

SWEET SUCCESS: DIABETES AND PREGNANCY NEWSLETTER FROM CDAPP REGIONAL PROGRAMS

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Dietary Reference Intakes for Calcium and Vitamin D

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For more information visit www.iom.edu/vitamins

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Calcium and Vitamin D are two essential nutrients long known for their role in bone health. Over the last ten years, the public has heard conflicting messages about other benefits of these nutrients—especially vitamin D—and also about how much calcium and vitamin D they need to be healthy.

To help clarify this issue, the U. S. and Canadian governments asked the Institute of Medicine (IOM) to assess the current data on health outcomes associated with calcium and vitamin D. The IOM tasked a committee of experts with reviewing the evidence, as well as updating the nutrient reference values, known as Dietary Reference Intakes (DRIs). These values are used widely by government agencies, for example, in setting standards for school meals or specifying the nutrition label on foods. Over time, they have come to be used by health professionals to counsel individuals about dietary intake.

The committee provided an exhaustive review of studies on potential health outcomes and found that the evidence supported a role for these nutrients in bone health but not in other health conditions. Overall, the committee concludes that the majority of Americans and Canadians are receiving adequate amounts of both calcium and vitamin D. Further, there is emerging evidence that

too much of these nutrients may be harmful.

Health Effects of Vitamin D and Calcium Intake

The new reference values are based on much more information and higher-quality studies than were available when the values for these nutrients were first set in 1997. The committee assessed more than one thousand studies and reports and listened to testimony from scientists and stakeholders before making its conclusions. It reviewed a range of health

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outcomes, including but not limited to cancer, cardiovascular disease and hypertension, diabetes and metabolic syndrome, falls, immune response, neuropsychological functioning, physical

performance, preeclampsia, and reproductive outcomes. This thorough review found that information about the health benefits beyond bone health—benefits often reported in the media—were from studies that provided often mixed and inconclusive results and could not be considered reliable. However, a strong body of evidence from rigorous testing substantiates the importance of vitamin D and calcium in promoting bone growth and maintenance.

Dietary Reference Intakes

The DRIs are intended to serve as a guide for good nutrition and provide the basis for the development of nutrient

Continued on Page 2

guidelines in both the United States and Canada. The science indicates that on average 500 milligrams of calcium per day meets the requirements of children ages 1 through 3, and on average 800 milligrams daily is appropriate for those ages 4 through 8 (see table for the Recommended Dietary Allowance—a value that meets the needs of most people). Adolescents need higher levels to support bone growth: 1,300 milligrams per day meets the needs of practically all adolescents. Women ages 19 through 50 and men up to 71 require

on average 800 milligrams daily. Women over 50 and both men and women 71 and older should take in 1,000 milligrams per day on average to

ensure they are meeting their daily needs for strong, healthy bones.

Determining intake levels for vitamin D is somewhat more complicated. Vitamin D levels in the body may come from not only vitamin D in the diet but also from synthesis in the skin through sunlight exposure. The amount of sun exposure one receives varies greatly from person to person, and people are advised against sun exposure to reduce the risk of skin cancer. Therefore, the committee assumed minimal sun exposure when establishing the DRIs for vitamin D, and it determined that North Americans need on average 400 International Units (IUs) of vitamin D per day (see table for the Recommended Dietary Allowances—values sufficient to meet the needs of virtually all persons). People age 71 and older may require as much as 800 IUs per day because of potential changes in people's bodies as they age.

Questions About Current Intake

National surveys in both the United States and Canada indicate that most people receive enough calcium, with the exception of girls ages 9–18, who often do not take in enough calcium. In contrast, postmenopausal women taking supplements may be getting too much calcium, thereby increasing their risk for kidney stones. Information from national surveys shows vitamin D presents a complicated picture. While the average total intake of vitamin D is below the median requirement, national surveys show that average

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blood levels of vitamin D are above the 20 nanograms per milliliter that the IOM committee found to be the level that is needed for good bone health for practically all individuals. These seemingly inconsistent data suggest that sun exposure currently contributes meaningful amounts of vitamin D to North Americans and indicates that a majority of the population is meeting its needs for vitamin D. Nonetheless, some subgroups—particularly those who are older and living in institutions or who have dark skin pigmentation—may be at increased risk for getting too little vitamin D.

Before a few years ago, tests for vitamin D were conducted infrequently. In recent years, these tests have become more widely used, and confusion has grown among the public about how much vitamin D is necessary. Further, the measurements, or cut-points, of sufficiency and deficiency used by laboratories to report results have not been set based on rigorous scientific studies, and no central authority has determined which cut-points to use. A single individual might be deemed deficient or sufficient, depending on the laboratory where the blood is tested. The number of people with vitamin D

deficiency in North America may be overestimated because many laboratories appear to be using cut-points that are much higher than the committee suggests is appropriate.

Tolerable Upper Levels of Intake

The upper level intakes set by the committee for both calcium and vitamin D represent the safe boundary at the high end of the scale and should not be misunderstood as amounts people need or should strive to consume. While these values vary somewhat by age, as shown in the table, the committee concludes that once intakes of vitamin D surpass 4,000 IUs per day, the risk for harm begins to increase. Once intakes surpass 2,000 milligrams per day for calcium, the risk for harm also increases.

As North Americans take more supplements and eat more of foods that have been fortified with vitamin D and calcium, it becomes more likely that people consume high amounts of these nutrients. Kidney stones have been associated with taking too much calcium from dietary supplements. Very high levels of vitamin D (above 10,000 IUs per day) are known to cause kidney and tissue damage. Strong evidence about possible risks for daily vitamin D at lower levels of intake is limited, but some preliminary studies offer tentative signals about adverse health effects.

Conclusion

Scientific evidence indicates that calcium and vitamin D play key roles in bone health. The current evidence, however, does not support other benefits for vitamin D or calcium intake. More targeted research should continue. However, the committee emphasizes that, with a few exceptions, all North Americans are receiving enough calcium and vitamin D. Higher levels have not been shown to confer greater benefits, and in fact, they have been linked to other health problems, challenging the concept that “more is better.”

TABLE: Dietary Reference Intakes for Calcium and Vitamin D

	Calcium			Vitamin D		
Life Stage Group	Estimated Average Requirement (mg/day)	Recommended Dietary Allowance (mg/day)	Upper Level Intake (mg/day)	Estimated Average Requirement (IU/day)	Recommended Dietary Allowance (IU/day)	Upper Level Intake (IU/day)
Infants 0 to 6 months	*	*	1,000	**	**	1,000
Infants 6 to 12 months	*	*	1,500	**	**	1,500
1-3 years old	500	700	2,500	400	600	2,500
4-8 years old	800	1,000	2,500	400	600	3,000
9-13 years old	1,100	1,300	3,000	400	600	4,000
14-18 years old	1,100	1,300	3,000	400	600	4,000
19-30 years old	800	1,000	2,500	400	600	4,000
31-50 years old	800	1,000	2,500	400	600	4,000
51-70 years old	800	1,000	2,000	400	600	4,000
51-70 year old, females	1,000	1,200	2,000	400	600	4,000
71 + years old	1,000	1,200	2,000	400	800	4,000
14-18 years old, Pregnant/Lactating	1,100	1,300	3,000	400	600	4,000
19-50 years old, Pregnant/Lactating	800	1,000	2,500	400	600	4,000

*For infants, Adequate Intake in 200 mg/day for 0 to 6 months of age and 260mg/day for 6 to 12 months of age

**For infants, Adequate Intake is 400 IU/day for 0 to 6 months of age and 400 IU/day for 6 to 12 months of age



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<http://www.iom.edu/Reports/2010/Dietary-Reference-Intakes-for-Calcium-and-Vitamin-D.aspx>

Reframing How We Look at Health and Disease: The Life Course Model for Maternal Child and Adolescent Health

Charlene Canger, MFT, LCSW, Region 4 (ccanger@stanford.edu)

Although long familiar to social sciences, Life Course Theory (LCT) is a framework that explains health and disease patterns (especially health disparities) across populations and over time. Rather than focusing on differences in these patterns one disease at a time as we currently do with diabetes, for instance, LCT expands to broad, social, economic, and environmental factors (community focused) that underlie the enduring inequities in health for a wide range of conditions across population groups. In a broader sense it also helps understand factors that would comprehensively assist everyone, rather than select groups, maximize good health over a lifetime and across generations.

In the nation and California, at the state level and in many counties, the Maternal, Child and Adolescent Health (MCAH) field is focusing on:

- Why do health disparities persist across groups in

spite of persistent improvement rates for a specific disease across all population groups?

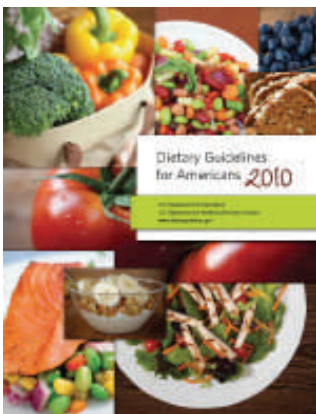
- What are the factors that influence an individual or a population group's capacity to attain peak well-being in all aspects of health?

Answering these questions means facing squarely the enduring demons of ongoing racial discrimination, food insecurity, unsafe neighborhoods, poverty, all forms of violence and trauma, pollution, being born low birth weight, etc. often relegated to a checklist of "risk factors". More importantly the LCT adjusts the primary focus to the protective factors and resiliency of cultures, communities, groups, and individuals that can be identified and strengthened in their neighborhoods and lives. This is a paradigm shift for all of us and requires a revision of the current model to a broader one committed to far-reaching prevention; not our strong suit as a

nation or health care system.

There are many other stimulating concepts in the LCT that are beyond the scope of this article but can be expanded on in future writings. How, for example, does a person or group's "allostatic load" of psychosocial stress affect their collective health over generations and what does coordinated intervention look like on a systems level? For chronic illnesses like diabetes or depression, what would a comprehensive, evidence-based prevention and strength-based model extending far before and beyond a few months of an individual woman's life encompass?

For anyone interested, there are other articles and readings on this topic, especially those by Michael Lu, M.D. M.P.H., Associate Professor, Department of OB-GYN, UCLA.



Just released! The 2010 Dietary Guidelines Policy Document by U.S. Department of Health & Human Services. For the full document, visit

<http://www.health.gov/dietaryguidelines/>

Key recommendations:

- Control total calorie intake to manage body weight and increase physical activity.
- Reduce daily sodium, saturated fatty acids, cholesterol, trans fatty acids, solid fats, sugars, refined grains, and alcohol consumption.
- Increase vegetables, fruits, whole grains, fat-free or low-fat milk, milk products, variety of proteins that are lower in fat, seafood, and healthy oils.
- For women capable of becoming pregnant-choose foods high in heme iron and increase synthetic folic acid intake.
- For women who are pregnant or breastfeeding-increase consumption of seafood, while limiting white (albacore) tuna and avoiding tilefish, shark, swordfish, and king mackerel. Take an iron supplement.

Expanding Our Expertise About Perinatal Mood Disorders (PMAD)

Charlene Canger, MFT, LCSW, Region 4 (ccanger@stanford.edu)

If you were to only check one website for information on PMAD, this is it.

MedEdPPD.org is a professional education, peer-reviewed Web site supported by the National Institute of Mental Health (NIMH). The website has two stated objectives: "first, to further the education of primary care providers (pediatricians, family physicians, obstetricians, psychiatrists, nurses, physician's assistants, nurse practitioners, nurse midwives, social workers) who treat women who have or are at risk for postpartum depression; and second, to provide information for women with postpartum depression and their friends and family members."

The portal entitled "Mothers and Others" (option of English and Spanish) offers excellent, clearly written information on perinatal and postpartum depression to expand a woman's and her family's awareness so they do not get as mired in the stigma, secrecy, and misunderstanding of the conditions. It offers websites, video clips, brochures, warmlines, support, and provider referrals.

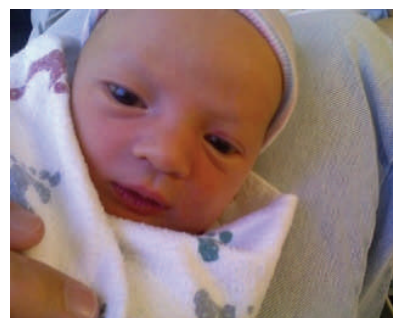
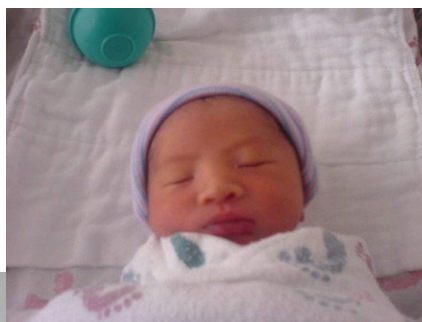
For providers, the site is a clearinghouse for postpartum and perinatal depression including:

- Pittsburgh Training Program for Depression Screening- an interactive, comprehensive depression management training
- CME/CEU opportunities
- Best practice recommendations-breastfeeding, psychotropics, etc.
- Perinatal depression screening options
- Care pathways
- Culturally appropriate assessment and intervention
- Emergency assessment
- Slide library on a wealth of critical related topics for medical and nursing personnel
- Recent journal articles
- Nationwide conferences
- NIMH videos
- Patient materials in English and Spanish
- Provider directories, support services, bibliographies

For more information visit:

<http://www.mededppd.org/>

Our Sweet Successors!



Change is coming - or is it here?

ADA Published a New Way to Diagnose Gestational Diabetes

Maribeth Inturrisi, RN, MS, APN, CDE, Regions 1 & 3

In January 2011, the ADA published a new way to detect and diagnose GDM based on the International Association of Diabetes in Pregnancy Study Group's Recommendations (IADPSG) which were derived from the Hyperglycemia and Adverse Pregnancy Outcomes Study (HAPO). The HAPO study was done to identify blood glucose levels in the OGTT that correlated with adverse outcomes for the newborn (hyperinsulinemia, excess body fat, and macrosomia) and to create a universal method of diagnosing GDM that could be adopted around the world. The following table from the ADA publication is consistent with the IADPSG recommendation:

Screening and Diagnosing GDM (ADA 2011)

- ▶ Perform a 75-g OGTT, with plasma glucose measurement fasting and at 1 and 2 h, at 24–28 weeks of gestation in **all women not previously diagnosed** with overt diabetes.
- ▶ The OGTT should be performed in the morning after an overnight fast of at least 8 h.
- ▶ The diagnosis of GDM is made when **any** of the following plasma glucose values are exceeded:
 - Fasting ≥ 92 mg/dl (5.1 mmol/l);
 - 1 h ≥ 180 mg/dl (10.0 mmol/l);
 - 2 h ≥ 153 mg/dl (8.5 mmol/l)

From 1964 to 2011, the American Diabetes Association (ADA) has published the same method for diagnosing Gestational Diabetes: a two step method that involved a non-fasting one hour 50 gm oral glucose screen with a subsequent diagnostic three hour 100 gm oral glucose tolerance test (OGTT) for those who “failed” one hour. Women with 2 abnormal values on the OGTT were considered to have gestational diabetes (GDM). This two step method remained the gold standard in the USA with only changes in the glucose cutoffs which were related to changes in the glucose assays and to the use of plasma rather than whole blood.

In 1964, the prevalence of type 2 diabetes in the United States was 2.3 million (Public Health Reports, 1967) and in 2010 the prevalence was 23 million (Diabetes Fact Sheet, CDC 2010). The 2010 estimates are as high as 25.6 million in adults over 20 years of age (Diabetes Fact Sheet, CDC 2011). The prevalence of GDM is quoted as 7-14%. In 1964 it was 1-4% (Public Health Reports, 1967).

Type 2 diabetes in America is epidemic. Gestational Diabetes is a silent epidemic. Women diagnosed with GDM have a greater than 60% risk of developing type 2 diabetes in the next 5 – 10 years. Detection and diagnosis of GDM is the first step in prevention. Providers of diabetes care during pregnancy (Sweet Success Affiliates) are in the unique position to educate women concerning healthy life style so they can reduce their own and their baby's future risks.

What are the changes for diagnosing GDM?

- ▶ All women not previously diagnosed with diabetes should be tested with the 2 hour OGTT—not just those with risk factors.
- ▶ This is a one step test. **There is NO SCREEN (50 gm GLT) preceding the OGTT.**
- ▶ The length of the test is **2 hours** versus three hours.
- ▶ **ANY one value equal to or exceeding the cut points is GDM** therefore, if it were feasible, the lab could run

Continued on Page 7

each blood as they were drawn and if the fasting were 92 or above the woman could leave without having to have glucola (~ 7 % of the 17 % of women diagnosed with GDM had an abnormal fasting.) If one hour after administration of the glucola, the value was 180 or above the woman could leave without sitting for the third blood draw at 2 hours. (~8% of women who test positive have an abnormal one hour value) Only ~2 % had the 2 hour value as their only abnormality.

- ▶ The only test for GDM at 24 to 28 weeks is now a **fasting** test. One suggestion is to order it with the third trimester labs to be completed by 28 weeks instructing the patient to be fasting. Labs will need to be on board to accommodate early morning draws for pregnant women as well as others who need to be tested while fasting.
- ▶ The blood **glucose cutoffs are different** than those for the 3 hour OGTT- but not all are different. The fasting is 3 points less, the one hour is the same and the two hour is 2 points less. This change will result in a prevalence of ~17% GDM.

Can we diagnose type 2 diabetes during pregnancy?

“As the ongoing epidemic of obesity and diabetes has led to more type 2 diabetes in women of childbearing age, the number of pregnant women with undiagnosed type 2 diabetes has increased. Because of this, it is reasonable to screen women with risk factors for type 2 diabetes at their **initial prenatal visit**, using standard diagnostic criteria. Women with diabetes found at this visit should receive a diagnosis of overt or type 2 diabetes, not gestational, diabetes” (ADA 2011).

The IADPSG recommend that we use the non pregnant criteria for diagnosing diabetes at first booking to prenatal care in order to get women with **undiagnosed type 2 diabetes** into the appropriate treatment as soon as possible. This recommendation was not derived from the HAPO study but rather from expert opinion within the writing group who composed the recommendations. The IADPSG recommendation for diagnosing overt (type 2 diabetes) left many unanswered questions:

Should we screen all pregnant women for type 2 diabetes or just those at high risk? The high risk group for developing type 2 diabetes is listed below. While the ADA recommends screening only high risk women, IADPSG suggests that the provider may choose to screen all women without regard to risk.

Criteria for testing for diabetes in asymptomatic adult individuals (ADA, 2011)

Testing should be considered in all adults who are overweight (BMI > 25 kg/m²) and have additional risk factors:

- Physical inactivity
- First-degree relative with diabetes
- High-risk race/ethnicity (e.g., African American, Latino, Native American, Asian American, Pacific Islander)
- Women who delivered a baby weighing > 9 lb or were diagnosed with GDM
- Hypertension (>140/90 mmHg or on therapy for hypertension)
- HDL cholesterol level < 35 mg/dl (0.90 mmol/l) and/or a triglyceride level >250 mg/dl (2.82 mmol/l)
- Women with polycystic ovarian syndrome (PCOS)
- A1C > 5.7%, IGT, or IFG on previous testing
- Other clinical conditions associated with insulin resistance (e.g., severe obesity, acanthosis nigricans)
- History of CVD

Which of the tests for diagnosing type 2 should be used? Both the ADA and IADPSG recommend either the fasting BG ≥ 126 mg/dL or A1c ≥ 6.5% or random BG ≥ 200mg/dL. In the absence of unequivocal hyperglycemia, these should be confirmed by repeat testing.

Which would be most valid? Fasting blood glucose drops about 10% by the end of the first trimester and remains lower than normal throughout pregnancy. A random blood glucose will depend on whether or not the woman has eaten carbohydrates recently. An A1c can be influenced by preexisting anemia and later in pregnancy by dilutional anemia. A random BG or an A1c is more convenient than a fasting and can be included in the prenatal labs.

If entry to care is after the first trimester, are the A1c and/or the fasting BG useful if they are negative? Sensitivity is poor but specificity is about 98% for the A1c.

What should we do with results that are above the normal level but not at the level of overt diabetes- i.e. pre-diabetic values (Fasting BG 100-125mg/dL; A1c 5.7-6.4% random BG 140-199mg/dL). Should these individuals be treated as GDM? The IADPSG suggested that a fasting BG of 92 or above was valid reason to begin treatment for GDM anytime in pregnancy. However, they did not comment on other tests of diabetes. ADA says nothing about early diagnosis of GDM.

Should the 2 hour OGTT be offered before 24—28 weeks? The HAPO study was conducted on women who used the 2 hour OGTT at 24 – 28 weeks, therefore the conclusions made are based on its use at that time in gestation. It is important to remember that the three hour OGTT was also studied in the third trimester but used in the first and second trimester to diagnose “early GDM” for the last 25 years.

So what should we do about early diagnosis? As might be expected, maternal-fetal experts have a variety of different approaches to early diagnosis. Consult with your Regional Sweet Success Coordinator for specific approaches used in your Region.

ADA has made the change- now it is ACOG’s turn to revise their 2001 Practice Bulletin on GDM.

We look forward...

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American Diabetes Association. Diagnosis and classification of diabetes mellitus. Position statement. Diabetes Care; 2011;34:S62-9.

Coustan DR, Lowe LP, Metzger BE, Dyer AR. The hyperglycemia and adverse pregnancy outcome (HAPO) study: paving the way for new diagnostic criteria for gestational diabetes mellitus. Am J Obstet Gynecol 2010; 202:654.e1-6.

International Association of Diabetes and Pregnancy Study Group Consensus Panel. International Association of Diabetes and Pregnancy Study Groups recommendations on the diagnosis and classification of hyperglycemia in pregnancy. Diabetes Care 2010; 33:676-82.

Do you need help in supporting breastfeeding practices in your institution? Do you need information for clients? Here are some additional resources online as free downloads that might be helpful to you:

Your Guide to Breastfeeding in English/Spanish/Chinese (free)

<http://www.womenshealth.gov/breastfeeding>

The Surgeon General’s Call to Action to Support Breastfeeding

<http://www.surgeongeneral.gov>

California Obesity Prevention Plan

<http://www.cdph.ca.gov/programs/COPP/Pages/default.aspx>



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Upcoming Educational Opportunities

April 13, 2011: Affiliate Share Day, Region 5. Contact Susan Yoshimura at 559-244-4546 or Diane Bienvenue at 559-244-4511.

April 26-27, 2011: Sweet Success Affiliate Training, Regions 6.2 and 8. For more information contact SoBayPeriP@labiomed.org.

May 12, 2011: Clinical Applications of IADPSG & ADA GDM Recommendations Pre-Conference and to follow **May 13-14, 2011:** DPSG-W 2011: Moving the Maternal-Pediatric Paradigm Forward. Register online at <http://www.sweetsuccessexpress.com/conferences.htm>

May 13, 2011: Affiliate Share Day, Regions 1, 2, and 3. Contact Gina Cherrix, Interim Grant Program Secretary, 916-733-6065 or via email at CherriG@sutterhealth.org

May 18, 2011: Affiliate Share Day on Chinese Culture and GDM Meal Planning, Region 6.1. Contact ediaz@memorial.care.org

June 14, 2011: Sweet Success Share Day by Webinar on Fast Food and GDM Meal Planning. Contact Diana@perinatalnetwork.org

September 26-27, 2011: Sweet Success Affiliate Training, Region 6.1. Contact ediaz@memorialcare.org

Regional Program Address



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