

Knowledge Utilization Research Center

# اصول و مبانی ترجمان دانش

بهاره یزدی زاده  
دکتری تخصصی اپیدمیولوژی  
مرکز تحقیقات بهره برداری از دانش سلامت

۲ اسفند ۱۴۰۲

از نتیجه پژوهش چه استفاده هایی میتوان کرد؟

- ✓ **Why** knowledge translation is important?
- ✓ **What** is knowledge translation?
- ✓ **How** to strengthen knowledge translation?

why?

Commentary

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## Materializing research promises: opportunities, priorities and conflicts in translational medicine

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### Inefficient translation rates

My team recently examined the rate of translation of promising basic research findings to clinical applications [8]. We screened reports published between 1979–1983 in 6 top basic science journals (Science, Nature, Cell, Journal of Biological Chemistry, Journal of Experimental Medicine, and Journal of Clinical Investigation). We found 101 articles that clearly made a promise for a major clinical application of their findings. Two decades later, only 5 of these promises were in licensed clinical use and only one of them had a major impact on current medical practice. Three quarters of the basic science promises had not yet been tested in a randomized trial. The strongest predictor of moving to randomized experimentation was industry involvement in the original basic science publication.

- **Randomized clinical trials:** have shown that a number of interventions are effective, safe, and cost-effective for reducing the risk of VTE in hospital settings.
- **Evidence-based guidelines** for identifying patients for VTE prophylaxis are widely accepted by professional bodies and expert task forces around the world, and are seemingly straightforward to implement.
- **Surveys(2007):** less than 30% of eligible patients receive VTE prophylaxis.

Why does this disparity exist?

## Consistent evidence of failure to translate research findings into clinical practice:

- 30-40% patients do not get treatments of proven effectiveness.
- 20–25% patients get care that is not needed or potentially harmful.

Schuster, McGlynn, Brook (1998). *Milbank Memorial Quarterly* Grol R (2001). *Med Care*

- According to clinical trials, many effective treatments exist for chronic diseases. However the outcomes in the real world are not as expected from these explanatory trials and lack of adherence to treatment is considered one of the major reasons.
- It has been estimated that, in developed countries, patients with chronic medical illnesses adhere only 50% of the time to their medications, and it is believed that the problem is much higher in developing countries.

RESEARCH

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## An assessment of health research impact in Iran



Bahareh Yazdizadeh<sup>1\*</sup>, Reza Majdzadeh<sup>1,2</sup>, Leila Janani<sup>3</sup>, Farideh Mohtasham<sup>1</sup>, Sima Nikoosaei<sup>1</sup>,  
Abdmohammad Mousavi<sup>4</sup>, Farid Najafi<sup>5</sup>, Maryam Atabakzadeh<sup>6</sup>, Azam Bazrafshan<sup>7</sup>, Morteza Zare<sup>7</sup>  
and Manoochehr Karami<sup>8</sup>

۶۰٪ از مطالعات می توانند مستقیماً بر سلامت تأثیر گذار باشند، اما تنها یک سوم آن ها مورد استفاده قرار گرفته اند، ولی چنانچه مورد استفاده قرار گرفته باشند در بیش از نیمی از موارد نتیجه مورد نظر حاصل شده است.



## What Is the Share of the Country's Researches in Iran's National Tuberculosis Guideline?

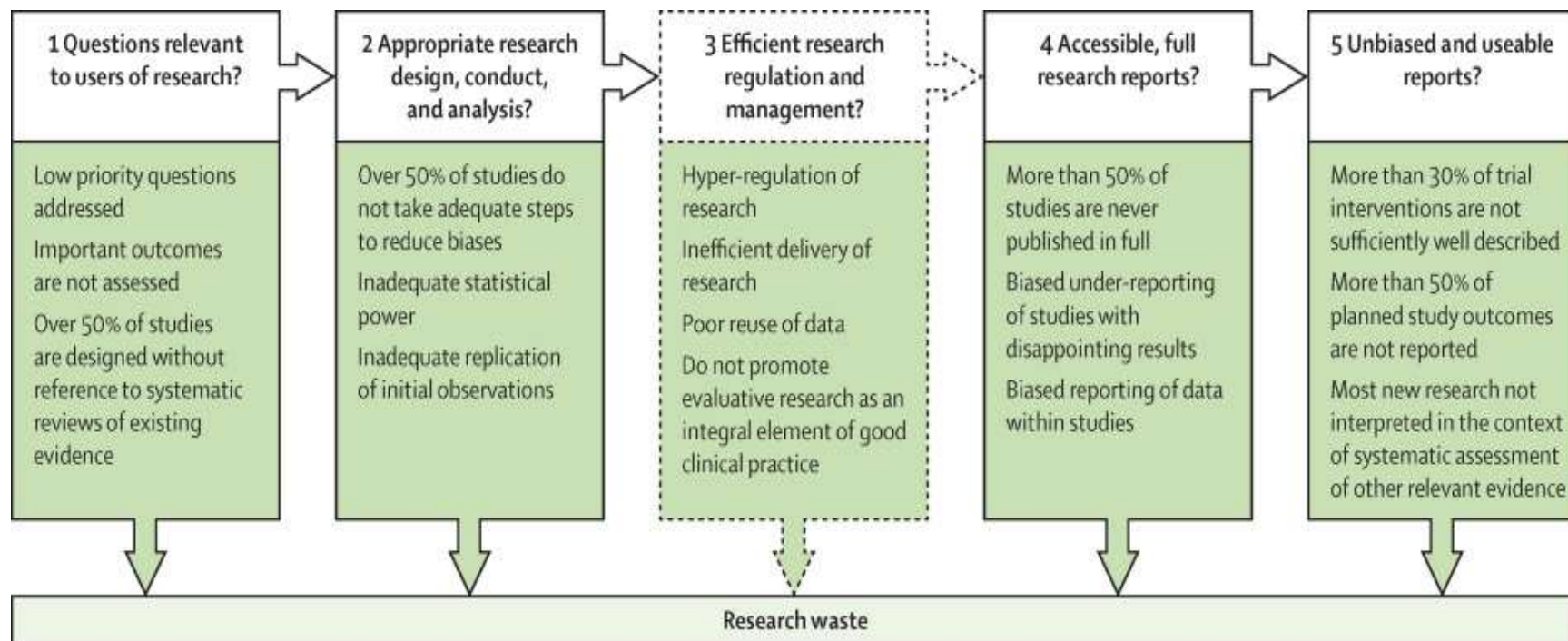
**Reza MAJDADEH<sup>1, 2</sup>, Khaled RAHMANT<sup>1</sup>, \*Mahshid NASEHI<sup>3</sup>**

Table 3: Evidence level of recommendations in the National Tuberculosis Guideline of Iran

Evi- dence level	Definition	Percent of recommenda- tion evidence in total recommendations	Recommendation No.
+++1	Very good systematic review	6.4	10-11
++1	Medium systematic review and or good Randomized Controlled Trial (RCT)	19.3	1-4-5-6-7-12
++2	Systematic review on observational studies	19.3	3-8-9-13-14-15
++3	Appropriate descriptive study	3.2	2
+3	Descriptive with bias probability	3.2	16
4	Opinion of experts (internal or Interna- tional) including WHO recommenda- tions	48.4	17-18-19-20-21-22-23-24- 25-26-27-28-29-30-31

Table 4: Source of the information according to the type of study and its location for recommendations of the National Tuberculosis Guideline of Iran

Type of study	Location of study		Percent of total recommendations in guideline with cited study
	Internal	International	
Narrative review	0	6	40.0
Systematic review	0	4	26.6
Clinical Trial	0	3	20.0
Observational	0	2	13.3



85% of medical research may be wasted (Chalmers et al., 2014)

## Iran Context

The research budget has increased from  
0.55% of the GDP in 2001 → 0.87% of the GDP in 2009,

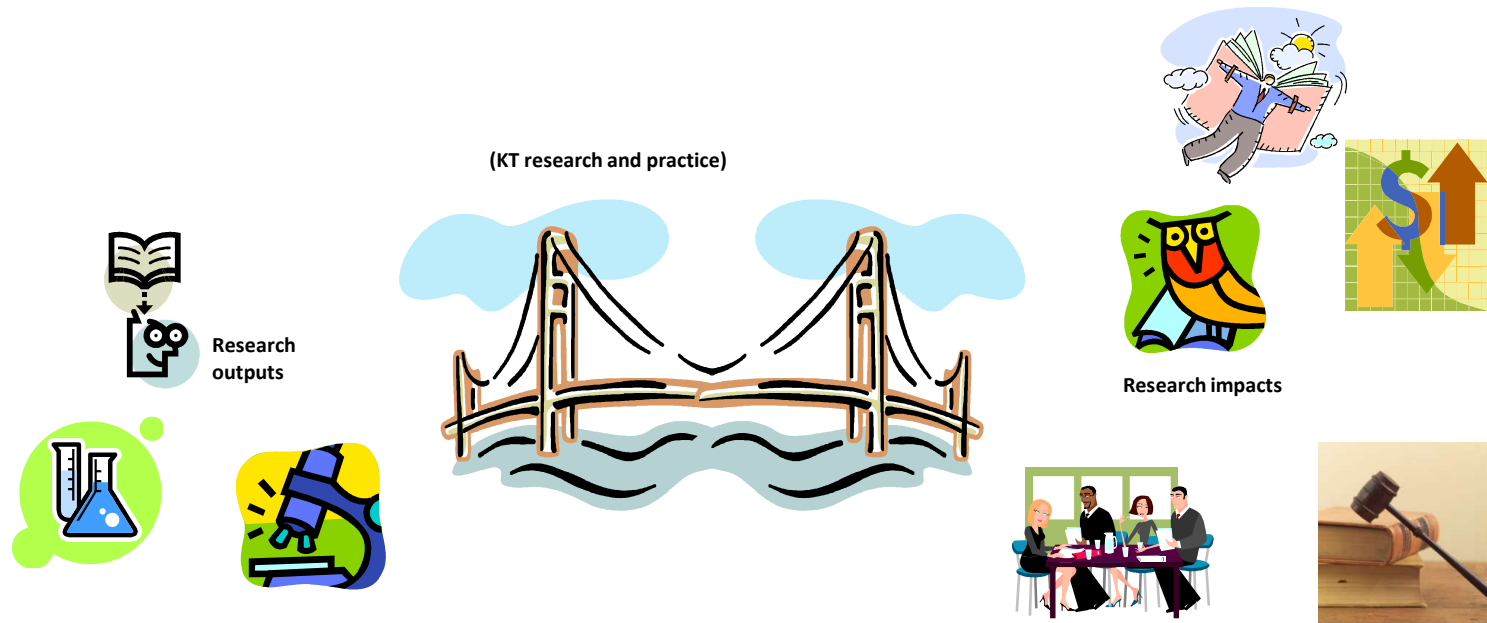
It was meant to be raised to 2.5% in 2015, although this did not happen.

Main reason: the policymakers' lack of belief in the impacts of research compared to other investments

Sepanlou SG, Malekzadeh R. Health research system in Iran: an overview. Arch Iran Med. 2012;15(7):392–3.

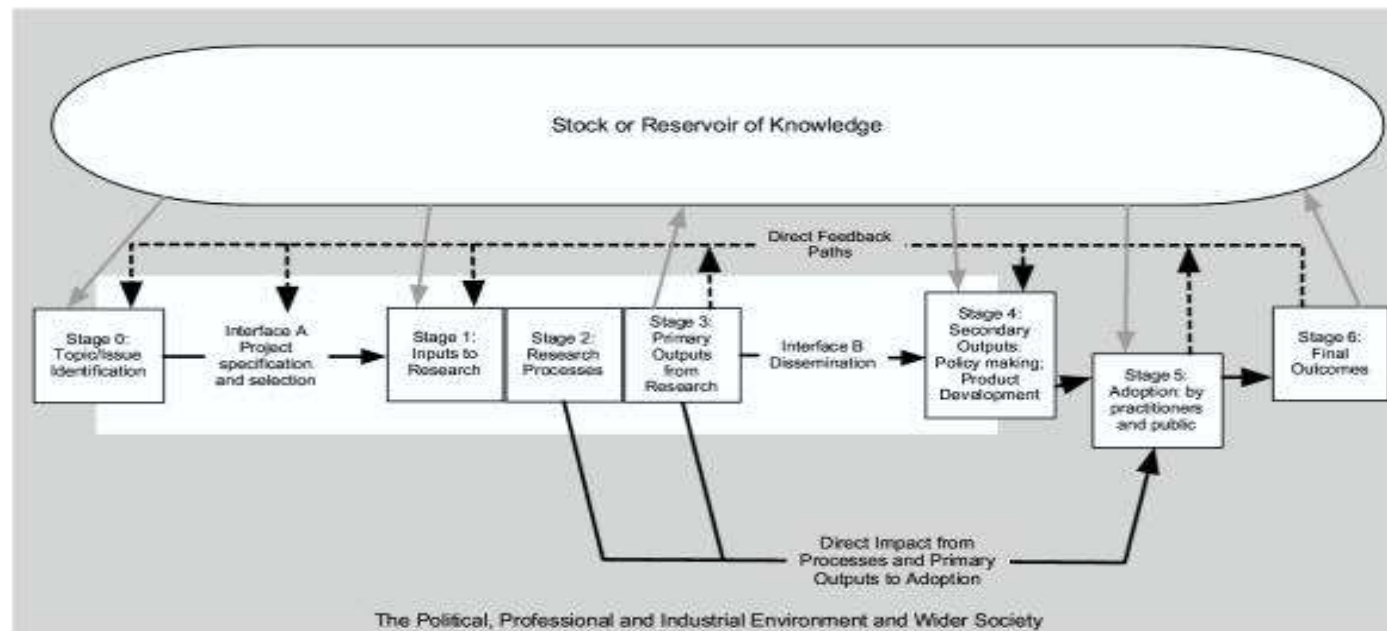
What?

Knowledge Translation is the bridge between  
discovery and impact



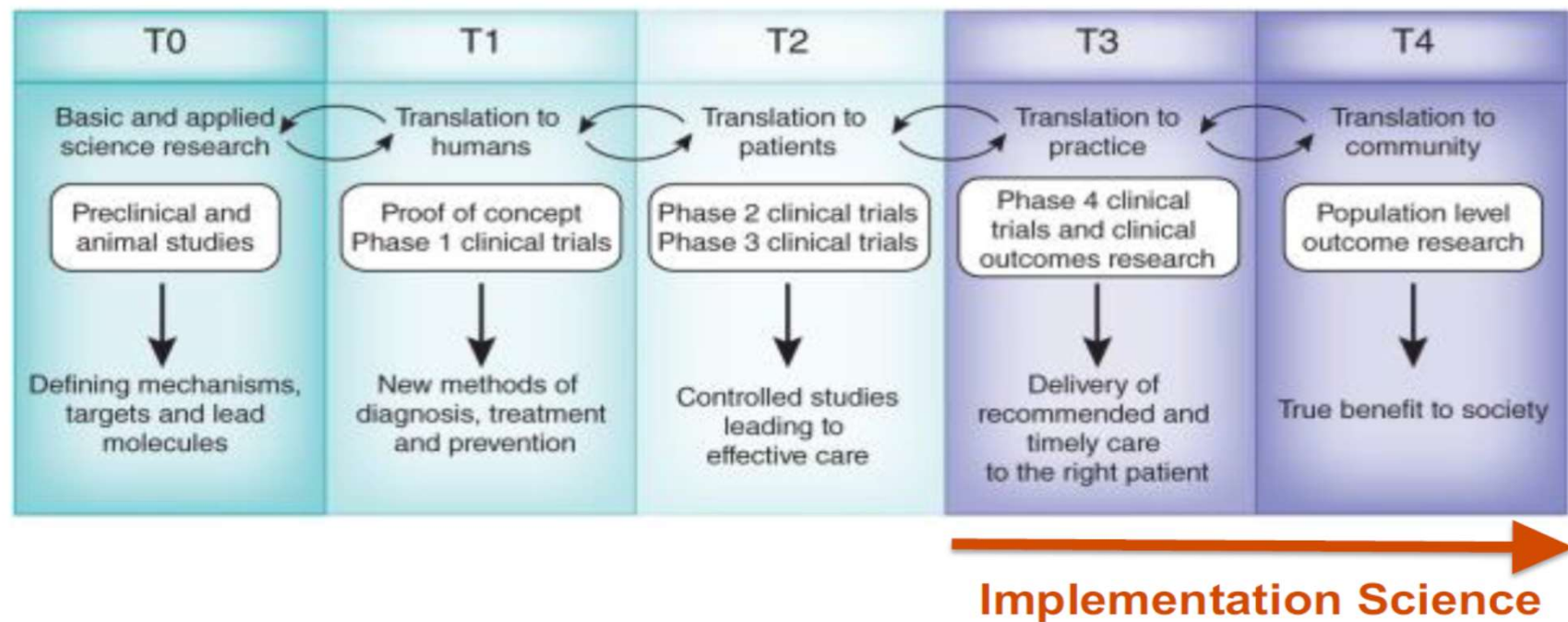
**It's is about making a difference**

# Payback logic model



(Buxton M, Hanney S: How can payback from health research be assessed? Health Serv Res Policy 1996)

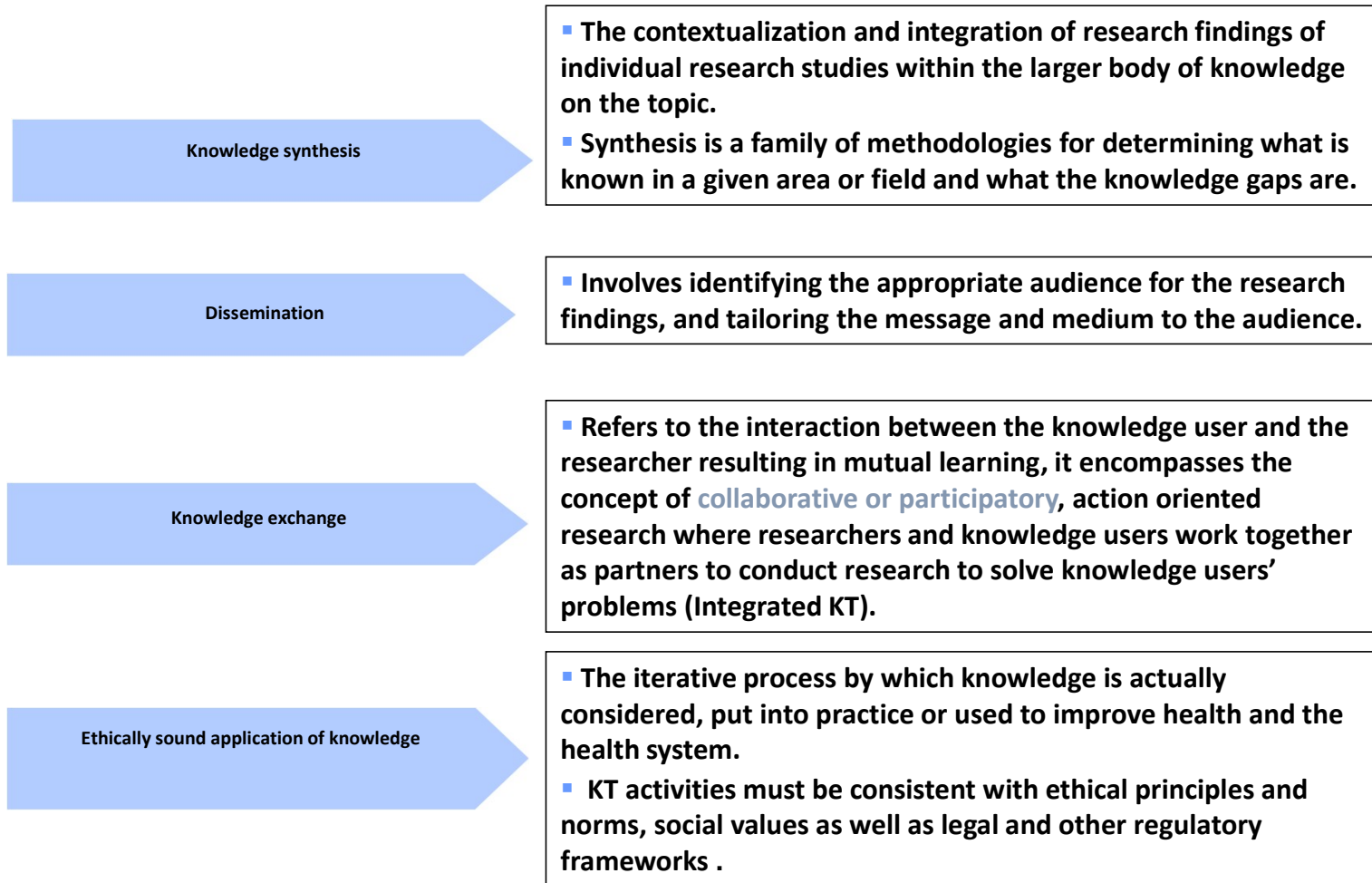
# Translational Research Pathways



# KT definition

- The exchange, synthesis and ethically-sound application of knowledge—within a complex system of interactions among researchers and users—to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products, and a strengthened health care system(Canadian Institute of Health Research,2004).
- The synthesis, exchange, and application of knowledge by relevant stakeholders to accelerate the benefits of global and local innovation in strengthening health systems and improving people's health ( WHO,2005).

# What is Knowledge Translation?



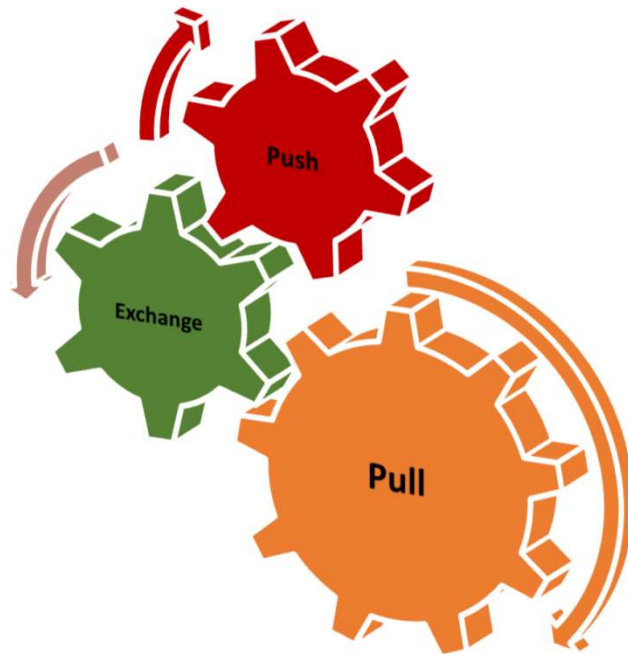
“Help it happen”



“Make it happen”

*Milbank Quarterly* 2004;82:581-629.

How?



Lavis, J; Roberston, D.; Woodside, J.; McLeod, C.B.; Abelson; J. (2003). « How Can Research Organizations More Effectively Transfer Research Knowledge to Decision-Makers »; The Milbank Quarterly, 81 (2) : 221-248.

# Push activities

Gholami et al. *Health Research Policy and Systems* 2011, 9:10  
<http://www.health-policy-systems.com/content/9/1/10>



HEALTH RESEARCH POLICY  
AND SYSTEMS

## RESEARCH

## Open Access

### How should we assess knowledge translation in research organizations; designing a knowledge translation self-assessment tool for research institutes (SATORI)

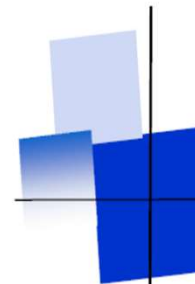
Jaleh Gholami<sup>1,2</sup>, Reza Majdzadeh<sup>2,1\*</sup>, Saharnaz Nedjat<sup>1,2</sup>, Sima Nedjat<sup>2</sup>, Katayoun Maleki<sup>2</sup>, Mahnaz Ashoorkhani<sup>2</sup>, Bahareh Yazdizadeh<sup>2,1</sup>

این ابزار در چهار بخش طراحی شده:

- ۱- سوال پژوهش: آیا نیازهای تصمیم گیرندگانی که از نتایج تحقیق استفاده می کنند را شناسایی می کنیم و به صورت موضوع پژوهشی درمی آوریم؟
- ۲- تولید دانش: آیا شواهدی تولید می کنیم که در تصمیم گیری ها قابل استفاده باشد؟
- ۳- انتقال دانش: آیا سازوکارهای مناسب برای انتشار نتایج پژوهش های سازمان به مخاطبین آنها وجود دارد و اقدامات مناسب برای انتقال صورت می گیرد؟
- ۴- ترویج استفاده: آیا به تصمیم گیرندگان کمک می کنیم که بتوانند از نتایج پژوهش ها بهتر استفاده کنند؟



دانشگاه علوم پزشکی و خدمات بهداشتی درمانی تهران



ابزار خودارزیابی ترجمه دانش ویژه سازمان های  
پژوهشی

Knowledge Translation  
Self Assessment Tool for Research  
Institutes (SATORI)

# PULL activities

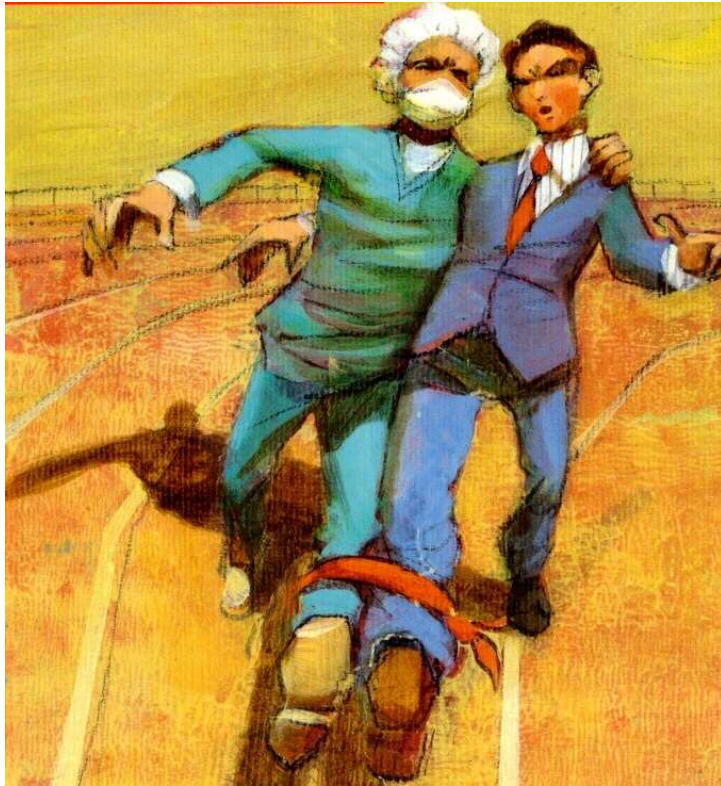
- All activities which promote use of knowledge in target groups

Policy maker and manager, Health care provider, Patient and public, Industry, Media

Target group	Product knowledge
Patients and public	Educational content, Media, Patient decision aid
Health care providers	Clinical practice and public health guideline
Policy makers and managers	Policy brief , 1,3,25 report

- Change behavior

# The Research Practice gap



*Many suppliers and users of social research are dissatisfied, the former because they are not listened to, the latter because they do not hear much they want to listen to (Lindblom & Cohen, 1979).*



Created by Peter de Gannes Design for the Canadian Health Services Research Foundation, 2006

# Exchange activities

## Brokering

individuals, groups, organizations in PUSH, PULL or as independent organizations.

- ✓ Find and link people
- ✓ Work with both parties to scan the literature, summarize what exists, identify gaps
- ✓ Work with researchers and users of research to create research-able questions from policy/management issues
- ✓ Ensure that both researchers and users of research are engaged throughout the research process

Iran?

## Networking

formal network of producer and user of knowledge. Examples:

- Knowledge translation platforms (KTP)  
Evidence Informed Policy Network (EVIPNet)
- Community of practice
- Formal knowledge networks

Iran?

# Exchange activities

Yazdizadeh et al. *Health Research Policy and Systems* 2014, **12**:63  
<http://www.health-policy-systems.com/content/12/1/63>



HEALTH RESEARCH POLICY  
AND SYSTEMS

**RESEARCH**

**Open Access**

## How can we establish more successful knowledge networks in developing countries? Lessons learnt from knowledge networks in Iran

Bahareh Yazdizadeh<sup>1\*</sup>, Reza Majdzadeh<sup>2</sup>, Ali Alami<sup>3</sup> and Sima Amrolalaei<sup>1</sup>

# Health Research System

Function	Operational component
Stewardship	<ol style="list-style-type: none"><li>1. Define and articulate vision for a health research system</li><li>2. Identify appropriate health research priorities and coordinate adherence to them</li><li>3. Set and monitor ethical standards for health research and research partnerships</li><li>4. Monitor and evaluate of the health research system</li></ol>
Financing	<ol style="list-style-type: none"><li>5. Secure research funds and allocate them accountably</li></ol>
Creating and sustaining resources	<ol style="list-style-type: none"><li>6. Build, strengthen and sustain the human and physical capacity to conduct, absorb and utilize health research</li></ol>
Producing and using research	<ol style="list-style-type: none"><li>7. Produce scientifically valid research outputs</li><li>8. Translate and communicate research to inform health policy, strategies, practices and public opinion</li><li>9. Promote the use of research to develop new tools (drugs, vaccines, devices and other applications) to improve health</li></ol>

Source: adapted from Pang et al., 2003 (5).

- ✓ ما در دانشگاه های علوم پزشکی کشور، پژوهشگر هستیم یا استفاده کننده از دانش؟
- ✓ ما به عنوان پژوهشگر برای ترجمان دانش در سلامت چه میتوانیم انجام دهیم؟

## Antibiotics for induction and maintenance of remission in Crohn's disease (Review)

Townsend CM, Parker CE, MacDonald JK, Nguyen TM, Jairath V, Feagan BG, Khanna R

### Conclusions

Moderate to high quality evidence suggests that any benefit provided by antibiotics in active CD is likely to be very modest. High quality evidence suggests that there is no increased risk of side effects with antibiotics compared to placebo. The effect of antibiotics on the risk of serious side effects is uncertain. The effect of antibiotics on preventing relapse in CD is uncertain. Thus, no firm conclusions regarding the benefits and harms of antibiotics for maintenance of remission in CD can be drawn. More research is needed to determine the harms and benefits of antibiotic therapy in CD.



**Cochrane  
Library**

Cochrane Database of Systematic Reviews

## **Infliximab for medical induction of remission in Crohn's disease (Review)**

Gordon M, Sinopoulou V, Akobeng AK, Radford SJ, Eldragini M, Darie AM, Moran GW

### **Key messages**

- Infliximab used with purine analogues (azathioprine or 6-mercaptopurine) is probably more effective than purine analogues alone at getting Crohn's into remission. It may also be better at improving symptoms. The two treatments may be similar in terms of safety.
- Infliximab alone may be more effective than purine analogues alone for getting Crohn's into remission and improving symptoms. The two treatments may be similar in terms of safety.




*Journal of Clinical and  
Translational Science*

[www.cambridge.org/cts](http://www.cambridge.org/cts)

**Translational Science Case**

## A retrospective case study of successful translational research: Gazelle Hb variant point-of-care diagnostic device for sickle cell disease

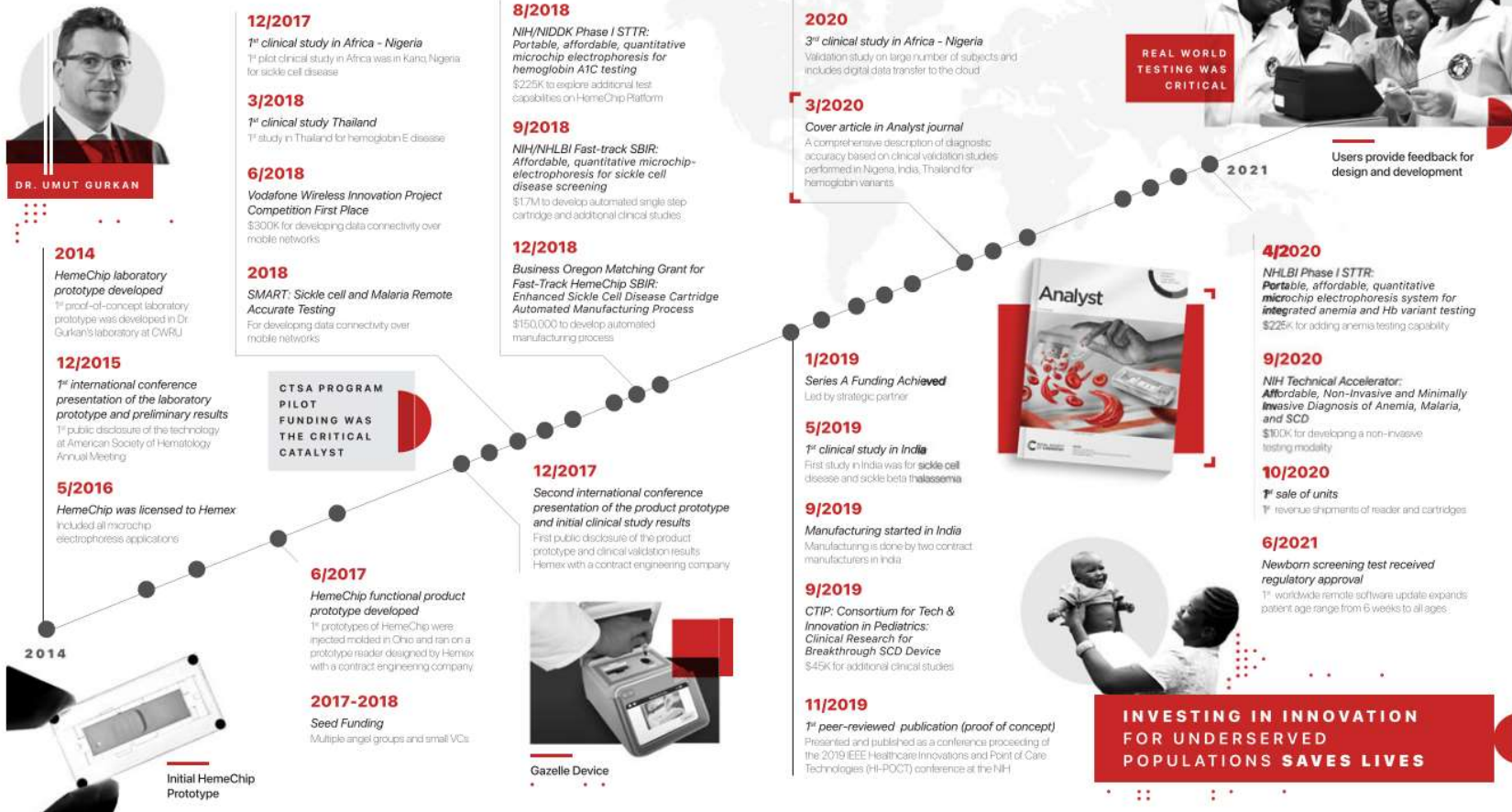
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Kelli Qua<sup>1</sup> , Shannon M. Swiatkowski<sup>1</sup>, Umut A. Gurkan<sup>2,3,4</sup>  and  
Clara M. Pelfrey<sup>1</sup> 

## Research to Practice:

# Sickle Cell Diagnostic Milestones

EVIDENCE OF IMPACT ON HUMAN HEALTH



**Fig. 1.** Timeline of key events in the HemeChip's translation. Sickle cell disease (SCD); Clinical and Translational Science Award (CTSA); National Institutes of Health (NIH); National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); The National Heart, Lung, and Blood Institute (NIHLBI); Small Business Innovation Research (SBIR); Small Business Technology Transfer (STTR).

**Table 1.** Key publications, grants, and patents related to the HemeChip in chronological order

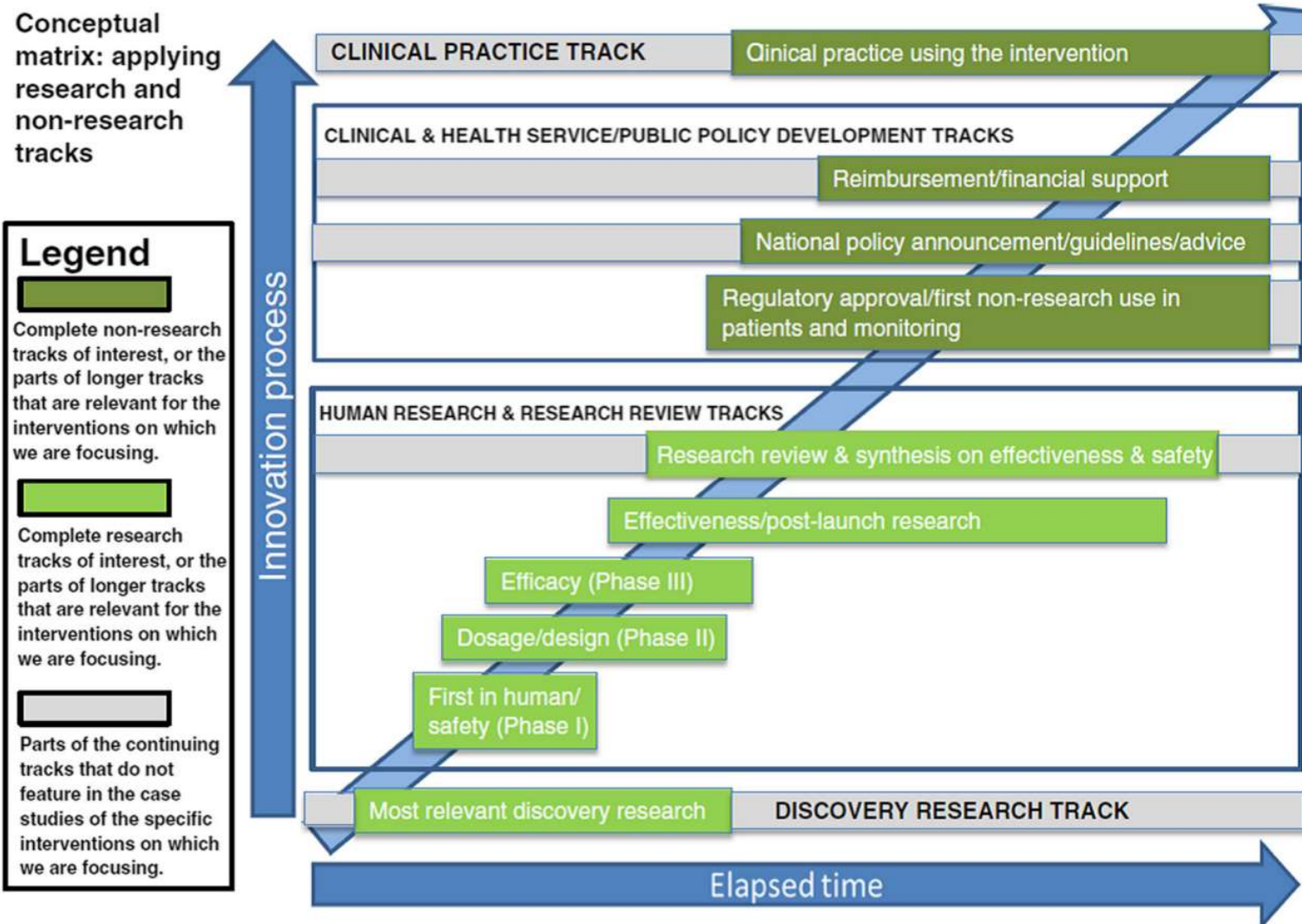
Title	Type	Date
Towards a Simple and Reliable Way to Monitor Sickle Cell Disease	Grant	September 1, 2013
Hemoglobin Electrophoresis Biochip for Newborns	Grant	April 1, 2014
Heterogeneous red blood cell adhesion and deformability in sickle cell disease	Publication	November 24, 2014
HemeChip for Point-of-Care Diagnosis of Sickle Cell Disease and Other Hemoglobin Disorders – exploring high volume and low-cost manufacturing of disposable cartridges via plastic injection molding in Cleveland, Ohio	Grant	March 1, 2016
HemeChip for Point-of-Care Diagnosis of Sickle Cell Disease in Newborns – preliminary clinical validation in the US	Grant	March 1, 2016
HemeChip: Point-of-Care Sickle Cell Disease Diagnosis in Low Resource Settings – real world clinical validation in Africa	Grant	March 1, 2016
Sickle cell disease biochip: a functional red blood cell adhesion assay for monitoring sickle cell disease	Publication	March 19, 2016
Emerging point-of-care technologies for sickle cell disease screening and monitoring	Publication	December 1, 2016
Mobile Device Support for Sickle Cell Disease Care in Nigeria	Grant	June 1, 2017
Application of the HemeChip Point-of-Care Device for Real-time Monitoring of Hemoglobin S Levels in Chronically Transfused Patients with Sickle Cell Disease	Grant	November 1, 2017
HemeChip: An Automated Portable Microchip Electrophoresis Platform for Point-of-Care Sickle Cell Disease Screening	Publication	December 7, 2017
Diagnostic systems and methods (US patent #10,768,166)	Patent	March 8, 2018
Diagnostic systems and methods (US patent #10,349,589)	Patent	March 8, 2018
SMART – Sickle and Malaria Accurate Remote Testing	Grant	June 1, 2018
Sickle Cell Disease Biochip Blood Cell Adhesion Test for Emerging Anti-Adhesive Therapies	Grant	September 1, 2018
Diagnostic systems and methods (US patent #10,375,909)	Patent	February 21, 2019
Affordable, quantitative microchip-electrophoresis for sickle cell disease screening	Grant	April 1, 2019
Paper-based microchip electrophoresis for point-of-care hemoglobin testing	Publication	March 2, 2020

COMMENTARY

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From COVID-19 research to vaccine application: why might it take 17 months not 17 years and what are the wider lessons?



**Fig. 1** Conceptual matrix for measuring and understanding time-lags Source: Hanney et al. [10]

OPINION

Open Access



# Saving millions of lives but some resources squandered: emerging lessons from health research system pandemic achievements and challenges

Stephen R. Hanney<sup>1\*</sup> , Sharon E. Straus<sup>2</sup> and Bev J. Holmes<sup>3</sup>

**Table 2** Outline of lessons for HRSs from the pandemic, organized using the WHO framework for HRSs

HRS functions/components	Lessons related to each HRS component, comprehensive strategies and negative impact
<b>Governance</b>	<i>Governance</i>
1. Coordination	1. Existing or rapidly established coordination was often the key, especially for clinical research, to effective responses and reduced risk of wasted resources
2. Priority-setting	2. Effective priority-setting was important in: rapidly testing new therapies, reducing waste of resources, considering the needs of diverse communities
3. Ethical approval	3. The ability to accelerate ethics and protocol approvals and to enhance data access and sharing increased the speed and efficiency of research production
4. Evaluation	4. The substantial and immediate benefits from rapid (but expensive) research progress provide enhanced opportunities and need for impact assessment
<b>Financing</b>	<i>Financing</i>
5. Securing finance	5. Unprecedented (but uneven) funding; public, for many pandemic topics; private, for development of vaccines and therapies; collaborative, to help achieve major successes; but widespread concerns about wasted resources
<b>Capacity</b>	<i>Capacity</i>
6. Capacity-building	6. Important contributions came from: mobilization of capacity developed over years to conduct primary and secondary research, enhanced interdisciplinary cooperation and clinical research integrated in healthcare systems

### *Production and use*

7. Knowledge production

8. Promote use in new products

9. Translate to inform policies, practice and opinion

### *Comprehensive strategies for health research*

### *Negative impacts on HRSs*

### *Production and use of research knowledge*

7. Accelerating research production (new vaccine platforms, mobilized capacity, adaptive platform trials) produced results—but problems for policy research; rapid publication of findings became essential but led to dangers

8. Translation of research into new products to reduce mortality and morbidity often occurred at unprecedented speed and often reflected unprecedented levels of both public funding and public/private collaboration tackling the crisis

9. The considerable divergence in the use of evidence to inform NPI policies, etc., and to promote equity in policies, partly reflected established structures and cultures; collaborative living guidelines and good communications mattered

10. Pre-existing comprehensive health research strategies and vision enhanced the effectiveness of specific steps and opportunities for producing research to improve policies, practice and health, but did not ensure informed action

11. The pandemic damaged aspects of HRSs: reduced resources/opportunities especially for non-COVID-19, early-career, female and minority researchers; problems completing projects in lockdowns; reductions in public involvement

با تشکر