How many times have you heard that obesity "simply" results from poor personal choices, with too many calories in compared to too few calories burned?

While that basic equation is true, there's more to the story. Much more.

The Organic Center

Obesity Revisited: Beyond Exercise and Calorie Counting

Exposure to toxic compounds in the womb can cause health problems late in life

New research shows that certain pesticide residues commonly found in conventional foods, especially fresh fruits and vegetables, can disrupt developmental processes in subtle ways that increase the odds that a person will struggle later in life with overweight, obesity, and diabetes. And unfortunately, "later in life" seems to be happening earlier and earlier. Two-thirds of American teenagers have one or more of the symptoms characterizing the metabolic syndrome.

Houston we have a problem! One of every three U.S. children are overweight. If current obesity trends continue, by the year 2030, more than 85% of adults will be overweight.

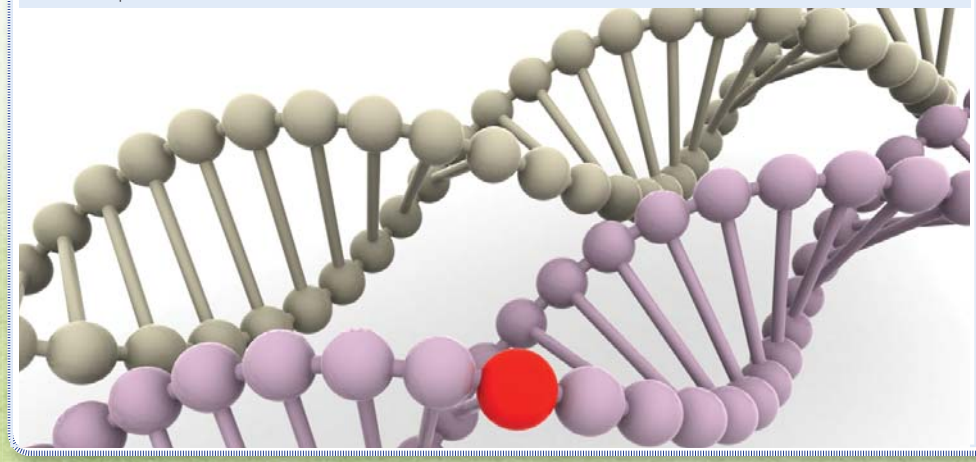
In fact, a recent study concluded that by age two, most of the critical genetic programming is completed that will govern an individual's ability throughout life to regulate weight and blood sugars.

Scientists have puzzled for years over what might account for such outcomes and finally, research is delivering some answers -- and troubling insights.

It turns out that a pregnant woman's dietary exposure to pesticides can alter her infant's developmental trajectory. One study found that pre-natal exposure to a fungicide increased the risk of the child becoming overweight by age six, compared to children who had not been exposed to the chemical. Another set of studies have concluded that a major class of insecticides, the so-called organophosphates, or OPs, disrupt cell signaling and gene expression, undermining the capacity later in life to regulate weight and insulin levels.

Epigenetics - A Common Root Cause

Subtle changes can occur in the way a gene behaves during the developmental process, perhaps turning on too soon or too strongly, or not soon enough or too weakly. When a gene fails to do its job in guiding some aspect of a child's development, the result is what scientists call an "epigenetic" change. Epigenetic changes alter how a gene behaves or is expressed, sometimes with lifelong consequences.



Timing Counts

We used to think that the "dose makes the poison." But today we understand that the timing of exposures to harmful compounds may be even more important than dose levels. That's because during a baby's development, there are critical developmental "windows" when everything must go just right for the child to grow up without health problems.

Peak times for sensitivity to toxic chemicals in our environment include: the six months before a woman conceives; during pregnancy; and, through the first two years of a child's life.

The Center's March, 2009 report "That First Step: Organic Food and a Healthier Future" concluded that –

"Organic food and farming can help slow, and potentially reverse the rising incidence of overweight, obesity, and diabetes through six principal mechanisms."

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Strategies for Healthy Development - For Life

Parents have an important role to play in tilting the odds toward their children's proper development and good health. Such strategies include:

- Breast feeding infants at least through six months of age
- Purchasing organic fresh fruits and vegetables with their nutrient-rich peels
- Planning a home or family garden or participating in a CSA farm
- Consuming a healthy breakfast every day
- Cooking and eating more family meals at home, and
- Trying new recipes and quick meal ideas that incorporate organically produced, raw and minimally processed foods.

Did You Know?

Over half of the most widely used pesticides are "endocrine disruptors." They affect our body's glands and hormones that regulate growth, sexual development, fertility, behavior, immune function and the ability to control our weight.

The average American is exposed to 10-13 different pesticides through food, beverages, and drinking water every day?

How can organic food and farming help slow, and potentially reverse the rising incidence of overweight, obesity and diabetes?

Three mechanisms play out before conception and during pregnancy.

- Promoting healthy patterns of cell division and differentiation, and laying the groundwork for normal regulation of blood sugars, lipid (fat) levels and energy intake.
- Establishing and helping sustain taste-based preferences for nutrient-dense fruits and vegetables. It turns out if mom likes and eats her veggies, junior is likely to follow suit.
- Avoiding epigenetic changes by largely eliminating dietary exposures to the approximately 180 pesticides know to be endocrine disruptors.

Access more information on *reducing the risks from obesity and diabetes* and the Critical Issue Report, **"That First Step: Organic Food and a Healthier Future"** at www.organic-center.org under TOC Reports or contact Dr. Charles Benbrook, at cbenbrook@organic-center.org.

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sometimes the greatest ideas are the simplest.

The Organic Center

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