

## Drug box: A novel strategic tool to minimize pill burden and polypharmacy in geriatric population

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### Abstract

Longevity and graceful ageing is what every elderly years for.

With advances in better health care, better standards and newer modalities of medical expertise the elderly population is in a phase three of demographic transition and the number of elderly in India are on the rise. With increasing age comes the prospect of multiple morbidities. The current medical practice guidelines often require multiple medications to treat each chronic disease state for optimal clinical benefit and poly-pharmacy is inevitable. The multiple drugs when consumed in excess or in lesser dosage can in turn result in adverse drug reactions. An elders body responds in a different manner from the adult body mechanism especially with respect to drug-drug interactions, reduced organ functional capacities and most importantly medication non compliance due to morbidities of ageing viz. dementia, blindness, etc. Also there is accumulation of toxic products of drug metabolism due to pharmacokinetic and pharmacodynamics changes occurring with advancing age.

A Novel substitute for pill burden and poly pharmacy<sup>3</sup> is the drug box.<sup>3</sup>

A simple, cost-effective tool for the elderly, which helps in appropriate storage of medicines having compartments which coincide with the number of days in a week or a month, with divisions as per doses. Few boxes even show the time of the day during which the drug must be taken. Drug dispensers are high tech pill boxes keep the medications locked till the time it needs to be taken, and dispenses it at the right time thus prevents drug over dosage. This is very helpful for the elderly patients who suffer from dementia and those who are on multiple drug therapies.

**Keywords:** Drug box, Novel tool, Pill burden.

### Introduction

Longevity and graceful ageing is what every elderly years for.

With advances in better health care, better standards and newer modalities of medical expertise the elderly population is in a phase three of demographic transition and the number of elderly in India are on the rise. With increasing age comes the prospect of multiple morbidities. The current medical practice guidelines often require multiple medications to treat each chronic disease state for optimal clinical benefit and poly-pharmacy is inevitable. The multiple drugs when consumed in excess or in lesser dosage can in turn result in adverse drug reactions. An elders body responds in a different manner from the adult body mechanism especially with respect to drug-drug interactions, reduced organ functional capacities and most importantly medication non compliance due to morbidities of ageing viz. dementia, blindness, etc. Also there is accumulation of toxic products of drug metabolism due to pharmacokinetic and pharmacodynamics changes occurring with advancing age.

**Causes of Pill Burden:** The drug over dose or under dose of the elderly patients is mainly due to elderly suffering from dementia, caregiver burden and burnout and pill Burden. Pill burden<sup>1</sup> refers to the number of pills that a patient consumes on a regular basis. It includes the efforts spent on storing, organising, consuming, and understanding the medications in the regimen.<sup>2</sup>

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**Table 1: Type of drug boxes with special features & the consequences of drug overdose**

S.No	Type of Drug Box	Special feature	Reminder to take medicines	Drug overdose
1.	Tray type drug box	Sliding	Absent	No
2	Braille drug box	Helpful for the blind	Absent	No

3	Pill Bottle Recorder and medication reminder.	Pill is dispensed at the right time.	Yes, Alarm type of alert system	No
4	Traveller Pill Holder	Portable pouch	Absent	No
5	Talking Alarm Clock	Timing needs to be set	Present	No
6	One month Medication Organiser	Morning noon and evening sections (+)	Absent	No
7	Piece Braille measuring spoon.	Helpful in measurement and dispensing liquid medications	Absent	No
8	Pill Box with tactual markings	Specific markings make it easy to dispense	Absent	No
9	Take and Slide	Handy to operate	Absent	No
10.	360* rotatory pill box	Sections which should be taken open up on rotating	Absent	Yes

### Conclusion

Thus drug box is a very useful aid for the elderly helping them in better compliance to drug intake and to reduce pill burden. Drug box often come in various features and specifications so as to make it easier for the 'special need patients'. It includes boxes with

1. Color coding
2. Braille (visually impaired)
3. Locking mechanism
4. (To prevent double dosing for those suffering from dementia)
5. Alarm clocks (as a remainder) etc.

Advanced models can be made, which would be linked via the Internet to a medical facility. This could aid in monitoring and reminding a patient to take his/her medication. The government should take necessary steps to bring these boxes at less expensive rates to the outlets. The government can also make the use of drug boxes mandatory for the elderly patients.

The pharmaceutical companies can provide free drug boxes with the drugs that they supply. Thus drug box is a novel tool, simple to use and cost effective, reduces the care giver burden and builds a sense of independence in the elderly.

**Conflict of Interest:** None

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