

# KEEPING TABS

Absolute Pharmacy  
is the prescription  
for what ails you.

In each edition, you'll find news about the latest in pharmacy, new medications, technology and more – all through the lens of what is pertinent to the long-term care (LTC) industry.

Absolute Pharmacy has been serving the LTC industry since 1994. We're a part of a dynamic circle of care that consists of rehabilitation, home health care services, hospice care and much more. We have a rich perspective, and we're thrilled to share what we've been learning from other industry leaders, our employees and our customers – you!

We hope you find the information useful. If you have a suggestion for something you'd like to see, let us know at [maryjo.mcelyea@abshealth.com](mailto:maryjo.mcelyea@abshealth.com).

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# Industry

## Holistic Measures for Drug Reduction

by Kevin R. Fearon, RPh, Chief Operating Officer

CMS announced a goal of reducing antipsychotic medication by 25 percent by the end of 2015 and 30 percent by the end of 2016.

As a pharmacist, I believe the best opportunities are not simply cutting this class of drugs, but focusing on holistic factors that can lead to drug replacement such as music, time with family, and reliving fond memories. Reading the article below, I thought of the CMS goals. Since 2011, health care providers have reduced these drugs by more than 20 percent, but further reduction will require more than baseline metrics and behavior evaluation.

### Reference:

CMS.GOV Centers for Medicare and Medicaid Services  
press release September 2014.

MUSIC & MEMORY<sup>SM</sup> Helps Wisconsin Nursing Homes Reduce Antipsychotic Use

<http://musicandmemory.org/2014/11/14/music-memory-%E2%84%A0-helps-wisconsin-nursing-homes-reduce-antipsychotic-use/>



When Wisconsin's Department of Health Services (DHS) decided to implement Music & Memory's personalized music program in 100 long-term care facilities in September 2013, officials were hopeful that the initiative would improve residents' quality of life. But they had no idea just how significant the improvements might be.

One year later, the evidence is persuasive: Wisconsin has moved from tenth to fourth place among all 50 states in a national effort to reduce use of antipsychotic drugs in nursing homes. The Music & Memory program is one of the alternatives to medications implemented by Wisconsin nursing homes to reduce unnecessary prescribing of antipsychotic drugs to residents. Before the state's Music & Memory initiative, across all nursing homes in the second quarter of 2013, 17.4 percent of residents were taking antipsychotics; a year later, use had dropped to 14.6 percent.

# Industry

## The Difference Between GFR and CrCl in Drug Dosing

by Courtney Salvino, RPh, PharmD

Health care providers care for patients with comorbid conditions, which are usually treated with several medications. Especially for medications with narrow therapeutic windows, like digoxin and lithium, kidney function is an important component when determining drug dosing regimens.

Kidney function is evaluated using certain values calculated from formulas based on blood and urine test results. Each method has its own set of limitations, and clinical judgment is advised when interpreting the test results.

### Glomerular Filtration Rate (GFR)

This is the volume of blood filtered through the kidneys per minute (ml/min). This is the best overall measure of kidney function. However, GFR increases as body size increases and requires a correction factor in its calculation. The correction factor, body surface area (BSA), allows comparison among individuals of different sizes. (See Chart 1)

#### CHART 1:

$$\text{BSA (m}^2\text{)} = 0.007184 \times \text{Height(cm)}^{0.725} \times \text{Weight(kg)}^{0.425}$$

$$\text{Correction Factor} = 1.73 / \text{BSA}$$

In a young healthy adult per  $1.73\text{m}^2$ , GFR is 120-130 ml/min and decreases about 0.8ml/min per  $1.73\text{m}^2$  each year after 40 years of age. Unfortunately, GFR cannot be directly measured so a marker, inulin, is used to calculate GFR. Inulin is only filtered, and neither absorbed nor secreted by the renal tubule, making it ideal for assessing kidney function. But it is difficult to use in practice and extremely limited in dosing medications, since most manufacturers do not conduct their clinical trials using GFR when calculating dose adjustments based on renal function.

### Creatinine Clearance (CrCl)

GFR is more commonly estimated by calculating creatinine clearance (CrCl). Essentially, all manufacturer-recommended dose adjustments are based on CrCl during drug development. CrCl can be directly measured or estimated by using the Cockcroft-Gault equation or the Modification of Diet in Renal Disease (MDRD) equation. In order to estimate CrCl, markers also are utilized, including serum creatinine (Scr). Serum creatinine is obtained through a basic metabolic panel. Chart 2 provides some limitations of Scr to take into consideration.

#### CHART 2:

Limitations using Serum Creatinine (Scr)

1. Varied production: Elevated muscle mass or excessive consumption of cooked meat can elevate Scr, while the opposite can decrease Scr.
2. Varied filtration: Increasing age decreases the excretion, underestimating GFR.
3. Secretion of Scr: This overestimates GFR, even as GFR declines. Medications can inhibit secretion, including cimetidine and trimethoprim.
4. Laboratory calibration bias.
5. Extra-renal elimination may be increased with decreasing GFR, causing varied Scr.

### Direct Measurement

Direct measurement of CrCl is obtained by a 24-hour urine collection to determine GFR. The likelihood of an accurate measurement is limited, especially if patients have cognitive impairment, are bed bound, have acute renal failure, or instances of rapidly changing Scr. Keep in mind that this method tends to overestimate GFR due to tubular secretion of creatinine in the urine. Chart 3 provides the formula to calculate CrCl based off the direct measurement of urine-measured creatinine and serum (plasma) creatinine.

#### CHART 3:

$$\text{CrCl} = (\text{U}_{\text{Cr}} \times \text{U}_{\text{vol}}) / (\text{P}_{\text{Cr}} \times \text{T}_{\text{min}})$$

$$\text{Corrected CrCl} = \text{CrCl} \times (1.73 / \text{BSA})$$

$\text{U}_{\text{Cr}}$  = Urine creatinine concentration (mg/dL)

$\text{U}_{\text{vol}}$  = 24-hour urine volume (ml)

$\text{P}_{\text{Cr}}$  = Plasma creatinine concentration (mg/dL)

$\text{T}_{\text{min}}$  = Time (1440 mins)

### Cockcroft-Gault Equation

The Cockcroft-Gault equation is the most widely used, even for the elderly. CrCl tends to be slightly overestimated when employing this equation since it uses serum creatinine in its equation, but it tends to underestimate GFR, especially in the elderly with higher GFRs. Most of the estimated values with this equation are within 30% of the actual GFR, which makes it a better tool than looking at serum creatinine alone. In cases of extreme weights, lean body mass or BSA corrections have been used in the calculation instead of actual body weight. Chart 4 shows the Cockcroft-Gault equation and the difference in calculation between men and women. Chart 5 gives some of the limitations for the equation as well.

# Industry

## CHART 4:

For men: CrCl (ml/min) = {[140 - Age (years)] x Weight (kg)}/ [Scr (mg/dL) x 72]

For women: CrCl (for men) x 0.85

## CHART 5:

Limitations for Cockcroft-Gault

1. The limitations for serum creatinine.
2. Values not adjusted for BSA.

## Modification of Diet in Renal Disease (MDRD) Equation

There are many variations of the MDRD equations, including the six-variable, four-variable, and the re-expressed MDRD equation. MDRD, like the Cockcroft-Gault equation, underestimates the GFR, but its estimate tends to be greater than the Cockcroft-Gault. However, the accuracy is limited when CrCl and GFR are above 60 ml/min per 1.73m<sup>2</sup>.

The four-variable version is an abbreviated form of the six-variable version, which is more commonly used in the elderly. Because of the variability in calibration of Scr assays among labs, the re-expressed version was created with Scr methods calibrated to the reference assay method, attempting to limit Scr calibration bias among various labs. Charts 6 and 7 illustrate the calculations of each MDRD equation, which appear more sophisticated than the Cockcroft-Gault.

## CHART 6:

Six-variable MDRD Equation:

$$\text{GFR} = 170 \times (\text{Scr})^{0.999} \times (\text{Age})^{0.176} \times (\text{BUN})^{-0.170} \times (\text{Albumin})^{0.318} \\ \times 0.762 \text{ (if patient is female)} \times 1.18 \text{ (if patient is black)}$$

Four-variable MDRD Equation:

$$\text{GFR} = 186 \times (\text{Scr}) - 1.154 \times (\text{Age}) - 0.203 \\ \times 0.742 \text{ (if patient is female)} \times 1.212 \text{ (if patient is black)}$$

Re-expressed MDRD Equation:

$$\text{GFR} = 175 \times (\text{Scr}) - 1.154 \times (\text{Age}) - 0.203 \\ \times 0.742 \text{ (if patient is female)} \times 1.212 \text{ (if patient is black)}$$

## CHART 7:

Limitations of MDRD Equation

1. Limitations listed with serum creatinine.
2. Reliability and accuracy is decreased in extremes GFR.
3. Lack of validation in some ethnic groups (Asians).

4. Many manufacturers' drug dosing regimens for renally impaired patients were published before the development of MDRD, limiting the validity of the tool.

Another potential novel-marker for assessing kidney function is cystatin C, a serine protease inhibitor produced by all nucleated cells and filtered by the kidneys. However, a normal range is not yet defined, method of measurements are not standardized for clinical practice, testing is not widely available, higher associated cost compared to serum creatinine, and conflicting studies influence its ability to estimate GFR, which limits its use.

## Conclusion

Glomerular filtration rate (GFR) is the best index to assess kidney function; however, creatinine clearance (CrCl) is used as a guide to drug dosing. Most manufacturers' research and report renal drug dose adjustments as CrCl. CrCl is most often estimated by utilizing the marker serum creatinine (Scr).

To calculate an accurate estimate, Scr should be measured when renal function is at steady state, regardless of which estimate calculation is utilized. If renal function is not at steady state, be mindful that another metabolic panel for another Scr may be needed to conduct further assessments in renal function and drug dosing.

The Cockcroft-Gault equation is more commonly used to estimate creatinine clearance. The MDRD equation is used less frequently, especially in patients with extreme GFRs due to inaccuracy issues, but it may have a place in dosing medications in older, low muscle mass, or high protein intake individuals. By using medications that rely heavily on renal elimination in the face of reduced kidney function, daily dosing should be lowered and/or frequency should be reduced.

Because renal function is dynamic, maintenance doses may need to be adjusted if patients become sick, dehydrated or fully recovered clinical judgment should be exercised on a patient-to-patient basis when determining the best way to assess the impact of renal function on drug dosing regimens. If there are any concerns about assessing drug dosing regimens, do not hesitate to contact your pharmacist.

## Sources:

- 1) Evaluation of the renal patient. Merks Manual. Cited 28 Feb 2015. Available at: [http://www.merckmanuals.com/professional/genitourinary\\_disorders/approach\\_to\\_the\\_genitourinary\\_patient/evaluation\\_of\\_the\\_renal\\_patient.html#v1153212](http://www.merckmanuals.com/professional/genitourinary_disorders/approach_to_the_genitourinary_patient/evaluation_of_the_renal_patient.html#v1153212)
- 2) Munikrishnappa D. Chapter 6: Limitations of various formulae and other ways of assessing GFR in the elderly: is there a role for cystatin C? American Society of Nephrology. Cited 28 Feb 2015. Available at: <https://www ASN-Online.org/education/distancelearning/curricula/geriatrics/Chapter6.pdf>
- 3) Olyaei AJ, Bennett WM. Chapter 9: Drug dosing and renal toxicity in the elderly patient. American Society of Nephrology. Cited 28 Feb 2015. Available at: <https://www ASN-Online.org/education/distancelearning/curricula/geriatrics/Chapter9.pdf>

# Drug News

## New Drug Update: Afrezza Inhaled Insulin

by Susan Riggle, RPh, Consultant Pharmacist

Afrezza is a rapid-acting insulin for diabetes that is inhaled instead of injected. It is now available by prescription, approved for Type 1 diabetics who also receive long-acting insulin therapy. It is promoted as an alternative to mealtime injections of medications like Humalog or Novolog. Afrezza has a shorter duration of action than either of those and therefore may be associated with less hypoglycemia.

Since the medication is inhaled and can decrease lung function, lung function tests (spirometry) should be performed prior to med initiation, again at six months of therapy, and annually thereafter. Likewise, the med is contra-indicated in those individuals with COPD, asthma, lung cancer, or a recent history of smoking. The most common side effects are cough, throat pain or irritation, and hypoglycemia.

The inhaler device is about the size of a whistle and is used with cartridges filled with insulin powder. The inhaler device itself should be replaced every 15 days and cleaned only with a dry cloth (never washed or made wet). Each cartridge is for one-time use and can be discarded with regular trash. The med will be available in a cartridge containing four units of insulin (which is blue in color) and a cartridge with eight units of insulin (green in color). Depending on the dose needed, more than one cartridge may need to be inhaled.

When switching from subcutaneous insulin, the manufacturer recommends rounding up to the nearest four units and converting unit-per-unit. For example, a patient on nine units of mealtime insulin would convert to 12 units of inhaled insulin and require a four-unit cartridge (blue) and an eight-unit cartridge (green). This would necessitate two inhalations, one for each cartridge. It is recommended that patients unaccustomed to insulin start on four units of Afrezza.

Administering the inhaled insulin is similar to administering an Albuterol inhaler, meaning the patient should exhale first. The insulin inhaler, however, should be positioned at a downward angle while the head remains level. The med, once inhaled, should be held in for as long as comfortable.

Prior to administration, the cartridges and inhaler should be at room temperature for ten minutes. When not in use, the med should be refrigerated. Sealed cartridges are good at room temperature for ten days. Opened cartridges are good for three days at room temperature.



It is important to note that Afrezza will cost about twice as much as similar insulin products, and additional blood-glucose monitoring should be done during the transition from injectable insulin.

For at least the last 15 years, we have been promised an inhaled insulin. Afrezza's predecessor, Exubera, was cumbersome to use. Afrezza could be attractive for patients who dislike having multiple daily injections. The challenge in long-term care will be proper storage and use, particularly having the inhaler and cartridge at room temperature for 10 minutes before use.

Inhaled powder dosage forms have been fairly well tolerated. Meds like Spiriva have been successful and have paved the way for acceptance of an inhaled insulin product.

As with any medication, suspected adverse reactions should be reported to both the FDA at **1-800-FDA-1088** or [www.fda.gov/medwatch](http://www.fda.gov/medwatch) AND Absolute pharmacy.

# Drug News

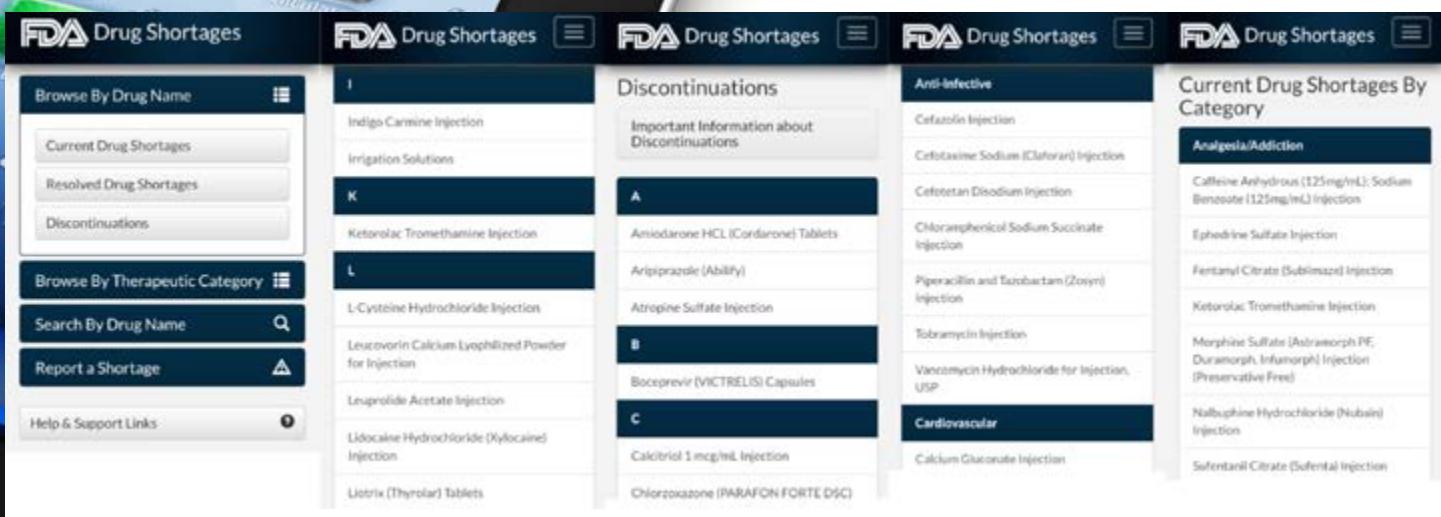
## FDA Launches drug shortages mobile app

### FDA News Release

Provides public with rapid access to information on drugs in short supply.

In March, the U.S. Food and Drug Administration launched the agency's first mobile app specifically designed to speed public access to valuable information about drug shortages.

The app identifies current drug shortages, resolved shortages and discontinuations of drug products.



"The FDA understands that health care professionals and pharmacists need real-time information about drug shortages to make treatment decisions," said Valerie Jensen, associate director of the Drug Shortage Staff in the FDA's Center for Drug Evaluation and Research. "The new mobile app is an innovative tool that will offer easier and faster access to important drug shortage information."

Drugs in short supply can delay or deny needed care for patients. Drug shortages may also lead health care professionals to rely on alternative drug products, which may be less effective or associated with higher risks than the drug in shortage.

The app is available for free download via iTunes (for Apple devices) and the Google Play store (for Android devices) by searching "FDA Drug Shortages."

# Absolute Insights



## Cost management Tips

by Becky Sommers R.ph, VP Clinical Services

### Prolia/Xgeva and New Admits

Prolia/Xgeva (Denosumab) is a bone modifying agent that is often prescribed for osteoporosis. It is normally administered subcutaneously once every six months. If administered in a Medicare Part A skilled stay, the cost is approximately \$1,000. Some Medicare Part D plans do cover Prolia/Xgeva with prior authorization in non-Medicare A skilled stays. Therefore, before ordering Prolia/Xgeva from Absolute Pharmacy on a new admit, it benefits you significantly to verify the date the last dose was given. There is no therapeutic advantage if given more frequently than every six months.

### Lidocaine Patches and Appropriate Diagnosis

We see lidocaine patches commonly used in our practices today. It is important to note that most Medicare Part D insurance plans require a diagnosis of post-herpetic neuralgia before approving prior authorization coverage. One patch costs the facility approximately \$15 per day if not covered by Medicare Part D. Many patients require more than one patch per day. Verify that a post-herpetic neuralgia diagnosis is available and accurate to be considered for insurance coverage.

### Insulin Pens and the Weekly High-Cost Medication Report

You may have noticed that since we implemented our cost-savings initiative with insulin pens, they are now appearing on your high-cost medication report with greater frequency. This occurs on those residents who previously were being dispensed 1x10cc vial of insulin at a time and now are receiving a one-month supply (up to five pens [15cc] per dispensing). Residents with a dose greater than 30 units per day required more than one vial per month and incurred two prescription co-pays some months for their insulin. As we are now dispensing the 3cc insulin pens, we are able to dispense a one-month supply, reducing the patient co-pay to one per month.

## We Have a New Administrative Fax Number!

The following forms of communication should be faxed to the new administrative line at:

**855-552-1826**

- Absolute Pharmacy authorization forms
- Notice of intent to purchase medications from an outside pharmacy
- All census forms
- All face sheets
- Any communication regarding insurance changes or coverage
- Prior authorization forms

If the fax is regarding a medication order, the fax should be sent to 1-800-858-7394 as usual. No presets should be changed at the nursing station, as this number will remain for medication orders and refills.

## Reminder:

Medications that are on anniversary fill do not need to be reordered. They will come automatically on the same date each month.

Any routine solid, oral dose medication is on anniversary fill. Remember to always start punching the card on the date on the pharmacy label.

Items that need to be requested for refill are all PRN medications, controlled substances, injections, topical medications, ear drops, eye drops, inhalers, nasal sprays, liquid medications, etc.



# Absolute Insights



## Put a Face to a Name: Cheryl Bertke, CPhT Quality Representative

1. How long have you worked for Absolute Pharmacy?

A: I started in June 2006.

2. What do you do for Absolute Pharmacy?

A: I assist our customers in obtaining approval for medications that are non-formulary and not covered by the insurance company.

3. What's your favorite quote or saying?

A: "Never trust feelings over facts of faith."

4. What's your favorite song?

A: "Mary, Did You Know?"

5. What chore do you absolutely hate doing?

A: Cleaning toilets. Ugh!

6. What do you enjoy doing the most?

A: Gardening.

7. If you could choose anyone, who would you pick as your mentor?

A: Pope Francis.

8. What did you want to be when you grew up as a child?

A: A mommy!

9. What is your favorite animal and why?

A: Dogs, because of their unconditional love.

10. If you could take a vacation anywhere in the world, where would it be?

A: Medjugorje, Bosnia.

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## Customer Appreciation Event Recap:

Absolute Pharmacy and Absolute Rehabilitation had a customer appreciation event on April 8, 2015. Mary Beth Maly, Owner and Principal of Maly Group LLC, talked about the "Bundled Payment Primer - how to navigate through what is here now and what is to come." Thank you to Mary Beth and those that were able to join us for the discussion on this critical topic affecting our industry.

### Upcoming Shows:

OHCA Convention, April 28-29

OALA Spring, May 18

LeadingAge Pennsylvania, June 17-19