Clinical Pharmacy Newsletter

A Newsletter of Drug and Prescribing Information
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INSIDE THIS ISSUE:

Medication Reconciliation: Useful Tool or Box to Check?

A clinic visit, hospital admission, or transition in care often begins with medication reconciliation. Developed to provide safer, more coordinated, and better-quality care, medication reconciliation has become the process, lacking critical appraisal or evaluation of the medications in the context of the patient's current clinical status.

Medication reconciliation is performed to avoid such medication errors as omissions, duplications, dosing errors, or drug interactions. Despite all of the emphasis on this process and its importance, little, if any, data have shown that medication reconciliation, as it is practiced now, has improved healthcare. In theory, medication reconciliation—the process of "identifying the most accurate list of all medications that the patient is taking, including name, dosage, frequency, and route, by comparing the medical record to an external list of medications obtained from a patient, hospital, or other provider," as defined by the Centers for Medicare & Medicaid Services—makes a lot of sense. The end product, however, is rarely scrutinized or even shared. The outcome most often measured is whether the medication reconciliation box has been checked off.
Patients would benefit far more, and quality of care and safety would improve, if each medication was actually reviewed. This would involve assessing the appropriateness of each prescribed drug, on the basis of clinical status and patient report. Questions that must be asked include whether the medication is still indicated. Can the patient afford it? Does the patient take the medication as prescribed or recommended? Does the patient want to continue taking it?

An accurate and complete list of medications that the patient is taking can be a helpful tool, but in creating the list, the goal must not be simply to check a box in the patient's record. Rather than just carrying the entire medication list forward at each encounter, the reconciliation process permits clinicians to assess whether the medication is having the desired effect and the patient's condition has improved when taking the medication. It's an opportunity to deprescribe or discontinue medications that are deemed unnecessary, inappropriate, or not desired any longer by the patient.

7 Strategies to Improve Medication Reconciliation

Here are seven strategies that hospitalists are using to improve medication reconciliation and reduce harm.

1. Building Relationships with Emergency Department Physicians
According to a 2013 study published in Medical Care, majority of unscheduled hospital admissions come through the emergency department (ED). ED personnel are usually the first to ask patients about their medication history, making this interaction a crucial one to the overall process of medication reconciliation. "Historically, there was very little effort put into assuring the accuracy of that list because it doesn't really impact emergency care all that much". “Asking the patient or patient carer face-to-face which build the trust and allow finding opportunities to help one another and it makes work life easier”. As a result, patients are now coming to the floor with more accurate medication histories.

2. Using Pharmacy Technicians to Compile Medication Histories
Going through a paper bag full of prescription bottles is time-consuming. So is trying to interpret a tattered, handwritten list of meds. Neither is a good use of a hospitalist's time. Engage the pharmacy technicians to compare medication lists provided by patients and families to electronic medical records, noting any discrepancies or changes. If needed, pharmacy technicians also call patients' pharmacies to gather prescription data. Hospital medicine physicians then review the collected information and work to clarify any discrepancies.

3. Tapping into Prescription Databases
Many electronic medical records now integrate with large databases of prescription fill data. These databases—which include prescription fill information from participating pharmacies—can be a goldmine of information, but they're not a panacea.

If the patient gets medication from a pharmacy that's not included in the database, may not be able to access their information. Further, prescription fill data don't tell you the whole story. "A lot of filled prescriptions aren't taken,"

4. Focused Conversations with Patients and Family Caregivers

After reviewing the medication history, hospitalists sit down with patients and family caregivers to focus their understanding of the patient's medication use. With a best possible medication history in hand, this can be a much deeper conversation from the start. Talk directly about patients' concerns about medications and clarify discrepancies such as changes in the medication dose. These tailored conversations also help hospitalists determine patients' health literacy levels. There is a huge difference between the patients who tell you, 'I take two of those little green pills' and a patient who is able to talk about the dose of the beta-blocker they're taking." This knowledge helps hospital medicine physicians more effectively discuss plans of care with patients and families.

5. Working with IT to Create Technological Solutions

There's a lot of local customization that can be done to electronic medical records. Hospitalists can (and should) collaborate with information technology specialists to increase the utility of the medical record in promoting medication reconciliation. For instance, it's possible to add a section to document the quality of the initial medication history, flagging any areas of concern. It may also be possible to highlight high-risk medications so that they receive careful follow-up.

6. Collaborating with Pharmacists

Transition pharmacists are part of the team that works at the point of discharging the patient. Because discharges—to home or to continuing outpatient care—are a high-risk time for medication errors, engaging high-level professionals to review and discuss discharge orders is an efficient use of resources. "If the transition pharmacists see something on the final list of medications that is not discerning to them, they will reach out directly to the discharging physician". A pharmacist, for instance, may note that the patient's metoprolol dose was decreased slightly during hospitalization and see if the physician intends to continue the lower dose or resume the patient's previous dosing.

7. Researching Best Practices

The Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS), launched in 2011 with a grant from the federal Agency for Healthcare Research and Quality, included six hospitals; the MARQUIS 2 study involved 18 hospitals and has evolved into the MARQUIS Collaborative, a Society of Hospital Medicine program designed to help hospitals improve medication reconciliation processes. From the study, it is evidenced that 30% to 60% reduction in the unintended discrepancies in orders in the MARQUIS studies," noting that investments in medication reconciliation make financial wisdom as well.

Reference:

https://www.medscape.com/viewarticle/901285
https://www.medscape.com/viewarticle/901315#vp_1

Editorial Article

Nutrition in the ICU

Once malnutrition has been identified in a critically ill patient, a number of other factors need to be considered—such as the patient's age and comorbidities—before determining the optimal therapy. The importance of preserving lean body mass, so higher doses of protein and exercise are critical for patients over the age of 60 years, as well as those with burns, obesity or on continuous renal replacement therapy. Bed rest can result in a drop in the expression of cell membrane–associated amino acid transporters and other factors associated with a decline in skeletal muscle mass (*JPEN J Parenter Enteral Nutr* 2015;39[3]:273-281).

Providers to look for the cardiac, pulmonary and neurologic signs of refeeding syndrome, a potentially fatal shift in fluids and electrolytes that can occur in malnourished patients receiving artificial refeeding (box). Once need to minimize permissive underfeeding and increasing the infusion rate to goal as soon as possible—preferably "by day 2 or 3." Although there are multiple schools of thought on micronutrients, including measuring levels in the ICU and correcting any deficiencies or providing supraphysiologic doses, (*Am J Clin Nutr* 2007;85[5]:1293-1300).

Enteral nutrition (EN) has both nutritional and non nutritional benefits over parenteral nutrition (PN). The EN route is less invasive, poses less risk for infection or metabolic abnormalities, and helps to maintain healthy gut integrity, motility and immune function. "And by putting proteins in the gut compared with the blood, you get more insulin output".

Phil Ayers, PharmD, BCNSP, FASHP, the chief of clinical pharmacy services at Mississippi Baptist Medical Center, in Jackson, also underscored the advantages of EN. "In the majority of critically ill patients, it is practical to use enteral nutrition instead of parenteral nutrition," Dr. Ayers said. "Parenteral nutrition is only indicated if enteral nutrition is not feasible and hypermetabolism is expected to last more than four to five days, or if the patient's condition precludes the use of the gastrointestinal tract for more than seven to 10 days." EN, Dr. Ayers added, is contraindicated if the gastrointestinal tract has severely diminished function due to the underlying disease or treatment, such as paralytic ileus, mesenteric ischemia, small-bowel obstruction or GI fistula.

Reference:

https://www.pharmacypracticenews.com/Clinical/Article/

Statin Benefits After 75 years -Limited to Patients with Diabetes

A large observational study has shown no benefit from statin therapy for primary prevention of atherosclerotic cardiovascular disease (CVD) or all-cause mortality in non-diabetic adults aged 75 and older. Atherosclerotic CVD was a composite of coronary heart disease (fatal and nonfatal angina, fatal and nonfatal myocardial infarction, or cardiac revascularization), and stroke. However, for those with type 2 diabetes, statins did reduce the risk for atherosclerotic CVD and death, but only up to age 85, the researchers report.

"Statin prescription in older populations needs a more refined adjustment to those persons who could benefit from it, like persons with type 2 diabetes, as evidenced in recent research publication in Medscape Cardiology. This implies the need to "individualize the decision-making process about statin treatment in old and very old populations, and need specific risk prediction tools for these older people, the result of which should be shared with patients in a comprehensible way so they can participate in the decision of taking statins or not. Also consider that the current risk threshold for statin indication (10% risk of atherosclerotic CVD at 10 years) might need reevaluation in this population."

Statin prescriptions to elderly patients have increased in recent decades, but evidence to support statin treatment in primary prevention for people aged 75 years or older is lacking. Using data from the Catalan primary care system database, 46,864 people aged 75 and older (mean age, 77; 63% women) with no history of CVD between 2006 and 2015 were identified and reviewed. A total of 7502 individuals (16.0%) were taking a statin, and 7880 (16.8%) had Type 2 Diabetes. The median follow-up was 5.6 years. In those without diabetes, statin treatment was not associated with a reduction in CVD or all-cause mortality in both old (75 to 84 years) and very old (85 and older) age groups, even though the risk for CVD in both groups was higher than the risk thresholds proposed for statin use in guidelines, the researchers report. In individuals with diabetes, however, statin therapy was significantly associated with reductions in CVD (24%) and all-cause mortality (16%) in those aged 75 to 84 years. But this protective effect was substantially reduced after age 85 and disappeared in nonagenarians.

These results do not support the widespread use of statins in old and very old populations, but they do support statin treatment in selected people such as those aged 75-84 with type 2 diabetes. The key strength of the study was the high-quality, internally validated database of electronic medical records that provided a large sample size and reflected real-life clinical conditions. However, the study was observational, so no firm conclusions can be drawn about cause and effect, and residual confounding cannot be ruled out. These observational findings should be tested further in randomized trials "to rule out any confounding and to study the effect of statins on CVD death, which were not recorded in the database used for this study."

An ongoing clinical trial in Australia, the Statins for Reducing Events in the Elderly (STAREE) trial, is comparing atorvastatin 40 mg with placebo for primary prevention in adults older than 70 years. The investigators hope to recruit 18,000 participants and aim to report findings in 2022. The challenge for investigators will be whether they can run the trial long enough to evaluate slowly progressive conditions such as cognitive impairment. In the meantime, the "patient preference remains the guiding principle while wait for better evidence."

Observational data have shown that researchers and patients may have different priorities in the aims of treatment. Patients older than 65 years of age prioritized reductions in myocardial infarction and stroke over death, in contrast to both researchers and younger patients. Therefore, if in the process of shared decision making, older patients express a preference for extending longevity, then current evidence supporting statins for primary prevention remains limited," the study concluded. A patient preference for reduction in myocardial infarction or stroke, however, might help to tilt the balance in favor of statin prescription but the absolute risk reduction number needed to treat or to prevent a CVD event in older patients remains uncertain.

Reference: https://www.medscape.com/viewarticle/902217

Endpoint	Without Diabetes	With Diabetes
Age: 75 - 84		
CVD	0.94 (0.86 to 1.04)	0.76 (0.65 to 0.89)
All-cause mortality	0.98 (0.91 to 1.05)	0.84 (0.75 to 0.94)
Age: 85+		
CVD	1.00 (0.80 to 1.24)	0.82 (0.53 to 1.26)
All-cause mortality	1.00 (0.90 to 1.11)	1.05 (0.86 to 1.28)

Antihypertensive Therapy Reduces Alzheimer's, Dementia Risk

Antihypertensive therapy used to lower elevated blood pressure (BP) decreases the risk for dementia and Alzheimer's disease (AD) in older adults, and the benefits may be gained by several different drug classes, new research shows. However, the debate continues about whether treating elevated BP or using a specific antihypertensive medication in late life will reduce the risk for dementia. The study findings were presented at the Alzheimer's Association International Conference (AAIC) 2018.

To investigate the hypothesis, the researchers conducted a meta-analysis of individual patient data from six long-term prospective cohort studies: the Age, Gene/Environment Susceptibility-Reykjavik Study; Atherosclerosis Risk in Communities Study; Framingham Heart Study; Honolulu-Asia Aging Study; Rotterdam Study; and 3-C study. The study assessed the associations of different classes of BP-lowering drugs to incident dementia and Alzheimer's disease in 31,090 dementia-free community-dwelling participants aged 55 years and older with baseline data on BP and use of BP-lowering drugs who were followed for up to 22 years. Further, the study examined five major drug classes: angiotensin-converting enzyme inhibitors (ACEIs), angiotensin II receptor blockers (ARBs), beta-blockers (BBs), calcium channel blockers, and diuretics.

Within-study Cox proportional hazards analyses were adjusted for propensity scores to control for risk factors. Analyses were stratified by high baseline BP (systolic BP ≥140 mm Hg or diastolic BP ≥ 90 mm Hg) and normal baseline BP irrespective of medication use, and *APOE* ε4 carrier status. During follow-up, 3728 study participants developed dementia and 1741 developed AD. In adults with high baseline BP, those using any BP-lowering drug, regardless of drug class, had a reduced risk for developing all-cause dementia (hazard ratio [HR], 0.88; 95% confidence interval [CI], 0.79 - 0.98) and Alzheimer's disease (HR, 0.85; 95% CI, 0.74 - 0.99) compared with those not using BP medication.

Hazard ratios for incident dementia were similarly reduced among *APOE* ε4 carriers (HR, 0.77; 95% CI, 0.64 - 0.93), which mainly reflected the associations with ACEIs (HR, 0.75; 95% CI, 0.57 - 0.98), ARBs (HR, 0.65; 95% CI, 0.47 - 0.91), BBs (HR, 0.74; 95% CI, 0.58 - 0.95), and diuretics (HR, 0.75; 95% CI, 0.59 - 0.94). No significant associations were noted among *APOE* ε4 noncarriers or in participants with normal baseline BP.

Growing Evidence:

The study analysis is interesting, especially comparing it to the SPRINT MIND study," which was also reported here at AAIC 2018. As reported by *Medscape Medical News,* SPRINT MIND showed that aggressive lowering of systolic blood pressure to 120 mm Hg significantly reduces the risk for mild cognitive impairment (MCI). What's nice about this meta-analysis is the size, 31,000 people, and that it looked at dementia and found a statistical difference for those who were treated vs those who were not in terms of the number of people who developed dementia. So this analysis adds to the overall story especially given that SPRINT MIND is a little bit incomplete at this point.

It's also interesting, that this meta-analysis looked not only at dementia but also Alzheimer's disease specifically and found a benefit of BP lowering. This is interesting and suggests that the onset of Alzheimer's disease may be slowed through treatment of high blood pressure, which is good news.

Reference:
https://www.medscape.com/viewarticle/900131

10 ANTIHYPERTENSIVE DRUG BRAND NAMES

DIURETICS

- **Chlorthalidone -Hydrazide (Cipla Ltd.)**
- **Chlorothiazide- Aquazide (Sun Pharmaceuticals)**
- **Furosemide-Lasix (Sanofi Aventis Pharma)**
- **Metolazone – Metoral (Dr. Reddy's Laboratories)**
- **Torsemide- Dytor Plus (Cipla Ltd.)**

BETA BLOCKERS

- **Atenolol -Atenova (Lupin)**
- **Carvedilol –Carloc (Cipla Ltd.)**
- **Esmilol –Clol (Health Biotect Pvt. Ltd.)**
- **Labetalol -Lobet (Samarth Pharma Pvt. Ltd.)**
- **Metoprolol tartrate - Actiblok-IPR – Biocon**

EVENT CORNER

REPORT

Conferences Attended by Faculty

Dr. **S Ponnusankar,** Dr. **KP Arun,** Dr. **Khayati Moudgil** attended a National Seminar on advances in Chemical and Microbiological Food Safety Analysis organised by Dept. of Pharmaceutical Biotechnology, Dept. of Analysis & Industry Institutional Interaction Cell in association with Thermo Fisher, at JSS College of Pharmacy, Ooty, on 5th October 2018

Dr. **KP Arun** and Ms. **M Deepalakhshmi** attended a National Conference on Combat Depression for Professionals & Public organised by Dept of Pharmacology & Psychiatry, JSS Medical college, Mysuru, from 22-23rd October, 2018

Dr. **Keerthana.C** and Dr. **Aneena Suresh** attended a National seminar on Future Aspects of Pharmacotherapeutic Approaches in Disease Management organised by Department of Pharmacology, PSG College of Pharmacy, Coimbatore from 5th- 6th October, 2018

Dr. **S Ponnusankar** attended a National 48th Annual Conference of Endocrine Society of India organised by Endocrine Society of India at Mayfair Convention, Bhubaneswar, Odisha from 15 – 18th November 2018

Ms. **M Deepalakhshmi** and Dr. **Khayati Moudgil** attended a National 2nd Leadership Development Conclave organised by JSS Academy of Higher Education & Research, at Sri Rajendra Auditorium, JSS College of Pharmacy, Mysuru, from 21-24th November 2018

Dr. **G.K.Sadagoban** attended a Online conference on Vaccine safety –Basics organised by WHO e-Learning course.

Papers Presented by Faculty

Ms. **M Deepalakhshmi** presented a paper on "**Effect of Antioxidant on Depression and Cognitive function**" at National Conference on Combat Depression for Professionals & Public organised by Dept of Pharmacology & Psychiatry, JSS Medical college, Mysuru, on 22 and 23rd October, 2018

Faculty as Resource Persons

Dr. **KP Arun** delivered a talk on "**Role of Pharmacists in Depression**" at National Conference on Combat Depression For Professionals & Public organised by Dept of Pharmacology & Psychiatry, JSS Medical college, Mysuru, on 22 and 23rd of October, 2018

Dr. **S Ponnusankar** delivered a lecture on "**Clinical Pharmacy Services at Public Hospital: 20 year of our experience"** at International Conference on Pharmacy Practice organised by KB Institute of Pharmaceutical Education and Research, Gandhi Nagar, Gujarat 26 and 27th December 2018

Research Awards / Recognitions

Dr. **KP Arun**, Ms. **M Deepalakhshmi** and Ms. **B.S. Roopa** recognised for their Outstanding contribution towards the success of JSS Academy of Higher Education and Research, Myuru in pursuit for Quality and Excellence at Education celebration 2018 on 11th October 2018

Dr. **S Ponnusankar** and Dr. **KP Arun** recognised as a Organizing Committee member in Pharmacy Practice Module - Advanced Learning Series in New Infectious Diseases held at JSS College of Pharmacy, Mysuru between 24th – 26th November 2018

Upcoming events:

1. AICTE, New Delhi sponsored Quality Improvement Program on (Doctor of Pharmacy) PharmD Education: Training for the academic practitioner will be organized by Department of Pharmacy Practice, JSS College of Pharmacy, Ooty between 1st -14th March, 2019.
2. Continuing Pharmacy Education (CPE), for PharmD/M. Pharm (Pharmacy Practice) students will be organized during this year (6 programs) between Jan-June 2019. The said program provide an opportunity for the students to establish the better understanding of Pharmacotherapy, and strong clinical base to serve as Clinical Pharmacist in diverse patient care settings. Further the program will provide an opportunity to gain additional knowledge of the practice standards followed by the specialty consultant practicing in higher treatment centers.

DRUG PROFILE

AMIFAMPRIDINE

Class: Potassium channel Blocker

Indication: Symptomatic treatment of Lambert-Eaton myasthenic syndrome (LEMS) in adults.

Mechanism of Action: Amifampridine blocks voltage-dependent potassium channels, thereby prolonging pre-synaptic cell membrane depolarization, which enhances calcium transport into nerve endings The increased intracellular calcium concentrations facilitate exocytosis of acetylcholine-containing vesicles, which in turn enhances neuromuscular transmission

Dosage form and Administration: Amifampridine is available in the form of Tablets. Each tablet contains Amifampridine phosphate equivalent to 10 mg of Amifampridine.
Tablets should not be stored above 30°C.
Amifampridine is administered in divided doses, three or four times a day. The recommended starting dose is 15 mg amifampridine a day, which can be increased in 5 mg increments every 4 to 5 days, to a maximum of 60 mg per day. No single dose should exceed 20 mg. Tablets are to be taken with food.

Dosing in Renal & Hepatic Impairment:
Drug should be used with caution in patients with renal or hepatic impairment. A starting dose of 5 mg Amifampridine once per day is recommended in patients with moderate or severe impairment of renal or hepatic function.
For patients with mild impairment of renal or hepatic function, a starting dose of 10 mg Amifampridine (5 mg twice a day) per day is recommended.

Pharmacokinetics: Orally administered Amifampridine is rapidly absorbed in humans, reaching peak plasma concentrations by 0.6 to 1.3 hours. There was a decrease in Cmax and AUC, and an increase in the time to reach maximum plasma concentrations when Amifampridine phosphate was administered with food as compared to without food. A 2-fold increase in the time to reach Cmax (Tmax) was observed in the presence of food.

Bioavailability is approximately 93-100%. In humans, 93.2% to 100% of amifampridine is excreted into the urine within 24 hours after dosing as unchanged form (19%) and a 3-N-acetylated metabolite (74.0% to 81.7%). The plasma elimination half-life is approximately 2.5 hours for the amifampridine and 4 hours for the 3-Nacetylated amifampridine metabolite.

Adverse Reactions: Paraesthesia was the most commonly reported adverse effect in 62% of the patients. Other adverse reactions include Upper respiratory tract infection (33%), Abdominal pain, Nausea, Diarrhoea, Headache, Elevated liver enzymes, Back pain (14%), Hypertension, Muscle spasms (12%). Dizziness, Asthenia, Muscular weakness, Pain in extremity, Cataract (10%), Constipation, Bronchitis, Fall, Lymphadenopathy (7%), Seizures (2%).

Contraindications:

- Pregnancy: Drug should not be used during pregnancy. No adequate clinical data on exposed pregnancies are available for Amifampridine.
  Amifampridine has shown no effect on embryo-fetal viability and development in rabbits; however, in rats, an increase in the number of mothers delivering still-born offspring was observed.
- Drug is contraindicated in patients with Epilepsy and Uncontrolled Asthma.

Precautions:

- Concomitant use of Amifampridine and substances known to lower the epileptic threshold (Ex: Tricyclic anti-depressants, Selective serotonin uptake inhibitors, Phenothiazines, Butyrophenones, Mefloquine, Bupropion, Tramadol) may lead to an increased risk of seizures.
- Concomitant use of Amifampridine and drugs with anti-cholinergic effects may reduce the effect of both.
- Concomitant use of Amifampridine and drugs with cholinergic effects may increase the effect of both.
- Concomitant use of Amifampridine and drugs with non-depolarising muscle relaxant effects (Ex: Mivacurium, Pipercurium) or concomitant use with depolarising muscle relaxant effects (Ex: Suxamethonium) may lead to a decreased effect of both products.

Drug Interactions:

- Concomitant use of medicinal products with a narrow therapeutic window is contraindicated.
- Based on the pharmacodynamic properties of amifampridine, the concomitant use with Sultopride or other medicines known to cause QT prolongation (Ex: Disopyramide, Cisapride, Domperidone, Rifampicin, Ketoconazole) is contraindicated as this combination may lead to an enhanced risk of ventricular tachycardia, notably torsade de pointes.

RECENTLY APPROVED DRUGS BY FDA

S.no	Drug	Active Ingredient	Approval Date	FDA-approved use on approval date
1.	Seysara	sarecycline	10/1/2018	To treat inflammatory lesions of non-nodular moderate to severe acne vulgaris in patients 9 years of age and older
2.	Nuzyra	omadacycline	10/3/2018	To treat community-acquired bacterial pneumonia and acute bacterial skin and skin structure infections
3.	Revcovi	elapegademase-lvlr	10/5/2018	To treat Adenosine Deaminase-Severe Combined Immunodeficiency (ADA-SCID)
4.	Tegsedi	inotersen	10/5/2018	To treat polyneuropathy of hereditary transthyretin-mediated amyloidosis in adults
5.	Talzenna	talazoparib	10/16/2018	For the treatment of locally advanced or metastatic breast cancer patients with a germline BRCA mutation.
6.	Xofluza	baloxavir marboxil	10/24/2018	For the treatment of acute uncomplicated influenza in patients who have been symptomatic for no more than 48 hours.
7.	Lorbrena	lorlatinib	11/2/2018	To treat patients with anaplastic lymphoma kinase (ALK)-positive metastatic non-small cell lung cancer
8.	Yupelri	revefenacin	11/8/2018	To treat patients with chronic obstructive pulmonary disease (COPD)
9.	Aemcolo	rifamycin	11/16/2018	To treat travelers' diarrhea
10.	Gamifant	emapalumab-lzsg	11/20/2018	To treat primary hemophagocytic lymphohistiocytosis (HLH)
11.	Daurismo	glasdegib	11/21/2018	To treat newly-diagnosed acute myeloid leukemia (AML) in adult patients
12.	Vitrakvi	larotrectinib	11/26/2018	To treat patients whose cancers have a specific genetic feature (biomarker)
13.	Firdapse	amifampridine	11/28/2018	To treat Lambert-Eaton myasthenic syndrome (LEMS) in adults

14.	Xospata	gilteritinib	11/28/2018	To treat patients who have relapsed or refractory acute myeloid leukemia (AML)
15.	Motegrity	prucalopride	12/14/2018	To treat chronic idiopathic constipation
16.	Asparlas	calaspargase pegol-mknl	12/20/2018	To treat acute lymphoblastic leukemia (ALL) in pediatric and young adult patients age 1 month to 21 years
17.	Elzonris	tagraxofusp-erzs	12/21/2018	To treat blastic plasmacytoid dendritic cell neoplasm (BPDCN)
18.	Ultomiris	ravulizumab	12/21/2018	To treat paroxysmal nocturnal hemoglobi.nuria (PNH)

Available from: Novel Drug Approvals for 2019
https://www.fda.gov/drugs/developmentapprovalprocess/druginnovation/ucm592464.htm

For clarifications/ feedback, write to:
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