Assistance Program) and WIC (Women, Infants, and Children Supplemental Feeding Program). She helped guide and support nutrition education research and programming in schools, preschools, corner stores, homeless shelters and supermarkets. Currently, she works at the University of Delaware in the Center for Research in Education and Social Policy. She also consults for a local non-profit developing and delivering nutrition education programming in underserved schools in the Philadelphia region and for a local corporate wellness business. Amy has a Bachelor of Science in Nutrition from Pennsylvania State University and is a Registered Dietitian Nutritionist and Licensed Dietitian/Nutritionist in the state of Pennsylvania.



Samantha Marks, B.S., R.D. is a recent graduate of the University of Delaware's dietetic internship, where she also completed her undergraduate education in Dietetics. In the past year, Samantha has been working as a Research Assistant under Dr. Allison Karpyn at UD's Center for Research in Education and Social Policy. She has thoroughly enjoyed working alongside Dr. Karpyn in analyzing and developing public health initiatives that focus on nutrition education and promotion. Samantha will take these experiences with her as she begins her career as a Registered Dietitian Nutritionist.

Nutrition for Seniors by Ina Li, M.D., CCHS

More people are surviving to an older age. Eating well is vital for everyone at all ages. Your daily food choices can make an important difference in your health by impacting your energy level and many disease states such as heart disease, stroke, and diabetes. In addition, eating well will give you the nutrients to keep you muscle, bones, organs, and other parts of your body healthy throughout your entire life.

Dietary Recommendations:

Aging is associated with notable changes in body composition. Bone mass, lean mass, and water content all decrease, while fat mass generally increases. The increase in total body fat is commonly accompanied by greater intra-abdominal fat stores. In addition, older adults have a reduced basal metabolic rate. The consequence of these changes in body composition is that well-standardized nutrient requirements for younger or middle-aged adults cannot be generalized to older adults.¹

The Food and Nutrition Board of the Institute of Medicine of the National Academies² has released macronutrient guidelines that recommend a prudent diet, with 20%–35% of energy as fat with reduced intake of cholesterol, saturated fatty acids, and trans fatty acids. An additional 45%–65% as carbohydrates, preferably complex carbohydrates in the form of fiber, should be added to an older adult diet. The recommended daily fiber intake for those ≥60 years old is 30 grams for men and 21 grams for women. Protein intake is recommended at approximately 10%–35% of total energy.

The recommended dietary allowance (RDAs) is the average daily micronutrient intake level estimated to meet the requirements of 97%–98% of the healthy individuals in a group. This information is helpful for individualized recommendations to avoid over-nutrition (see Table 1)

Dehydration is the most common fluid or electrolyte disturbance in older adults. Normal aging is associated with a decreased perception of thirst and reduced

ability to concentrate urine after fluid deprivation.³ This is especially a concern during the hot summer months when older adults need to drink more fluids to replenish extra-corporeal losses but do not feel the need to do so. In general, fluid needs of older adults can be met with 30 mL/kg/d.

For example, a person weighing 165 lbs (approximately 75 kg), will need to drink 2250 mL (roughly a 2 Liter soda bottle) per day. Fluid needs may increase during episodes of fever or infection, as well as with diuretic or laxative therapy. Common signs of dehydration are decreased urine output, confusion, constipation, and mucosal dryness.

Table 1—Recommended Dietary Intakes of Micronutrients for Adults ≥71 Years Old

Nutrient	Recommended Daily Allowance	
	For Men	For Women
Calcium	1,000 mg*	1,000 mg*
Magnesium	350 mg	65 mg
Vitamin D	10 mcg*	10 mcg*
Thiamine	1.0 mg	0.9 mg
Riboflavin	1.1 mg	0.9 mg
Niacin	12 mg	11 mg
Vitamin B6	1.4 mg	1.3 mg
Folate	320 mcg	320 mcg
Vitamin B12	2.0 mcg	2.0 mcg
Pantothenic acid	5 mg*	5 mg*
Vitamin A	625 mcg	500 mcg
Vitamin K	90 mcg*	90 mcg*
Iron	6 mg	5 mg
Zinc	9.5 mg	6.8 mg
Vitamin C	75 mg	60 mg
α-Tocopherol	12 IU	12 IU
Selenium	45 mcg	45 mcg
Potassium	4,700 mg*	4,700 mg*

* Adequate intake, not recommended dietary allowance.

SOURCES: Data from Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Institute of Medicine, Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride. Washington, DC: National Academy Press; 1997; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Institute of Medicine, Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B6, Folate, Vitamin B12, Pantothenic Acid, Biotin, and Choline. Washington, DC: National Academy Press; 1998; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Beta Carotene, and Other Carotenoids. Washington, DC: National Academy Press; 2000; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, DC: National Academy Press; 2001; Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Institute of Medicine, Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Washington, DC: National Academy Press; 2004; Dietary Reference Intakes for Calcium and Vitamin D (2011). Available at www.nap.edu (accessed Jan 2016).

Tools for Nutrition Screening:

The nutritional status of older adults can be influenced by a variety of factors (see Table 2). It is important to keep these factors in mind as many are modifiable. For example, if a patient is not eating because of dental pain, then correcting the dental issue may solve the issue of poor nutrition.

The use of screening tools to survey older patients about their nutritional intake is important as it evaluates the risk of malnutrition among frail older adults and identifies those who may benefit from early intervention. The shortened version of the Mini-Nutritional Assessment tool (www.mna-elderly.com) contains only 6 screening questions which is simple to use in routine care. Another nutritional assessment tool, the Simplified Nutrition Assessment Questionnaire, can be answered by patients through the mail or while sitting in a waiting room. It has a sensitivity and specificity of 88.2% and

Table 2—Risk Factors for Poor Nutritional Status¹
Alcohol or substance abuse
Cognitive dysfunction
Decreased exercise
Depression, poor mental health
Functional limitations
Inadequate funds
Limited education
Limited mobility, transportation
Medical problems, chronic diseases
Medications
Poor dentition
Restricted diet, poor eating habits
Social isolation

83.5% for identifying those at risk of weight loss (www.slu.edu/readstory/newslink/6349)

Another way to determine nutritional risk of an older person is by tracking his/her weight over time. For example, clinically important weight loss is commonly defined as loss of 10 lbs (4.5 kg) or >5% of usual body weight over a period of 6–12 months. Weight loss of this degree serves a warning sign that the person is not thriving. It is associated with poor wound healing, infections, pressure sores, depressed functional ability, and mortality. Involuntary weight loss is present in approximately 13% of older outpatients, 25%–50% of hospitalized older adults, and >50% of nursing-home residents.⁴

Another useful measure of body size is the Body Mass Index (www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html). A BMI

lower than 18.5 is designated as underweight however, this level should be interpreted in the context of the individual's lifelong weight history.

Medications can also cause nutrient deficits and side effects that might lead to weight loss. For example, anti-depressants such as serotonin selective reuptake inhibitors (SSRIs), calcium channel blockers, H₂-receptor antagonists, proton-pump inhibitors, narcotic and nonsteroidal analgesics, furosemide, and potassium supplements can all cause anorexia. Anticholinergics can cause constipation and dry mouth. Table 3 (*below*) lists some common Drug-Nutrient interactions.

The growing prevalence of obesity in America extends to older adults in their 60s and 70s. Excess body weight and modest weight gain (≥5 kg) in middle age can be associated with medical comorbidities in later life that include hypertension, diabetes mellitus, cardiovascular disease, obstructive sleep apnea, and osteoarthritis. However, in older individuals, higher BMI may have a protective effect with mortality rates lowest for individuals with BMIs between 27 and 29. The advantage of being overweight could be that fat mass stores energy that can be used during negative energy balance states such as an acute illness. In fact, BMI gain or loss was associated with increased mortality whereas BMI stability was not. In this group, the emphasis may better be placed on preservation of strength and flexibility and maintaining weight rather than on weight reduction.^{5,6}

Nutritional Interventions

Preventing under-nutrition is much easier than treating it. Food intake can be enhanced by catering to food preferences as much as possible and by avoiding therapeutic diets unless their clinical value is certain. Patients should be prepared for meals with appropriate hand and mouth care, and they should be comfortably situated for eating. Assistance should be provided for those who need help. Placing two or more patients together for meals can increase sociability and food intake. Foods should be of appropriate consistency, prepared with attention to color, texture, temperature, and arrangement. The use of herbs, spices, and hot foods helps to compensate for loss of the sense of taste and smell often accompanying older age and to avoid the excessive use of salt and sugar. Hard-to-open individual packages should be avoided. Adequate time should be given for leisurely meals.¹

Nutritional supplements containing protein and energy (calories) have been widely used in an effort to enhance caloric and nutrient intake, especially when patients eat only small amounts of food. The use of such supplements may decrease food intake, but overall nutritional intake usually increases owing to the nutrient quality and density of the supplements. Supplementation with energy and protein produces a small but consistent weight gain in older people.⁷ Current evidence does not support routine supplementation for older people who are well-nourished in any setting.

Approximately 60% of older adults take self-prescribed dietary supplements. Although many vitamin and mineral supplements are generally safe, the proposed benefit of many of these over the counter supplements is lacking. The strongest recommendation for benefit surrounds calcium and vitamin D to prevent osteoporosis (Table 1). Vitamin D deficiency occurs in 30% of individuals >70 years old and is associated with impaired calcium absorption and reduced physical activity level. Screening for vitamin D deficiency with measurement of total vitamin D levels is appropriate in older patients, because repletion is associated with improved physical performance, reduced falls, improved bone healing, and response to bisphosphonates.

Table 3—Drug-Nutrient Interactions¹

Drug	Reduced Nutrient Availability
Alcohol	Zinc, vitamins A, B ₁ , B ₂ , B ₆ , B ₁₂ , folate
Antacids	Vitamin B ₁₂ , folate, iron
Antibiotics, broad-spectrum	Vitamin K
Colchicine	Vitamin B ₁₂
Digoxin	Zinc
Diuretics	Zinc, magnesium, vitamin B ₆ , potassium, copper
Isoniazid	Vitamin B ₆ , niacin
Levodopa	Vitamin B ₆
Laxatives	Calcium, vitamins A, B ₂ , B ₁₂ , D, E, K
Lipid-binding resins	Vitamins A, D, E, K
Metformin	Vitamin B ₁₂
Mineral oil	Vitamins A, D, E, K
Phenytoin	Vitamin D, folate
Salicylates	Vitamin C, folate
Trimethoprim	Folate

The current dietary allowance for older persons over the age of 51 is 1,2000 mg for calcium supplementation. For those 51-70 years of age, 600 IU of Vitamin D daily and for those over age of 71 years of age, 800 IU of Vitamin D daily is recommended. (<https://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/>) Vitamins such as Folic acid, vitamins B6, and B12 have not demonstrated its proposed benefit of lowering the risk of heart disease or memory loss. Whether or not antioxidants are beneficial is also the subject of controversy. Vitamin E has not been shown to slow progression of Alzheimer disease or prevent cardiovascular disease, but it may be associated with higher risk of hemorrhagic stroke and heart failure. An expert panel reviewed Multivitamins in chronic disease prevention at the National Institutes of Health in 2006 concluded that “the present evidence is insufficient to recommend either for or against the use of multivitamins by the American public to prevent chronic disease.”⁸

.....

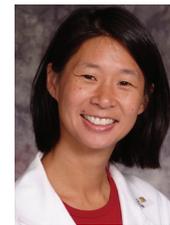
Conclusion:

Nutritional problems become a concern in older adults as there are age-related changes,

metabolism, disease states, and medication interactions and side effects to account for. Being sensitive to these factors is paramount to ensure the health of our aging population. A wonderful resource to direct patients to as a preventive measure for their nutritional health is MyPlate (www.choosemyplate.gov). The U.S. Department of Agriculture (USDA) has put forth easy-to-understand food guidelines at this website. It discusses portion sizes, gives examples of low-fat dairy and low-sodium food choices and encourages more consumption of fruit and vegetables. In the end, a healthy diet leads to healthy living.

References

1. Geriatric Review Syllabus (9th revised edition) by the American Geriatrics Society. *Chapter: Nutrition and Weight.*
2. Institute of Medicine of the National Academies, Food and Nutrition Board. *Dietary Reference Intakes.* www.iom.edu/Global/Topics/Food-Nutrition.aspx.
3. Ferry, M. (2005 Jun) Strategies for ensuring good hydration in the elderly. *Nutr Rev*, 63(6 Pt 2): S22-9.
4. Caser MP, Van den Berghe G. (2014). Nutrition in the acute phase of critical illness. *N Engl J Med*, 370(25):1227-1236.
5. Winter JE, MacInnis RJ, Wattanapenpaiboon N, et al. (2014). BMI and all-cause mortality in older adults: a meta-analysis. *Am J Clin Nutr*;99(4):875-890
6. Dahl, AK, Fauth, EB, Ernsth-Bravell, M, et al. (2013). Body mass index, change in body mass index, and survival in old and very old persons. *Journal of American Geriatrics Society*, 61, 512-518.
7. Gray-Donald, K, St. Arnaud-McKenzie, D, Gaudreau, P, et al. (2014). Protein Intake protects against weight loss in healthy community-dwelling older adults. *The Journal of Nutrition*, 144: 321-326.
8. NIH State-of-the-Science Panel. National Institutes of Health state-of-the-science conference statement: multivitamin/mineral supplements and chronic disease prevention. *Am J Clin Nutr* 2007;85:257S-264S.



Ina Li, M.D. currently holds the titles of Director of Clinical Geriatrics at Christiana Care Health System, Program Director for Independence at Home, a CMS Demonstration Project for CCHS, Medical Director of the Visiting Nurses Association (VNA) of Christiana care, and the Program Director of Geriatric Primary Care offices at the Wilmington and New Castle Senior Centers. She is Board certified in Family Medicine, Geriatric Medicine, and Palliative Care.

DCHI COMMUNITY FORUM

The DCHI Community Forums are intended to inform consumers about the Health Care Transformation efforts that are underway, how DE is working to make health care better for all individuals and populations across the state, and how it impacts all persons.

Monday, July 11 @ 5:00PM - Dover

Modern Maturity Center
1121 Forrest Ave.
Dover, DE

Monday, September 12 @ 5:00PM – Seaford

Seaford Volunteer Fire Company - Banquet Hall
King & Cannon St.
Seaford, DE

Monday, August 1 @ 7:00PM - Newark

Church of the Nazarene
357 Paper Mill Road
Newark, DE

Date = TBD

7:00PM – Wilmington
Location – TBD
Wilmington, DE

Tuesday, August 23 @ 7:00PM - Middletown

Middletown Memorial Hall
27 West Green Street
Middletown, DE



Delaware Center for Health Innovation

SAVE THE DATE HOT TOPICS IN PUBLIC HEALTH: Webinar Series

July 12 - August 3

This series is designed to assist health and human service providers working in a variety of settings throughout with recognizing public health issues among diverse populations and developing strategies for improving access to integrated healthcare and human services.

July 12, 2016: You are the Key to HPV Cancer Prevention

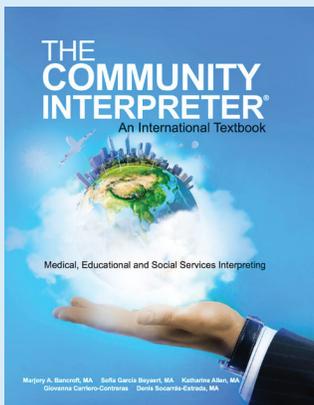
July 19, 2016: New Ethical Dilemmas in the Digital Age

**July 26, 2016: Technology-Based Supervision: Extending the Reach of
Clinical Supervisors**

July 28, 2016: Telehealth in Urban Settings

August 3, 2016: Opioid Prescribing: Safe Practice, Changing Lives

Complete information about the series will be available soon at www.sepaahec.org



The Community Interpreter - Professional Training for Community Interpreters

Christiana Care Health System is pleased to offer The Community Interpreter® training program for medical interpreting. Whether you are a bilingual healthcare professional, a contract interpreter or someone starting out, you need a training certificate to interpret. A 40- hour training certificate is now the minimum requirement in the field.

Dates: Modules on Fridays July 1, 8,15, 22 and August 1, 2016.

Times: 8:30 a.m. – 5:30 p.m. (two Friday sessions offered 9:30am – 6:30pm)

Location: Training will be held at Wilmington Hospital (Wilmington) campus.

Deadline for registration and payment: June 24, 2016

Cost: \$650 (includes five days of training with highly qualified trainers, 453 page textbook, 229 page workbook, 90-minute written test, snacks and certificate).

Please call (302) 733-3113 or (302) 733-1417 or send an email to languageservices@christianacare.org for details.

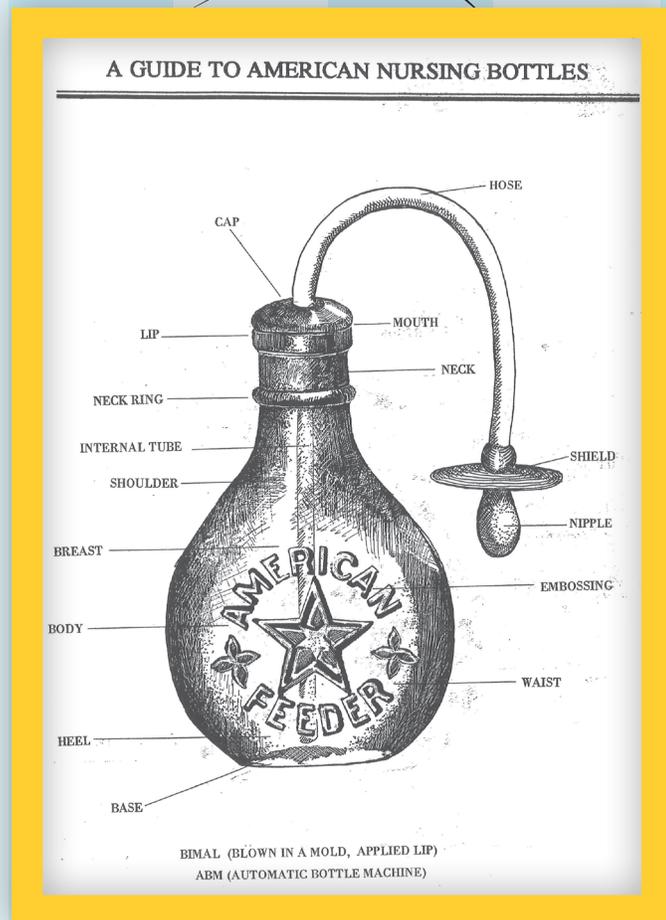
From the History and Archives Collection

This month's selected image from The Delaware Academy of Medicine historical archives is of an American Feeder, a nursing bottle used circa 1878. The image is taken from Diane Ostrander's 1984 book, "A Guide to American Nursing Bottles". Ostrander's book, of which there were only 200 copies printed, and is now a collector's item. Notably, the book was the first of its kind to give terminology and proper organization to nursing bottles.

Infant feeding has undergone historical evolutions from wet feeding, to nursing bottles, to formula. In fact, containers used in infant nursing are amongst some of the oldest vessels in history, with their use predating 1600 BC.

Throughout history, these bottles have changed considerably. Some of the earliest, ancient vessels were created from natural containers, such as gourds or animal horns, while later, make-shift containers included household items, such as soda bottles.

Although nursing bottles have varied in shape and style throughout history, their purpose has remained consistent—to ensure infants are receiving proper nutrition in order to start a healthy life. Food and nutrition are important throughout all stages in life, but critical for newborns as their bodies go through rapid growth and development. A proper nutritional foundation beginning during childhood, can translate into an improved health status during adult life.



(from the Margaret Handy, MD Collection donated by Katherine L. Esterly, MD).