TRENDS-in-MEDICINE

August 5, 2012

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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SHORT TAKES

- **23ANDME**, a Google-backed DNA analysis company, applied for FDA approval of seven saliva-based genetic tests (though the company didn't say what these tests are, exactly) to help people assess their risk for developing cancer, heart disease, and Alzheimer's disease.

- **ACURA PHARMACEUTICALS – Pfizer** returned the rights to all assets and rescinded regulatory and clinical responsibilities related to three drug products it was developing using Acura's abuse-resistant **Aversion** technology. Acura said it may look for a new partner. However, Pfizer retains the rights to Acura's **Oxecta** (oxycodone HCl), which also uses Aversion technology but is already on the market.

- **ARIAD PHARMACEUTICALS' ponatinib**, a BCR-ABL inhibitor, was submitted to the FDA to treat resistant/intolerant chronic myeloid leukemia (CML) and Philadelphia chromosome-positive acute lymphoblastic leukemia (Ph+ ALL). The drug has fast track status, and the company is making a rolling submission.

- **BAXTER's HyQ (injectable immunoglobulin)** – The company said the FDA requested additional preclinical information about HyQ – which uses **Halozyme**'s recombinant human hyaluronidase to make it injectable – particularly information on non-neutralizing antibodies and reproduction, fertility, and fetal development. This could delay approval.

- **BRISTOL-MYERS SQUIBB's BMS-986094 (formerly INX-189)** – The company voluntarily suspended a Phase IIb trial of this investigational nucleotide polymerase (NS5B) inhibitor (acquired with Inhibitex) for HCV because a patient developed heart failure at the highest dose (200 mg/day). BMS-986094 + daclatasvir had been administered to ~30 patients when the adverse event occurred. The company is investigating whether there are issues with other doses, evaluating all patients treated with the drug, and looking for causes.

- **COOK MEDICAL** said it is postponing plans to set up five new manufacturing facilities in the Midwest because of the 2.3% medical device tax that goes into effect in 2013.

- **DENDREON's Provenge** – Sales have been so much lower than expected that the company is eliminating >600 jobs (an ~41% downsizing) and plans to reduce costs by $150 million over the next 12 months, including closure of a manufacturing plant in Morris Plains NJ.

- **DR. REDDY'S LABORATORIES** – The company said the FDA lifted the ban it had placed on the company's manufacturing facility in Mexico and gave permission to resume shipping drug products to the U.S.

- **EXELIXIS' cabozantinib** – The company said the FDA accepted its filing of this investigational drug to treat medullary thyroid cancer, and the Agency granted priority review. The PDUFA date is November 29, 2012.

- **FIBROGEN's FG-3019**, an investigational therapy for idiopathic pulmonary fibrosis (IPF), was granted orphan drug status by the FDA.

- **GENSPERA's G-202** – The FDA gave the company permission to begin a Phase II trial in the U.S. and U.K. of this investigational prostate cancer drug in ≤40 men who have not responded to hormone therapy.

- **GILEAD SCIENCES** said it plans to start an 800-patient trial in 4Q12 of a single, once-daily pill combining GS-7977 and GS-5855 to treat hepatitis C virus (HCV).

- **HALOZYME THERAPEUTICS** – Two companies – **Baxter** and **ViroPharma** – that are using the company's hyaluronidase technology to improve their drugs have run into FDA problems, which raises questions about the safety and outlook for this technology.

- **HEMISPHERX BIOPHARMA's Ampligen (rintatolimod)** – The company filed a response to FDA concerns about this investigational treatment for chronic fatigue syndrome, saying the FDA agreed to review additional analyses of completed clinical studies rather than order a confirmatory Phase III trial.

- **NSF INTERNATIONAL** acquired **Becker & Associates Consulting**, which offers guidance to companies seeking FDA approval of a drug, device, or biologic.

- **NUPATHE's Zelrix (transdermal sumatriptan)** – The company resubmitted this migraine patch to the FDA, which rejected it in August 2011, citing chemistry, manufacturing, and controls (CMC) and development issues. The new PDUFA date is January 17, 2013.

- **PFIZER** – The headquarters for Pfizer's Centers for Therapeutic Innovation is Boston, but there are also satellite centers in New York, San Francisco, and La Jolla CA.

- **PROGENICS PHARMACEUTICALS and SALIX PHARMACEUTICALS' Relistor (subcutaneous methylnaltrexone bromide)** – The FDA rejected this injectable drug to treat opioid-induced constipation, saying it wants more clinical data about patients with chronic, non-cancer pain. The companies said they will meet with the FDA to better understand what the FDA will require for approval.

- **RADIATION CONTROL TECHNOLOGIES' RCT-1938** – The company received an exclusive license from the National Institutes of Health (NIH) to two patents covering the use and composition of this radiosensitizer for treating cancer and preventing/treating radiation exposure.

- **REGENERATIVE SCIENCES' Regenexx** – The U.S. District Court in Washington DC ruled against Regenerative Sciences, saying that the FDA does have the right to regulate treatments based on a patient's own processed stem cells. The company plans to appeal, arguing that Regenexx should be considered a routine medical procedure.

- **TAKEDA and FURIEX's Nesina (alogliptin)** – Takeda resubmitted alogliptin as well as a fixed-dose combination of Takeda's **Actos** (pioglitazone) + alogliptin to the FDA to treat Type 2 diabetes. Both the stand-alone therapy and the combination were rejected in April 2012 by the FDA, which issued a complete response letter asking for more information on use in completed and ongoing studies outside the U.S. (OUS).

- **VIROPHARMA's Cinryze (C1 esterase inhibitor)** – The FDA halted testing of this drug to treat hereditary angioedema. The company said it would continue trials of Cinryze that do not include **Halozyme**'s product.

NEWS IN BRIEF

AUXILIUM PHARMACEUTICALS' Xiaflex (collagenase clostridium histolyticum) – positive repeat administration data

The company released positive data from a study of this Dupuytren's contracture drug that is designed to expand use to include patients with >1 cord. The data showed that patients with several cords who were injected multiple times with 0.58 mg Xiaflex had higher response rates than those who were only administered the initial, single injection. However, the placebo comparison was to historical placebo patients, so statistical significance vs. placebo was not available. The company plans to start a Phase III trial in 3Q12. Auxilium also plans to seek an indication to treat Peyronie's disease.

EDWARDS LIFESCIENCES' Sapien – TAVI concerns

A paper by Belgian researchers, published in the ***British Medical Journal*** (BMJ), raised several concerns about transcatheter aortic valve implantation (TAVI):

- The European approval process is too lax.
- The evidence and arguments supporting widespread use of TAVI do not stand up to scrutiny.
- The cost-effectiveness of TAVI is equivocal.

- The principal investigator in the pivotal Sapien trial had undisclosed conflicts of interest.
- The transapical (TA) approach is being used more than the evidence supports. The researchers wrote, "What concerns us the most is that in Europe the use of TAVI in the transapical route far exceeds what is justified by the clinical evidence."

HEALTHPOINT BIOTHERAPEUTICS' HP-802-247 – positive Phase II results

In a randomized Phase II study published in ***The Lancet***, this spray-on skin cell product significantly improved wound healing vs. standard care in 228 patients with venous leg ulcers. The trial met the primary endpoint, with a significantly greater mean reduction in wound area at Week 12 with HP-802-247 vs. placebo (p=0.0446). The skin-cell spray is composed of cryopreserved fibroblasts and keratinocytes derived from neonatal foreskin obtained from circumcisions.

The lowest dose (0.5 x10^6 cell Q14D) was also the dose with the best results. It showed:

- complete healing in ~30% more patients than placebo (p=0.0267).
- wound closure in 50 days vs. 81 days with placebo (p=0.0211).

IDENIX PHARMACEUTICALS and NOVARTIS – end agreement on HCV drugs

Idenix ended its "relationship" agreement with Novartis on its hepatitis C virus (HCV) drugs. Reportedly, Novartis had an option that it did not exercise by the deadline. This termination ends Novartis' options and allows Idenix to cut a deal with another pharma to co-develop its HCV drugs. In addition, under the termination agreement, Idenix gives up royalty and milestone payments from Novartis on sales of their jointly developed hepatitis B treatment, **Tyzeka/Sebivo** (telbivudine).

Migraine headaches – patient survey results

An online survey by Health Union of >2,600 migraine patients found that:

- 50% reported that migraines negatively impacted their professional development/career.
- 25% said they lost a job due to migraines (38% for chronic migraine sufferers).
- 43% said that migraines impacted their relationship with their children.
- 80% identified at least one migraine trigger, with 78% saying weather is a trigger and 77% saying stress is a trigger.

The results were notably worse for patients who have chronic migraine (>15 headache days each month with symptoms lasting >4 hours), and 43% of this sample had chronic migraine.

Obesity drugs – FDA warns they're not for everyone

Writing in the FDA's blog, **FDA Voice**, Eric Colman, MD, deputy director of the FDA's Division of Metabolism and Endocrinology Products, Center for Drug Evaluation and Research, appeared to be trying to dampen enthusiasm (*over-enthusiasm?*) for the two obesity drugs recently approved – **Arena Pharmaceuticals** and **Eisai's Belviq** (lorcaserin) and **Vivus' Qsymia** (phentermine + topiramate).

While noting that adding the drugs to lifestyle modification can lead to weight loss (an average of ~3.5% with Qsymia and ~6%-9% with Belviq), he cautioned that they are not intended to be used alone, saying, "There are a few important things to keep in mind about these products."

Those points included:

- **Who should take these drugs.** "If you're looking to lose a few pounds before going to the beach or after over-indulging on vacation, these drugs are not for you. They are not even intended for use by otherwise healthy people who are significantly overweight. Both are only intended for use in people who are obese, defined as having a body mass index (BMI) over 30, or for certain overweight patients who are not obese but have a significant health problem like diabetes, high blood pressure, or high cholesterol."
- **They are only *part* of a comprehensive weight-loss program.** "These new products have received a great deal of media attention, but one aspect of their use not highlighted by the media is that these drugs are intended for chronic use as part of a comprehensive weight-loss program that includes modifications to diet and increased exercise."
- **There are risks with these drugs.** Belviq and Qsymia are both associated with potentially serious risks, which is a key reason why they are approved by FDA only for use in obese patients whose risk from the health consequences of obesity and its related health issues outweigh the risks associated with using the drug. For instance…Qsymia can cause birth defects, and Belviq can cause a dangerous chemical imbalance called "serotonin syndrome."

- **They are not a cure.** "What may be most important to remember about these two new products is that they are not 'cures' for obesity."

Pertussis vaccine (DTaP) – may need a booster

A study by Australian researchers, published in the ***Journal of the American Medical Association***, found that this diptheria, tetanus, and pertussis (whooping cough) vaccine is not as effective against pertussis as the older vaccine (DTwP) that was used 15 years ago, though the DTaP has a better adverse event profile than DTwP. Unlike DTaP, which is an acellular vaccine, DTwP is a whole-cell pertussis vaccine.

The researchers reported that the pertussis rate among ~58,000 Australian children born in 1998 was more than 2.5 times the rate among children who received the earlier DTwP vaccine (13.2 vs. 5.2 infections per 100,000/year). Likewise, the Centers for Disease Control and Prevention (CDC) has reported a doubling in the U.S. pertussis rate this year.

The upshot of this is that people vaccinated with the newer DTaP may need a booster shot.

PFIZER's tofacitinib – a delay and dose data

- The PDUFA date (August 21, 2012) for this oral JAK inhibitor to treat rheumatoid arthritis (RA) is likely to be delayed because the FDA requested additional analyses of existing data.
- The top-line results from the Phase III ORAL START trial of tofacitinib monotherapy showed that both the 5 mg and 10 mg doses met statistical significance in inhibiting structural damage vs. methotrexate (MTX). Remember that only the 5 mg dose showed a structural benefit in the 1044 trial.

REGENERON PHARMACEUTICALS' Arcalyst (rilonacept) – sBLA rejected by FDA

The FDA rejected a supplemental biologics license application (sBLA) to expand approval of this gout drug to include prevention of gout flares in patients who are just beginning uric acid-lowering treatment regimens. The company said the FDA asked for additional clinical data, including chemistry, manufacturing, and controls information related to a proposed new dosage form. In May 2012, the FDA's Arthritis Advisory Committee recommended against expanded use, saying the company had not provided sufficient safety data.

ROCHE/GENENTECH's Rituxan (rituximab) – may be better second option for RA patients

A study by U.K. researchers, published in ***Arthritis Care & Research***, found that rheumatoid arthritis patients who fail on one TNF inhibitor may do better with Rituxan than trying a second TNF inhibitor.

Rituxan vs. 2nd TNF Inhibitor in RA

Measurement	Rituxan n=387	TNF inhibitor n=941	p-value
Baseline DAS28	6.2	5.9	<0.001
Change in DAS28	– 1.3	– 1.2	Nss
HAQ change	– 0.13	– 0.11	Nss
Clinically important improvement in physical function (≥22-point improvement in HAQ)	38.4%	29.6%	0.01
EULAR good response	17.1%	13.5%	---
EULAR moderate response	37.7%	33.8%	---
Remission	10.4%	7.2%	Nss, 0.07

VERTEX and ALIOS BIOPHARMA's ALS-2200 – positive Phase I results

The company announced positive results from a 7-day, 8-patient, double-blind, ascending dose, Phase I viral kinetic study with the 200 mg QD dose of this NS5B nucleotide analog in HCV-1. There was a median 3.85 $\log_{10}$ reduction in HCV RNA at 3 days and a 4.54 $\log_{10}$ reduction at 7 days. The drug was well tolerated, with no discontinuations due to adverse events. Vertex plans to start 12-week Phase II trials later this year as well as a study in combination with **Incivek** (telaprevir).

The companies also are conducting a 7-day Phase I viral kinetic study of a second NS5B nucleotide analogue, ALS-2158, and the data from that study are expected in the next few months.

REGULATORY NEWS

CMS finally launching pre-procedure audit program

After an eight-month delay due to provider complaints, the Centers for Medicare and Medicaid Services (CMS) announced that it will start a demonstration program on August 27, 2012, that will allow Medicare recovery audit contractors in 11 states to review the medical necessity of claims ***before*** the providers are ever paid, not after. The prepayment reviews will focus on seven states with providers prone to errors and fraud – California, Florida, Illinois, Louisiana, Michigan, New York, and Texas – as well as four states with a large volume of short inpatient hospital stays – Missouri, North Carolina, Ohio, and Pennsylvania.

CMS issues final inpatient payment rule

CMS issued the final Inpatient Prospective Payment System (IPPS) rule that updates fiscal year (FY) 2013 Medicare payment policies and rates for inpatient stays at general acute care and long-term care hospitals. The rule, which goes into effect October 1, 2012, also implements new readmissions reduction programs.

Among the key features of the rule are:

- A 2.8% increase in the payment rate to general acute care hospitals, which, after all adjustments, will increase Medicare's operating payments to acute care hospitals by ~2.3%.
- A 4.4% increase in cardiology payments, with increases of:
  - 11.8% for ventricular assist devices (VADs).
  - 0.6% for implantable cardioverter-defibrillators (ICDs).
  - 1.5% for pacemakers.
  - 0.3% for heart valves.
- A 4.2% increase in orthopedic diagnosis-related groups (DRGs), with:
  - Spinal fusion up 0.4%.
  - Kyphoplasty/vertebroplasty up 1.7%.
  - Hip/knee replacements up 0.3%.
- The Hospital Readmissions Reduction Program will reduce payments (for discharges on or after October 1, 2012) to certain hospitals that have excess readmissions for three conditions: heart attack, heart failure, and pneumonia.
- The rule strengthens the Hospital Value-Based Purchasing Program (VBP program) to reward efficient, high-quality care by adjusting hospital payments annually based on how well hospitals perform or improve their performance on a set of quality measures.
- Medicare spending on inpatient hospital services will increase by ~$2 billion in FY2013 vs. 2012.
- A new outcome measure is included in the VBP program that rewards hospitals for avoiding central-line-associated bloodstream infections.
- The rule also strengthens the Inpatient Quality Reporting (IQR) program, especially measures relating to overall readmissions and readmissions relating to hip and knee replacement procedures.

CMS' MEDCAC to consider VADs

A Medicare Evidence Development & Coverage Advisory Committee (MEDCAC) will meet on November 14, 2012, to consider how outcomes with ventricular assist devices (VADs) can be optimized for heart failure patients, especially the appropriate selection of those who are likely to benefit from placement of the devices and the facility and operator characteristics that predict improved health outcomes for patients receiving a device. The panel also must identify areas where further research may be warranted and evaluate the generalizability of the available evidence to patients of different age, gender, and racial/ethnic backgrounds. *Remember that MEDCAC judges the strength of the available evidence and makes recommendations to CMS based on that evidence.*

HHS can bar guilty execs from government programs

The U.S. Court of Appeals for the District of Columbia upheld the ability of the Department of Health and Human Services (HHS) to exclude two former **Purdue Pharma** executives from dealing with federal healthcare programs (e.g., Medicaid and Medicare) due to their convictions for misdemeanors involving opioid misbranding (fraud). However, the court said HHS must provide a justification for the penalty's duration.

FDA approvals/clearances

- **BRACCO DIAGNOSTICS' MultiHance** (gadobenate dimeglumine), a contrast agent for use in magnetic resonance angiography, received expanded approval for use to assess adult patients with aorto-ilio-femoral or renal occlusive vascular disease.
- **COVIDIEN's Nellcor Bedside SpO_2 Patient Monitoring System**, which is used to track pulse rate and SpO_2, received 510(k) clearance.
- **ELITECH MOLECULAR DIAGNOSTICS' ELITe MGB test** for methicillin-resistant *Staphylococcus aureus*/*Staphylococcus aureus* infections was cleared for use.
- **JOHNSON & JOHNSON/DEPUY/SYNTHES SPINE's Viper, Viper 2, and Expedium** spinal devices received clearance for expanded uses.
- **MEDTRONIC's BSC9.1S Bipolar Sealer with Cutting**, a device for use during orthopedic procedures, was cleared for use.
- **PROTEUS DIGITAL HEALTH's Ingestion Event Marker (IEM)** – The FDA cleared this ingestible sensor to be marketed as a medical device under the de novo pathway used for low-risk devices with no predicate on the market.

The sensor, which is the size of a grain of sand, can be integrated into an inert pill or other ingested products (e.g., drugs). Once it reaches the stomach, it is powered by contact with stomach fluid, sending a signal to a patch worn on the patient's skin that records the time the drug was taken, the patient's heart rate, body position, etc., at the same time.

- **REFLECTANCE MEDICAL's CareGuide Oximeter** received 510(k) clearance.
- **REGENERON PHARMACEUTICALS and SANOFI's Zaltrap (ziv-aflibercept)** – This angiogenesis inhibitor was approved to treat metastatic colorectal cancer in combination with FOLFIRI chemotherapy. However, there is a boxed warning that the drug can cause severe and sometimes fatal bleeding, including gastrointestinal bleeding, and the development of holes in the gastrointestinal tract.

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FDA recalls/warnings

- **ARROW INTERNATIONAL's Multi-Lumen Venous Catheterization Set with Blue FlexTip ARROW-g+ard Catheter** – The FDA issued a Class I recall because the device contains unlabeled drugs – chlorhexidine and silver sulfadiazine, which can cause anaphylaxis as well as rash and hives.
- **B. BRAUN's Infusomat Space Infusion System** – The FDA issued a Class I recall due to the potential for breakage of the anti-free-flow clip catch located inside the infusion pump door, which, if it fails, could cause life-threatening effects and injuries. The company will modify the devices.
- **CAREFUSION's Alaris PC Unit** – A Class I recall was initiated because a failure in the power supply board can cause an error code – "System Error" or "Missing Battery Error" – to occur. Depending on when the error code occurs, it can cause a delay in patient therapy, serious injury, and/or death.
- **COVIDIEN's Shiley** reusable cannula, cuffed adult tracheostomy tubes, were recalled due to reports of volume leakage and/or disconnection between the inner and outer cannulae.
- **PHILIPS/RESPIRONICS' Trilogy 100, 200, and 202 Ventilators** – A Class I recall was announced due to defective power supply components that may cause the device to stop working suddenly and/or the alarm to fail to sound.
- **SMITHS MEDICAL's Medfusion Model 4000 Syringe Infusion Pump** – The FDA initiated a Class I recall due to system errors that can cause device shutdowns.

European regulatory actions

- **ABBOTT's Humira (adalimumab)** was approved by the European Commission to treat severe axial spondyloarthritis with no x-ray evidence of structural damage (nr-axSpA). This is the first TNF inhibitor to get this indication.
- **BOSTON SCIENTIFIC's Advantio and Ingenio pacemakers** were granted wider approval to include patients undergoing an MRI.
- **NOVARTIS' Afinitor (everolimus)** – The European Commission approved this mTOR inhibitor to treat postmenopausal women with advanced hormone receptor-positive, HER2-negative breast cancer in combination with **Pfizer's Aromasin** (exemestane).

Upcoming FDA Advisory Committees and Other Regulatory Meetings of Interest (*items in RED are new since last week*)		
Date	**Topic**	**Committee/Event**
	August 2012	
August 9	Draft guidance on **tablet scoring** and CDER's **nanotechnology** risk management working group activities	FDA's Pharmaceutical Science and Clinical Pharmacology Advisory Committee
August 10	**Roche/Genentech's Lucentis** (ranibizumab) to treat diabetic macular edema (DME)	PDUFA date
August 12	**Talon Therapeutics' Marqibo** (vincristine sulfate liposomes injection) for Philadelphia chromosome-negative acute lymphoblastic leukemia (ALL)	PDUFA date (extended from May 13)
August 17	**Amarin's Vascepa** (icosapent ethyl, AMR-101), an FDA-approved omega-3 fatty acid for lowering high triglycerides	FDA decision expected on NCE status
August 21	**Pfizer's tofacitinib**, an oral JAK2 inhibitor for rheumatoid arthritis	PDUFA date **(but this probably will be delayed)**
August 27	**Gilead Sciences' Quad** (emtricitabine+tenofovir+elvitegravir+cobicistat) for HIV	PDUFA date
	Other 2012	
September tba	**Vivus' Qnexa** (topiramate + phentermine) for obesity	EMA oral hearing
September 5	**Salix Pharmaceuticals' Provir** (crofelemer) for HIV-related diarrhea	PDUFA date (extended from June 5)
September 5	**Novartis' tobramycin inhalation powder** for management of cystic fibrosis patients infected with *Pseudomonas aeruginosa*	FDA's Anti-Infective Drugs Advisory Committee
September 8	**Ironwood Pharmaceuticals and Forest Laboratories' linaclotide** for irritable bowel syndrome	PDUFA date
September 10	**Navidea Biopharmaceuticals' Lymphoseek** (tilmanocept), a radioactive agent for tracing lymph nodes in cancer patients	PDUFA date (extended from June 10)
September 13	**Cornerstone Therapeutics/Cardiokine Biopharma's lixivaptan** for treatment of symptomatic hypervolemic and euvolemic hyponatremia associated with heart failure and syndrome of inappropriate antidiuretic hormone (SIADH) and **West-Ward Pharmaceutical's phenylephrine hydrochloride injection** to increase blood pressure in acute hypotensive states (e.g., shock and peri-operative hypotension)	FDA's Cardiovascular and Renal Drugs Advisory Committee
September 14	**Novartis' Gleevec** (imatinib) for adjunctive therapy of pulmonary arterial hypertension	FDA's Cardiovascular and Renal Drugs Advisory Committee
September 21	Classification of posterior **cervical screws**, including pedicle and lateral mass screws	FDA's Orthopaedic and Rehabilitation Devices Advisory Committee
September 23	**Regeneron's Eylea** (aflibercept) for central retinal vein occlusion (CRVO)	PDUFA date
September 27-28	Regulatory science considerations for performance validation of **radiation biodosimetry** devices	FDA public meeting
September 28	**Second Sight's Argus II Retinal Prosthesis System** for severe to profound retinitis pigmentosa	FDA's Ophthalmic Devices Advisory Committee
October 12	**Celgene's Abraxane** (nab-paclitaxel) to treat NSCLC	PDUFA date
October 21	**Impax Laboratories' IPX-066** for Parkinson's disease	PDUFA date
October 29	**Cornerstone Therapeutics' CRTX-080** to treat hyponatremia	PDUFA date
October 29-31	**Bayer's regorafenib** for metastatic CRC	PDUFA date
November 8	**Novo Nordisk's Tresiba** (degludec) **and Ryzodeg** (degludecPlus)	FDA's Endocrinologic and Metabolic Drugs Advisory Committee
November 14	Optimization of outcomes with **ventricular assist devices** (VADs) for patients with heart failure	CMS' MEDCAC
November 29	**Exelixis' cabozantinib** to treat medullary thyroid cancer	PDUFA date
December 15	**Human Genome Sciences' raxibacumab** to treat anthrax	PDUFA date
December 21	**Alexa Pharmaceuticals' Adasuve** (loxapine) for agitation associated with schizophrenia or bipolar disorder	PDUFA date
December 28	**Biogen Idec's BG-12** for multiple sclerosis	PDUFA date

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Date	**Topic**	**Committee/Event**
2013		
January 17	**NuPathe's Zelrix** (transdermal sumatriptan), a migraine patch	***New*** PDUFA date
January 29	**Sanofi/Genzyme and Isis Pharmaceuticals' Kynamro** (mipromersen) for homozygous familial hypercholesterolemia	PDUFA date
January 30	**Raptor Pharmaceutical's cysteamine bitartrate** delayed-release (RP-103) to treat nephropathic cystinosis	PDUFA date
February 10	**Celgene's pomalidomide** for relapsed/refractory multiple myeloma	PDUFA date
February 24	**Dynavax's Heplisav** hepatitis B vaccine	PDUFA date
March 1	**Zogenix's Zohydro** (extended-release hydrocodone) for chronic pain	PDUFA date
April 11	**Sanofi/Genzyme and Bayer's Lemtrada** (alemtuzumab) for multiple sclerosis	PDUFA date