

**FROM CHIEF EDITOR'S DESK****Improving Medication Safety**

"Death by medicine is a 21st-century epidemic, and America's "war on drugs" is clearly directed at the wrong enemy."

- Dr. Mercola October 26, 2011

Prescription drugs are now killing far more people than illegal drugs, and while most major causes of preventable deaths are declining, those from prescription drug use are increasing, an analysis of data released in 2011, by the U.S. Centers for Disease Control and Prevention (CDC) by the *Los Angeles Times* revealed.

With emergence of more drugs, and more drug products; complexity of therapy is ever increasing. Prescribing, dispensing and administration of medicines are becoming more complicated day by day. The history of medication error is filled with numerous reports and few are quoted here.

Schimmel reported in 1964 that 20 percent of hospital patients suffered iatrogenic injury, with a 20 percent fatality rate.

Steel in 1981 reported that 36 percent of hospitalized patients experienced iatrogenesis with a 25 percent fatality rate and adverse drug reactions were involved in 50 percent of the injuries.

Bedell in 1991 reported that 64 percent of acute heart attacks in one hospital were preventable and were mostly due to adverse drug reactions.



Dr. Lucian L. Leape in his 1994 JAMA paper, "Error in Medicine" gives startling account of havocs played by medicines.

Dr. Richard Besser, of the U.S. Centers for Disease Control and Prevention, in 1995, said the number of unnecessary antibiotics prescribed annually for viral infections was 20 million.

Death by Medicine, Part I by **Gary Null et al. dated November 26, 2003 reported** "A definitive review

and close reading of medical peer-review journals, and government health statistics shows that American medicine frequently causes more harm than good. The number of people having in-hospital, adverse drug reactions (ADR) to prescribed medicine is 2.2 million."

There are many sources of errors, which either relates to personnel or the system. Unless the individuals learn from failures and be vigilant neither personnel error nor system error can be prevented.

Sources of Error

Patient Information: Important and useful patient information relating to diagnoses, lab reports, allergies, drug contradictions, etc. are often unavailable to pharmacy, nursing, and medical staff prior to dispensing or administering drugs.

Drug Information: Pharmacist not available in patient care unit and drug information resources are not up-to-date. This may lead to wrong calculation of dose or ignoring any drug interaction. Maximum error occurs during prescribing and administration of drugs. The entire medical team should consult other members to harness the benefit of their expertise. This is an essential step in ensuring safety of medication.

Miscommunication: Poor handwriting, confusion of drugs with similar names, careless use of zeroes and decimal points, confusion of metric and apothecary systems, use of inappropriate abbreviations, ambiguous or incomplete orders, and, sometimes, conflicts between practitioners become major source of error. Such errors are preventable if proper care is taken at every level.

A small list of 54 pairs of medicines is appended below to emphasize the gravity of the problem.

Sl.No.	Medicine name	Content	Use
1	ABAN	Albendazole	Anthelmintic
	ABANA	Ayurvedic Medicine	Anti-hypertensive
2	AB-CAN	Fluconazole	Antifungal



	AB-CIN	Levofloxacin	broad-spectrum antibiotic
3	AC2	Aceclofenac+Paracetamol	Analgesic, Antipyretic, Anti-Inflammatory
	AC-2	Amoxicillin+clavulanate potassium	antibiotic
4	ACER	Diacerein	Anti-Inflammatory
	ACERA	Rabeprazole	peptic ulcer and gastro-oesophageal reflux disease (GERD)
5	ACETEN	Coptopril	Cardio-vascular disease
	ACETEC	Acitretin	Psoriasis
6	ACILEX	Aceclofenac	Anti-inflammatory
	ACIFIX	Magnesium hydroxide, Dried aluminium hydroxide, Simethicone	Antacid
7	ALDEC	Nandrolone decanoate	anabolic steroid
	ALDIC	Diclofenac Potassium, Paracetamol, Serrateionpeptidase	anti-inflammatory and antirheumatic
8	ALEVA	Levocetirizine	Antihistamines & Antiallergics
	ALEVO	Levofloxacin	broad-spectrum antibiotic
9	ALEXA	Dexamethasone sodium phosphate	Corticosteroid
	ALEXI	Amoxicillin+ Clavulanic acid	broad-spectrum antibiotic



10	BACIMOX	Amoxicillin+ Cloxacillin	broad-spectrum antibiotic
	BACMAX	Baclofen	Muscle Relaxant
11	BUSCOPAN	Hyoscine butyl-bromide	Antispasmodic
	BUSUPHAN	Busulfan	Treatment of cancer
12	CALURAN	Bicalutamide	anti-androgen
	CALRON	Calcium lacto-bionate, calcium Gluc-onate, ferric ammonium citrate, vitamin A	Vitamins & Minerals
13	CARMAX	Omega-3 fatty acid, alpha lipoic acid, Cyanocobalamin, chromium, picolinate, selenium	Vitamins, minerals, micronutrient
	CARMOX	Amoxicillin, Carbocisteine	broad-spectrum antibiotic
14	CYPAN	Pantoprazole	proton pump inhibitor
	CYPON	Cyproheptadine hydrochloride, dried yeast	Appetite Enhancer
15	DAMOL	Tramadol	Analgesic
	DIMOL	Activated dime-thicone	Antiflatulent
16	DAONIL	Glibenclamide	Anti diabetic



	DIOVOL	Dried Aluminium hydroxide, Magnesium hydroxide, Magnesium carbonate light, Activated dimethicone	Antacid
17	DAXID	Sertraline hydrochloride	Antidepressant
	ROXID	Roxithromycin	antibiotic
18	DIAMIG	Miglitol	Anti diabetic
	DIAMIN	Imipramine	Antidepressant
19	DIAMOX	Acetazolamide	Treatment of glaucoma and miosis
	DICIMAX	Diacerein	anti-inflammatory and antirheumatic
20	DIGENE	Aluminium hydroxide, magnesium aluminium silicate, magnesium hydroxide, Simethicone	Antacid
	DIFENIC	Diclofenac sodium	Anti –Inflammatory
21	DROXYL	Cefadroxil	Cephalosporin antibiotic
	DOXY-1	Doxycycline	Tetracycline antibiotic
22	E-PRIN	Aspirin	Antiplatelets& Fibrinolytic
	EPRIL	Enalapril Maleate	cardiovascular disease
23	FEGAN	Diclofenac	Anti-inflammatory
	FEGEM	Iron (III) hydroxide Polymaltose complex 100 mg, folic acid	Antianemic
24	GAMET 800	Gabapentin 300 mg, Mecobalamin	Anticonvulsant



	GAMETOP	Gemifloxacin	broad-spectrum antibacterial
25	HIFEN	Cefixime	Cephalosporin antibiotic
	HIPEN	Amoxicillin	broad spectrum Penicillin
26	IDEBEN	Idebenone	CNS Stimulant
	IDIBEND	Mebendazole	Anthelmintic
27	IKA	Cetirizine, Pseudoephedrine hydrochloride	Cough & Cold
	IKKA	Amikacin	antibiotic
28	JUCAN	Fluconazole	antifungal
	JUGAM	Sparfloxacin	Broad spectrum antibacterial
29	KARDIA	Dobutamine	heart failure
	KARDIN	Trimetazidine	Anti-Anginal
30	L-CIT	Levocetirizine	Antihistamines & Antiallergic
	L-COT	Omeprazole, Clarithromycin, Tinidazole	Gastritis
31	METACIN	Paracetamol	Analgesic & Antipyretic
	METHACIN	Neomycin sulphate	Anti-Infective & Antiseptic
32	NEPOMOX	Amoxicillin	Broad spectrum penicillin
	NEPOTOX	Cefotaxime	Broad spectrum antibiotic
33	NIFDEC	Diclofenac	Anti-inflammatory



	NIFEDINE	Nifedipine	Anti-Anginal
34	NIPCARE	Lanolin	Emollient
	LPCARE	Losartan potassium	cardiovascular disease
35	OCUVIT	Vitamin A, D, E	Vitamin
	OCUWET	Povidone	Lubricant
36	PACID	Pantoprazole	peptic ulcer and gastro-oesophageal reflux disease (GERD)
	PACIP	Ciprofloxacin	antibacterial
37	QUINIDINE	Quinidine	arrhythmia
	QUININE	Quinine	Malaria
38	ROBI-D	Methocarbamol, Diclofenac	Muscle Relaxant & Pain Reliever
	RAB-D	Rabeprazole, Domperidone	peptic ulcer and gastro-oesophageal reflux disease
39	SIBOLONE	Tibolone	Menopausal Vasomotor symptoms, Prophylaxis of Postmenopausal Osteoporosis
	SORBILINE	Tricholine citrate	Early Phase of liver disease due to alcohol, Viral hepatitis, and toxic hepatitis associated with fatty infiltration of liver.
40	TRENTAL	Pentoxifylline	Peripheral vasodilator
	TEGRITAL	Carbamazepine	epilepsy
41	TROPAN	Oxybutynin chloride	Bladder & Prostate Disorders
	TROPARIN	Certoparin Sodium	Anticoagulant, Antiplatelet & Fibrinolytic
42	ULCORT	Deflazacort	Corticosteroid



	ULCURE	Omeprazole	Peptic ulcer and gastro-oesophageal reflux disease (GERD)
43	ULOTRIC	Duloxetine hydrochloride	Depression
	ULORIC	Allopurinol	Gout, Hyperuricaemia
44	ULPAN	Pantoprazole	peptic ulcer and gastro-oesophageal reflux disease (GERD)
	ULPANE	Oxphenonium bromide, diazepam, Magaldrate	anxiety and depression
45	ULTRCIT	Potassium citrate, citric acid	helps the kidneys get rid of uric acid, Calculi Dissolution Agent
	ULTRICH	Whey protein, carbohydrate, sugar, fat, calcium carbonate, vitamin C, carbonyl iron, folic acid, vitamin B ₁₂ , vitamin D ₂	Protein supplement & energy drink
46	UVEX	Levofloxacin	Quinolone antibacterial
	UZEX	Magaldrate, Simethicone, Oxetacaine	Antiulcer
47	VAL-BCD	Valdecoxib	Osteoarthritis, Rheumatoid Arthritis
	VAL-FCD	Sodiumvalproate, Valproic Acid	Primary Generalised Seizures, Partial Seizures
48	VALUE	Rabeprazole	peptic ulcer and gastro-oesophageal reflux disease (GERD)
	VALIUM	Diazepam	Anxiolytic



49	WINCIP	Ciprofloxacin, Tinidazole	Amoebiasis and other protozoal diseases
	WINCID	Omeprazole	Peptic ulcer and gastro-oesophageal reflux disease (GERD)
50	XET	Paroxetine hydrochloride	Anti-depressant
	XMET	Metformin hydrochloride	Antidiabetic
51	XONE	Ceftriaxone sodium	Typhoid Fever, gonorrhoea Fever, Meningococcal meningitis
	XOXE	Cefuroxime	Urinary tract infections, Respiratory tract infections, gonorrhoea, Prophylaxis of surgical infections
52	YESMOX	Amoxicillin	extended spectrum Penicillin
	YESROX	Roxithromycin	Macrolide antibiotic
53	ZIMIG	Terbinafine hydrochloride	Antifungal
	ZIMINIC	Cefixime trihydrate	Hypersensitivity to Cephalosporins
54	ZOPIC	Alprazolam	anxiety, agitation or tension
	ZOIDP	Zolpidem	hypnotics and sedative

Stress: Factors like lighting, heat, noise, and excessive interruptions, affect individual performance. The process of transcribing prescription orders is particularly vulnerable to such distractions, as staff transcribing orders are exposed to noise, interruptions, non-stop unit activity, and too-long or double shift duties.

Knowledge Updating: Many practitioners are not as aware as they should be of the current information published in professional literature. This adversely affects their performance.



Patient Counseling: Medication use is a multi-step, multidisciplinary process that begins and ends with the patient. Patient education about medications - what they are taking, why they are taking it, and how they should take it - is essential to successful medication administration. Patients are the most important partners in the prevention of error and should be adequately counseled and trained to safely self-administer medications when at home.

Recommendations

The important steps for improving medication safety must be devised and improved from time to time based on experience and outcomes of the process.

1. Legible prescription writing and rational prescribing are the major issues which can nip the problem in bud.
2. Dispensing of prescription only by a registered Pharmacist as envisaged in Section 42 of the Pharmacy Act, 1948 is another step forward to shun dispensing errors.
3. Effective patient counseling is a way forward measure in improving patient compliance and ensuring success of therapy.

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Chief Editor