

The future of health economic evaluation

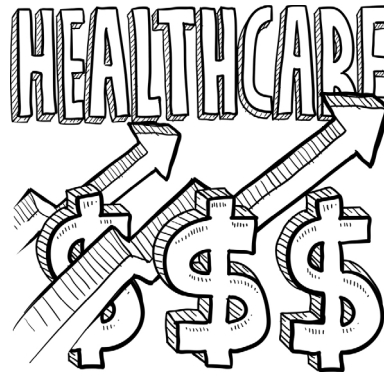
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Saw Swee Hock School of Public Health
National University of Singapore
21 December 2018

In the past seminar events, we learned....

- Introduction to health economic evaluation (June)
- The greatest happiness of the greatest number? Experience use of economic evaluation evidence to inform policy decisions (July)
- Can we be more systematic? The role of MCDA in informing policy decisions (August)
- Can we be more consistent? The issues of the cost-effectiveness threshold (September)
- Ethical issues in health resource allocation (October)

In this seminar, we will learn....





UHC is on the World Development Agenda

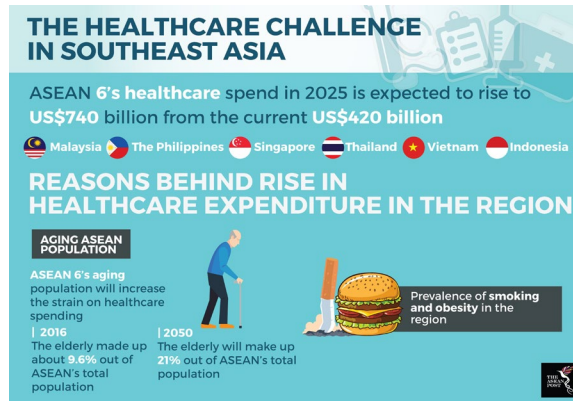
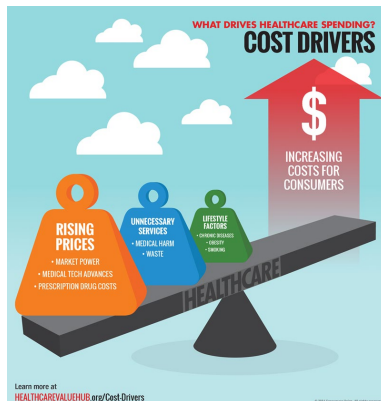
» Sustainable Development Goals (SDGs) adopted by UN (Sept 2015):
"Ensure healthy lives and promote well-being for all, at all ages" & "end poverty in all its forms everywhere"

» Goal 3 is for health

» Includes target to:
"achieve UHC, including financial risk protection, access to quality essential health care services and access to safe, effective quality and affordable essential medicines and vaccines for all."



3





health economic evaluation

Return of investment

- a ratio between the net profit and cost of investment resulting from an investment of some resources.



ROI Formula

Calculate whether you are getting more money back than you are putting in.

$$\text{ROI} = \left(\frac{\text{Amount Gained} - \text{Amount Spent}}{\text{Amount Spent}} \right) \times 100$$

(Return on Investment)

*ROI is typically expressed as a percentage, so for easy of use x 100 is added to the above equation.

What does it mean?

Amount Gained: The amount of income that has been generated by an investment (eg if an ad campaign generated 10 sales, the amount of revenue from those sales).

Amount Spent: The total amount spent on an investment (eg for an ad campaign to sell goods it would include planning, creating, running and placing the ads, as well as all costs incurred to complete a sale such as delivery and initial cost of the good).

theonlineadvertisingguide.com

**TO
AG**

Appraisal of ranibizumab (Lucentis) for diabetic macular oedema 2011

- Additional costs = £3,506 per patient with 23,000 eligible patients each year
- Opportunity cost threshold in the UK is £13,000 per QALY
- Incremental cost-effectiveness = £25,000 per QALY

Attributes	Investment
	Lucentis for diabetic macular oedema (£80m pa)
QALYs	3,225
Wider social benefits (net production)	£88.4m

$$\text{Benefit-cost ratio} = 88.4/80 \\ = 1.105$$

But this is not the best option
when considering opportunity
costs

This slide was modified from the presentation of Prof. Karl Claxton, University of York

Appraisal of ranibizumab (Lucentis) for diabetic macular oedema 2011

- Additional costs = £3,506 per patient with 23,000 eligible patients each year
- Opportunity cost threshold in the UK is £12,936 per QALY
- Incremental cost-effectiveness = £25,000 per QALY
- Per capita GDP = £ 42,000

Attributes	Investment	Opportunity costs
	Lucentis for diabetic macular oedema (£80m pa)	Expected effects of £80m pa
QALYs	3,225	- 6,184
Wider social benefits (net production)	£135 m	- £260m

$$\text{Benefit-cost ratio} = 88.4/80 \\ = 1.105$$

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Appraisal of ranibizumab (Lucentis) for diabetic macular oedema 2011

- Additional costs = £3,506 per patient with 23,000 eligible patients each year
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- Incremental cost-effectiveness = £25,000 per QALY

Attributes	Investment	Opportunity costs	Opportunity cost of using Avastin	Net effect of using lucentis
	Lucentis for diabetic macular oedema (£80m pa)	Expected effects of £80m pa	Expected effects of £2m pa for avastin	
QALYs	3,225	- 6,184	-155	3,070
Wider social benefits (net production)	£135m	- £260m	£6m	£129m

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Methodological development

- Incorporating equity dimension
- Using real world data
- Automatisation of health economic evaluation

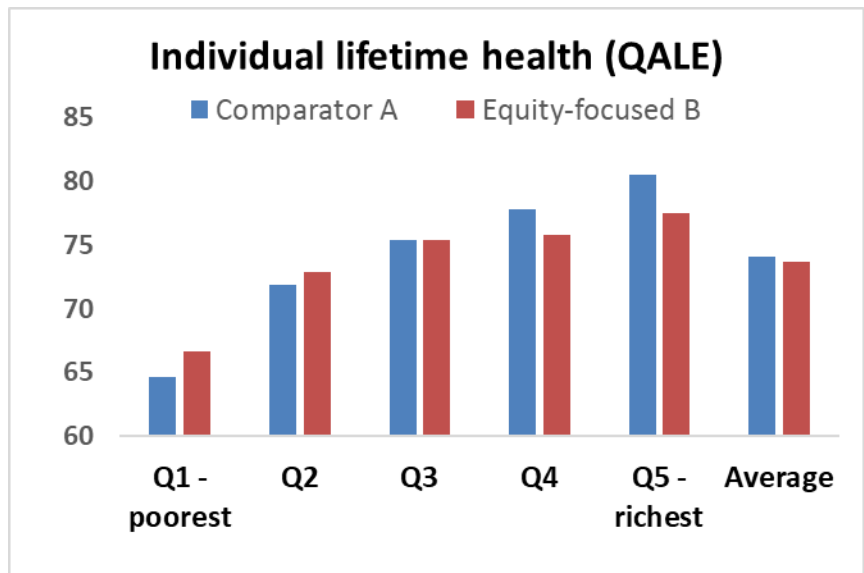
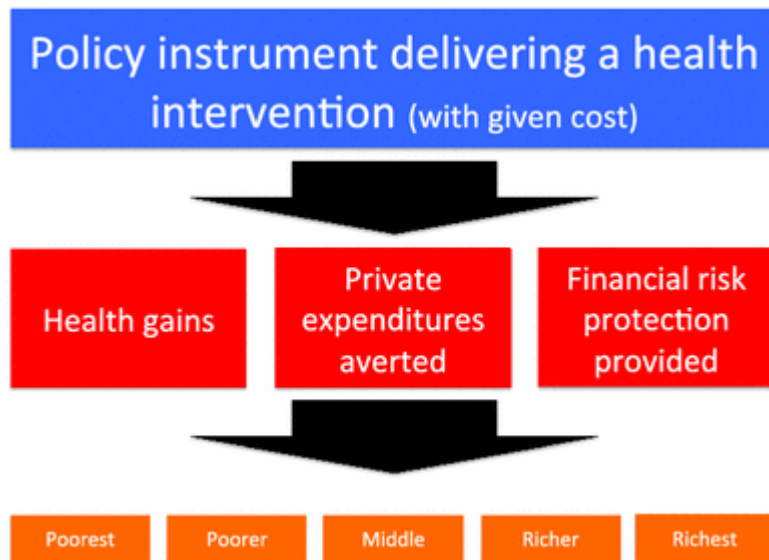
Applications

- HTA for developing health target/ goal setting
- Early HTA

Policy

- Using HTA for price interventions
- Joint assessment or uniform HTA process

Efficiency-equity trade-off



Verguet et al,
Cookson et al

What do we already know about RWD use?

- Many advantages of using RWD e.g. getting effectiveness (not efficacy), overcoming ethical barriers in conducting RCTs, reflecting real-life situation etc.
- Increasing potential for using RWD due to better establishment of digital health care systems
- The need for establishing **good process**, including transparency (the rationale for using RWD and the RWD used must be publicly accessible), relevance (there must be a reasonable explanation for a decision's rationale) and fairness (the RWD is used in similar fashion across technologies). Processes should also allow opportunity for stakeholder participation.

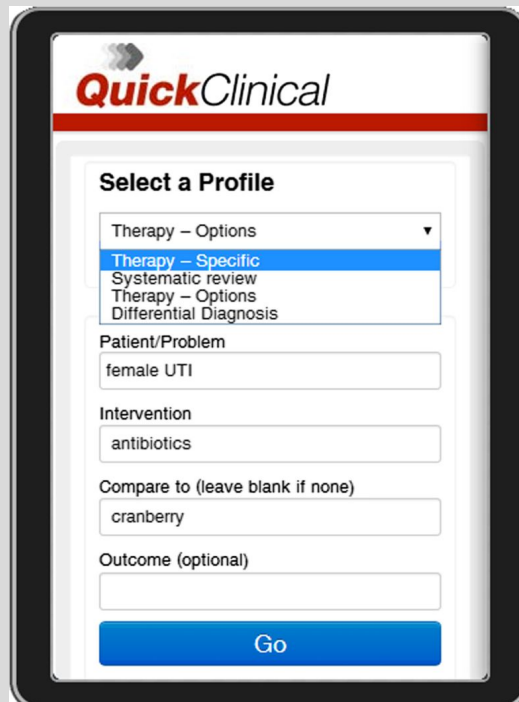
Garrison Jr LP, Neumann PJ, Erickson P, Marshall D, Mullins CD. Using real-world data for coverage and payment decisions: The ISPOR real-world data task force report. *Value in health*. 2007 Sep;10(5):326-35.

Berger ML, Lipset C, Gutteridge A, Axelsen K, Subedi P, Madigan D. Optimizing the leveraging of real-world data to improve the development and use of medicines. *Value in Health*. 2015 Jan 1;18(1):127-30.

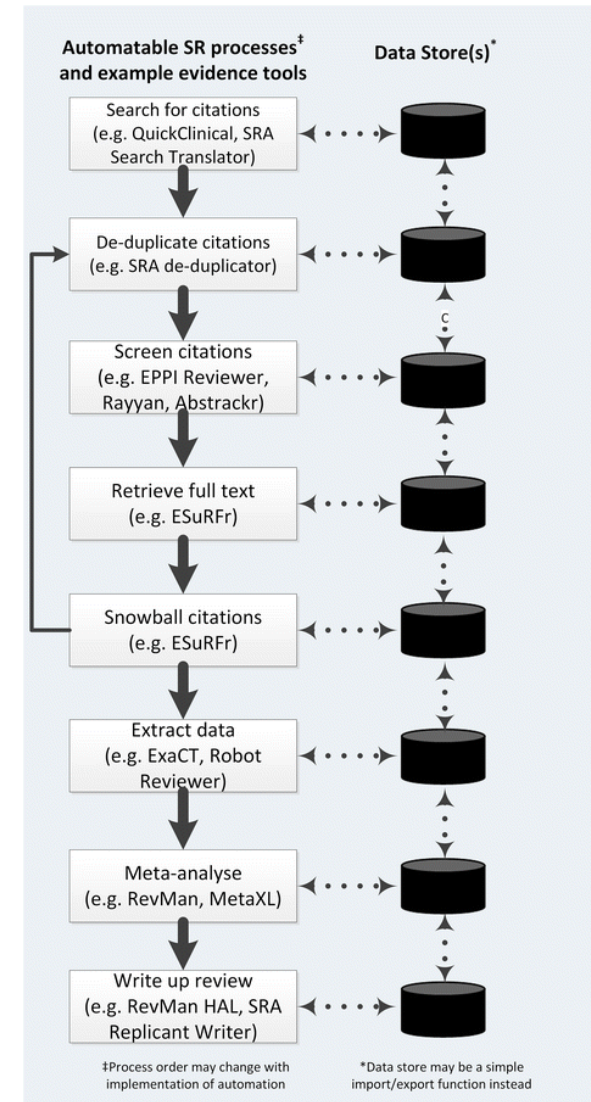
Myth and facts of using RWD

The myth	The facts
RWD is free	RWD needs serious investment
RWD is an alternative to traditional RCTs or experiment studies	RWD should be used to complement data from experimental studies
Only RWD can answer real world questions	Many careful designed experiments can answer real world questions Some studies using RWD cannot answer real world questions
Bias can be technically corrected	It's not possible to correct all biases

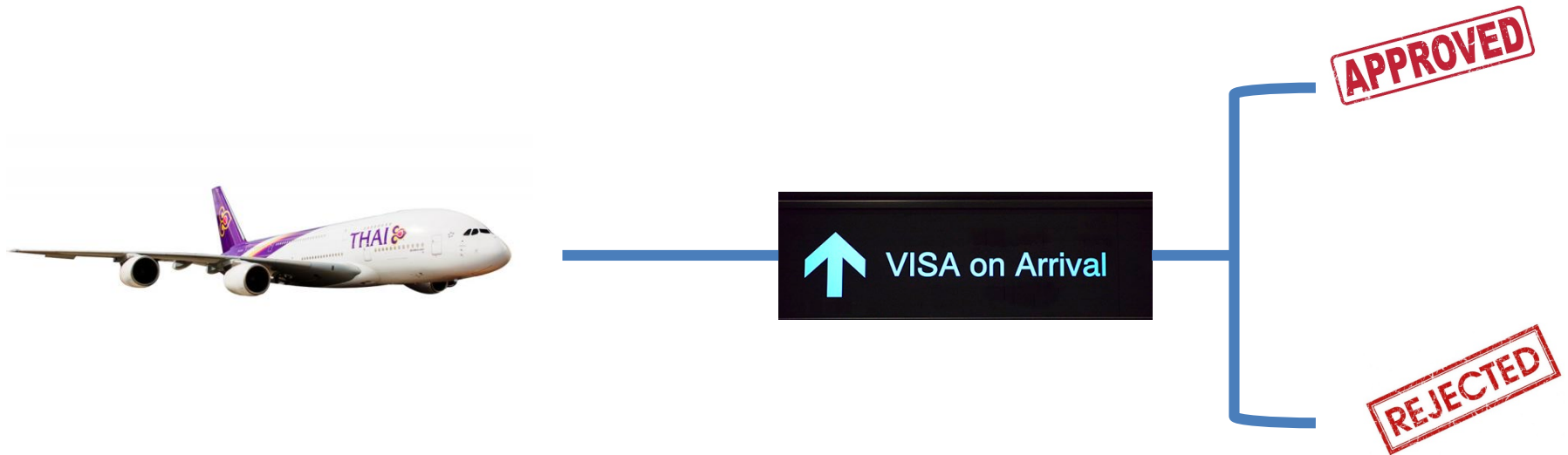
Automatisation of systematic review and meta-analysis



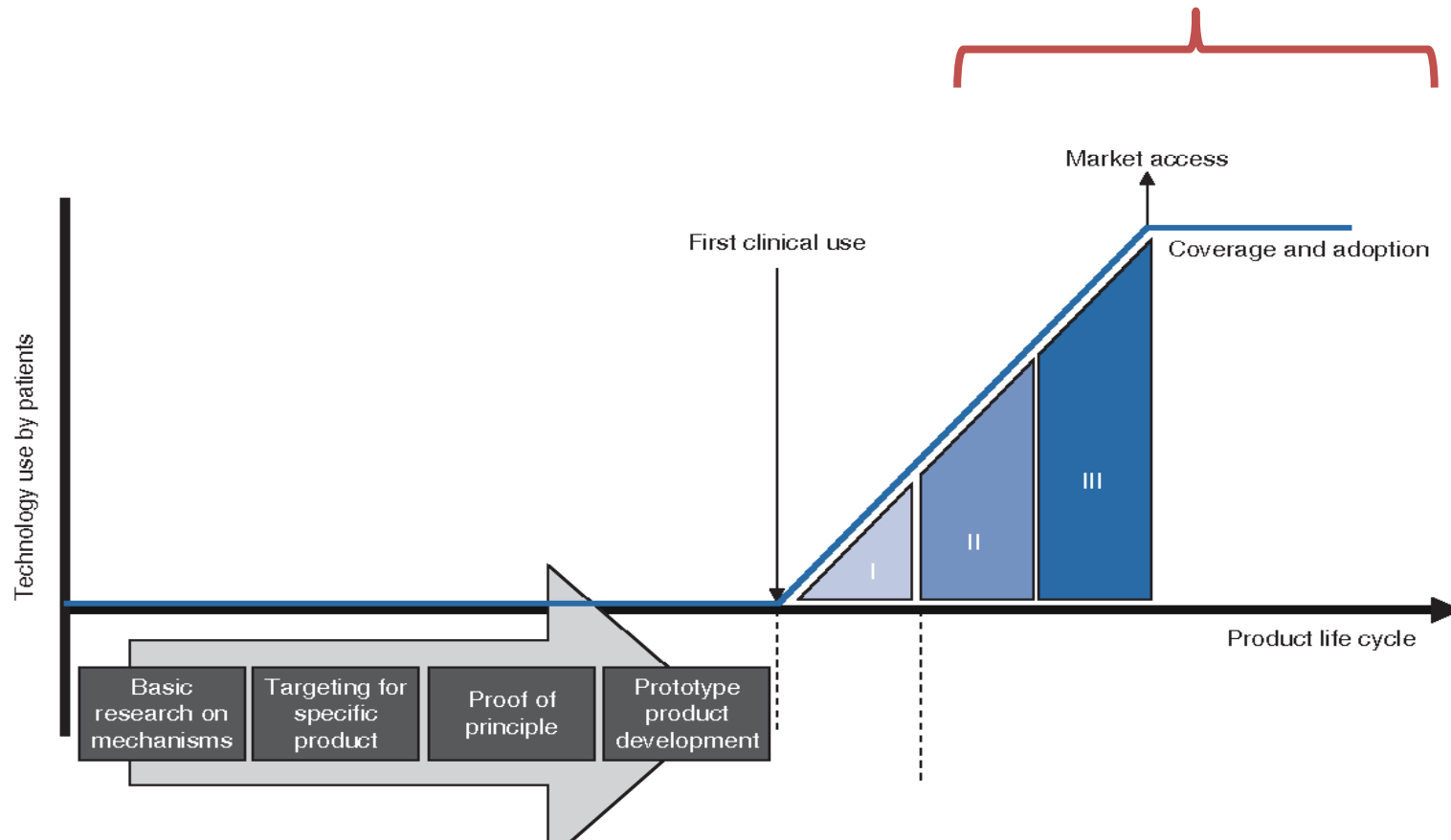
- Beller et al 2018. Making progress with the automation of systematic reviews: principles of the International Collaboration for the Automation of Systematic Reviews (ICASR)
- Tsafnat et al 2014 Systematic review automation technologies



Early HTA or HTA for R&D

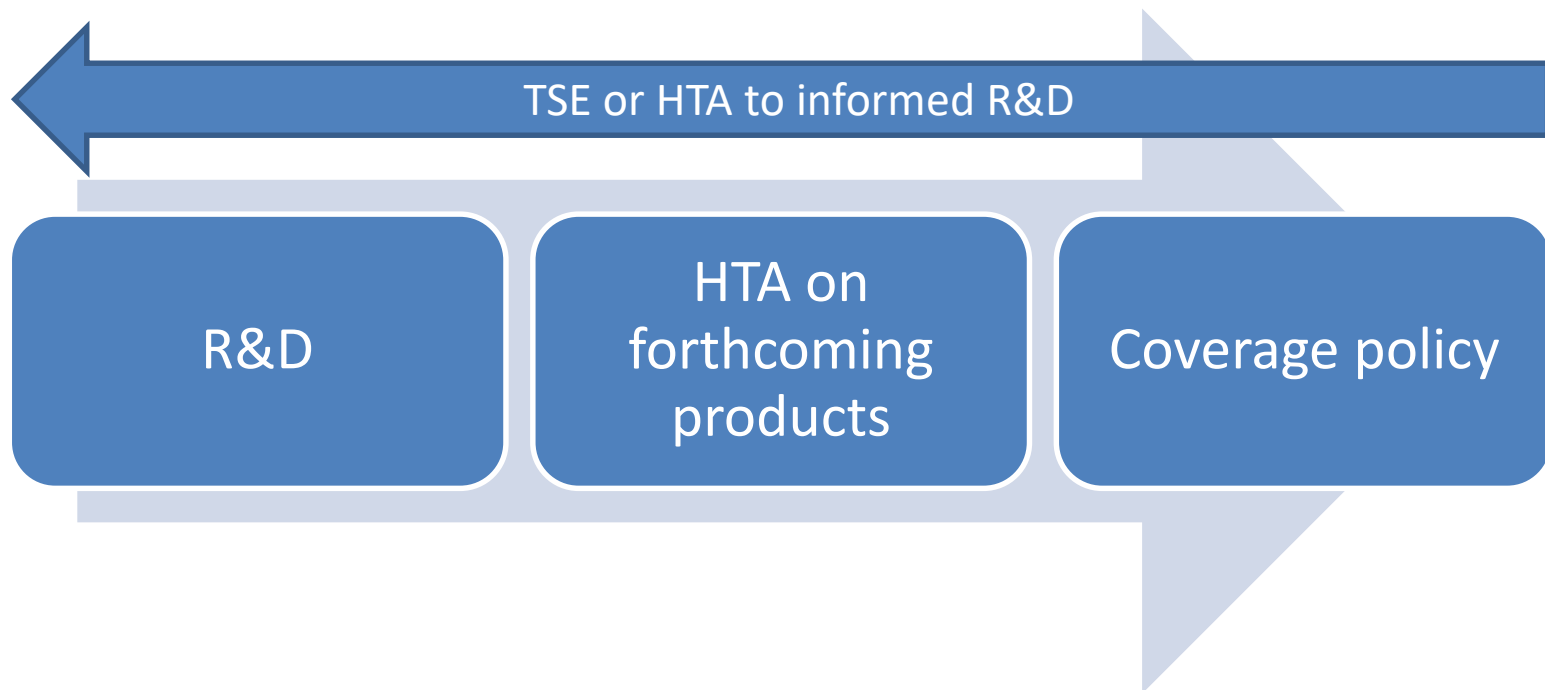


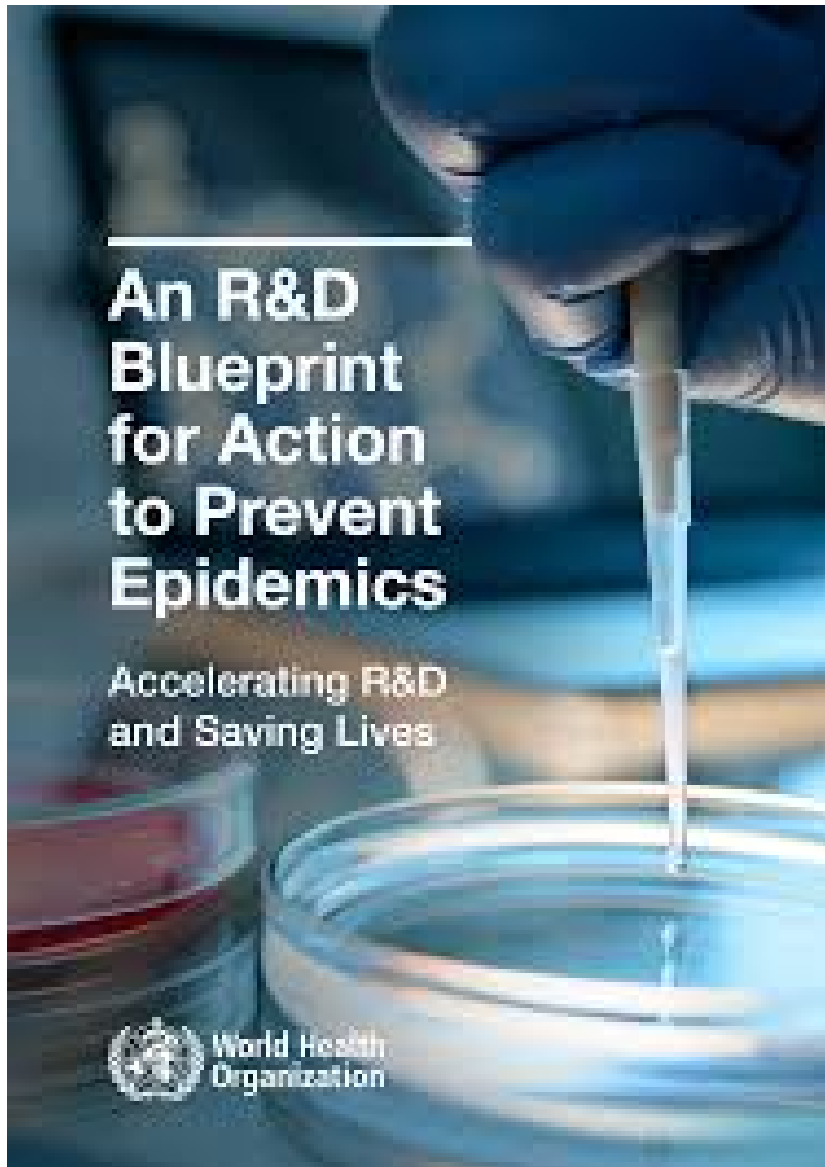
Health Technology Assessment



Traditional HTA







Total Systems Effectiveness
Evaluating all trade-offs to inform choice

Thailand country pilot

March – September 2018

DRAFT as of 08/03/18

Setting the guidelines or global target without considering 'opportunity cost' can make more harm than good

Throughout pregnancy, all women should have 8 contacts with a health provider.

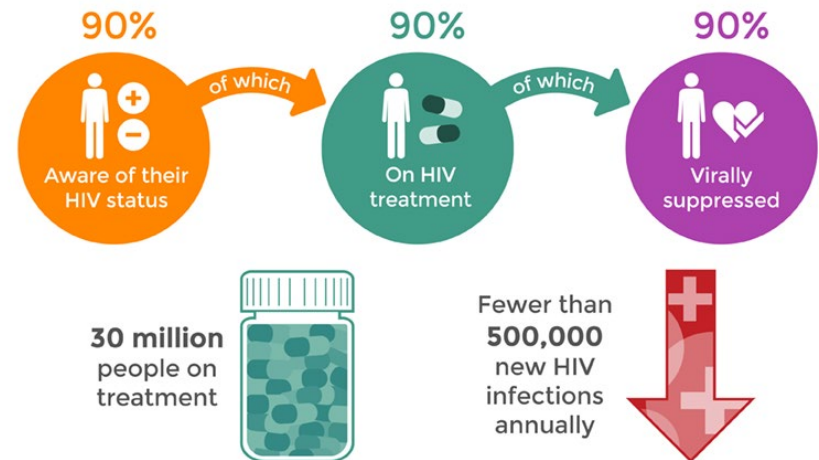
These can happen in settings such as:



Health systems should ensure that all providers are empowered and equipped with necessary skills and supplies.



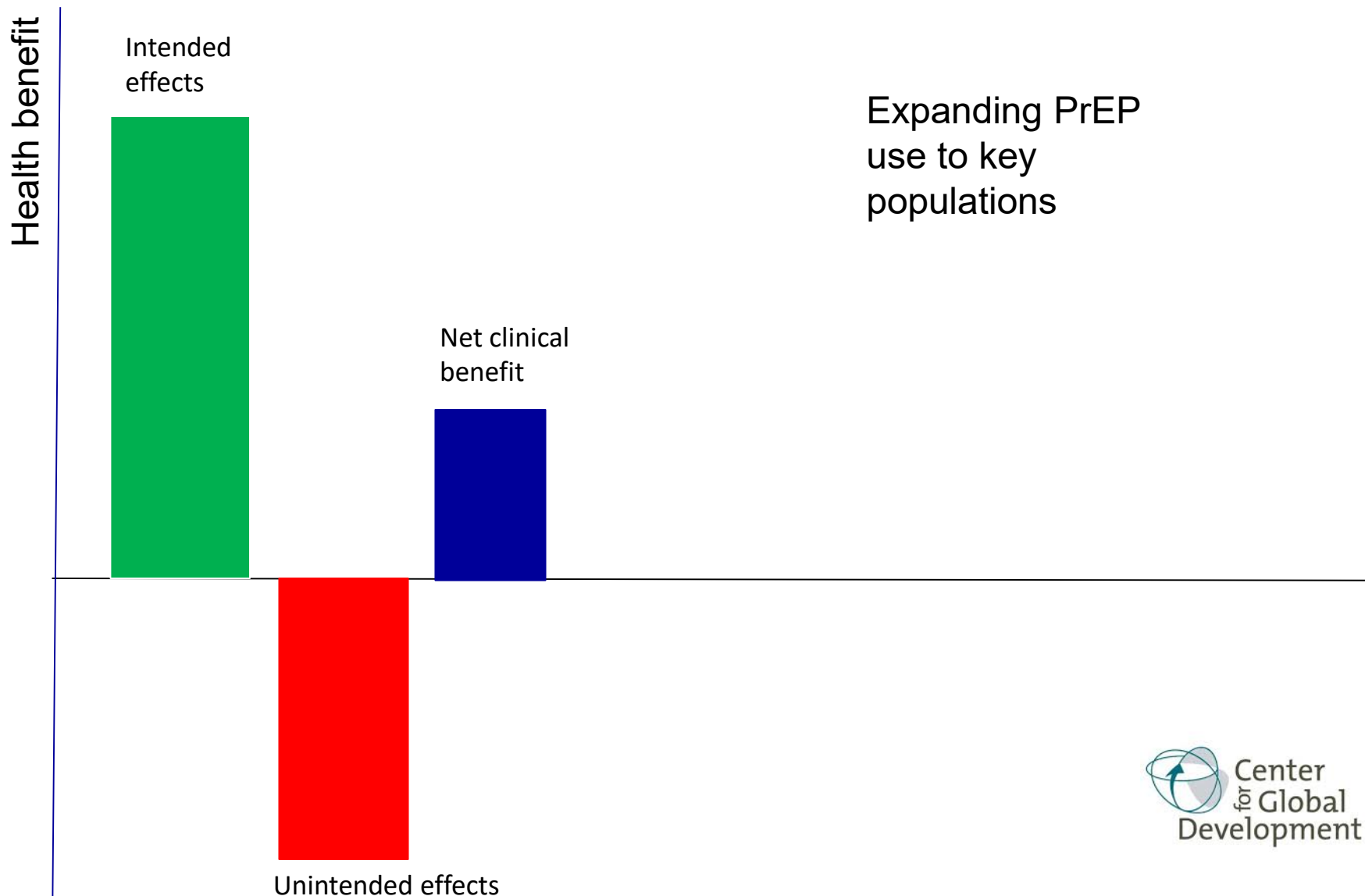
KEY 2020 FAST TRACK TARGETS



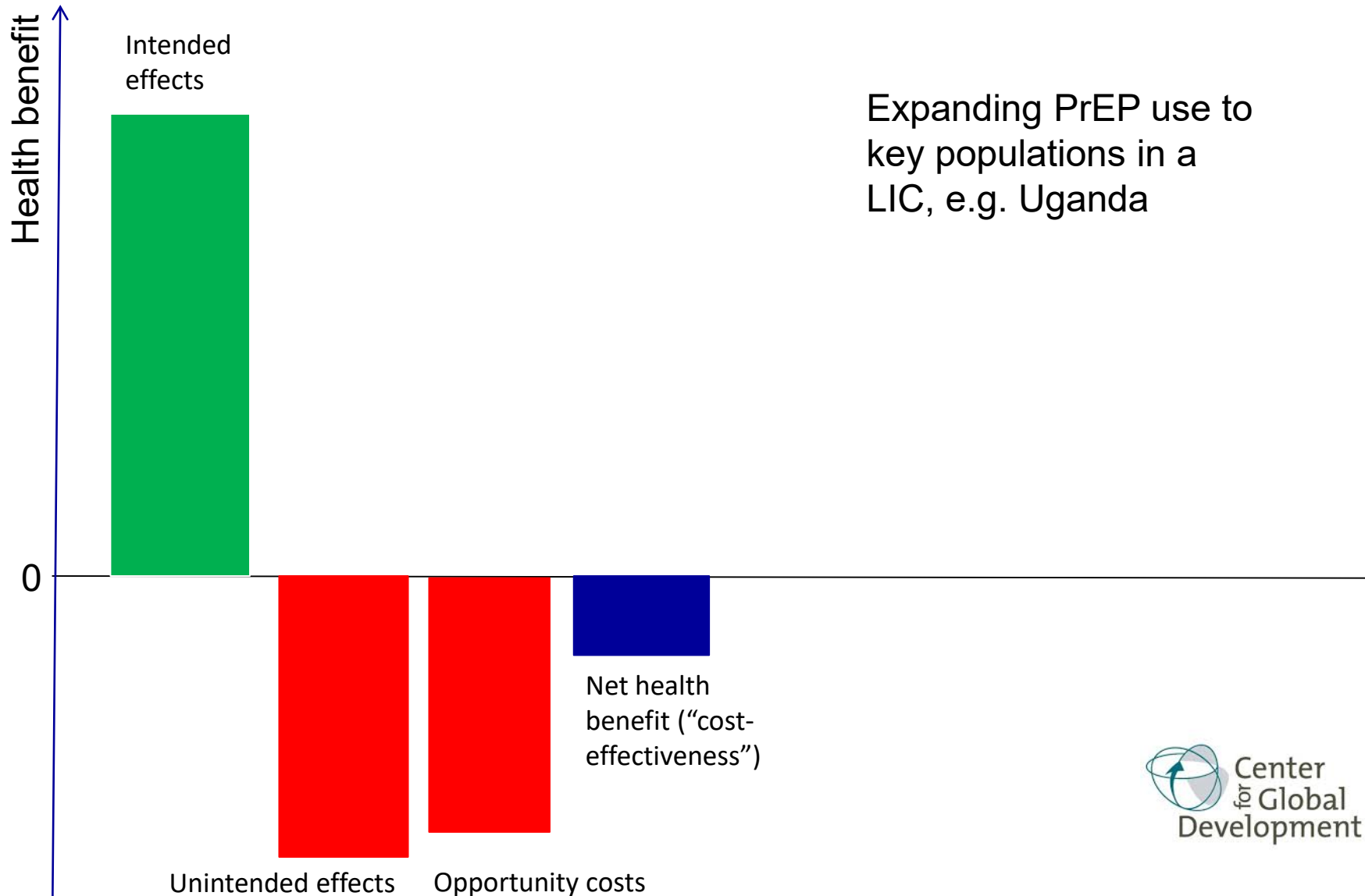
Source: UNAIDS data 2017

Avert > www.avert.org

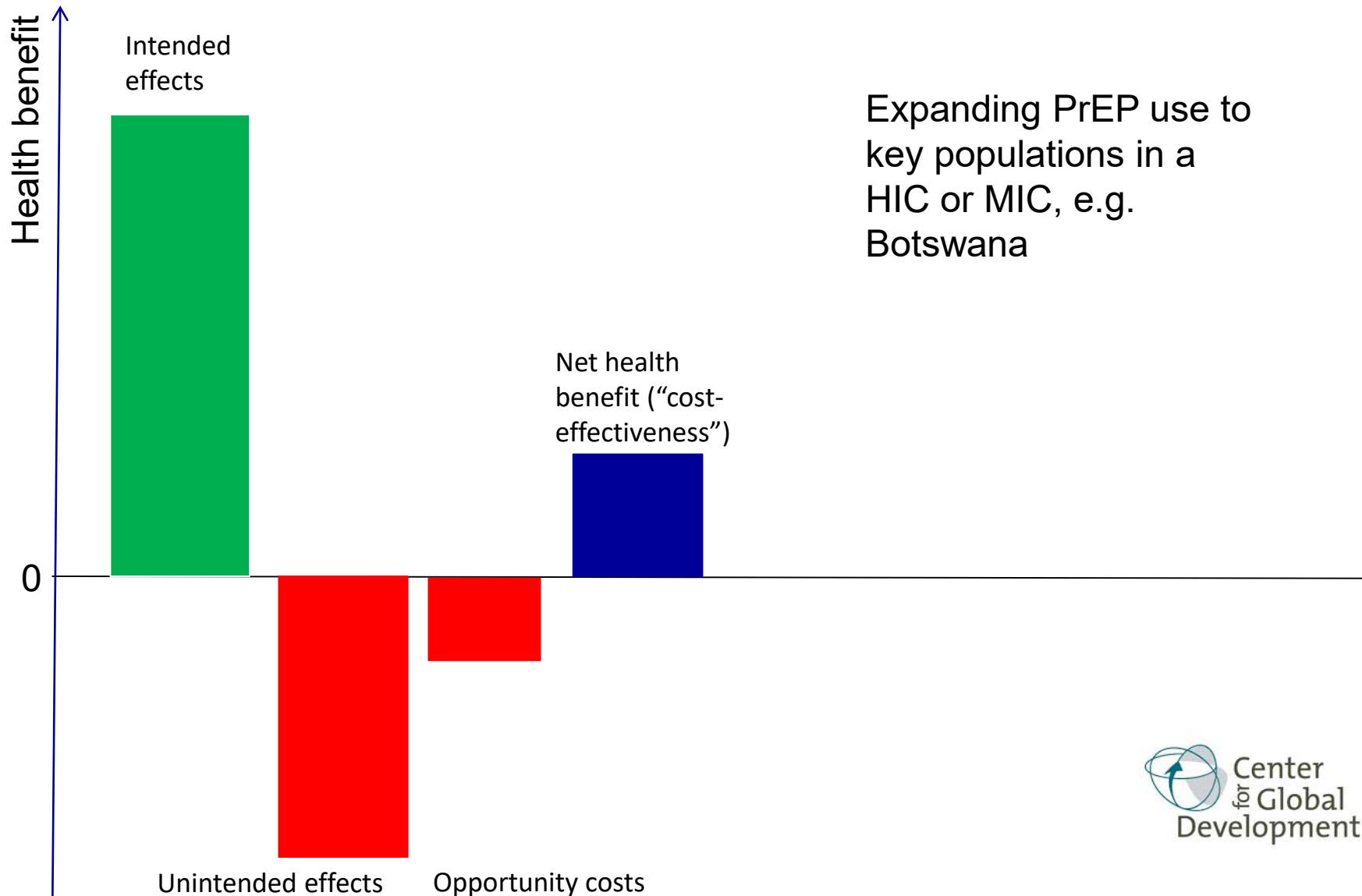
II. Understanding value in health care



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Expanding PrEP use to
key populations in a
HIC or MIC, e.g.
Botswana

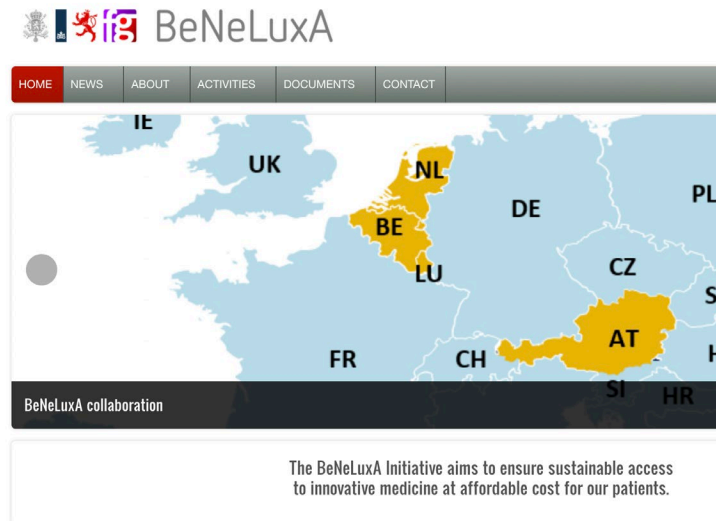
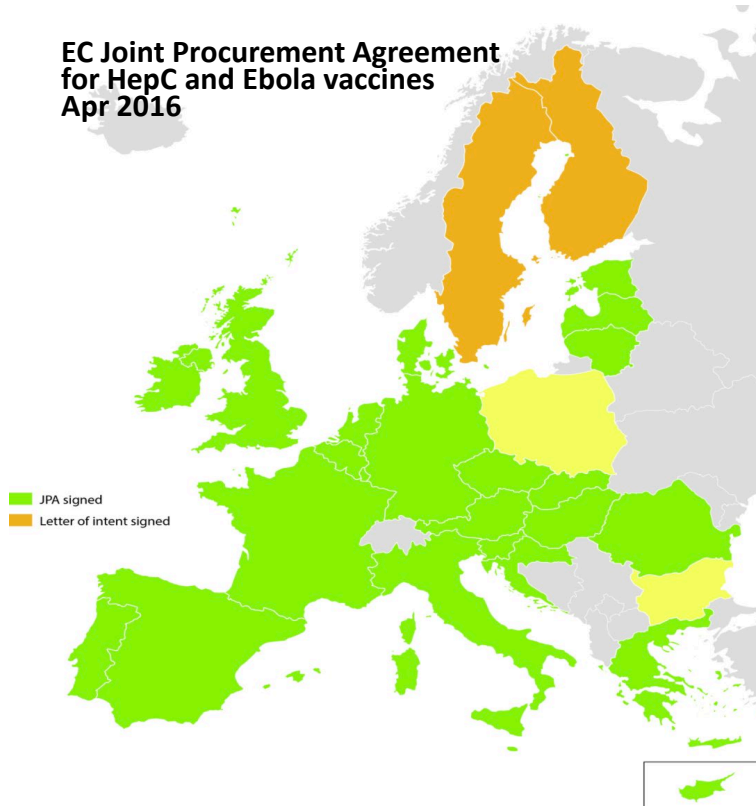
strengthening EU cooperation on **Health Technology Assessment** in response to calls from **EU** countries



- On 4 October 2018, the European Parliament adopted its [Report](#) on the Commission Proposal for a Regulation on Health Technology Assessment (HTA)
- **The proposal seeks to ensure that when HTA is performed, the methodologies and procedures applied are more predictable across the EU and that joint clinical assessments are not repeated at national level**, thereby avoiding duplication and discrepancies. The Report recognises that current approaches lead to *“higher costs for industry, delays in access to technologies and a negative effect on innovation*
- Concerns have been raised by some EU Member States that joint clinical assessments might lead to the loss of control of a Member States’ ability to decide on prices. Deciding on reimbursement and pricing of medicinal products is a national competence of the Member States
- The Director General considers, however, that the HTA Regulation is foremost a matter of defining on an EU level which evidence to expect from innovator companies: ***“Clinical assessments you can do across Europe, cost effectiveness has to be done country by country.”***

As poorer countries graduate from purchasing clubs... rich countries come together to form new ones!

EC Joint Procurement Agreement
for HepC and Ebola vaccines
Apr 2016





See you in Seoul!

Turning Discovery into Healthier Communities

