Improving efficiency in health

Hepatitis C virus session
Aims of this session

“Optima” is a tool to assist in reducing the burden of diseases by optimizing resource allocation. This session will discuss:

• **The Optima approach and how could it be applied to HCV:**
  – What tools does the global community currently have?
  – Where are the gaps?
  – How could we fill them?
  – Could an “Optima HCV” model help to put things together?

• **Why this is important now, given the rapidly changing landscape of HCV prevention and control.**
The changing landscape of HCV

• Modelling studies show that new treatments can have immediate and dramatic effects on the burden of HCV-related liver disease.
  – This has generated discussion of HCV elimination.
  – However, treatments are costly in most settings.

• How do we determine the most cost-effective scale-up of treatments *among priority groups, through different modalities, and over different time-frames?*
  – How can treatment be most cost-effectively complemented by other prevention programs?
The Optima approach

Assess the burden of disease
- Data collation
- Epidemic models
- Key populations

Consider programmatic responses
- Interventions
- Delivery modes
- Costs

Define objectives and constraints
- Strategic goals
- Political constraints
- Economic constraints

Apply optimization algorithm and interpret results
Part 1: Epidemic models of HCV

What tools are currently available to assess country-specific burdens of disease?
What metrics / data can be used

• Historic trajectories:
  – Prevalence and incidence of HCV.
  – Distribution of liver disease stage (fibrosis).

• Measures of disease burden:
  – Liver-related deaths.
  – Cases of hepatocellular carcinoma (liver cancer).
  – Quality-adjusted life years / disability-adjusted life years.
  – Healthcare costs.

Work can be done with countries to identify the best measures available.
What modelling tools are available

Many modelling groups are addressing problems related to HCV.

• Ravazi et al.
  – Excel-based models, generating epidemic / burden of disease curves.
  – Country-specific historical estimates and future projections.

• Martin / Vickerman et al.
  – Dynamic models comparing interventions and programs.
  – Predicting the impact / relative impact of treatment, needle and syringe programs, opioid substitution therapy etc.

• de Vos / Prins / Kretzschmar et al.
  – Probabilistic approach.
  – Comparing strategies of treatment prioritisation.

• Lots of others.
Optima HCV would include a dynamic, population-based HCV epidemiological model.

- Key features and granularity based on existing designs.
  - Calibrated to available data.
    - Separately for sub-populations.
    - For example, stratify for age categories, geographic location, co-morbidities (e.g. HIV status), risk groups (e.g. injecting drug use status).
    - Sub-populations can interact / overlap.
Part 2: Future programmatic responses

What options do we have and how much are they likely to cost.
Cascade of care

Treatment can not be scaled up unless patients are in care.

• Consider programs to improve the cascade of care, e.g. screening programs to improve diagnosis.

• *Identify and remove bottlenecks from the cascade.*
  – How do we get the most people on treatment?
  – Which modalities of which programs are required, e.g. mobile clinics or nurse-led models of care.
Other considerations

**How do we achieve the greatest impact?**

- What are the priority populations? Are there benefits in treating by:
  - Age group (birth cohort screening)
  - Disease stage
  - Geography
  - Risk population, e.g. treatment as prevention

- What about reducing incidence and re-infection?
  - Screening of blood products
  - Smart syringes
  - Needle and syringe programs and opioid substitution therapy for people who inject drugs

**What political and other constraints are there?**
Cost-coverage-outcome curves

In order to decide on an overall response, we need to determine for each program:

• What are the start-up, unit and delivery costs?
• How does additional spending affect coverage?
• How does additional coverage affect outcomes?

Coverage among targeted population (e.g. percentage of PWID with access to clean injecting equipment)

Coverage

Money spent on program

Outcome (e.g. probability of using a clean needle)

Outcome (%)
Part 3: Define strategic objectives

What do we want to achieve, and by when?

• Work with governments to define strategic objectives and time-frames.

• Guided by global elimination targets, WHO guidelines etc.
Part 4: Putting it all together

• What is the most cost-effective way to scale-up treatments:
  – Through prioritisation of sub-populations.
  – Across delivery methods to sub-populations.
  – In conjunction with cascade of care improvements.

• How much will it cost to reach our targets? If we don’t have that much:
  – What is the best we can do with what we have?
  – Does this change our priorities?

Existing Optima infrastructure could be used to answer these questions
Challenges

There will be many data challenges:

• Obtaining or estimating disease burden among key populations (i.e. prevalence, liver disease stage), in particular marginalised populations.

• Obtaining or estimating cost data for different services and modalities.
  – In HIV, data come from either National AIDS Spending Assessments (quick) OR time consuming micro-costing studies.
  – National Spending Assessments are not done for HCV
  – *Are other sources available before needing to do micro-costing studies?*

*Open discussion: Data sources and other technical / political challenges.*
Summary

• Optima is a tool for deciding how a budget can be allocated to most cost-effectively achieve strategic goals.

• In the context of HCV, this could decide:
  – Priority populations, programs and delivery methods in treatment scale-up.
  – Total funding required to achieve strategic goals.
  – How to improve outcomes with current levels of spending.

• The success of an Optima HCV would be contingent on global engagement and collaborations.
  – From governments, country experts, policy makers, economists, modelling groups and more.
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