

## DRUG UTILISATION RESEARCH

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## DISCLOSURE

- Some of the slides are from educational materials developed for previous training workshops by INRUD and WHO.

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South Africa

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## OBJECTIVES

- To highlight the importance of drug utilisation research
- To describe the types of DUR
- To describe the skills needed for DUR
- To describe study designs in DUR
- To describe the components of WHO core indicators for DUR

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## DEFINITIONS: Drug Utilisation Research (DUR)

The marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequence (WHO, 1977)

An eclectic collection of descriptive and analytical methods for the quantification, the understanding and the evaluation of the processes of prescribing, dispensing and consumption of medicines and for the testing of interventions to enhance the quality of these processes (2008)

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## DEFINITIONS ( Contd)

- **Pharmacoepidemiology**

Pharmacoepidemiology is the branch of epidemiology that studies the use and effect of medicines in specific populations. It studies the relationships between patients, diseases, and medicines

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## IMPORTANCE OF DRUG UTILISATION STUDIES

- Overall objective is to promote rational use of medicines

- Specifically :

- For description of drug use pattern
- Detecting early signals of irrational use of drugs
- Interventions to improve drug use
- Quality control cycle
- Continuous quality improvement

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## RATIONAL USE OF MEDICINES

- The rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and at the lowest cost to them and their community.

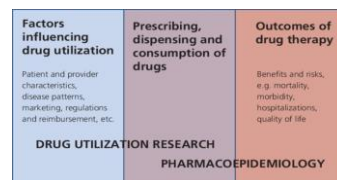
(WHO conference of experts Nairobi 1985)

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## LINK BETWEEN DUR AND PE

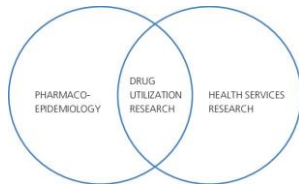


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## LINK BETWEEN DUR AND PE



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## SKILLS NEEDED FOR DUR

- Eclectic collection of descriptive and analytical methods for the quantification
  - Classification systems (ATC)
  - Measurement units (DDD)
  - Biostatistical methods (descriptive statistics, sampling etc)
  - Epidemiology study designs
- Understanding
  - Qualitative methods (FGD, in-depth interviews)
  - Purposive sampling, triangulation

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## SKILLS NEEDED FOR DUR (Contd)

- Evaluation
  - Evaluation techniques
- Prescribing, dispensing and consumption of medicines
  - Data collection from patients (questionnaire, data collection forms, prescriptions etc)
  - Rational use of medicines guidelines, critical drug evaluation

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## SKILLS NEEDED FOR DUR (Contd)

- To enhance the quality of these processes (2008):
  - Quality standards for prescribing, dispensing and consumption of medicines
  - Quality assessment tools
  - Quality indicators

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TYPES OF DRUG UTILIZATION STUDIES

- Studies on prescription habits
- Studies on patient compliance/adherence
- Studies on patients' knowledge about drugs
- Studies on drug effects
- Descriptive studies, determinants of drug utilization and the impact of drug use
- Cost studies (may be based on units sold)

STUDY DESIGNS IN DUR

- Quantitative research
  - Measure , explain, predict and generalize observation
  - Associations and differences between variables may be studied
- Qualitative research
  - To discover underlying meanings and patterns of relationships
  - Not in numerical form
  - Focus group discussion, open ended questionnaires, in-depth interview

DIFFERENCES BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCH

Difference between Qualitative Research (QLR) and Quantitative Research (QNR)	
Qualitative Research	Quantitative Research
Purpose of research is to gain in depth understanding of phenomena	Purpose of research is to generalize results from sample to population
Small sample of mostly non representative cases	Large sample of representative cases
Unstructured or semi structured data collection techniques	Standardized techniques i.e. scales, questionnaires or tests etc
Use non statistical techniques	Use of statistical techniques
Often exploratory in nature	Generalization
Not clearly defined research question	Clearly defined research questions
Development of theory	Verify the theory

QUANTITATIVE OBSERVATIONAL STUDY

- Descriptive studies:
  - Case reports
  - Cross-sectional study
  - Longitudinal observational study
- Analytical studies:
  - Permits evaluation of causal effect association between exposure and outcome
  - Case-control study
  - Cohort study

CROSS-SECTIONAL STUDY IN QUANTITATIVE RESEARCH

Title	Design	Country
Prescribing pattern of psychotropic medications in child psychiatric practice in a mental referral hospital in Botswana	Cross-sectional	Botswana
Prescription audit in a paediatric sickle cell clinic in South-West Nigeria: A cross-sectional retrospective study.	Cross-sectional	Nigeria
Prescription pattern and prevalence of potentially inappropriate medications among elderly patients in a Nigerian rural tertiary hospital.	Cross-sectional	Nigeria
Antibiotic prescription pattern in a Ghanaian primary health care facility.	Cross-sectional	Ghana
Antibiotic-prescribing patterns of South African dental practitioners following tooth extractions.	Cross-sectional	South Africa

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CROSS-SECTIONAL STUDY IN QUANTITATIVE RESEARCH

Title	Method	Country
Seventeen-Year Nationwide Trends in Antihypertensive Drug Use in Denmark	Longitudinal	Denmark
Trends and patterns of five antihypertensive drug classes between 2007 and 2012 in China using hospital prescription data.	Longitudinal	China
Real-world antidiabetic drug use and fracture risk in 12,277 patients with type 2 diabetes mellitus: a nested case-control study.	Case-control	Spain
Metformin, other antidiabetic drugs, and endometrial cancer risk: a nested case-control study within Italian healthcare utilization databases.	Case-control	Italy
Patterns and predictors of analgesic use in pregnancy: a longitudinal drug utilization	Longitudinal	Norway

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USES OF QUANTITATIVE DUR

- To estimate drug utilization in populations by demographic characteristics
- Used as denominators to calculate rates of ADRs
- To monitor:
  - Specific therapeutic categories
  - Effects of regulatory activities
- Markers for crude estimates of disease prevalence
- To plan importation, production & distribution
- To estimate drug expenditures

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USES OF QUALITATIVE DUR

- To study appropriateness of drug uses
  - Indications
  - Daily dose
  - Length of therapy
- To assess clinical efficacy (high intrinsic value) of most common sold drugs

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### WHO CORE INDICATORS

- Prescribing
- Patient Care
- Facility

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### PRESCRIBING INDICATORS

- Average number of drugs
- Percentage antibiotics
- Percentage injections
- Percentage generic
- Percentage prescribed from Essential Drugs List or Formulary

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### PATIENT CARE INDICATORS

- Average consultation time
- Average dispensing time
- Percentage drugs dispensed
- Percentage drugs adequately labeled
- Patient's knowledge of correct dosage

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### FACILITY INDICATORS

- Availability of national Essential Drugs List or Formulary
- Availability of key drugs

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COMPLIMENTARY INDICATORS

- Percentage of patients treated without drugs
- Percentage of patients treated with antimalarials
- Average drug cost per encounter

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STEPS IN AN INDICATORS STUDY

- Select geographic area
- Select sample of facilities
- Retrospective prescribing data available?
- Simple vs. detailed data form?
- Define criteria for core indicators
- Define complementary indicators
- Describe study procedures
- Select and train personnel
- Pilot test and revise procedures
- Collect data
- Feedback to facilities and managers
- Decide on follow-up studies

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SCOPE OF THE INDICATORS STUDY

- Depends on—
  - Information needs of managers
  - Capabilities of record system
  - Types of providers
  - Resources available
- Minimum sample
  - 20 facilities and 30 prescriptions / 30 patients per facility for cross-sectional study
  - 100 prescriptions per facility if facilities will be compared

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SIMPLE PRESCRIBING INDICATORS FORM

**PRESCRIBING INDICATOR FORM**

Location: \_\_\_\_\_ Date: \_\_\_\_\_

Investigator: \_\_\_\_\_

Fac. #	Type of Rx	Date of Rx	Age (yr)	# Drugs	# Gen-erics	Anti-bi-otics (BT)	Injec-tions (BT)	# of EDs	Diagnoses (Optional)
1									
2									
3									
4									
5									
<b>Total</b>									
<b>Average</b>									
<b>Percentage</b>									
					% of total drugs	% of total cases	% of total cases	% of total drugs	

\* 0=No 1=Yes

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## CONCLUSION

- Drug utilisation research if appropriately conducted, can contribute to improving rational use of medicines
- Though limitations remain, studies with sound methodologies can do a lot in this direction

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## REFERENCES

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