

Elimination of Hepatitis C in Individuals With HIV Infection

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Learning Objectives

After attending this presentation, learners will be able to:

- List two 2030 elimination goals for HCV infection
- Compare treatment of HCV infection in a person with HIV infection and someone without

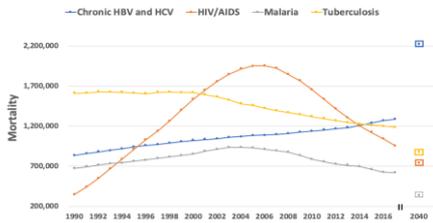
ARS Question 1: Which is most true about the expected future (2040) mortality from chronic HCV and HBV?

1. Should decrease in parallel with HIV
2. Will exceed HIV
3. Will exceed TB
4. Will exceed malaria
5. Will exceed HIV+TB+malaria

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Global health importance of hepatitis



Foreman Lancet 2018; IHME, 2015 <http://ghdx.healthdata.org>

WHO Hepatitis Elimination Goals

90% reduction in incidence

2015 2020 (30%) 2030

HCV

~1.75 million

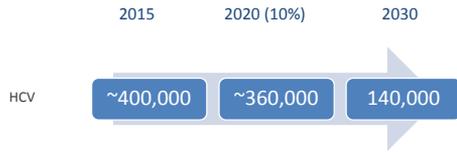
~1.23 million

175,000

WHO Global Hepatitis Report 2017

WHO Hepatitis Elimination Goals

65% reduction in mortality



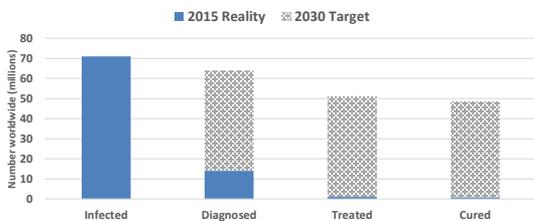
WHO Global Hepatitis Report 2017

Targets to eliminate hepatitis C

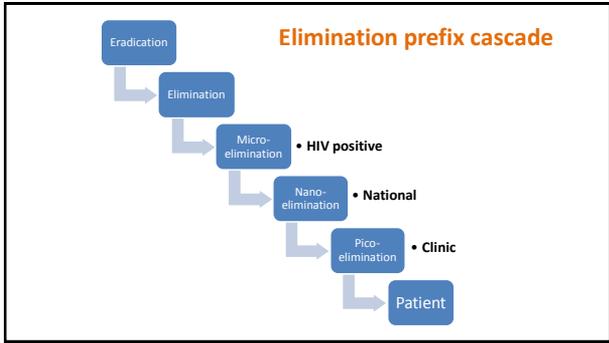
Intervention	2015	2020	2030
HCV diagnosed	20%	30%	90%
HCV treatment	1%	3 million	80%
Donations screened	97%	97.5%	100%
Harm reduction (syr/person/yr)	27	200	300
Safe injection	95%	100%	100%

WHO Global Hepatitis Report 2017

Global cascade of HCV care and 2030 WHO elimination goals: 90/80 target



WHO Global Hep Report 2017



ARS Question 2: A 53 year old man with 1a HCV and HIV on r/DRV, FTC, and TDF with F1-2 disease presents for HCV treatment. Which is true?

1. Needs 24 weeks of treatment due to HIV
2. Doesn't need treatment due to low F score
3. Change ART first
4. Add ribavirin to regimen
5. Must screen for HCC before starting

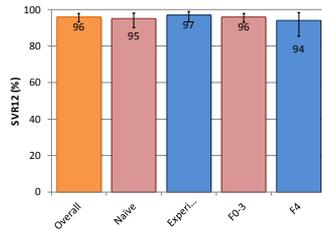
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Efficacy of SOF/LDV in HIV Co-infected patients

335 patients SOF/LDV x 12 wk

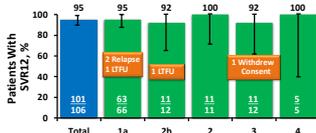
- 82% male, 34% AA, 98% geno 1
- 55% experienced
- 20% cirrhosis
- All 10 relapses were in AA
- 8/10 on EFV



Efficacy of SOF/VEL in HIV/HCV Coinfection

106 patients SOF/VEL x 12 wks

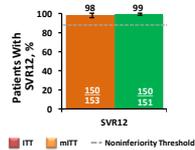
- 86% male
- 45% AA
- 18% cirrhosis
- 62% GT1a, 11% GT3
- SVR
 - cirrhosis: 19/19 (100%)
 - SVR treatment-experienced: 29/31 (94%)



Efficacy of GLE/PIB in HIV/HCV Coinfection

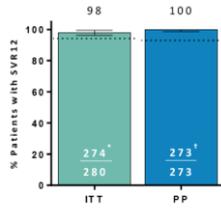
150 patients G/P x 8 or 12 wks

- 18% Black
- 19% TE
- 16% GT3
- 88% FO-F1
- SVR:
 - 93% SVR in cirrhosis (14/15)
 - 1 breakthrough GT3 cirrhosis



GLE/PIB for 8 weeks works well in cirrhosis

- 280 patients G/P x 8 wks
- 10% Black
- Treatment naive
- Compensated cirrhosis
- NO HIV
- 60 Genotype 3 + cirrhosis not yet known

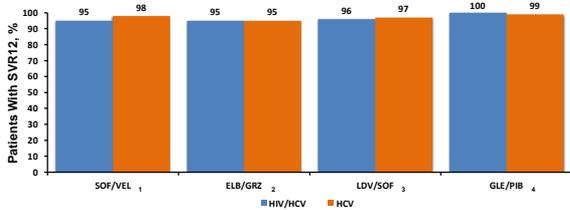


Efficacy of elbasvir/grazoprevir in HIV Co-infection

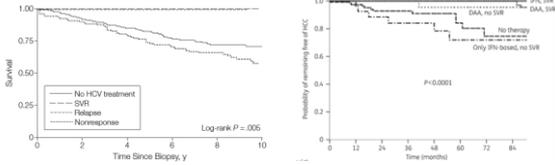
- 218 patients ELB/GRA x 12 wks
- 175 male
- 38 African American
- 35 cirrhosis
- 164 on TDF containing

	All patients	HCV genotype 1a	HCV genotype 1b	HCV genotype 4
SVR12 (95% CI)	210/218* (96.3%, 92.9-98.4)	136/144 (94.4%, 84.5-99.4)	42/44 (95.5%, 84.5-99.4)	27/28 (96.4%, 81.7-99.9)
Lost to follow up or other non-virological failure	11	0	1	0
Virological breakthrough	0	0	0	0
Virological relapse	5	4	0	1
Reinfection	2	1	1	0

Treatment of HCV in HIV/HCV Coinfection



Cure of HCV in HIV-infected reduces ESLD and HCC

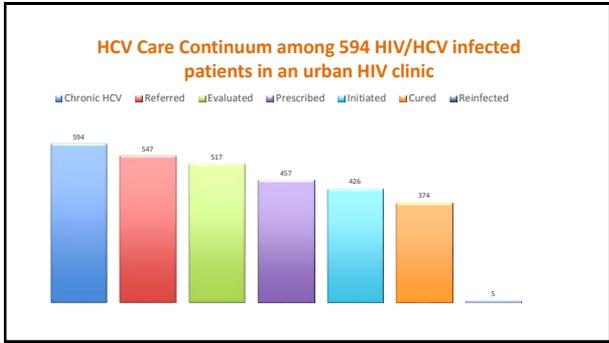


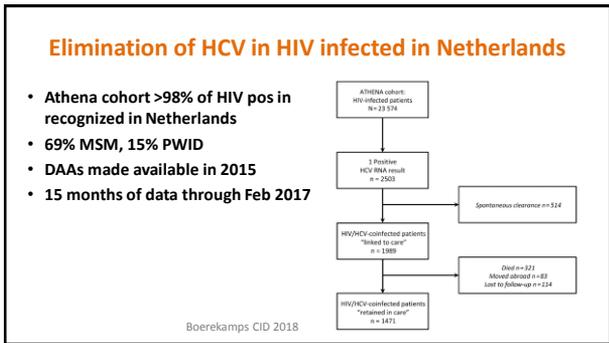
Limketkai JAMA 2012; Berenguer Hepatol 2009; Merchante J Antimicrobiol Ther 2018

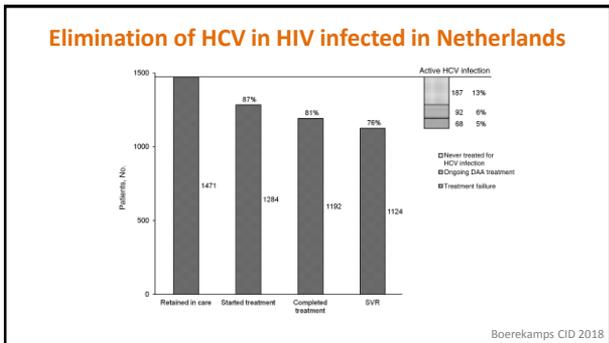
	Ledipasvir/ Sofosbuvir (LDV/SOF)	Sofosbuvir/ Velpatasvir (SOF/VEL)	Elbasvir/ Grazoprevir (ELB/GRZ)	Glecaprevir/ Pibrentasvir (GLE/PIB)	Sofosbuvir/ Velpatasvir/ Voxilaprevir (SOF/VEL/VOX)
Raltegravir (RAL)	↔ LDV ↔ RAL	↔ VEL ↔ RAL	↔ ELB ↔ GRZ ▲ RAL	↔ GLE ↔ PIB ▲ RAL	ND
Cobicistat- boosted elvitegravir (COB)	▲ LDV ▲ COB ^a	▲ VEL ▲ COB ^a	▲ ELB ▲ GRZ ▲ COB	▲ GLE ▲ PIB ▲ COB	▲ VOX ▲ COB ^a
Dolutegravir (DTG)	↔ LDV ↔ DTG	↔ VEL ↔ DTG	↔ ELB ↔ GRZ ▲ DTG	▼ GLE ▼ PIB ▲ DTG	ND
Rilpivirine (RPV)	↔ LDV ↔ RPV	↔ VEL ↔ RPV	↔ ELB ↔ GRZ ↔ RPV	↔ GLE ↔ PIB ▲ RPV	↔ VEL ↔ VOX ↔ RPV

Kiser, HCVguidelines.org

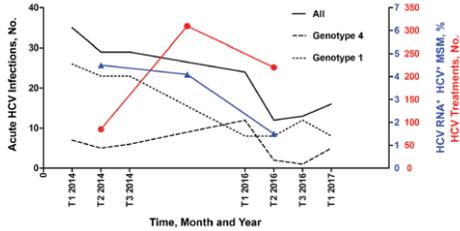
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Ritonavir- boosted atazanavir (ATZ)	▲ LDV ▲ ATZ ^a	▲ VEL ▲ ATZ ^a	▲ ELB ▲ GRZ ▲ ATZ	ND	▲ ATZ
Ritonavir- boosted darunavir (DRV)	▲ LDV ↔ DRV ^a	↔ VEL ↔ DRV ^a	▲ ELB ▲ GRZ ↔ DRV	ND	▲ VOX ↔ DRV
Ritonavir- boosted lopinavir (LPV)	ND ^a	↔ VEL ↔ LPV ^a	▲ ELB ▲ GRZ ↔ LPV	ND	ND
Ritonavir- boosted tipranavir (TPV/r)	ND	ND	ND	ND	ND
Efavirenz (EFV)	▼ LDV ▼ EFV ^a	▼ VEL ▼ EFV	▼ ELB ▼ GRZ	ND	ND





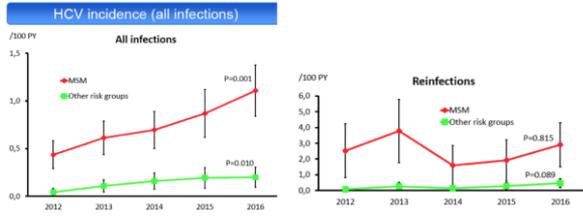


Elimination of HCV in HIV infected in Netherlands



Boerekamps CID 2018

Elimination of HCV in HIV infected persons in France



Cotte CROI 2018

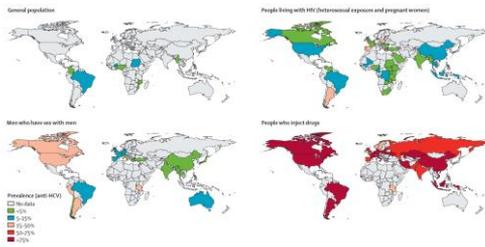
ARS Question 3: How many HCV infected people need to be cured to eradicate HCV from HIV-infected population?

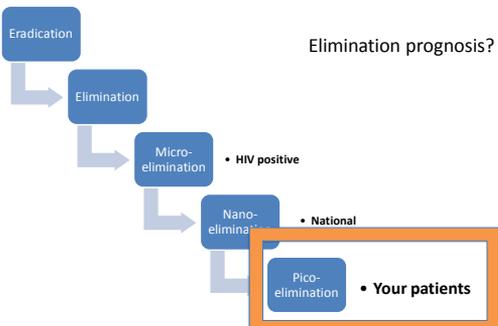
1. 20,000
2. 200,000
3. 2,000,000
4. 20,000,000

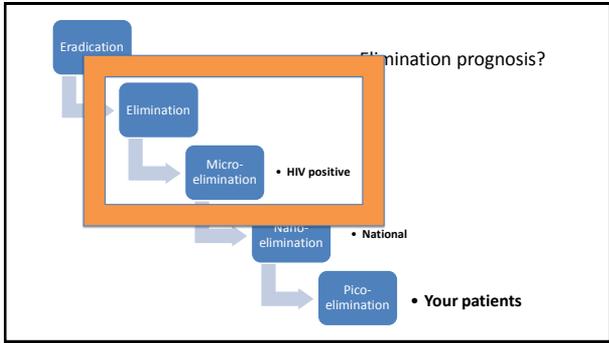
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2. 200,000
3. 2,000,000
4. 20,000,000

2.27 million persons are HIV/HCV coinfectd







Public health response to eliminate HCV

- Requires shifting to public health response
- HIV example
 - ART given to >20 million persons (>240 million person months)/year
 - Cost of HIV ~20 billion USD/year
- Can build on HIV infrastructure for HIV/HCV elimination
 - 2 million/2-3 months each <6 million person months TOTAL
- Must avoid 2040 forecast for status quo

Thanks!

<p>JHU HIV</p> <ul style="list-style-type: none"> – Mark Sulkowski – Seun Falade-Nwulia – Kathleen Ward – Richard Moore – Shruti Mehta <p>HCV/HIV</p> <ul style="list-style-type: none"> – David Wyles – Susanna Naggie 	<p>WHO</p> <ul style="list-style-type: none"> – Yvan Hutin – Godfrey – John Ward
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Question-and-Answer

IAS-USA

WHO elimination indicators and targets

Interventions	Indicator	2015 baseline	Targets	
			2020	2030
1 Hepatitis B vaccination	HEPB3 coverage	84%	90%	90%
2 HBV PMTCT*	HEP vaccine birth dose coverage	39%	50%	90%
3 Blood safety	Donations screened with quality assurance	97%	95%	100%
	Injection safety	Proportion of unsafe injections	5%	0%
4 Harm reduction	Syringes & needles distributed/PWID/year	27	200	300
5 Testing services	% HBV-infected diagnosed	9%	30%	90%
	% HCV-infected diagnosed	20%	30%	90%
Treatment	% diagnosed with HBV on treatment	8% ^b	- ^c	80% ^d
	% diagnosed with HCV started on treatment	7% ^b	- ^c	80% ^d

WHO Global Hepatitis Report 2017

WHO goals for elimination of hepatitis C

- “A world where viral hepatitis transmission is stopped and everyone has access to safe, affordable and effective treatment and care” **WHO**
- **Elimination:** Reduction to zero of the incidence of infection caused by a specific agent in *a defined geographical area* as a result of deliberate efforts; continued measures to prevent re-establishment of transmission are required. Example: measles, poliomyelitis.

WHO Global Hepatitis Report 2017; Hill J Virus Elimin 2016

Why elimination and not eradication?

HCV *could* be eradicated

- ✓ Every HCV-infected person can be detected
- ✓ Eradicate infection by treatment
- ✓ Humans are only source
- ✓ Transmission can be prevented
- ✓ Public health importance

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- ✓ Public health importance
- International commitment

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SUGGESTED READINGS

Hepatitis C Guidance 2018 Update: AASLD-IDSAs Recommendations for Testing, Managing, and Treating Hepatitis C Virus Infection. *Clin Infect Dis*. 2018;67(10):1477-1492.

The National Academies of Sciences, Engineering and Medicine. A National Strategy for the Elimination of Hepatitis B and C: Phase Two Report. <http://www.nationalacademies.org/hmd/reports/2017/national-strategy-for-the-elimination-of-hepatitis-b-and-c.aspx>. Accessed on December 7, 2018.

Ward JW, Hinman AR. What is Needed to Eliminate Hepatitis B Virus and Hepatitis C Virus as Global Health Threats. *Gastroenterology*. 2018;

World Health Organization. Global health sector strategy on viral hepatitis 2016-2021. <https://www.who.int/hepatitis/strategy2016-2021/ghss-hep/en/>. Accessed on December 7, 2018.

World Health Organization. Global Hepatitis Report, 2017. <http://apps.who.int/iris/bitstream/10665/255016/1/9789241565455-eng.pdf?ua=1>. Accessed on May 08, 2017.