

# OPPORTUNITIES FOR PHARMACISTS IN DELIVERING VALUE IN HEALTHCARE

**Prof Praneet Valodia**

**Cell: 072 0707700**

**Office: 021 6385932**

**[pvalodia@pvconsulting.org](mailto:pvalodia@pvconsulting.org)**

# Disclaimer

- This presentation reflects my own views and does not reflect the views of any company or organization that I am affiliated with.
- I declare that I have received sponsorship from PMSA to attend this conference.

# Outline

- Opportunities for pharmacists
  - Task shifting
  - Harm reduction
  - Health outcomes measurement
- Practical examples: value of a pharmacist

# Opportunities for pharmacists

Guidelines for pharmacist-initiated therapy

- evidence-based guidelines
- self-medication formulary

Drug Utilization Review (DUR)

Task shifting involving pharmacists

Harm reduction interventions

Measure health outcomes

- pay for performance

Collection of clinical data

# Tasking shifting

- more efficient use of existing human resources

Global recommendations and guidelines. 2008, WHO

Process whereby specific tasks are moved, where appropriate, to health workers with shorter training and fewer qualifications – save on costs.

# What is harm reduction?

- Refers to policies and interventions to reduce the harmful consequences of alcohol, tobacco, marijuana and other psychoactive substance use.
- Minimises the negative health impact of a risky activity without stopping it entirely.
- Harm reduction = reduce risk of a harmful activity by using safer alternatives.

# Health Outcomes measurement

- ‘Outcome measurement is perhaps the single most powerful tool in revamping the health care system’.
- ‘Measure outcomes for every patient’.

Porter ME. What is value in health care? NEngl J Med 2010; 363: 2477-81

# Practical example: Epilepsy

Task-shifting

Health outcomes measurement



# Clinical pharmacokinetic service

- Referral by doctor
- Demographic data
- Concurrent medicines
- Duration of treatment
- History of seizures
- Frequency of seizures
- Description of seizures
- Alcohol and smoking
- Admission to hospital
- Toxicity
- Seizure diary
- Compliance checks
- Counselling – missed doses
- Tablet counts
- Time to steady state calculation
- Serum phenytoin samples
- Determination of  $V_m$  and  $K_m$
- Calculation of dose
- Prediction of new PHT dose
- Report to doctor
- Phenytoin toxicity
- Oral loading dose

# Phenytoin kinetics

$$Vm = \frac{S.F.R}{Cp_{ss}} Km + S.F.R$$

$$Km = \frac{R_2 - R_1}{\frac{R_1}{Cp_{ss1}} - \frac{R_2}{Cp_{ss2}}}$$

$$R = \frac{Vm \times Cp_{ss} \times \tau}{(Km + Cp_{ss})(S)(F)}$$

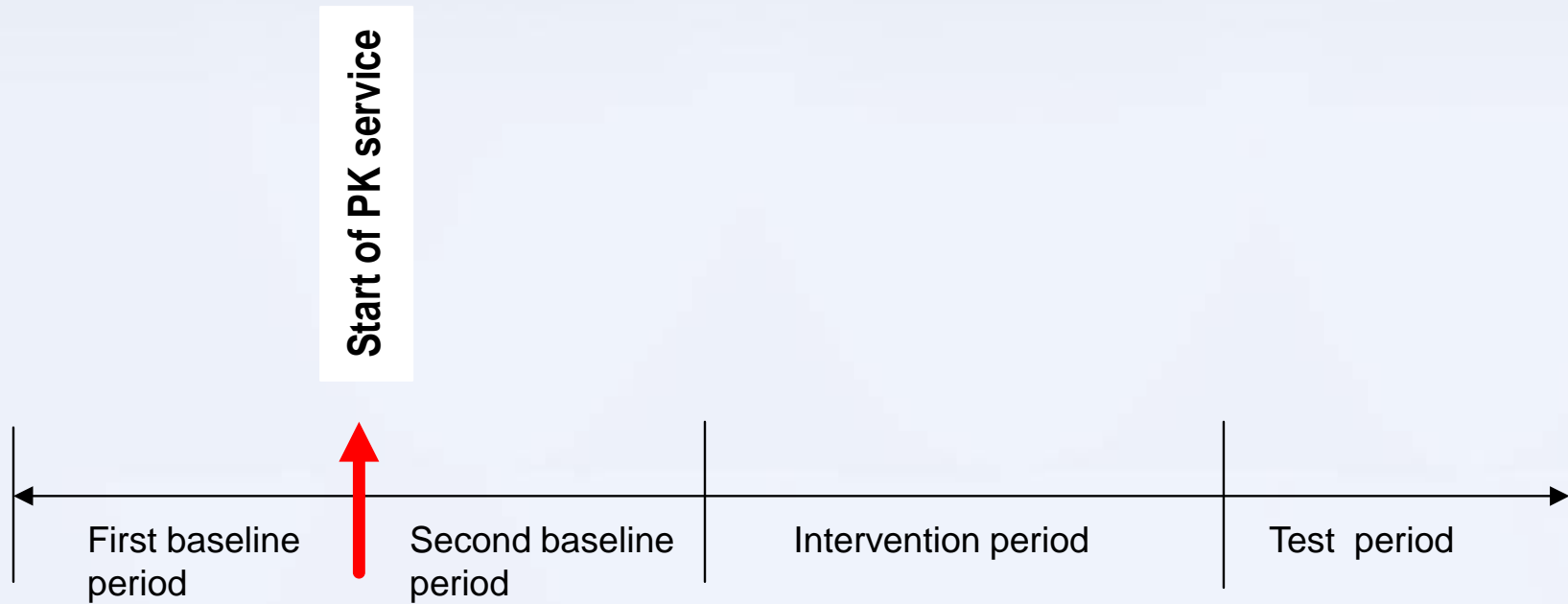
$$Cp_{ss} = \frac{Km + (S)(F)(R)}{Vm - (S)(F)(R)}$$

# Phenytoin kinetics

$$t_{90\%} = \frac{K_m \times V_d}{(V_m - S.F.R.)^2} \times (2.303V_m - 0.9S.F.R.)$$

$$LD = V_d (CP_{desired} - CP_{achieved})$$

# Health outcomes measurement



P. Valodia et al, Benefits of a clinical pharmacokinetic service in optimizing phenytoin use in the Western Cape. SAMJ.1998,88:873-875

# Results

- Reduction in seizure frequency = 65%
- Reduction in adverse effects

Visit	% patients
First visit	20,5%
Last visit	3,2%

Based on phenytoin blood samples

P. Valodia, PI Folb, BM Kies, MA Seymour. Benefits of a clinical pharmacokinetic service in optimizing phenytoin use in the Western Cape. SAMJ.1998,88:873-875

$$Cp_{ss} = -\frac{1}{2} \left[ \left( \frac{Vm}{Cl} + Km - \frac{R}{Cl} \right) - \sqrt{\left( \frac{Vm}{Cl} + Km - \frac{R}{Cl} \right)^2 + \frac{4 \cdot R \cdot Km}{Cl}} \right]$$

$$Vm = (\theta_1 * WT * \theta_3) RACE * SMK * ALC * SEX * AGE * EXPn_1$$

Where RACE =  $\theta_4$  if coloured, otherwise = 1  
 SMK =  $\theta_5$  if smoker, otherwise = 1  
 ALC =  $\theta_8$  if drinker, otherwise = 1  
 SEX =  $\theta_9$  if male, otherwise = 1  
 AGE =  $\theta_{10}$  if  $\geq 65$  years, otherwise = 1

$$Km = \theta_2 * RACE * AGE * EXPn_2$$

where RACE =  $\theta_7$  if coloured, otherwise = 1  
 AGE =  $\theta_{11}$  if  $\geq 65$  years, otherwise = 1

$$Cl = \theta_{11} * EXPn_3$$

P. Valodia et al. Factors influencing the population pharmacokinetic parameters of phenytoin using non-linear mixed effects modelling in adult epileptic patients in South Africa. Therapeutic Drug Monitoring. 1999.21: 57-62

# Learning points from phenytoin study

- Impact of task shifting
- Value of measuring health outcomes
- Extent of inappropriate use of phenytoin

# Practical example: Asthma

Collection of clinical information  
Health outcomes measurement



FIRST VISIT	SECOND VISIT	THIRD VISIT	FOURTH VISIT
Demographics	Inhaler technique	Self management	Compliance checks
Medicines	Triggers	Knowledge	Inhaler technique
Symptoms	Peak flow	Quality of life	Peak flow
Compliance	Dosage form	Productivity	Knowledge
Assess asthma control	Assess asthma control	Assess Asthma control	Assess asthma control
	Spacer device	Patient satisfaction	Spacer device
	Nebulisation		Nebulisation
	Warning signs		Quality of life
			Productivity
			Patient satisfaction

Harm reduction intervention



# Conclusions

Measure health outcomes

- pay for performance

Guidelines for pharmacist initiated therapy

- evidence-based guidelines
- self-medication formulary

Collection of clinical data

Drug Utilization Review (DUR) T

Task shifting involving pharmacists

Harm reduction interventions

Need a paradigm shift in our thinking!!

Need experimentation and adaptation