

A Model for the analysis of implementing Universal Coverage in National Health Financing

Raphael D. Barrett, July 2006

BACKGROUND

Universal Coverage for healthcare has been established as a goal for the development of national health systems by the WHO and other global institutions concerned with the health and welfare of populations in all countries. Attaining this objective has proved elusive for most countries through either affordability or the implementation of suitable mechanisms which make achieving this goal seem probable. The model presented seeks to evaluate the mechanisms found in most countries and analyse their chances of success whilst suggesting the most feasible route to accomplish the mission. The model relies heavily on an analysis of the Jamaican situation and seeks to identify principles which may be applied to other countries and economies.

DESCRIPTION

Universal Coverage is defined by the WHO as providing healthcare coverage for the entire population of a country. In many instances, attempts are made to target national financing for the provision of healthcare to the poor. Whilst this strategy is laudable, there is no clear definition of the poor as due to the impact of illness on a social unit – individual, family or community – persons who may not be described as economically poor may be medically indigent, i.e. unable to afford the care they require to maintain good health.

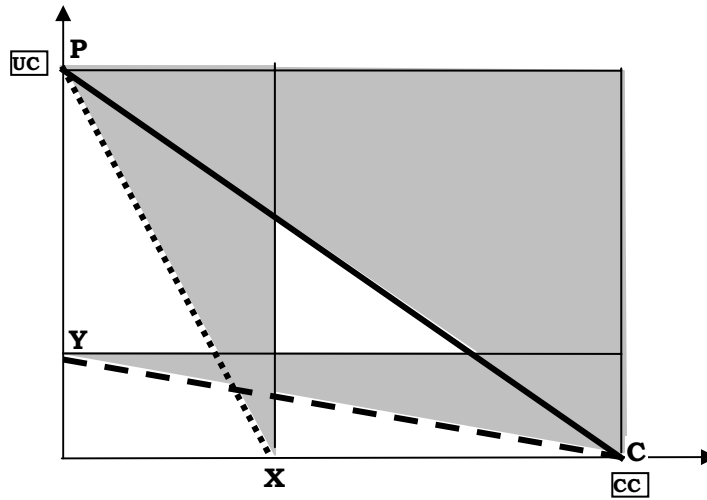
Based on generally accepted principles, the following definitions are used in the model:

- Universal Coverage, UC, as defined by the WHO
- Comprehensive Care, CC, is satisfying the total healthcare needs of the population.

Therefore, the ultimate goal is achieved when all the healthcare needs of all the population are fully satisfied.

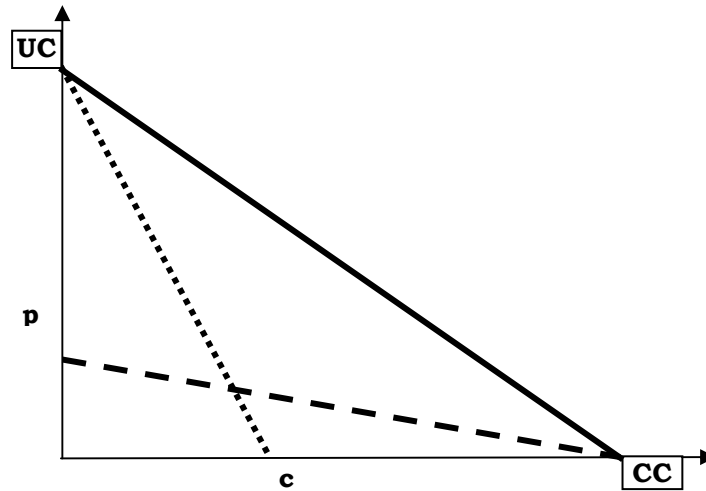
In analysing the approaches to achieving this goal, two strategies are identified. The first starts with CC for a limited subset of the population and seeks to extend this to the entire population. The second starts with UC for a limited subset of care and seeks to extend the range of coverage provided.

ANALYSIS



- 1) A Comprehensive Care strategy starts with full care for a limited population subset represented by the line CY with Y representing the population group covered. Extending this policy to provide Universal Coverage requires increasing the group covered to include the entire population represented by the line CP.
- 2) A Universal Coverage strategy starts with limited care for the entire population represented by the line PX with X representing the extent of care provided. Extending this policy to provide Comprehensive Care requires increasing the range of services provided represented by the line PC.
- 3) Whereas conventionally the strategy used would be represented by a line parallel to the policy axis and the area used as a measure of the result, for the purposes of the model to emphasise the strategy used the strategy is represented by vectors originating on the policy axis. The ultimate objective is represented by the line PC. The shaded areas each represent the 'mirror image' of the strategy representation in the model and show that the analysis can be carried out without any loss in integrity.
- 4) The Coverage Index is defined as the area represented by the strategy, **A**, as a proportion of that for the ultimate goal, **A₀** - **CI = A/A₀**

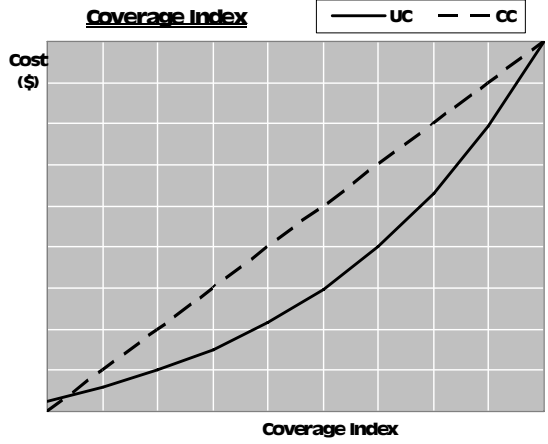
CONCLUSIONS



The challenge is to define a suitable function for each country that defines the extent of healthcare provided. It is proposed that this definition could be based on the burden of care covered compared to the overall burden for the population. Typically, there is a greater return from initial investment in Primary care than further investments in Secondary and Tertiary care – the principle of diminishing returns seems to be relevant here. On this basis, the model assumes there is an exponential relationship between the cost of care and the benefit obtained hence the use of a logarithmic function.

The model developed has the following parameters and assumptions:

- i) Population Coverage is defined as **p** ; for UC, **p** = 1.0
- ii) Healthcare Provision is defined as **f(h)** ; for CC, **f(h)** = 1.0
- iii) Population Coverage is assumed to be a linear function reflecting the percentage of the population that are included for the healthcare provided
- iv) Healthcare Provision is assumed to be a non-linear function and is related to the extent of care provided and how this package of benefits addresses the burden of healthcare required by the population. Thus, if **h₀** = {Comprehensive Care} then **f(h) = f(h/h₀)**
- v) In the model presented, it is assumed that **f(h) = log{10*h/h₀} = 1 + log(h/h₀)**
- vi) A Coverage Index, **CI**, is defined as the proportion of care provided to the care required



EVALUATION

For a Universal Coverage strategy, $p = 1$

$$\mathbf{A_u} = \frac{1}{2} \log_{10} h$$

For a Comprehensive Care strategy, $c = 1$

$$\mathbf{A_c} = \frac{1}{2} u$$

For both strategies, the ultimate goal is attained when

$$p = 1 \text{ and } c = 1 \text{ then } \mathbf{A_0} = \frac{1}{2}$$

The Coverage Index is represented by

$$\mathbf{CI_u} = \mathbf{A_u/A_0} = \log_{10} h$$

$$\mathbf{CI_c} = \mathbf{A_c/A_0} = u$$

If m = change resulting from an improvement in service such that

$$\mathbf{A_m} = m * \mathbf{A_u}$$

$$\mathbf{A_m} = m * \mathbf{A_c}$$

If the Improvement in service is measured as $(\mathbf{A_m} - \mathbf{A})/\mathbf{A}$ then

For a Universal Coverage strategy

$$\mathbf{Improvement} = (\log_{10} m / \log_{10} h)$$

For a Comprehensive Care strategy

$$\mathbf{Improvement} = (m - 1)$$