Fluoroquinolone Antibiotics – Warning updates

- On July 10, 2018, the FDA announced an update to the *Warnings and Precautions* section of the fluoroquinolone antibiotics drug labels on risks of low blood sugar and mental health adverse reactions.

- The following brand and generic fluoroquinolone products include Levaquin® (levofloxacin), Cipro® (ciprofloxacin), ciprofloxacin extended-release tablets, Avelox® (moxifloxacin), and ofloxacin. Factive® (gemifloxacin) and Baxdela™ (delafloxacin) are only available as brand products.

    - Fluoroquinolones have a place in the treatment of serious bacterial infections which include certain types of bacterial pneumonia.
    - Consult individual drug labels for specific indication recommendations.
    - The safety updates only affect the oral and injectable fluoroquinolone formulations.

- Across the fluoroquinolone antibiotic class, mental health side effects are currently noted in the *Warning and Precautions* section of the drug label. The new class wide labeling changes require that mental health side effects be more prominent and consistent. The side effects include disturbances in attention, disorientation, agitation, nervousness, memory impairment and delirium.

- The fluoroquinolone antibiotic class may cause significant decreases in blood sugar. This can result in serious problems including coma, particularly in older people and patients with diabetes who are taking medicines to reduce blood sugar.

- Healthcare providers should be aware of the risk of hypoglycemia and mental health adverse reactions associated with fluoroquinolones.

    - Alert patients of the symptoms of hypoglycemia and carefully monitor blood glucose levels in these patients, and discuss self-treatment if they have symptoms of hypoglycemia.
    - Early signs and symptoms of hypoglycemia include: confusion, dizziness, feeling shaky, unusual hunger, headaches, irritability, pounding heart or very fast pulse, pale skin, sweating, trembling, weakness and unusual anxiety.
    - Patients should be informed of the risk of psychiatric adverse reactions that can occur just after one dose.
    - Stop fluoroquinolone treatment immediately if a patient reports any central nervous system side effects, including psychiatric adverse reactions, or blood glucose disturbances and switch to a non-fluoroquinolone antibiotic if possible.
    - Healthcare professionals should not prescribe fluoroquinolones to patients who have other treatment options for acute bacterial sinusitis, acute bacterial exacerbation of chronic bronchitis, and uncomplicated urinary tract infections because the risks outweigh the benefits in these patients.

- Patients should discuss the following with their healthcare provider if they are prescribed a fluoroquinolone:

    - Notify their healthcare provider if they are taking a diabetes medicine, if they have hypoglycemia while taking a fluoroquinolone, and how to self-treat hypoglycemia.
    - Patients with diabetes may be asked to check their blood glucose levels more often while taking a fluoroquinolone.

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- Symptoms of low blood sugar can progress and become life-threatening, so patients should seek immediate help by calling 911 or going to an emergency room if they experience more serious symptoms.

- Patients should also tell their healthcare provider immediately if they notice any changes in mood, behavior, or thinking.

- The safety update is based on 67 cases of hypoglycemic coma associated with fluoroquinolones in the FDA database and the medical literature.

    — Over half of the patients had diabetes and were taking antidiabetics. Twenty of the 67 patients who experienced hypoglycemic coma did not have diabetes and were not reported to be taking oral hypoglycemic agents or insulin.
    — Thirteen deaths occurred. Some of these patients were treated with fluoroquinolones for relatively uncomplicated infections and others had renal insufficiency.
    — Nine of the 54 patients who experienced a hypoglycemic coma did not recover fully and had resultant disability.
    — Patients had risk factors for hypoglycemia including older age, diabetes, renal insufficiency and concomitant use of hypoglycemic drugs especially sulfonylureas.

- The FDA conducted a review of postmarketing adverse event data and published medical literature on select psychiatric adverse events associated with fluoroquinolones and are recommending to streamline and standardize this information in the drug labels across the fluoroquinolone drug class.

- The FDA has previously communicated other safety issues associated with fluoroquinolones in in May 2016 (restricting use for certain uncomplicated infections), July 2016 (disabling side effects), August 2013 (peripheral neuropathy), and July 2008 (tendinitis and tendon rupture).