

# Hepatitis C Market Report – Advancing Elimination

*Highlights and Key Takeaways*

Webinar

2<sup>nd</sup> July 2020



# Agenda

- Introduction (*Craig McClure*)
- Country Perspective (*Dr. Sabin Nsanzimana*)
- Clinical Updates (*Dr. Christian Ramers*)
- HCV Diagnostics (*Dr. Timothy Meehan*)
- HCV Treatment (*Vidhi Lohia*)
- WHO's Reflections (*Dr. Meg Doherty*)

Globally, 71M people are living with chronic HCV infection (2015), which has resulted in ~400K deaths per year (2016)

## Global HCV Burden and Progress



**71 million people**  
living with chronic HCV globally (2015)



**13.1 million people (19%)**  
know their HCV status (2017)



**399K deaths**  
from HCV (2016)



**5 million people (7%)**  
received treatment for HCV infection (2017)




## HCV Elimination Goals

**WHO Global Health Sector Strategy (GHSS) on viral hepatitis calls for elimination of HCV (and HBV) as a public health threat by 2030**

**10%** reduction in number of  
hepatitis-related **deaths** by **2020**  
**65%** reduction by **2030**

**30%** reduction of new hepatitis  
**infections** by **2020**  
**90%** reduction by **2030**

While a half million have received HCV treatment, only a few countries were responsible for the bulk of that increase and treatment scale-up

Country	Highlights
<p data-bbox="181 372 537 408"><b>Egypt, India, Pakistan</b></p> 	<ul data-bbox="649 351 1306 536" style="list-style-type: none"><li>• Rapidly scaling up public programs</li><li>• Large volumes of patients</li><li>• Low prices for DAAs</li><li>• Locally manufacture products</li></ul>
<p data-bbox="272 686 401 722"><b>Georgia</b></p> 	<ul data-bbox="649 618 1541 958" style="list-style-type: none"><li>• On track to achieve <b>elimination by 2025</b></li><li>• <b>~50%</b> of the <b>~4M</b> population has been screened</li><li>• <b>~44,500</b> have been cured</li><li>• Drug donation from Gilead</li><li>• Strong political backing</li><li>• Information systems</li><li>• Engagement with civil society, and advocacy</li></ul>
<p data-bbox="276 1075 411 1110"><b>Rwanda</b></p> 	<ul data-bbox="649 1036 1779 1322" style="list-style-type: none"><li>• Launched elimination program in December 2018</li><li>• Committed to treat <b>112K patients</b> over <b>5 years</b> (2019-2024)</li><li>• Price of <b>\$60</b> per patient course with Mylan's WHO PQ'd SOF + DCV</li><li>• Strong political will, commitment to elimination, and backing</li><li>• Now on an accelerated timeline to eliminate HCV by 2022</li></ul>

Barriers to access to HCV testing and treatment continue to exist and countries may not reach HCV elimination goals by 2030

### KEY MARKET BARRIERS



**Limited funding** of public HCV programs



**Lack of transparency** in pricing



**High in-country prices**



**Fragmented procurement** through a patchwork of separate buyers



**Limited integration** of HCV diagnostics, resulting in inefficiencies



**Slow or limited product registration** in-country

# CHAI's Market Report aims to increase market transparency to mitigate market barriers and accelerate progress towards HCV elimination

## KEY OBJECTIVES OF THE REPORT

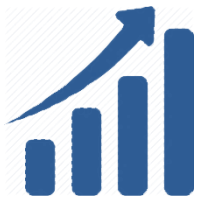
1



### Single source of all hepatitis C market-related information

Provide a publicly available consolidated source of latest market information on drugs and diagnostics

2



### Increase transparency in pricing and volumes trends

Increase transparency on global volume and pricing trends to support governments to optimize resource utilization

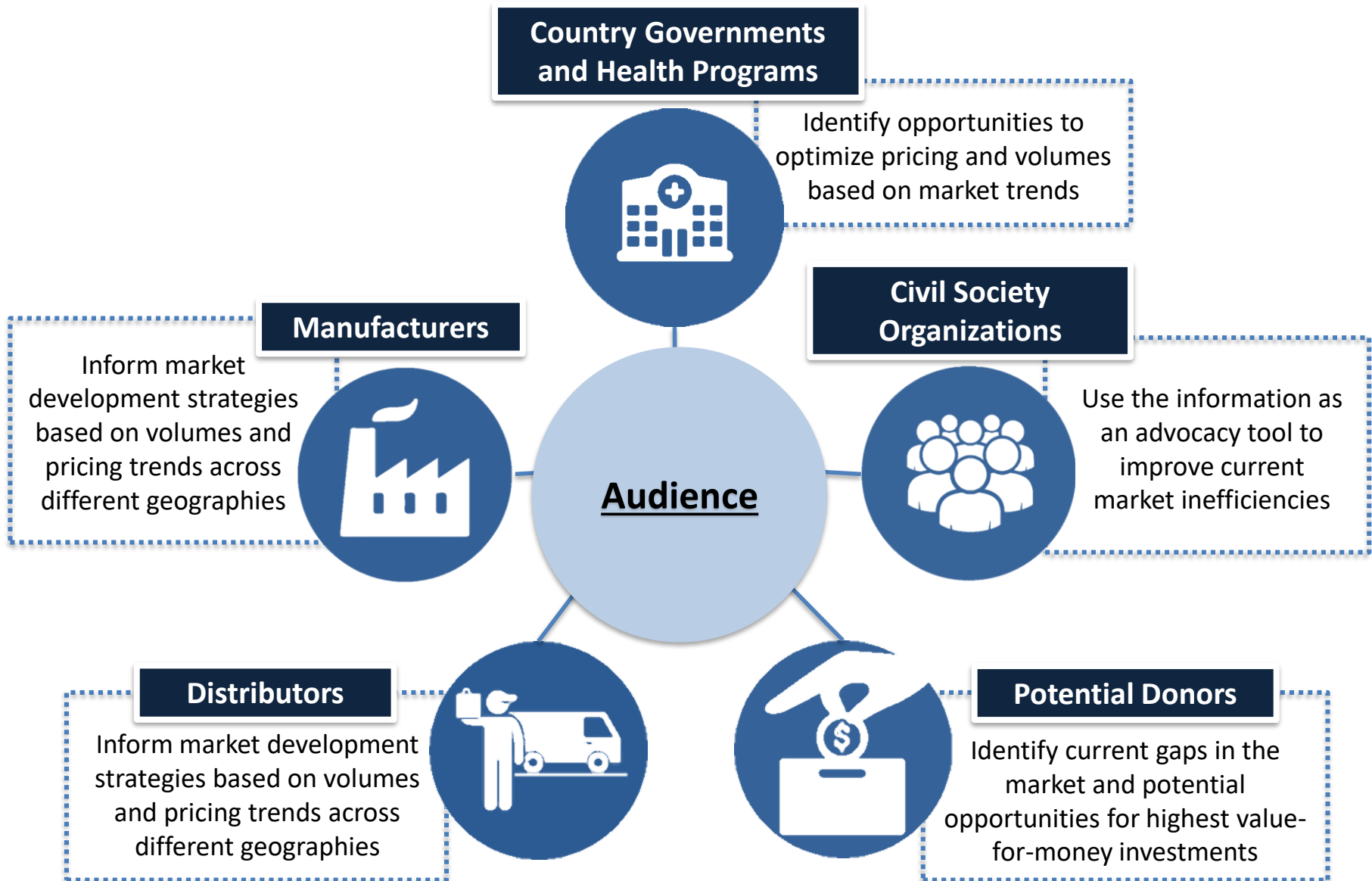
3



### Highlight existing gaps in the demand and supply landscape

Help Identify opportunities to improve price transparency and agreements with suppliers and reduce in-country price mark-ups

The report targets a broad range of stakeholders within the HCV community and can be leveraged for multiple purposes



# Agenda

- Introduction (*Craig McClure*)
- Country Perspective (*Dr. Sabin Nsanzimana*)
- Clinical Updates (*Dr. Christian Ramers*)
- HCV Diagnostics (*Dr. Timothy Meehan*)
- HCV Treatment (*Vidhi Lohia*)
- WHO's Reflections (*Dr. Meg Doherty*)

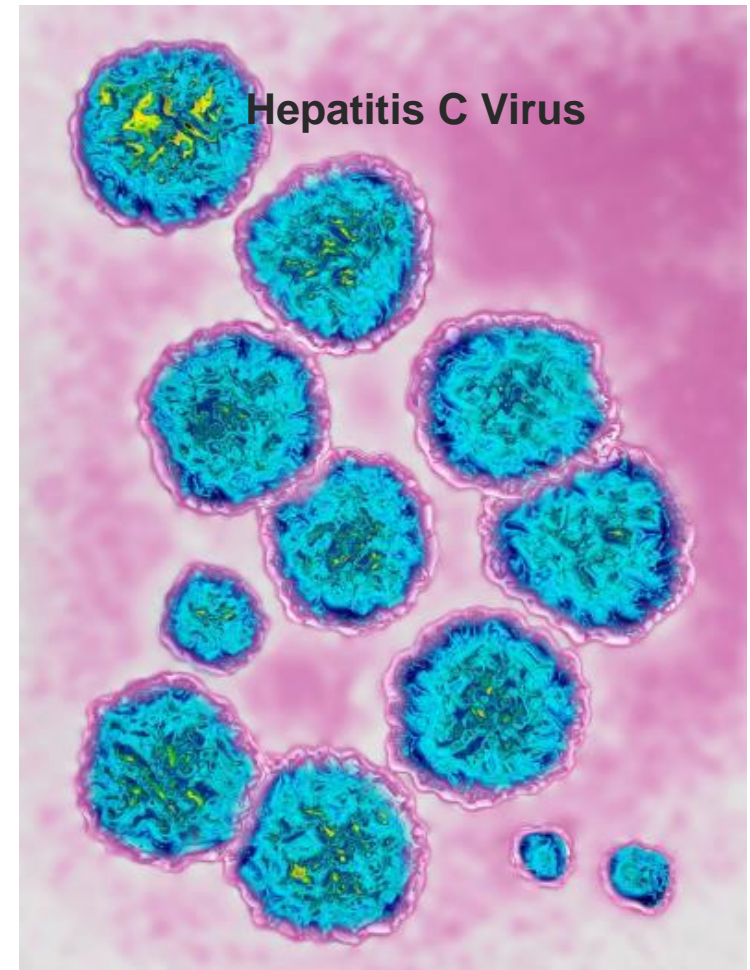


# Agenda

- Introduction (*Craig McClure*)
- Country Perspective (*Dr. Sabin Nsanzimana*)
- Clinical Updates (*Dr. Christian Ramers*)
- HCV Diagnostics (*Dr. Timothy Meehan*)
- HCV Treatment (*Vidhi Lohia*)
- WHO's Reflections (*Dr. Meg Doherty*)

## HCV Basics

- Enveloped RNA virus, robust outside host (survives weeks on surfaces, months within syringes<sup>1-4</sup>)
- Transmission via exposure to infected blood (needles, syringes, medical/ dental procedures, tattoos, sex, mother to child)
- No vaccine available (Antibody not protective)
- Minimal or no symptoms on acute infection; long clinically latent period (~20-30 years) .



# Chronic HCV can lead to cirrhosis, liver cancer, liver failure and death over long disease course

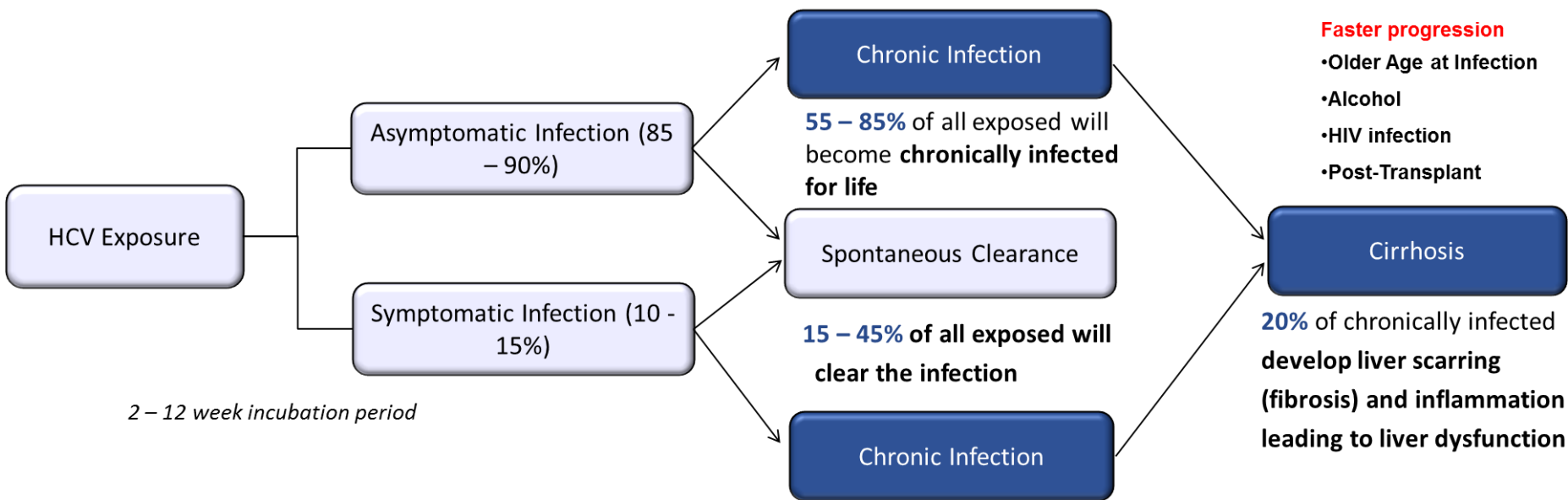


## Acute Infection

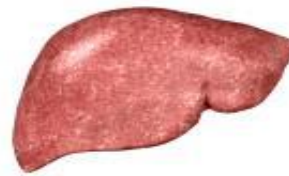
Patients diagnosed **within 6 months** of HCV exposure

## Chronic Infection

Patients diagnosed **6 months or more** after HCV exposure remain infected for life without treatment



**Healthy**



**Fibrotic**

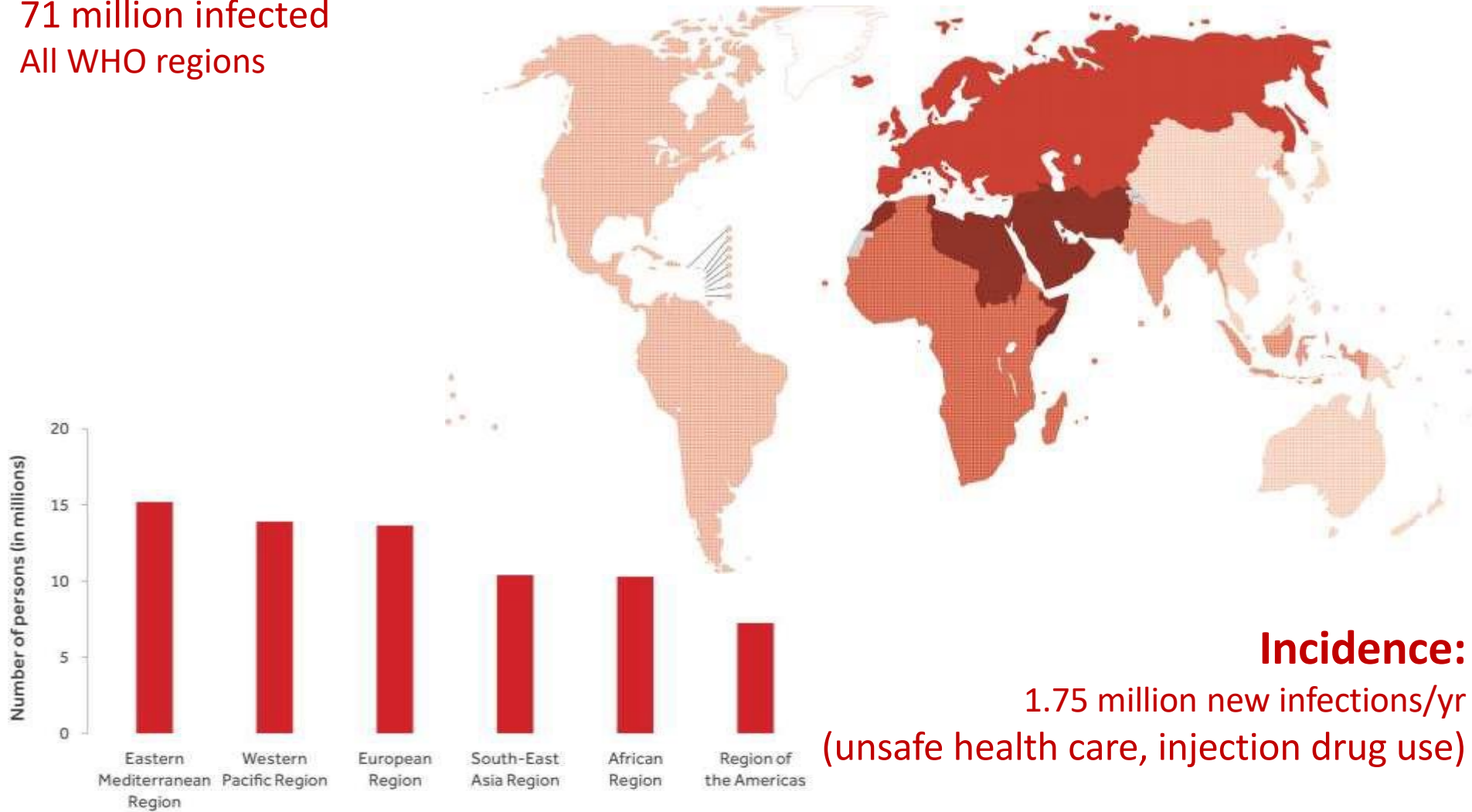


**Cirrhotic**

## Prevalence:

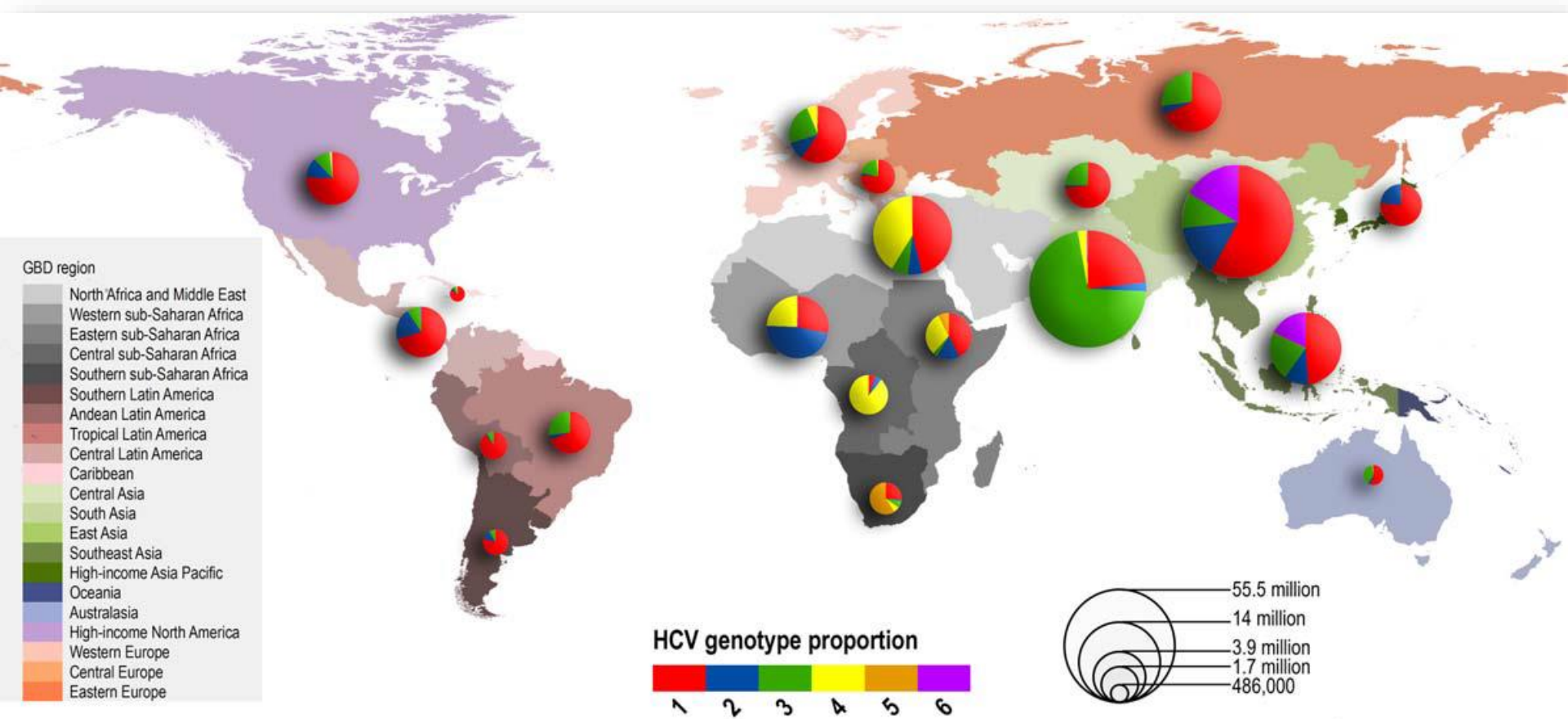
71 million infected

All WHO regions



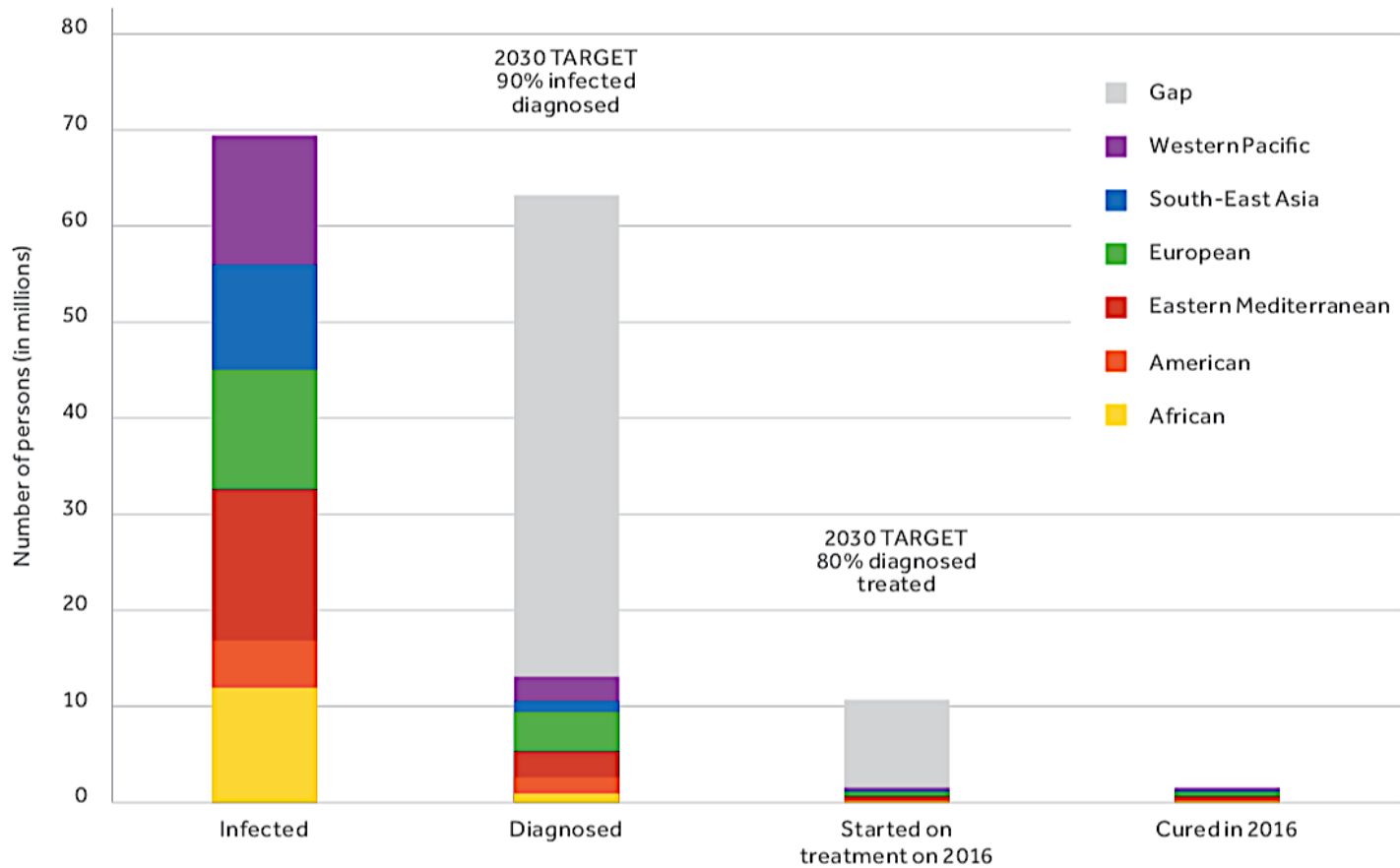
**Incidence:**  
1.75 million new infections/yr  
(unsafe health care, injection drug use)

# Global Distribution of HCV genotypes

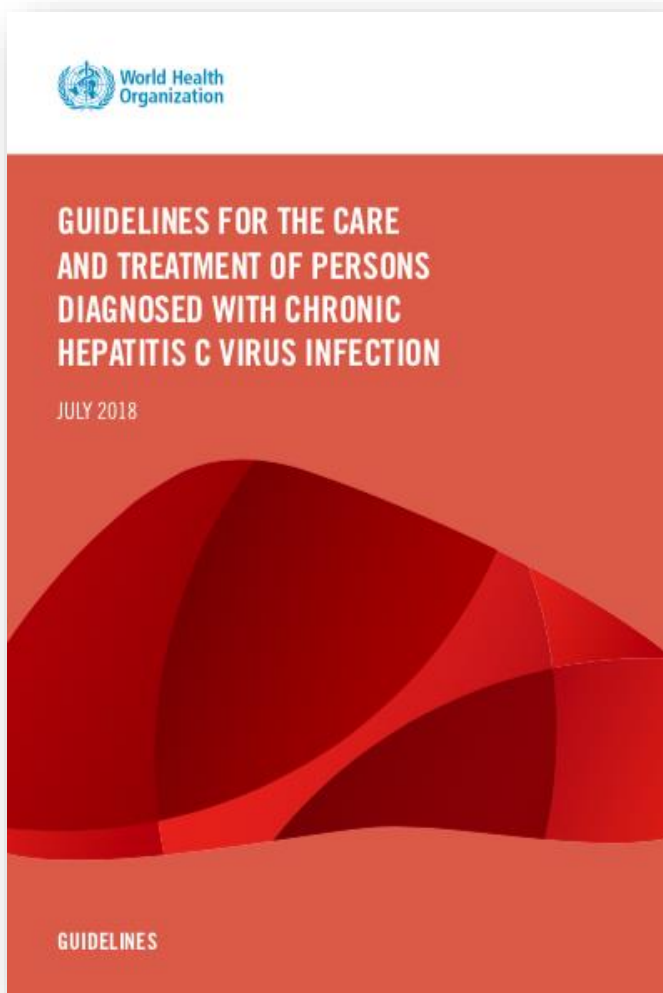


- 6 major HCV genotypes; globally distributed and have different clinical characteristics
- Interferon-based therapy long, toxic, complicated with low cure rates.
- Early DAA therapy (2014-16) improved toxicity, greater efficacy, still genotype-specific

Fig. 1. Cascade of care for people living with HCV infection, by WHO region, 2016



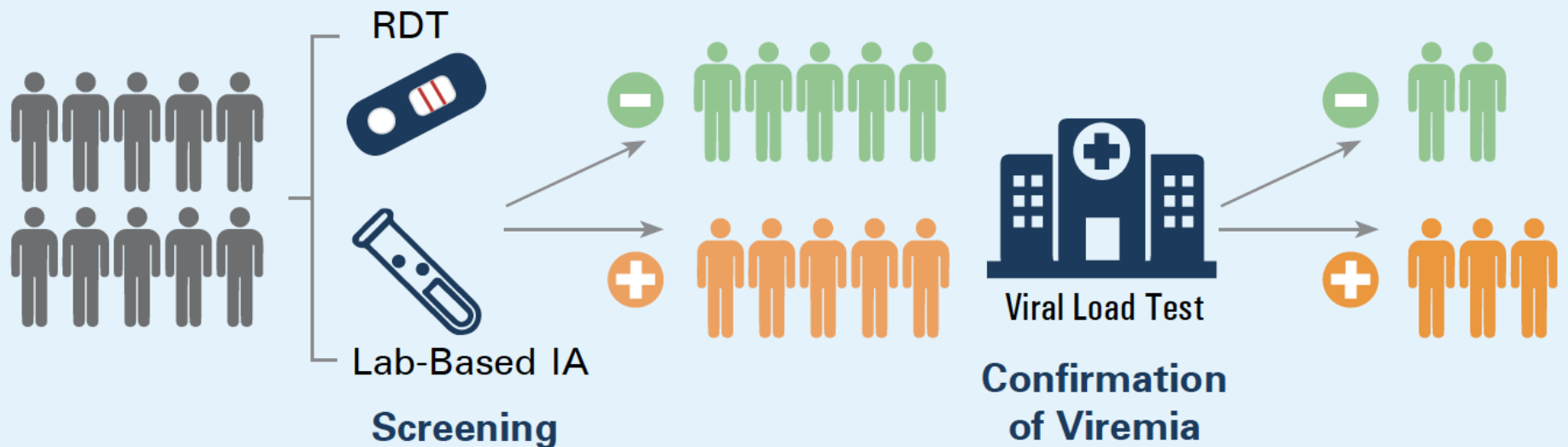
- Globally, major deficiencies in diagnostic testing and treatment initiation
- New treatment starts roughly balancing new infections



- Improved rapid Diagnostics
- Non-invasive fibrosis assessment techniques
- Advances in HCV therapeutics:
  - Safe and effective DAA's shift risk/benefit ratio in favor of treating all
  - Pan-genotypic regimens since 4/2016
  - Substantial price reduction of DAA's

*WHO recommends offering **treatment to all individuals** > 12 years, irrespective of disease stage.*

# WHO-Recommended HCV Diagnosis Cascade



## Recommended prior to treatment:

Assessment of hepatic fibrosis by APRI or FIB-4.

Assessment of co-morbidities, pregnancy, and potential drug-drug interactions.

Genotyping for adolescents (12-17 years) to determine the appropriate treatment regimen.

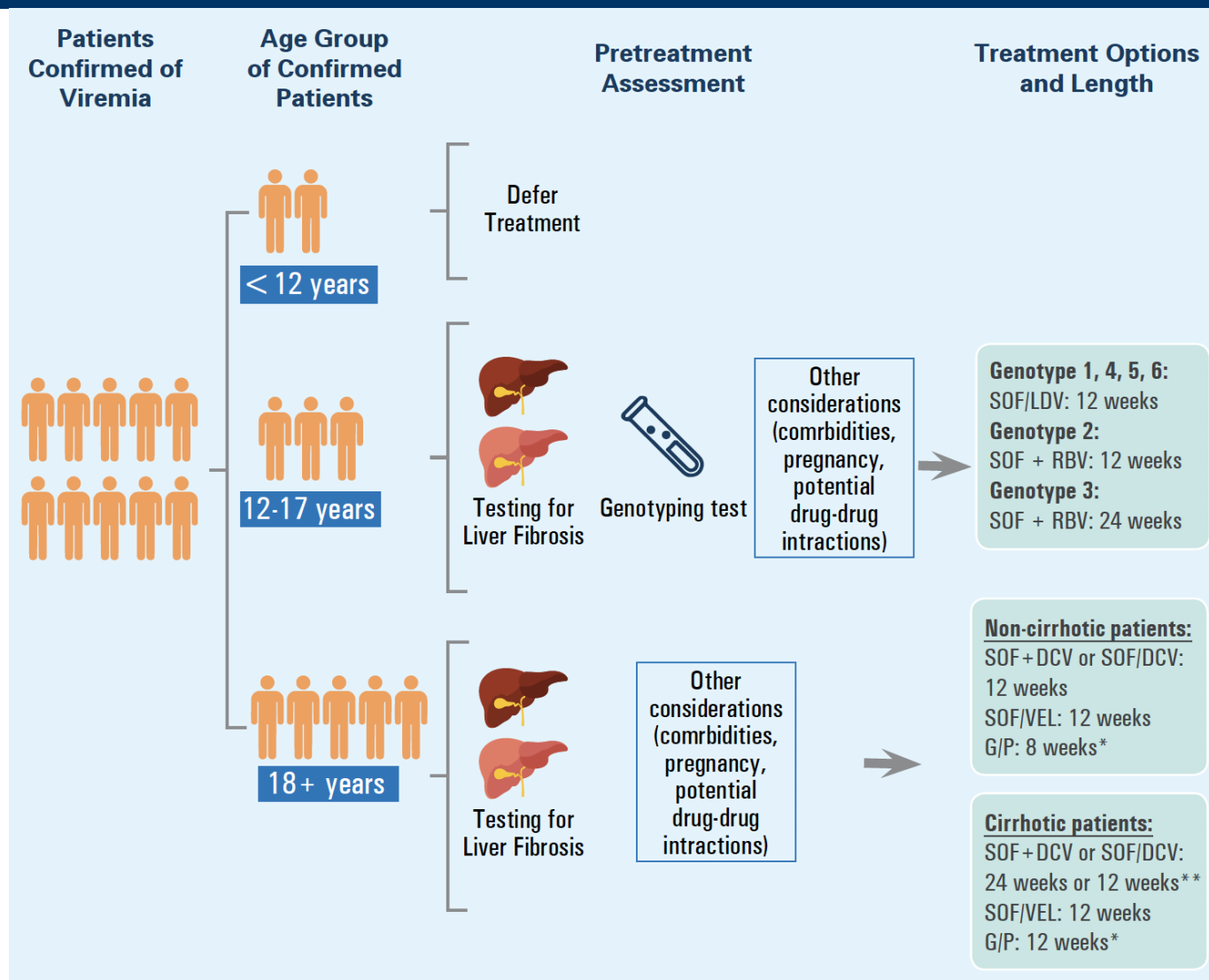
## No longer necessary:

Genotyping for adults when pan-genotypic DAAs are used in treatment.

HCV viral load at week four due to a lack of clinical evidence in predicting cure.



# WHO-Recommended HCV Treatment Cascade



- Genotype-specific DAA treatment
- Pan-Genotypic treatment

\*US Guidelines now recommend GLE/PIB x 8 weeks in cirrhotic patients; and GLE/PIB x 16 weeks in Tx experienced pts

\*\* May be considered in countries where GT distribution is known and GT-3 <5%

Adapted from <http://www.who.int/hepatitis/publications/hepatitis-c-guidelines-2018/en/>

- **Pan-Genotypic Regimens for ALL Adult Patients**
  - **F0-F3:**
    - **SOF/VEL** 12 weeks
    - **SOF+DCV** 12 weeks
    - **GLE/PIB** 8 weeks (16w if TE)
  - **Compensated Cirrhosis:**
    - **SOF/VEL** 12 weeks
    - **GLE/PIB** 12 weeks (16w if TE)
    - **SOF+DCV** 24 weeks
    - **SOF+DCV** 12 weeks, (if GT3 < 5%)
- 
- **SOF/VEL/VOX** x 12 weeks is the only retreatment option
  - Fibrosis staging using APRI & FIB-4
  - Minimal monitoring: baseline & SVR 12 assessments
  - Simplified service delivery approach to testing, care & treatment

## AASLD, EASL, APASL, ALEH Call to Action

- **Simplification** of diagnostic and treatment algorithms towards goal of a one-stop “test and cure” for HCV
- **Integration** of HCV treatment with primary care and other disease programs (e.g. TB, HIV) and outreach settings (harm reduction)
- **Decentralization** of HCV services from large urban referral hospitals to local level care
- **Task-sharing** of HCV care for uncomplicated cases with primary care clinicians, medical officers, advanced practice clinicians, nurses, pharmacists and trained community health workers where available



*To make HCV elimination a reality, hepatologists have key roles in public health surveillance, testing, care and treatment policies, advocacy, training, and identification and management of the principal complications of HCV infection: cirrhosis and hepatocellular carcinoma*

- Global HCV epidemic is substantial, causing high morbidity/mortality burden on health systems through cirrhosis, liver cancer (HCC), and liver failure
- Challenges of complex diagnostic/treatment algorithms largely have been overcome
- Rapid diagnostics and safe, effective, pan-genotypic DAA regimens allow decentralization, simplification, integration and task sharing
- HCV Elimination is possible with political will and mobilization of testing & treatment resources

# Agenda

- Introduction (*Craig McClure*)
- Country Perspective (*Dr. Sabin Nsanzimana*)
- Clinical Updates (*Dr. Christian Ramers*)
- HCV Diagnostics (*Dr. Timothy Meehan*)
- HCV Treatment (*Vidhi Lohia*)
- WHO's Reflections (*Dr. Meg Doherty*)

## EXHIBIT 4: WHO PQ RDTs

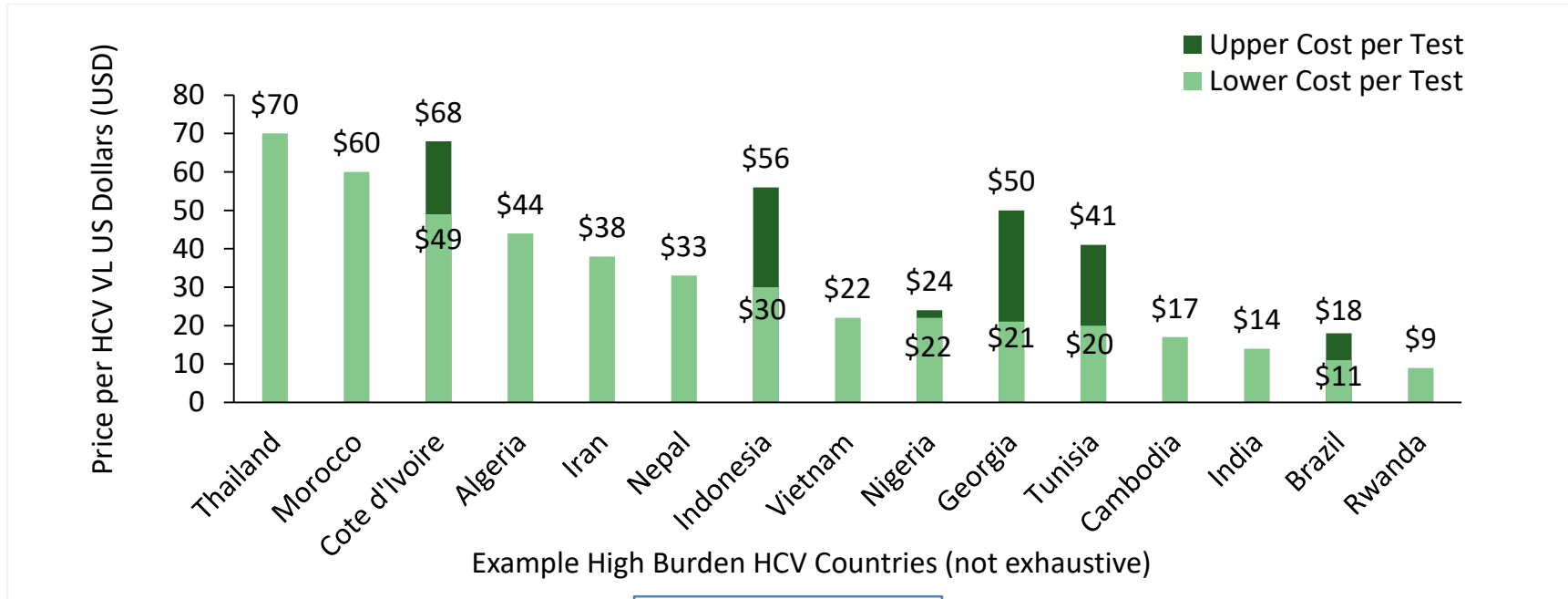
Advantages of quality assured RDTs for screening:

- Quality assured antibody RDTs are readily available
- Inexpensive (typically \$1 USD)
- Enables decentralized/POC testing
- Visual readout from a drop of blood
- Avoids challenges associated with sample collection/transportation
- Permits rapid ( $\geq 5$ min) results return limiting loss-to-follow-up



There are significant differences in the prices paid for diagnostics both between countries and within a given country

### EXHIBIT 8: VIRAL LOAD PRICE PER TEST PAID BY PUBLIC PROGRAMS



#### Key Takeaways

Reasons for pricing differences between and within countries:

- Different suppliers sell tests at different prices
- Differing levels of political will and allocations for public programs
- Higher volume commitments may enable negotiation of a lower cost per test
- Country specific cost components such as import duties, taxes and tariffs vary
- Even within a country, multiple procurement channels may result in different prices paid for the same product

The pricing structures of diagnostics are often complex and stakeholders within public programs may not have adequate visibility across the entire procurement cascade

- **Additional Cost Components** not included in global agreements increase the final price per test
- Confirm that **Global Ceiling Prices** are being accessed
- Determine if **Taxes and Duties** may be waived or reduced
- Confirm that appropriate value is obtained from service contracts
- Assure that **Distributor Margins** are not excessive

**EXHIBIT 9: EXAMPLE OF PRICING VISIBILITY  
(PROCUREMENT CASCADE)**

Cepheid GeneXpert HCV Test Procured via Global Access			
Price Component	Cost Percentage	Incremental (USD)	Total (USD)
Cartridge			<b>\$14.90</b>
Freight	8% of Cartridge	\$1.19	\$16.09
Taxes & Duties	15% of Cartridge	\$2.24	\$18.33
Distribution	5% of Cartridge	\$0.75	\$19.07
Service & Support	10% of Final Cost	\$2.20	\$21.27
Distributor Margin	Flat Rate	<b>\$0.37</b>	\$21.64
<b>Selling Price</b>			<b>\$21.64</b>

**Key Takeaway**

Stakeholder visibility across the procurement/use chain is vital in understanding cost components, identifying potential cost reductions, informing negotiation and forecasting budget needs



# Global ceiling pricing is trending toward highly-inclusive agreements which enable increased pricing visibility

- Global agreements represent **Ceiling Prices**
- Markups for local agent fees may be added to the prices for Abbott, Roche and Cepheid
- All agreements include multiple disease tests
- Hologic has the most comprehensive agreement including instrument placement

## Key Takeaway

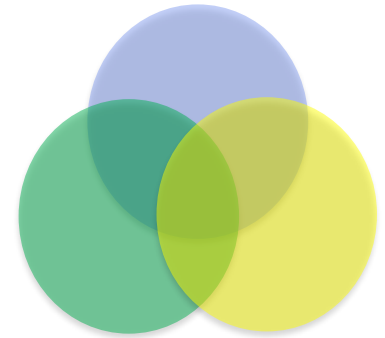
Global ceiling pricing is trending toward highly-inclusive agreements

**EXHIBIT 6: GLOBAL CEILING AGREEMENTS FOR VIRAL LOAD TESTING**

		Global Ceiling Pricing			
		Abbott <sup>a</sup>	Cepheid <sup>b</sup>	Roche <sup>c</sup>	Hologic <sup>d</sup>
Laboratory	Reagents and proprietary consumables	x	x	x	x
	Calibration and control standards	x	x	x	x
	Invalid results due to instrument errors				x
	Non-proprietary consumables				
Diagnostic Platform	Instrument placement				x <sup>g</sup>
	Instrument training				x
	Service and maintenance				x
Supply Chain	Incoterm <sup>h</sup>	Ex-works	Ex-works	CPT	DAPI <sup>i</sup>
	Packaging	x	x	x	x
	Loading from warehouse			x	x
	Pre-carriage			x	x
	Export customs clearance			x	x
	Handling at departure			x	x
	Main transportation			x	x
	Transportation insurance			x	x
	Handling at arrival				x
	Post-carriage				x
	Duties and local taxes				
	Import customs clearance				
	Unloading at destination				
Agreement Specifications	Cost-per-test (US Dollars)	\$13.00 - \$25.00 <sup>e,f</sup>	\$14.90	\$8.90	\$11.28
	Includes distributor and local agent fees	No	No	No	Yes
	Tests included in agreement	HIV EID HCV HBV HPV MTB CT/NG	HIV EID HCV HBV HPV MTB <sup>h</sup>	HIV EID HCV HBV HPV MTB <sup>i</sup>	HIV <sup>g</sup> EID <sup>i</sup> HCV HBV HPV

## Removing barriers to integrated testing across diseases can have multiple advantages for all programs

- The broad test menus and global agreements for viral load testing encourages an integrated approach to testing
- Integration with other disease programs can be an entry point for hepatitis testing while benefiting all disease programs
- Leveraging the HIV infrastructure already present in many LMICs has been a successful strategy for building public hepatitis programs
- Centralized, pooled acquisition integrated across diseases can streamline diagnostic procurement and leverage larger testing volumes to enables competitive contract negotiation



# Summary of the challenges to cost-effective diagnostics and strategies for achieving competitive pricing

## KEY CHALLENGES

- Limited funding of public HCV programs
- Gap in information on global pricing and testing volumes – no public database
- Fragmented procurement through a patchwork of separate buyers
- Complicated pricing structures

## SUCCESSFUL STRATEGIES















- Political will enabling volume commitments and budget allocations
- Pooled testing volumes and streamlined procurement
- Integrated testing across disease to leverage existing diagnostics infrastructure
- Increased visibility of individual cost components
- Highly-inclusive pricing models which minimize individual cost components

# Agenda

- Introduction (*Craig McClure*)
- Country Perspective (*Dr. Sabin Nsanzimana*)
- Clinical Updates (*Dr. Christian Ramers*)
- HCV Diagnostics (*Dr. Timothy Meehan*)
- HCV Treatment (*Vidhi Lohia*)
- WHO's Reflections (*Dr. Meg Doherty*)

The generic supplier landscape for key DAAs has expanded over the last few years giving countries a number of product options for procurement

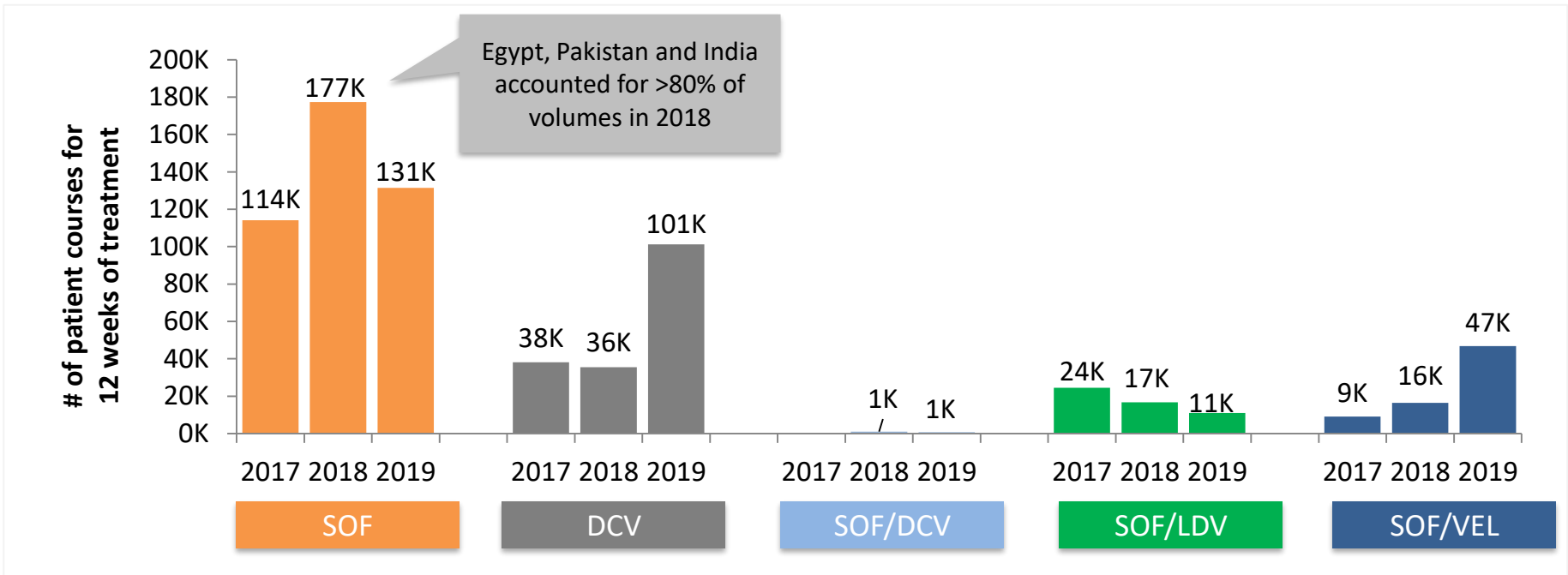
**EXHIBIT 10: GENERIC SUPPLIER LANDSCAPE FOR QUALITY ASSURED DAAs**

DAA	WHO Prequalified	ERP Reviewed
SOF (400 mg)	    	
DCV (60 mg and 30 mg)	  	
SOF/DCV (400/60mg)		
SOF + DCV co-blister (400 + 60mg)		
SOF/LDV (400/90 mg)		 
SOF/VEL (400/100 mg)		
G/P (300/120 mg)		

\*As of Q2 2020

# Overall volumes of generic DAAs used in LMICs have increased indicating scale-up in HCV treatment with generic drugs

**EXHIBIT 11: 2017–2019 INDIA GENERIC DAA EXPORT VOLUMES TO LMICs AND INDIA VOLUMES**

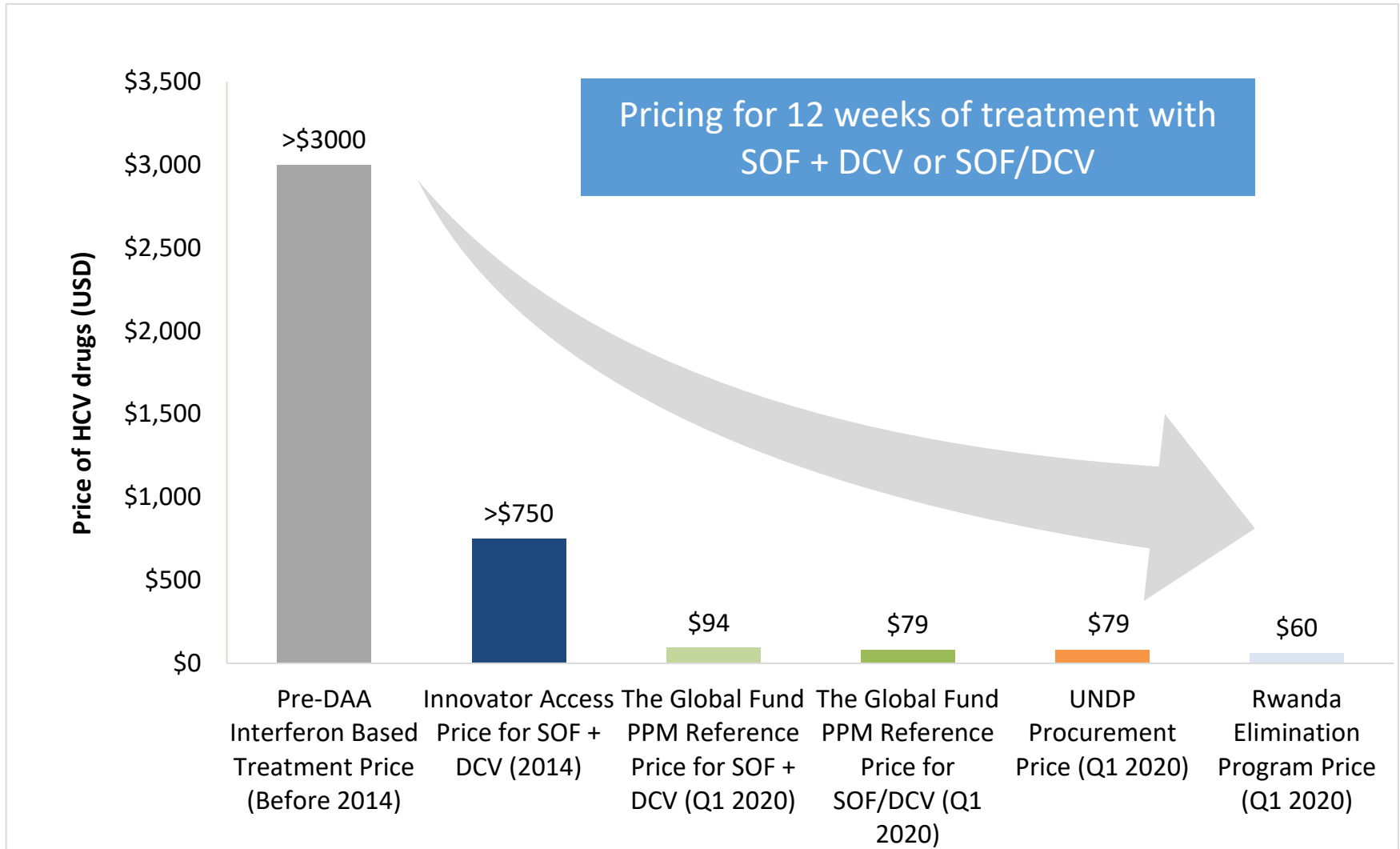


## Key Takeaways

- Countries that prioritized patients who were previously diagnosed and awaiting treatment will need to **focus on active case finding**
- Rwanda, Ukraine and Uzbekistan have scaled up treatment with generic DAAs in 2019
- Decline in exports of SOF/LDV and increase in exports for SOF/VEL, SOF/DCV FDC and SOF + DCV indicate a **preference for pan-genotypic regimens** over non-pan-genotypic regimens

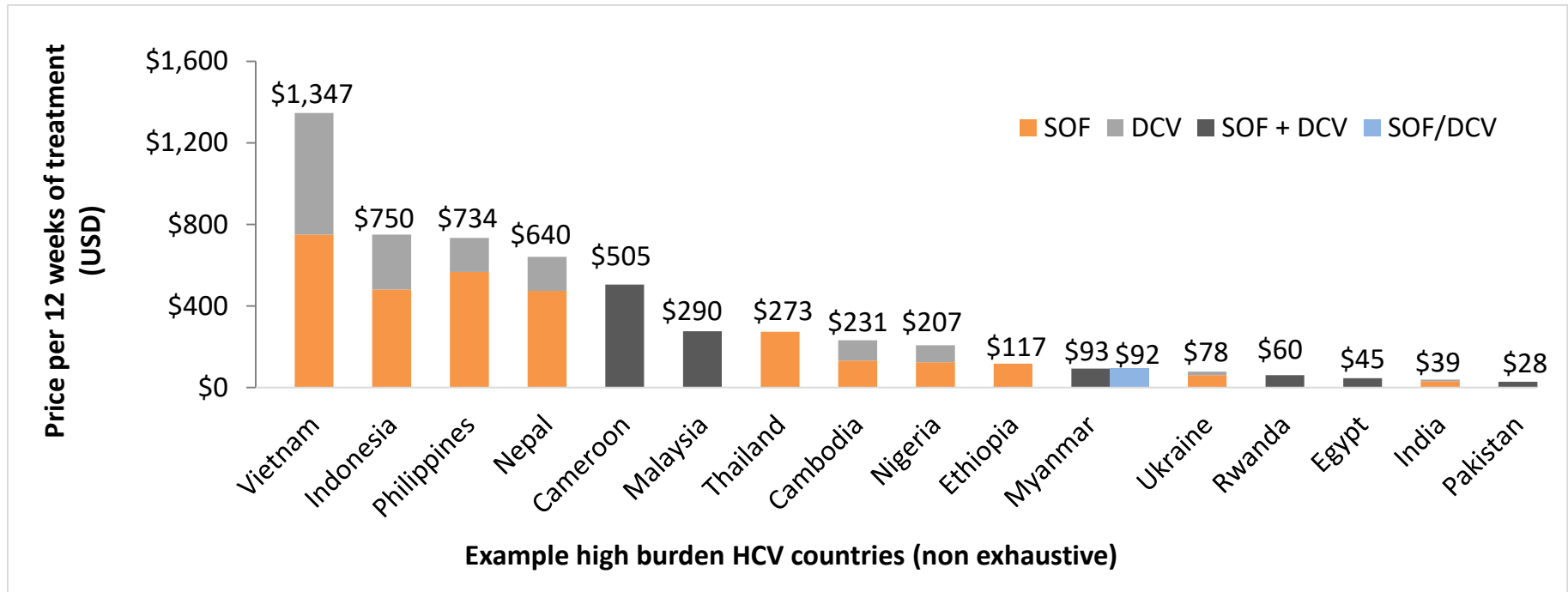
The price for HCV treatment has declined over the last few years from >\$3000 per patient course to as low as \$60 per patient course

**EXHIBIT 12: PRICE EVOLUTION OF HCV DRUGS (USD)**



While the global benchmarks for DAA prices have declined, in-country prices are high in some countries and there is significant variability in prices across countries

#### EXHIBIT 14: IN-COUNTRY PRICE FOR 12 WEEKS OF TREATMENT WITH SOF AND DCV



#### Key Takeaways

- There is **no standardized global price** that countries are accessing yet
- **Egypt, India, and Pakistan have secured very low prices for DAAs** as they are scaling-up public programs. India and Pakistan are using non WHO PQ'd/ ERP reviewed products which tend to be less expensive
- Similar **variation in prices for other HCV treatment drugs** including SOF/VEL and SOF/LDV (Exhibit 15 and 16 of the report)



# Countries that have a large number of suppliers registered can benefit from accessing lower price per patient course

## IN-COUNTRY SUPPLIER REGISTRATIONS AND TREATMENT PRICES

Country	# of generic suppliers registered for SOF	# of generic suppliers registered for DCV	Price per patient course with SOF and DCV for 12 weeks
India	>10	>10	US\$39
Myanmar	>10	3	US\$93
Some other LMICs	3-4	2-3	>US\$200

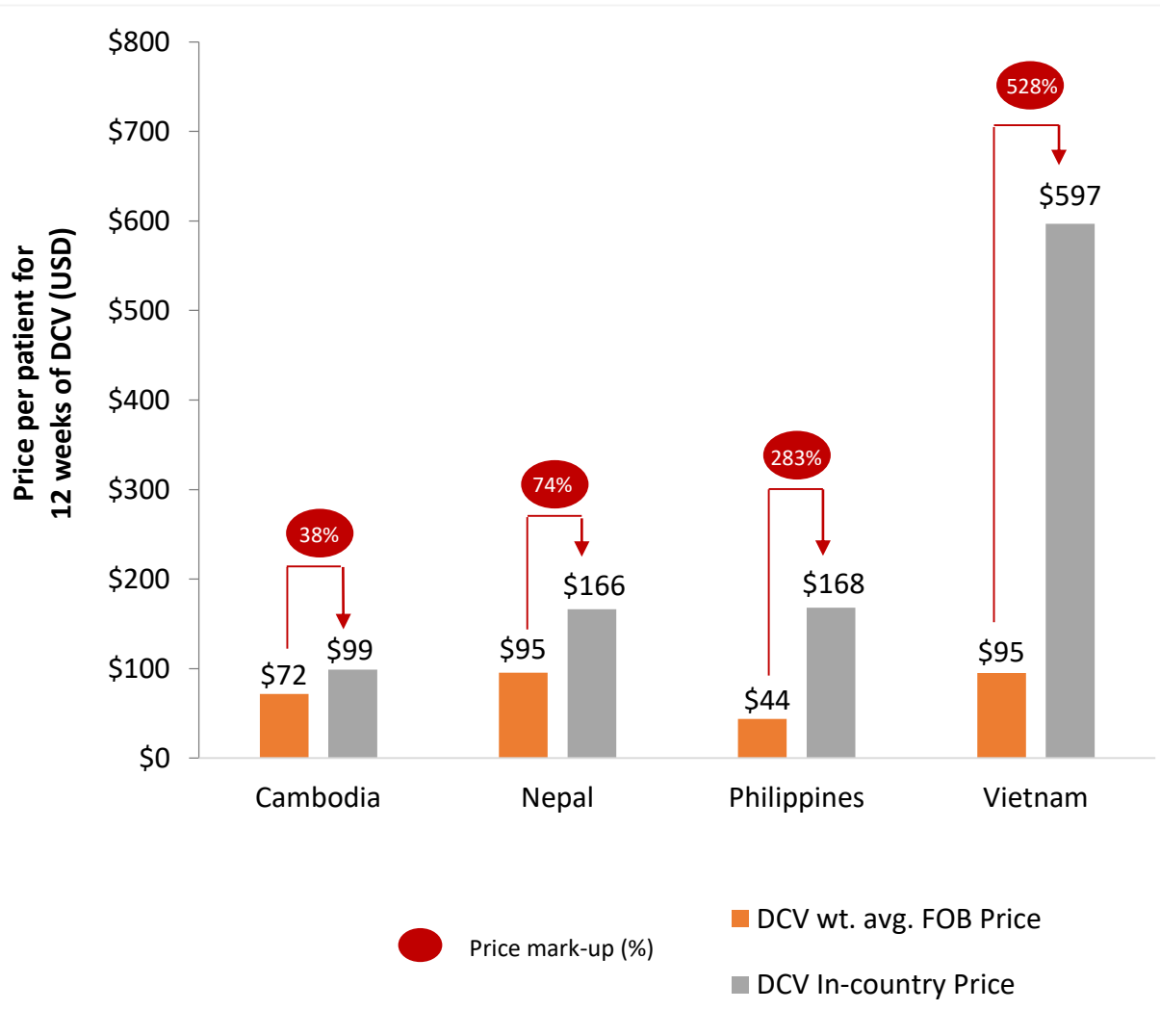
*\*The public programs of both India and Myanmar procure locally approved products, but not WHO PQ'd/ERP reviewed/SRA approved products.*

### Key Takeaways

- **Benefits of larger number of suppliers registered in-country:**
  - More product options can ensure supply security in-country
  - Increase competition among suppliers for lower prices
  - More successful tender processes
- Suppliers and countries can consider using the **WHO's Collaborative Registration Procedure (CRP)** for accelerating registration of DAAs in-country

# Price mark-ups associated to shipping, insurance, import duties, distributor margins can contribute to high prices in-country

**EXHIBIT 19: IN-COUNTRY PRICE MARK-UPS ON DCV (INDICATIVE)**

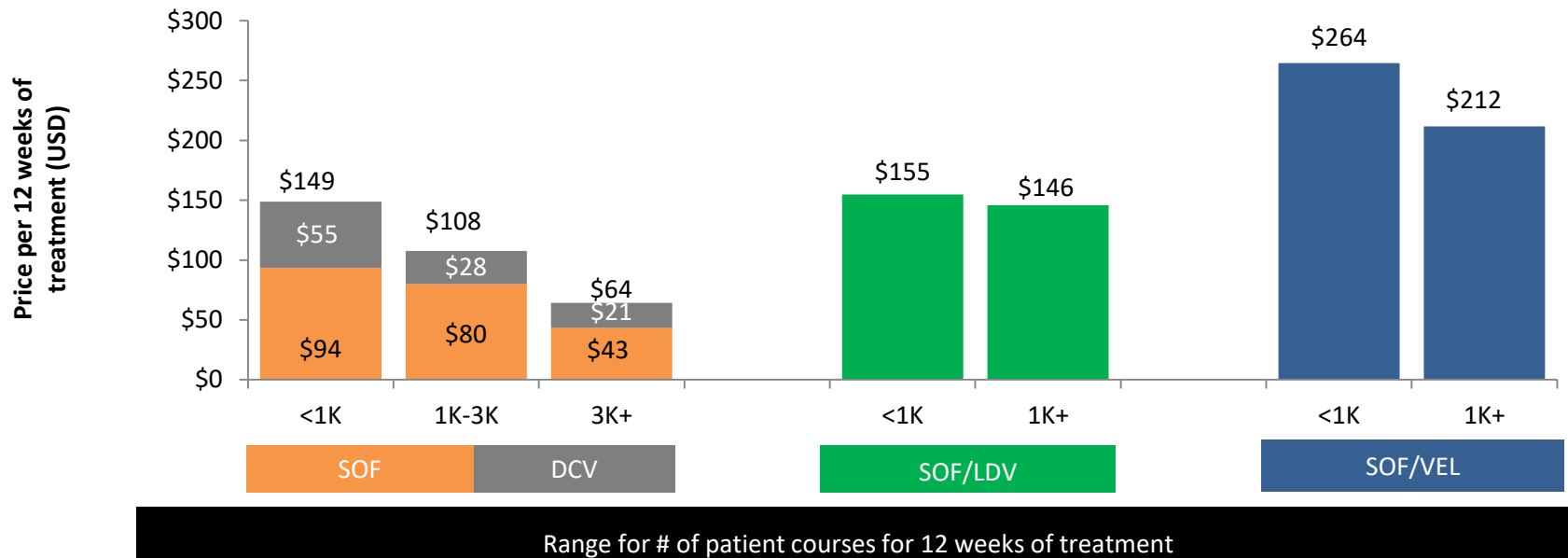


## Key Takeaways

- In-country **mark-ups may include various factors** such as shipping, insurance, import duties, taxes, storage, facility maintenance and transportation costs, and distributor margins, which can contribute to high in-country price
- In-country **mark-ups vary across countries**
- Countries observing high mark-ups can **reduce prices by identifying contributing factors and limiting them** where possible

# Countries can benefit from lower pricing by planning procurement and ordering DAAs in optimal quantities






**EXHIBIT 20: 2019 VOLUME BASED PRICING FOR DAAS (USD)**



## Key Takeaways

- Programs that have aggressively scaled-up treatment volumes have usually benefited from significant price breaks.
- For orders in the range of over 3,000 patient courses of SOF and DCV, Egypt and Pakistan have been able to receive very competitive FOB prices compared to the orders in lower ranges.

# Despite limited funding, some LMICs are working towards expanding their public programs; some others are looking at alternative models to scale up treatment

Country	Strategy Snapshot
<p><b>Myanmar</b></p> 	<p><b>Private Sector Engagement</b></p> <ul style="list-style-type: none"> <li>Launched public-private partnership model that enables patient access to diagnostics and drugs at selected labs and pharmacies at subsidized rates               <ul style="list-style-type: none"> <li>Model launched in 3 public healthcare facilities across Yangon and Mandalay</li> </ul> </li> </ul>
<p><b>Vietnam</b></p> 	<p><b>Health Financing</b></p> <ul style="list-style-type: none"> <li>Dept. of Health Insurance has included coverage of four DAAs in the national health scheme with a reimbursement rate of 50%, significantly increase treatment access</li> </ul>
<p><b>Nigeria</b></p> 	<p><b>Launch of Micro-elimination Program</b></p> <ul style="list-style-type: none"> <li>Launched elimination program in Nasarawa Jan 2020 and dedicate funds to elimination</li> <li>The goal is to treat 124K HCV patients in Nasarawa State and eliminate HCV by 2024</li> </ul>
<p><b>Indonesia</b></p> 	<p><b>Scale up National Hepatitis Program</b></p> <ul style="list-style-type: none"> <li>Expanded hepatitis program to 7 new provinces in 2018 and 1 new province in 2019               <ul style="list-style-type: none"> <li>Led to hepatitis treatment being available in 15 out of 34 provinces</li> </ul> </li> </ul>
<p><b>Cambodia</b></p> 	<p><b>Launch of National Program</b></p> <ul style="list-style-type: none"> <li>Leveraging results of HIV/HCV co-infection program to develop investment case to inform the launch of a national program</li> </ul>

# Key challenges and successful strategies in the treatment sphere

## KEY CHALLENGES

- Limited funding of public HCV programs
- Lack of awareness among stakeholders on global benchmark pricing
- Slow or limited in-country product registration
- High in-country prices of drugs

## POTENTIAL SUCCESSFUL STRATEGIES

- Government commitments with dedicated budgets to scale public HCV programs
- Accelerated registration or time limited import approval of WHO prequalified/ERP reviewed products
- Leveraging global benchmark prices
- Global procurement mechanisms such as The Global Fund PPM, the UNDP health procurement mechanism, PAHO Strategic Fund
- Mapping of in-country mark ups and identifying areas to reduce added costs
- Procurement planning and ordering DAAs in optimal quantities
- Alternative pricing mechanisms such as public-private partnerships and insurance schemes

# Agenda

- Introduction (*Craig McClure*)
- Country Perspective (*Dr. Sabin Nsanzimana*)
- Clinical Updates (*Dr. Christian Ramers*)
- HCV Diagnostics (*Dr. Timothy Meehan*)
- HCV Treatment (*Vidhi Lohia*)
- WHO's Reflections (*Dr. Meg Doherty*)

**Q&A**