

Program Learning Objectives

Upon successful completion of this program, participants will be able to:

- Identify the 25 most frequently prescribed FDA approved medications.
- Review the basic mechanism of action, therapeutic indications, and potential adverse reactions and drug interactions of these medications.
- Discuss the clinical dental considerations of these
 medications and potential impact on dentistry.

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		The Top 25			
1.	Lipitor	10. Cymblata	18. Nasonex		
2.	Nexium	11. Diovan	19. Viagra		
3.	Plavix	12. Ventolin HFA	20. Lyrica		
4.	Singulair	13. Diovan HCT	21. Celebrex		
5.	Lexapro	14. Actos	22. Concerta		
6.	Crestor	15. Seroquel	23. Spiriva		
7.	Synthroid	16. Levaquin	24. Effexor XR		
8.	ProAir HFA	17. Lantus	25. Tricor		
9.	Advair Diskus				
Source: SDI's Vector One: National (as published in Drug Topics) © 2013 Thomas A. Viola, R.Ph. All Rights Reserved 4					

Lipitor (atorvastatin) Crestor (rosuvastatin)

Antihyperlipidemic Agents

- Hyperlipidemia
 - -Elevation of lipids (fats) in the bloodstream
- Lipoproteins

- -Cholesterol, phospholipids and triglycerides are insoluble in our water-based blood
- -Must be bound to lipid-containing proteins (lipoprotein) for transport

Antihyperlipidemic Agents

- Low-density lipoproteins (LDL's)
 - -Transport cholesterol to peripheral cells
 - -Excess cholesterol is discarded into the blood
 - Leads to high cholesterol
 - Leads to atherosclerotic plaque formation
- High-density lipoproteins (HDL's)
 - -Transfer cholesterol from peripheral cells to liver -Cholesterol is metabolized in liver and excreted

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Lipitor (atorvastatin)

- Pharmacologic Classification –Antihyperlipidemic
- Mechanism of Action

 Inhibits HMG-CoA reductase, reduces cholesterol synthesis, decreases LDL's and increases HDL's
- Therapeutic Indication
 - -Treatment of high cholesterol
 - -Reduction of risk of MI, angina

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Nexium (esomeprazole)

 Pharmacologic Classification —Proton-pump inhibitor

- Mechanism of Action

 Inhibits enzyme on the surface of parietal cells, reduces gastric acid synthesis
- Therapeutic Indication

 Treatment of gastroesophageal reflux disease





Thromboembolic Disease

Coagulation

 A normal clotting mechanism which prevents blood loss when the integrity of a blood vessel is disrupted

Hypercoagulation

- An abnormally overactive clotting mechanism which produces clots (thrombi) within undamaged vessels
 - Arterial thrombi produce stroke, MI, death
 - Venous thrombi produce deep vein
 - thrombosis and pulmonary embolism

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Oral Antiplatelet Agents

- Types
 - aspirinclopidogrel (Plavix)
 - -dipyridamole (Persantine)
 - -prasugrel (Effient)
 - -ticagrelor (Brilinta)

Uses

- -Prevention of cardiovascular events in adults with
 - Acute coronary syndrome
 - Recent MI, TIA, stroke
 - Post-stenting

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Oral Antiplatelet Agents

- Dental considerations
 - Drug interactions with liver enzyme inducers and inhibitors (Plavix and Brilinta)
 - Increased risk of bleeding may be exacerbated by other drugs used in dentistry
 - NSAIA's
 - Antibiotics
 - -No contraindication for dental treatment

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Plavix (clopidogrel)

- Pharmacologic Classification –Platelet aggregation inhibitor
- Mechanism of Action

 Inhibits binding of ADP to platelet receptors, inhibits formation of thrombi
- Therapeutic Indication
 - -Treatment of MI, stroke, PVD
 - -Treatment of acute coronary syndrome
- -Prevention of thrombosis post-stent placement



Oral Anticoagulant Agents

- Types
 - -Coumadin (warfarin)
 - Inhibits the synthesis of Vitamin K-dependent clotting factors
- Uses

 Prevention and treatment of venous thrombosis, pulmonary embolism, thromboembolism due to
 Atrial fibrillation

- Atrial fibrillat
- Prosthesis
- Recent MI

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Oral Anticoagulant Agents

- Patient care considerations
 - -Increased risk of bleeding
 - Assessed by INR
 INR (internations)
 - -INR (international normalized ratio)
 Value of 1 is "normal"
 - Value of <3.5 is needed for dental hygiene treatment
 - -INR test should be done immediately before oral treatment

Oral Anticoagulant Agents

 Dental considerations

 Anticoagulant effect may be reversed with administration of Vitamin K or whole blood

 Increased risk of bleeding may be exacerbated by other drugs used in dentistry

• NSAIA's

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Antibiotics

-No contraindication for dental treatment!

Oral Anticoagulant Agents

Types

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- Pradaxa (dabigatran)
 Inhibits thrombin (factor IIa)
- Uses

 Prevention and treatment of venous thrombosis, pulmonary embolism, thromboembolism due to atrial fibrillation

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Oral Anticoagulant Agents

- Patient care considerations

 No antidote for reversal of anticoagulant effect
 No INR testing for monitoring
 - -High incidence of dyspepsia
 - Due to tartaric acid included in capsule to improve absorption
 - Missed doses increase risk of stroke
 Must be taken twice daily

Oral Anticoagulant Agents

Patient care considerations

 Increased risk of bleeding may be exacerbated by other drugs used in dentistry

- NSAIA's
- Antibiotics
- -Co-administration with aspirin doubles bleeding risk
- -No contraindication for dental treatment!

Oral Anticoagulant Agents

- Types
 - -Xarelto (rivaroxaban) -Eliquis (apixaban)
 - Inhibit factor Xa
- Uses
 - -Prevention and treatment of venous thrombosis, post-hip or knee replacement
 - Prevention and treatment of venous thrombosis, pulmonary embolism, thromboembolism due to atrial fibrillation

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Oral Anticoagulant Agents

- Patient care considerations
 - No antidote for reversal of anticoagulant effect
 No INR testing for monitoring
 - -Possible drug interactions
 - -Impaired renal function may alter efficacy
 - -Should be taken with food

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Oral Anticoagulant Agents

- Patient care considerations

 Increased risk of bleeding may be exacerbated by other drugs used in dentistry
 NSAIA's
 - Antibiotics

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-No contraindication for dental treatment!

To Bleed or Not to Bleed... There is a widespread belief that oral anti-thromboembolic therapy must be discontinued before dental treatment to prevent serious hemorrhagic complications. • This is regardless of the fact that dental treatment

rarely involves trauma to major blood vessels and that effective local hemostatic measures exist in dentistry (aminocaproic acid or tranexamic acid oral rinse)

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To Bleed or Not to Bleed...

The potential for excessive bleeding with continuation of therapy must be weighed against the adverse effects of discontinuation of therapy.

- Patients receiving oral antithromboembolic therapy may bleed more that what is normally encountered.
- Patients who discontinue such therapy are at greater risk for resulting hypercoagulation.

To Bleed or Not to Bleed...

Clinical literature does not support routine discontinuation of oral antithromboembolic therapy for dental patients.

- Discontinuation of oral antithromboembolic therapy prior to dental treatment puts the patient at unnecessary risk for severe morbidity and mortality.
- Antithromboembolic therapy is not within the scope of practice of dentists or hygienists.



Singulair (montelukast)

- Pharmacologic Classification

 Leukotriene receptor antagonist
- Mechanism of Action

 Inhibits binding of leukotrienes to receptors, decreases bronchoconstriction and edema
- Therapeutic Indication

 Prophylaxis and treatment of chronic bronchial asthma

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Antidepressant Agents

- Mechanism of action/Types
 - -Inhibit reuptake of norepinephrine/serotonin
 - Tricyclic antidepressants (TCA's)
 -amitriptyline (Elavil)
 - trazodone (Desyrel)
 - venlafaxine (Effexor)

-Inhibit reuptake of serotonin only (SSRI's)

- fluoxetine (Prozac)
- sertraline (Zoloft)

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Lexapro (escitalopram)

- Pharmacologic Classification –Antidepressant
- Mechanism of Action

 Selective serotonin reuptake inhibitor (SSRI), increases serotonin activity at receptors
- Therapeutic Indication
 - -Treatment of major depressive disorder
 - -Treatment of generalized anxiety disorder

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Lexapro (escitalopram)

- Adverse Effects
- Precautions
- Headache
 Xerostomia
- Increased bleeding
 Serotonin syndrome
- -Gl upset
- –Seizure disorder
- –Bruxism
- -Suicidal thoughts
- Dental Considerations

 Increased risk of bleeding events, especially with
 - concurrent use of NSAIA's, aspirin, warfarin
 - -Use epinephrine with caution, monitor blood pressure and pulse

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Synthroid (levothyroxine) Pharmacologic Classification —Thyroid hormone Mechanism of Action —Synthetic for of thyroxine, responsible for normal growth and development Therapeutic Indication —Treatment of hypothyroidism

Synthroid (levothyroxine) Adverse Effects Precautions -Alopecia -Allergy -Dry skin -Ischemic heart -Gl upset disease -Dysphagia Dental Considerations

- -Overdose may lead to exaggerated response to epinephrine and cardiac arrhythmias
- -Refer uncontrolled patients for medical consult
- Monitor blood pressure and pulse

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ProAir HFA (albuterol) Ventolin HFA (albuterol)

ProAir HFA (albuterol)

- Pharmacologic Classification
 Short-acting Beta-2 adrenergic agonist
- Mechanism of Action

 Stimulates Beta-2 receptors, relaxes bronchial smooth muscle, producing bronchodilation
- Therapeutic Indication

 Prevention and relief of bronchospasm and exercise-induced bronchospasm

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ProAir HFA (albuterol)

- Adverse Effects
- Precautions
 Hyperthyroidism
- HeadacheTachycardia
- Severe cardiac disease
- -Pharyngitis
- -Xerostomia
- Dental Considerations
 - -Keep short-acting bronchodilators readily available
 - -Use NSAIA's with caution
 - -Use vasoconstrictors (sulfites) with caution
 - -Consider semi-supine chair position









Cymbalta (duloxetine)

- Pharmacologic Classification –Antidepressant
- Mechanism of Action

 Inhibits serotonin and norepinephrine reuptake, increases their activity at their receptors
- Therapeutic Indication
 - -Treatment of major depressive disorder
 - -Treatment of diabetic neuropathy
 - -Treatment of fibromyalgia and chronic muscle pain
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Cymbalta (duloxetine)

- Adverse Effects
 Headache
- Precautions
 Increased bleeding
- -Hepatotoxicity
- –Xerostomia–GI upset
- -Serotonin syndrome
- –Bruxism
- -Suicidal thoughts
- Dental Considerations
 - -Increased risk of bleeding events, especially with concurrent use of NSAIA's, aspirin, warfarin
 - -Use epinephrine with caution, monitor blood pressure and pulse







Sympathetic Autonomic Nervous System				
Receptor	Stimulation by (nor)epinephrine produces:			
α_1	Vasoconstriction (skin and mucosa)			
β_1	Increased cardiac activity			
β_2	Vasodilation (skeletal muscle) Bronchodilation			
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Treatment of Hypertension

- Non-pharmacologic treatment of hypertension —Reduce weight
 - -Limit alcohol consumption
 - -Increase aerobic physical activity
 - -Restrict sodium intake
 - -Stop smoking

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Treatment of Hypertension				
 Pharmacologic treatment of hypertension 				
<u>Goal of Treatment</u> Reduce plasma volume	Drugs Employed Diuretics			
Dilate blood vessels	ACEI's, ARB's, CCB's, hydralazine			
Reduce cardiac output (via SANS)	Beta-1 Blockers, Alpha-1 Blockers, clonidine			
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Diovan (valsartan) Pharmacologic Classification Angiotensin II receptor (AT1) antagonist Mechanism of Action Inhibits binding of angiotensin II to receptors, produces vasodilation and reduces blood pressure Therapeutic Indication

- -Treatment of hypertension
- -Treatment of heart failure © 2013 Thomas A. Viola, R.Ph. All Rights Reserved







Antidiabetic Agents

- Treatment of Diabetes Type II (NIDDM) (continued)
 Inhibit breakdown of ingested carbohydrates
 acarbose (Precose)
 - Mimic the action of incretin hormones
 Prolongs the stimulation of insulin production -exenatide (Byetta)
 - Inhibit the breakdown of incretin hormones
 - sitagliptin (Januvia)
 - saxagliptin (Onglyza)
 - linagliptin (Tradjenta)
 - alogliptin (Nesina)
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Actos (pioglitazone)

- Pharmacologic Classification –Antidiabetic
- Mechanism of Action

 Reduces skeletal muscle insulin resistance and decrease hepatic glucose output
- Therapeutic Indication

 Treatment of Type II diabetes

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 Actos (pioglitazone)

 • Adverse Effects
 • Precautions

 -Headache
 -Hepatic impairment

 -Myopathy
 -Renal impairment

 -Sinusitis
 -Increased risk of MI

 -Pharyngitis
 • Dental Considerations

 • No drug-specific
 • Consider susceptibility to infection

 • Consider decreased wound healing
 • Consider AM appointments/stress reduction

Seroquel (quetiapine)

Seroquel (quetiapine)

Pharmacologic Classification
 –Psychotherapeutic agent

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- Mechanism of Action

 Antagonizes dopamine, serotonin, histamine, and alpha-1 adrenergic receptors, reduces psychoses
- Therapeutic Indication
 Treatment of schizophrenia















Insulins				
Short Acting	Intermediate Acting	Long Acting		
 Humulin R Insulin aspart (Novolog) Insulin lispro (Humalog) Insulin glulisine (Apidra) 	 Humulin N Humulin L Humulin 70/30 Humalog Mix 75/25 	 Humulin U Insulin detemir (Levemir) Insulin glargine (Lantus)** "discard 28 days after 1st use 		
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 Lantus (insulin glargine)

 Adverse Effects
 Precautions

 -Fatigue
 -Hypoglycemia

 -Muscle weakness
 -Hypokalemia

 -Skin rash
 -Mouth numbness

 Dental Considerations
 -Additive hypoglycemia with NSAIA's, salicylates

 -Corticosteroids and epinephrine may increase serum glucose levels
 -Monitor for hypoglycemia, ketoacidosis



Nasonex (mometasone furoate) Pharmacologic Classification Nasal corticosteroid Mechanism of Action Inhibits release of inflammatory mediators, prevents onset of allergic reaction Therapeutic Indication Treatment and prophylaxis of seasonal and perennial allergic rhinitis

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Lyrica (pregabalin)

- Adverse Effects
 - -Peripheral edema
 - -Dizziness
 - Weight gain
 Xerostomia
- Abnormal thoughts
 Mood changes

Precautions

- Amnesia and mental impairment
- Dental Considerations
 - Additive sedation with CNS depressants
 - -Medical consult for determine seizure control
 - -Consider stress-reduction techniques











Concerta (methylphenidate)

- Pharmacologic Classification –CNS stimulant
- Mechanism of Action

 Blocks reuptake of norepinephrine and dopamine, increases attention span and mental alertness
- Therapeutic Indication
 - -Treatment of ADHD
 - -Treatment of narcolepsy

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Concerta (methylphenidate)

- Adverse Effects
- Precautions
 –Psychiatric disorders
- HeadacheHypertension
- -Seizure disorders
- -GI upset -Xerostomia
- Abuse potential
- Dental Considerations

 Additive CNS stimulation with TCA's, SSRI's
 - -Monitor blood pressure and pulse
 - -Use vasoconstrictors with caution









Effexor XR (venlafaxine)

- Pharmacologic Classification –Antidepressant
- Mechanism of Action

 Inhibits serotonin and norepinephrine reuptake, increases their activity at their receptors
- Therapeutic Indication
 - -Treatment of major depressive disorder
 - -Treatment of generalized anxiety disorder

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Effexor XR (venlafaxine)

- Adverse Effects
- Precautions
- -Headache -Xerostomia
- Increased bleeding
 Serotonin syndrome
- –Xerostomia
 –GI upset
- -Seizure disorder
- -Bruxism
- Suicidal thoughts
- Dental Considerations
 _Increased risk of bleeding events
 - -Increased risk of bleeding events, especially with concurrent use of NSAIA's, aspirin, warfarin
 - -Use epinephrine with caution, monitor blood pressure and pulse







