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## Pharmacy Newsletter : May 2013

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*Aga Khan University Hospital*

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# PHARMACY

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NEWSLETTER

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Pharmacy Newsletter provides  
information regarding the decisions  
of P & TC, current concepts in drug  
therapy, warnings and cautions issued  
by various regulatory agencies, drug  
interactions, ADRs and matters related  
to drug usage

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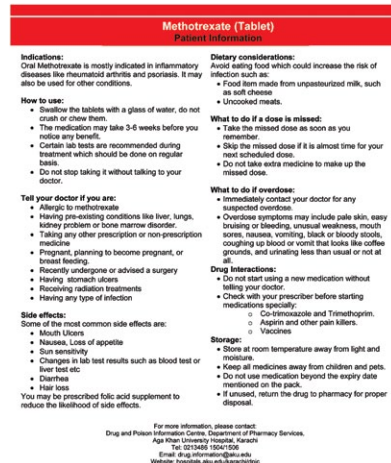
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## Patient Information Brochure

Medication errors are important cause of  
healthcare associated patient harm. Errors  
can occur at the stage of prescribing,  
transcribing, dispensing and administration.  
Studies estimated that about 38% medication  
errors occur at the time of administration  
and lack of patient’s knowledge about drugs  
is a major contributing cause. In order to  
provide better understanding of medication  
use, a group of pharmacists deliberated  
on the subject and prepared easy-to-  
comprehend patient medication information



brochures  
of selected  
critical medications. These seven  
brochures are single page handout both  
in English and Urdu translation designed  
in order to enhance the awareness among  
the patients who are using these critical  
medications for chronic illnesses.

With the intent to reduce patient harm by  
making our patients more educated, this will  
build better relationship with the patients  
along with increase satisfaction level.

## “Beers Criteria”– Medication Safety in Elderly Patients

Contributed by: *Zulfiqar Khalil (Intern Pharmacist)*

Geriatrics is a special population of patients with increased risk of  
adverse effects and medication errors. In 1991, Dr. Mark Beers and  
colleagues published criteria developed by consensus and literature review  
identifying inappropriate medication use among institutionalized elderly  
patients. Since 1991, these criteria have been updated and presently, the  
Beers criteria (Beers List) is one of the most widely cited criteria for  
inappropriate medication use in older adults aged 65 years or greater.

The Beers criteria cover 3 categories of inappropriate medication use:

- (1) Medications/ classes of medications that should generally be avoided in patients 65 years or older because are either ineffective, or pose an unnecessary risk for older patients and a safer alternative is available.
- (2) Medications that should be avoided in older persons known to have specific medical conditions; and/or



- (3) Medications to be used with caution. With each recommendation, the quality of supporting evidence is ranked as low, moderate, or high, and the strength of each recommendation is rated as strong, weak, or insufficient.

The following table represents the Beers Criteria listing the categories of inappropriate medication use by drug along with the strength of recommendation rating, and quality of supporting evidence.

Organ System or Therapeutic Category	Rationale	Recommendation	Quality of Evidence	Strength of Recommendation
<b>Anticholinergics (excludes TCAs) - First-generation antihistamines</b> (as single agent or as part of combination products) Chlorpheniramine Clemastine, Cyproheptadine Diphenhydramine (oral) Doxylamine, Hydroxyzine Promethazine, Triprolidine	Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; greater risk of confusion, dry mouth, constipation, and other anticholinergic effects and toxicity. Use of diphenhydramine in special situations such as acute treatment of severe allergic reaction may be appropriate	Avoid	Hydroxyzine and promethazine: high; All others: moderate	Strong
<b>Antispasmodics - Belladonna alkaloids</b> Clidinium-chlordiazepoxide Dicyclomine Hyoscyamine	Highly anticholinergic, uncertain effectiveness	Avoid except in short-term palliative care to decrease oral secretions	Moderate	Strong
<b>Anti-infective</b> Nitrofurantoin	Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCl < 60 mL/min due to inadequate drug concentration in the urine	Avoid for long-term suppression; avoid in patients with CrCl <60mL/min	Moderate	Strong
<b>Cardiovascular - Alpha blockers</b> Doxazosin Prazosin Terazosin	High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/benefit profile	Avoid use as an antihypertensive	Moderate	Strong
<b>Antiarrhythmic drugs (Class Ia, Ic, III)</b> Amiodarone Flecainide Procainamide Quinidine	Amiodarone is associated with multiple toxicities, including thyroid disease, pulmonary disorders, and QT- interval prolongation	Avoid antiarrhythmic drugs as first-line treatment of atrial fibrillation	High	Strong
Digoxin > 0.125 mg/d	In heart failure, higher dosages associated with no additional benefit and may increase risk of toxicity; slow renal clearance may lead to risk of toxic effects	Avoid	Moderate	Strong

<b>Central nervous system</b> Tertiary TCAs Amitriptyline, Clomipramine Imipramine	Highly anticholinergic, sedating, and cause orthostatic hypotension	Avoid	High	Strong
<b>Benzodiazepines</b> <b>Short and intermediate acting:</b> Alprazolam Lorazepam Temazepam <b>Long acting:</b> Chlordiazepoxide Clidinium-chlordiazepoxide Clonazepam Diazepam	Older adults have increased sensitivity to benzodiazepines and slower metabolism of long-acting agents. In general, all benzodiazepines increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents in older adults. May be appropriate for seizure, REM sleep disorders, benzodiazepine or ethanol withdrawal, severe generalized anxiety disorder, periprocedural anesthesia, end-of-life care	Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium	High	Strong
<b>Nonbenzodiazepine hypnotics</b> Zolpidem	Same as above	Avoid chronic use (> 90 days)	Moderate	Strong
<b>Sulfonylureas</b> Glibenclamide	Greater risk of severe prolonged hypoglycemia in older adults	Avoid	High	Strong
<b>NSAIDs:</b> Aspirin > 325 mg/d Diclofenac Ibuprofen Ketoprofen Mefenamic acid Meloxicam Naproxen Piroxicam Indomethacin Ketorolac	Increases risk of GI bleeding and peptic ulcer disease in high-risk groups, including those aged > 75 or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents. Use of proton pump inhibitor or misoprostol reduces but does not eliminate risk. Upper GI ulcers, gross bleeding, or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3–6 months and in approximately 2–4% of patients treated for 1 year. These trends continue with longer duration of use	Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective agent (proton pump inhibitor or misoprostol)	Moderate Ketorolac: high	Strong
<b>Muscle Relaxants</b> Orphenadrine	Most muscle relaxants are poorly tolerated because of anticholinergic adverse effects, sedation, risk of fracture	Avoid	Moderate	Strong

Note: Only selected medications are depicted in this table, for details please refer to full text in J Am Geriatr Soc 2012 (American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults)

## Adverse Drug Reactions – Summary 2012

Adverse drug reaction are any response to a drug that is noxious, unintended and that occurs at doses normally used for prophylaxis, diagnosis or therapy. The main purpose of ADR reporting and monitoring is to provide an indirect measure of the quality of pharmaceutical care through identification of preventable ADRs and anticipatory surveillance for high-risk drugs or patients. The data will help to monitor trends and significant isolated ADRs, create a feedback loop to practitioners,

promote educational endeavors to prevent ADRs, and improve patient outcomes.

**In the year 2012**, a total number of 135 ADRs were reported (with exception of many unreported too). Following are the details of reported ADRs:

### Antibiotics:

In the year 2012, majority of ADRs were reported from antibiotic class of drugs. These mainly were rashes and hypersensitivity reactions.

### Learning outcomes:

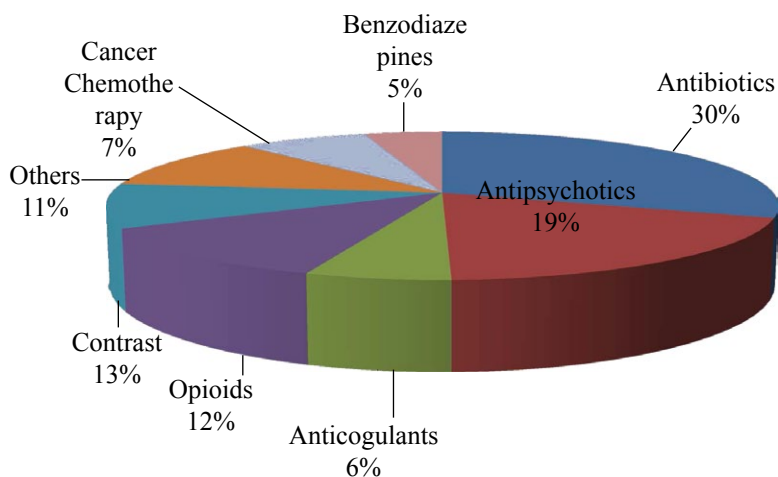
- All antibiotics must be infused slowly over a

period time recommended by the drug information resources (mention on the patient labels).

- Avoid administration of antibiotics in high concentrations where possible, decrease rate of infusion if using maximum concentration of dilution.
- If patient develops allergy or hypersensitivity to any antibiotic it must be documented in patient record and updated in the Pharmacy system to avoid any further administration.

- Elderly patients are usually at high risk. Start the therapy of antipsychotic medications with low doses and gradually increase the dose.
- In order to avoid drug induced postural tremor and daytime tremor elderly patients should take the antipsychotics at bedtime.
- To prevent acute dystonia, a preventative medication along with the antipsychotic such as procyclidine, trihexyphenidyl, diphenhydramine etc. can also be prescribed.

### Reported ADRs 2012



### ADR Reporting:

Adverse drug Reactions are reported in AKUH through;

- Yellow Cards
- <http://intranet/pharmacy/adrrf.htm>

*Vote of thanks to all the Physicians, Nurses and Pharmacists who spared some time for patient safety and reported ADRs last Year.*

### Antipsychotics:

The second most frequently reported ADRs were from Neuroleptics class of drugs. Extra Pyramidal Symptoms (EPS), tremor and dystonia were highest in this class. Neuroleptics induced movement disorders are caused by medications that block the action of dopamine.

### Learning Outcomes:

- Antipsychotic induced EPS and movement disorders are well documented in the literature; clinicians should anticipate these reactions.



آغا خان یونیورسٹی ہسپتال، کراچی

The Aga Khan University Hospital, Karachi



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