A systematic review of the cost-effectiveness of harm reduction for IDUs – how good is the evidence?

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BACKGROUND

Harm reduction

- "Harm reduction refers to policies, programmes and practices that aim to reduce the harms associated with the use of psychoactive drugs in people unable or unwilling to stop. The defining features are the focus <u>on the prevention of harm, rather than on the prevention of drug use itself</u>, and the focus on people who continue to use drugs."

(International Harm Reduction www.ihra.net)

Aims

- To critically review the international literature on the economic evaluation of harm reduction for IDUs
    - focussing on analyses that explore the health effects
- To explore methodological developments
- To compile current evidence on the costs and impacts of these interventions
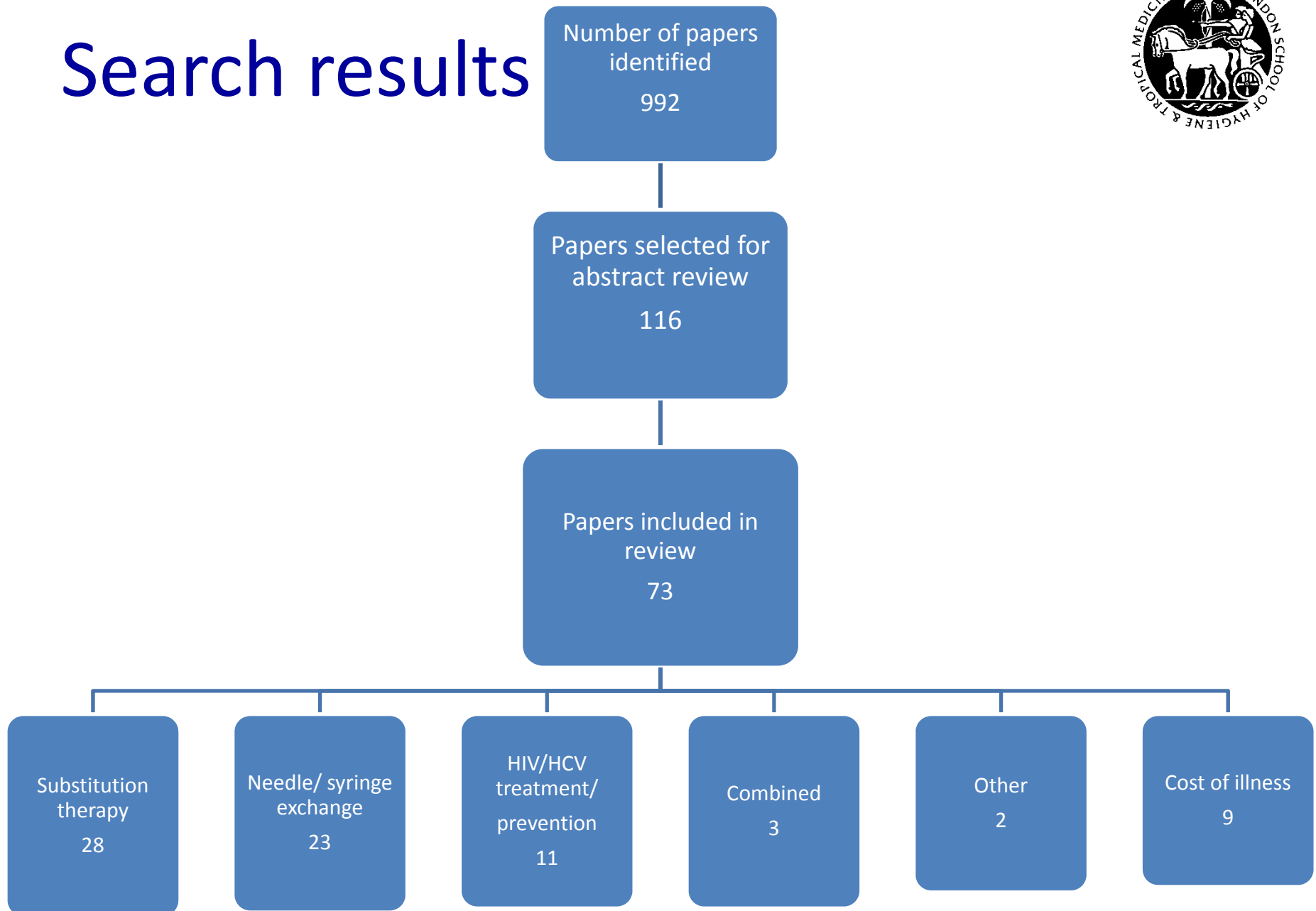
Methods

- Time period: January 1990 – June 2011

- Search criteria:
  - ('cost' or 'economic') and ('substance abuse' or 'injecting drug use*' or 'methadone' or 'substitution therapy' or 'needle exchange')

- Inclusion criteria:
  - Costing or economic evaluation with health related outcomes (i.e. non-health outcome focus excluded).

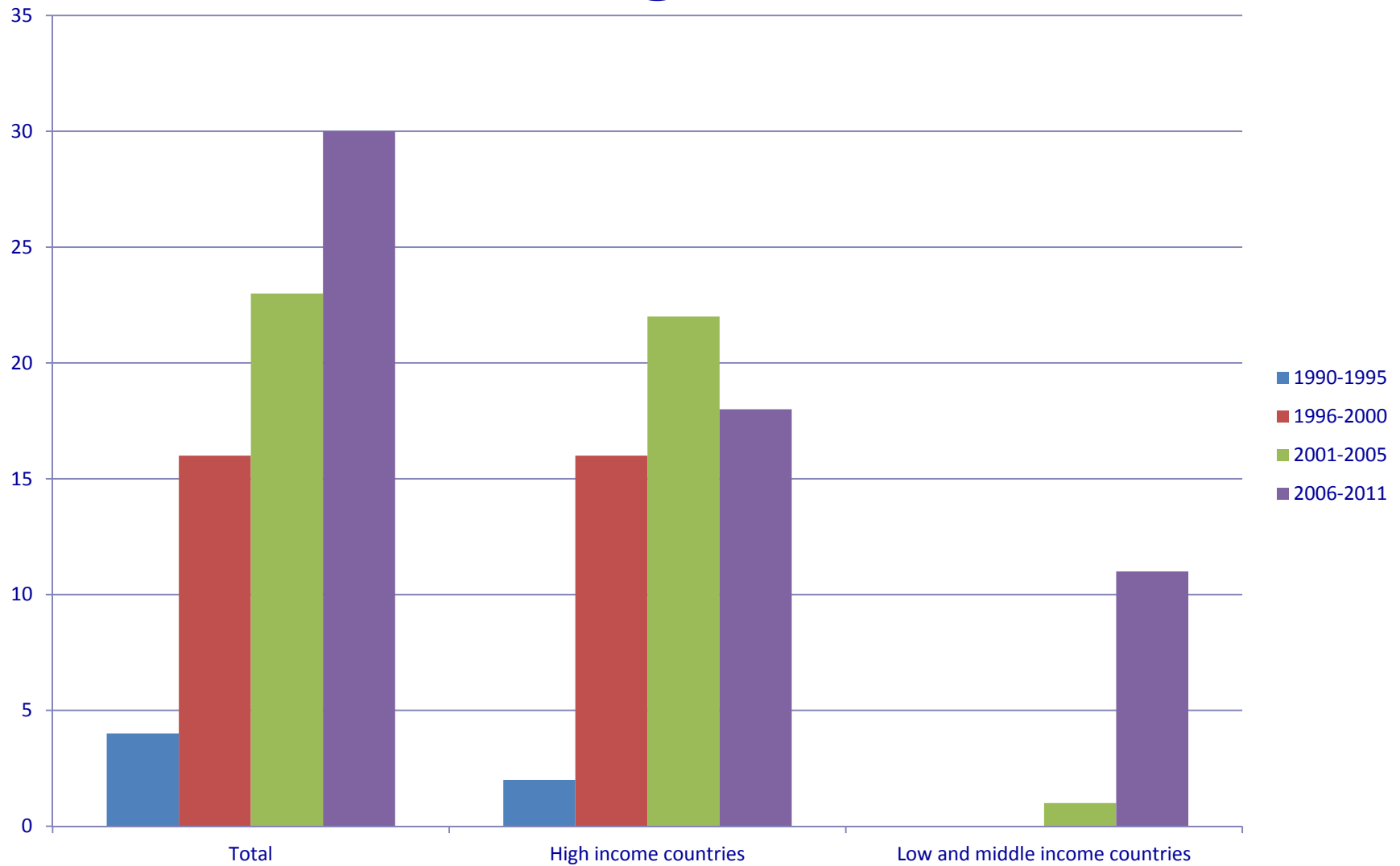- Counts/trends and quality review using BMJ and HTA (modelling) checklists
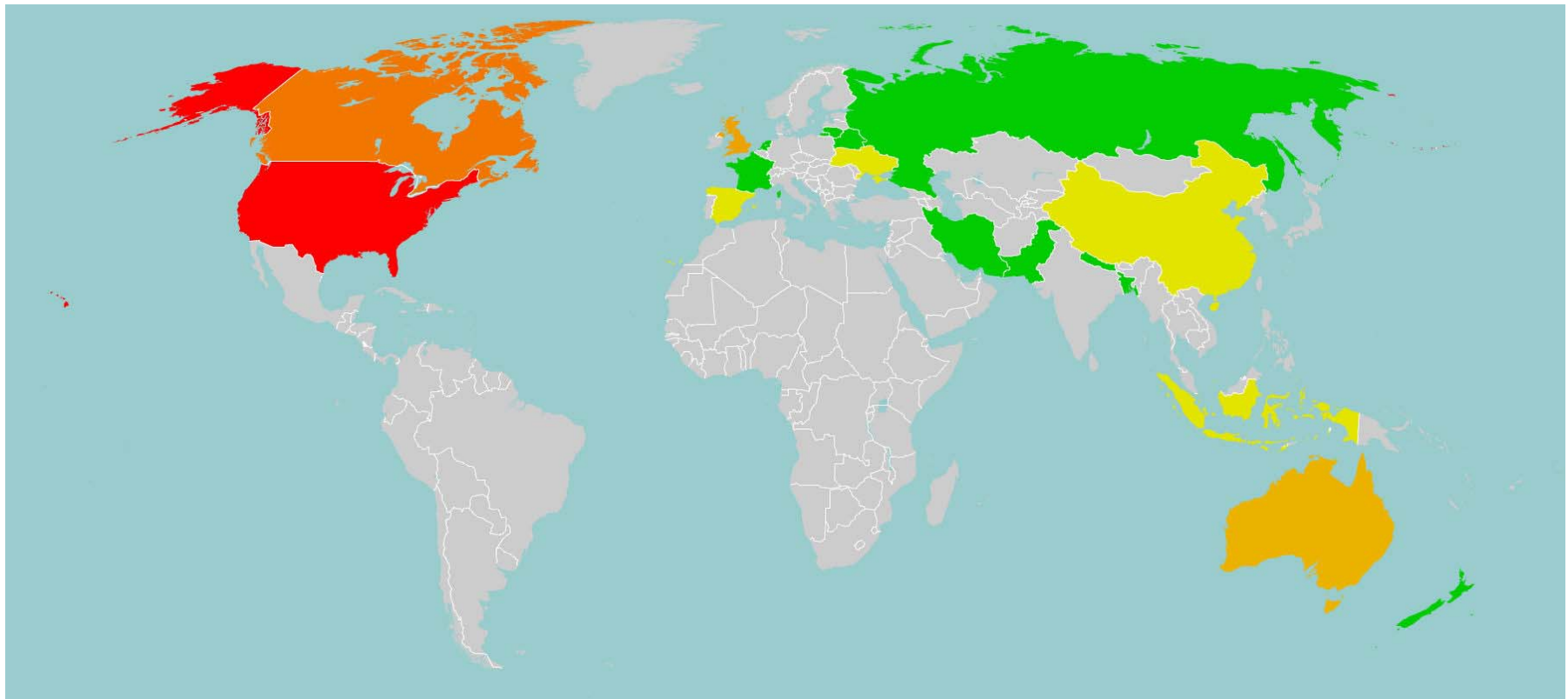
RESULTS: COUNT AND TRENDS

Search results

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              ┌────────────────────┐
              │ Number of papers   │
              │ identified         │
              │ 992                │
              └────────────────────┘
                        │
              ┌────────────────────┐
              │ Papers selected for│
              │ abstract review    │
              │ 116                │
              └────────────────────┘
                        │
              ┌────────────────────┐
              │ Papers included in │
              │ review             │
              │ 73                 │
              └────────────────────┘
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| Substitution therapy 28 | Needle/ syringe exchange 23 | HIV/HCV treatment/ prevention 11 | Combined 3 | Other 2 | Cost of illness 9 |

Papers by year of publication and region

Location of studies

Red	>10
Dark orange	>5 and <10
Orange	>2 and =< 5
Yellow	2
Green	1

RESULTS: STUDY DESIGN

Type of analyses used for each strategy

- 50% of 32* OST analyses focussed only costs
- Only 3% of 35* of NSP analyses only dealt with costs
- CBA were conducted in 40% and CEA were conducted in 43% of the NSP analyses
- Of the 7 analyses on HCV, 5 were CUA (including 1 prevention) and 2 were CEAs
- Of HIV treatment analyses 1 dealt with costs alone, the other 2 were CUAs

* Some papers include more than 1 type of analysis/strategy.

Types of outcome measures

- Different EE types and research questions lead to different outcome measures
  - HCV case averted - 7
  - HIV infections averted - 26
  - Deaths averted/life years saved - 6
  - QALY (including other QoL measures) – 14
  - DALY - 3
  - Cost savings – 20 (health sector perspective)
  - Cost of illness - 9

A mix of perspectives

- 56/73 studies from a provider perspective

- 5 from the payer (e.g. Medicaid) perspective (all USA)

- Only 12 from a societal perspective (6 USA, 1 each in Canada, Australia, Lithuania, Netherlands, Indonesia & China)

RESULTS: DATA COLLECTION AND ANALYSIS

Mix of data collection and modelling

- Cost calculation:
  - 54% of studies used primary cost data;
  - 34% of studies modelled costs (3 used primary cost data)

- Impact estimation:
  - 39% (21/53) used primary impact data
  - 10 of which (48%) were based on RCTs
  - 79% (42) papers used some form of model to estimate the impact

Cost data collection

- 5 of the 34 USA studies used a national level costing scheme e.g. DATCAP and SASCAP (but different ones!)

- 17 studies used bottom up approach – 2 of which used secondary cost data

- 10 studies used financial costing (including claims data and financial operating costs)

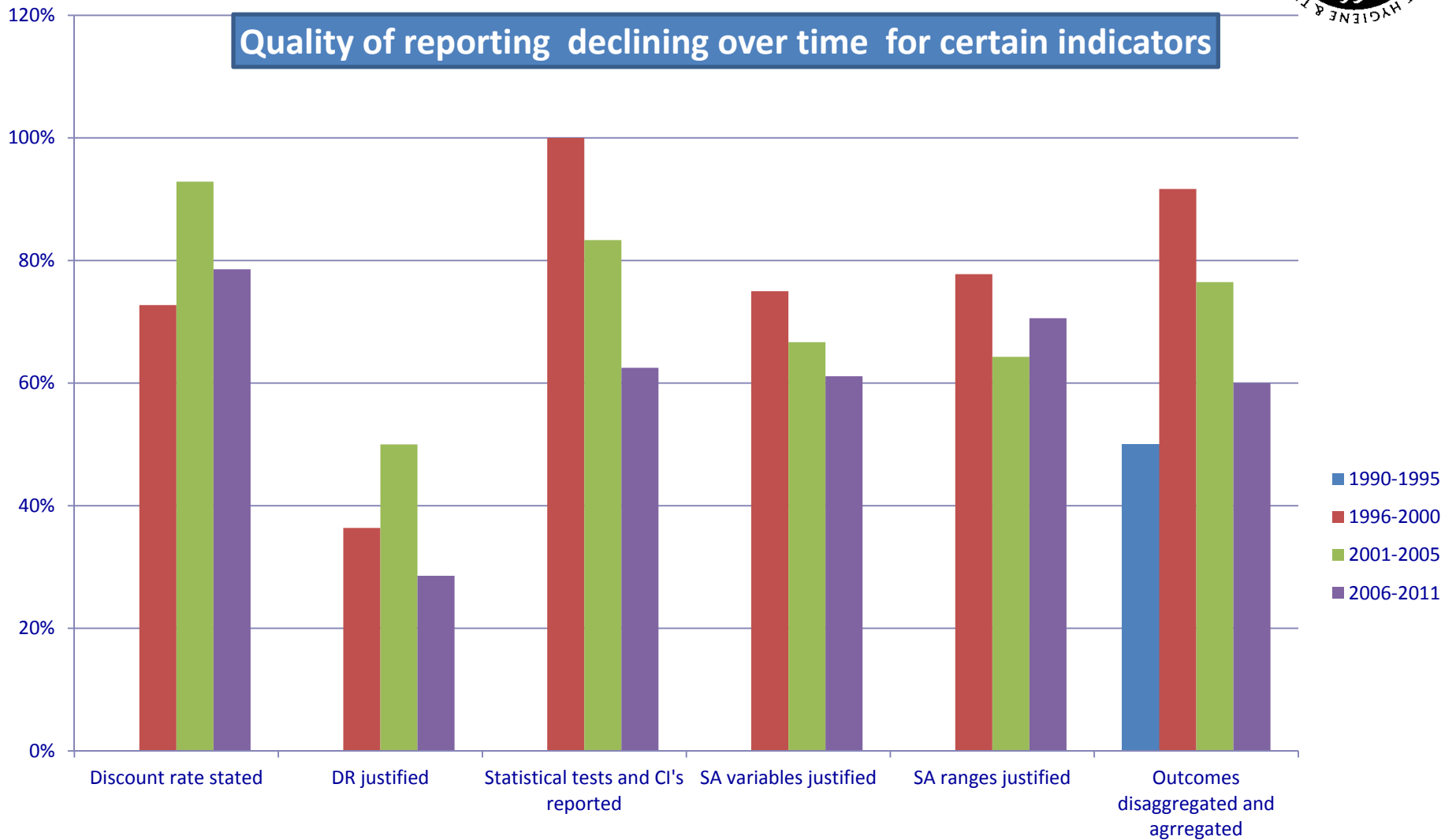- 5 studies had insufficient information to determine the costing methodology

Secondary sources of data

- Poor egs included
  - Cost models did not provide sources of data (2)
  - Costs based on news interviews (2)
  - Unjustified assumptions
  - Failing to contextualise the data

- Good egs. Included
  - Use of systematic literature reviews (3)
  - Favouring recent/ high quality studies (1)
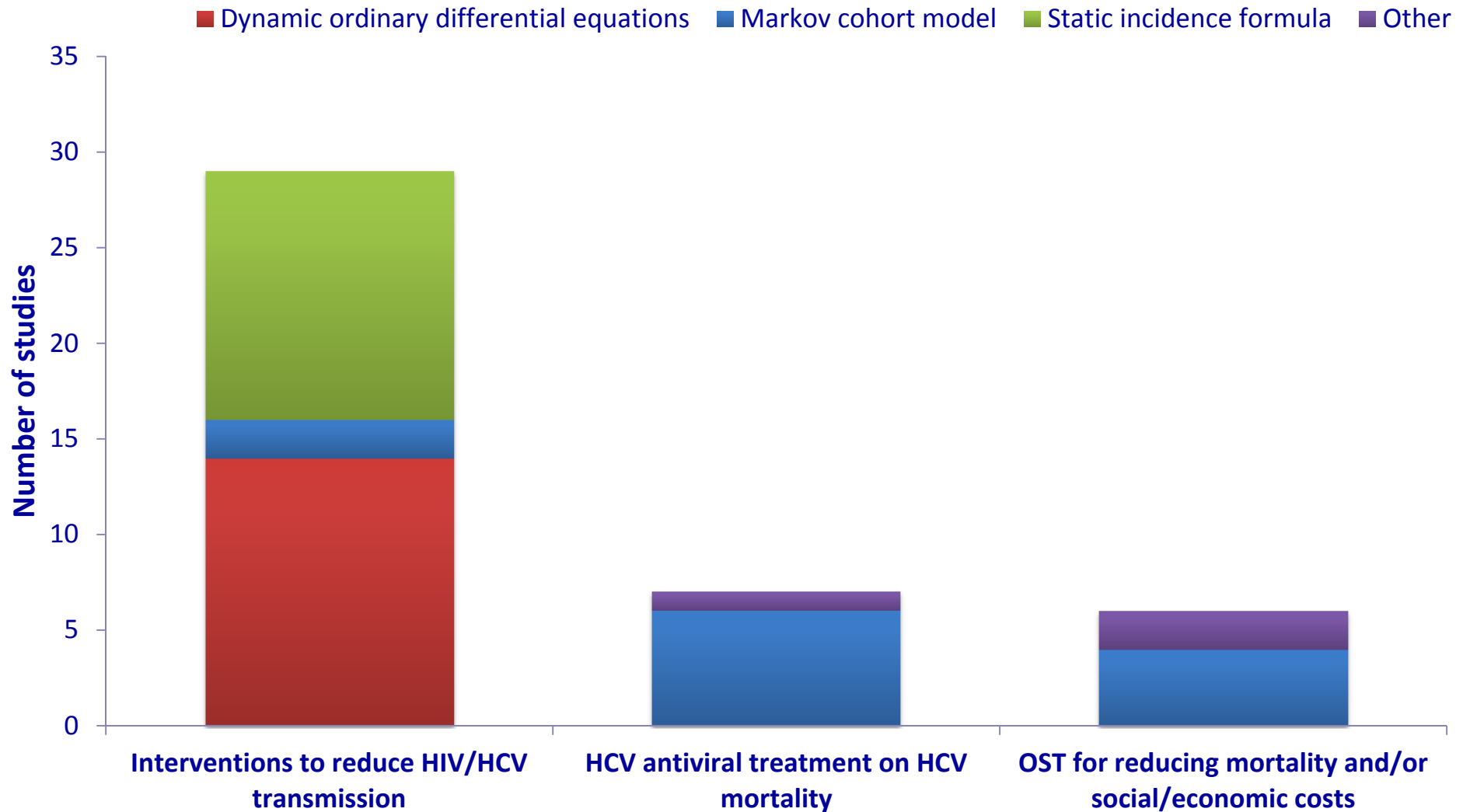 - Pooling and weighting data as appropriate (1)

Quality of reporting declining over time for certain indicators

RESULTS: REVIEW OF THE MODELS

42 papers used models to estimate outcomes

■ Dynamic ordinary differential equations ■ Markov cohort model ■ Static incidence formula ■ Other

Interventions to reduce HIV/HCV transmission: model structure

- NSP (23 studies) and/or OST (4), ART (2) and other interventions (4)

- 52% (15/29) use appropriate dynamic models

- Before 2004, 73% (11/15) of models were static:
  - Do not model the chain of infections averted.
  - Since 2004, 79% (11/14) have used dynamic models.

- Only 45% (13/29) of HIV models include sexual transmission among IDUs and non-IDU partners:
  - Only ½ of these include full chain of infections averted

- Effectiveness parameter always weak –none used biological estimate of effect on HIV/HCV incidence

Other model considerations

- Most disease transmission models had short time horizons (1-5 years) calculating infections averted
  - CEA projections assume infections remain averted with full DALYs with no added costs
  - Models really estimate HIV infection years averted
  - Very few include costs and utilities in model structure
- Dynamic models generally fitted (11/13) to data (static not)
  - Many (4) just to one prevalence data point
  - Most (8) models did not incorporate uncertainty in their impact estimate:

Conclusions (1)

- Studies vary in scope, methods and outcome measures

- Costing methodologies are not standardised

- Despite guidelines in economic evaluation, costing methodologies, poor quality costings are still being published

- Attention needs to be paid to proper documentation and justification of sources when building models

Conclusions (2)

- Non disease transmission models generally rigorous in terms of model and methods used

- Disease transmission models are limited:
  - None have strong efficacy estimate
  - Many are static
  - Few fit to sufficient data
  - Few account for uncertainty in model fitting
  - Few include full chain of infections averted for HIV
  - Few build in costs and detailed disease progression with utilities into model structure

Thank you for listening

Thanks to the SAME group at LSHTM for
    funding this study.

Further details available at:
            www.same.lshtm.ac.uk