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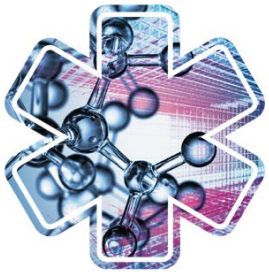

GLOBAL INNOVATION INDEX 2019

Creating Healthy Lives—The Future of Medical Innovation

Global Innovation Index (GII) 2019:
Creating Healthy Lives – The Future of Health Innovation

WTO Headquarters
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GII 2019

What is the GII 2019 about?

"Creating Healthy Lives – The Future of Medical Innovation"

#1 Are we about to (re-) enter a new "golden age" of medical innovation?

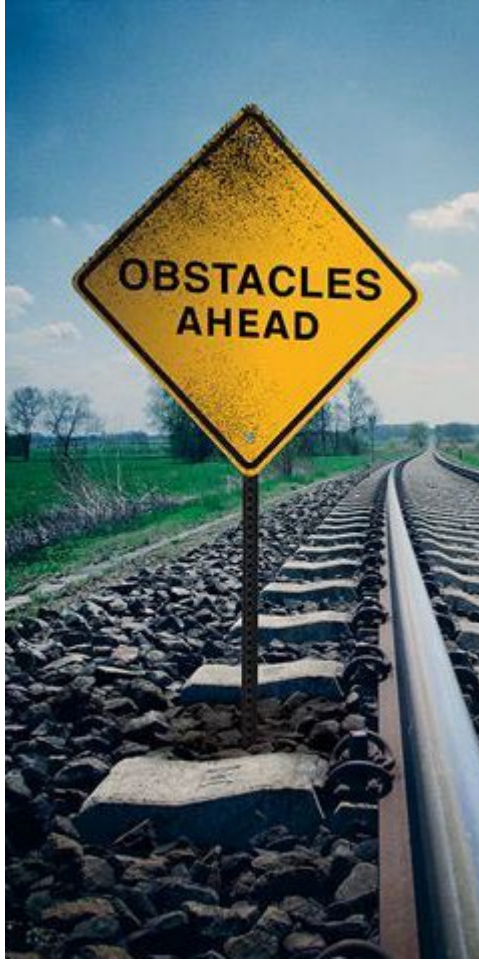
Or are we facing the «end of rapid health innovation»?

#2 … what obstacles need to be overcome to reach this potential?

1. **Productivity in healthcare R&D is low**

2. **Innovation diffusion is slow** due to complex interactions between actors in the health ecosystem
   - Slow move of medical innovations "from bench to bedside"

3. Too much effort still spent **fixing rather than preventing** health problems in the first place



#3 there are reasons for optimism

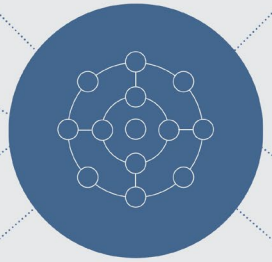
1. **A resurgence of health R&D**
   - Health R&D investment has picked up post-2009 financial crisis; reaching US$177 billion worldwide in 2019

2. **Medical technology patents growing faster than pharma patents**
   - Med tech patents in top 5 fastest-growing tech fields since 2016; PCT filings nearly 2x volume of pharma patents

3. **Is a revival of medical research productivity on the horizon?**
   - Trends of new patenting and drugs, process innovations in healthcare delivery and “adapted” use of existing technologies in developing countries

#4 Upcoming breakthroughs in medical and health innovation

NEW SCIENTIFIC BREAKTHROUGHS, TREATMENTS, AND CURES



Genetics and stem cell research
- Single-cell analysis
- Gene and stem cell therapies
- Genetic engineering and editing including CRISPR technology

Nanotechnology
- Swallowable small devices

Biologics
- Development and manufacture of complex biologics

Brain research, neurology, and neurosurgery
- Characterization of the brain's major circuits
- New brain imagery for mental disorders
- Migraine treatment

New generation of vaccines and immunotherapy
- HIV and universal flu vaccine
- Cancer vaccine
- Immunotherapy
- New vaccine delive

Pain managemer
- Effective, non-addic pain management

Mental health tre
- Pre-symptomatic di of Alzheimer's disea cognitive declines

NEW MEDICAL TECHNOLOGIES

Medical devices
- 3D printing
- Cardiac devices
- Implants and bionics

Medical imaging and diagnostics
- Optical high-definition imaging and virtual anatomic models
- Biosensors and markers

Precision and personalized medicine
- Computer-assisted surgery
- Surgical robots
- Personalized medicine

Regenerative medicine
- Tissue engineering
- Effective bioartificial pancreas

ORGANIZATIONAL AND PROCESS INNOVATIONS

Novel approaches in healthcare research
- Software-based modeling to speed up research
- Artificial intelligence techniques to speed up research and clinical trials

New ways of delivering healthcare
- Telemedicine applications
- Drone delivery of medications
- Remote monitoring and portable diagnostics
- Improved data sharing

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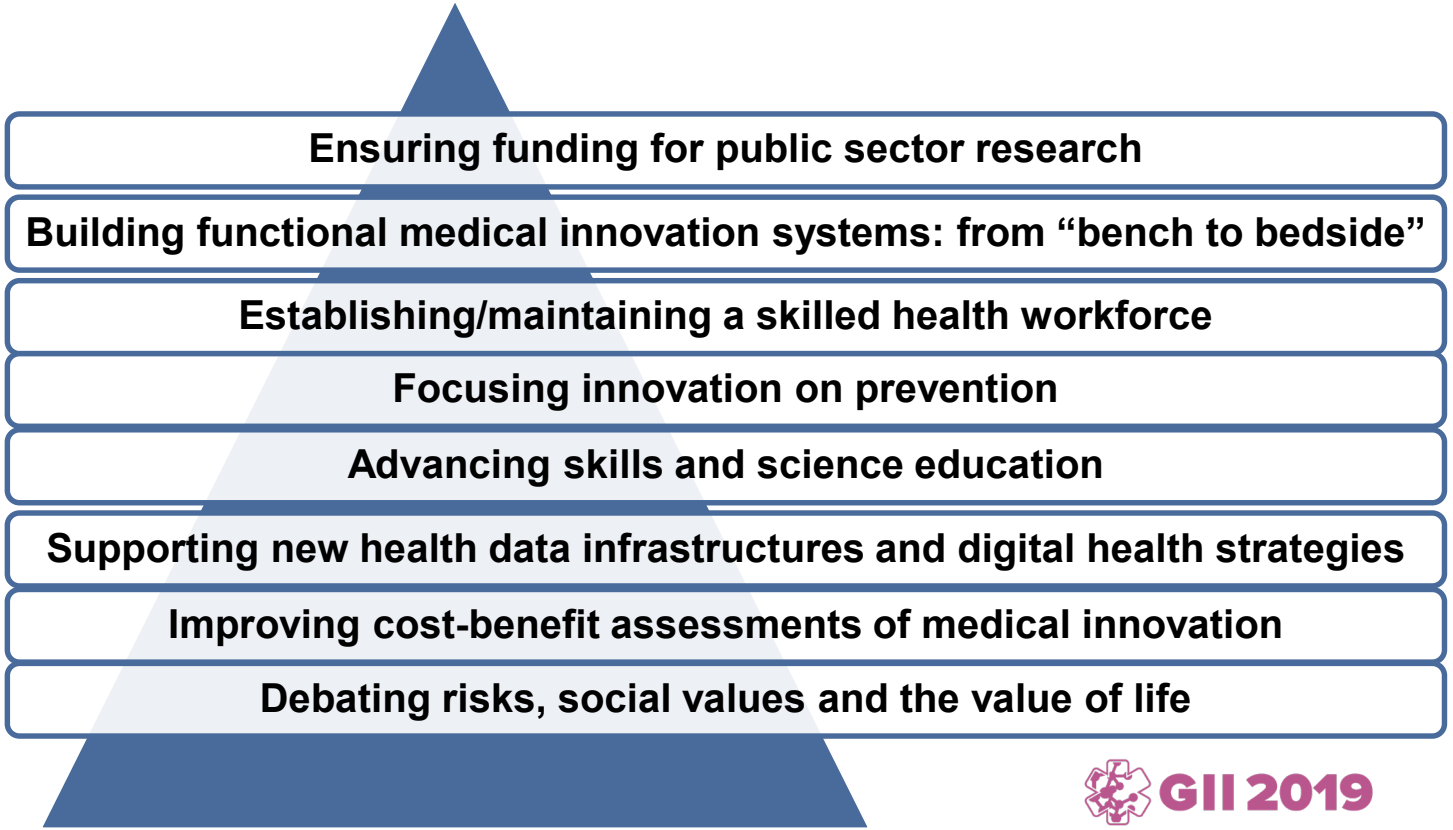
#5 … and what are the opportunities and policy imperatives for health innovation?



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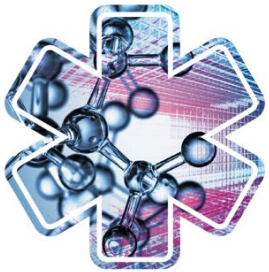

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https://www.wipo.int/global_innovation_index/en/

www.globalinnovationindex.org