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

WTO Headquarters
31 October 2019

Sacha Wunsch-Vincent
Head of Section, Economics and Statistics Division
Co-Editor of GII, WIPO
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 therapies

- 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 delivery

- Pain management
  - Effective, non-opioid pain management

- Mental health care
  - Pre-symptomatic diagnosis of Alzheimer’s disease
  - Cognitive decline

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

- Ensuring funding for public sector research
- Building functional medical innovation systems: from “bench to bedside”
- Establishing/maintaining a skilled health workforce
- Focusing innovation on prevention
- Advancing skills and science education
- Supporting new health data infrastructures and digital health strategies
- Improving cost-benefit assessments of medical innovation
- Debating risks, social values and the value of life