

The Prudent Prescriber

Phil Mohler, M.D. • pmohler69@gmail.com

2775 Crossroads Blvd • P.O. Box 10600 • Grand Junction, CO 81502-5600

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Pharm Reps ≠ Rational Prescribing

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Measles: Only a Plane Ride Away

The Threat

I am finishing this newsletter on Good Friday, the first day of Passover, with ongoing concerns that the measles outbreak in New York City will accelerate with travel associated with these religious holidays. The CDC reports 555 US measles cases as of April 15, 2019, on course to be the worst outbreak since the US eliminated measles as an endemic disease in 2000. New cases in the United States are largely linked to travelers returning from countries with outbreaks of their own, including the Philippines, Ukraine, and Israel.

American outbreaks come as the incidence of measles is rising all over the world. The World Health Organization (WHO) reported measles cases tripled worldwide in the first three months of 2019 compared with last year.

With a 93% - 95% vaccination level needed to prevent measles outbreaks, global coverage of the first dose of measles vaccine remains at 85%. Therein, epidemiologists continue to predict more and larger measles outbreaks worldwide.

Meanwhile, back in Happy Valley, my wife and I celebrate daily, "Tis a privilege to live in Colorado." Yet, Grand Junction and many communities in Colorado as well as nationwide are at imminent risk for another measles outbreak.

Antibiotics do NOT

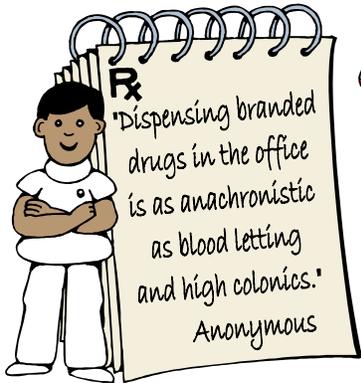


help acute bronchitis

β-blockers in post-MI save lives



Pill splitters save BIG



R
"Dispensing branded drugs in the office is as anachronistic as blood letting and high colonics."
Anonymous



CHE?

Think:
Ace
Aldactone
B-blocker
Dig
Diuretic



Avoid these expensive "me-too" drugs:

Intermezzo
Vimovo
Livalo
Gralise
Viibryd
Edarbi
Daliresp



Treat patients > 60 years to 150/90



NOW AVAILABLE
ON THE
GENERIC MARQUEE

Advair → fluticasone/salmeterol
or Wixela Inhub
Viagra → sildenafil
Uceris → budesonide ER
Suboxone → buprenorphine/naloxone

Recall that in December 1994, Mesa County, Colorado experienced a measles outbreak with 62 confirmed cases. A study that looked at that outbreak, Vitek et al. (Pediatr Infect Dis J 1999; 18(7): 620 –3) reported that at school A where there were 17 cases, the attack rate in unvaccinated children (7 of 16, 44%) was higher than those with one dose (10 of 320, 3%) or two doses (0 of 289, 0%).

Perusal of the Colorado Department of Public Health and Environment (CDPHE) MMR data (December, 2018) is superficially reassuring. With 89.8% of schools reporting, including 986,766 students surveyed, Colorado boasts 94.46% of its students fully immunized (Healthy People 2020 Goal, 95%). Looking at Mesa County, all six high schools have greater than 94% up-to-date on MMRs. All eight middle schools report MMRs up-to-date greater than 92% and 14 of 23 K-5 schools have MMR rates greater than 93%.

Yet pockets of unimmunized and under-immunized remain in Mesa County, as outlined in the table below are disturbing.

School	Number of Students	Type of School	% exempted for all vaccines	% Up to Date MMR
Juniper Ridge	323	K-12 Charter	9.9%	76.8% *
Mesa Valley Community	402	K-12 Charter	13.7%	72.9% *
Independence Academy	398	K-12 Charter	6.5%	84.7% #

* data from Mesa County School D51 Nov. 2018

data from CDPHE 2017-2018

Couple those low immunization rates with measles virus behavior:

- Measles patients are contagious 4-5 days prior to the onset of the rash and 4 days after the rash appears.
- Transmission occurs via person-to-person contact as well as airborne spread. Infectious droplets from respiratory secretions of patients with measles can remain airborne for up to two hours. Therefore the illness can be transmitted in public spaces, even in the absence of person-to-person contact.
- Measles transmission between airplane passengers during flights has been described.
- The average number of new infections caused by each case of measles in a totally susceptible population is 12 to 18, compared with influenza where 2-3 cases occur.

Colorado Immunization Law(less)

- Colorado remains the home of majestic mountains, striking forests and readily available pot. We have also become the refuge for some extraordinary libertarian views regarding pediatric immunizations.
- School immunization mandates, implemented through state level legislation, have played an important role in maintaining high immunization coverage in the United States.
- **Certain types of exemptions (especially personal belief exemptions) and the ease of obtaining them are predictive of high rates of vaccine exemptions and increased disease risk among exemptors themselves and in the communities in which they reside.** (JAMA, December 27, 2000)
- So in Colorado, we have made our bed in the setting where a mom or dad can opt their children out of all immunizations on an annual basis with a single signature:
 - without stating a reason
 - without any significant vaccine education
 - without any discussion of the pros and cons of immunization

- Currently, CDPHE estimates about 45,000 students and childcare participants claim non-medical exemptions for vaccinations every year. The vast majority of these exemptions are based on personal belief.
- In the Colorado Legislature, House Bill 19 – 1312 passed out of committee on April 15, 2019. If this bill is signed into law, parents wanting to exempt their children for personal or medical reasons would need to fill out a form in person and turn it into a state or local public health agency and then submit it to a school. In my mind, this is “a spitting in the ocean” bureaucratic attempt to make it a little more difficult to exempt these kids.

Vaccine Hesitancy

- Weak public health childhood immunization laws in Colorado, discredited British physician Andrew Wakefield, actress Jenny McCarthy and a social media bandwagon that rolls on and on have borne an anti-vaccine movement that has consistently grown over the last decade.
- Multiple studies have failed to demonstrate any association between measles, mumps, and rubella vaccination and autism.
- In the past, my behavior in dealing with anti-vaxxer parents was often less than exemplary. I often proselytized, rather than listened.
- Here are some ideas (American Academy of Pediatrics and Prescriber’s Letter) for interacting with vaccine hesitant parents:
 - Listening is critical, as it is in all of clinical medicine. Allowing parents to express their concerns will increase their willingness to listen to the clinician’s views.
 - Find out what the parents’ hesitancy is about. “What keeps you or your child from getting a recommended vaccine?”
 - Validate their emotions: “I know you are scared.” “What fears or questions do you have because of things you’ve heard about vaccines?”
 - Acknowledge the obvious, “**I know you want the best for your kids.**”
 - Promote partnerships with parents in decision-making and personalize these relationships. Provide the important information first.
 - Make sure the parent understands the information. Clarify and reaffirm parents’ correct beliefs about immunization and modify misconceptions.
 - Educate that giving multiple vaccines according to the recommended schedule can’t overwhelm the immune system.
 - Discuss the benefits of vaccines and the possibility of adverse events. Be open about what is known about immunizations and what is not known. Stress the number of lives saved by immunization, as a positive approach, rather than focusing on the number of deaths from not immunizing.
 - Researchers found that pediatricians who provided a “presumptive recommendation” – informed parents that shots were due, rather than a “participatory recommendation” – asking what the parent thought about shots, were more likely to see parents accept vaccines.

What are the clinical manifestations of measles?

Put measles on your radar!

- The incubation period for measles is 6 to 21 days, median 13 days. It begins after the virus enters via the respiratory mucosa or conjunctivae. The period of contagiousness, as noted above, is estimated to be from five days before the appearance of the rash to 4 days afterward. Infected individuals are characteristically asymptomatic during the incubation period.
- The prodrome usually lasts for 2 to 4 days, but maybe persist for as long as eight days. It is defined by the appearance of symptoms that typically include fever, malaise, and anorexia, followed by 3Cs: conjunctivitis, coryza, and cough.

- The enanthem: approximately 48 hours prior to the onset of the exanthem, patients may develop an enanthem characterized by Koplik spots; these are 1 to 3mm whitish, grayish or bluish elevations with an erythematous base, typically seen on the buccal mucosa opposite the molar teeth. They have been described as “grains of salt on a red background.” Koplik spots do not appear in all patients with measles.
- The exanthem of measles arises approximately 2 to 4 days after onset of fever. It consists of an erythematous, maculopapular, blanching rash, which classically begins on the face and spreads cephalocaudally and centrifugally to involve the neck, upper trunk, lower trunk and extremities. Early on, the lesions are blanching; in the later stages, they are not. The rash may include petechiae; in severe cases it may appear hemorrhagic. Other characteristic findings during the exam of this phase include lymphadenopathy, high fever and significant pharyngitis and conjunctivitis.
- Clinical improvement typically begins within 48 hours of the appearance of the rash. After 3 to 4 days, the rash darkens to a brownish color in Caucasians, but not in patients of African descent. The rash usually lasts 6 to 7 days and fades in the order that it appeared. Cough may persist for 1 to 2 weeks after measles. The occurrence of fever beyond the third to fourth day of rash suggests a measles-associated complication. Immunity after measles virus infection is thought to be lifelong.
- Complications occur in approximately 30% of measles cases. Diarrhea is the most common complication. Otitis media occurs in 5% to 10% of cases and is more common in younger individuals. Encephalitis occurs in up to 1 in 1000 measles cases. It appears within a few days of the rash. Symptoms may include fever, headache, vomiting, stiff neck, meningeal irritation, drowsiness, convulsions and coma. Acute disseminated encephalomyelitis is a demyelinating disease that occurs in about 1 in 1000 measles cases. It typically presents within two weeks of the exanthem. Most deaths are due to respiratory tract infections or encephalitis.

Who should get measles vaccine?

- Either MMR or MMRV (Measles, Mumps, Rubella, Varicella) is recommended between the ages of 12 and 15 months. The risk of febrile seizures is increased when MMRV is administered for the first dose in children less than four years of age compared with separate injections of MMR and varicella. A second dose is recommended before starting elementary school, usually between four and six years old.
- The second dose can be given as soon as four weeks after the first dose if necessary (catch up vaccinations). The first and second doses of varicella containing vaccine should be separated by at least three months.
- Children may receive the first dose of MMR at six months old before international travel to endemic or outbreak areas. If the first dose is given before 12 months old, three doses are recommended.
- Ensure adults have had at least one dose of MMR if born in 1957 or later. Or give two doses at least four weeks apart for adults at higher risk of exposure such as college students, healthcare workers, and international travelers. If patients don't have a record of getting an MMR, vaccinate.
- Don't give MMR to severely immune-compromised or pregnant patients. It's a live vaccine. Do ensure that their household contacts are vaccinated.
- An egg allergy is not a contraindication to receiving MMR.
- Patients with the documented history of anaphylaxis to neomycin should not receive a measles containing vaccine.

How to respond to a case of suspected measles

- **First:** Call your local health agency! In Mesa County, that 24/7 disease reporting and consultation line is:
 - 970-254-4120
- The epidemiologist who answers your call will advise you in caring for the suspected measles case and contacts.
 - Suspected diagnosis: are symptoms consistent with measles?
 - Which test: PCR, serology?
 - Isolation: whom? How long?
 - Contacts: who was exposed? Need for prophylaxis? How to keep you/your staff safe?

- Remember MMR boosters are NOT usually recommended during a measles outbreak. About 97% of people develop lifelong immunity to two doses of a measles vaccine. This differs from mumps, where waning immunity is a concern.
 - Treatment: the World Health Organization recommends that vitamin A be administered to all children with acute measles. Vitamin A for treatment of measles is administered once daily for two days in the following doses:
 - Infants < 6 months of age: 50,000 IU
 - Infants 6 to 11 months of age: 100,000 IU
 - Children >12 months: 200,000 IU

My Take

- Childhood vaccination documentation should be a public health, not a school nurse task. As it is, school nurses often are stretched thin to provide basic healthcare services. Requiring school nurses to report immunization data by December 1st of each year disrupts routine healthcare and results in incomplete immunization data reporting.
- It is too easy to opt out of immunizing our kids in Colorado. I worry that it will take another Disneyland-like measles outbreak in Colorado to awaken us to the threat at hand.
- Some good news: In March 2019, Facebook pledged to reject advertising with false vaccine claims. YouTube is removing advertising from videos that spread false vaccine information and Amazon Prime is removing anti-vaccination videos from its Prime Video service. (JAMA, online, April 19, 2019)
- Live in Mesa County? Want a cool magnet? Email me (pmohler69@gmail.com) and I'll send you a refrigerator magnet that's guaranteed to hold seven pictures of your kids or grandkids tightly to your fridge. It features the Mesa County Public Health disease reporting line, **970-254-4120**.

I work for Mesa County Public Health and Rocky Mountain Health Plans. The opinions expressed in this newsletter are mine and may not reflect those of my employers.

You may access previous issues at <https://www.rmhp.org/i-am-a-provider/provider-resources/publications-for-providers>.

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