TRENDS-in-MEDICINE

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by Lynne Peterson

Quick Takes

…Highlights from this week's news relating to drugs and devices in development that are not covered in other *Trends-in-Medicine* reports…

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NOTE: Subscribe to ***Trends-in-Medicine*** for coverage of the **Association for Research in Vision and Ophthalmology** (ARVO) virtual meeting.

Top news of the week (*read details in other sections of* ***Quick Takes***)

✓ The FDA lifted its hold on:

- **Neoleukin Therapeutics' NL-201** – in advanced/relapsed/refractory solid tumors.
- **UniQure's etranacogene dezaparvovec** – in hemophilia B.
- **Voyager Therapeutics' VY-HTT01** – for Huntington's disease.

✓ **Positive trial news:**

- **Abiomed's Impella** – in cardiogenic shock.
- **Akebia Therapeutics and Otsuka's vadadustat** – in anemia of CKD.
- **Aldeyra Therapeutics' reproxalap** – in allergic conjunctivitis.
- **Arrowhead Pharmaceuticals and Takeda's ARO-ATT** – in a rare genetic liver disease.
- **AstraZeneca and Sanofi's nirsevimab** – in infant respiratory syncytial virus (RSV).
- **BeiGene's Brukinsa** (zanubrutinib) – in relapsed/refractory CLL or small lymphocytic lymphoma.
- **BioArctic and Eisai's lecanemab** – in early Alzheimer's disease.
- **Galera Therapeutics' avasopasem manganese** (GC-4419) – in pancreatic cancer.
- **I-Mab Biopharma's olamkicept** – in ulcerative colitis.
- **Jubilant Pharmova / Jubilant Pharma's oral remdesivir** – in Covid-19 patients.
- **Mallinckrodt's INOmax** (nitric oxide) – in pre-term neonates with pulmonary hypertension.
- **Phathom Pharmaceuticals' vonoprazan** – in *H. pylori*.
- **Pfizer's Cyklokapron (tranexamic acid)** – in postpartum blood loss.

✓ **Negative trial news**

- **Adverum Biotechnologies' ADVM-022** – in DME because a gene therapy patient developed hypotony.
- **Cara Therapeutics' Korsuva** (difelikefalin, CR-845) – in pruritus.
- **Fish oil supplements** – *increased* the risk of AFib.
- **Novartis' Entresto** (sacubitril + valsartan) – in heart failure after an AMI.

SHORT TAKES

- **ABIOMED's Impella** – The results of the National Cardiogenic Shock Initiative, presented at the Society for Cardiovascular Angiography and Interventions (SCAI) virtual meeting, showed a 71% survival rate in patients with a heart attack complicated by cardiogenic shock who were treated with this percutaneous right heart pump vs. a historic survival rate of ~50%. The protocol involved rapid initiation of mechanical circulatory support with an Impella 2.5 or Impella CP heart pump, along with right heart catheterization to assess status of right and left ventricular heart function.

  The principal investigator, William O'Neill, MD, medical director of Henry Ford Hospital's Center for Structural Heart Disease, estimated that if the same protocol were implemented across the country, the protocol could save up to 20,000 lives a year. Another confirmatory trial, Recover IV, is expected to start in late 2022.

- **ACCELERON PHARMA** – The FDA issued its first Notice of Noncompliance to Acceleron for failing to submit required summary results information from a trial of dalantercept (an ALK1 fusion protein) in combination with axitinib (Pfizer's Inlyta) in advanced renal cell carcinoma to **clinicaltrials.gov**, giving Acceleron 30 days to submit the data, with a threat of a monetary penalty if that is not done.

- **ADVERUM BIOTECHNOLOGIES' ADVM-022** – A patient on the high dose (6 x 10^{11} vg/eye) of this gene therapy in the 36-patient Phase II INFINITY trial in diabetic macular edema (DME) developed hypotony (decreased intraocular pressure at Week 30) and lost vision in one eye. Whether the gene therapy is to blame has not yet been determined, but the company decided to unmask the trial.

- **AKEBIA THERAPEUTICS and OTSUKA's vadadustat** – The results of two global Phase III trials for anemia in chronic kidney disease (CKD) patients – INNO$_2$VATE in those on dialysis and PRO$_2$TECT in non-dialysis patients – were published in the ***New England Journal of Medicine***, both showing that this oral HIF-PHI was non-inferior to darbepoetin alfa (Amgen's Aranesp).

- **ALCON** is buying the U.S. rights from **Novartis** to **Simbrinza** (brinzolamide + brimonidine), an eye drop for treating elevated intraocular pressure (IOP) in patients with glaucoma or ocular hypertension.

- **ALDEYRA THERAPEUTICS' reproxalap** – This RASP inhibitor met the primary endpoint in the 95-patient Phase III INVIGORATE trial in allergic conjunctivitis, significantly reducing the ocular itching score vs. vehicle. Reproxalap also met the key secondary endpoints: ocular redness score, patient-reported ocular tearing score, and total ocular severity score.

- **ARDELYX's tenapanor** – The FDA extended the review of this NHE3 inhibitor for treating hyperphosphatemia in adults with chronic kidney disease (CKD) who are on dialysis by three months to July 29, 2021, after the company submitted additional information the FDA had requested about the mechanism of action.

- **ARROWHEAD PHARMACEUTICALS and TAKEDA's ARO-ATT** – At Week 48 of a 16-patient, open-label Phase II trial in a rare genetic liver disease associated with alpha-1 antitrypsin deficiency (AATD), liver biopsies showed that 4 of 5 patients who got this RNA interference therapeutic in Cohort 2 had a reduction in fibrosis of ≥1 stage, while the fifth patient had fibrosis stability.

- **BECTON DICKINSON's BD Alaris System** – A new 510(k) application for this acute care infusion pump was submitted to the FDA that would update it with new modifications.

- **BEIGENE's Brukinsa (zanubrutinib)** – An interim analysis of 415 patients from the 652-patient Phase III ALPINE trial of this BTK inhibitor in relapsed/refractory chronic lymphocytic leukemia or small lymphocytic lymphoma met non-inferiority on objective response rate (ORR) to Johnson & Johnson and AbbVie's Imbruvica (ibrutinib) and superiority by investigator assessment (but not independent review) on ORR.

- **BIOARCTIC and EISAI's lecanemab** – The results of a double-blind, 854-patient Phase II proof-of-concept trial in early Alzheimer's disease, published in the journal ***Alzheimer's Research & Therapy***, found that the highest dose of this anti-amyloid-beta protofibril antibody led to a consistent reduction in clinical decline across several clinical and biomarker endpoints.

- **CARA THERAPEUTICS and VIFOR PHARMA's Korsuva (difelikefalin, CR-845)** – In the 401-patient Phase II KARE trial, this selective kappa opioid receptor agonist missed the primary endpoint of worst-itch NRS change from baseline at Week 12 vs. placebo in *moderate-to-severe* pruritus, and it missed the secondary endpoint of 4-point improvement in an overall responder analysis. However, Korsuva met the primary endpoint in a pre-specified analysis of the responder index among *mild-to-moderate* patients.

- **COLFAX/DJO GLOBAL** bought **MedShape**, an orthopedic medical device company.

- **CYNOSURE** announced at The Aesthetic Society meeting that it is buying **MyEllevate Surgical Suture System** (also known as the "Zoom Lift"), an office-based light facelift system.

- **Electronic health records (EHRs)** – A study, published in ***JAMA Network Open***, found that the care benefits of EHRs may take some time to be realized. There was an association between advanced EHR capability and high-quality care at ambulatory clinics – but mostly at clinics that had EHRs for ≥3 years.

- **ENZYVANT's RVT-802** – The company believes it has resolved the chemistry, manufacturing, and controls (CMC) issues that led the FDA to issue a complete response letter (CRL) in 2019 for this treatment for pediatric congenital athymia, an ultra-rare disease, and has resubmitted a biologics license application (BLA) to the FDA, with a PDUFA date of October 8, 2021.

- **ESPERION THERAPEUTICS' Nexletol (bempedoic acid)** – **Daiichi Sankyo**, which is already commercializing this ACL inhibitor for lowering cholesterol in Japan and Europe, bought the rights to other regions of the world.

- **Fish oil supplements** – A comprehensive meta-analysis of 50,277 patients, published in the ***European Heart Journal – Cardiovascular Pharmacotherapy***, has linked omega-3 fish oil supplements – several different formulations, including low-dose products sold over-the-counter and prescription formulations – with an increased likelihood of developing atrial fibrillation – and a related stroke – in patients with elevated triglycerides.

- **GALERA THERAPEUTICS' avasopasem manganese (GC-4419)** – The company reported the 6-month results of a 42-patient Phase I/II pilot trial of this selective small molecule superoxide dismutase (SOD) mimetic in pancreatic cancer showed improved survival (20.1 months vs. 10.9 months), with 29% of GC-4419 patients achieving at least a partial response vs. 11% of placebo patients. However, no p-values were provided.

- **GLAXOSMITHKLINE** said it is dropping two Phase I drugs – (1) GSK-3537142, an anti-CD3 bispecific targeting NY-ESO for solid tumors and synovial sarcoma that is partnered with Immunocore, and (2) GSK-3439171, a hematopoietic prostaglandin D2 synthase inhibitor for Duchenne muscular dystrophy.

- **I-MAB BIOPHARMA's olamkicept** – The high dose (600 mg) of this IL-6 inhibitor met the primary endpoint in a Phase II trial in ulcerative colitis, with a significantly higher response rate at Week 12 vs. placebo.

- **IMPLANDATA OPHTHALMIC PRODUCTS' Eyemate**, a digital system for remote management and monitoring of glaucoma patients, was granted breakthrough device status by the FDA.

- **INNOVA MEDICAL GROUP** bought **Pacific PPE** (3PE), which makes and distributes N95 respirators and other face masks.

- **JUBILANT PHARMOVA/JUBILANT PHARMA's oral remdesivir** – The company said a Phase I pharmacokinetic study of this oral version of Gilead Sciences' antibody, Veklury (IV remdesivir), in healthy volunteers in India was successful, and a Phase II in Covid-19 patients will start.

- **KATENA PRODUCTS**, an ophthalmic instrument company, bought **ASICO**, which also makes ophthalmic instruments.

- **LEO PHARMA's Adtralza (tralokinumab)** – The FDA rejected this anti-IL-13 for atopic dermatitis, issuing a complete response letter (CRL) . The company didn't say what the issue is except to insist the Agency did not request new efficacy or safety data except that it is related to the device component.

- **LEXEO THERAPEUTICS' LX-1001**, a gene therapy for apolipoprotein E4 (ApoE4)-associated Alzheimer's disease, was granted fast track designation by the FDA.

- **LILLY's mirikizumab**, an anti-IL23p19, is ***no longer*** being pursued in psoriasis anywhere in the world, despite positive results in a Phase III trial in psoriasis. Instead, Lilly will focus on getting approval in ulcerative colitis and Crohn's disease.

- **MALLINCKRODT's INOmax (nitric oxide)** – The results of a Phase IV observational registry, presented at the Pediatric Academic Societies (PAS) virtual meeting, showed that this inhaled nitric oxide was as effective in improving oxygenation in premature (pre-term) neonates with pulmonary hypertension as in term/near term-neonates with pulmonary hypertension, meeting non-inferiority with no negative impact on survival. In each age group, 50% of treatment responders achieved a response within 6 hours after initiation of INOmax.

- **NEOLEUKIN THERAPEUTICS' NL-201** – The FDA lifted the clinical hold on this IL-5/2 agonist, clearing the way for a ≤120-patient Phase I trial to start as monotherapy for advanced/relapsed/refractory solid tumors.

- **NOVARTIS' Entresto (sacubitril + valsartan)** missed the primary endpoint in the Phase III PARADISE-MI trial, failing to reduce the risk of cardiovascular death and heart failure after an acute myocardial infarction (AMI). *Look for details at the American College of Cardiology virtual meeting May 15-17, 2021.*

- **OHANA BIOSCIENCES** is going out of business after <18 months.

- **OMNISEQ's Insight**, a cancer genomic and immune profiling test, was cleared for use by the New York State Department of Health's Clinical Laboratory Evaluation Program for use in patients with solid tumors.

- **PHATHOM PHARMACEUTICALS' vonoprazan** – In the 992-patient Phase III PHALCON-HP trial in *Helicobacter pylori* (*H. pylori*), both vonoprazan-based regimens – vonoprazan + clarithromycin + amoxicillin – triple therapy, and dual therapy with vonoprazan + amoxicillin met the primary endpoint, showing non-inferiority to triple therapy with lansoprazole (Takeda's Pepcid or generics), with an eradication rate of 84.7% vs. 78.8%. Vonoprazan dual and triple therapy also met all the secondary endpoints.

- **PROTALIX BIOTHERAPEUTICS and CHIESI FARMACEUTICI's pegunigalsidase alfa (PRX-102)** – The FDA rejected this treatment for Fabry disease, issuing a complete response letter (CRL), saying it was unable to inspect the manufacturing site due to Covid-19.

- **ROCHE's tominersen** – The results on ~60% of the patients in the Phase III GENERATION-HD1 trial, presented at the CHDI Therapeutics virtual meeting, showed why Roche stopped dosing in the trial for futility, at the recommendation of the data safety monitoring board – Huntington's disease progression was no better than placebo with the drug and may even have been slightly worse, though there were no safety issues.

- **SANOFI's avalglucosidase alfa** – The FDA extended the PDUFA date on this treatment for Pompe disease by three months to August 18.

- **TG THERAPEUTICS' ublituximab** – Samsung Biologics expanded its contract manufacturing deal to supply this anti-CD20 antibody.

- **TODOS MEDICAL** bought **Provista Diagnostics**.

- **TRANSPLANT GENOMICS and EUROFINS VIRACOR's Viracor Transplant Allograft Rejection Check**, a donor-derived cell-free DNA test, and the **TruGraf** blood gene expression test, for use in analyzing rejection status in kidney transplant recipients, were approved for use by the New York State Department of Health's Clinical Laboratory Evaluation Program.

- **TRILLIUM THERAPEUTICS' TTI-622** – Updated data on 9 of 27 evaluable patients in a trial of this anti-CD47 in relapsed/refractory lymphoma showed a 33% objective response rate (ORR), down from 35% reported in December 2020 for 6 of 17 evaluable patients. There was one new complete response and 2 partial responses.

- **UNCHAINED LABS** – The **Carlyle Group** bought >90% of this vaccine and gene therapy services company.

- **UNIQURE's etranacogene dezaparvovec** – The FDA agreed with the findings of the company's investigation of the case of hepatocellular carcinoma in a trial of this gene therapy for hemophilia B and lifted the clinical hold that it had imposed.

- **VOYAGER THERAPEUTICS' VY-HTT01** – The FDA lifted its clinical hold on this gene therapy for Huntington's disease after the company provided more chemistry, manufacturing, and controls (CMC) information the Agency had requested. The Phase I/II VYTAL trial is expected to start later this year.

Very early research news

- **Prostate cancer** – University of Michigan Rogel Cancer Center researchers have developed a urine test that can detect aggressive forms of prostate cancer, which are often missed by scans and biopsies – Urine Prostate Seq (UPSeq).

NEWS IN BRIEF

Accelerated approvals

The FDA's Oncologic Drugs Advisory Committee (ODAC) held a virtual meeting to review 6 indications granted accelerated approval which failed to show a benefit in a postmarketing confirmatory trial:

- **BRISTOL-MYERS SQUIBB's Opdivo (nivolumab).** ODAC was **split** 5-4 against continuing the accelerated approval for this PD-1 inhibitor in hepatocellular carcinoma.

- **MERCK MSD's Keytruda (pembrolizumab)**

  - Urothelial carcinoma – ODAC voted 5-3 to recommend **maintaining** the accelerated approval of this PD-1 inhibitor for platinum-ineligible advanced/metastatic urothelial cancer.

  - Gastric cancer – ODAC voted 6-2 to **revoke** the accelerated approval in third-line gastric or gastroesophageal junction cancer.

  - Hepatocellular carcinoma – The panel voted 8-0 that the accelerated approval should be **continued** in hepatocellular carcinoma patients previously treated with sorafenib (Bayer's Nexavar).

■ **ROCHE's Tecentriq (atezolizumab)**

- **TNBC –** The panel voted 7-2 in **favor** of maintaining the accelerated approval of this PD-L1 inhibitor to treat PD-L1+ locally-advanced/metastatic triple-negative breast cancer (TNBC) in combination with nab-paclitaxel (Bristol-Myers Squibb/Celgene's Abraxane).
- **Urothelial cancer –** The panel voted 10-1 in **favor** of maintaining the accelerated approval for treating PD-L1+ locally-advanced/metastatic urothelial carcinoma patients ineligible for cisplatin-containing chemotherapy.

ASTRAZENECA

■ **and SANOFI's nirsevimab** met the primary endpoint in the Phase III MELODY trial in infant respiratory syncytial virus (RSV). The companies didn't release more details except to say the results were sooner than expected and "groundbreaking."

■ Development of several drugs was stopped, including:

- **AZD-8154**, an inhaled PI3Kδ/γ inhibitor for asthma.
- **Ceralasertib**, an ATR kinase inhibitor in combination with Lynparza (olaparib), a PARP inhibitor, and in combination with Calquence (acalabrutinib), a BTK inhibitor, though other indications are continuing to be explored.
- **MEDI-2228**, an anti-BCMA antibody-drug conjugate (ADC) for multiple myeloma was dropped.
- **MEDI-6012**, a lecithin-cholesterol acyltransferase (LCAT) for atherosclerosis in adults with an acute STEMI.

BIOGEN

■ **Tofersen.** The company said that, starting in mid-July, it will allow compassionate use of this SOD1 inhibitor for very rapidly progressing familial amyotrophic lateral sclerosis (ALS) caused by mutations in the SOD1 gene.

■ **Tysabri (natalizumab).** The FDA rejected a subcutaneous formulation to treat relapsing multiple sclerosis, issuing a complete response letter. However Biogen did not disclose why the Agency didn't approve it.

Medical conferences

A survey of ophthalmologists and people in the ophthalmic industry, published in Market Scope's ***Ophthalmic Market Perspectives***, found that the return to in-person ophthalmic medical meetings is likely to be slow.

- No meetings: Only 15.4% of industry respondents but 39.6% of ophthalmologists said they do not plan to attend any in-person meetings this year.
- One meeting: 10.8% of industry respondents and 24.5% of ophthalmologists plan to attend 1 meeting this year.
- 4+ meetings: 23.1% of industry respondents and 1.9% of ophthalmologists plan to attend 4+ meetings this year.
- Uncertain: 23.1% of industry respondents and 17% of ophthalmologists.

MEDTRONIC

■ **Emprint.** This ablation catheter kit was granted breakthrough device status by the FDA for use with the Medtronic lung navigation platform and the Emprint microwave generator for minimally invasive treatment of malignant lung lesions.

■ **Evolut PRO and PRO+.** Results for the first 171 patients from the OPTIMIZE PRO trial, presented at the virtual SCAI meeting, showed that these transcatheter aortic valve replacements (TAVRs) showed: no death or disabling stroke at Day 30, a low pacemaker rate (8.8%), low residual aortic regurgitation, and a median hospital length of stay of 1 day.

■ **Harmony TPV.** Data presented at SCAI on this transcatheter pulmonary valve for severe pulmonary regurgitation included one-year results from a pivotal trial which showed no explants, endocarditis, major stent fractures, or death. More than 90% of patients had none/trace pulmonary regurgitation at all follow-up visits. Two patients required catheter reinterventions – one a valve-in-valve and one balloon angioplasty, and several patients had stable ventricular tachycardia after implant that resolved and was considered not to be clinically important.

PFIZER

■ **Cyklokapron (tranexamic acid).** A 4, 153-patient double-bind, study in pregnant women undergoing cesarean section found that this anti-fibrinolytic reduced the incidence of postpartum blood loss >1000 mL or red cell transfusion within two days of the cesarean delivery (26.7% vs. 31.6% with placebo). However, tranexamic acid did not significantly reduce secondary outcomes.

■ Bought **Amplyx Pharmaceuticals**, which will give it fosmanogepix (APX-001), an investigational treatment for invasive fungal infections.

REGULATORY NEWS

Regulatory tidbits

- **Buprenorphine.** The Department of Health and Human Services (HHS) relaxed the restrictions on prescribing this opioid (used to treat opioid use disorder, acute pain, and chronic pain), allowing qualified physicians, nurse practitioners, physician assistants, and other healthcare professionals to prescribe it to up to 30 patients without having to first undergo eight hours of training.
- **FDA**
  - President Biden signed into law two measures affecting FDA: (1) A new law that codifies the FDA's definition of an "active moiety" and replaces the term active moiety with "active ingredient." (2) A law to boost education about biosimilars.
  - The FDA issued draft guidance on non-clinical testing of antisense oligonucleotide (ASO) drugs.
  - President Biden urged Congress to pass legislation to allow Medicare to negotiate drug prices – and to use the savings to enhance the Affordable Care Act and expand Medicare benefits and coverage.
  - The FDA announced that it plans to advance two tobacco product standards that would significantly reduce disease and death from tobacco products by banning menthol flavoring in cigarettes and cigars.
  - The FDA changed its regulatory classification of PACS (picture archiving and communication systems), and the new name is **MIMPS** (medical image management and processing systems).
- **Hospital star ratings** – The Centers for Medicare and Medicaid Services (CMS) changed how it rates hospitals on its Hospital Compare website to integrate safety of care, mortality, patient experience, readmission, and timely/effective care. There were 455 hospitals that got 5 stars, 988 that got 4 stars, and 204 with 1 star.
- **Medicare** – The Medicare at 50 Act, which would make people age 50-64 eligible for Medicare, was reintroduced in the U.S. Senate.

FDA approvals/clearances

- **ADC THERAPEUTICS' Zynlonta (loncastuximab tesirine-lpyl)**, an anti-CD19 antibody-drug conjugate, was granted accelerated approval to treat relapsed/refractory diffuse large B-cell lymphoma.
- **ASTRAZENECA's Farxiga (dapagliflozin)**, an SGLT2 inhibitor, was approved to treat chronic kidney disease (CKD) patients with or without Type 2 diabetes who are at risk of continued eGFR decline.
- **ATRICURE's EPi-Sense system** was cleared for use in hybrid ablation of long-standing, persistent atrial fibrillation.
- **BRAINSWAY's Theta Burst**, a three-minute protocol for its deep transcranial magnetic stimulation system for treating major depressive disorder, was granted 510(k) clearance.
- **HIKMA PHARMACEUTICALS' Kloxxado (naloxone 8 mg)** – This higher dose naloxone nasal spray was approved to treat opioid overdose.
- **MOLLI SURGICAL's MOLLI**, a wire-free localization technology for breast cancer surgery, was granted 510(k) clearance.
- **PIXEE MEDICAL's Knee+ AR**, an augmented reality headset to help with alignment of instruments in knee surgery, was granted 510(k) clearance.

FDA recalls/warnings

- **Covid-19**
  - The FDA issued a warning letter to the operator of a website, **www.pharmacygeoff.md**, for marketing unapproved drugs for multiple diseases, including Covid-19.
  - **Battelle's CCDS Critical Care Decontamination System** – The emergency use authorization (EUA) for this N95 respirator decontamination system was cancelled at the request of the company, which said it has stopped all CCDS decontamination site operations and marketing because it is no longer needed.
- **NOVO NORDISK's Ozempic (semaglutide)** – Prescribing information was updated, cautioning that diabetics using this GLP-1 agonist with an insulin secretagogue (e.g., a sulfonylurea) or insulin may be at increased risk of hypoglycemia.

European Regulatory News

- **BIOCON BIOLOGICS and VIATRIS' Abevmy (bevacizumab)** – a biosimilar of Roche's Avastin – was approved by the European Commission to treat metastatic colorectal carcinoma, metastatic breast cancer, non-small cell lung cancer, glioblastoma, ovarian cancer, cervical cancer, and renal cancer.
- **BIOCRYST PHARMACEUTICALS' Orladeyo (berotralstat)** was approved by the European Commission to prevent recurrent hereditary angioedema (HAE) attacks.

- ILLUMINA sued the European Commission, seeking to stop the investigation of its acquisition of **Grail**.
- **LILLY and INCYTE's Olumiant (baricitinib)** – The European Medicines Agency (EMA) granted accelerated review of this JAK inhibitor as a treatment for hospitalized Covid-19 patients on oxygen.
- **PHOENIX CARDIAC DEVICES' Basal Annuloplasty of the Cardia Externally**, a device for use in treating functional mitral regurgitation, was granted a CE Mark.
- **SPEEDX's PlexPCR SARS-CoV-2 assay**, which can detect all currently known Covid-19 variants, was granted a CE Mark.
- **VERTEX PHARMACEUTICALS' Kaftrio (ivacaftor + tezacaftor + elexacaftor)** was approved by the European Commission to treat cystic fibrosis patients age ≥12 with at least one F508del mutation.

Regulatory news from other countries

- ***South Korea.*** **ROCHE's Ventana PD-L1 assay** was approved by the Ministry of Food and Drug Safety as a companion diagnostic to screen non-small cell lung cancer (NSCLC) patients for Tecentriq (atezolizumab), a PD-L1 inhibitor.

2021 FDA Advisory Committees and Other Regulatory Dates of Interest *RED are new since last week*		
Date	**Topic**	**Committee/Event**
Missed PDUFA dates with no new date		
November 25	**Revance Therapeutics' daxibotulinumtoxinA** for glabellar lines	PDUFA date *Delayed by FDA No new date announced*
December tba	**Pfizer and Lilly's tanezumab** to treat moderate-to-severe osteoarthritis pain	PDUFA date missed *No decision announced yet*
January 28	**Amgen's Nplate** (romiplostim) – expanded approval to treat hematopoietic syndrome of acute radiation syndrome	PDUFA date *No decision announced yet*
February 2	**Mallinckrodt's StrataGraft**, a regenerative skin tissue therapy	PDUFA date *Decision delayed due to Covid-19*
April 12	**Fortress Biotech/Avenue Therapeutics' IV tramadol**	PDUFA date April 12 *No decision announced yet*
2021 Events		
May tba	**Roche's Esbriet** (pirfenidone) – expanded approval to treat unclassifiable interstitial lung disease	PDUFA date
May 4	**Patient-generated health data** and medical devices	FDA virtual public meeting
May 5	FDA Product-Specific Guidances: **Generic Drugs**	FDA webinar
May 6	**ChemoCentryx's avacopan** to treat anti-neutrophil cytoplasmic antibody-associated vasculitis	FDA's Arthritis Advisory Committee virtual meeting
May 6	Patient Engagement & **Regenerative Medicine**	FDA's Center for Biologics Evaluation and Research (CBER) virtual workshop for patient advocates
May 11	Implementation of the **patient-reported outcomes tool** (PRO-CTCAE)	FDA's Pediatric Oncology Subcommittee of the Oncologic Drugs Advisory Committee (ODAC) virtual meeting
May 11-12	Review of **ongoing research**	Science Advisory Board to the National Center for Toxicological Research *Meeting closed to the public*
May 12	Discussion of the use of **real-world evidence** in pediatric trials	FDA's Pediatric Oncology Subcommittee of the Oncologic Drugs Advisory Committee (ODAC) virtual meeting
May 14	**Apellis Pharmaceuticals and SOBI's pegcetacoplan** for treating PNH	PDUFA date
May 14	**Regional International Council for Harmonisation (ICH)** of technical requirements for pharmaceuticals	FDA and Health Canada joint virtual public meeting
May 18	**Sanofi's avalglucosidase alfa** for Pompe disease	PDUFA date **Postponed by FDA by 3 months to August 18**
May 18	**AbbVie's Humira** (adalimumab) vs. generics – AbbVie's CEO Richard Gonzalez grilled	House Oversight Committee
May 18-19	Potential **medical error risks** with investigational drug container labels	FDA virtual public meeting
May 26-27	**2021 FDA Science Forum**	FDA virtual meeting
May 27	**Provention Bio's teplizumab** to treat Type 1 diabetes	FDA's Endocrinologic and Metabolic Drugs Advisory Committee virtual meeting
May 30	**Kadmon's belumosudil** for chronic graft-versus-host disease after hematopoietic stem cell transplant	PDUFA date *Extended 3 months by FDA to August 30*
May 30	**Bristol-Myers Squibb's Zeposia** (ozanimod) for ulcerative colitis	PDUFA date
June 1	**Scynexis' Brexafemme** (ibrexafungerp) for vulvovaginal candidiasis	PDUFA date
June 7	**Biogen and Eisai's aducanumab** for Alzheimer's disease	PDUFA date *Extended 3 months by FDA from March 7*
June 7-8	**Morphine milligram equivalents** – current applications and knowledge gaps	FDA Center for Drug Evaluation and Research (CDER) virtual public workshop
June 9	Review of **non-prescription drug** labeling	FDA virtual public workshop
June 10	Orthopedic device postmarket review	FDA virtual public workshop
June 21	**Incyte's topical ruxolitinib** to treat atopic dermatitis	PDUFA date
June 23	**FY2021 generic drug** science and research initiatives	FDA virtual public workshop
June 30	**Lupin Pharmaceuticals' Solosec** (secnidazole) – expanded approval to treat trichomoniasis	PDUFA date
July tba	**Bayer's finerenone** (BAY-94-8862) for Type 2 diabetes patients with CKD	PDUFA date
July tba	**AbbVie's Rinvoq** (upadacitinib) – expanded use to treat moderate-to-severe atopic dermatitis	PDUFA date
July 2	**Provention Bio's teplizumab** (PRV-031) for preventing/delaying clinical Type 1 diabetes	PDUFA date
July 7	**ChemoCentryx's avacopan** to treat anti-neutrophil cytoplasmic antibody-associated vasculitis	PDUFA date

2021 FDA Advisory Committees and Other Regulatory Dates of Interest *RED are new since last week*		
Date	**Topic**	**Committee/Event**
July 15	**FibroGen's roxadustat** for anemia of CKD in dialysis and non-dialysis patients	FDA's Cardiovascular and Renal Drugs Advisory Committee virtual meeting
July 18	**Merck MSD's V114**, a 15-valent pneumococcal conjugate vaccine	PDUFA date
July 20	**Albireo Pharma's odevixibat** (A-4250) to treat pruritus in patients with progressive familial intrahepatic cholestasis (PFIC)	PDUFA date
July 21	**Gastroenterology regulatory endpoints** in eosinophillic gastrointestinal disorders	FDA virtual public workshop
July 22	**Gastroenterology regulatory endpoints** in celiac disease	FDA virtual public workshop
July 25	**Iterum Therapeutics' sulopenem etzadroxil/probenecid** for uncomplicated urinary tract infections	PDUFA date
July 29	**Ardelyx Pharmaceuticals' tenapanor** for hyperphosphatemia in CKD patients on dialysis	PDUFA date **Extended from April 29 by the FDA**
August tba	**Pfizer's TicoVac** for tick-borne encephalitis	PDUFA date
August 12	**Jazz Pharmaceuticals' Xywav** (calcium, magnesium, potassium, + sodium oxybates) – expanded use to treat adult idiopathic hypersomnia	PDUFA date
August 16	**Amgen's sotorasib** for KRAS G12C-mutated NSCLC	PDUFA date
August 17	**Astellas and Seagen's Padcev** (enfortumab vedotin-ejfv) for metastatic/locally-advanced urothelial cancer including patients ineligible for cisplatin and who previously received a PD-1/L1 inhibitor	PDUFA date
August 18	**Sensen Bio's vicineum** for non-muscle invasive bladder cancer	PDUFA date
August 18	**Sanofi's avalglucosidase alfa** for Pompe disease	PDUFA date **Extended by FDA by 3 months from May 18**
August 23	**Cara Therapeutics' Korsuva** (difelikefalin, CR-845), a kappa opioid receptor agonist for pruritus in chronic kidney disease patients on dialysis	PDUFA date
August 30	**Kadmon's belumosudil** for chronic graft-versus-host disease after hematopoietic stem cell transplant	PDUFA date *Extended from May 30 by the FDA*
September 15	**Merck MSD's belzutifan** (MK-6482) to treat von Hippel-Lindau disease-associated renal cell carcinoma	PDUFA date
October tba	**Pfizer and OPKO Health's somatrogon** for growth hormone deficiency	PDUFA date
October 10	**Seagen and Genmab's tisotumab vedotin** to treat recurrent/metastatic cervical cancer	PDUFA date
October 18	**BeiGene's Brukinsa** (zanubrutinib) – expanded approval to treat Waldenström's macroglobulinemia	PDUFA date
December 21	**Merck MSD's gefapixant** for refractory chronic cough	PDUFA date
2022 Events		
January 28, 2022	**Bristol-Myers Squibb/MyoKardia's mavacamten** for symptomatic obstructive hypertrophic cardiomyopathy	PDUFA date