

Effective Coverage

Conceptual Framework

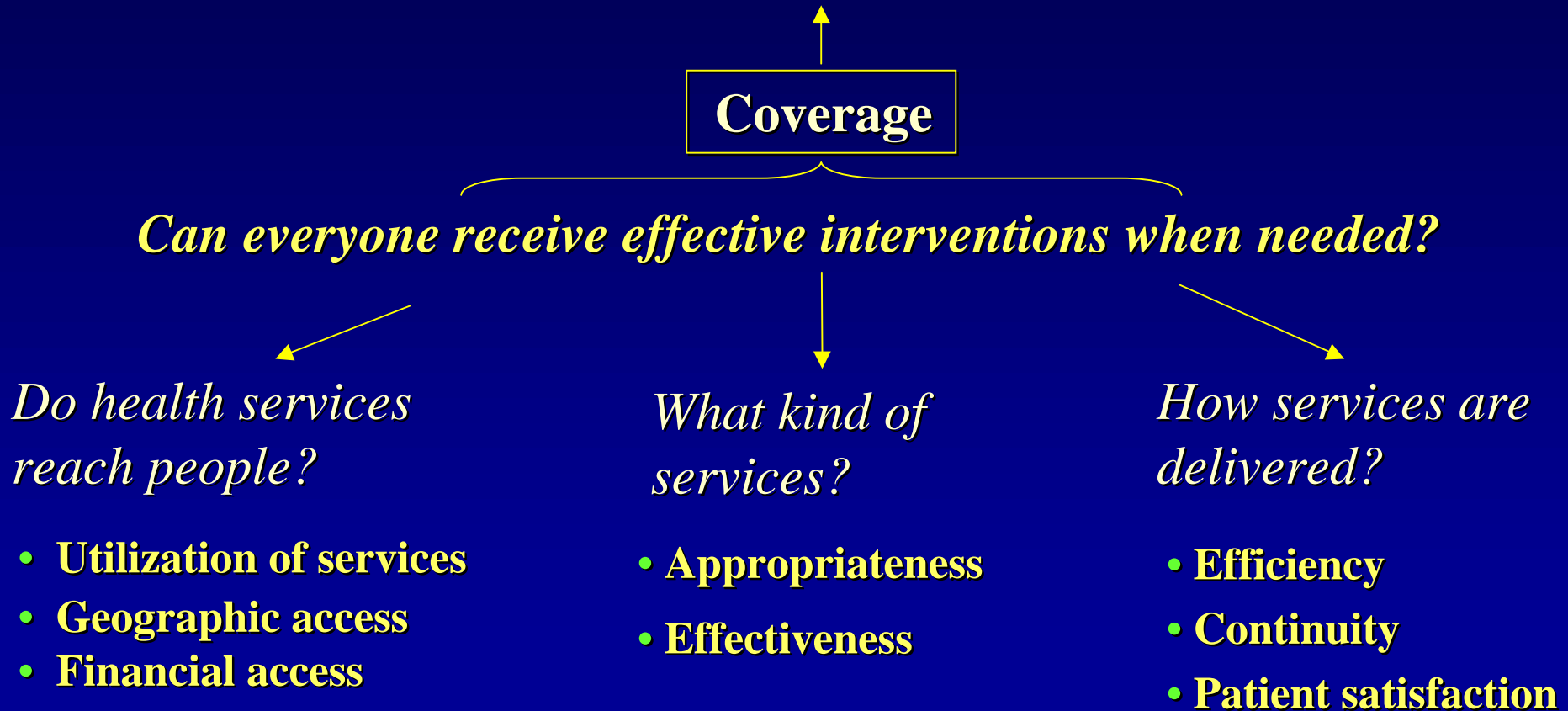
International Health Economics Association
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Department of Health Service Provision (OSD)
Evidence and Information for Policy (EIP)



Assessment of health service provision

How much of the potential population health gain can be realised with existing medical and public health knowledge?



Traditional concept of coverage

Proportion of population who have received specific health interventions

$$C = \frac{n'}{n}$$

n' - population who have received interventions
n - population who needed interventions

- **Intervention-specific**
- **Population level**
- **Ex post**



Limitations of the traditional concept

- Determinants of access & utilization are not reflected
- A lot of information is discarded
- Hinders application of the health system perspective to specific health programs
- Does not provide a link between the health service provision function and the final goal of health systems



New definition of coverage

The probability of receiving a necessary health intervention conditional on the presence of a health care need



Coverage with intervention

$$C_j = \frac{\sum_i C_{ij} d_{ij}}{\sum_i d_{ij}}$$

C_j - coverage of population with intervention j (aggregate coverage)

C_{ij} - coverage of individual i with intervention j (the probability of receiving intervention j)

d_{ij} - individual health risk (probability of developing the condition that requires intervention j)



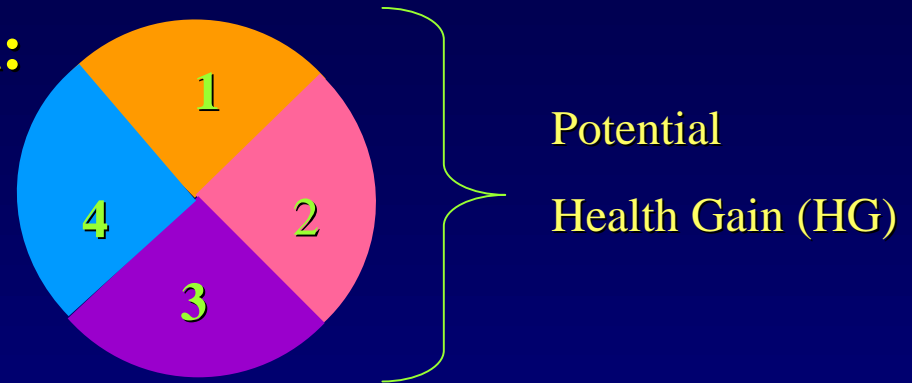
Advantages of this approach

- **Captures the contribution of different access factors both of individual and system character**
- **Takes the health system perspective**
- **Permits comprehensive analysis of inequality of coverage**
- **Links health service provision function with the final goals of health systems**
- **Allows estimation of the total health system coverage (for multiple interventions)**



From Coverage to Effective Coverage - Efficacy

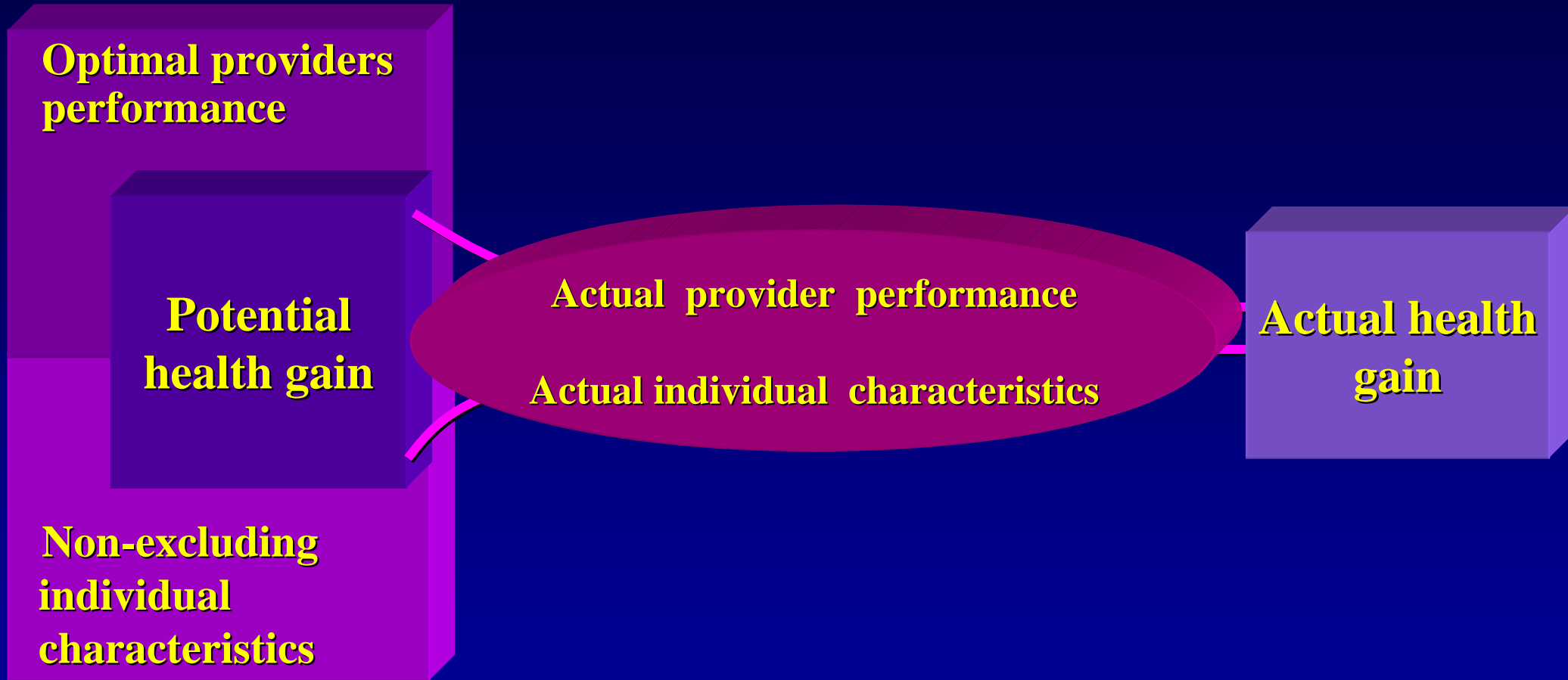
Health gain from intervention given:



- 1. The individual does not have any characteristics that could reduce or prevent the full effect of the intervention**
- 2. Provider performs at the optimal level for the given health system**
- 3. Providers have all resources for delivering intervention**
- 4. Patients fully adhere to the course of treatment**



Effectiveness



Optimal providers performance

Potential health gain

Non-excluding individual characteristics

Actual provider performance
Actual individual characteristics

Actual health gain



Effective coverage

The magnitude of the realised health gain from the intervention relative to the potential health gain possible with the optimal performance of providers for a given health system

Effective coverage of an individual with an intervention

$$EC_{ij} = \frac{HG_{ij} C_{ij}}{(HG_{ij} | P_{jk} = P_{opt}, R_{jk} = 1, Y_{ij} = 1, \forall k = 1 \dots)}$$

X_i - individual characteristics, P_{jk} - provider performance, R_{jk} - available technology, Y_{ij} - adherence



Effective coverage

Effective coverage of population with an intervention

$$EC_j = \frac{\sum_{i=1}^n HG_{ij} C_{ij} d_{ij}}{\sum_{i=1}^n (HG_{ij} | P_{jk} = P_{opt}, R_{jk} = 1, Y_{ij} = 1, \forall k = 1 \dots) d_{ij}}$$

C_{ij} - probability of receiving intervention j by individual i , d_{ij} - individual health risk, X_i - individual characteristics, P_k - provider performance, R_{jk} - available technology, Y_{ij} - adherence



What determines effective coverage?

Price of intervention j offered by provider k - B_{jk}

Disposable income of individual i - I_i

Geographic location of a provider k offering intervention j in relation to individual i - Q_{ijk}

Cultural and social acceptability of intervention j offered by provider k to individual i - Z_{jik}

Availability of necessary technology to provider k for delivering intervention j - R_{jk}

Right choice of intervention - HG_{ij}

Performance of provider k in relation to intervention j - P_{jk}

$$EC_{ijk} = f(B_{jk}, I_i, Q_{ijk}, Z_{jik}, R_j, HG_{ij}, P_{jk}, Y_{ij})$$

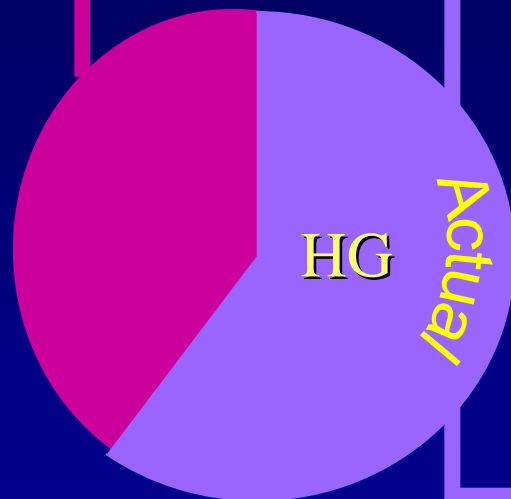


Effective coverage

Optimal health system performance



HG potential



Actual health system performance



Health system coverage

Aggregation of intervention-specific effective coverage across interventions

$$EC = \frac{\sum_{j=1} HG_j EC_j}{\sum_{j=1}^n (HG_j | P_{jk} = P_{opt}, R_{jk} = 1, Y_{ij} = 1, \forall k = 1 \dots)}$$

$$EC_j = \frac{\sum_{i=1}^n HG_{ij} C_{ij} d_{ij}}{\sum_{i=1}^n (HG_{ij} | P_{jk} = P_{opt}, R_{jk} = 1, Y_{ij} = 1, \forall k = 1 \dots) d_{ij}}$$



Inequality of effective coverage

Individual effective coverage with a set of interventions

$$EC_i = \frac{\sum_j HG_{ij} C_{ij} d_{ij}}{\sum_j (HG_{ij} | P_{jk} = P_{opt}, R_{jk} = 1, Y_{ij} = 1, \forall k = 1 \dots) d_{ij}}$$



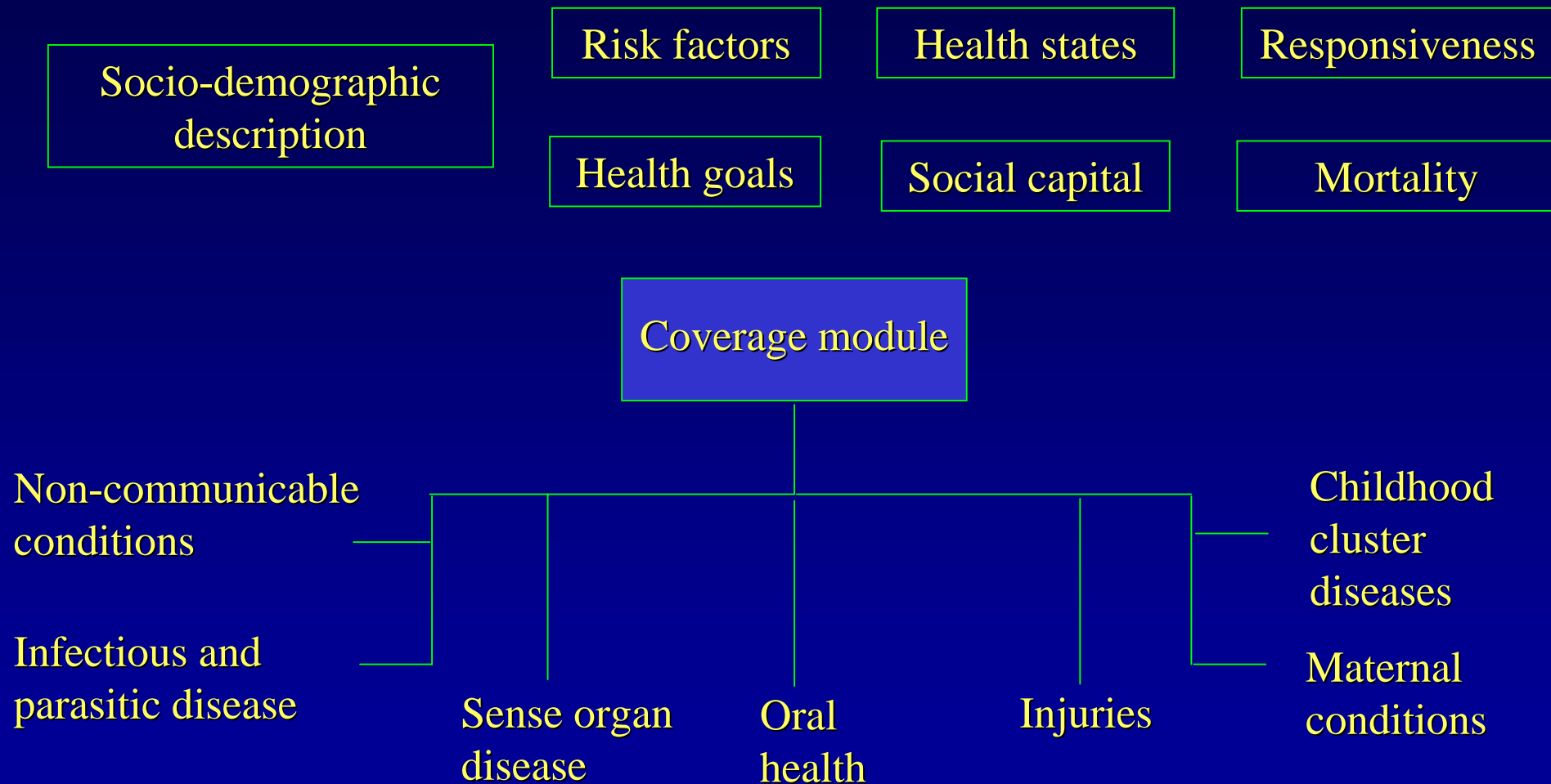
Selection of interventions

Criteria for selecting interventions

- Ability to produce a significant health gain
- The size of a health problem - the burden of disease
- Correspondence to the national health priorities
- Balance between different types of services (preventive-curative) and different health conditions (communicable diseases, non-communicable disease, life-cycle related conditions)
- Low cost of obtaining information at country level



World Health Survey



Next steps

Analysis of the World Health Survey - the first empirical data on health system coverage

- Average levels
- Inequality of coverage

Developing a model for decomposing gaps in coverage - an analytical tool for health system managers

- Quantification of the contribution of different health systems factors to effective coverage

Exploring relationships between coverage and other health indicators of health system performance

- Identification of health system characteristics and policies that maximize coverage

