Health Care Provider Performance Review

Webinar, December 6, 2018.

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Presentation time: 40 minutes

Effectiveness of strategies to improve health care provider performance in low- and middle-income countries: a systematic review

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Health Care Provider Performance Review

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Data abstraction team

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Background

- Health care providers (HCPs) play essential roles in delivering health care
- In low- and middle-income countries (LMICs), however, HCP performance often inadequate
- Estimated 5 million deaths per year due to poor quality among people using care
- Improving HCP performance is important for programs and patients they serve, required for Sustainable Development Goal of achieving universal health coverage

Background

- Many strategies exist to improve performance, and summary of evidence would be useful
- Existing reviews have limitations, especially that they typically focus on only a narrow range of strategies
- Decision-makers, however, ask broader question: What are most effective ways to improve performance?
- To answer this broader question, one needs to compare multiple strategies
- Health Care Provider Performance Review (HCPPR): systematic review designed to help fill this gap by comparing all strategies

METHODS

Inclusion criteria

- Any quantitative study of effectiveness of any strategy to improve HCP performance in LMIC, on any health topic, in any language, published or not
- HCP. Any facility- or community-based health worker, pharmacists, shopkeepers who sell drugs, private sector
- Literature search
  - Included studies from 1960s to May 2016
  - 52 electronic databases of published studies (eg, MEDLINE)
  - 58 document inventories & websites for unpublished studies

Eligible study designs

- Pre-intervention vs. post-intervention study with comparison (+/- randomization)
- Post-intervention only study with randomized controls
- Interrupted time series (≥3 data points before and after intervention)

Defining strategy groups

- Determined which individual strategy components were used (e.g., training + supervision = 2 components)
- 207 components identified
- Created 12 component categories (e.g., training, supervision, incentives, etc.)
- Defined strategy as unique combination of 12 component categories, for example
  - Training only
  - Training + supervision
  - Training + supervision + incentives
  - Etc.

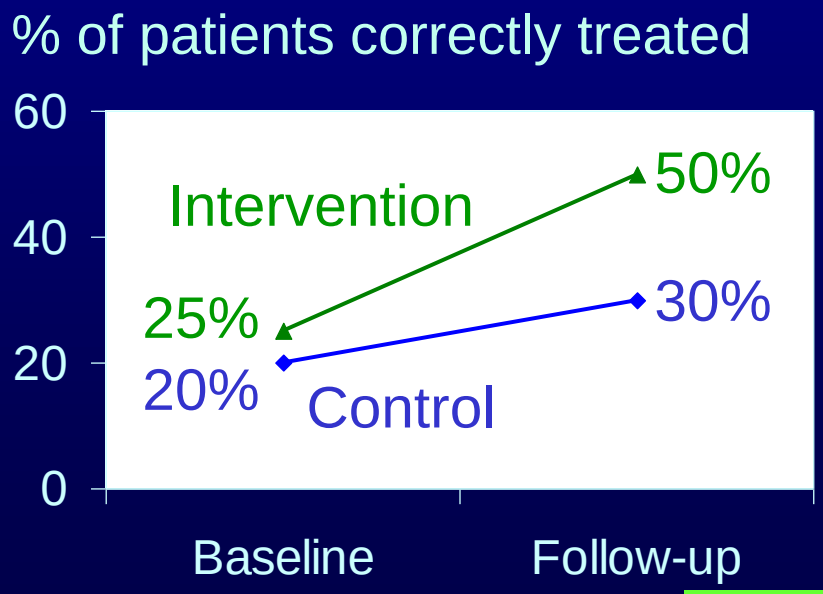
Defining strategies: 12 component categories

1) Community support: E.g., community health education
2) Patient support: E.g., patient education
3) Strengthening infrastructure: E.g., provision of drugs
4) HCP-directed financial incentives
5) Health system financing and other incentives. E.g., insurance
6) Regulation and governance: E.g., accreditation
7) Group problem solving: E.g., collaborative improvement
8) Supervision: E.g., improving routine supervision, audit with feedback
9) Other management techniques: E.g., HCP self-assessment
10) Training
11) Printed information or job aids for HCPs
12) Information & communication technology (ICT) for HCPs:
    E.g., reminders sent to HCP phone

Analysis of effect sizes

- Effect size in terms of %-point change
- Example formula for outcomes expressed as %:

$$\text{Effect size} = (\text{FU} - \text{BL})_{\text{intervention}} - (\text{FU} - \text{BL})_{\text{control}}$$



← Change = (50% – 25%) = **25 %-points**

← Change = (30% – 20%) = **10 %-points**

Effect size = 25 – 10

= 15 %-points

For every 100 patients, 15 treated correctly

Analysis

- Primary method
  - Only include strategy vs. control comparisons (no head-to-head studies)
  - If study had >1 primary outcome (thus >1 effect size), study represented by median of effect sizes (MES)
  - Compare MES distributions of various strategies: weighted medians, IQRs (weight = 1 + ln[no. of HCPs or HFs])
  - To reduce bias, effect sizes of outcomes expressed as percentage from studies of professional HCPs were adjusted for baseline performance, public HF only, & Asia

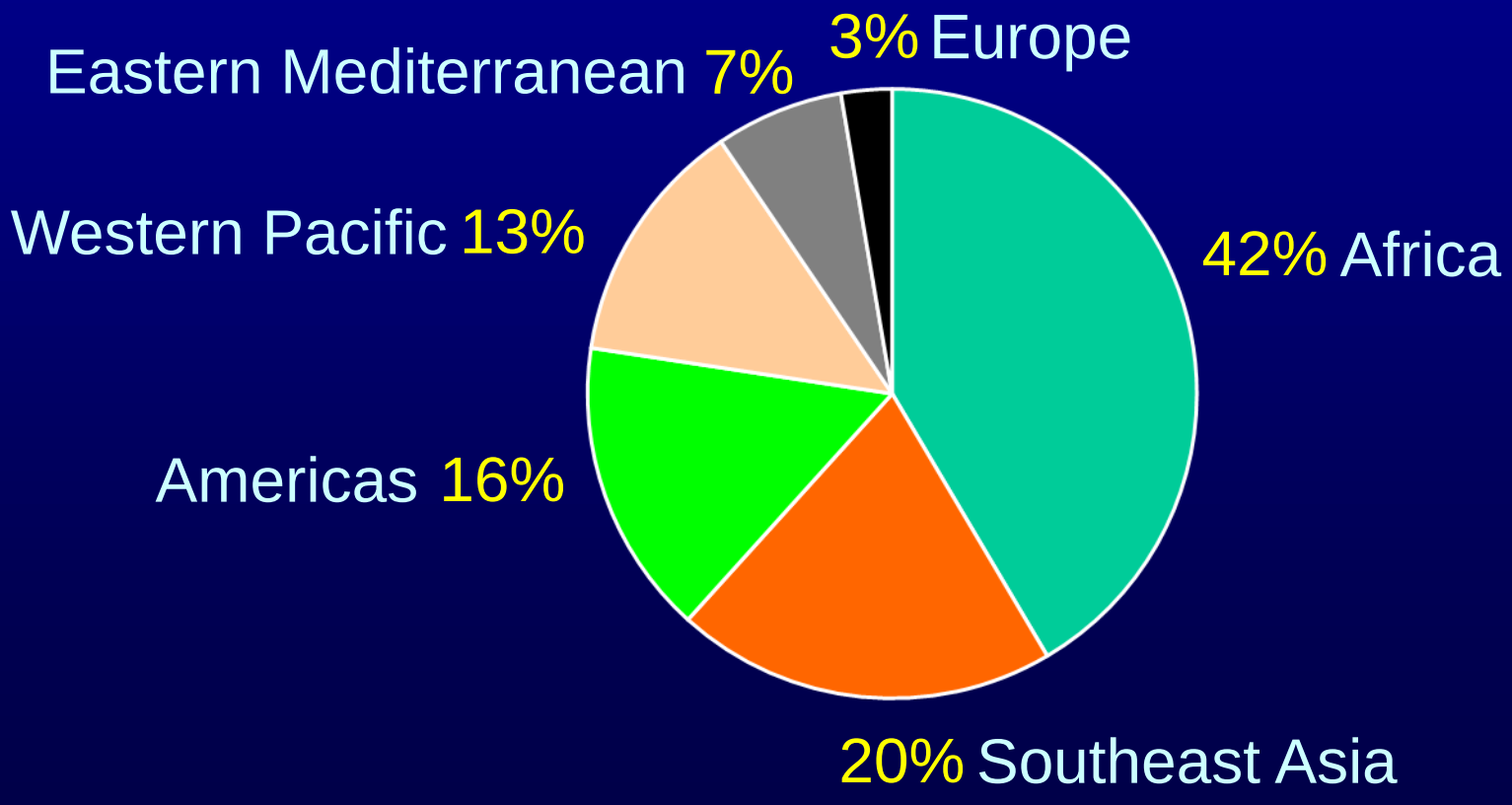
RESULTS

Literature search

- 216,477 citations screened
- 2269 reports included in review (all outcomes)
- For HCP practice outcomes (focus of presentation, e.g., % of patients correctly diagnosed or treated)
  - Included 670 reports from 337 studies
  - Identified 118 strategies
- Wide range of contexts
  - Urban and rural
  - Public & private health facilities, community settings
  - Numerous health conditions

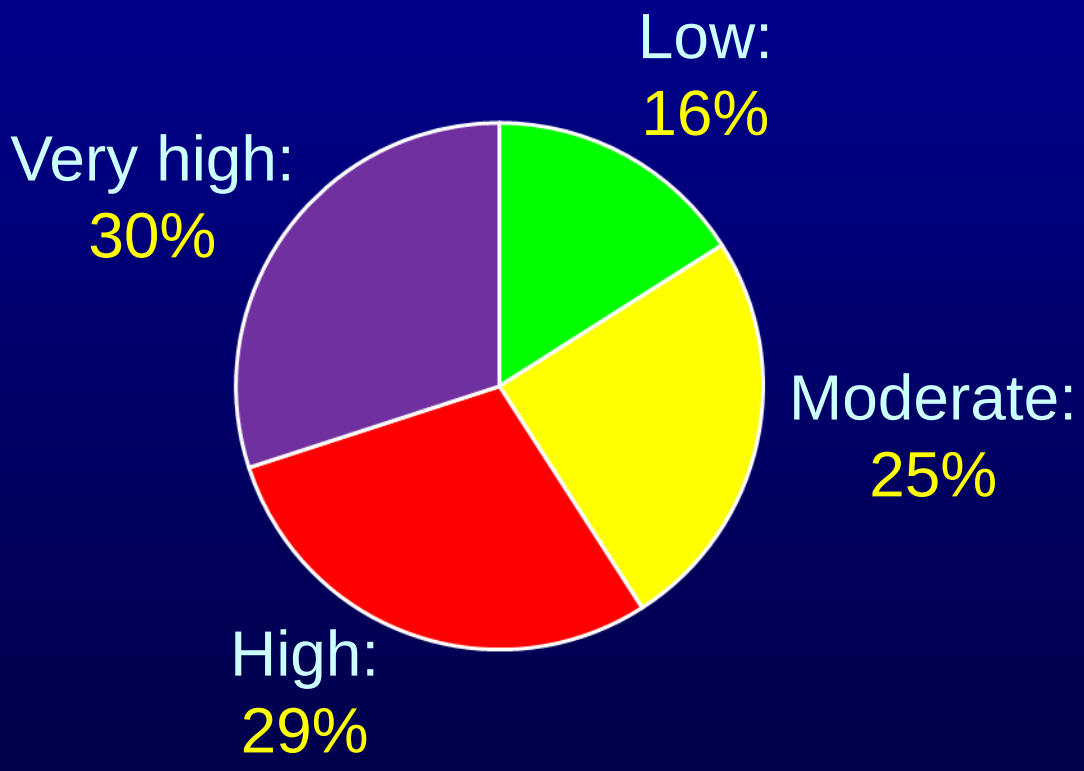
Study sites (337 studies with HCP practice outcomes)

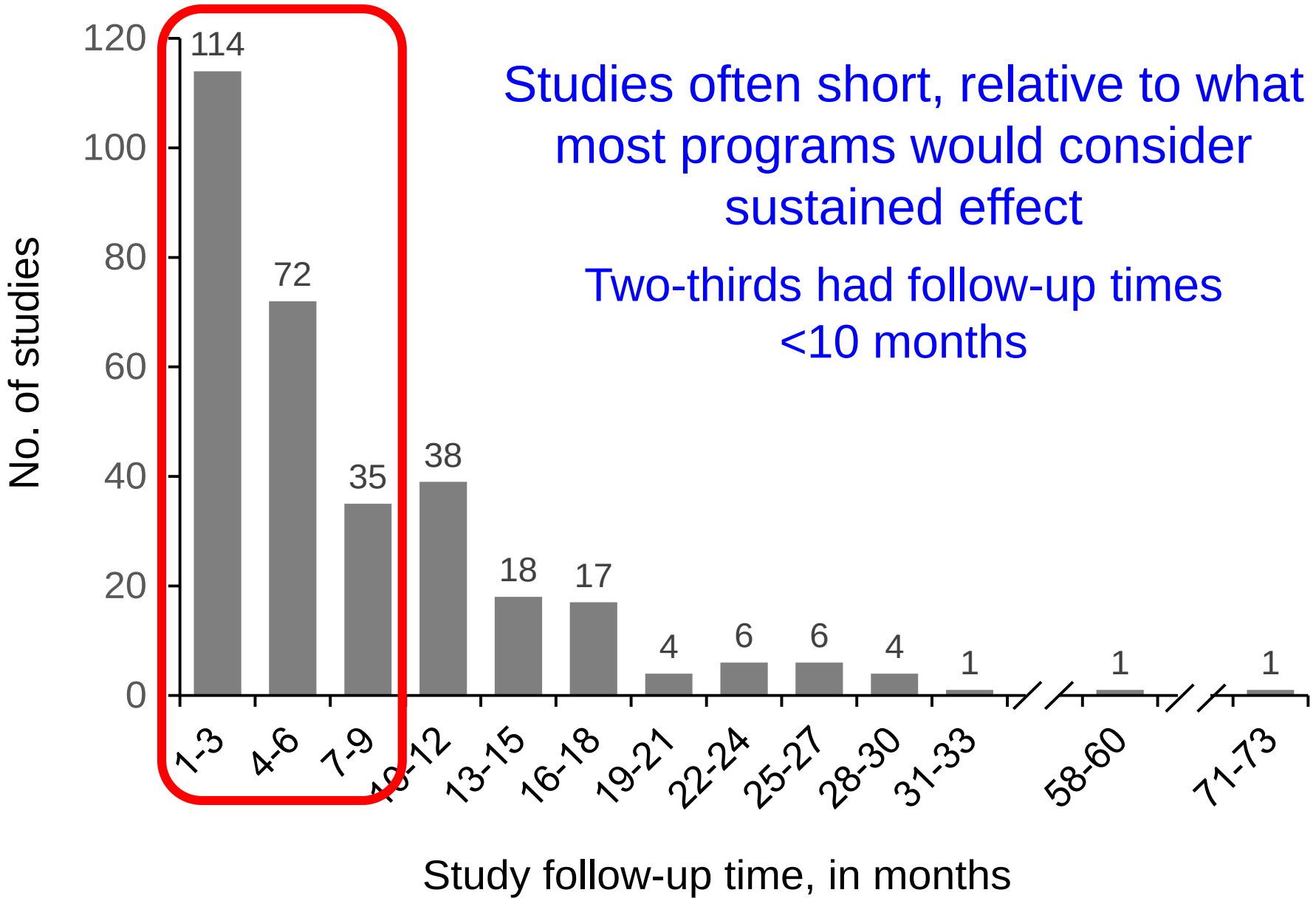
- 64 countries
- 40% from low-income countries



Overall risk of bias

Based on guidance from Cochrane's EPOC group




Studies often short, relative to what most programs would consider sustained effect
Two-thirds had follow-up times <10 months
No. of studies
120
100
80
60
40
20
0
114
72
35
38
18
17
4
6
6
4
1
1
1
1-3
4-6
7-9
10-12
13-15
16-18
19-21
22-24
25-27
28-30
31-33
58-60
71-73
Study follow-up time, in months

Effectiveness of strategies to improve HCP practices:

Studies of professional health workers

(generally facility-based health workers, such as physicians, nurses, and midwives)

Results of outcomes expressed as % (e.g., % of patients treated correctly)

Top photo: TF Org. https://www.tforg.com/how-we-think/sweetspot-blog/2015/02/27/opportunities-indonesian-healthcare-system-summary-recent-publications/. Accessed November 10, 2018.

General findings

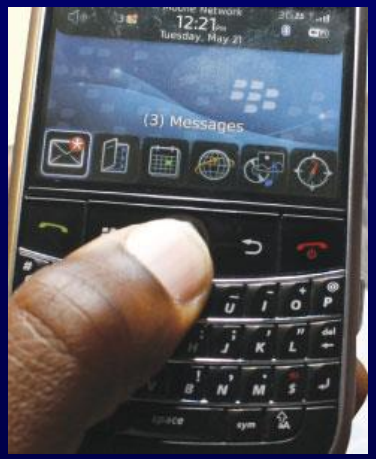
- Mean baseline: 40%
- Among all 101 strategies, median improvement = 12 %-pts
  (Typical scenario: 40% BL + 12 %-pt improvement = 52% F/U)
- Most strategies (80%) tested by only 1 or 2 studies
  - Generalizability extremely limited
  - Presentation focuses on strategies tested by at least 3 studies
- Effect sizes vary widely for most strategies
  - Ex. Train only, median effect: 10 %-pts (IQR: 6, 21; range: –20, 61)
    Thus, ¼ of effects: <6 %-pts, and ¼ of effects: 21 to 61 %-pts
  - Demonstrates difficulty in predicting strategy's effect
  - Underscores importance of monitoring effect of any strategy

Effectiveness of strategies tested by 3+ studies

Median effect size, %-pts

- Printed information or job aids for HCPs only 1
- ICT for HCPs as sole strategy (N = 4 studies) 1

Information and communication technology (mHealth)



Effectiveness of strategies tested by 3+ studies

	Median effect size, %-pts
• Printed information or job aids for HCPs only	1
• ICT for HCPs as sole strategy (N = 4 studies)	1
– Broadened strategy definition (ICT +/- other strategy components, N = 28 studies)	8

Goal: analyze larger pool of studies with greater diversity of context and implementation approaches

Effectiveness of strategies tested by 3+ studies

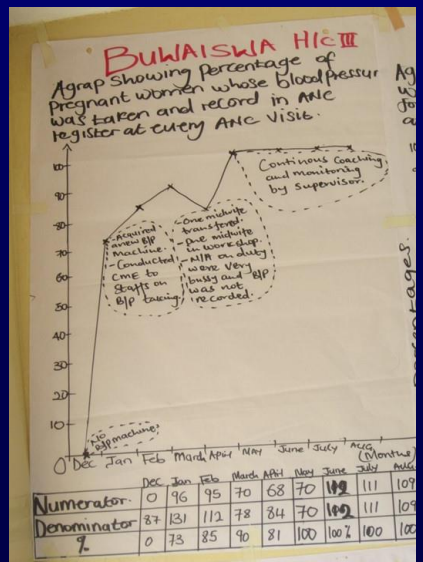
	Median effect size, %-pts
• Printed information or job aids for HCPs only	1
• ICT for HCPs as sole strategy (N = 4 studies)	1
– Broadened strategy definition (ICT +/- other strategy components, N = 28 studies)	8
• Training only	10
• Supervision only	15
• Training + supervision	18

Effectiveness of strategies tested by 3+ studies

Median effect size, %-pts (broadened definition)

- Group problem solving only — 28 (12)

E.g., CQI or collaborative improvement



Effectiveness of strategies tested by 3+ studies

	Median effect size, %-pts (broadened definition)
• Group problem solving only	28 (12)
• Group problem solving + training	56 (16)
• Strengthened infrastructure + supervision + other mgmt techniques + training	33 (29)

E.g., HCP group process/meetings

E.g., Provision of medicines

Effectiveness of strategies tested by 3+ studies

	Median effect size, %-pts (broadened definition)
• Group problem solving only	28 (12)
• Group problem solving + training	56 (16)
• Strengthened infrastructure + supervision + other mgmt techniques + training	33 (29)
• Strengthened infrastructure + supervision + other mgmt techniques + training + financing	58 (33)

Are multi-faceted strategies more effective than simpler ones?

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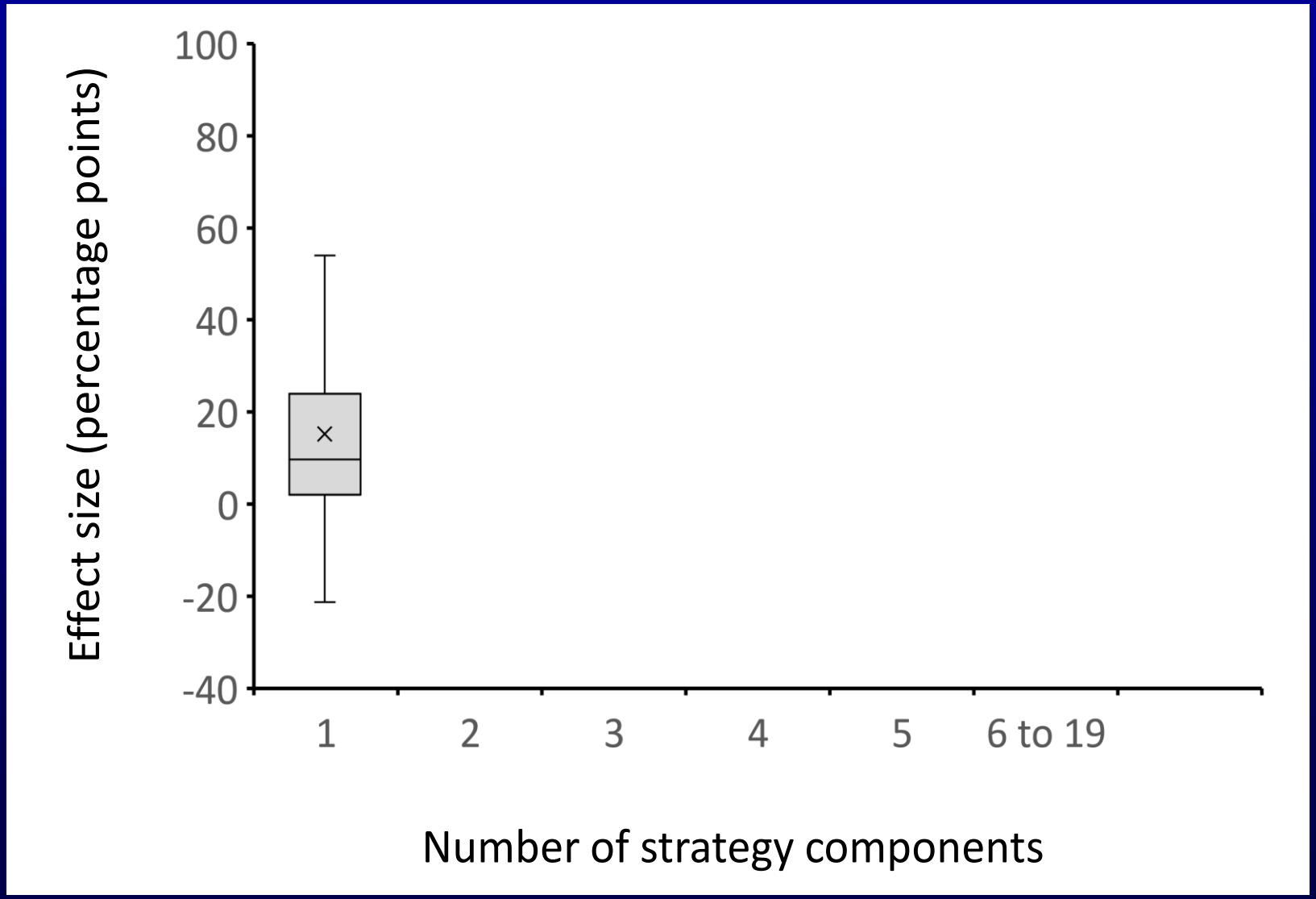
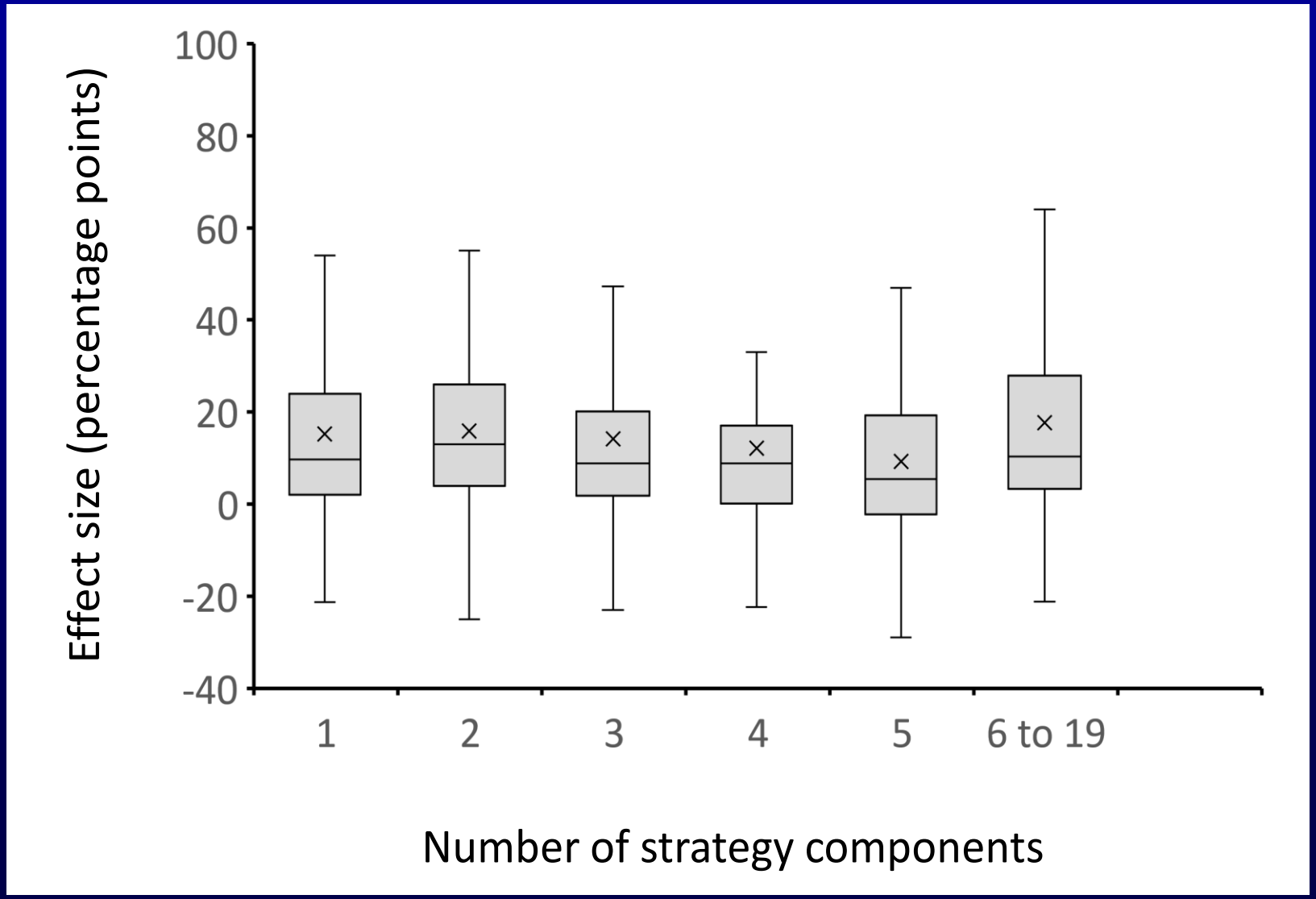


Are multi-faceted strategies more effective than simpler ones?



Strategies tested by <3 studies ("hot topics")

	Median effect size, %-pts (broadened definition)
• Financial incentives for HCPs only	26 (7)
• Health system financing or other incentives only (i.e., not financial incentives for HCPs)	1 (14)
• Regulation/governance only	NA (28)

No eligible studies found of regulation/governance as sole strategy

Context-specific analysis

Stratify effectiveness results: low versus moderate level of resources (what works where?)

Low- vs. moderate-resource setting

Strategy (with 3+ comparisons per stratum and ≥10 %-pt difference between strata)	All settings (median MES)	Low resource* (median MES)	Moderate resource** (median MES)
Group problem solving only	28	12	40
Supervision + training	18	12	25

* Non-hospital settings in low-income countries and rural-only settings in middle-income countries

** Hospitals in low-income countries and any urban & mixed urban/rural settings in middle-income countries

Low- vs. moderate-resource setting

Strategy (with 3+ comparisons per stratum and ≥10 %-pt difference between strata)	All settings (median MES)	Low resource* (median MES)	Moderate resource** (median MES)
Group problem solving only	28	12	40
Supervision + training	18	12	25

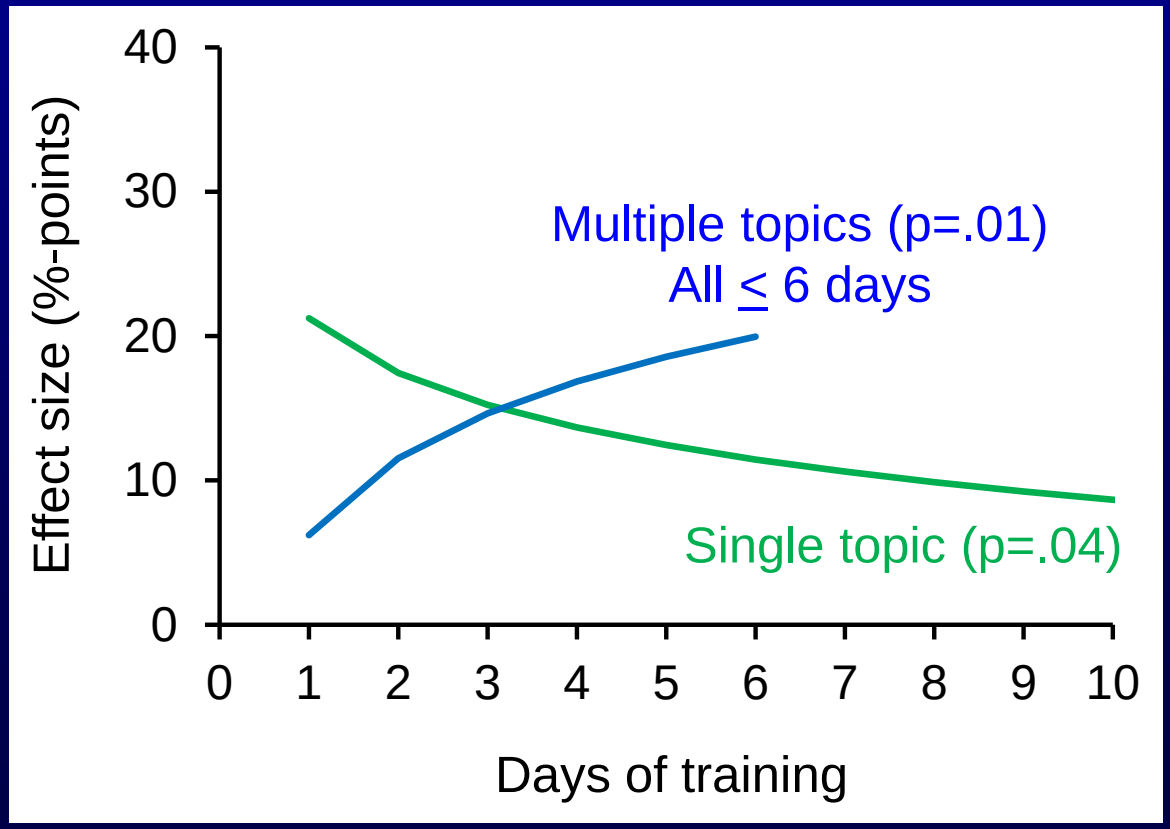
Not all strategies have large stratum-specific differences for "low vs. moderate resource" factor, and some strategies have large stratum-specific differences for other contextual factors.

Factors associated with training effectiveness

(Are some training approaches more effective or more efficient?)

Factors associated with training effectiveness

- Interaction between training duration and complexity of training topic: additional days increase mean effect **but only for multiple health topics**

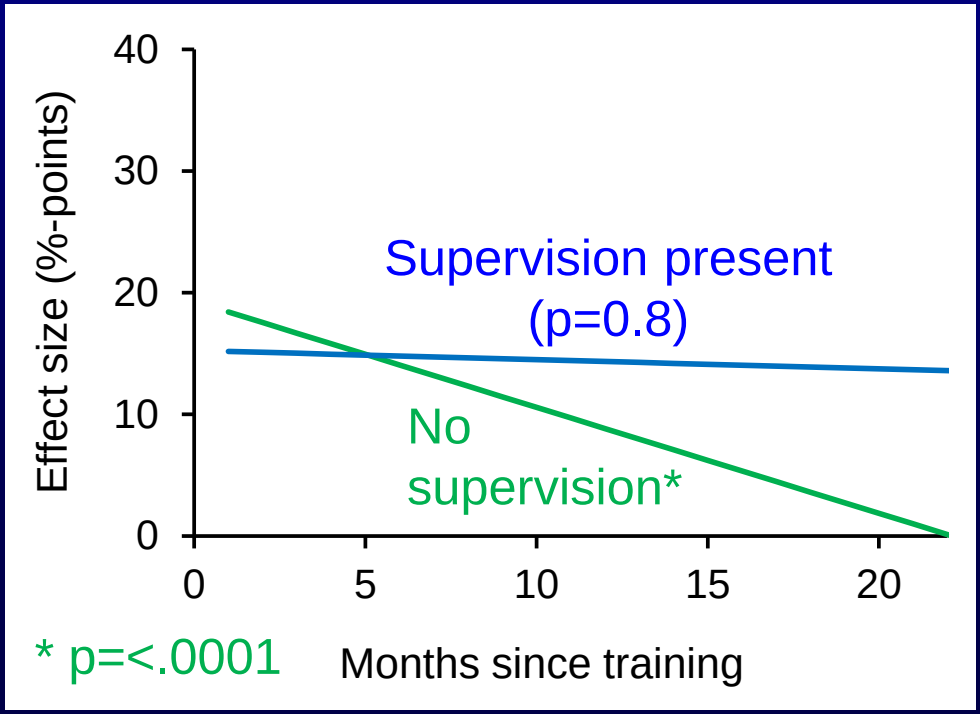


Ex: Integrated Management of Childhood Illness (IMCI)

For single-topic training, no benefit to having longer courses

Factors associated with training effectiveness

- Mean effect 6–11 %-pts higher if some or all training is on-site (compared with all off-site training)
- Time since training: effect of training wanes over time
- Interaction between supervision and time since training: supervision "protects" against waning effect of training



Waning effect

Effect of strategies to improve performance of lay or community health workers (CHWs)

Results of outcomes expressed as percentage (e.g., % of patients treated correctly)

Top image. Malaria Consortium. https://www.malariaconsortium.org/blog/recognising-community-health-workers-this-world-health-day-and-world-health-workers-week-2/. Accessed May 16, 2018

Lower image. World Vision. https://www.worldvision.org/health-news-stories/malaria-burundi-half-country-sick. Accessed May 16, 2018.

Improving lay or CHW performance

- 18 studies, most with high or very high risk of bias
- 14 strategies, most tested by 1 or 2 studies each
- For training only (N = 4 studies), median effect = 2 %-points
- For strategies that included community support and training CHWs, effects ranged from 8 to 56 %-points

Evidence-based guidance on improving HCP performance in LMICs

General guidance on improving HCP practices

1) Effect of any strategy should be monitored so managers can know how well it works. Monitoring data could be used to adapt strategies to local conditions and facilitate learning, with aim of increasing effectiveness.

2) General approach
   - Initial strategy (based on research evidence and knowledge of local context)
   - Monitor HCP practices
   - Address gaps (which should be expected) by modifying or abandoning strategy or layering on new one
   - Continue to monitor and modify as needed

3) Decision-makers should not assume multi-faceted strategies are more effective than simpler ones

Guidance for professional HCPs (i.e., not only CHWs)

1) **Printed information or job aids** to HCPs as sole strategy is unlikely to change performance

2) **ICT** typically has small-to-modest effects

3) **Training** or **supervision** generally have moderate effects. May be more effective to combine training with other strategies, such as supervision or group problem solving.

   - To increase effect of training on **multiple health topics**, duration at least 3 days might be beneficial, with additional days potentially increasing effectiveness
   - For training on **single health topics**, short duration (1–2 days) seems as effective as longer duration (and less expensive)

Guidance for professional HCPs (i.e., not only CHWs)

4) **Group problem solving** typically has moderate effects

5) **Multifaceted strategies** of infrastructure, supervision, management techniques, and training (+/- financing), and strategy of **group problem solving + training** tend to have large effects

6) **Financial incentives** for HCPs, & **other finance/incentive strategies** typically have modest–moderate effects

7) Effect of **regulation/governance** alone is unknown; it tends to have large effects when combined with other components

8) Programs might consider influence of context on strategy effect. Some (e.g., group problem solving) might be more effective in moderate-resource areas.

Guidance for improving CHW performance

1) Only **training** CHWs usually has small effects

2) Strategies that include **community support plus training** for CHWs might lead to large improvements, although evidence is limited

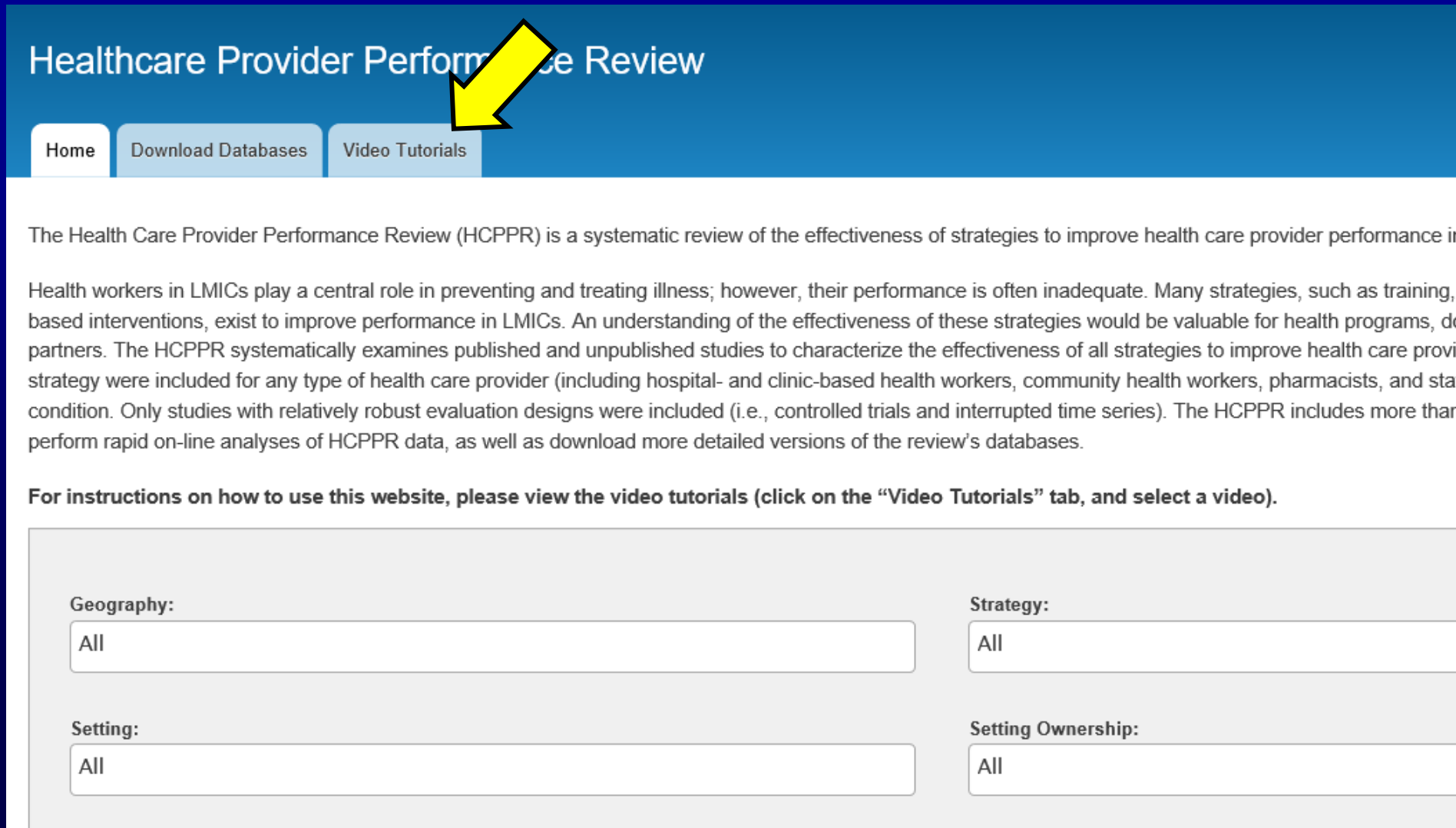
Limitations

1) Limitations of studies: lack of detail on strategy and context, lack of standard methods, difficulty in assessing study precision and strength of implementation, high risk of bias, and short follow-up time

2) With many statistical tests performed, results represent hypothesis screening, not true hypothesis testing

3) Overview analysis—i.e., intentionally designed to identify broad patterns across all studies. Thus, results do not reflect nuances, e.g., all countries combined. Future analyses will be more specific.

HCPPR website: www.hcpperformancereview.org



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Healthcare Provi[illegible] Performance Review

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The Health Care Provider Performance Review (HCPPR) is a systematic review of the effectiveness of strategies to improve health care provider performance i

Health workers in LMICs play a central role in preventing and treating illness; however, their performance is often inadequate. Many strategies, such as training, based interventions, exist to improve performance in LMICs. An understanding of the effectiveness of these strategies would be valuable for health programs, d partners. The HCPPR systematically examines published and unpublished studies to characterize the effectiveness of all strategies to improve health care provi strategy were included for any type of health care provider (including hospital- and clinic-based health workers, community health workers, pharmacists, and sta condition. Only studies with relatively robust evaluation designs were included (i.e., controlled trials and interrupted time series). The HCPPR includes more than perform rapid on-line analyses of HCPPR data, as well as download more detailed versions of the review's databases.

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Setting: All

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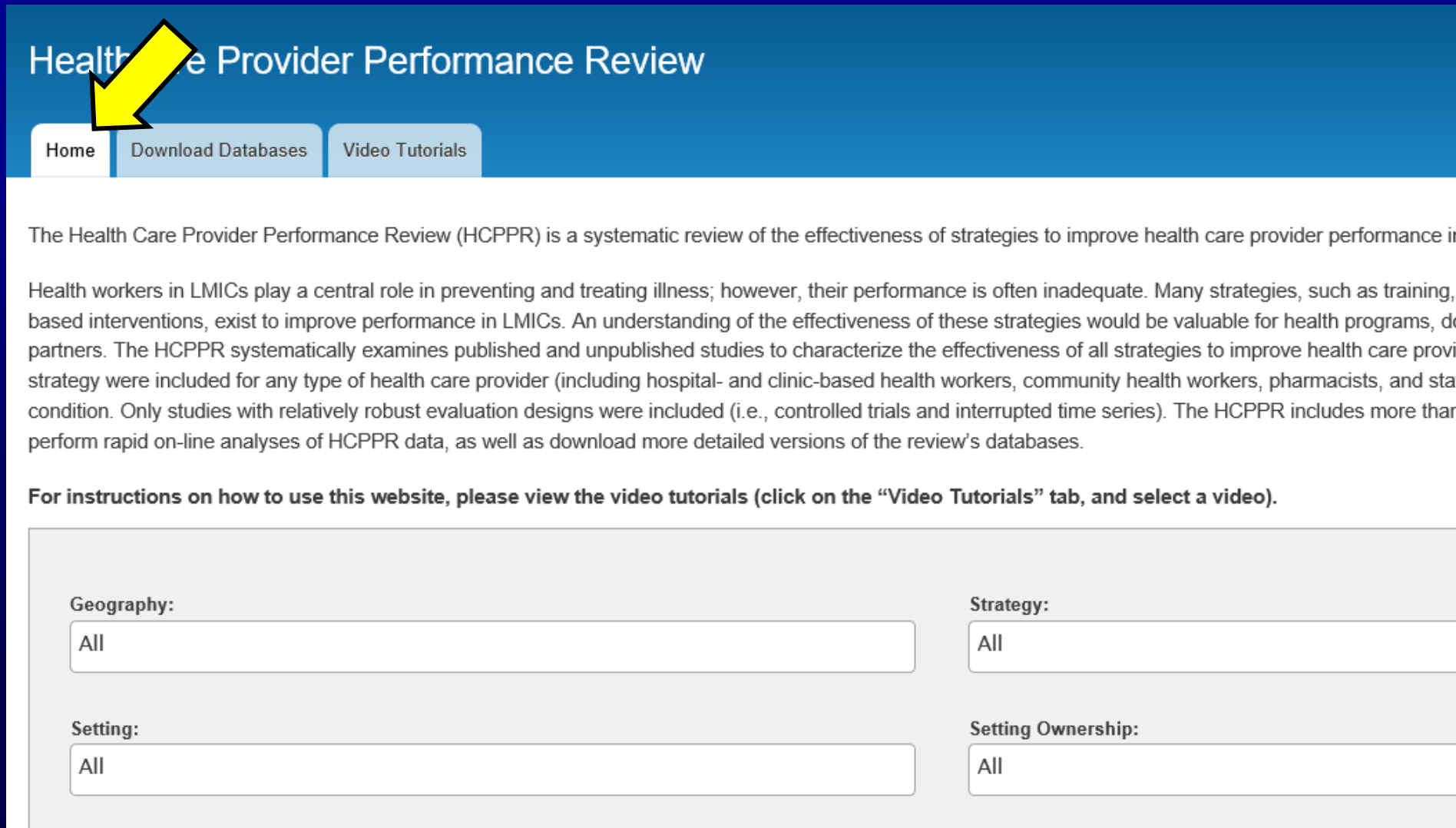

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2) Click on "Run analysis"

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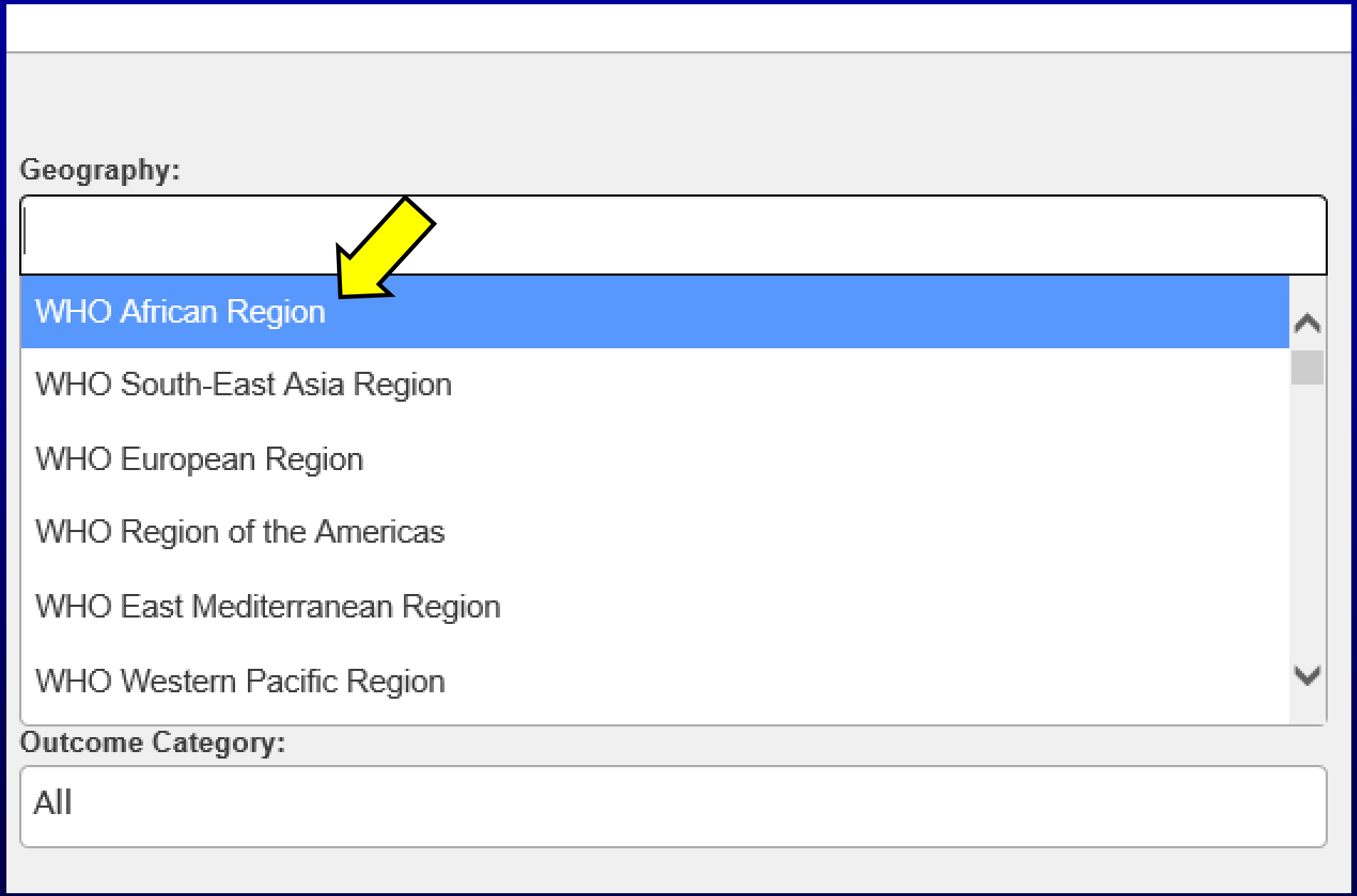
Geography:
WHO African Region
WHO South-East Asia Region
WHO European Region
WHO Region of the Americas
WHO East Mediterranean Region
WHO Western Pacific Region
Outcome Category:
All

Geography:

× WHO African Region

Strategy:

All

Setting:

All

Setting Ownership:

All

Health Worker Type:

All

Health Condition:

× Malaria

Outcome Category:

All

Risk of Bias:

All

Income Level:

All

Lay or Community Health Workers (CHWs):

- ○ All studies (i.e., studies of lay/CHWs AND health facility-based health workers)
- ○ Include only lay or CHW predominant studies
- ◉ Exclude lay or CHW predominant studies (i.e., only include health facility-based health worker studies)

Random control:

- ◉ All studies
- ○ Include only randomized, controlled studies
- ○ Exclude randomized, controlled studies

Run analysis Reset

Geography:

× WHO African Region

Strategy:

All

Setting:

All

Setting Ownership:

All

Health Worker Type:

All

Health Condition:

× Malaria

Outcome Category:

All

Risk of Bias:

All

Income Level:

All

Lay or Community Health Workers (CHWs):

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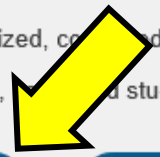

Run analysis Reset

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▸ Perform Analysis

Analysis of Strategy Effectiveness

Strategy	Number of Study Comparisons in Analysis	Analysis o… Median of MES Value…
Strategies tested … least 3 study comparisons each:		
Strengthening infrastructure + Health system financing and other incentives + management techniques + Training	3	63.0
Supervision + Training	4	44.9
Training only	5	10.9

Conclusions

1) Important performance problems exist, but there are strategies to improve quality of care
2) Research has some important limitations, but results still useful to inform decision-making
3) Some strategies seem more effective than others (e.g., training + group problem solving, some multi-faceted strategies); consider using in appropriate context
4) Might be ways to make training more effective and efficient
5) Avoid ineffective strategies (e.g., only printed info)
6) Important to monitor effectiveness for all strategies
7) High-quality research needed (e.g., on CHWs)

Conclusions

8) HCPPR is largest review of strategies to improve HCP performance in LMICs
   - Programs, donors, and other development partners consider results when making decisions
   - To help disseminate results and encourage more specific analyses, the database is publicly available on website

Visit our website:
www.hcpperformancereview.org

Lancet Global Health, October 2018

(appendices: additional methods and results)

Effectiveness of strategies to improve health-care provider practices in low-income and middle-income countries: a systematic review

Alexander K Rowe, Samantha Y Rowe, David H Peters, Kathleen A Holloway, John Chalker, Dennis Ross-Degnan*

Summary

Background Inadequate health-care provider performance is a major challenge to the delivery of high-quality health care in low-income and middle-income countries (LMICs). The Health Care Provider Performance Review (HCPPR) is a comprehensive systematic review of strategies to improve health-care provider performance in LMICs.

Thank you!

Any questions or comments?

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