Intensive blood pressure (BP) control reduced the risk of cardiovascular (CV) events by 21% compared with standard BP control in a subgroup of patients from the ACCORD-BP trial who had type 2 diabetes and additional CV risk factors, according to results of a post-hoc analysis published in Diabetes Care.
Focus on HIV Care

Advising on this article: Betty J. Dong

April 2, 2018

Two-drug regimens might be as effective as three-drug regimens for HIV-1 infections

Key Point

The fixed-dose combination regimen of dolutegravir/rilpivirine (Juluca—ViiV Healthcare) administered as one tablet daily was found to be noninferior to traditional three-drug antiviral regimens for management of HIV-1 infections, according to pooled results from the SWORD-1 and -2 trials published in Lancet.

Source URL:

New oral option for cancer-associated VTE

Key Point

Use of long-term oral edoxaban (Savaysa—Daiichi-Sankyo) in patients with cancer and an acute venous thromboembolism (VTE) was found to be noninferior to long-term use of subcutaneous dalteparin for recurrent VTE or major bleeding, according to results of the Hokusai VTE Cancer trial published in the New England Journal of Medicine.

Source URL:

No renal benefits with sodium bicarbonate or acetylcysteine before angiography

Key Point

In patients at high risk of renal complications who are undergoing angiography, use of I.V. sodium bicarbonate offered no benefits for prevention of contrast-associated acute kidney injury compared with I.V. sodium chloride. Similarly, a lack of effect was observed with use of oral acetylcysteine compared with placebo, according to results of the PRESERVE trial published in the New England Journal of Medicine.

Source URL:
http://www.aphadruginfoline.com/nephrology/no-renal-benefits-sodium-bicarbonate-or-acetylcysteine-angiography
Infectious Diseases

Advising on this article: Allana Sucher

April 16, 2018

Updated Clostridium difficile guidelines released

Key Point

Updated guidelines for management of Clostridium difficile infections in adults and children, published in Clinical Infectious Diseases, focus on diagnosis, infection prevention and control, and revised initial treatment considerations for these patient populations.

Source URL:

New analysis compares efficacy and safety of antidepressants

Key Point

Results of a systematic review and network meta-analysis involving 21 antidepressants (two not available in the United States) for acute treatment of adults with major depressive disorder (MDD) found all antidepressants to be more efficacious than placebo. Compared with placebo, only amitriptyline had significantly greater efficacy than some but not all of the other antidepressants. The analysis also did head-to-head comparisons and rated these medications on the basis of efficacy and acceptability.

Source URL:

Trimethoprim is associated with negative renal outcomes in older adults

Key Point

Use of trimethoprim for management of urinary tract infections (UTIs) in older adults was associated with a higher risk of acute kidney injury (AKI) and hyperkalemia compared with other antibiotics (i.e., ciprofloxacin, cephalexin, nitrofurantoin, amoxicillin), according to results of an observational cohort study published in BMJ. These data support the theory that the trimethoprim component of trimethoprim–sulfamethoxazole has been implicated in other studies in the United States.

Source URL:
Safety concerns with digoxin use

Key Point

Use of digoxin in patients with atrial fibrillation (AF) was associated with an increased risk of death, specifically when serum concentrations were 1.2 ng/mL or higher or when treatment was newly initiated, according to results of a new analysis published in the Journal of the American College of Cardiology.

Source URL:

http://www.aphadruginfoline.com/cardiology/safety-concerns-digoxin-use
April 2, 2018

Sargramostim
(Leukine—Partner Therapeutics)

FDA approves Leukine for acute radiation syndrome

On March 29, 2018, FDA approved the use of sargramostim under the trade name Leukine to increase survival in adult and pediatric patients acutely exposed to myelosuppressive doses of radiation (hematopoietic syndrome of acute radiation syndrome, or H-ARS).

The approval adds to the country’s available treatments in the event of radiological or nuclear emergency. It is the third FDA-approved medical countermeasure indicated to increase survival in patients exposed to myelosuppressive doses of radiation, following approval of Neupogen in March 2015 and Neulasta in November 2015.

Leukine can help patients with H-ARS by facilitating recovery of bone marrow cells that develop into white blood cells that help fight off infections. It was shown to increase survival when administered up to 48 hours after total body irradiation exposure at doses expected to be fatal to 50% of those exposed subjects under conditions of minimal supportive care.

Approval was based on efficacy studies in animals (under the Animal Rule), as efficacy studies in humans could not be ethically conducted.

Leukine was originally approved in 1991 to shorten time to neutrophil recovery and to reduce the incidence of severe and life-threatening infections following induction chemotherapy in adult patients aged 55 years and older with acute myeloid leukemia (AML), and subsequently approved for several oncology-related indications.

Its most commonly reported adverse effects are fever, injection site reactions, and shortness of breath.

Source URL:
## Supplemental Approvals

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<th>Generic Name (Trade Name—Company)</th>
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### Exenatide extended-release

(Bydureon—AstraZeneca)

Approval of exenatide ER expanded for use with basal insulin to treat uncontrolled T2D

FDA has approved exenatide extended-release (ER) for injectable suspension as add-on therapy to basal insulin in adults with type 2 diabetes (T2D) with inadequate glycemic control despite taking one or more antidiabetic medications and making diet and exercise changes.

The expanded use is based on results from the 28-week DURATION-7 study, which examined the effect of exenatide ER or placebo as add-on therapy to insulin glargine, with or without metformin, in adults with T2D. Mean A1C was reduced by 0.9% in the exenatide extended-release group compared to 0.2% in the placebo group in patients with a mean baseline A1C of 8.5%.

Furthermore, 32.5% of patients in the exenatide extended-release group reached an A1C of less than 7.0% compared to 7.0% of patients in the placebo group.

No new safety data were found in the DURATION-7 study. Overall hypoglycemia was similar between the groups, with no reported major hypoglycemia. In both arms, the same percentage of patients reported minor hypoglycemia.

Like other GLP-1 receptor agonists, the risk of hypoglycemia is increased when exenatide extended-release is coadministered with insulin. Prescribers should consider lowering the dose of insulin when coadministering exenatide extended-release.

The most common adverse events are nausea, diarrhea, headache, vomiting, constipation, injection-site pruritus, injection-site nodule, and dyspepsia.

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**Source URL:**
**Supplemental Approvals**

**Generic Name (Trade Name—Company)**

April 12, 2018

**Rucaparib**

FDA approved rucaparib, a poly adenosine diphosphate (ADP)-ribose polymerase (PARP) inhibitor, for the maintenance treatment of recurrent epithelial ovarian, fallopian tube, or primary peritoneal cancer in patients who achieved complete or partial response to platinum-based chemotherapy.

Approval was based on ARIEL3 (NCT01968213), a randomized, double-blind, placebo-controlled trial in 561 patients with recurrent epithelial ovarian, fallopian tube, or primary peritoneal cancer who had been treated with at least two prior treatments of platinum-based chemotherapy and were in complete or partial response to the most recent platinum-based chemotherapy. Patients were randomized (2:1) to rucaparib 600 mg orally twice daily (n = 372) or placebo (n = 189) and were treated until disease progression or unacceptable toxicity.

Tumor tissue samples were examined with a next-generation sequencing assay to determine whether DNA contained a deleterious somatic or germline BRCA mutation (tBRCA). This test was also used to determine the percentage of genomic loss of heterozygosity (LOH). Positive homologous recombination deficiency (HRD) status was defined as tBRCA-positive and/or LOH high. Three patient outcomes analyses were performed on the following groups: all patients, HRD subgroup, and tBRCA subgroup.

ARIEL3 demonstrated a statistically significant improvement in estimated median progression-free survival (PFS) assessed by investigator for patients randomized to rucaparib compared with placebo in all patients, in the HRD subgroup, and in the tBRCA subgroup.

In ARIEL3, the most common adverse reactions in at least 20% of patients treated with rucaparib included nausea, fatigue (including asthenia), abdominal pain/distension, rash, dysgeusia, anemia, ALT/AST elevation, constipation, vomiting, diarrhea, thrombocytopenia, nasopharyngitis/URI, stomatitis, decreased appetite, and neutropenia. Myelodysplastic
syndrome and/or acute myeloid leukemia occurred in 7 of 372 (1.9%) patients treated with rucaparib and in 1 of 189 (0.5%) patients assigned to placebo.

Discontinuation due to adverse reactions occurred in 15% of patients receiving rucaparib and 2% of those assigned to placebo.

The recommended rucaparib dose is 600 mg (two 300-mg tablets) taken orally twice daily with or without food.

Source URL:
http://www.aphadruginfoline.com/supplemental-approvals/agent-now-approved-treat-recurrent-ovarian-fallopian-tube-or-primary
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<tr>
<td>Bupivacaine liposome injectable suspension (Exparel—Pacira Pharmaceuticals)</td>
<td>FDA approved a new indication for bupivacaine liposome injectable suspension for use as an interscalene brachial plexus nerve block to produce postsurgical regional analgesia following shoulder surgery in adults for 48 to 72 hours following administration. Interscalene brachial plexus nerve block works by anesthetizing the body’s nerves nearest the shoulder to help curb pain. The new indication’s approval was based on the results of one multicenter clinical study, which demonstrated that the product is safe and effective for use as an interscalene brachial plexus nerve block to provide postsurgical regional analgesia for shoulder surgeries, such as total shoulder arthroplasty and rotator cuff repair. In accordance with recommendations made by an FDA advisory committee in February, the agency has determined that clinical trial data are not sufficient to support the general use of the agent for regional nerve blocks for postsurgical analgesia other than shoulder surgery. As such, the product’s updated labeling clearly articulates both the agent's limitations of use as well as the most up-to-date safety and efficacy data associated with this new indication. In 2011, the agent was approved for local administration to provide postsurgical analgesia.</td>
</tr>
<tr>
<td>FDA approves new use for nerve block pain relief after shoulder surgeries</td>
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**Source URL:**
Implanted birth control device
(Essure—Bayer)

FDA restricts sale and distribution of Essure, requires women to be informed of risks

April 12, 2018

FDA continues to monitor the safety of Essure. FDA stated that it continues to believe the benefits of the device outweigh its risks, and that Essure’s updated labeling and the sales restriction will ensure that women are appropriately informed of the risks.

Some women have received the Essure device without being adequately informed of its risks. FDA has taken steps, including labeling changes in 2016 adding a boxed warning and patient decision checklist, to better inform health care providers and patients about these risks. For this device to meet reasonable assurance of safety and effectiveness, all women considering Essure should receive this important information.

On April 9, 2018, FDA restricted sales of the Essure device to only doctors and health care facilities who use the FDA-approved “Patient-Doctor Discussion Checklist – Acceptance of Risk and Informed Decision Acknowledgement,” which is part of the patient information booklet. It includes key items about the device, its use, and safety and effectiveness outcomes. Sale and distribution of Essure is limited to health care providers who agree to review this checklist with patients, and give them the opportunity to sign it, before Essure implantation.

FDA also approved Bayer’s new labeling that includes the following statement: “The sale and distribution of this device are restricted to users and/or user facilities that provide information to patients about the risks and benefits of this device in the form and manner specified in the approved labeling provided by Bayer.”

Source URL:
Supplemental Approvals

Generic Name (Trade Name—Company)  Uses/Notes

April 12, 2018

Everolimus  FDA approved everolimus tablets for oral suspension for adjunctive treatment of adult and pediatric patients aged 2 years and older with tuberous sclerosis complex (TSC)–associated partial-onset seizures.

Everolimus is also approved for TSC-associated subependymal giant cell astrocytoma (SEGA) and TSC-associated renal angiomyolipoma.

Approval was based on EXIST-3, a randomized, double-blind, multicenter trial in 366 patients with TSC-associated partial-onset seizures, inadequate seizure control with 2 or more sequential antiepileptic drug (AED) regimens, and a TSC diagnosis (modified Gomez criteria). In addition, eligible patients were required to have had 16 or more partial-onset seizures during the 8-week baseline phase on a stable AED regimen.

Patients were randomized (1:1.09:1) to everolimus targeting a low trough (LT, n = 117) or high trough (HT, n = 130) concentration of everolimus or placebo (n = 119). Patients initiated treatment with everolimus/matching placebo at 3–6 mg/m² (depending on age or further adjusted for concomitant CYP3A4/P-glycoprotein inducer use) orally once daily.

Subsequent doses were titrated to achieve the targeted trough concentrations as directed by an automated system to maintain the study blind. The major efficacy measure was the percentage reduction in average weekly seizures during a 12-week treatment period compared with the average weekly seizures during the 8-week baseline period.

The trial demonstrated statistically significant reductions in seizures for each of the everolimus arms (LT arm, 29.3%; HT arm, 39.6%), compared with the placebo arm (14.9%). The proportion of patients with 50% reduction in seizure frequency during the 12-week treatment period compared with baseline also was higher in the LT and HT everolimus arms (28.2% and 40%, respectively) compared with the placebo arm.
(Afinitor Disperz—Novartis)

FDA approves everolimus for tuberous sclerosis complex-associated partial-onset seizures

The most common adverse reactions, occurring in at least 10% of patients, were stomatitis, diarrhea, vomiting, nasopharyngitis, upper respiratory tract infection, pyrexia, cough, and rash.

The recommended starting dose of everolimus arms for this indication is 5 mg/m² orally once daily with dose adjustments (in increments up to 5 mg) to achieve trough concentrations of 5–15 ng/mL.

The dose should be reduced in patients with severe hepatic impairment or in patients taking concurrent P-glycoprotein and moderate CYP3A4 inhibitors. The dose should be increased in patients taking concurrent P-glycoprotein and strong CYP3A4 inducers.

Source URL:
### Alerts and Recalls

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<td><strong>Sterile injectable products</strong></td>
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<tr>
<td><em>(No trade names—Premier Pharmacy Labs)</em></td>
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<tr>
<td>Recalled sterile injectable products may have microbial contamination</td>
<td>Premier Pharmacy Labs is voluntarily recalling <a href="http://www.aphadruginfoline.com/alerts-and-recalls/recalled-sterile-injectable-products-may-have-microbial-contamination">specific sterile injectable product lots</a> because they lack sterility assurance.</td>
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Microbial contamination was detected during routine testing of subsequent unreleased product lots due to interaction between the product syringe and tamper-evident container closure. This may introduce microorganisms into the products.

Administration of nonsterile injection products that are intended to be sterile may result in a site-specific or systemic infection, which in turn may cause hospitalization, significant morbidity (permanent organ damage), or a fatal outcome.

The product can be identified by the product description in the [table](http://www.aphadruginfoline.com/alerts-and-recalls/recalled-sterile-injectable-products-may-have-microbial-contamination) on FDA's website and beyond-use date (BUD) on the individual product or shipping bag. The listed product lots were distributed nationwide to hospital pharmacy, clinic, and health care facilities.

To date, Premier Pharmacy Labs has not received any reports of adverse events related to this issue.

### Source URL:

http://www.aphadruginfoline.com/alerts-and-recalls/recalled-sterile-injectable-products-may-have-microbial-contamination
Supplemental Approvals

Generic Name (Trade Name—Company)  
April 16, 2018

**Nivolumab and ipilimumab**

FDA granted approvals to nivolumab and ipilimumab in combination to treat intermediate or poor risk, previously untreated advanced renal cell carcinoma.

Approvals were based on CheckMate 214 (NCT02231749), a randomized open-label trial. Patients with previously untreated advanced RCC received nivolumab (3 mg/kg) plus ipilimumab (1 mg/kg) every 3 weeks for four doses, followed by nivolumab monotherapy (3 mg/kg) every 2 weeks, or sunitinib 50 mg daily for 4 weeks followed by 2 weeks off every cycle.

Efficacy was evaluated in intermediate or poor-risk patients (n = 847). The trial demonstrated statistically significant improvements in overall survival (OS) and objective response rate (ORR) for patients receiving the combination (n = 425) compared with those receiving sunitinib (n = 422). Estimated median OS was not estimable in the combination arm compared with 25.9 months in the sunitinib arm (hazard ratio 0.63 [95% CI 0.44–0.89]; \( P < 0.0001 \)). The ORR was 41.6% (95% CI 36.9–46.5) for the combination versus 26.5% (95% CI 22.4–31) in the sunitinib arm (\( P < 0.0001 \)). The efficacy of the combination in patients with previously untreated renal cell carcinoma with favorable-risk disease was not established.

The most common adverse reactions (reported in at least 20% of patients treated with the combination) were fatigue, rash, diarrhea, musculoskeletal pain, pruritus, nausea, cough, pyrexia, arthralgia, and decreased appetite.

The recommended schedule and dose for this combination is nivolumab 3 mg/kg, followed by ipilimumab 1 mg/kg on the same day every 3 weeks for four doses, then nivolumab 240 mg every 2 weeks or 480 mg every 4 weeks.

Prescribing information for both nivolumab and ipilimumab have been updated with these results. Full prescribing information is available at:
**Opdivo and Yervoy—Bristol-Myers Squibb**

FDA approves nivolumab plus ipilimumab combination for intermediate or poor-risk advanced renal cell carcinoma

Source URL:

## Alerts and Recalls

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### Sterile injectable products

**No trade names—Coastal Meds**

FDA announces nationwide recall of all sterile products from Coastal Meds

FDA is alerting health professionals to a voluntary recall of all nonexpired products marketed as sterile that were made by Coastal Meds, of Biloxi, MI. During a recent inspection, FDA investigators observed visible particulates and poor sterile production practices in products intended for injection.

Injection of a drug product containing particulate matter may result in serious and potentially life-threatening adverse events, such as infection, allergic reaction, toxicity, or other reactions. Health professionals should immediately check their medical supplies, quarantine any sterile drug products intended for injection from Coastal Meds, and not administer them to patients.

On April 5, 2018, Coastal Meds initiated a voluntarily recall of all products intended to be sterile. FDA requested the compounding inform the public, but the company has not done so.

To date, FDA is not aware of any reports of adverse events associated with drug products produced by Coastal Meds. Patients who have received drug products produced by Coastal Meds and have concerns should contact their health professional.

### Source URL:

April 16, 2018

Highly concentrated caffeine  
(Multiple trade names—Multiple companies)

FDA warns of dangers of extremely concentrated or pure caffeine sold in bulk

FDA issued new guidance to clarify that dietary supplements containing pure or highly concentrated caffeine in powder or liquid forms are dangerous and present a significant or unreasonable risk of illness or injury.

In 2015 and 2016, FDA issued warning letters to seven distributors of pure powdered caffeine. Since that time, FDA has continued to see a proliferation of similar products being sold online.

Highly concentrated and pure caffeine, often sold in bulk packages, has been linked to at least two deaths in otherwise healthy individuals.

A one-half cup of highly concentrated liquid caffeine can contain approximately 2,000 mg of caffeine, and just a single teaspoon of a powdered pure caffeine product can contain approximately 3,200 mg of caffeine. This is equivalent to about 20 to 28 cups of coffee, a potentially toxic dose.

The recommended safe serving of highly concentrated or pure caffeine products is often 200 mg of caffeine, which equates to 1/16 of a teaspoon of pure powder or approximately 2.5 teaspoons of a liquid.

When formulated and marketed appropriately, such as in premeasured packets or containers, in solid dosage forms such as tablets or capsules, or when in formulations that are not highly concentrated, caffeine can be a safe ingredient in a dietary supplement.

The guidance does not affect other types of products that might also contain caffeine, such as prescription or OTC drugs or conventional foods such as traditionally caffeinated beverages.

Source URL:
FDA has approved burosumab, the first drug approved to treat adults and children aged 1 year and older with x-linked hypophosphatemia (XLH), a rare, inherited form of rickets. XLH causes low levels of phosphorus in the blood. It leads to impaired bone growth and development in children and adolescents and problems with bone mineralization throughout a patient’s life.

Most children with XLH experience bowed or bent legs, short stature, bone pain, and severe dental pain. Some adults with XLH experience persistent discomfort or complications, such as joint pain, impaired mobility, tooth abscesses, and hearing loss.

Safety and efficacy of burosumab were studied in four clinical trials. In the placebo-controlled trial, 94% of adults receiving burosumab once a month achieved normal phosphorus levels, compared with 8% of those receiving placebo. In children, 94% to 100% of patients treated with burosumab every 2 weeks achieved normal phosphorus levels. In both children and adults, X-ray findings associated with XLH improved with burosumab therapy. Comparison of the results to a natural history cohort also provided support for burosumab’s effectiveness.

The most common adverse reactions in adults taking burosumab were back pain, headache, restless leg syndrome, decreased vitamin D, dizziness, and constipation. The most common adverse reactions in children were headache, injection site reaction, vomiting, decreased vitamin D, and fever.

Burosumab was granted breakthrough therapy and orphan drug designations, which provides incentives to assist and encourage the development of drugs for rare diseases.

Source URL:
Rigel Pharmaceuticals announced FDA approval of fostamatinib disodium hexahydrate to treat thrombocytopenia in adult patients with chronic immune thrombocytopenia (ITP) who have had an insufficient response to a previous treatment.

The agent is an oral spleen tyrosine kinase (SYK) inhibitor that targets the underlying autoimmune cause of the disease by impeding platelet destruction, providing an important new treatment option for adult patients with chronic ITP.

FDA approval was supported by data from the FIT clinical program, which included two randomized, placebo-controlled Phase III trials and an open-label extension, as well as an initial proof of concept study. The studies included 163 patients with ITP and was supported by a safety database of more than 4,600 participants across other indications in which fostamatinib has been evaluated.

Rigel plans to launch the new drug in the United States in late May 2018.
Supplemental Approvals

Generic Name (Trade Name—Company)  Uses/Notes

Idarucizumab  (Praxbind—Boehringer Ingelheim)
Idarucizumab approved as first reversal agent for novel oral anticoagulant dabigatran

April 19, 2018

FDA has expanded the approval of idarucizumab as an antidote to the anticoagulant dabigatran in patients requiring emergency surgery or urgent procedures or who face life-threatening or uncontrolled bleeding.

It is the first of its kind for a reversal agent of a novel oral anticoagulant.

Approval of idarucizumab as a reversal agent was based on data from the RE-VERSE Ad Phase III trial of dabigatran, which was conducted in October 2015. In the trial, 503 patients worldwide at 173 sites were split into two groups: group A (n = 301), in which 60% presented with uncontrolled or life-threatening bleeding, and group B (n = 202), in which 40% required an invasive procedure or an emergency surgery or intervention.

The final results of the trial, published in July 2017, revealed that in 90 patients who received idarucizumab (group A, 51 patients; group B, 39 patients), the median maximum percentage reversal was 100% (95% CI 100-100). According to the researchers, test results were normalized within minutes in 88% to 98% of patients, as measured by ecarin clotting time (82%) or diluted thrombin time (99%).

After 24 hours, concentrations of unbound dabigatran were below 20 mg/mL in 79% of patients. In group A, 35 patients could be assessed for hemostasis, which was restored at a mean of 11.4 hours. In group B, of the 36 patients who underwent a procedure, 33 reported intraoperative hemostasis, and 3 patients reported mildly or moderately abnormal hemostasis.

Only one thrombotic event occurred within 72 hours after idarucizumab was administered to a patient who was not reinitiated to anticoagulants. No adverse safety signals were observed in the study.

Source URL: