The Opportunity to Eliminate Viral Hepatitis as a Public Health Threat

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The Task Force for Global Health

- Mission
  - Control, eliminate, and eradicate debilitating diseases that affect vulnerable populations

- Current disease elimination/ eradication programs
  - Eliminate trachoma, onchocerciasis, LF
  - Eradicate polio

- New focus: HBV and HCV elimination

Alan Hinman

reaching
360
million
people
in
154
countries

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Infection and Disease
Control, Elimination and Eradication

Below acceptable levels (e.g., flu)

Zero cases in an area (e.g., measles)

Below a certain rate (e.g., TB)

A proportional decrease (e.g. malaria)

As a public health threat (LF, Chagas)

Zero cases globally e.g., smallpox

Prevention Interventions

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Disease Elimination and Eradication

- **Guiding Principle** - Health equity
- **Goals**
  - Primary: Improved health through disease reduction /elimination
  - Secondary: Strengthen health systems
- **The importance of targets**
  - Sense of urgency
  - Accountability
  - Attract and sustain stakeholder interest

Hinman A NY State J of Med 1984; Dowdle W, Bull WHO 1998; Dowdle W, Cochi S, Vaccine 2011

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HBV and HCV Meet Criteria for Disease Elimination

- **Biologic feasibility-**
  - Humans required for replication
  - No intermediate hosts, or environmental propagation

- **Technical feasibility-**
  - Prevent transmission-
    - Hepatitis B vaccine >95% efficacy
    - Prevent parenteral blood exposures and sexual contact (HBV)
  - Prevent mortality – HBV and HCV treatment
    - HBV treatment- long term viral suppressive therapy
      - Reduced risk of liver cancer (50%) and all cause mortality (40%)
    - HCV treatment and cure
      - Reduced risk of liver cancer (80%) and cause mortality (75%)
  - Reliable, widely available tests- high sensitivity and specificity

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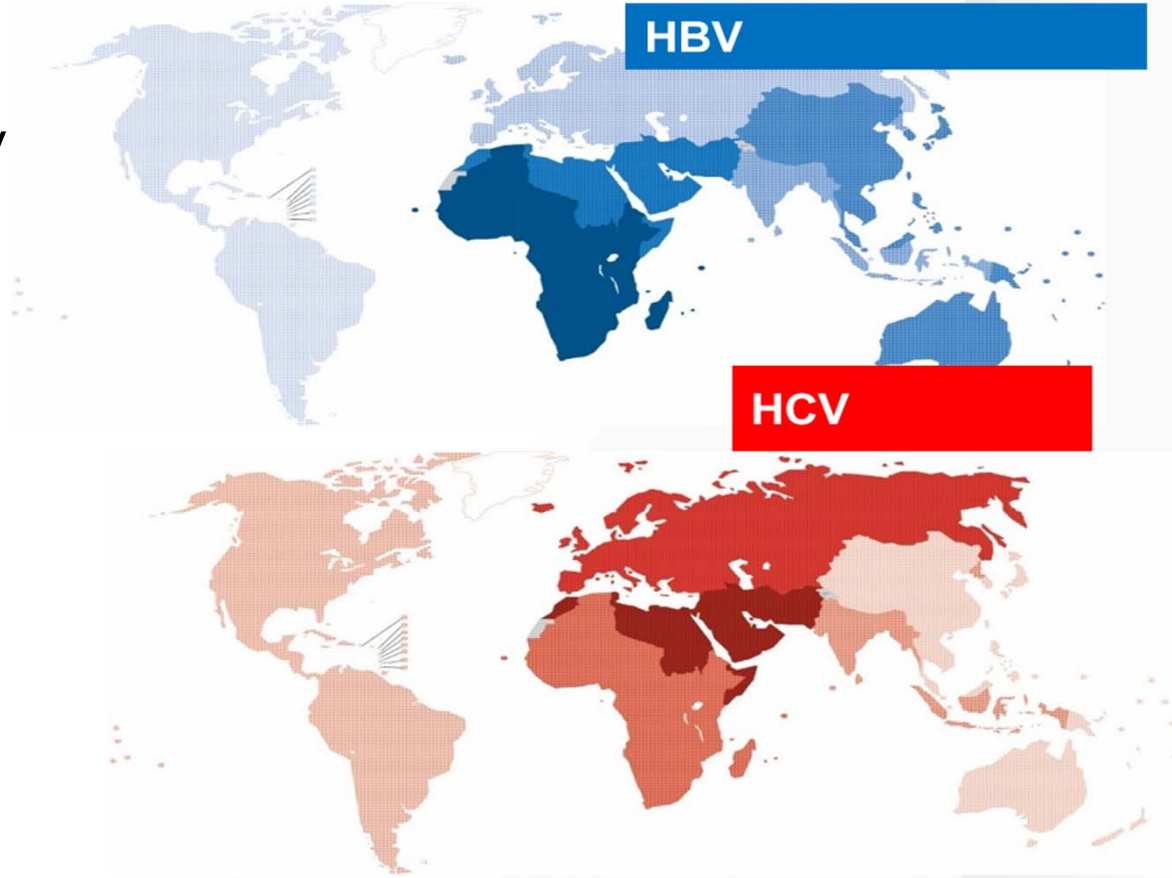
HBV and HCV Are Large Public Health Problems

- HBV
  - 257 million persons with chronic HBV
  - 799,000 deaths
- HCV
  - 71 million persons with current HCV
  - 580,000 deaths



Sources – WHO (LSHTM); Lancet 2016; 388: 1459–544

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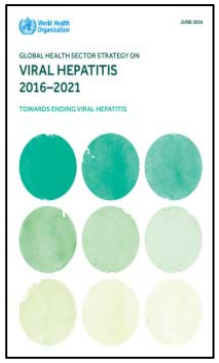
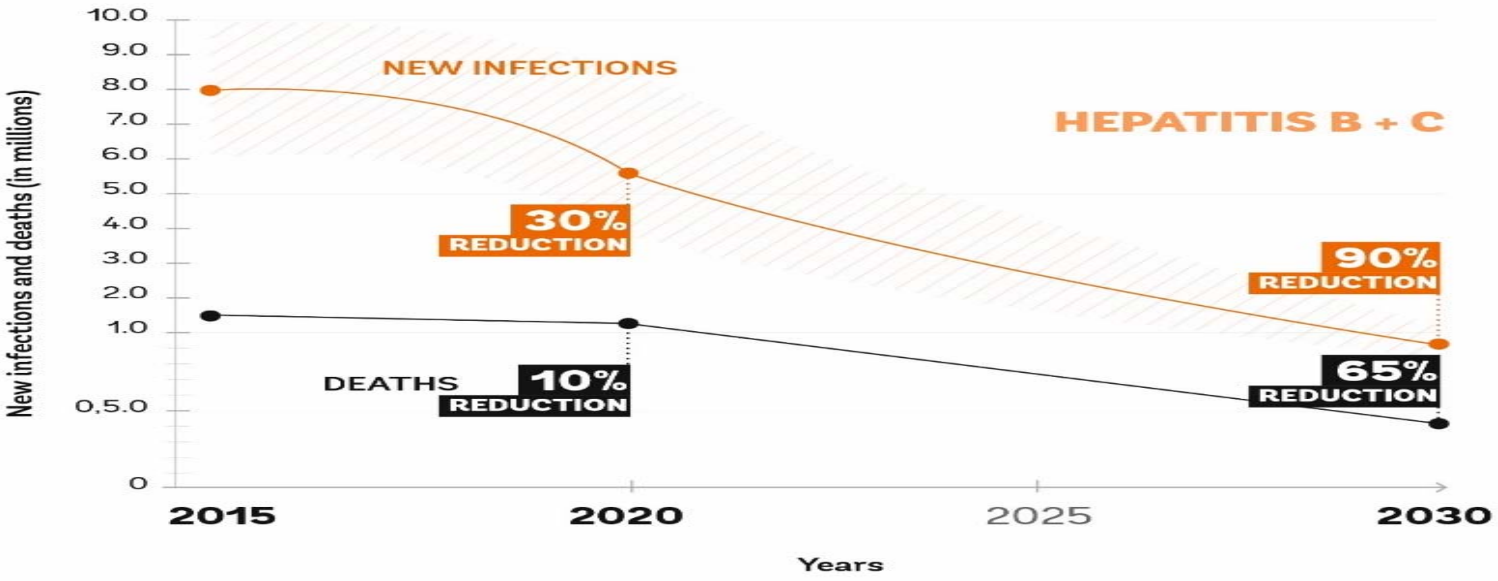
Eliminate Hepatitis B Virus and Hepatitis C Virus as Public Health Threats by 2030





Global endorsement

World Health Assembly

International Task Force for Disease Eradication

http://www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/ http://nationalacademies.org/hmd/Reports/2017.aspx

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Benefits and Cost of Full Implementation of HBV and HCV Elimination Strategies

HBV

Prevent

- 18.7 M new infections
- 7.3 M deaths

Cost

- Annual $5.5b
- Total $88.7b

HCV

Prevent

- 12 M infections (85% reduction)
- 2.1M deaths (68% reduction)

Cost

- Annual $4.8b (max) (2021)
- Total $51b
- Cost saving by 2027

Pedrana A, et al. Eliminating Viral Hepatitis: The Investment Case. Doha, Qatar: World Innovation Summit for Health, 2018; Nayagam S, et al. Requirements for global elimination of hepatitis B: a modelling study, Lancet Infection Dis 2016

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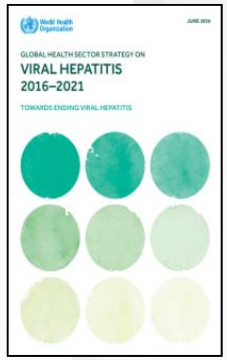
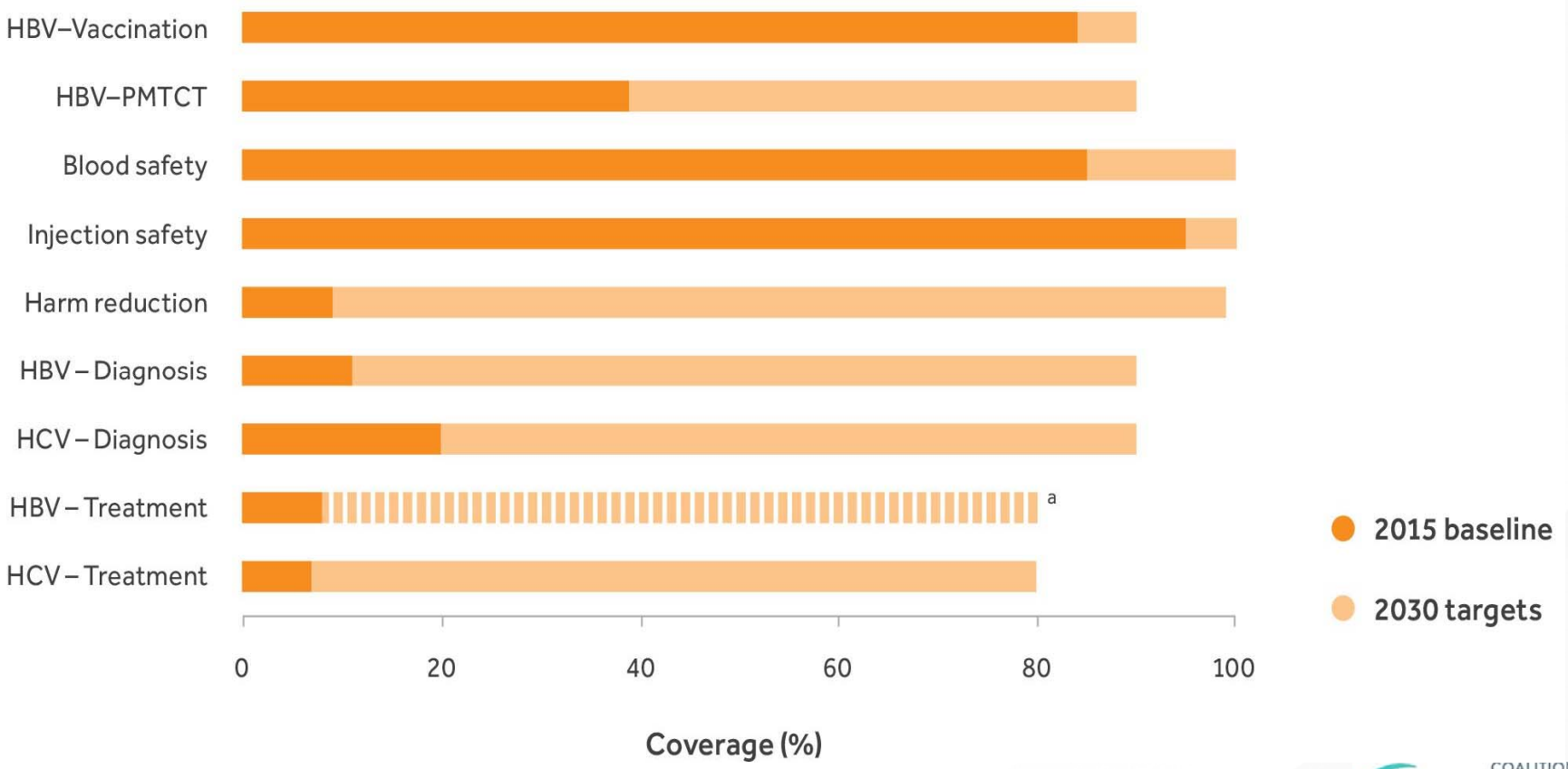
Monitoring Implementation to Reach HBV and HCV Elimination Goals





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Since 2000, 83% and 91% Reduction in Health-Care Related HBV and HCV Transmission, Respectively

- In 2010, health-care injections accounted for approximately 315 000 HCV and 1.7 million HBV infections

- Implement three step prevention strategy
  - Reduce injection use
  - Provide sufficient quantities of safe equipment
  - Dispose medical waste properly

- Introduce reuse prevention syringes

- Strengthen blood-transfusion services for quality testing of blood donations

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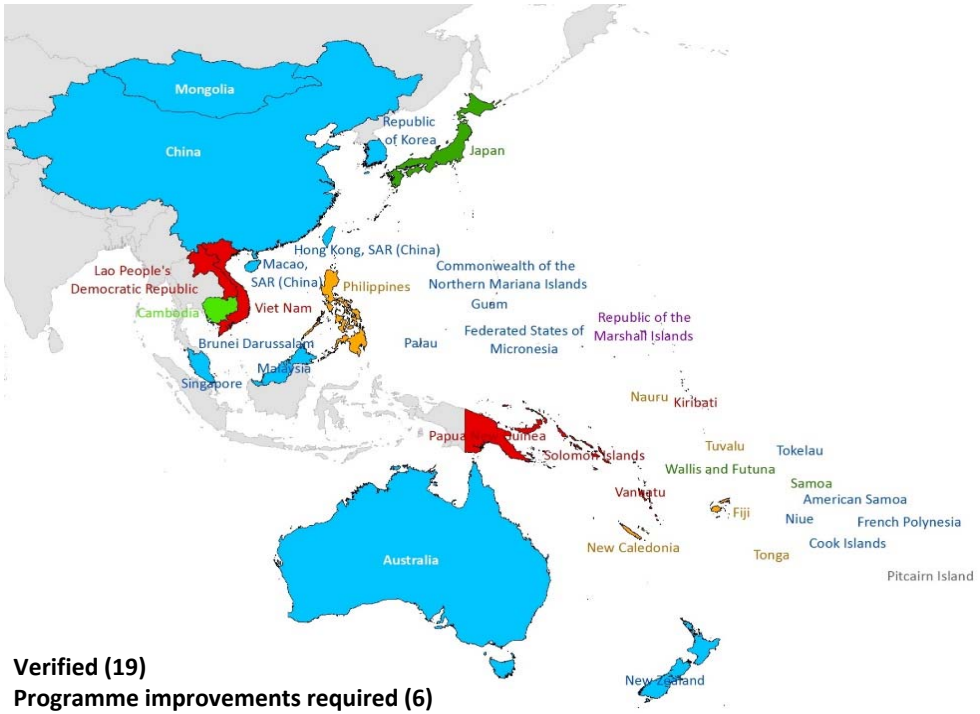
Hepatitis B Vaccination
Western Pacific Region Achieved Goal of <1% of Children with HBV by 2017

Western Pacific Region



- Verified (19)
- Programme improvements required (6)
- Serosurvey with <1% but not submitted (3)
- Serosurvey planned (6)
- Awaiting results of serosurvey (1)
- Under review for verification (1)
- Data not available (1)

- ➢ **Strategic information to guide planning**
- ➢ **Plans with time limited goals and financing**
- ➢ **Implementation platform and tools**
- ➢ **Accountability**
- ➢ **Strategic information to monitor progress**
- ➢ **Certification process to document achievement of goal**

Wiesen E, Diorditsa S, Li X. Vaccine. 2016 May 27;34(25):2855-62

The Challenge to HBV Elimination
Hepatitis B Vaccination of Newborns

Nigeria

- High infant immunization coverage globally, 84%
- Perinatal transmission will cause 50% of new chronic HBV infections by 2030
- Newborns highest risk of severe HBV disease and liver cancer
- Lowest coverage in Sub-Saharan Africa ~10%
- GAVI support for Hep B birth dose vaccination (2021)
- Barriers to implementation in GAVI-eligible countries

WHO global hepatitis report
http://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/
Shimakawa Y Gut. 2016 Dec;65(12):2007-2016.

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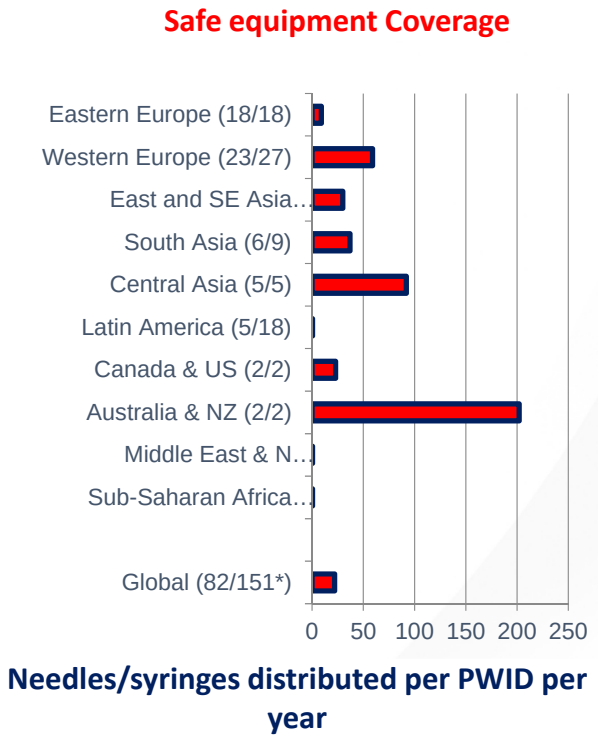
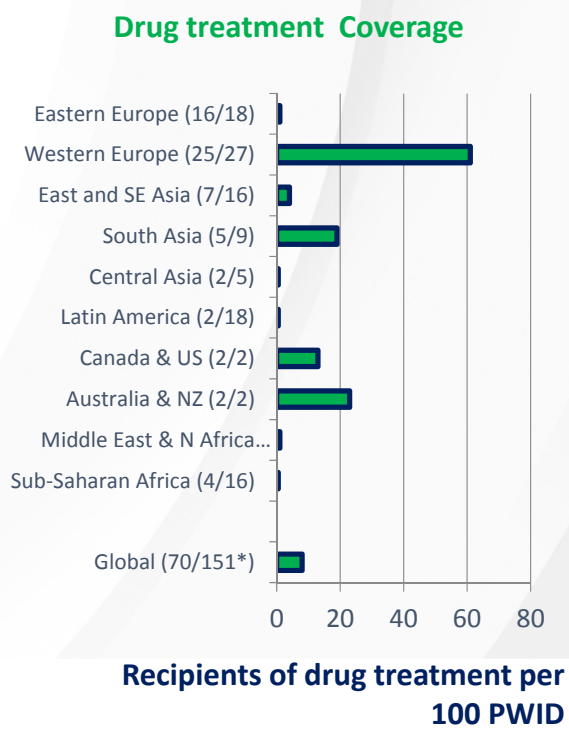
Of 179 Countries, 52% and 48% Lack Syringe Services and Opioid Substitution Services, Respectively

- **Drug treatment+ safe injection equipment reduces HCV transmission risk by 71%**
- **Models indicate HCV cure as prevention (CAP) strategies reduce risk by > 90%**





* (Number of countries reporting implementing OST, of those with injecting drug use identified)

Larney S, Lancet Glob Health. 2017

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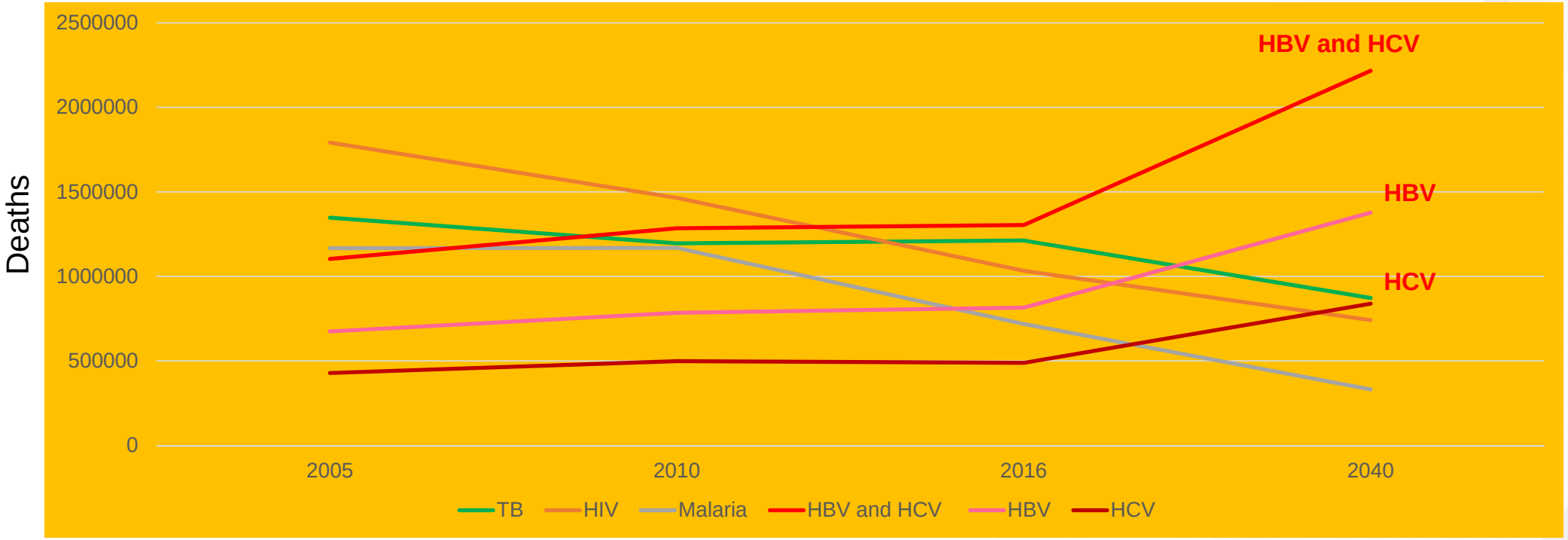
SW3
JW1

HCV and HBV Deaths will Surpass Deaths from HIV, TB and Malaria by 2040



Global Burden of Disease
Lancet 2018; 392: 1736–88; Lancet 2018; 392: 2052–90 V Lancet 2012, 380,(9859); 2095-2128

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Slide 14

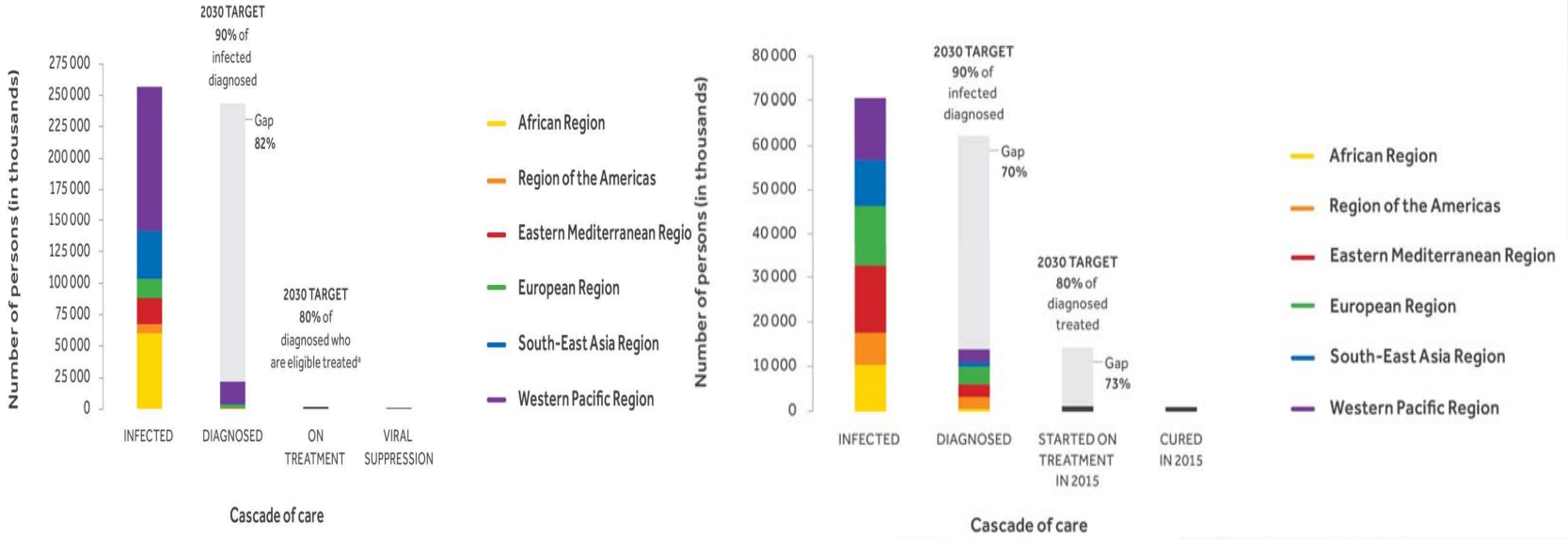
SW3 y axis title
Stefan Wiktor; 13/03/2019

JW1 ok
John Ward; 13/03/2019

HBV and HCV are Under-diagnosed and Under-treated Infections

HBV 257 million
Global: Diagnosed 9%; On treatment 1%

HCV 71 million
Global: Diagnosed: 20%; Treated 4%



http://www.who.int/hepatitis/publications/global-hepatitis-report2017/en/
cdc.gov/hepatitis

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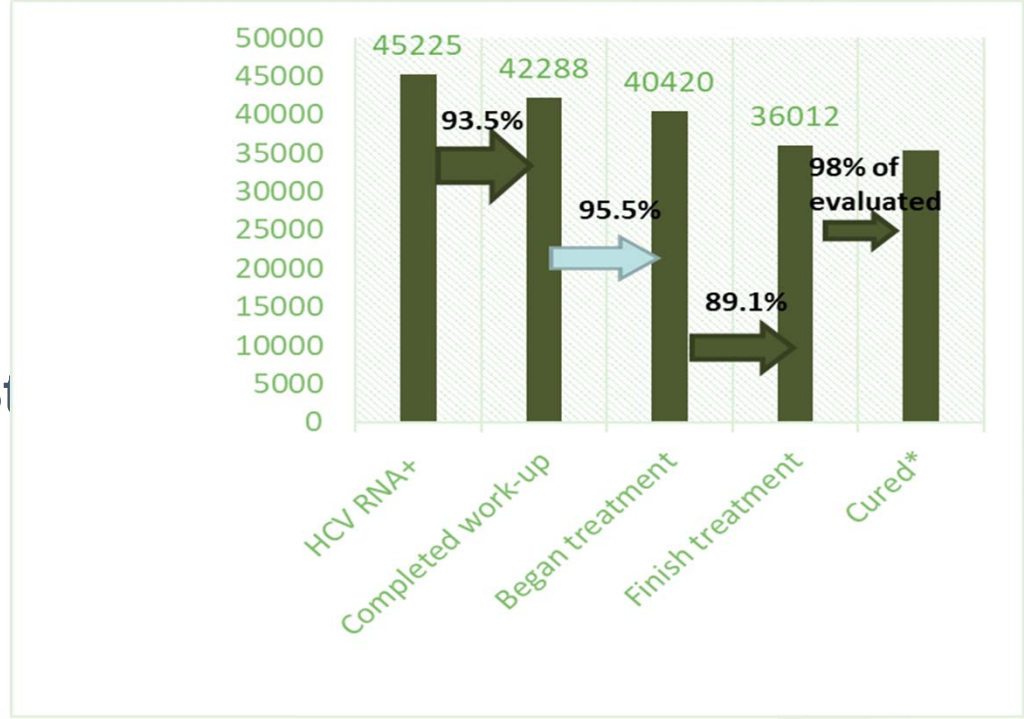
Elimination Programs Improve Access in Country of Georgia

- ~150,000 HCV RNA+ persons; 5.4% prevalence
- Goal: 90% diagnosed; 95% treated; 95% cured by 2020
- >50,000 HCV RNA+ persons treated
- Key tools
  - National planning
  - Data to guide and evaluate program
  - Health system strengthening
  - Political support
  - Partnerships – Gilead, Abbott, CDC, St WHO,



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Nasrullah M, Nat Rev Gastroenterol Hepatol. 2017 Jul

Strategies to Improve Access to HBV and HCV Testing and Treatment

Medicine access –

- Ensure priority for HBV and HCV treatment
- Access generics where available- HCV ($75-900/course); HBV (<$50/year)
- Consider compulsory licensing for countries that cannot access generics
- Ensure access policies (by originator companies) for low/low-middle income settings (WHO Essential Medicines List, Treatment guidelines)
- Companies use WHO prequalification program and access collaborative registration process

Medicine delivery

- Simplify care algorithms to promote task shifting from specialist to primary care
- Implement care models that promote adherence and engage marginalized populations
- Remove policy barriers to treatment (e.g. stage of disease, drug use)

"*Develop investment cases for viral hepatitis, demonstrating the returns on investment by achieving elimination*"

The Lancet Gastroenterology & Hepatology **2019 4, 135-184DOI: (10.1016/S2468-1253(18)30270-X)**

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Other Elimination Efforts in Progress

- Other national programs
  - Iceland, India, Mongolia, Morocco, Rwanda

- Sub-national programs
  - Punjab India
  - US (Washington state, San Francisco)

- Pilot projects (“micro-elimination”)
  - HIV
  - Incarcerated
  - PWID
  - Clinical care systems
- Various implementers CHAI, MSF, PIH, Unitaid, CDC

“Sharing these experiences will help all countries make progress towards elimination”

The Lancet Gastroenterology & Hepatology 2019 4, 135-184DOI: (10.1016/S2468-1253(18)30270-X)

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A Coalition for Global Hepatitis Elimination

- Rationale
  - Elimination programs are new and often disconnected from others
  - No primary external funding resource
  - Internal resources for service integration within existing health systems
  - Coalitions function as technical hubs for other global health initiatives

- Recommended
  - International Task Force for Disease Eradication- 2017
  - WHO Meeting of Global Partners for Viral Hepatitis Elimination -2019
  - The Lancet Commission to Accelerate Progress toward Viral Hepatitis Elimination - 2019

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Coalition for Global Hepatitis Elimination

Launch by June 2019

Community of Practice	HEPEXPERT Evidence base	Technical Assistance	Operational Research	Awareness and Advocacy
• Contact	• Compile	• Connect	• Convene	• Engage
• Share	• Assess	• Respond	• Coordinate	• Inform
• Learn	• Disseminate	• Develop	• Share	• Promote

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Summary

- HBV and HCV elimination are rare opportunities for major improvements in health
- The progress toward elimination is substantial
- Model programs provide examples of best practices
- Collaboration and information sharing can help current and new program achieve elimination goals

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VHPB
Vilnius Lithuania

- Hepatitis C treatment non-responders, reinfection, relapse
  - Failures; frequency, risks, options for retreatment
  - Reinfection: Testing and treatment for persons who inject drugs, men who have sex with men
- Hepatitis B Vaccine Non-Responders
  - Populations at risk
  - Policies for re-vaccination and post vaccination testing
- Occult Hepatitis B and reactivation
  - Detection and management
  - Implication for vaccination

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