NEW MEDICATIONS IN THE WORKPLACE

MATT LAUZON, MD FRCPC

OEMAC September 2018

DISCLOSURES

- **Faculty:** Matt Lauzon, MD, FRCPC
  Internal Medicine and Occupational Medicine
  Clinical Lecturer University of Calgary
- **Relationships with commercial interests:**

–**Speakers Honoraria:** Occupational Health Nurses Association of Alberta

–**Consulting Fees:** AHS Workplace Health and Safety, University of Calgary Wellness Department, Veresen Inc., Drivercheck Inc., Hines Health Services, Shell Canada, Alberta Workers Compensation Board, Cargill Inc., Encana, Nutrien

OBJECTIVES

1. Discuss concerns regarding new medications in the workplace
2. Considerations for Fitness to Work and how medication affects this
3. Discussion of more recent medications and specific concerns

Adverse Reactions

>10%:

Central nervous system: H
14%), drowsiness (9%
related), fatigue (7% to
related)

Gastrointestinal: Nausea (
xerostomia (adults: 11
related, children and a
abdominal pain (childr
adolescents: 13%, adu

Endocrine & metabolic: We
and adolescents: 14%

Neuromuscular & skeletal:
to ≤11%; dose related)

1% to 10%:

Cardiovascular: Flushing (
blood pressure (2%), p
to 2%)

Central nervous system: In
10%; dose related), di

paresthesia (≥1%), rigors (≥
disorder (≥1%), vertigo (≥1

Dermatologic: Diaphoresis (6%)
(≥1%)

Endocrine & metabolic: Decreas
(3%), orgasm abnormal (≥1
hot flash (≥1%), weight gair

Gastrointestinal: Constipation (9
dose related), decreased ap
to 10%; dose related), vomi
and adolescents: 9%; adults
diarrhea (6% to 9%), dyspe
dysgeusia (≥1%), flatulence

Genitourinary: Erectile dysfuncti
ejaculatory disorder (2%), u
frequency (≥1%)

Hepatic: Increased serum ALT (
1%)

Neuromuscular & skeletal: Trem
3%; dose related), musculo
(≥1%)

Ophthalmic: Blurred vision (≥1%

Respiratory: Oropharyngeal pain (chil
and adolescents: 4%; adults: ≥1%
cough (children and adolescents:

<1%, postmarketing, and/or case reports:
Abnormal gait, acute pancreatitis, agg
behavior (particularly early in treatmer
after treatment discontinuation), akath
anaphylaxis, angioedema, angle-closu
glaucoma, apathy, bruxism, cardiomy
(takotsubo), cholestatic jaundice, cold
extremities, confusion, contact derma
dehydration, diplopia, disorientation,
disturbance in attention, dry eye synd
dysarthria, dyskinesia, dyslipidemia,
dysphagia, dysuria, ecchymoses, elev
glycosylated hemoglobin (diabetic
neuropathic pain), emotional lability,
epistaxis, eructation, erythema, erythe
multiforme, extrapyramidal reaction, fa
feeling abnormal, galactorrhea, gastri
gastritis, gastroenteritis, gastrointestin
hemorrhage, gynecological bleeding,
halitosis, hallucination, hematoma, he
failure, hepatitis, hepatomegaly, hostil
hyperbilirubinemia, hypercholesterole
hyperglycemia, hyperkalemia,
hyperlipidemia, hyperprolactinemia,
hypersensitivity angiitis, hypersensitiv

hypersensitivity angiitis, hypersensitivity
reaction, hypertensive crisis, hypertonia,
hypokalemia, hypomania, hyponatremia,
hypothyroidism, impulsivity, increased blood
pressure, increased creatine phosphokinase,
increased diastolic blood pressure, increased
serum alkaline phosphatase, increased
serum AST, increased serum bicarbonate,
increased serum transaminases, increased
thirst, irritability, jaundice, laryngitis,
lymphocytic colitis, malaise, malodorous
urine, mania, menopausal symptoms,
menstrual disease, myocardial infarction,
muscle spasm, muscle twitching, myoclonus,
night sweats, nocturia, orthostatic
hypotension, otalgia, outbursts of anger
(particularly early in treatment or after
treatment discontinuation), panic attack,
petechia, pharyngeal edema, polyuria,
restless leg syndrome, seizure, sensation of
cold, serotonin syndrome, sexual disorder,
SIADH, skin photosensitivity, skin rash,
Stevens-Johnson syndrome, stomatitis,
suicidal ideation, supraventricular cardiac
arrhythmia, syncope, tachycardia, testicular
pain, tinnitus, trismus, urinary retention,
urinary urgency, urticaria, visual disturbance

Related Information

WHY IS THIS A CONCERN?

- Prescribing/authorizing a drug may have major implications on their ability to work, particularly if they have safety sensitive work
  - Pain medication
  - Sedatives
  - Cannabis
- Usually a long list of side effects for medication (or interactions!), but will focus on adverse effects that impact fitness to work

WHY IS THIS A CONCERN?

- Typically onus is on worker (employer perspective) to ask their health care provider about the likely effects of the drug, and advise employer of work-related restrictions from their treating provider
  - This can go both ways: sometimes restrictions not enough, sometimes too much – this is where we come in, to rationalize recommendations
- Employer does not need to be informed of worker medical conditions/treatments (unless advised) and may not be aware of restrictions/limitations, which may cause concern later if information comes to light showing heightened safety risk or if incidents occur
  - Employer should be aware of specific risks that could impact safety in the workplace and/or have appropriate limitations/restrictions in place to fulfill obligations under OHS Act

Table 1
Percentage using prescription medication, by sex and selected characteristics, household population aged 6 to 79, Canada, 2007 to 2011

	Total			Males			Females		
	%	95% confidence interval		%	95% confidence interval		%	95% confidence interval	
		from	to		from	to		from	to
Total	40.5	38.1	42.9	34.5‡	31.9	37.0	46.5	43.6	49.4
Age group									
6 to 14‡	11.7	9.7	13.8	14.0‡	11.3	16.6	9.3	7.0	11.5
15 to 24	26.2*	21.4	31.1	12.6‡	8.7	16.4	40.3*	33.1	47.5
25 to 44	28.0*	25.2	30.9	20.8*‡	18.1	23.4	35.3*	29.8	40.8
45 to 64	55.1*	51.4	58.8	50.2*‡	44.3	56.1	59.7*	56.5	63.0
65 to 79	82.7*	79.5	85.9	83.2*	79.7	86.8	82.2*	77.9	86.5
Household income quintile									
Not lowest‡	40.8	38.4	43.2	34.6‡	32.1	37.1	47.0	44.0	50.1
Lowest 20%	36.4E	22.0	50.8	33.4E	13.6	53.2	37.9E	21.5	54.4
Number of selected chronic conditions									
None‡	21.6	19.6	23.7	14.8‡	12.7	17.0	28.8	25.4	32.3
1	60.6*	57.0	64.3	57.8*	51.6	64.1	63.2*	57.5	68.9
2	83.7*	79.1	88.3	83.3*	75.5	91.0	84.0*	79.0	89.1
3	92.4*	87.9	97.0	92.9*	86.3	99.4	92.1*	85.9	98.3
4 or more	99.2*	98.3	100.2	98.5*	96.2	100.0	99.8*	99.4	100.0
Disability									
None‡	23.5	20.8	26.2	17.8‡	14.6	21.0	30.3	26.3	34.4
Mild	40.9*	37.8	44.0	36.0*‡	31.2	40.7	45.6*	42.6	48.6
Moderate	48.0*	42.7	53.3	43.1*	35.7	50.5	52.5*	44.5	60.4
Severe	66.2*	61.5	70.9	58.6*‡	51.0	66.3	72.6*	66.1	79.1
Usually free of pain/discomfort									
Yes‡	35.1	32.9	37.3	29.7‡	27.2	32.3	40.7	38.2	43.3
No	63.7*	59.2	68.2	57.9*‡	52.2	63.5	68.3*	62.4	74.3
Self-perceived health									
Very good/Excellent‡	31.7	29.4	34.1	24.9‡	21.8	28.0	38.8	35.7	41.9
Good	47.1*	43.5	50.7	41.8*‡	36.9	46.8	52.2*	47.7	56.6
Fair/Poor	67.0*	60.8	73.2	66.3*	58.3	74.3	67.6*	60.2	75.0

StatsCan

HOW DO WE ASSESS FITNESS FOR WORK?

FITNESS FOR WORK

Government of Canada | Gouvernement du Canada

CCOHS
Canadian Centre for Occupational Health and Safety

- "Fitness to work" is a medical assessment done when an employer wishes to be sure an employee is capable of performing the duties and responsibilities of a specific job
- Purpose is to determine if can safely and competently perform the job or task under the working conditions
- Many reasons this might be done, including:
  - Change in work conditions
  - Change in worker health/condition
    - Medical condition/treatment **limits or restricts their performance**
    - **Unsafe** for themselves/others/public/company
    - Worsened/aggravated by job

FITNESS FOR WORK

- Different approaches/considerations for this but ultimately have to address similar issues
- Key considerations in fitness for work:

1. Job Matching
    a. Do their abilities match the job demands?
2. Is it safe for the worker to return to work?
    a. Will the job harm them?
    b. Do they need restrictions/limitations?
3. Is it safe for others if the worker returns to work?
4. Can they reasonably attend the job?

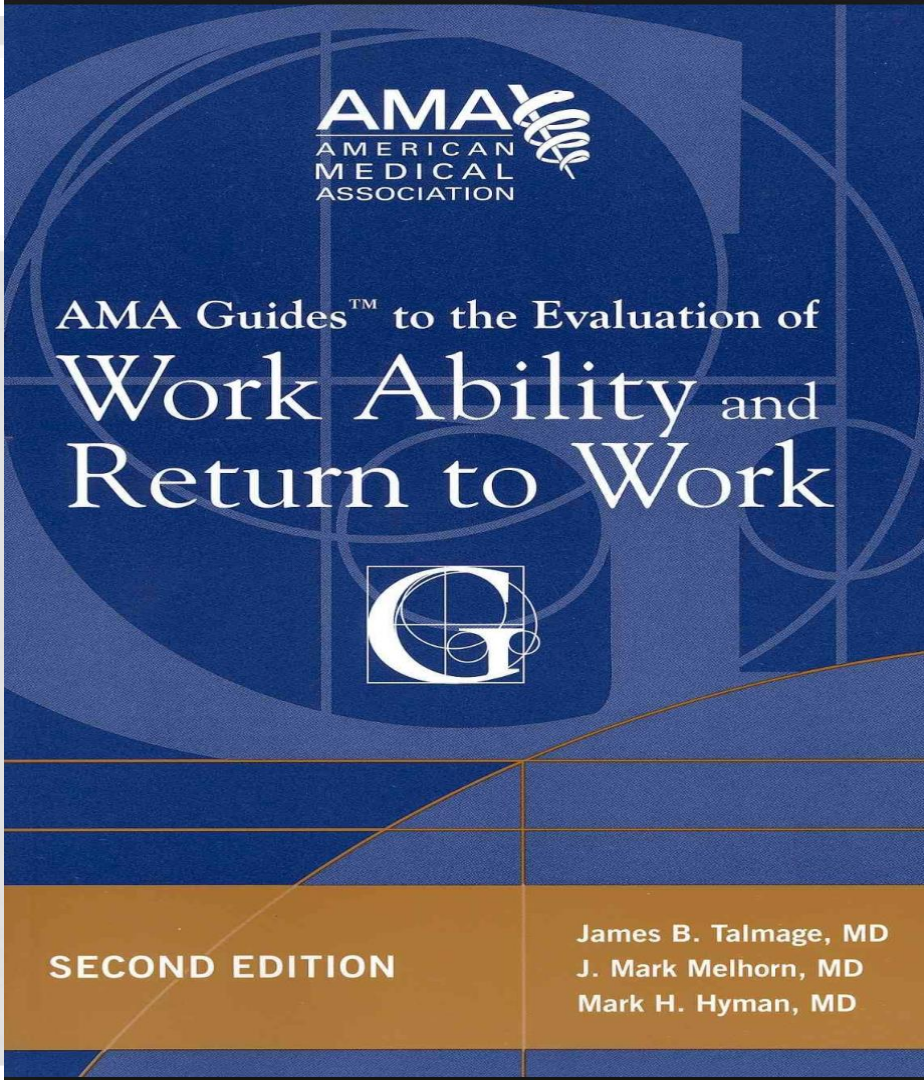
Capacity

Risk

Tolerance

FITNESS FOR WORK

- "RCT" Acronym
  - Risk
    - Is there "imminent harm"?
  - Capacity
    - Able to do the job?
    - Match with JDA?
  - Tolerance
    - Can't measure



FITNESS FOR WORK

- Risk
  - This is the area physicians often (and should) focus on
  - There is some inherent risk in work and in virtually everything we do – much of it is acceptable to society
    - We are tasked with determining *unacceptable* risk – risk of "***imminent harm***" – and placing limitations/restrictions to prevent this
  - Risk is an 'assessment': severity(or consequence) x probability(or likelihood) of occurrence
  - Not measured
- Capacity
  - This is often what employers focus on – can they perform the tasks required?
- Tolerance
  - This is a 'wildcard' – workers will *tolerate a lot* if they feel the benefits are *worth it*

SO HOW DO MEDICATIONS AFFECT FITNESS TO WORK?

MEDICATION IMPACT ON FITNESS TO WORK

- Impact on:
  - Risk
    - Directly affect safety for worker and others, particularly in safety-sensitive environments
  - Capacity
    - Might affect ability to complete tasks required of them, especially if a bona-fide work requirement (i.e., vision for pilots)
  - Tolerance
    - Could go up or down
- Impact could be detrimental OR beneficial!

SOME ADVERSE EFFECTS OF MEDICATION IMPACTING WORK

- Adverse effects *impacting fitness for work* could include:
  - Sedation
  - Fatigue
  - Weakness
  - Confusion
  - Syncope/presyncope
  - Headaches
  - Metabolic abnormalities
    - Hypoglycemia
    - Hyponatremia
    - Hypo/hyperkalemia
  - Hypo/hypertension
  - Cardiac issues
    - Palpitations
    - Arrhythmias
    - Brady/tachycardia
  - Psychosis/hallucinations/paranoia/agitation
  - Depression/suicidal ideation
  - GI effects: N/V/D
  - Pain
  - Respiratory issues
    - Dyspnea/bronchospasm
    - Respiratory depression
    - Hypoxia
  - Visual disturbances
  - Sensory changes
  - Balance/equilibrium changes
  - Memory/concentration/mood changes
  - Bleeding

Many others could be added to this list!

;W MEDICATIONS?

New Drugs Approved by Health Canada in 2018

This is a running list of the new drugs that received a Notice of Compliance from Health Canada in 2018. We will continue to update this list throughout the year. The first section lists new molecular entities as they are approved in 2018...and the second and third sections list significant new biologicals and significant new dosage forms of previously approved drugs. Some of these drugs are not yet commercially available. You'll also find a list of important drug withdrawals of 2018. Descriptions and advice about using the most significant products appear in the monthly issues of *Pharmacist's Letter*, *Pharmacy Technician's Letter*, and *Prescriber's Letter*...and more information can be found in our Clinical Resources. Subscribers can get the Clinical Resources from PharmacistsLetter.com, PharmacyTechniciansLetter.com, and PrescribersLetter.com.

New Molecular Entities

BRAND	GENERIC	COMPANY	DESCRIPTION
Addyi	flibanserin	Sprout (U.S.)/ Therapeutic Products	A serotonin agonist/antagonist for premenopausal women with hypoactive sexual desire disorder.
Kisqali	ribociclib	Novartis	A kinase inhibitor for postmenopausal women with advanced breast cancer.
Lonsurf	trifluridine/tipiracil	Taiho Pharma	New oral combination formulation for metastatic colorectal cancer.
Ozempic	semaglutide	Novo Nordisk	A GLP-1 agonist for type 2 diabetes.
Penthrox	methoxyflurane	Purdue Pharma	A self-administered inhaled anesthetic/analgesic for short-term relief of moderate to severe acute pain.
Velphoro	sucroferric oxyhydroxide	Vifor Fresenius/ Innomar Strategies	A chewable, calcium-free phosphate binder.

Significant New Biologicals

BRAND	GENERIC	COMPANY	DESCRIPTION
Afluria Tetra	influenza vaccine	Seqirus	Quadrivalent influenza vaccine for preventing influenza.
Besponsa	inotuzumab ozogamicin	Pfizer	A CD22-directed antibody-drug conjugate for advanced B-cell precursor acute lymphoblastic leukemia.
Cutaquig	immunoglobulin G	Octapharma	Human immunoglobulin given by SC infusion for primary or secondary immune deficiency.
Fasenra	benralizumab	Astra Zeneca	A monoclonal antibody for add-on maintenance treatment of severe eosinophilic asthma.
Lapelga	pegfilgrastim	Apotex	First biosimilar to *Neulasta*.
Mvasi	bevacizumab	Amgen	A biosimilar to *Avastin*, for colorectal & non-small cell lung cancer.
Rekovelle	follitropin delta	Ferring	A recombinant human FSH for ovarian stimulation.
Siliq	brodalumab	Valeant	An IL-17RA blocker for moderate to severe plaque psoriasis.

trc pharmacist's letter canada™

trc prescriber's letter canada™

New Drugs Approved by Health Canada in 2017

This is a list of the new drugs that received a Notice of Compliance from Health Canada in 2017. The first section lists new molecular entities approved in 2017...and the second and third sections list significant new biologicals and significant new dosage forms of previously approved drugs. Some of these drugs are not yet commercially available. Descriptions and advice about using the most significant products appear in the monthly issues of *Pharmacist's Letter*, *Pharmacy Technician's Letter*, and *Prescriber's Letter*...and more information can be found in our Clinical Resources. Subscribers can get the Clinical Resources from PharmacistsLetter.com, PharmacyTechniciansLetter.com, and PrescribersLetter.com.

New Molecular Entities

BRAND	GENERIC	COMPANY	DESCRIPTION
Adlyxine	lixisenatide	Sanofi-Aventis	An injectable GLP-1 agonist for type 2 diabetes.
Akynzeo	palonosetron/netupitant	Purdue Pharma	An oral combination formulation for preventing chemotherapy-associated nausea and vomiting.
Brinavess	vernakalant	Cardiome UK/ Innomar Strategies	An antiarrhythmic for rapid conversion of recent onset atrial fibrillation to sinus rhythm.
Cerdelga	eliglustat	Sanofi Genzyme	A glucosylceramide synthase inhibitor for Gaucher disease.
Defitelio	defibrotide	Jazz/ CGF Pharmatech	A profibrinolytic agent for hepatic veno-occlusive disease following stem cell transplantation therapy.
Galafold	migalastat	Amicus (U.K.)	An oral alpha-galactosidase A inhibitor for Fabry disease.
Imfinzi	durvalumab	AstraZeneca	An injectable monoclonal antibody for advanced/metastatic urothelial carcinoma.
Mavenclad	cladribine	EMD Serono	An oral immunosuppressant for relapsing-remitting multiple sclerosis.
Maviret	glecaprevir/ pibrentasvir	AbbVie	A fixed-dose combination tablet for chronic hepatitis C infection.
Mictoryl	propiverine	Duchesnay	An anticholinergic/calcium modulator for overactive bladder.
Ocaliva	obeticholic acid	Intercept Pharm	An oral farnesoid X receptor agonist for primary biliary cholangitis.
Ozanex	ozenoxacin	Ferrrer (Spain)/ Cipher	A nonfluorinated quinolone for topical treatment of impetigo.
Prevymis	letermovir	Merck	An antiviral for preventing cytomegalovirus infection in adult allogeneic hematopoietic stem cell transplant recipients.
Procysbi	cysteamine	Horizon Pharma/ Innomar Strategies	Oral aminothiol for nephropathic cystinosis.
Rapivab	peramivir	Seqirus (U.K.)	An injectable neuraminidase inhibitor for acute uncomplicated influenza.
Rexulti	brexpiprazole	Otsuka/Lundbeck	An atypical antipsychotic for schizophrenia.
Rydapt	midostaurin	Novartis	An oral tyrosine kinase inhibitor for acute myeloid leukemia.
Spinraza	nusinersen	Biogen	An intrathecal injection for spinal muscular atrophy.
Tepadina	thiotepa	Adienne	An IV cytotoxic agent used before stem cell transplantation in adults with CNS lymphoma.
Tremfya	guselkumab	Janssen	An IL-23 inhibitor for moderate to severe plaque psoriasis.
Tresiba	insulin degludec	Novo Nordisk	A long-acting insulin analogue for diabetes.
Viberzi	eluxadoline	Allergan	A mu-opioid receptor agonist/delta-opioid receptor antagonist for irritable bowel syndrome with diarrhea (IBS-D).
Vosevi	sofosbuvir/velpatasvir/ voxilaprevir	Gilead Sciences	An oral fixed-dose combination product for chronic hepatitis C infection.
Xiidra	lifitegrast	Shire	An ophthalmic lymphocyte function-associated antigen-1 (LFA-1) antagonist for dry eye disease.

Significant New Biologicals

BRAND	GENERIC	COMPANY	DESCRIPTION
Acarizax	house dust mites allergen extract	ALK-Abello	A sublingual allergy immunotherapy tablet for treating house dust mite allergy.
Bavencio	avelumab	EMD Serono	A monoclonal antibody for metastatic Merkel cell carcinoma.
Dupixent	dupilumab	Sanofi-Aventis	An IL-4/IL-13 inhibitor for moderate to severe eczema (atopic dermatitis).
Erelzi	etanercept	Sandoz	A tumor necrosis factor blocker and biosimilar to *Enbrel*.
Haegarda	C1 esterase inhibitor	CSL Behring	A C1 esterase inhibitor (human) to prevent hereditary angioedema attacks.
Kanuma	sebelipase alfa	Alexion	An enzyme replacement for patients with lysosomal acid lipase deficiency.
Kevzara	sarilumab	Sanofi-Aventis/ Genzyme	An IL-6 inhibitor for SC treatment of moderate to severe rheumatoid arthritis.
Lartruvo	olaratumab	Lilly	A monoclonal antibody for advanced soft tissue sarcoma.
Ocrevus	ocrelizumab	Hoffamnn-La Roche	A monoclonal antibody for relapsing remitting multiple sclerosis.
Portrazza	necitumumab	Lilly	A monoclonal antibody for metastatic squamous non-small cell lung cancer.
Rebinyn	Factor IX, pegylated	Novo Nordisk	A coagulation factor for management of bleeding in patients with hemophilia B.
Renflexis	infliximab	Samsung Bioepis/ Merck	New biosimilar to *Remicade*.
Shingrix	herpes zoster vaccine	GSK	An inactivated, adjuvanted vaccine for prevention of shingles.
Tecentriq	atezolizumab	Hoffmann-La Roche	A programmed death-ligand 1 blocking antibody for advanced urothelial carcinoma.
Trumenba	meningococcal group B vaccine	Pfizer	Vaccine to prevent serogroup B meningococcal disease.

Significant New Dosage Forms

BRAND	GENERIC	COMPANY	DESCRIPTION
Admelog	insulin lispro	Sanofi-Aventis	New rapid-acting insulin. A biosimilar to *Humalog*.
Aermony Respiclick	fluticasone	Teva	New oral inhalation corticosteroid for maintenance treatment of asthma.
Baca Respiclick	salbutamol	Teva	New oral inhalation beta-agonist bronchodilator.
Belbuca	buprenorphine	Paladin	New buccal film formulation for chronic pain management.
Benlysta	belimumab	GSK	New formulation for once-weekly subcutaneous injection.
Cuvposa	glycopyrrolate	Pediapharm	An oral anticholinergic solution for reducing chronic severe drooling in children with neurologic conditions (e.g., cerebral palsy).
Entuzity Kwikpen	human insulin	Lilly	New concentrated (U-500) insulin for patients who require >200 units per day.
Fiasp	insulin aspart	Novo Nordisk	New rapid-acting insulin formulation for diabetes.
Foquest	methylphenidate	Purdue	A new controlled-release formulation for ADHD in adults.
Onivyde	irinotecan	Baxalta	A liposome formulation for advanced pancreatic cancer.
Pergoveris	follitropin/ lutropin	EMD Serono	New solution formulation in a prefilled pen.
Sitavig	acyclovir	Cipher	New buccal tablet, single-dose formulation for recurrent cold sores.
Utrogestan	progesterone	Besins Healthcare/ GMD Distribution	A progestin vaginal capsule for luteal phase support during in vitro fertilization cycles.
Vemlidy	tenofovir alafenamide	Gilead	A hepatitis B virus replication inhibitor for chronic hepatitis B infection.
Xeljanz XR	tofacitinib	Pfizer	New once-daily extended-release tablet for moderate/severe arthritis.

New Drugs Approved by Health Canada in 2016

This is a list of the new drugs that received a Notice of Compliance from Health Canada in 2016. The first secti lists new molecular entities approved in 2016...and the second and third sections list significant new biologic and significant new dosage forms of previously approved drugs. Some of these drugs are not yet commercia available. Descriptions and advice about using the most significant products appear in the monthly issues *Pharmacist's Letter*, *Pharmacy Technician's Letter*, and *Prescriber's Letter*...and more information can be fou in our Clinical Resources. Subscribers can get these resources from PharmacistsLetter.co PharmacyTechniciansLetter.com, and PrescribersLetter.com.

New Molecular Entities

BRAND	GENERIC	COMPANY	DESCRIPTION
Alecensaro	alectinib	Hoffmann La Roche	A protein kinase inhibitor for advanced non-small cell lung cancer.
Bepreve	bepotastine	Bausch &Lomb/ Valeant	An ophthalmic antihistamine for allergic conjunctivitis.
Blexten	bilastine	Aralez/Tribute	New second-generation prescription antihistamine for seasonal allergic rhinitis and chronic spontaneous urticaria.
Bridion	sugammadex	Merck	An intravenous agent for reversal of neuromuscular blockade induced b rocuronium and vecuronium.
Brivlera	brivaracetam	UCB	New anticonvulsant for use as add-on therapy for partial-onset seizures.
Cotellic	cobimetinib	Hoffmann-La Roche	An oral kinase inhibitor for advanced melanoma.
Epclusa	sofosbuvir/velpatasvir	Gilead Sciences	New oral fixed-dose combination tablet for chronic hepatitis C.
Ibrance	palbociclib	Pfizer	An oral kinase inhibitor for advanced breast cancer.
Kyprolis	carfilzomib	Amgen	A proteasome inhibitor for advanced multiple myeloma.
Lancora	ivabradine	Servier	New agent to reduce CV mortality and hospitalizations due to worsenin heart failure.
Lixiana	edoxaban	Daiichi Sankyo/ Servier	A factor Xa inhibitor anticoagulant for patients with A Fib (stroke prevention) or DVT/PE (treatment/prevention of recurrence).
Lunesta	eszopiclone	Sunovion	A non-benzodiazepine hypnotic for insomnia.
Lynparza	olaparib	AstraZeneca	An oral PARP (poly ADP-ribose polymerase) inhibitor for ovarian, fallopian tube, or peritoneal cancer.
Movapo	apomorphine	Paladin	A SC dopamine agonist for acute treatment of "off" episodes in advanc Parkinson's disease.
Ninlaro	ixazomib	Takeda	An oral proteasome inhibitor for multiple myeloma.
Nitisinone	nitisinone	Cycle Pharm (UK)/ Canreg	An oral tyrosine catabolism inhibitor for hereditary tyrosinemia.
Orkambi	lumacaftor/ivacaftor	Vertex	A combination product for treating certain types of cystic fibrosis.
Ravicti	glycerol phenylbutyrate	Horizon Pharma	An oral liquid nitrogen-binding agent for chronic management of urea cycle disorders.
Rupall	rupatadine	Pediapharm	An oral antihistamine for allergic rhinitis or chronic urticaria.
Selexid	pivmecillinam	Leo	A narrow-spectrum beta-lactam antibiotic for uncomplicated UTI.
Sunvepra	asunaprevir	BMS	An oral antiviral agent used in combination with other agents for chroni hepatitis C.
Tagrisso	osimertinib	AstraZeneca	An oral kinase inhibitor for metastatic non-small cell lung cancer.
Uptravi	selexipag	Actelion	A prostacyclin agonist for long-term treatment of pulmonary arterial hypertension.
Venclexta	venetoclax	AbbVie	A BCL-2 inhibitor for chronic lymphocytic leukemia.
Xtoro	finafloxacin	Alcon	A quinolone otic suspension for acute otitis externa (swimmer's ear).
Zepatier	elbasvir/grazoprevir	Merck	New oral fixed-dose combination tablet for chronic hepatitis C.
Zontivity	vorapaxar	Merck	An oral antiplatelet agent for patients with a history of MI.

Significant New Biologicals

BRAND	GENERIC	COMPANY	DESCRIPTION
Adynovate	PEGylated antihemophilic factor	Baxalta	First pegylated antihemophilic factor for hemophilia A.
Afstyla	lonoctocog alfa	CSL Behring	An antihemophilic factor VIII (recombinant, single chain) for hemophilia A.
BAT	botulinum antitoxin A, B, C, D, E, F, G	Cangene	Immune globulin fragments for treatment of symptomatic botulism.
Cinqair	reslizumab	Teva	An interleukin-5 inhibitor for add-on maintenance treatment of severe asthma.
Darzalex	daratumumab	Janssen	A monoclonal antibody for multiple myeloma.
Empliciti	elotuzumab	BMS	An immune system activator for multiple myeloma.
Grastofil	filgrastim	Apotex	A granulocyte colony stimulating factor and subsequent entry biologic to *Neupogen*.
Praxbind	idarucizumab	Boehringer Ingelheim	A monoclonal antibody to reverse the anticoagulant effects of dabigatran.
Repatha	evolocumab	Amgen	An injectable PCSK9 inhibitor to lower LDL cholesterol.
Taltz	ixekizumab	Lilly	An interleukin 17 inhibitor for moderate to severe plaque psoriasis.
Xolair	omalizumab	Novartis	A monoclonal antibody for moderate to severe allergy-related asthma or chronic idiopathic urticaria.
Zinbryta	daclizumab beta	Biogen/AbbVie	An interleukin-2 receptor blocking antibody for relapsing remitting multiple sclerosis.

Significant New Dosage Forms

BRAND	GENERIC	COMPANY	DESCRIPTION
Brenzys	etanercept	Merck	A subsequent entry biologic for *Enbrel*. For treatment of rheumatoid arthritis and ankylosing spondylitis.
Cortiment	budesonide	Ferring	New delayed/extended-release oral tablet formulation for mild/moderate ulcerative colitis.
Descovy	emtricitabine/ tenofovir alafenamide	Gilead	New combination oral tablet for HIV-1 infection.
Dotarem	gadoterate meglumine	Guerbet/ Methapharm	A gadolinium-based contrast agent for cranial and spinal MRI.
Enstilar	betamethasone/ calcipotriol	Leo	Topical foam formulation for psoriasis.
Fycompa	perampanel	Eisai	New oral suspension formulation for adjunctive treatment of epilepsy.
Glyxambi	linagliptin/ empagliflozin	Boehringer Ingelheim	New combination DPP-4 inhibitor/SGLT2 inhibitor for type 2 diabetes.
Hemangiol	propranolol	Pierre Fabre Dermo-Cosmetique	An oral beta-blocker solution for treatment of infantile hemangioma.
Invega Trinza	paliperidone	Janssen	New longer-acting (e.g., 3 month) injectable atypical antipsychotic.
Invokamet	metformin/ canagliflozin	Janssen	New combination metformin/SGLT2 inhibitor for type 2 diabetes.
Izba	travoprost	Alcon (Novartis)	New lower-strength (0.003%) ophthalmic solution used for glaucoma/ocular hypertension.
Jadenu	deferasirox	Novartis	New oral tablet formulation iron chelator for chronic iron overload.
Kyleena	levonorgestrel	Bayer	New progestin-containing intrauterine system for pregnancy prevention.
Metoject Subcutaneous	methotrexate	Medexus	New SC formulation for psoriasis, psoriatic arthritis, or rheumatoid arthritis.
Narcan Nasal Spray	naloxone	Adapt Pharma (U.S.)	New nasal spray formulation for emergency treatment of opioid overdose.

WHICH DRUGS TO TALK ABOUT?

- Results of an OEMAC survey requesting a list of medications to discuss included:
  - New diabetes medication
  - Anticoagulants
  - Biologics
  - Pain medications
  - Cannabis
  - Other psychoactive drugs, specifically common antipsychotics/antidepressants

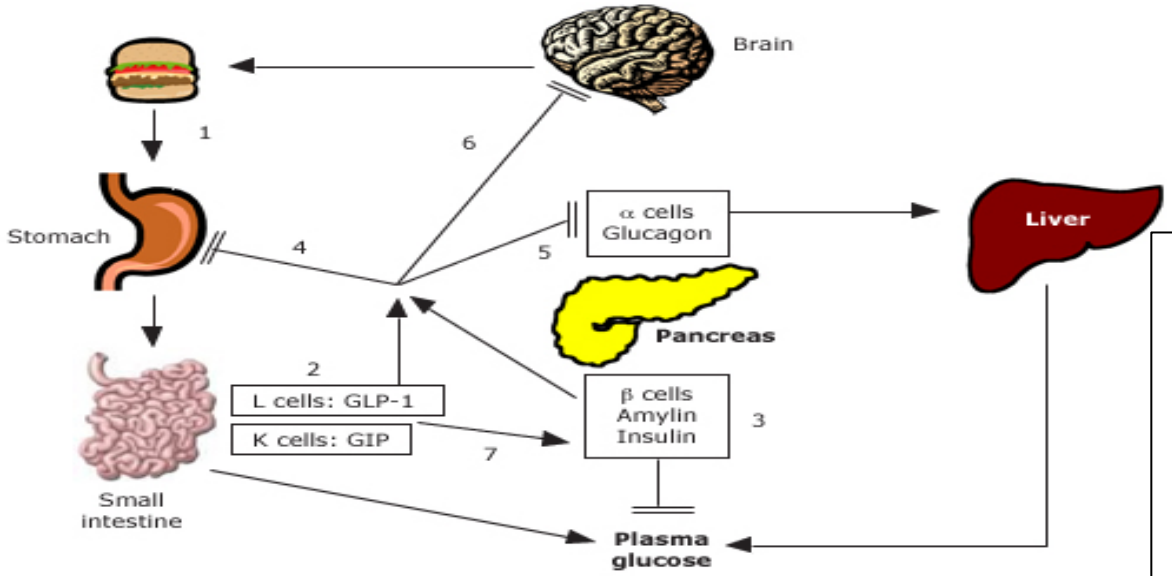
NEWER DIABETES MEDICATIONS

- Incretin based therapies
  - Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists
  - Dipeptidyl peptidase-4 (DPP-4) inhibitors
- Sodium-glucose co-transporter 2 (SGLT2) inhibitors

INCRETIN BASED THERAPIES

- GLP-1 is produced from the L-cells of the small intestine and is secreted in response to nutrients
- GLP-1 exerts its main effect by stimulating glucose-dependent insulin release from pancreatic islets cells
- Has been shown to slow gastric emptying and inhibit post-meal glucagon release
- Do not usually cause hypoglycemia **unless combined** with therapies that can cause hypoglycemia

Multihormonal regulation of glucose



In healthy individuals, (1) ingestion of food results in (2) release of gastrointestinal peptides (GLP-1 and GIP) as well as (3) pancreatic beta cell hormones (insulin and amylin). GLP-1 and amylin, in particular, have inhibitory effects on (4) gastric emptying, (5) glucagon release, and (6) appetite. (7) Following the absorption of food, GLP-1 and GIP promote insulin secretion, otherwise known as the incretin effect. In diabetes, these steps are disrupted.

GLP-1: glucagon-like peptide 1; GIP: glucose-dependent insulinotropic polypeptide, gastric inhibitory peptide.

UpToDate®

GLP-1
- Inhibits
  - Gastric emptying
  - Glucagon
  - Appetite
- Promotes insulin release

GLP-1 AGONISTS

- Injectable – requires time, clean area to do this
  - Ranges from BID to once weekly dosing
  - i.e., Exenatide IR – BID, Semaglutide – once weekly
- Adverse effects impacting work
  - >10%: N/V/D, injection site reactions
  - <10%: acute pancreatitis, headache, dizziness, fatigue, increased HR
- *If combined with other diabetes medications*, hypoglycemia may occur
- Expensive (if on limited benefits)
- Liraglutide shown to have CV benefit (LEADER trial 2016)

DPP-4 INHIBITORS

- Class of oral diabetes drugs that inhibit the enzyme DPP-4, which keeps GLP-1 available longer
- Examples include Sitagliptin, Saxagliptin
- Adverse effects impacting work
  - 1-10%: acute pancreatitis, headache, dizziness, nasopharyngitis, and upper respiratory tract infections
  - <1%: acute joint pain, myalgias, muscle weakness, and muscle spasms
- *If combined with other diabetes medications*, hypoglycemia may occur
- Expensive (if on limited benefits)

SGLT2 INHIBITORS

- SGLT2 expressed in proximal tubule - mediates reabsorption of ~90% of filtered glucose load
- Reduces BG by increasing urinary glucose excretion (lowers 'set point'), causes osmotic diuresis
- Adverse effects impacting work
  - >10%: Increased K, UTIs
  - 1-10%: Mild dehydration/hypotension, AKI, hypoglycemia, falls, fatigue
  - <1%:**Euglycemic DKA**, weakness, bone fractures/OP

SGLT2 INHIBITORS

- Empagliflozin and Canagliflozin shown to have CV benefit
- Must be cautious with other diuretics, ACE/ARBs, other diabetes medications
- Increased frequency of urination

OTHER DIABETES MEDICATIONS

- Not going to focus on this as they are not new
- BUT, in general the main concern with diabetes medications is with regard to risk of hypoglycemia, minimizing complications
- With respect to diabetes treatments in general, would want to show a period of relative stability with BG levels
  - Obviously avoiding symptomatic lows
  - Avoiding BG which puts at risk for DKA/Hyperosmolar Hyperglycemic State (HHS) (probably >20)
- In long term, want to optimize treatment to avoid complications such as retinopathy, peripheral neuropathy and macrovascular complications such as MI/CVA risk as these could present risks in the workplace

ANTICOAGULANTS

- Most clinicians are familiar with VKA/heparins/fondaparinux, so will focus on the DOACs (direct oral anticoagulants)
- Directly target the enzymatic activity of thrombin (dabigatran is the only oral one) or factor Xa (examples include Apixaban, Rivaroxaban)
- Typically used for VTE, Afib, ACS, and sometimes HIT
- Increased bleeding risk
  - DOACs have low overall risk of major bleeding, but as with any anticoagulant, life-threatening bleeding can occur
- May be a concern with workers at risk for unpredictable injuries (especially head), which may include police, workers in unpredictable environments (i.e, offshore vessels), remote workers at risk, contact sports
- Recommend a detailed risk/benefit assessment be done on a case-by-case basis to determine choice of medication and any limitations/restrictions that may be needed. Review other meds (antiplatelets!)

DABIGATRAN

- Prodrug converted to an active direct thrombin inhibitor that inhibits clot-bound and circulating thrombin
- Half-life 12-17 hours, fixed dosing, no monitoring needed, accumulation with renal insufficiency
- Bleeding risk:
  - overall is similar compared with warfarin
  - may be associated with slightly lower intracranial hemorrhage and death, and slightly higher risk of GI bleeding at 150 mg twice daily
- Antidote is available!

DIRECT FACTOR XA INHIBITORS

- Inactivates circulating and clot-bound factor Xa
- Metabolized in the kidney (~30%) and liver
- Fixed dosing, no monitoring needed, accumulation with renal insufficiency and severe hepatic impairment
- Adverse effects impacting work
  - Major bleeding risk ranges from 1-3%, any bleeding >10%
  - 1-10%: dizziness, nausea, syncope, fatigue, abdo pain, joint pain, muscle spasm
- No reversal agent in Canada yet (new in US) – typically use other agents to reduce bleeding (PCC, FFP, tranexamic acid) and blood if needed

BIOLOGICS

- Very complex and not produced in the same way as other pharmaceuticals
- Formally, it is any drug produced in living systems such as a microorganism, or plant or animal cells which includes vaccines, blood components, tissues, proteins, etc…
- Often when refer to biologics we mean *engineered macromolecular products* like protein and nucleic acid-based drugs
- Most are very large, complex molecules or mixtures. Many are produced using recombinant DNA technology
- Can be used in a wide variety of conditions

BIOLOGICS

- Difficult to characterize by available testing methods
  - Some components of a finished biologic may be unknown
- Must ensure product consistency, quality, and purity by ensuring that the manufacturing process remains substantially the same over time
  - living systems used to produce biologics can be sensitive to very minor changes
  - Small process differences can significantly affect the nature of the finished biologic and the way it functions

BIOLOGICS

- Often very targeted and function by acting as agonists/antagonists or as hormones
- Often affects immune system and may
  - Interfere with cytokine function or production
  - Inhibit the "second signal" required for T-cell activation
  - Deplete B cells
- Can have unintended effects on immune function which compromise host defenses and lead to serious infections, autoimmune disease or malignancies
- Biologic therapies that can increase infection include
  - antithymocyte globulin,
  - monoclonal antibodies to T and B cells,
  - anticytokine therapies,
  - and agents that disrupt T cell costimulation signals

BIOLOGICS

- Examples of biologics made with recombinant DNA technology:

USAN/INN	Trade name	Indication	Technology	Mechanism of action
abatacept	Orencia	rheumatoid arthritis	immunoglobin CTLA-4 fusion protein	T-cell deactivation
adalimumab	Humira	rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, psoriasis, ulcerative colitis, Crohn's disease	monoclonal antibody	TNF antagonist
alefacept	Amevive	chronic plaque psoriasis	immunoglobin G1 fusion protein	incompletely characterized
erythropoietin	Epogen	anemia arising from cancer chemotherapy, chronic renal failure, etc.	recombinant protein	stimulation of red blood cell production
etanercept	Enbrel	rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, psoriasis	recombinant human TNF-receptor fusion protein	TNF antagonist
infliximab	Remicade	rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, psoriasis, Ulcerative Colitus, Crohn's disease	monoclonal antibody	TNF antagonist
trastuzumab	Herceptin	breast cancer	humanized monoclonal antibody	HER2/neu (erbB2) antagonist
ustekinumab	Stelara	psoriasis	humanized monoclonal antibody	IL-12 and IL-23 antagonist
denileukin diftitox	Ontak	cutaneous T-cell lymphoma (CTCL)	Diphtheria toxin engineered protein combining Interleukin-2 and Diphtheria toxin	Interleukin-2 receptor binder
golimumab	Simponi	rheumatoid arthritis, psoriatic arthritis, ankylosing spondylitis, ulcerative colitis	monoclonal antibody	TNF antagonist

Wikipedia

BIOLOGICS

- Likely main concern in the workplace is with infection or cardiovascular effects
  - Infectious risk would potentially be increased for those exposed to communicable diseases
    - Usually these risks can be mitigated by appropriate use of PPE
    - May impact ability to vaccinate against specific exposures, which may lead to restrictions in the workplace (i.e., live vaccines like MMR, varicella)
  - Would not anticipate restrictions/limitations simply based on *possibility* of adverse effects (concept of *imminent harm*), though often these (expensive) treatments are being used for severe disease and the condition itself may warrant limitations/restrictions
- Would be important to consider individual adverse events specific to the type of biologic being used

BIOLOGICS

- As an example, for Adalimumab (or Humira - used in AS, IBD, RA, and psoriasis) Adverse effects impacting work include:
  - >10%: Headaches, infections
  - 1-10%: Hypertension, Afib, cardiac arrest/arrhythmia/palpitations, VTE, MI, pericardial effusion, subdural hematoma, confusion, paresthesias, myasthenia, carcinoma, lymphoma, melanoma, sepsis/serious infection, reactivation of TB, fractures, tremors, bronchospasm

PAIN MEDICATIONS

- These are not new, so won't spend much time on them
- Obviously carry significant risk in many workplaces
- Typically acetaminophen, NSAIDS and COX2s are less concerning
- Of more concern are
  - opioids
  - psychotropics (i.e., ketamine, clonidine)
  - and adjuvants such as
    - TCAs (i.e., amitriptyline),
    - anticonvulsants (i.e., gabapentin)
    - antispasmodics (i.e., cyclobenzaprine)
    - and antidepressants (i.e., duloxetine)
- Cannabis often authorized for pain, but will discuss briefly separately

PAIN MEDICATIONS

- Main adverse effects of concern for most of these medications would include:
  - Sedation/drowsiness
  - Syncope
  - Confusion/delirium/hallucinations
  - Hypotension/arrhythmias/brady or tachycardia
  - Respiratory depression
  - Withdrawal symptoms if missing doses
  - May be other concerning effects…
- Each medication would have additional side effects specific to that medication or class of medications (i.e., such as anticholinergic or extrapyramidal adverse effects)

PAIN MEDICATIONS

- Tolerance to medication often develops over time
- Often restricted from driving or other safety sensitive tasks when initiated on these medications
- May be permanently restricted from certain positions at an employer based on policy
- Typically if on reasonable doses, which are stable over time, and once demonstrating minimal side effects of concern, it might be appropriate to consider a return to previously restricted activities
  - These recommendations are often based on clinician experience and judgment

CANNABIS

- This has been covered by other presenters, so will minimize discussion here
- May be used for various different reasons, some 'valid'/accepted indications, others not
  - Often used for pain, sleeping, anxiety/depression, stress, nausea and vomiting, spasticity, movement/seizure disorders, appetite stimulant
  - In reality, can get authorized to use for almost any reason you can think of, though once legalized, even this won't be needed (unless for insurance or for minors for instance)
- Plethora of products with varying concentrations of THC, CBD and different ways of using

CANNABIS

- Consistent dosing is a concern with cannabis
  - Not a pharmaceutical, no DIN number
  - Products may change
  - Concentrations may be variable (some companies are better than others at monitoring for this – typically licensed producers are more consistent)
- Factors playing into effects on a user
  - Host factors/variability (i.e., body fat/distribution, size, metabolism, comorbidities)
  - Acute vs. chronic use
  - Time of use
  - Amount
  - Concentration
  - Route (oral, inhaled, transdermal, etc…)
  - Concomitant use with other substances (such as alcohol or medications)

CANNABIS

- Regardless of why taking, some possible safety issues are:
  - Acute impairment on the job
  - Memory deficit
  - Learning deficit
  - Trouble with complex tasks
  - Anxiety/paranoia/personality changes
  - Psychomotor slowing/coordination issues
- Other performance concerns might include:
  - Attendance issues
  - Poor interactions with others/public

CANNABIS

- Typically we do not allow impairment in the workplace regardless of the substance or if it's prescribed or not
- What's the impairment risk with cannabis?
  - Driving recommendations for cannabis give some indication of impairment risk in a safety sensitive position

CANNABIS

- Determining Driver Fitness in Canada, CCMTA, December 1, 2015
  - Psychoactive effects may affect driving for up to 24 hours
  - Users in a medical context should be advised not to drive for **AT LEAST 5 HOURS** and preferably for at least 24 hours after use
    - Many users of medical cannabis exceed the average usage (1.5 grams or 2 jts/day) by considerable margins
      - Should avoid driving during periods of over-average consumption

- AECOM Guidelines, April 2015
  - Impaired individuals are not permitted to drive any class of motor vehicle
    - Studies of impairment related to driving and cognition show return to a *generally nonimpaired state* **within 3 to 6 hours** after smoking cannabis among occasional recreational users

CANNABIS

THE COLLEGE OF FAMILY PHYSICIANS OF CANADA | LE COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA

- Authorizing Dried Cannabis for Chronic Pain or Anxiety: Preliminary Guidance September 2014

Strategies to prevent harm

RECOMMENDATION 10

Patients taking dried cannabis should be advised not to drive for at least:

a) **Four hours after inhalation (Level II)**

b) **Six hours after oral ingestion (Level II)**

c) **Eight hours after inhalation or oral ingestion if the patient experiences euphoria (Level II)**

Cannabis use prior to driving is an independent risk factor for motor vehicle accidents.[82-86] Patients should be advised not to drive for a minimum of four hours after inhalation or a minimum of six hours after oral ingestion[87]; they should abstain from driving for a full eight hours if they experience euphoria.[88]

However, note that "Health Canada states that the ability to drive or perform activities requiring alertness may be impaired for up to 24 hours following a single consumption."[12]

PSYCHOTROPIC DRUGS

- Those that change brain function resulting in alterations to perception, mood, consciousness, cognition, or behavior (which all could result in performance/safety concerns!)
- Examples include:
  - anesthetics
  - analgesics
  - anticonvulsants
  - antiparkinsonian drugs
  - antidepressants
  - anxiolytics (i.e., benzodiazepines)
  - antipsychotics
  - and stimulants

PSYCHOTROPIC DRUGS

- Was asked specifically about new antipsychotics and antidepressants, but the only new one in the past 3 years is Brexpiprazole (Rexulti), used as an adjunct for antidepressants or for schizophrenia
- Adverse effects impacting work
  - >10%: agitation, distress, restlessness
  - 1-10%: headaches, extrapyramidal reactions, drowsiness/fatigue/dizziness, sedation, nausea, abdominal pain, tremor, blurred vision
  - <1%: dystonia, hypotension, impulse control disorder, syncope

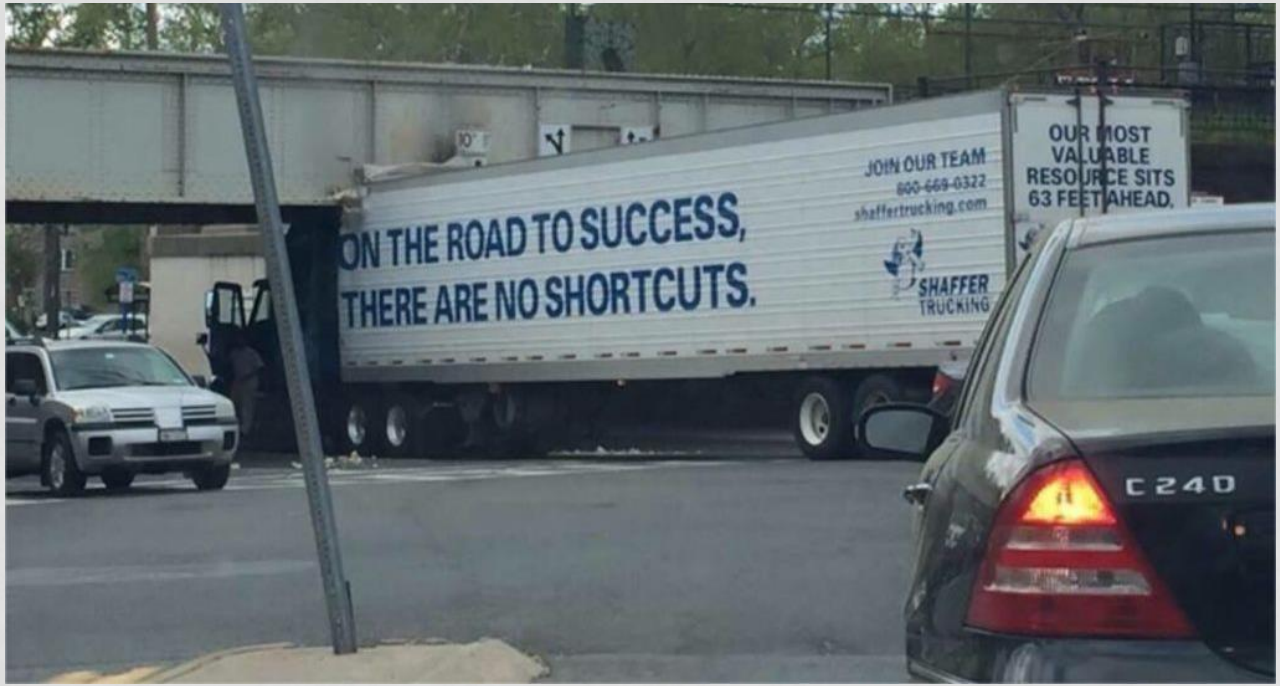
PSYCHOTROPIC DRUGS

- Was also asked specifically about Levomilnacipran (Fetzima), a newer SNRI approved in 2015 in Canada
- SNRIs vary in affinity for serotonin and norepinephrine transporter
  - Desvenlafaxine, duloxetine, and venlafaxine more potent inhibitors of serotonin reuptake than norepinephrine, whereas levomilnacipran preferentially blocks reuptake of norepinephrine
    - Purportedly helps with motivation in some individuals with depression (not a formal indication) – likely an individual effect but may be worth considering for those with both issues
- Adverse effects impacting work
  - >10%: Orthostatic hypotension, nausea
  - 1-10%: tachycardia/palpitations/HTN/HoTN, syncope, aggressive behavior, agitation, extrapyramidal reaction, paresthesias, blurred vision
  - <1%: cardiomyopathy, mydriasis, seizure

PSYCHOTROPIC DRUGS

- With regard to this type of medication, because they can affect perception, mood, consciousness, cognition, and behavior, it is important to ensure stability on these types of drugs in the workplace
  - Especially true if performing safety sensitive tasks
  - Start low, go slow
  - Watch for adverse effects; if any, need to consider impact at work

ASSESSING IMPAIRMENT IN THE WORKPLACE



ASSESSING IMPAIRMENT IN THE WORKPLACE

- Many drugs could result in a degree of impairment
- Employer needs to define for their workplace, however common characteristics may include:
  - Personality changes or erratic behavior (i.e., increased interpersonal conflicts; overreaction to criticism)
  - Appearance of impairment at work (i.e., odour of alcohol or drugs, red eyes, unsteady gait, slurring, poor coordination)
  - Working in an unsafe manner or accident
  - Failing a drug or alcohol test
  - Consistent lateness, absenteeism, or reduced productivity or quality of work

Impaired at Work, A guide to accommodating substance dependence, Canadian Human Rights Commission 2017

ASSESSING IMPAIRMENT IN THE WORKPLACE

- Once identified by a trained supervisor (and ideally with a second trained person present to eliminate bias), then appropriate action should be taken as per their policy
  - Discussion, action, documentation
- Not the role of the employer to diagnose substance use or dependency

Appendix B: Sample Tool- Incident Report

Employee Name:			
Date of Incident:			
Description of Incident:			
Behaviour	❑ Nervous?	❑ Insulting?	❑ Sleepy?
	❑ Exaggerated politeness?	❑ Confused?	❑ Combative?
	❑ Excited?	❑ Quarrelsome?	❑ Fatigued?
	❑ Uncooperative?	❑ Poor memory?	❑ Overly talkative?
	Other (please describe)?		
Unusual Actions	❑ Sweating?	❑ Slow reactions?	❑ Crying?
	❑ Quick moving?	❑ Tremors?	❑ Fighting?
	Other (please describe)?		
Speech	❑ Slurred?	❑ Slow?	❑ Confused?
	❑ Thick?	❑ Rambling?	❑ Pressured?
	Other (please describe)?		
Balance	❑ Falling?	❑ Staggering or unsteady gait?	❑ Unsure?
	❑ Needs support?	❑ Stumbling?	❑ Normal?
	Other (please describe)?		
Witness / Other Employees Involved:			
Supervisor Actions:			
Consequence:			
Planned Follow-up:			
Signature:			
Date:			

Workplace Strategies: Risk of Impairment from Cannabis, CCOHS June 2017

SUMMARY

- Medications may have major implications on fitness for work
- Employees must understand risks and appropriate restrictions/limitations and relay this to their employer
  - Treating doctors have an obligation to discuss these issues with their patients
- Fitness for Work → Risk, Capacity, Tolerance

SUMMARY

- Many new medications over time, but overall not that many new classes of medication
- Biologics have variable mechanisms of action and can be difficult to characterize – not really a 'class'
- With new medications typically start low, go slow, ensure stability on medication if concerns regarding safety/impairment at work

REFERENCES

- New Drug Approvals by Health Canada 2016, 2017, and 2018. Pharmacist's Letter Canada. Therapeutic Research Center. June 2018
- Prescription medication use by Canadians aged 6 to 79, 2007-2011. StatsCan publication 82_003_x Vol. 25 No. 6
- UpToDate online 2018
- Lexicomp – Lexi drugs database July 2018
- Johnson, M. National Police Chiefs Council. Position statement: Anti-coagulants and Risk Assessment. 2018
- https://www.bio.org/articles/how-do-drugs-and-biologics-differ Accessed July 2018
- https://www.canada.ca/en/health-canada/services/drugs-health-products/biologics-radiopharmaceuticals-genetic-therapies.html Accessed July 2018
- Canadian Centre for Occupational Health and Safety. Fit to Work. April 2016
- Talmage, J., Melhorn, J., Hyman, M. AMA Guides to the Evaluation of Work Ability and Return to Work. Second edition. American Medical Association. July 2011
- Phillips, J., Holland, M., Baldwin, D., Meuleveld, L., Mueller, K., Perkison, B., Upfal, M., Dreger, M. ACOEM Guidelines. Marijuana in the Workplace: Guidance for Occupational Health Professionals and Employers. Journal of Occupational and Environmental Medicine. Vol 57, Number 4. April 2015
- Determining Driver Fitness in Canada, CCMTA, December 1, 2015
- Authorizing Dried Cannabis for Chronic Pain or Anxiety: Preliminary Guidance. The College of Family Physicians of Canada. September 2014
- Impaired at Work, A guide to accommodating substance dependence, Canadian Human Rights Commission 2017
- Workplace Strategies: Risk of Impairment from Cannabis, CCOHS June 2017