

RATIONAL USE OF MEDICATIONS & COMPLIANCE



History

2

- Prescriptions have been in use since ancient times
 - ▣ Latin adopted as standard language
 - ▣ “Rx” = prescription

What is a prescription?

3

- A prescription is a written, verbal, or electronic order from a practitioner or designated agent to a pharmacist for a particular medication for a specific patient





Why Family Medicine/PHC and Rational Use of Drugs?

Barbara Star Field Study related to the practice of Family Medicine and health outcome indicators' of a country.

- The studies showed relationship b/w more & better primary care & most health outcomes studied.
- Evidences shows a positive impact of primary care on prevention of illness & death.
- Primary care (in contrast to specialty care) is associated with a more equitable distribution of health in populations.
- One primary care physician / 10,000 population.
- In US 127,617 deaths /year could be saved by increase in number of primary care physicians.

Is it always Necessary to Prescribe ?

6

- Diagnosis is still in doubt ?
- Value of treatment is debatable ?
- Combinations & formulations are irrational ?

WHAT IS GOOD PRESCRIBING ?

7

- *Appropriate drug
- *in the correct dose
- *of an Appropriate formulation
- *At the correct frequency of administration
- *For the correct length of time

GOOD PRESCRIBING INCLUDES..

8

* not prescribing any drug at all...



GOOD PRESCRIBING REQUIRES:

9

1. DETAILED KNOWLEDGE OF THE PATHOPHYSIOLOGY OF THE DISEASE of the patient.
2. CLINICAL PHARMACOLOGY OF THE DRUGS you are intended to use.

HOW TO CHOOSE A DRUG ?

10

- *Ask the following sequence of questions before writing the prescription
- *Is the drug therapy Indicated ?!!
- *Which drug?
- *Which class---which group-----which particular drug
- *Which route?
- *Which formulation?
- *What dosage regimen?

Why so irrational ?

11

- Increased cost of un-necessary prescription to the health care system.
- Harmful prescribing fails to meet acceptable standards.
- Chances of poly-pharmacy – effecting vulnerable groups like elderly.

How we can improve prescribing Habits

12

- There is no such thing as
GOOD MEDICINE or BAD MEDICINE

“A good prescribing is the prescribing based on the best available evidence & current guidelines “

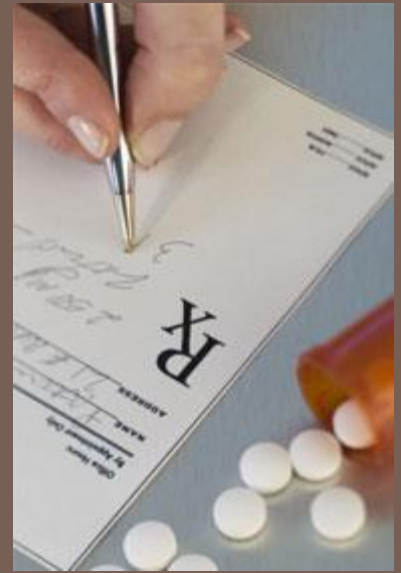
Evidence – Based Prescribing

Failure to do this may:-

- Cause patients to suffer unnecessary side effects of ineffective drugs.
- Deprive patients the chance to benefit from effective treatments.
- Waste valuable resources.



Advantages of Generic Prescribing



1. Reduced cost
2. Professional convenience; everyone knows it
3. Convenient to the patient
4. Convenient to the pharmacist

Reason for not Prescribing Generically

1. Drugs with a low therapeutic index e.g. Lithium, Carbamazepine, Phenytoin (small difference in plasma concentration can be significant)
2. Modified release formulations, difficult to standardize e.g. Diltiazem, Nifedipine.
1. Formulations containing ≥ 2 drugs.



How to prescribe Rationally

16

- Is a drug really required ?
- Will it work ?
- Will it harm ?
- Is it the cost –effective choice ?
- Have all alternatives been considered ?
- Is the likely risk-benefit ratio acceptable ?

Impact of irrational prescribing:

17

- * Delay in cure
- * More adverse effects
- * Prolonged hospitalization
- * Emergence of antimicrobial resistance
- * Loss of patient's confidence in the doctor
- * Loss to the patient/community
- * Lowering of health standards

Who is a good prescriber?

18

- One, who ensures that diagnosis is correct.
- Makes a positive & correct decision that drug is needed.
- Chooses a drug appropriate to patients need.
- Who consults patient and ensures his/her informed consent.
- Who explains patient's role and secures his/her co-operation.
- Who terminates treatment when no longer needed.

Social reasons for inappropriate prescribing

19

- Any pressure of pharmaceutical advertising.
- Patient's demand.
- Habit , peer group recommendation & ignorance.
- To avoid confrontation .
- Because of medico legal worries.
- To play for time until true picture becomes clearer or natural recovery occurs.
- To hasten the conclusion of consultation.

What is a Placebo medication

20

- A harmless pill, medicine, or procedure prescribed more for the psychological benefit to the patient than for any physiological effect.



Placebo medication

21

- Evidence shows that response can be psychological as well as physiological ;
- Conditions that could be helped are . for example:
 - Anxiety
 - Depression
 - Asthma
 - Headaches
 - Insomnia
 - Social problems

Placebo side effects

22

- It has been reported that 40% can also experience side effects like ;
 - Headache
 - Anorexia
 - Diarrhea
 - Dry mouth
 - Palpitations
 - Vertigo.

Prevention of Adverse Drug Reactions

- Never use a drug unless there is a good indication.
- Do not use a drug in pregnancy, unless the need for it is imperative.
- Ask if there is H/O allergy/idiosyncrasy.
- Consider possible drug interaction.
- Age and hepatic or renal impairment may require much smaller doses.

Prevention of Adverse Drug Reactions Cont..

24

- Prescribe as few drugs as possible.
- Give clear instructions, especially in elderly.
- Be particularly alert for adverse reactions or unexpected events, when prescribing new drugs.
- Fill the required form in case of suspected adverse reaction.
- Warn the patient if serious adverse reactions are liable to occur.

Delayed Drug Effects

Some adverse reactions may become manifest months or years after treatment e.g. chloroquine retinopathy.

Principles for antibiotic selection

26

Allow for a number of variables:

- H/o allergy / sensitivity
- State of renal and hepatic function
- Increasing resistance
- New information on side effects
- Age of patient & duration of therapy
- Dosage and route of administration



Principles for antibiotic selection Cont.....

27

- Site, type and severity of infection
- Individual response
- If female, whether pregnant, breast feeding or on oral contraceptives
- Likely organism and antibacterial sensitivity ?

Special Problems in Prescribing

- Delayed drug effect.
- In elderly.
- In children.
- In hepatic impairment.
- In renal impairment.
- In pregnancy.
- In breast feeding.
- In palliative care.
- Drug inter-actions.



Prescribing for Elderly

- A. Limit range of drugs.
- B. Reduce dose.
- C. Review regularly.
- D. Simplify regimens.
- E. Explain clearly.
- F. Repeats and disposal.

Prescribing for Children

- A. Special care needed in neonates
- B. Avoid injections if possible
- C. Actions of drugs and their pharmacokinetics may be different than adults
- D. Suitable formulations may not be available for children
- E. Drugs are not extensively tested in children

Prescribing in Hepatic Impairment

- A. Impaired drug metabolism
- B. Hypoproteinaemia
- C. Reduced clotting
- D. Hepatic encephalopathy
- E. Fluid overload
- F. Hepato-toxic drugs

Prescribing in Renal Impairment

- A. Reduced renal excretion of a drug
- B. Increased sensitivity to some drugs even if elimination is not impaired
- C. Many side effects are tolerated poorly
- D. Some drugs become ineffective

Prescribing in Pregnancy

Particular care is needed in prescribing for women in child bearing age or men trying to father a child.

- A. First trimester – congenital malformations
- B. Second and third trimester – effect on the growth or the functional status of fetus, including toxic effect on fetal tissues.

Shortly before term or during labour – possible adverse effect on labour or neonate, after delivery.

Prescribing in Breast-feeding

Avoid drugs (if possible) which:

- A. Cause inhibition of sucking reflex (e.g. phenobarbital).
- B. Suppress lactation (e.g. bromocriptine)
- C. Appear in a significant quantity in the milk (e.g. fluvastatin).

If not sure, look up at the therapeutic guidelines from a reputable source (e.g. BNF).

Prescribing in Palliative Care

1. The importance of pain relief and other symptoms are more important than sticking to the usual drugs or dosages.
2. Oral medications are preferable, if possible.
3. As few drugs as possible should be prescribed.
4. Doctor – patient relationship is usually more effective than the drug.

Drug Interactions

A Family Physician is not expected to know all the possible drug interactions, but awareness of some important categories is imperative:

- Anti-convulsants
- Oral contraceptives
- Warfarin

Risks of self medication

37

- Always risk of drug interaction with prescribed medicine.
- Increased risk of self-medication side effects.
- Taking wrong preparation & wrong formulations.
- Less chances to offer any opportunistic health promotion advice .



Prescription Writing

Who can write a Rx?

39

- Practitioners
 - ▣ Physicians, veterinarians, dentists

Prescription Formatting

40

- Heading
- Body
- Closing

Heading

41

- ▣ Name, address, and telephone number of the prescriber
- ▣ Name, sex and age of the patient
- ▣ Date of the prescription

- Patient Name and Address
 - Full first and last name
 - Middle initial may be helpful
 - DOB – not required, but will be helpful in further identifying the correct patient to prevent medication errors

- Practitioner's Name, Address, and Phone number
- Provides contact information to clarify any questions

Body

44

- ▣ Name
- ▣ dose size or concentration (liquids) of the drug
- ▣ Amount to be dispensed
- ▣ Directions to the patient

List of dangerous abbreviations, acronyms, and symbols

45

Abbreviation	Potential Problem	Preferred Term
U (unit)	Mistaken as zero, four	Write “unit”
IU (international unit)	Mistaken as IV or 10	Write “international unit”
Q.D., Q.O.D.	Mistaken for each other. Period after Q and O after Q can be mistaken for “l”	Write “daily” and “every other day”
MS, MSO4, MgSO4	Confused for one another	Write “morphine sulfate” or “magnesium sulfate”

- Tablets - tab
- Capsule – cap
- Syrup – syr
- Suspension – susp
- Injection – Inj
- Metered dose inhaler – as such
- Lotion – as such

- Strength of the drug

- ▣ Decimal points

- Avoid trailing zeros.

EX. 5 mg vs. 5.0 mg; can be mistaken for 50 mg

- Always use leading zeros.

EX. 0.8 ml vs. .8 ml; can be mistaken for 8 ml

Latin abbreviations frequently used in prescription writing

<i>Abbreviation</i>	<i>Latin</i>	<i>English</i>
ad lib.	<i>ad libitum</i>	at pleasure
a.c.	<i>ante cibum</i>	before meals
aq.	<i>aqua</i>	water
<u>b.i.d.</u>	<i>bis in die</i>	twice a day
<u>caps.</u>	<i>capsula</i>	capsule
̄	<i>cum</i>	with
d.	<i>dies</i>	a day, daily
disp.	<i>dispensa</i>	dispense
gtt.	<i>guttae</i>	drops
h.	<i>hora</i>	hour
h.s.	<i>hora somni</i>	at bedtime
non rep.	<i>non repetatur</i>	do not repeat (or refill)
no.	<i>numerus</i>	number, amount
p.c.	<i>post cibum</i>	after meals
p.r.n.	<i>pro re nata</i>	as needed
q.h.	<i>quaque hora</i>	every hour
q. 4 h.	<i>quaque quarta hora</i>	every 4 hours
<u>q.i.d.</u>	<i>quater in die</i>	four times a day
<u>Sig.</u>	<i>signa</i>	let it be labeled, label
<u>stat.</u>	<i>statim</i>	immediately
<u>tab.</u>	<i>tabella</i>	tablet
<u>t.i.d.</u>	<i>ter in die</i>	three times a day

Closing

49

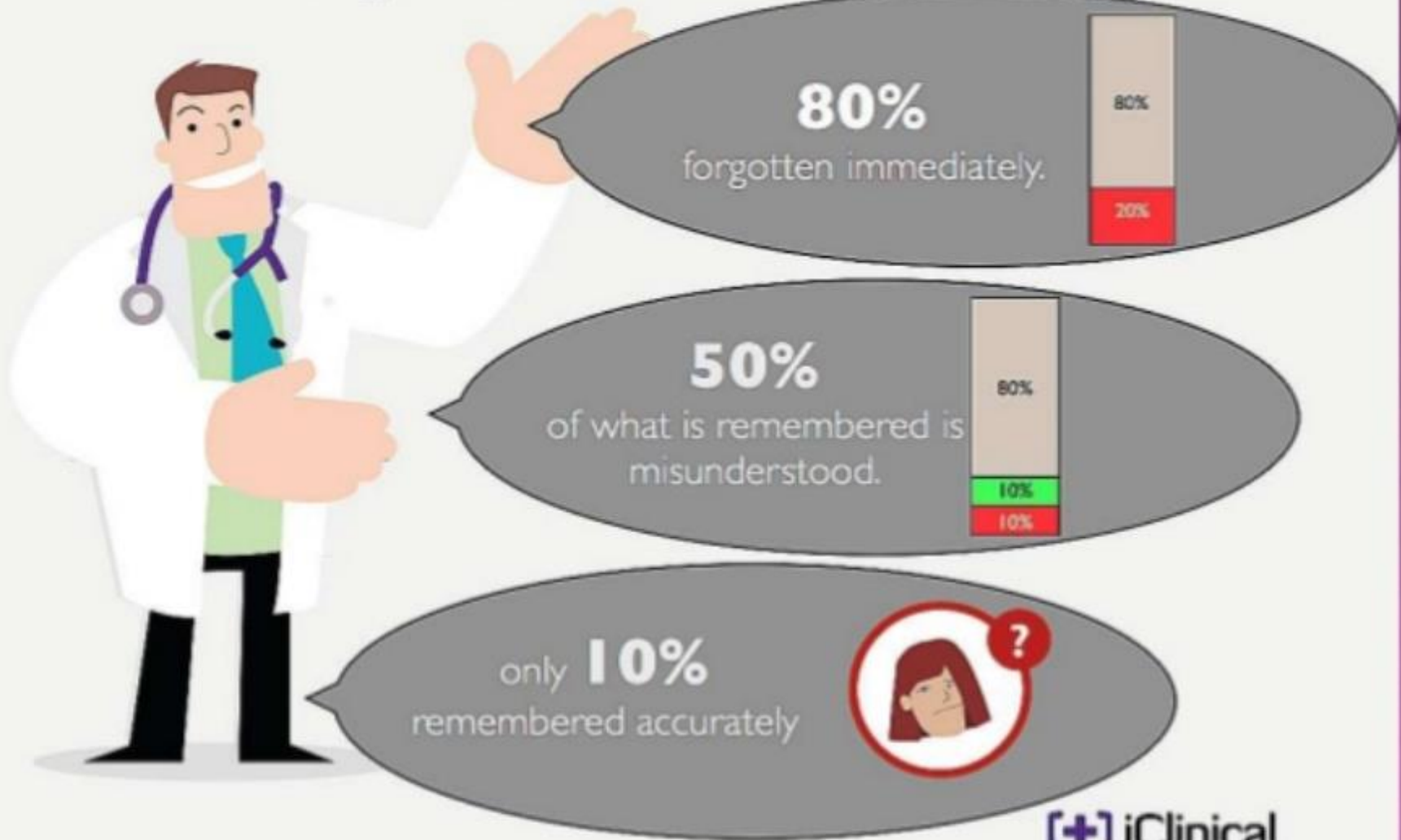
- ▣ Prescriber's signature
- ▣ Refill instructions
- ▣ Generic substitution instructions



Patient compliance or adherence (capacitance)

- Patient compliance describes the degree to which a patient correctly follows medical advice.
- Most commonly, it refers to medication or drug compliance, but it can also apply to other situations such as medical device use, self care, self-directed exercises, or therapy sessions

Average Retention of Patient Education

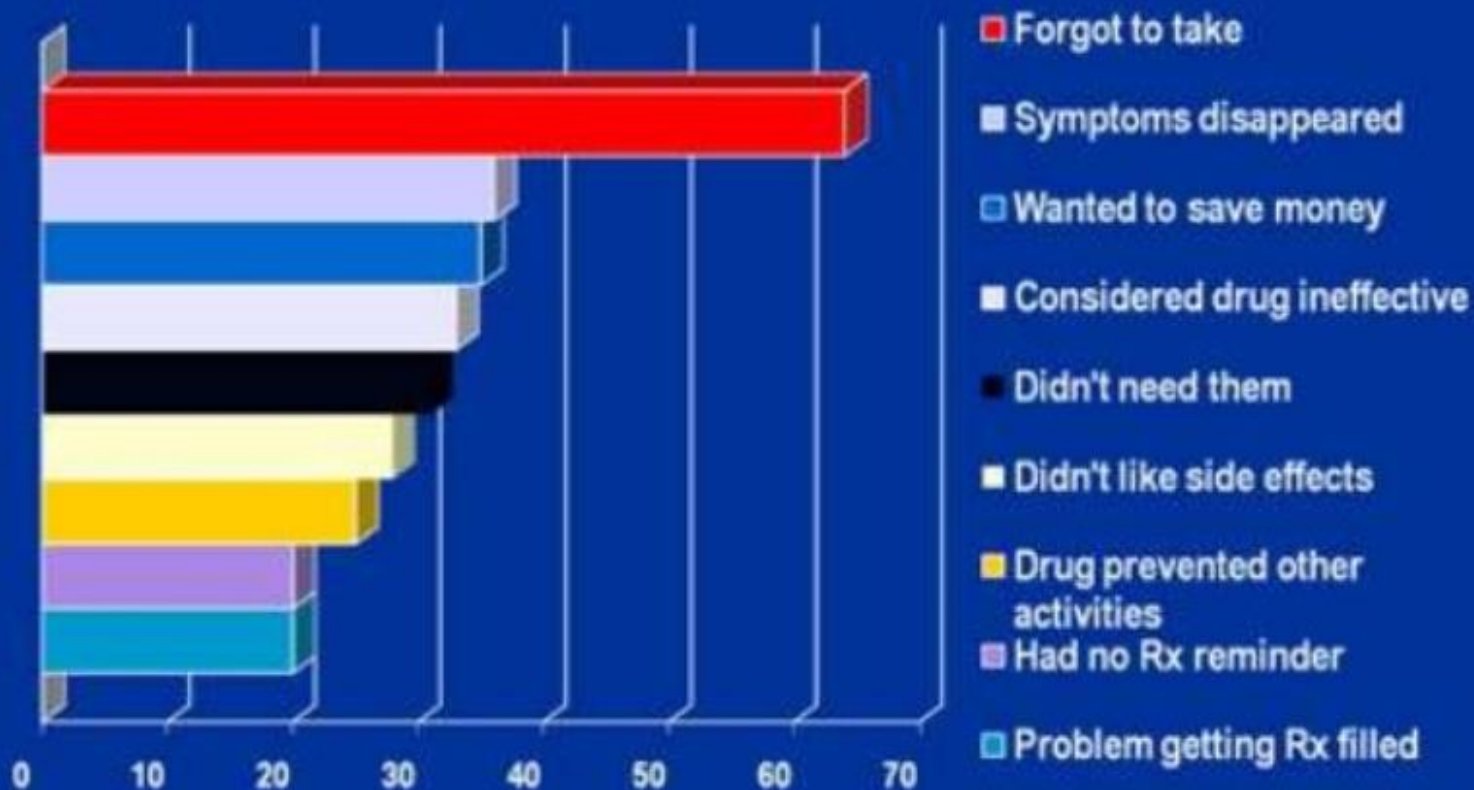


When is adherence important?

53

- Replacement therapy – insulin, thyroxine
- Maintenance of pharmacological effect – antihypertensive drugs
- Maintenance of serum drug concentration to control a particular disorder – anticonvulsants
- To control diseases of public health – HIV, TB
- In chronic diseases
- Contraceptive pills
- Overdose which causes serious health hazards

Reasons For Not Taking Medications



Wall Street Journal Online, Harris Interactive 2005

Factors Related to Poor Compliance

1. Purpose of medicine not clear to patient.
2. Perceived lack of efficacy of medicine.
3. Real or perceived adverse effects by the patient.
4. Lack of understanding between the doctor and the patient.
5. Instructions for administration not clear.
6. Unpleasant taste.
7. Complicated regimen – poly-pharmacy.
8. Physical difficulty in taking medicines.

Medicines too costly.

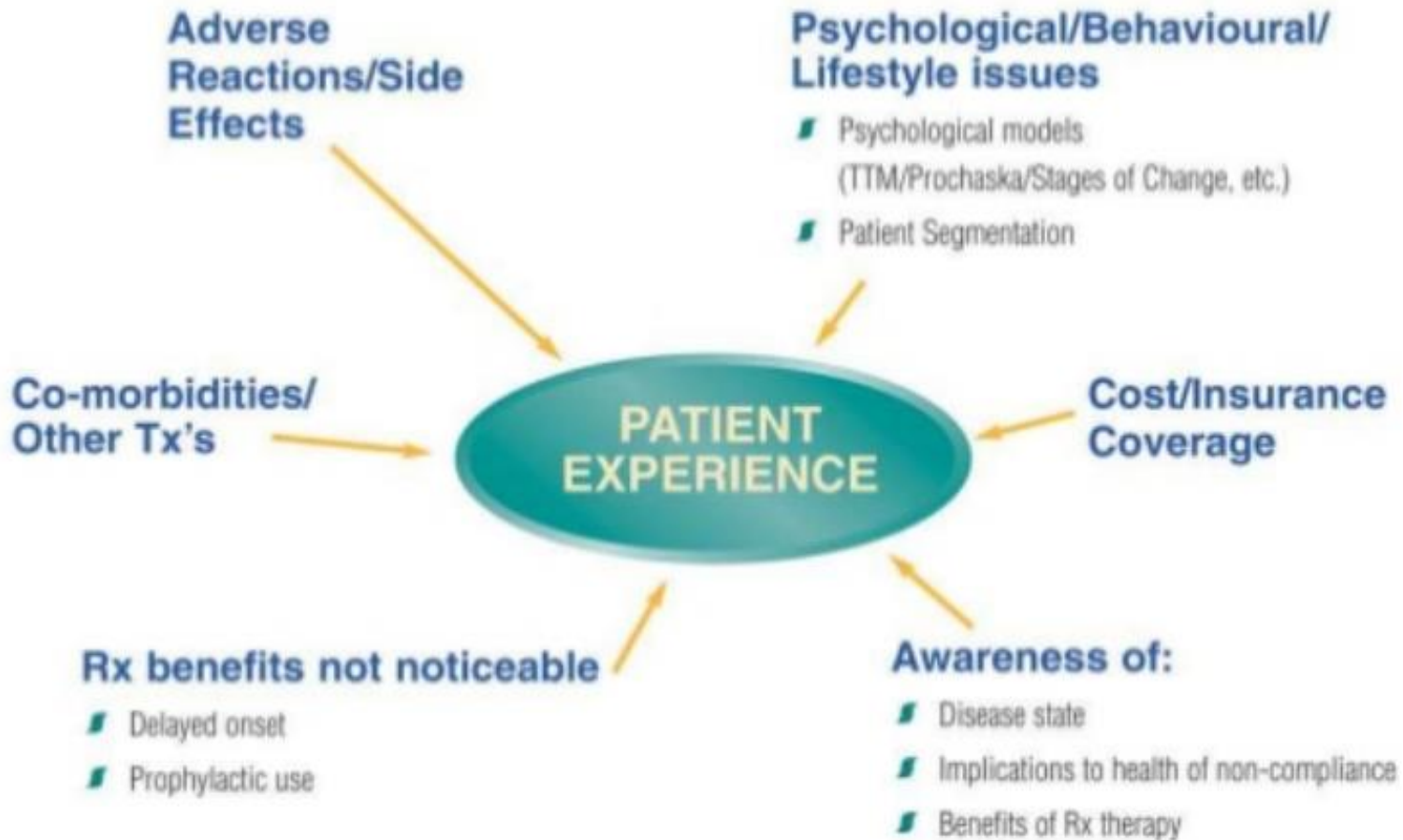
Methods to detect non-adherence

56

- Direct objective –measure blood or urine levels of drugs
- Indirect objective – pill count - Prescription refill
- Health outcome measures – BP control, asthma severity
- Utilization of health care services
- Clinic attendance
- Appointment making
- Appointment keeping
- Indirect subjective – patient interview & diary keeping

Factors affecting compliance

57



Detection and improvement of compliance

58

- ❑ To track the record whether the patient is following the prescribed medications or not: for this electronic access to patient prescription and refill records is checked.
- ❑ By using electronic questionnaire system.
- ❑ By appointing nurse case managers which checks the patient adherence and non-compliance at a very personal level.
- ❑ Utilizing pharmacist as a tool to resolve noncompliance.
- ❑ Long, complex and redundancy of drug regimens also lead to non compliance so; this point should also be taken care in mind while prescribing the medication.

Detection and improvement of compliance

59

- By the use of generic drugs which are more cost effective as that of branded drugs

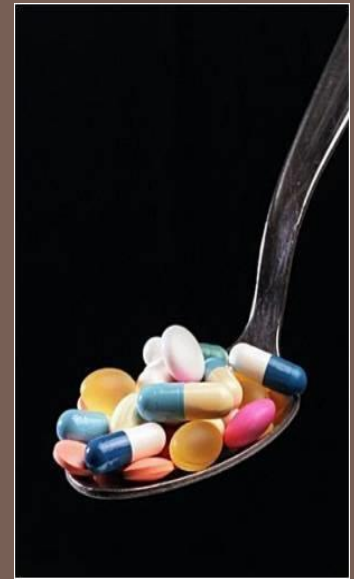
Practice Formulary

An effective way to limit prescribing and costs of prescribing:

Essential features:

- Evidence of efficacy
- Evidence of safety
- Cost-effectiveness
- Local policy

- While prescribing, apply the saying 'think before you ink' – by prescribing this drugs are you going to do more harm or more good?
- Factors related to compliance of medications by the patient must be considered.
- Cost-effective and generic prescribing is generally preferable.
- Prescribing in special circumstances requires special attention.



Thank You