

Medication Without Harm



WHO Global Patient Safety Challenge

Case Scenario – Patient experience in polypharmacy for medication safety

Dr J.S. Arora

National Thalassemia Welfare Society
Federation of Indian Thalassemics
Indian Alliance of Patient Groups
Member, Advisory Group, Patients for Patient Safety
PFPS (Patients for Patient Safety) Champion

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Global Patient Safety Challenge 'Medication Safety in Polypharmacy'

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- Health care interventions are intended to benefit patients, but can also cause harm
- Most of these harms are preventable
- It is estimated that 50% of medicines prescribed, dispensed or sold are inappropriate, many of these leading to preventable harm
- WHO launched its third Global Patient Safety Challenge: Medication Without Harm in March 2017, with the goal of reducing severe, avoidable medication-related harm by 50% over the next five years, globally

WHO prioritized three areas for strong commitment

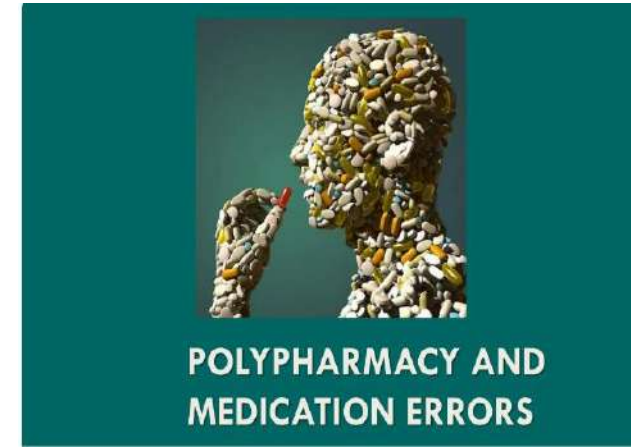
- Medication safety in high-risk situations
- **Medication safety in polypharmacy**
- Medication safety in transitions of care

Polypharmacy, lacks a clear universal definition

- Polypharmacy - Defined by WHO as “the administration of many drugs at the same time or the administration of excessive number of drugs”. Very common in elderly
 - Over-the-counter (OTC), traditional and complementary medicines should also be considered part of polypharmacy

Other terms

Polymedication, Multimedication, Multiprescription, Hyper-polypharmacy or Excessive multi-medication



Example Mr APS...

- Mr APS 58 year old male suffering from type II diabetes for over 10 years consulted Diabetologist for numbness and burning sensation in the feet (? Diabetic neuropathy). Besides medicine for diabetic control he was prescribed Maxner –G (Methylcobal 1500mg + Gabapentin 300mg) for 1 month.
- He was already taking Neurokind LC (Methylcobal 1500mg + L Carnitine 500mg + Folic Acid 1.5mg) on advice of his family friend which he did not revealed to the diabetologist thinking he would get annoyed and its only health supplement so no harm in taking.



Mr APS... after 3 months

- After 3 months Mr APS underwent a comprehensive health package in which he found Vitamin B12 level very high.



<u>Investigation</u>	<u>Observed Value</u>	<u>Unit</u>	<u>Biological Reference Interval</u>
Vitamin B12 level (Serum, ECLIA)	2845	pg/mL	197-771

Interpretation :

- Vit B12 levels are decreased in megaloblastic anemia, partial/total gastrectomy, pernicious anemia, peripheral neuropathies, chronic alcoholism, senile dementia, and treated epilepsy.
- An associated increase in homocysteine levels is an independent risk marker for cardiovascular disease and deep vein thrombosis.
- HoloTranscobalamin II levels are a more accurate marker of active VitB12 component.

Abbreviation :
ECLIA : Electrochemiluminescence Immunoassay

- Then he consulted his family physician who after seeing the prescription of diabetologist reminded him that he was advised Maxner – G for one month only and he has taken for over 3 months.
- He advised him to stop it and repeat B12 level after 3- 4 weeks.

Mr APS... One month after stopping Maxner G

- After 1 month B12 level was still very high (>2000 - normal range 197-771)

<u>Investigation</u>	<u>Observed Value</u>	<u>Unit</u>	<u>Biological Reference Interval</u>
Vitamin B12 level (Serum, ECLIA)	Above 2000	pg/mL	197-771

Interpretation :

1. Vit B12 levels are decreased in megaloblastic anemia, partial/total gastrectomy, pernicious anemia, peripheral neuropathies, chronic alcoholism, senile dementia, and treated epilepsy.
2. An associated increase in homocysteine levels is an independent risk marker for cardiovascular disease and deep vein thrombosis.
3. HoloTranscobalamin II levels are a more accurate marker of active VitB12 component.

Abbreviation :
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- Even at this point patient did not reveal taking Neurokind LC to family physician

Persistent elevation of Vitamin B12

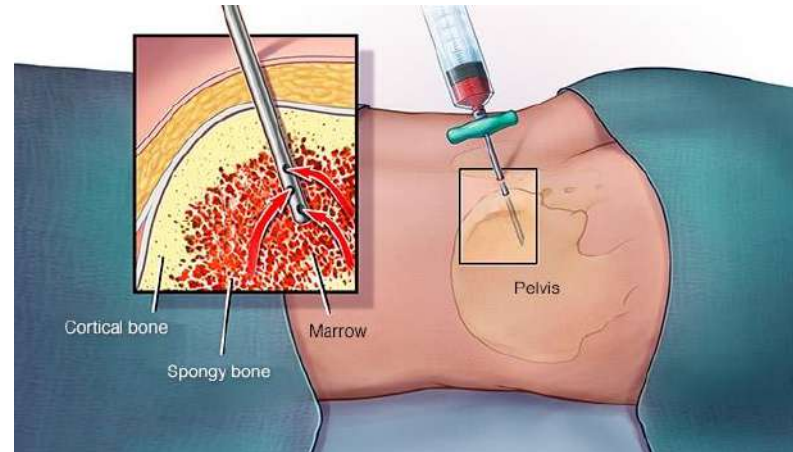
- Though high dose of oral Vitamin B12 is not very toxic, as excess quantity get excreted in the urine however it may cause headache, dizziness, nausea and vomiting

Persistently increased levels of Vitamin B12 are seen in:-

- Liver disease due to release of B12 from damaged liver cells into the bloodstream
- Kidney disease due to impaired function of the kidneys to excrete excess B12
- Increased levels of transcobalamin, which is a transporter of B12 in the bloodstream
- Inflammatory conditions: rheumatoid arthritis, lupus
- Hematologic cancers: acute leukemia, multiple myeloma
- Hematopoietic disorder: myeloproliferative neoplasm, myelodysplastic syndrome, hypereosinophilic syndrome, transient neutrophilia

Mr APS... Haematologist's opinion

- His family physician referred the Patient to haematologist for further evaluation in absence of history of taking Vitamin B12.
- The haematologist gave appointment for Bone Marrow Aspiration



- Since LFT KFT were normal, in absence of information of patient taking Vit B12 the haematologist was precise in advising Bone Marrow Aspiration

Mr APS... second opinion

- After realizing that it's an invasive and traumatic procedure he consulted me for second opinion
- I asked the patient to bring all the prescriptions, reports and medicines including supplements/alternative medicines he is taking or has taken during last 3 to 6 months

A medical report with a pen pointing to a value.

Kleines Blutbild	W	6.1	T/l
Leukozyten	P	5.1	g/d
Erythrozyten	R	15.4	fl
Haemoglobin	R	89	pg/
MCV	R	30	g/c
MCH	R	34	l/
MCHC	R	0.45	G/
Haematokrit	R	233	ng
Thrombozyten	R	149	pg
Trijodthyronin	C	7.9	ml
Thyroxin	C		
TSH basal	C		
Fettstatus	P	5.3	
Harnsäure	P	95	
Glucose	P	86	
Triglyceride	P	258	
Cholesterin	P	65	
HDL-Cholesterin	P		

- After going through his full bag of medicine I discovered that he has been taking full dose of Vitamin B12 (Neurokind LC) for last 6 months and double dose for 3 months when he was prescribed Maxner – G by the diabetologist
- I advised him to stop Neurokind LC and repeat B12 level after 4 weeks

Mr APS.... One month after stopping Vit B12 Completely

- After 1 month the B12 level came down to around 1250.

<u>Investigation</u>	<u>Observed Value</u>	<u>Unit</u>	<u>Biological Reference Interval</u>
Vitamin B12 level (Serum,ECLIA)	1248	pg/mL	197-771

Interpretation :

1. Vit B12 levels are decreased in megaloblastic anemia, partial/total gastrectomy, pernicious anemia, peripheral neuropathies, chronic alcoholism, senile dementia, and treated epilepsy.
2. An associated increase in homocysteine levels is an independent risk marker for cardiovascular disease and deep vein thrombosis.
3. HoloTranscobalamin II levels are a more accurate marker of active VitB12 component.

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Impact

- The patient was saved from unnecessary trauma and expenditure by asking him to bring all the medicines he is taking. .



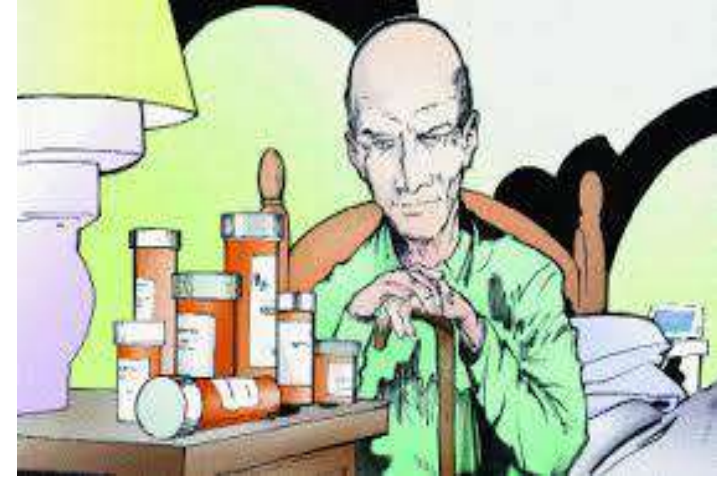
Risk Factors for Polypharmacy

- **Patient:**

- Senior citizen
- Cognitive Impairment, Mental health condition
- Frailty
- Lack of primary care physician
- Multiple chronic conditions (DM, HT, CAD, CVA, CA)
- Multiple Specialists
- Not disclosing all prescriptions, medicines (including over the counter & alternative medicines)

- **Health care system:**

- Poor medical record keeping
- Poor transition of care
- Prescribing to meet disease specific quality measures
- Not probing other medicines taken by the patient



Challenges in Detecting Polypharmacy

- **Problems due to medications may occur**
 - Without any changes to the medication
 - Advancing age
 - Coincident with acute illness or symptoms
- **ADRs masquerade as age-related changes**
 - Atypical presentation of adverse effects
 - Side effects difficult to interpret, may go unreported
 - Prescribing cascade
- **Infrequent Medication Review**
 - There is a lack of incentive to deprescribe



Strategies to limit the potential harms due to polypharmacy

1. Assess risk for polypharmacy
2. Regular review of medications in all older/chronic patients
3. Inform caregivers of medication changes to increase the chance of detecting problems as soon as possible
4. Choose medications with the fewest side effects
5. Stop unnecessary medications
6. Consider the impact of medications on quality of life
7. Consider the person's ability to take medications and remember to take them



Role of the pharmacist in medication safety

1. Check if two similar drugs have been prescribed
2. If there is discrepancy in patients age/weight and dose counter check with prescribing doctor
3. Prescribing Error – incorrect drug selection based on
 - a) indications, contraindications, known allergies, existing medication therapy etc.
 - b) dose, quantity, route, concentration, or instructions by Physician omission/error



Patient's Role

1. One family member should accompany with you while visiting for consultation
2. List your complaints (signs & symptoms) and queries before visiting for consultation.
- 3. Reveal medical history, allergies and medicines/supplements before examination**
4. If possible, re-confirm from the doctor if you had purchased right medicine
- 5. Self medication and investigation can lead to complications and wastage of money.**
6. Report to your doctor if you develop any unexpected symptom
7. Ask questions about how to use the medication.
- 8. Use of two similar drugs of two different brand names**
- 9. Use same pharmacy for your medicines. Your pharmacist understand your disease, medication and dosage. Do remind if your doctor has changed medicine or dosage**



Lessons to be Learnt

- Patient was on self-medication (for Neurokind LC) - **AVOID**
- Patient missed 3 chances (to Diabetologist, Family physician & Hematologists) to reveal ingestion of B12 (Neurokind LC) for long time. **ALWAYS REVEAL**
- Three doctors (Diabetologist, Family physician and Hematologist) missed to probe/investigate ingestion of other medicines/supplements. **HCP SHOULD PROBE PROACTIVELY**
- **Both patient and Health care providers missed 3 opportunities to avert “NEAR MISS” harm**
- **Fortunately here the medicine in discussion was B12 a water soluble vitamin which is very safe. In other cases there could have been a serious adverse event or death**