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Drug Information

2014-15 Measles Outbreaks and Vaccination Guidelines

By Mark Amoo, Pharm.D. (Bartell Drugs)

In the year 2000, the United States declared the elimination of measles. This held true up until 2011 when the number of confirmed cases rose from an average of 60 per year to above 200. In 2014, 23 outbreaks lead to the highest number of confirmed cases (over 600) since the turn of the millennia. The most recent outbreak from the end of 2014, linked to a Disneyland amusement park in southern California, has continued into 2015 with 121 confirmed cases as of February 9th.¹

This recent outbreak has received a lot of media attention, which we know brings a lot of patient concerns to our respective practice sites. With that being said here is a quick review of the CDC guidelines for measles vaccination.

Vaccination Guidelines²:

- Vaccine type: Live attenuated
- Children: 2-dose series with MMR vaccine; 1st dose: 12-15 months; 2nd dose: 4-6 years (must be given at least 4 weeks after the 1st dose)
 - Administer one dose at 6-11 months if infant is traveling internationally (at least 4 weeks before departure) but this does NOT count towards routine schedule starting at 12 months
- Adults: 1 or 2 doses separated by at least 4 weeks
 - Adults born before 1957 are generally considered immune to be measles
 - Administer routine 2nd dose if patient is:
 - ◆ A student in postsecondary educational institution
 - ◆ Works in a health care facility; or
 - ◆ Travelling internationally

Treatment³:

- There are currently no antivirals available to treat measles
- Treatment is targeted at supportive care and includes:
 - Tylenol - reduce fever and relieve muscle aches
 - Rest - to help boost the immune response
 - Fluids - to replace fluids lost through diarrhea and emesis
 - Vitamin A supplements - to support immune function; especially in children

References:

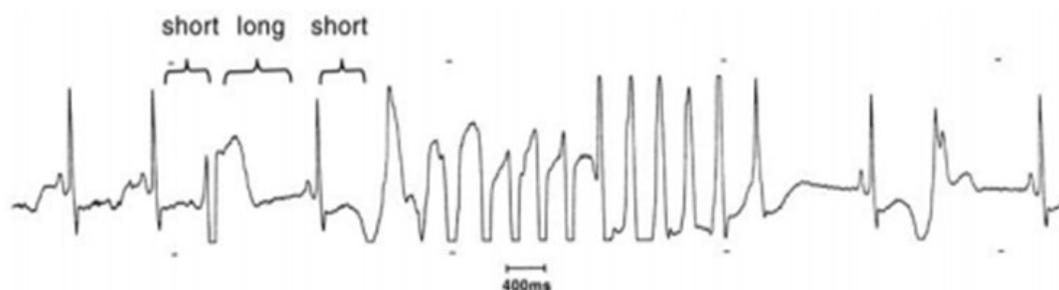
1. CDC—Measles
2. CDC. Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013: Summary Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2013; 62:1-34.
3. Chen SS, Stelle RW. Measles. Medscape Available from: <http://emedicine.medscape.com/article/966220-overview>

Drug Information***Managing QT: Prolongation Drug Interactions
By Shaelah Easterday, PharmD (Providence Pharmacy Monroe)***

Shaelah Easterday Pharm.D

QTc intervals:

- Normal ranges: Male: <440 ms; Female: <470 ms¹
- > 500 ms is highly abnormal¹
- Increase of >25% from baseline should raise concern¹
- Congenital vs. acquired (drug-induced) long QT
- Females tend to have an increased sensitivity to QT prolonging drugs²



Characteristic short-long-short sequence preceding a short run of TdP in a patient on high-dose procainamide and amiodarone. Adapted with permission from Trohman and Sahu.²¹

Current concepts in the mechanism and management of drug-induced QT prolongation and torsade de points. American Heart Journal, 2007:153(6).

Risk Factors for prolonged QT and TdP^{1,3}:

- History of TdP
- Female gender
- Left ventricular dysfunction
- Elderly
- Bradycardia
- Genetic predisposition
- Drugs: high doses of QT prolonging agents, concomitant use of multiple QT prolonging agents, medications that can cause electrolyte abnormalities
- Electrolyte abnormalities: hypokalemia, hypomagnesemia

Drug Information***Managing QT: Prolongation Drug Interactions (continued)***
By Shaelah Easterday, PharmD (Providence Pharmacy Monroe)**Higher risk QT prolonging medications⁵:**

- **Antiarrhythmic agents:** amiodarone, quinidine, sotalol, etc.
- **Antibiotics/antifungals:** macrolides, fluoroquinolones, azoles, etc.
- **Antidepressants:** citalopram
- **Antipsychotics:** haloperidol, quetiapine, etc.
- **Stimulants:** atomoxetine, methylphenidate, etc.
- **Others:** methadone
- Any interaction that can increase the effects of the high risk medications (eg. CYP3A4 inhibitors)
- ≥ 2 QT prolonging drugs

Management of the addition of a QT-prolonging drug:

1. Baseline ECG
 - a. Consider alternative medication if baseline ECG is already prolonged
 - b. Consider rechecking ECG if therapy will be greater than 1 week
2. Consider switching medication if:
 - a. ≥ 2 QT prolonging medications
 - b. QT prolonging medication is higher risk
 - c. QT prolonging medication is a high dose
 - d. QT prolonging medication will be used for an extended period of time
3. Watch electrolytes
 - a. Recent metabolic panel
 - b. Watch other medications that can affect electrolytes (eg. loop diuretics)

References:

1. UptoDate – Acquired long QT syndrome
2. Medscape – Drug induced QT interval prolongation
3. Kannankeril, P. et al. Drug-Induced Long QT Syndrome. Pharmacological Reviews, 2010:62(4).
4. Mayo Clinic – Long QT Syndrome
5. Credible Meds: <https://www.crediblemeds.org/>

Clinical Service**Clozapine Registry*****By Shaelah Easterday, PharmD (Providence Pharmacy)***

Patients at Providence Pharmacy Monroe can now obtain clozapine. This anti-psychotic can sometimes cause agranulocytosis and requires constant monitoring to protect patients. Agranulocytosis is most common in the first three months of therapy but can happen any time during the course of therapy.

In order for a pharmacy to dispense clozapine, it must be registered with a Clozapine Registry. The registry ensures that patients are completing their labs and that these labs are being monitored prior to dispensing clozapine. Specifically, the labs being monitored are WBC and ANC. Any significant drop in these levels will require more frequent monitoring until normalized. Patients complete labs every 3 days to 4 weeks depending on when they started the medication and their last lab results.

This service at Providence Pharmacy Monroe allows patients to access their medications locally. Prior to this service, the nearest pharmacy that could dispense clozapine was in Everett.

Tuberculosis Screening
By Mark Amoo (Bartell Drugs)

At one point, tuberculosis was the leading cause of death in the United States. Even though tuberculosis is still one of the world's deadliest diseases, the number of tuberculosis related deaths in the U.S. has decreased dramatically. This is partly due to the invention of diagnostic tools such as the stethoscope and X-ray in the 19th century, and with the discovery of antimycobacterial agents in the mid-20th century.

As the rate of active tuberculosis disease (TB) has decreased, the need for identification and treatment of persons with latent tuberculosis infection (LTBI) has become an essential component of the TB elimination strategy. Targeted tuberculin testing is used in the U.S. to focus on groups at highest risk for developing TB. While this has traditionally been done in the primary care setting, because of the rapidly evolving environment of healthcare and the expanding role of pharmacists, Bartell Drugs is stepping up to play a role.

We can all agree that pharmacists are the most accessible healthcare provider, so naturally it makes sense that we try to provide as many services to our communities as possible. Pharmacists can play a major role in point of care (POC) tests, such as the tuberculosis skin test (PPD), in which a follow-up appointment is needed. Since Bartell Drugs is already licensed as a medical testing site, all that was needed to develop a PPD program was a collaborative drug therapy agreement (CDTA) to administer the PPD. Once this was obtained, the program rapidly evolved, and we are now offering PPD at 3 of the Bartell Drugs locations.

Even though targeted tuberculin testing is focused on examining high risk groups, professional schools and healthcare institutions require a PPD for enrollment and employment respectively. Bartell Drugs' vision is to continue to be an added resource in the community for all patient needs and providing PPD POC testing adds to that benefit.

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