Pharmacology for Coding Specialists

Presented by:
Sandra Macica, MS, RHIA, CCS
Coding Content Manager
June 27, 2013
Objectives

• Coding & Pharmacology
• Drug Forms & Routes of Administration
• Cardiovascular & Thrombolytic Drugs
• Other Drugs
• Summary
Pharmacology and Drug Uses

- The study of drugs and their interactions with living organisms
- Concerned with the nature of drugs and medications, their actions in the body, drug dosages, side effects, etc.
- This webinar explains how coders can use their knowledge of drugs to ensure the accurate reporting of serious drug interactions and chronic healthcare conditions. The lesson provides information on uses for common brand-name and generic drugs. This information will help coders understand how to use medication information from physician orders and medication lists to identify situations in which further inquiry about comorbidities or complications may be necessary.
Examples

Coders can use medication information to find reportable conditions that otherwise might have gone unnoticed in the documentation.

– A surgeon treating a patient for a hip fracture focuses on documentation surrounding that acute condition.

– The fact that a patient is on medications for chronic conditions that are under control, such as hypertension, glaucoma, or hyperlipidemia, may be overlooked in the documentation. The patient doesn't go without the medications, but it may be more difficult to find this documentation in the record.

– Those conditions are not the current focus of treatment but are still important to report.

– Identifying poisonings, adverse effects, and underdosing.
Forensic Coding

• Understand the clinical picture
• Know how to interpret data
  – Labs
  – Radiology reports
  – Medication Administration Record (MAR)
• Know when it is appropriate to query the provider
  – A provider may document that a patient has a history of a certain condition. History in and of itself implies that the condition occurred in the past. In most cases, however, this condition is still present and will be present throughout the course of the patient's life. It is the coder's responsibility to know what to look for, and to determine whether the condition is still present.
  – For example, patient receiving treatment for hip fracture may be documented as having a history of depression. Because depression is a condition that may be short lived and situational, it may appear that the patient is no longer under treatment. Noticing that the patient is currently on medication for depression is important to reporting the coded data accurately.
Coding & Pharmacology

• Tools
  – Physician orders
  – Medication administration records (MAR)
  – Medication reconciliation forms
  – History and physical
  – Progress notes
Information Identified

• Stable secondary diagnoses that are being treated but not identified
  – Dilantin for seizure disorder
• Problems quickly resolved
  – Dehydration/electrolyte imbalance in the ED
• Severity of illness
  – Pipercillin for pneumonia (gram-negative bacteria)
Hybrid Medical Record

- Part paper/part electronic
- Constantly moving target
- How easy is it for you to find or read these?:
  - Physician orders
  - MAR
  - Medication reconciliation records

*Note: in an electronic record you have to know what you are looking at. If you haven’t been properly taught how to use what you see, you may be misunderstanding what the information is saying. Sometimes the drugs are ordered but not used, sometimes they are as needed but not used, sometimes they are from another period of time.*
Medical Uses for Drugs

• Therapeutic
• Preventive
• Diagnostic
Therapeutic Use

• Drugs used to control, improve, or cure symptoms, conditions, or diseases of a physiological or psychological nature.

• Examples:
  – Antibiotics to kill bacteria that cause infection
  – Type of antibiotic can help identify the bacteria
Preventative Use

• Drugs used to prevent the occurrence of symptoms, conditions, or diseases.

• Examples:
  – Total parental nutrition (TPN)
    • Is it to prevent malnutrition?
    • Is it to treat malnutrition?
Diagnostic Use

• Drugs used by themselves or in conjunction with radiological procedures/medical tests to provide evidence of a disease process
• Example:
  – Radiopaque dyes used during x-ray procedures
Drug Formats

• Tablet
  – Scored
  – Enteric
  – Slow release
  – Lozenge
  – Troche
Drug Formats

- Capsule – soft or hard
- Cream
- Ointment
- Lotion
- Gel
Drug Formats

- Powder
- Liquid
- Suppository
- Transdermal
- Pellet/bead
Routes of Administration

• Various routes
• Each route has distinct advantages and disadvantages
• One route may be therapeutic while another may be ineffective, harmful, or even fatal
Routes of Administration

- Oral
- Sublingual
- Nasogastric
- Gastrostomy/jeunostomy
- Rectal
- Vaginal
Routes of Administration

- Topical
- Transdermal
- Inhalation
- Parenteral
- Subcutaneous
- Intramuscular
• Patients who have trouble swallowing pills can take a liquid form
• Infants are given drugs in liquid form that is mixed with a small amount of formula and can be administered through a nipple
Sublingual

- Involves placing the drug (usually tablet form) under the tongue and allowing it to dissolve
- Drug is not swallowed
- Drug is absorbed quickly through oral mucous membranes into the large blood vessels under the tongue
- Faster therapeutic effect than oral route
Topical

• Drug is applied directly to the skin or to the mucous membranes of the eyes, ears, nose, or mouth
• Effects are generally local
Transdermal

- Drug is administered topically and applied to the skin via physical delivery through a porous membrane
- Therapeutic effects are felt systemically not just at the site of administration
  - e.g. patch
Parenternal

• Includes all routes of administration other than oral but in clinical usage includes:
  – Subcutaneous
  – Intramuscular
  – Intravenous
Drug Names

• Chemical name – describes molecular structure and is unique
• Generic name
• Trade name/brand name – registered with Patent Office
• The drug name contains information regarding the drug itself
<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Rx Trade Name</th>
<th>OTC Trade Name</th>
<th>Therapeutic Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Famotidine</td>
<td>Pepcid</td>
<td>Pepcid AC</td>
<td>Heartburn/ ulcer</td>
</tr>
<tr>
<td>Naproxen</td>
<td>Naprosyn</td>
<td>Aleve</td>
<td>Analgesic</td>
</tr>
</tbody>
</table>

Drugs carry a unique chemical name that describes the molecular structure. Drugs also have a generic name and a trade or brand name that is registered with the U.S. Patent and Trademark Office that may contain information regarding the drug itself. A brand-name drug is a drug marketed under a proprietary, trademark-protected name. Once a brand-name drug's patent has expired, other manufacturers may produce the drug under its generic name. A generic drug is the same as a brand-name drug in dosage, safety, strength, method of delivery, quality, performance, and intended use.
Tips for the Coding Specialist

• Issues
  – Vast number of drugs
  – Generic and trade names to remember
  – Constant introduction of new drugs
  – Same drugs may be used to treat different issues:
    • Wellbutrin: depression; quit smoking
    • Cymbalta: depression; chronic pain and fibromyalgia
  – Off-label use of drugs
Off-Label Uses of Drugs

Drugs are often prescribed for "off-label" uses. When a drug is used off label, it is used in a way that differs from that described on the drug label approved by the U.S. Food and Drug Administration (FDA). This off-label use can mean the drug is used or given as follows:

• For a different disease or medical condition
  – Minoxidil (Rogaine), used topically for hair loss, originally was created in a pill form to treat hypertension

• In a different way (such as by a different route)
  – Lorazepam (Ativan) is an antianxiety drug often used as an antinausea drug in cancer treatment. When used in this manner, Ativan is most commonly given under the tongue—a route of administration that is not listed on the drug label. In this case, it is being given for an off-label use and by an off-label route

• In a dosage different from what is on the approved label
Off-Label Uses of Drugs

• Off-label use is more prevalent with older, generic medicines because new uses for these drugs may have been found. Even though medical evidence often exists to support a new use, drug manufacturers have not put the drugs through the official FDA approval process. An example of off-label use is when a chemotherapy drug is approved for treating one type of cancer but is used to treat a different type of cancer.

• The off-label use of FDA-approved drugs is not regulated, and it is legal in the United States for all drugs except some controlled substances such as opioids (pain medicines—for example, morphine and fentanyl). It is legal for doctors to prescribe drugs off label, but it is not legal for drug companies to market their drugs for off-label uses.
Tip #1

- Generic drug names reflect similar chemical structures
- Members of the benzodiazepine class of tranquilizers and are used to treat anxiety and neurosis
  - Diazepam (Valium)
  - Lorazepam (Ativan)
  - Oxazepam (Serax)
Tip # 2

• The drug name may indicate the disease the drug will treat
  – Azmacort – used to treat asthma
  – Rythmol – used to treat cardiac arrhythmias
Tip # 3

• The drug name may indicate the part of the body the drug will treat
  – NasalCrom – used to treat nasal allergies
  – Bronkaid – used to dilate the bronchial tubes
Tip # 4

• The drug name may indicate the action of the drug
  – Elimite – used to treat scabies (mites)
  – Flexeril – a skeletal muscle relaxant
Tip # 5

• The drug name indicates several drugs are used in combination
  – Ser-Ap-Es (combines the trade name drugs Serpasil, Apresoline, and Esidrix)
Tip # 6

• The drug name indicates how often the drug should be taken
  – Nitro-Bid – used to treat angina pectoris (twice a day; \textit{b.i.d.})
Tip # 7

• The drug name indicates the duration of the drug action
  – Pronestyl-SR – a sustained release tablet for cardiac arrhythmias
  – Slow-K – slow release potassium supplement
Common Cardiovascular Conditions

- Congestive Heart Failure
- Angina pectoris
- Arrhythmia
- Hypertension
- Hyperlipidemia
Congestive Heart Failure

• Heart muscle is weakened and unable to adequately pump blood

• Right-sided
  – Back-up of blood into venous circulation
  – Enlargement of liver and edema
Congestive Heart Failure

• Left-sided failure
  – Back-up of blood into the pulmonary circulation
  – Produces pulmonary edema
CHF Treatment

- Cardiac Glycosides
- Diuretics
- ACE Inhibitors
- Calcium Channel Blockers
Cardiac Glycosides

• Digitalis glycosides to help the heart muscle to contract properly and help treat some heart rhythm disturbances
• Cause the heart to pump more slowly and more efficiently
• Allowing the heart to fill more completely before the next contraction
• Example
  – Digoxin (Lanoxicaps, Lanoxin)
Diuretics for CHF

- Used in combination with cardiac glycosides
- Helps rid your body of fluid and salt (sodium)
- Examples:
  - furosemide (Lasix)
  - spironolactone (Aldactone)
  - hydrochlorothiazide (HydroDIURIL),
  - chlorthalidone (Hydrone)
  - chlorothiazide (Chlotride)
  - torsemide (Demadex)
  - bumetanide (Bumex)
ACE Inhibitors for CHF

• Angiotensin-converting enzyme
• Open up blood vessels and decrease the work load of the heart
• Effect - Vasodilation
  – Decrease blood pressure
  – Decrease pulmonary vascular and peripheral resistance.
• Examples:
  – enalapril (Vasotec)
  – fosinopril (Monopril)
  – captopril (Capoten)
  – Lisinopril (Prinivil, Zestril)
  – ramipril (Altace)
Calcium Channel Blockers for CHF

• Effect:
  – Decreases heart rate
  – Decreases blood pressure
  – Treat diastolic heart failure

• Examples:
  – Amlodipine (Norvasc)
  – Diltiazem (Cardizem)
  – Verapamil (Calan SR)
• Angiotensin receptor blockers (ARBs) such as losartan (Cozaar) and candesartan (Atacand) for those who have side effects with ACE inhibitors
• Beta-blockers such as carvedilol (Coreg) and metoprolol (Lopressor, Toprol), which may be helpful for some patients
Angina Pectoris

• Pain caused:
  – When the cells of the myocardium receives insufficient oxygen
    • From plaques in the coronary system
    • Spasm of coronary arteries
    • Vasoconstriction due to smoking
Angina Treatments

• Angina pectoris
  – Nitrates
  – Beta-Blockers
  – Calcium Channel Blockers

• If progress to myocardial infarction
  – Thrombolytic
Nitrates for Angina

• Nitroglycerin is the standard anti-anginal therapy
• Act as a vasodilator reducing preload pressure and the need for oxygen
• Multiple routes of administration
  – Sublingual, transmucosal, tablet, patch, topical, intravenous
Beta Blockers for Angina

• Decreases heart rate and decreases the need for oxygen
• Examples:
  – propranolol (Inderal)
  – metoprolol (Lopressor, Toprol-XL)
 Calcium Channel Blockers for Angina

• Relaxes smooth muscle of the blood vessels decreasing arterial pressure
• Dilates coronary arteries and prevents spasms
• Examples:
  – Amlodipine (Norvasc)
  – Diltiazem (Cardizem)
  – Verapamil (Calan SR)
**Myocardial Infarction**

- Thrombolytic enzymes and tissue plasminogen activators are used to *lyse* the clot
- They bind to the fibrin in the clot and convert it to plasmin which breaks the fibrin and dissolves the clot
Examples

• Thrombolytic Enzymes
  – antistreplase (Eminase)
  – streptokinase (Streptase)

• Tissue Plasminogen Activators
  – alteplase (Activase)
  – reteplase (Retavase)
  – tenecteplase (TINKase)
Cardiac Arrhythmias

• Caused by conduction abnormalities of the electrical impulses
• Manifests as
  – Bradycardia or tachycardia
  – Atrial fibrillation/flutter
  – Irregular beats
Treatments

• Beta-Blockers
• Calcium Channel Blockers
• Cardiac Glycosides
Antiarhythmic Drugs

• Come in capsule, tablet (regular and extended-release), and injectable

• Commonly used antiarrhythmics:
  – disopyramide (Norpace, Norpace CR),
  – procainamide (Procan SR, Pronestyl, Pronestyl-SR)
  – quinidine (Cardioquin, Duraquin, Quinidex)
Hypertension

• Condition that manifests as an increase in the systolic and/or diastolic blood pressure
  • Systolic pressure $>140$ mmHg
  • Diastolic pressure $>90$ mmHg
• Causes:
  – Arteriosclerosis, kidney disease, other
• Life style changes may be tried prior to drug therapy
Drug Treatment Examples for HTN

- Diuretic - acetazolamide (Diamox®)
- Beta-Blockers - atenolol (Tenormin®)
- Calcium Channel Blockers - amlodipine (Norvasc®)
- ACE Inhibitors - enalapril (Vasotec®)
- Angiotensin II Receptor Blockers - losartan (Cozaar®)
Hyperlipidemia

- Term includes hypercholesterolemia and hypertriglyceridemia
- Well defined risk factor for atherosclerosis
- Cholesterol is produced by the liver and needed by the body
- Caused by excessive dietary intake and sometimes a genetic disorder
Treatment

• Dietary therapy
• Drugs -Cholesterol Synthesis Inhibitors
  – lovastatin (Mevacor)
  – simvastatin (Zocor)
  – pravastatin (Pravachol)
  – fluvastatin (Lescol)
Other Drugs

• Warfarin (Coumadin)
  – Anticoagulant (blood thinner)
  – Reduces the formation of blood clots.
  – Used to prevent:
    • Heart attacks
    • Strokes
    • Blood clots in veins and arteries.
Coumadin

- What to look for:
  - Heart valve replacement
  - Blood clots in the lungs
  - Atrial fibrillation
  - Stroke
  - There are others also...
What medications are used to treat schizophrenia?

- Antipsychotic medications
- Some of these medications have been available since the mid-1950's.
- Some of the more commonly used medications include:
  - Chlorpromazine (Thorazine)
  - Haloperidol (Haldol)
  - Perphenazine (generic only)
  - Fluphenazine (generic only).
What medications are used to treat schizophrenia?

• In the 1990's, new antipsychotic medications were developed. These new medications are called second generation, or "atypical" antipsychotics.

• One of these medications was clozapine (Clozaril).
  – Treats psychotic symptoms, hallucinations, and breaks with reality
  – Can sometimes cause a serious problem called agranulocytosis
    • Loss of the white blood cells that help a person fight infection.
    • Must get their white blood cell counts checked every week or two
What medications are used to treat schizophrenia?

• Other atypical antipsychotics were developed. All of them are effective, and none cause agranulocytosis. These include:
  – Risperidone (Risperdal)
  – Olanzapine (Zyprexa)
  – Quetiapine (Seroquel)
  – Ziprasidone (Geodon)
  – Aripiprazole (Abilify)
  – Paliperidone (Invega)

• Antipsychotic medications are not FDA-approved for the treatment of behavioral disorders in patients with dementia.
What medications are used to treat depression?

• Antidepressants work to balance some of the natural chemicals in our brains
• Antidepressants work on neurotransmitters such as serotonin, norepinephrine, and dopamine.
• The most popular types of antidepressants are called selective serotonin reuptake inhibitors (SSRIs). These include:
  – Fluoxetine (Prozac)
  – Citalopram (Celexa)
  – Sertraline (Zoloft)
  – Paroxetine (Paxil)
  – Escitalopram (Lexapro).
What medications are used to treat depression?

- Other types of antidepressants are serotonin and norepinephrine reuptake inhibitors (SNRIs).
- SNRIs are similar to SSRIs and include:
  - venlafaxine (Effexor)
  - duloxetine (Cymbalta)
- Another antidepressant that is commonly used is bupropion (Wellbutrin)
- SSRIs and SNRIs are popular because they do not cause as many side effects as older classes of antidepressants
Anxiety Disorder Treatment

• Antidepressants, anti-anxiety medications, and beta-blockers are the most common medications used for anxiety disorders.

• Anxiety disorders include:
  – Obsessive compulsive disorder (OCD)
  – Post-traumatic stress disorder (PTSD)
  – Generalized anxiety disorder (GAD)
  – Panic disorder
  – Social phobia
Anxiety Disorder Treatment

- The anti-anxiety medications called benzodiazepines can start working more quickly than antidepressants. The ones used to treat anxiety disorders include:
  - Clonazepam (Klonopin), which is used for social phobia and GAD
  - Lorazepam (Ativan), which is used for panic disorder
  - Alprazolam (Xanax), which is used for panic disorder and GAD.
  - Buspirone (Buspar) is an anti-anxiety medication used to treat GAD. Unlike benzodiazepines, however, it takes at least two weeks for buspirone to begin working.
  - Clonazepam, listed above, is an anticonvulsant medication
How are corticosteroids used?

• The drugs are front-line treatments for:
  – Rheumatoid arthritis
  – Lupus
  – Asthma
  – Allergies and many other conditions

• They also treat life-threatening conditions such as Addison's disease, in which the adrenal glands don't produce enough steroids, and help prevent organ rejection in transplant recipients.
How are corticosteroids used?

• Corticosteroids can be taken:
  – **By mouth.** Tablets, capsules or syrups help treat the inflammation and pain associated with certain chronic conditions, such as arthritis and lupus.
  – **By inhaler and intranasal spray.** These forms help control inflammation associated with asthma and nasal allergies.
  – **Topically.** Creams, ointments and roll-ons can help heal many skin conditions.
  – **By injection.** This form is used to treat such signs and symptoms as the pain and inflammation of tendinitis.
What side effects can corticosteroids cause?

- Side effects of oral corticosteroids:
  - Elevated pressure in the eyes (glaucoma)
  - Fluid retention, causing swelling in your lower legs
  - Increased blood pressure
  - Mood swings
  - Weight gain, with fat deposits in your abdomen, face and the back of your neck
  - High blood sugar, which can trigger or worsen diabetes
  - Increased risk of infections
  - Loss of calcium from bones
  - Menstrual irregularities
  - Suppressed adrenal gland hormone production
  - Thin skin, easy bruising and slower wound healing
What medications are used to treat GERD

- Stomach contents leak back (reflux) into the esophagus and irritate it; left untreated, it can cause more serious health problems
  - Lansoprazole (Prevacid)
  - Famotidine (Pepcid)
  - Esomeprazole (Nexium)
  - Rabeprazole (Aciphex)
  - Omeprazole (Prilosec)
Case Study
REASON FOR ADMISSION: Chest pain, syncopal episode.

HISTORY OF PRESENT ILLNESS: This is a 51-year-old female admitted through the emergency department with syncopal episode with chest pain and also noted to have epigastric discomfort.
The patient was admitted and started on Lovenox and nitroglycerin paste. The patient had serial cardiac enzymes and ruled out for myocardial infarction. The patient underwent a dual isotope stress test. There was no evidence of reversible ischemia on the Cardiolite scan. The patient had a Holter monitor placed but the report is not available at this time. The patient has remained hemodynamically stable.
1. Chest pain, ruled out myocardial infarction

2. Syncope, workup in progress

3. History of hyperlipidemia

4. History of gastroesophageal reflux disease
1. Prevacid 30 mg p.o. every day.
2. Lipitor 10 mg every day.
3. Premarin 0.625 mg every day.
4. Enteric-coated aspirin 325 mg every day.
5. Lisinopril 20 mg once a day
6. Hydrochlorothiazide HCTZ 25 mg
7. Elavil 75 mg once a day at bedtime
8. Ampicillin 500 mg, every 6 hours
Discussion

• What medications are used to treat the patient’s GER?
• What medications might indicate an undocumented diagnosis of depression?
• What medication might indicate an undocumented diagnosis of hypertension?
• What does “history of hyperlipidemia “indicate?
Summary

- Be thorough
- Follow the coding guidelines
- Look at the known facts
- Use the clues provided
- Query when necessary
Conclusion

• Thank you for attending our webinar!
• Questions? s.macica@elsevier.com
• Please complete the survey, your feedback helps us to design training to meet your needs
• You will receive an email within 10 days providing a link to the CE Certificate, the webinar recording and the presentation slides