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Childhood Vaccines: Why So Important?

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It is always better to prevent a disease than to treat it after it occurs. Diseases that were common in the U.S. and around the world included:

- Diphtheria – a serious bacterial infection that was once a major cause of illness and death among children. The U.S. recorded 206,000 cases resulting in 15,520 deaths in 1921.
- Measles – this disease took an average of 450 deaths reported annually, 1953-1963.
- Mumps – complications from the mumps can include inflammation of the brain (encephalitis) and/or tissue covering the brain and spinal cord (meningitis); and temporary or permanent deafness.
- Pertussis (whooping cough) – can be life-threatening, especially in infants.
- Polio – a crippling and potentially deadly infectious disease caused by a virus that can cause paralysis (can't move parts of the body).
- Rotavirus – a contagious virus that can cause inflammation of the stomach and intestines. Infants and young children can become severely dehydrated, need to be hospitalized, and even die.
- Rubella (German measles) – not to be confused with measles although symptoms for both often involve a rash. If acquired by a pregnant woman, complications to the unborn child include birth defects: deafness, cataracts, heart defects, mental retardation, and liver and spleen damage.

These diseases and others are now preventable by vaccination. Over the years, vaccines have prevented countless cases of disease and saved millions of lives.

Immunity

Immunity is the body's way of preventing disease. The immune system is composed of cells, glands, organs, and fluids located throughout the body. When germs enter the body, the immune system recognizes them as foreign invaders, called *antigens*, and produces proteins (*antibodies*) to fight them.

When a child is infected with an antigen for the first time, the measles virus for example, the immune system produces antibodies to fight it. However, this takes time. Usually, the immune system can't work fast enough to prevent the disease so the child gets sick.
Following the illness, the immune system "remembers" the antigen. If it ever enters the body again, even after many years, the immune system can produce antibodies fast enough to keep the disease from occurring a second time. This protection is called immunity.

Vaccines

A vaccine is a safer substitute for a child's first exposure to a disease

Vaccinations give children immunity to a disease without their having to get sick first. The way vaccines work is that they contain the same antigens (or parts of antigens) that cause diseases. In the measles example, the vaccine contains the measles virus – but the antigens are either killed or weakened to the point that they don't cause disease. However, they *are* strong enough to make the immune system produce antibodies that lead to immunity. In this way, the child gets protection without having to get sick.

The same germs that caused deaths in children still exist today. But because babies are protected by vaccines, we don't see these diseases nearly as often.

For more information refer to Parents Guide to Immunizations available at
http://www.cdc.gov/vaccines/pubs/parents-guide/defult.htm

Original article available at http://www.cdc.gov/vaccines/vac-gen/howvpd.htm

Measles: Why Vaccinate?

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Measles is a serious respiratory disease that occurs in the lungs and breathing tubes. It is spread from person to person through the air when an infected person coughs or sneezes. Droplets can remain suspended in the air for up to two hours.

In the entire year of 2014, there were 23 reported outbreaks of measles in the United States. In 2015, *there were 176 reported outbreaks in just 3 months* (January 1 to March 13)! This large, multi-state outbreak is linked to an amusement park in California (Centers for Disease Control and Prevention, 2015). What is known about this outbreak:

- The majority of people who got measles were unvaccinated.
- Measles is still common in many parts of the world including some countries in Europe, Asia, the Pacific, and Africa.
- Travelers with measles continue to bring the disease into the U.S.
- Measles can spread when it reaches a community in the U.S. where groups of people are unvaccinated.

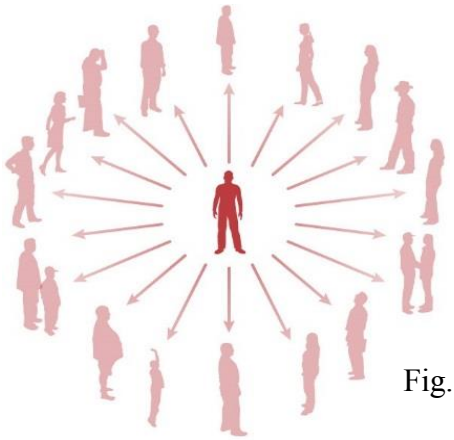
Prior to 1963, nearly everyone in the U.S. became infected before the age of 15. There were an estimated 3-4 million cases of measles each year in the U.S. and an average of 450 measles-associated deaths reported annually (1953-1963).

A measles vaccine was licensed in 1963. In the years following, the number of measles cases dropped dramatically. By 1981, the number of reported measles cases was 80% less compared with the previous year. In 2000, measles was declared eliminated from the U.S.

Today, the measles vaccine is usually combined with mumps and rubella - called the MMR shot. This vaccine is the best way to protect against measles.

What are the advantages of having everyone vaccinated?
Herd immunity is the concept behind mass vaccinations. Vaccinated people act as a barrier and reduce the risk of infection for people who cannot be immunized, such as the very young or those with compromised immune systems. For instance, health experts recommend first vaccines for children between 12 to 15 months of age.

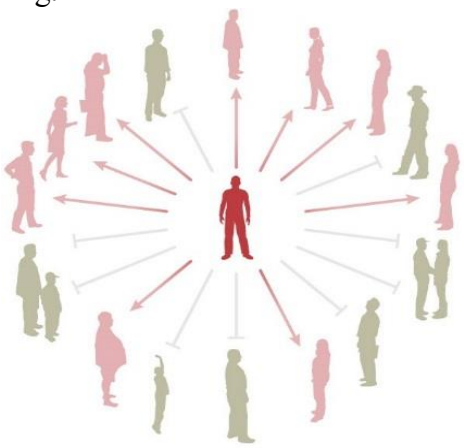
Following are graphics used to demonstrate how herd immunity protects in a hypothetical measles outbreak (Corum et.al., 2015).



In a measles outbreak where nobody has immunity, one infected person might infect 12-18 people. Each of those infected people might each infect another 12-18 people. At this rate, a small outbreak quickly grows out of control. (Fig. 1)

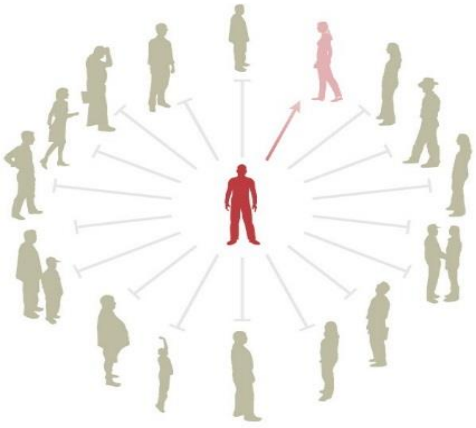
Fig. 1

Fig. 2



Every vaccinated person (represented with green) reduces the potential sources of infection. Thereby, reducing the risk to unvaccinated people. This reduction in risk is sometimes calls the **herd effect** (Fig. 2). The presence of vaccinated people helps slow the spread of the disease. (Fig. 3)

Fig. 3



For an outbreak to end quickly, each infected person must infect, on average, fewer than one other person. In this example, at least 17 of every 18 people (more than 94%) would need immunity. This threshold is sometimes called the **herd immunity** threshold. To maintain this threshold within a community over time, children need to be vaccinated at a high rate.

For more information on childhood vaccines and the measles shot, visit the Centers for Disease Control and Prevention website (www.cdc.gov). Talk to your primary care provider for a vaccination schedule.

Resources:

Centers for Disease Control and Prevention (2015). *Measles (Rubeola).* Available at http://www.cdc.gov/measles/index.html

Corum, J., Keller, j., Park, H., & Tse, A. (Feb. 2, 2015). *Facts about the measles outbreak.* Available at http://www.nytimes.com/interactive/2015/02/02/us/measles-facts.html?_r=0
Post-gazette.com (Oct. 31, 2000). *Before the age of vaccination.* Available at http://old.post-gazette.com/healthscience/20001031hvaccines.asp

Webmd.com (2015). *Q. How is measles spread?.* Available at http://answers.webmd.com/answers/1174723/how-is-measles-spread

Sodium 101

Carol W. Turner PhD, RD, LD
Food & Nutrition Specialist

Most Americans eat too much salt. A pinch of salt here and a dash of salt there can quickly add up to unhealthy levels of sodium in the diet. Choosing foods that are lower in salt and sodium is a key to healthy eating.

Salt is sodium chloride. Table salt is 40% sodium and 60% chloride. Food labels list sodium rather than salt content. Foods that are low in sodium are also low in salt.

Sodium is an essential mineral that does the following for the body:

- helps maintain the right balance of fluids.
- helps transmit nerve impulses.
- influences the contraction and relaxation of muscles, including the heart.
- helps regulate blood pressure.

Since humans are not born with a love for salt, taste buds can be retrained by gradually cutting back on the salt and sodium. The taste buds will adjust within a few weeks, allowing the natural taste of the food to be enjoyed. Using spice and herb blends instead of salt adds satisfying flavor to almost any recipe. Select more fresh foods, less processed items, and less sodium-dense foods to your daily diet.

Fresh foods naturally contain very little sodium. Most dietary sodium does not come from the salt shaker on the table. Instead, it is added to foods by the manufacturer during processing to preserve or add additional flavor.

Sources of
Salt in Food

Sources	%
Naturally in food	12
Added during cooking	5
Added at the table	6
Added during processing	72

How Much Sodium Is Needed?

The 2010 United States Dietary Guidelines for Americans suggests that individuals reduce daily sodium intake to less than 2,300 milligrams (mg). Intake should be reduced to 1,500 mg in those individuals who are over 51 years of age and all individuals who are African American or have hypertension, diabetes, or chronic kidney disease. The 1,500 mg recommendation applies to about half of the US population, including children, and the majority of adults.

The minimum sodium required is 250-500 mg per day.

Pregnant women should not eliminate salt in order to minimize water retention and swelling. More sodium is needed during pregnancy, although the amount eaten in pre-pregnancy should be adequate.

Athletes and heavy laborers should replace sodium lost through perspiration by including salt at the next meal. Drinking sports drinks with electrolytes is not necessary. Salt tablets are not recommended since they may lower performance and cause dehydration.

High Blood Pressure

Approximately one in four Americans has high blood pressure, or hypertension. On average, the higher a person's salt intake, the higher the blood pressure. Keeping blood pressure in the normal range reduces the risk of coronary heart disease, stroke, congestive heart failure, and kidney disease.

Middle-aged adults have a 90% chance of developing high blood pressure. Two risk factors over which a person has no control are: advancing age and a family history of high blood pressure.

Hypertension is preventable, however. To prevent or delay the onset of high blood pressure and to lower elevated blood pressure:

- Reduce salt intake.
- Increase potassium intake.
- Lose excess body weight.
- Increase physical activity.
- Eat an overall healthful diet.
- Avoid excessive alcohol intake.
- Stop smoking.

A diet containing the recommended amounts of potassium, calcium and magnesium may also help protect against hypertension. Fruits and vegetables are good sources of potassium. Calcium is available in dairy foods and some vegetables, and magnesium is found in whole grains, legumes, nuts and green vegetables.

Salt Substitutes

It is advisable to consult a healthcare provider before trying salt substitutes. They can be useful for some people but can cause health problems for others. For example, a person with a kidney impairment may not be able to eliminate the extra potassium contained in salt substitutes.

Backyard Barn: Egg Production and Handling

Nancy Flores, PhD
Food Technology Extension Specialist

Some municipalities in NM allow residents to own poultry as pets or for egg and meat production. Las Cruces City Council recently passed an ordinance that allows six chickens and/or ducks per property only with a special permit from the *Las Cruces Codes Enforcement Office and Animal Control*. Additionally male poultry are not allowed. An application fee is assessed at $25 for the first year and $15 annually thereafter. An animal control officer will inspect the coop to ensure that is set up correctly and secure, so that is a suitable place to raise poultry. Please check the rules for animal production that is allowed in your local area. There are several resources for backyard poultry production including organic practices that can be found at your local county extension office and online:

http://aces.nmsu.edu/pubs/_circulars/circ477.html

http://www.uwyo.edu/barnbackyard/_files/documents/magazine/2013/summer/072013bbchickentractor.pdf

http://mosesorganic.org/wpcontent/uploads/Publications/Fact_Sheets/14Org.Poultry.pdf

So now that you have the hens, what do you do with all those eggs that are piling up? How to collect, wash, store, sell, are all questions that arise once your hens are at full production. First get prepared to have a system that works for your household. Eggs should be collected daily, early and often, and chilled as soon as possible especially during the summer months. Before chilling, eggs should be cleaned from dirt and stains. Extremely dirty eggs covered in feces should be discarded. Eggs can be dry cleaned with a

clean brush or even sand paper. Caution should be taken if using wet cleaning procedures as moisture can transport pathogenic bacteria from the surface into the interior of the egg. Dipping, spraying, or water flowing over the egg can be used for washing eggs. Immersion is not an allowed practice by USDA because it can degrade the egg's waxy cuticle that protects the egg from contamination. There are egg wash detergents that are useful to remove heavy dirt and stains and also kill harmful bacteria. Additionally wash water temperature must be monitored to be greater than 20°F warmer than the egg temperature so that surface contaminants are not absorbed into the egg due to temperature contraction. Cleaned eggs can be sanitized with chlorine-based sanitizers ranging from 50 to 200 ppm. Diluting 1/2 tablespoon of household chlorine bleach (5.25 %sodium hypochlorite) per gallon of water will result in a solution of 100 ppm chlorine. Free chlorine level must be checked frequently because chlorine is inactivated by organic material such as dirt. Chlorine test strips are available in pool maintenance and restaurant supply stores.

Cleaned and sanitized eggs must dry before chilling to prevent moisture and mold build up. Fertilized egg chick embryos can develop in temperatures above 85°F. Eggs stored at room temperatures above 75°F will quickly degrade. It's important to maintain a constant temperature during storage so that condensation does not cause "sweating" which will allow any surface contaminants enter into the egg. Ideally eggs are packed into clean cartons within 3-7 days of laying. Additionally eggs readily absorb odors from other contents in the refrigerator. Storage limitations of eggs and egg products are outlined in a table below.

Egg grading is determined by egg size and weight and quality, which can be determined by a procedure known as "candling". The USDA Egg Grading Manual, describes these procedures in depth and is available online: www.ams.usda.gov/Poultry/pdfs/EggGrading%20manual.pdf.

Backyard eggs can be sold as graded eggs at your local farmers market and other retail markets but must be permitted by New Mexico Department of Agriculture (NMDA licensing): http://www.nmda.nmsu.edu/scs/licenseregistration/egg-licensing/ NMDA offers three types of licensing for small (5-199 cases sold per week), medium (200-399 cases sold per week) and large (>400 cases sold per week) producers. A case is considered 30 dozen eggs. Annual fees are assessed for each type license for small $10, medium $25 and large $50 producers. Dealers of organic eggs must follow organic poultry management practices including having the premises or land under organic certification: http://www.nmda.nmsu.edu/marketing/organic-program/
Ungraded eggs can also be sold at local markets but must clearly labeled as "ungraded". Additionally ungraded egg dealers must notify NMDA that they intend to sell ungraded eggs. There is a simple online form with the following information:
Name, address, phone number, email address, number of laying hens, place of production, and where eggs will sold.

Adapted from these useful resources:

http://sd.appstate.edu/sites/sd.appstate.edu/files/egghandling.pdf

http://ucanr.org/sites/placernevadasmallfarms/files/103059.pdf

http://mosesorganic.org/wp-content/uploads/Publications/Fact_Sheets/14Org.Poultry.pdf

http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3004445

http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELDEV3004502

http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/egg-products-preparation/shell-eggs-from-farm-to-table/CT_Index

http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/egg-products-preparation

Egg Storage Chart		
Product	**Refrigerator**	**Freezer**
Raw eggs in shell	3 to 5 weeks	Do not freeze.
Raw egg whites	2 to 4 days	12 months
Raw egg yolks	2 to 4 days	Yolks do not freeze well.
Raw egg accidentally frozen in shell	Use immediately after thawing.	Keep frozen; then refrigerate to thaw.
Hard-cooked eggs	1 week	Do not freeze.
Egg substitutes, liquid Unopened	10 days	Do not freeze.
Egg substitutes, liquid Opened	3 days	Do not freeze.
Egg substitutes, frozen Unopened	After thawing, 7 days, or refer to "Use-By" date on carton.	12 months
Egg substitutes, frozen Opened	After thawing, 3 days, or refer to "Use-By" date on carton.	Do not freeze.
Casseroles made with eggs	3 to 4 days	After baking, 2 to 3 months.
Eggnog, commercial	3 to 5 days	6 months
Eggnog, homemade	2 to 4 days	Do not freeze.
Pies, pumpkin or pecan	3 to 4 days	After baking, 1 to 2 months.
Pies, custard and chiffon	3 to 4 days	Do not freeze.
Quiche with any kind of filling	3 to 4 days	After baking, 1 to 2 months.

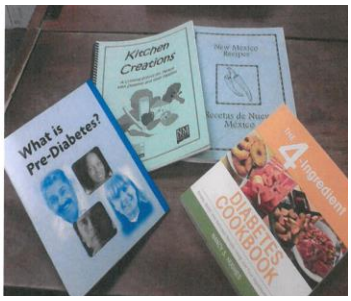
Table taken from Egg Storage Chart **Shell Eggs from Farm to Table USDA FSIS**

New Mexico Resources for People with Diabetes

Cassandra Vanderpool, MS, RDN, LD
Extension Diabetes Coordinator

The prevalence rate of diabetes in New Mexico has been similar to that in the United States since the mid-1990s. Over the last 15 years, it has approximately doubled. About 10% of adults in New Mexico and the United States have diabetes. Part of the increased prevalence is due to our aging population. Unfortunately, New Mexicans living in mixed urban/rural counties have a 30% higher prevalence rate than those in metropolitan and small metropolitan areas. Those in rural areas frequently have less access to health care. By identifying diabetes resources and guiding people to them, you help provide valuable information that may prevent, delay, or assist in the management of diabetes.

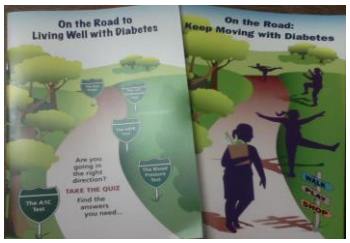
In addition to local clinics, programs, and organizations, look for programs offered to New Mexicans in several parts of the state. Such programs are often interested in expanding their reach. If they receive requests for a program in a particular area where there is a demand, they may be able to accommodate those requests. Examples of some programs offered to people with diabetes or prediabetes in multiple areas of our state are listed below:



Kitchen Creations is an evidence-based cooking school for people with diabetes and their families. It is offered free of charge to participants by the NMSU Cooperative Extension Service with funding from the New Mexico Department of Health (DOH) Diabetes Prevention and Control Program (DPCP). Registered Dietitians and Certified Diabetes Educators facilitate interactive, skill-building nutrition education. A primary focus is learning to plan and prepare meals that are balanced to help manage blood sugars. Extension Home Economists, Extension County Directors, or others lead participants in small group cooking so they can learn and improve cooking skills. Participants receive materials to assist in making recommended lifestyle changes, including a manual, diabetes cookbooks, and innovative tools to measure portion sizes. Classes are available in English or Spanish. People with diabetes who are interested in participating should call their County Extension Office. Requests to offer cooking schools in counties that do not have a cooking school scheduled within the next year may be directed to the County Extension Office or Cassandra Vanderpool at 575-202-5065 or cvpool@nmsu. Requests are accommodated when possible according to demand.

The *Diabetes Self-Management Program* is an evidence-based series of workshops held once a week for six weeks in community settings in several New Mexico counties. Two trained leaders, at least one of them with diagnosed diabetes, facilitate group sharing and learning from a manual that covers topics like dealing with the symptoms of diabetes, appropriate exercise, healthy eating, use of medication, and working effectively with health care providers. Workshop participants receive a book on living a healthy life with chronic conditions and a relaxation tape. *Manage Your Chronic Disease* is a similar program that is offered to people with chronic diseases, including but not limited to diabetes. Both sets of workshops are free of charge to

participants through funding from the DOH DPCP. People with diabetes may participate in either one or both of these programs and may register by calling 505-880-2800. Requests for workshops in other New Mexico communities may be directed to Catherine Offutt at 505-884-8389 or catoff@msn.com.



Pathways to Better Health is a program offered by NMSU Cooperative Extension Service in partnership with Joslin Diabetes Center to help individuals better manage their glucose levels and help reduce the complications that may result from uncontrolled diabetes. Participants may have diagnosed diabetes, prediabetes, or be at risk for developing diabetes. The program covers the five most important tests for diabetes, how to discuss test results with your healthcare provider, how to prepare healthy meals, and why physical activity is important. It is available in English and Spanish and is offered free of charge to participants through funding from the Department of Health and Human Services, Center for Medicare, and Medicaid Services. Currently, the program is offered in Doña Ana County and Truth or Consequences. Those who would like to enroll should contact Lourdes Olivas at 575-646-5763 or loumunoz@nmsu.edu.

The *National Diabetes Prevention Program* is an evidence-based, lifestyle intervention program designed for and offered to people with prediabetes. NMSU Cooperative Extension Service provides the program in partnership with Molina Healthcare. Participants meet one a week for 16 weeks and then once a month for six months. Throughout that time, they work closely with a trained lifestyle coach to set and accomplish goals for better health. Classes are available in English or Spanish. Those who are interested in participating in Doña Ana or Bernalillo Counties should contact Lucinda Banegas-Carreon at 575-646-2034 or lubanega@nmsu.edu. This program is offered by other organizations in other counties of our state. The DOH DPCP is working on creating a map of sites and contacts.

Children ages 8 – 13 years with diabetes rave about the American Diabetes Association (ADA) Camp for Kids held annually at the Manzano Mountain Retreat in Torreon. This year, the camp will be held June 28 – July 4. Campers interact with peers and positive role models in a fun, yet safe, environment where they learn how to manage their diabetes. A team of health care providers is on site 24 hours a day, along with ADA trained counselors. The camp can be expensive for New Mexico families, so ADA fundraises throughout each year to raise enough money so that families only pay half of the cost of providing the camp for their child. Scholarships, called "camperships," may also be awarded to help families pay the camp fee. Those who want to participate should contact Julie Garcia at 602-861-4731 ext. 7094 or jgarcia@diabetes.org. To apply to be a Counselor-in-Training, contact Ron Guerrero at 505-266-5716 or rguerrero@diabetes.org.

Most communities have additional resources available to help people learn how to manage their diabetes. Check with local health care providers, County Extension Offices, and the ADA's New Mexico office at 505-266-5716 to start identifying them. Then, spread the word to those who could benefit from them. Participation in these programs influences future availability and

funding. Connecting people to the programs they need aids them now and supports the use of these programs, allowing them to continue so they are available to others in the future.
Source:

New Mexico's Indicator-Based Information System (NM-IBIS). Health Indicator Report of Diabetes (Diagnosed) Prevalence. Retrieved Wed, 08 April 2015 from New Mexico Department of Health, Indicator-Based Information System for Public Health Web site: http://ibis.health.state.nm.us.