Treatment of Hepatitis C in Addiction Settings

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TORONTO CENTRE FOR LIVER DISEASE

Disclosures: J Feld

- Consulting: Abbvie, Enanta, Gilead, Merck, Roche
- Research support: Abbott, Abbvie, Gilead, Janssen, Wako/Fujifilm
- Speaking: None

Disclosures: H Shah

- Consulting: Abbvie, Gilead, Lupin

Learning objectives

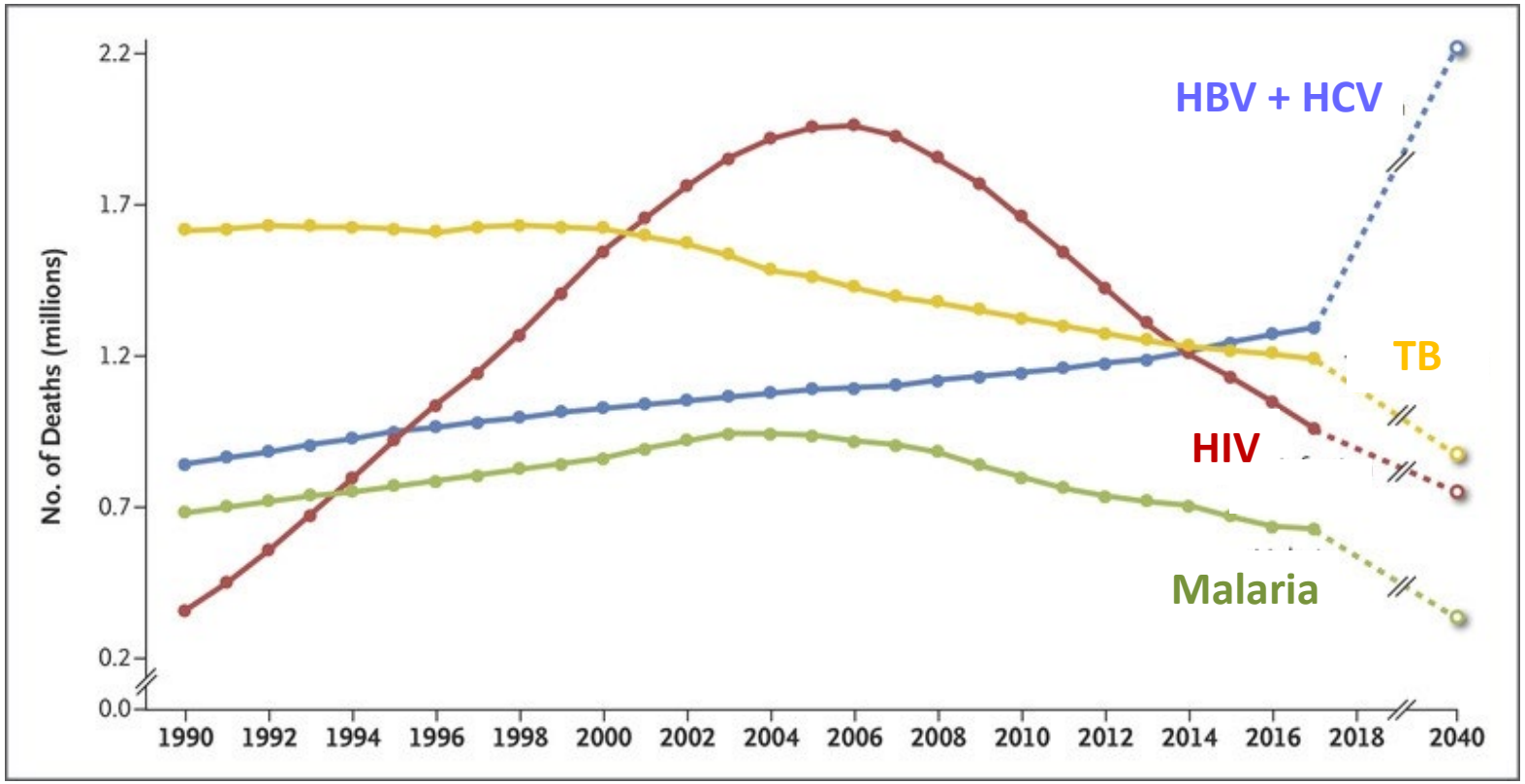
1. Appreciate the burden of disease caused by HCV particularly among those with substance use and mental health problems

2. Recognize the remarkable progress in HCV therapy

3. Develop an initial approach to HCV therapy

4. Identify resources for ongoing skills acquisition

Should the big 3 be the big 4?



Thomas NEJM 2019

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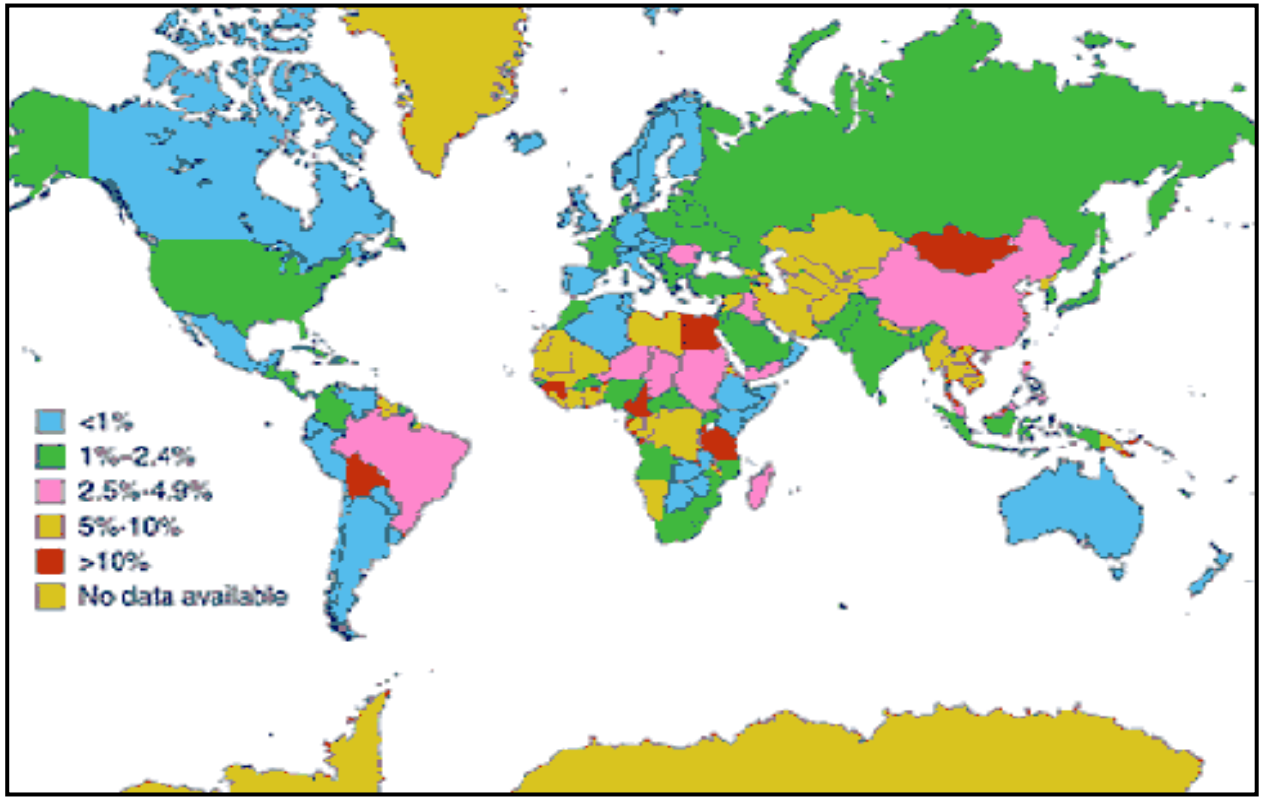
HCV is a MAJOR global public health problem

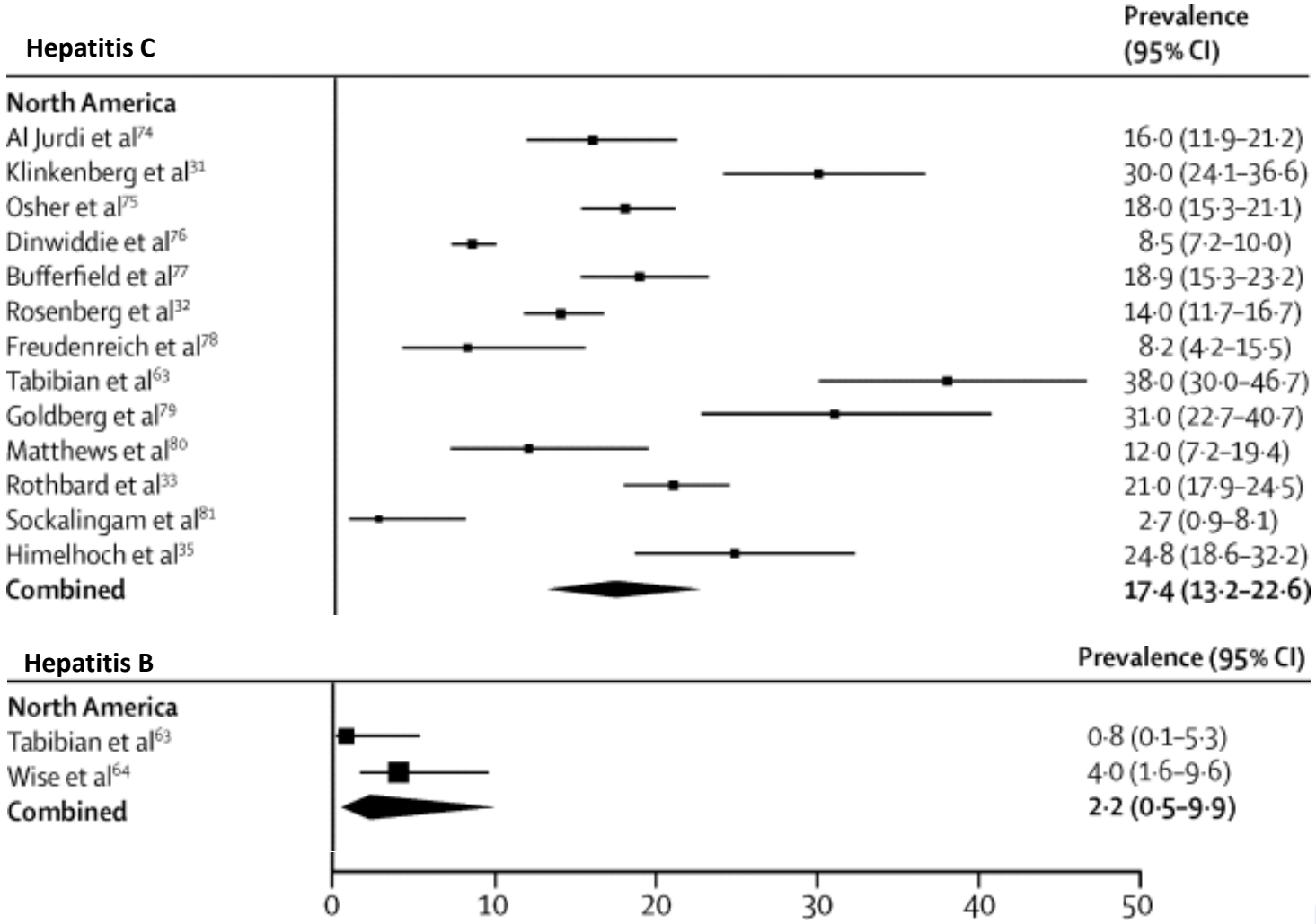


- ~58 million people infected
- No vaccine
- Leading indication for liver transplant

Why are so many people infected?

- Wealthy Countries
  - Injection drug use (even once)
  - Tattoos
  - Blood transfusions before 1992
  - Cocaine use (blood on the straws)
  - Sexual transmission – rare except MSM
  - Mother to child – rare (~3-5%)
  - Medical (rare but not never)
- Low/Middle Income Countries
  - Medical transmission
  - All of the above

Systematic Review of HCV Prevalence Among People with Mental Illness



Hughes et al (Lancet Psychiatry 2016)

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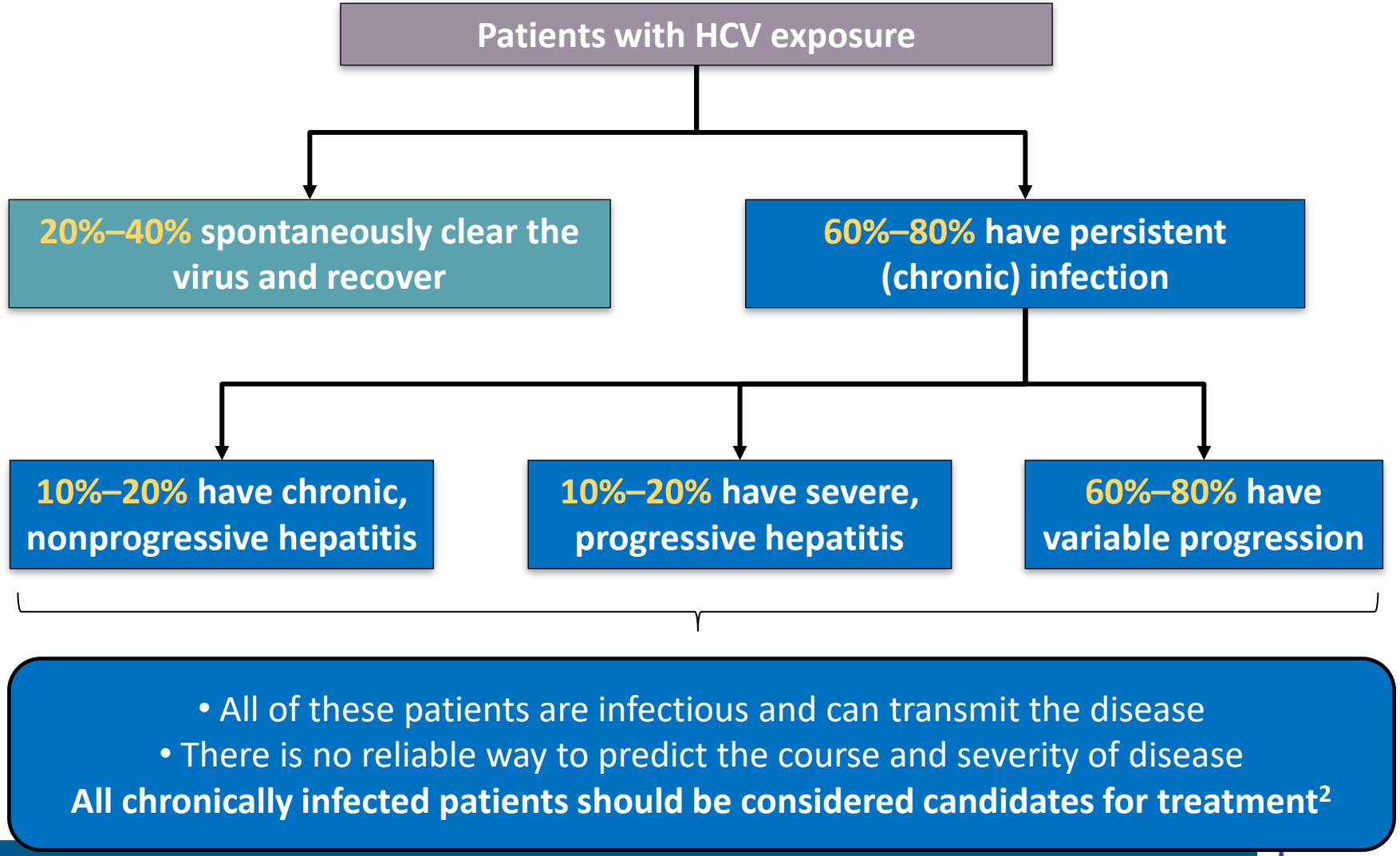
After an HCV Exposure

Acute HCV
-self-limited
-fluctuating enzymes
-<6mo
-no sequelae



Adapted from 1. Alter HJ, et al. *Semin Liver Dis.* 2000;20:17-35
and 2. Myers RP, et al. *Can J Gastroenterol Hepatol.* 2015;29(1):19-34.

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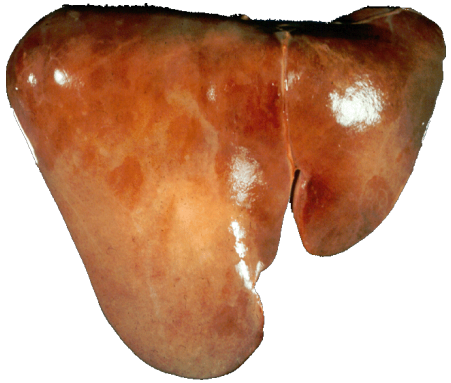
Potential Consequences of HCV Infection

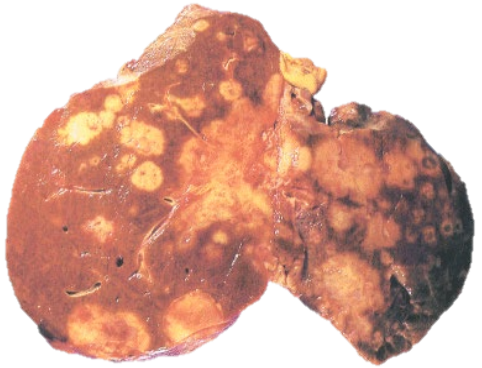
Healthy Liver → Cirrhosis → Liver Cancer

20%

(at 20 yrs of infection)

1-4%/yr





Slowly progressive over decades of infection

Thein Hepatol 2008

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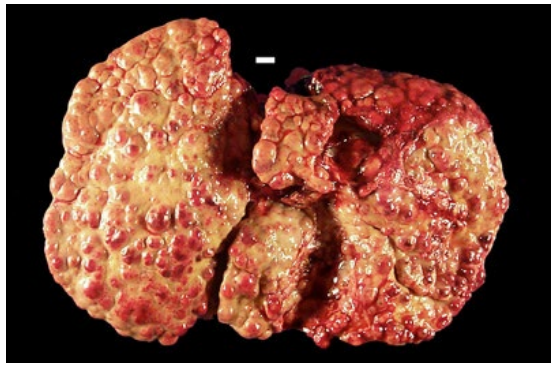
From the patient's perspective

- Few or no symptoms
  - Very non-specific
  - Fatigue/brain fog
- Even if they have cirrhosis!
- Screening is essential!

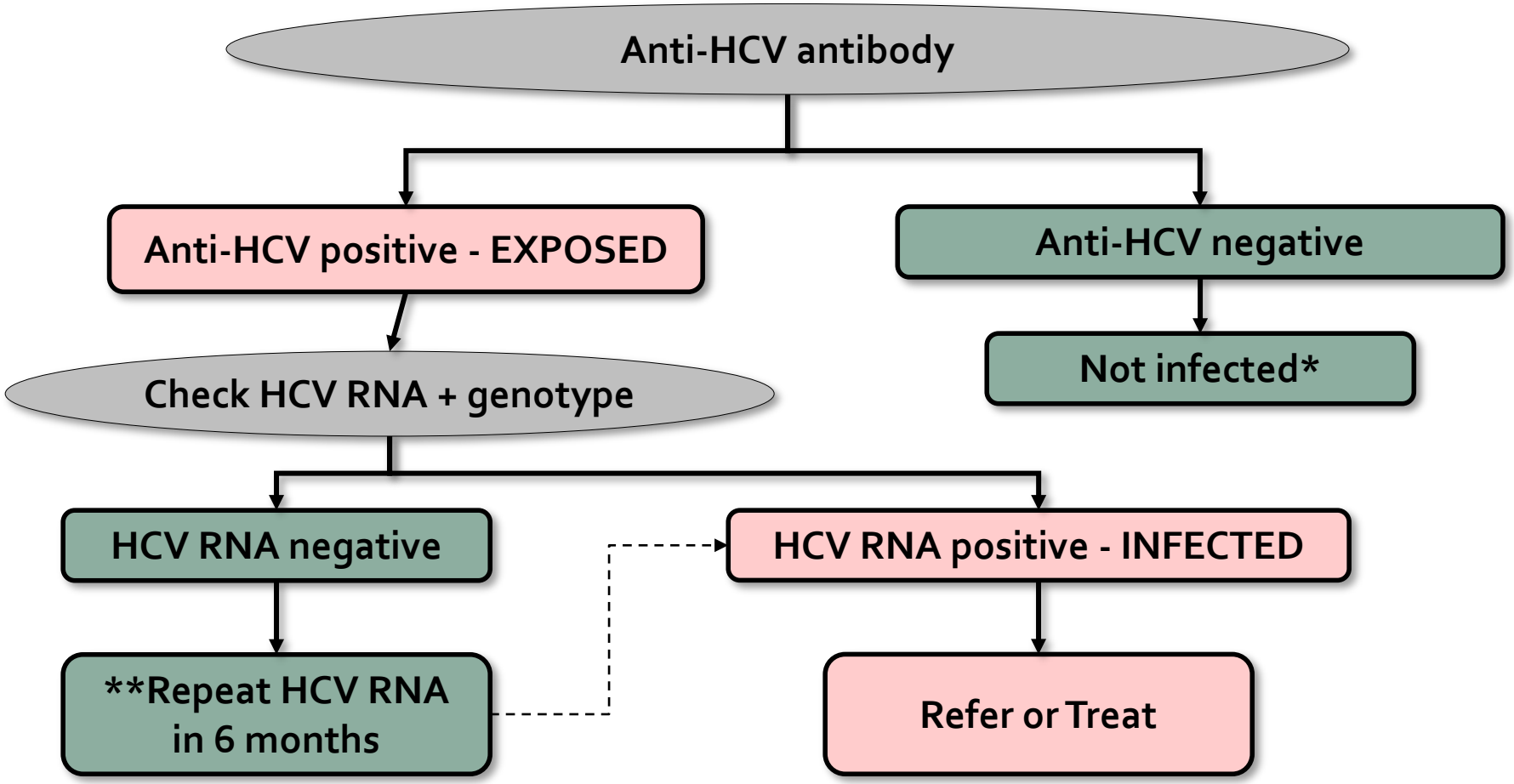


Population Groups to Prioritize for HCV Screening

- Birth between 1945 and 1975
- Any history of injection drug use
- Living or having lived in an endemic area
- Contaminated blood or blood products or organ transplantation before 1992 in Canada
- High-risk sexual behaviour

Adapted from Wong T, et al. *CMAJ.* 2006;174:649-59.

Simple Algorithm for HCV Screening



*Consider checking HCV RNA in patients who are at high risk of infection or immunocompromised.

CBC, complete blood count; INR, international normalized ratio.

Adapted from Wong T, et al. *CMAJ.* 2006;174(5):649-59

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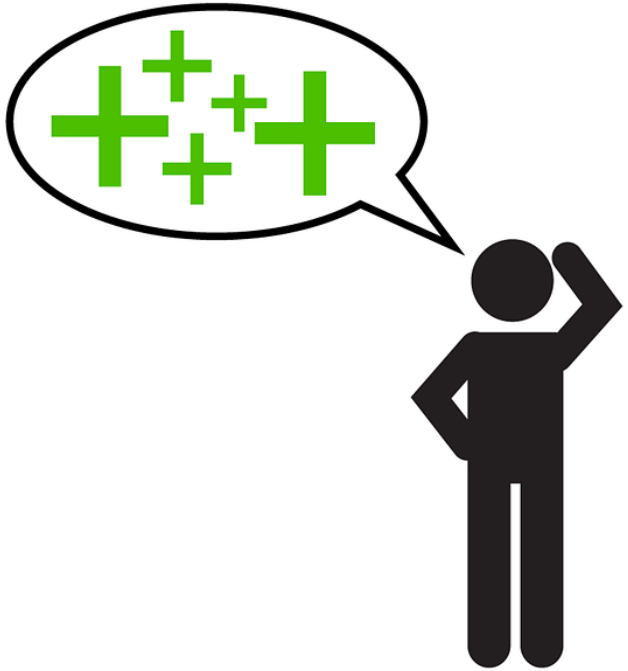
WORKUP AND COUNSELLING

AFTER A POSITIVE HCV RNA



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Key Elements of Patient Education for Newly Diagnosed Hepatitis C in Primary Care

- Chronic condition that progresses slowly, but can also present as advanced liver disease
- Virus is carried by the blood and is transmissible to others
  - Avoid sharing razors, toothbrushes, nail cutters
  - OK to share cutlery, eat from same dish, kiss/hug
- High risk sexual behaviour increases risk; low-risk sex does not
- Goal of treatment is cure of hepatitis C
- Treatment prevents complications and transmission of virus

Other Important Points for Counselling Patients

- Avoid/limit exposure to alcohol <2 drinks per week
  - Strict alcohol abstinence recommended if F3-4
- Maintain a healthy lifestyle
- Coffee is the best natural supplement
- If cirrhotic - annual influenza vaccine, one-time pneumococcal vaccine, hepatocellular carcinoma surveillance
- Vaccinate if patient is non-immune for HAV and HBV

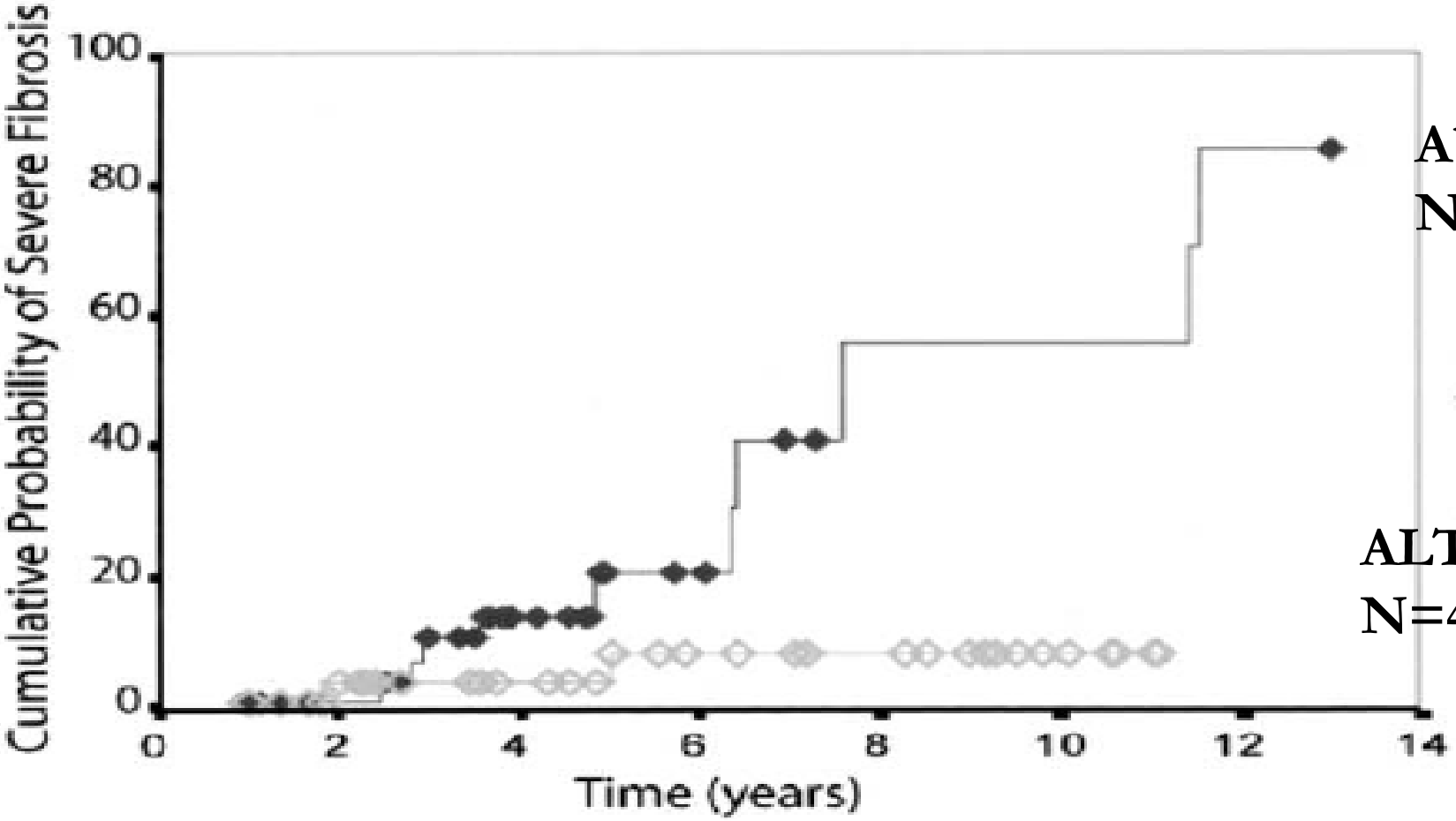
Assessment of the HCV+ individual

1. How active is the hepatitis C?
   - How quickly is the liver being damaged
2. How much damage has been done
   - How much liver fibrosis
     - F0-1: minimal
     - F2: moderate
     - F3-4: advanced
3. Look for extrahepatic disease
   - Vasculitis
4. Reimbursement Access?
5. Any reason NOT to proceed with therapy?

Assessment of activity

- Liver enzymes
  - ALT, AST
    - Rapid progression if ALT/AST > 200
    - 1 fibrosis unit over 4-5 years
    - **if ALT >250, consider acute HCV
- Liver biopsy
  - Lymphocytes

ALT levels and the risk of progression to severe fibrosis



Abnormal ALT (88, 63-746)
N=41

ALT persistently <60
N=40

CK Hui et al. J Hepatol 2003;38:511

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Assessment of fibrosis

- How much fibrosis, is there cirrhosis?
  - APRI
  - FIB-4
  - Fibrotest
  - Fibroscan
  - Liver biopsy
- If cirrhosis, any complications?
  - Portal hypertension (varices)
  - Liver failure (ascites)
  - Hepatoma

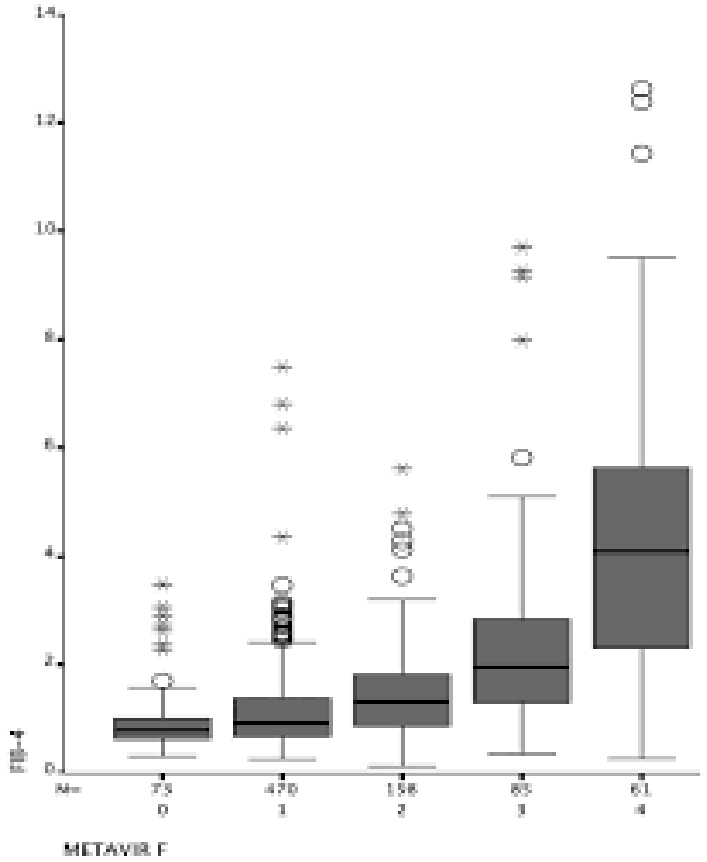
Tools to Assess Fibrosis

- **Laboratory tests**
  - Liver enzymes (AST/ALT) may be normal even with advanced fibrosis or cirrhosis – not helpful
  - Normal ALT does not mean 'inactive HCV'
  - Liver function (bilirubin, albumin, INR) normal until advanced cirrhosis
- **Tests suggesting advanced fibrosis/cirrhosis**
  - Platelet count < 150 x 10E9/µl
  - AST:ALT ratio > 1 (typically < 1 in HCV)
  - (Abnormal bilirubin, INR, albumin → late finding)

FIB-4

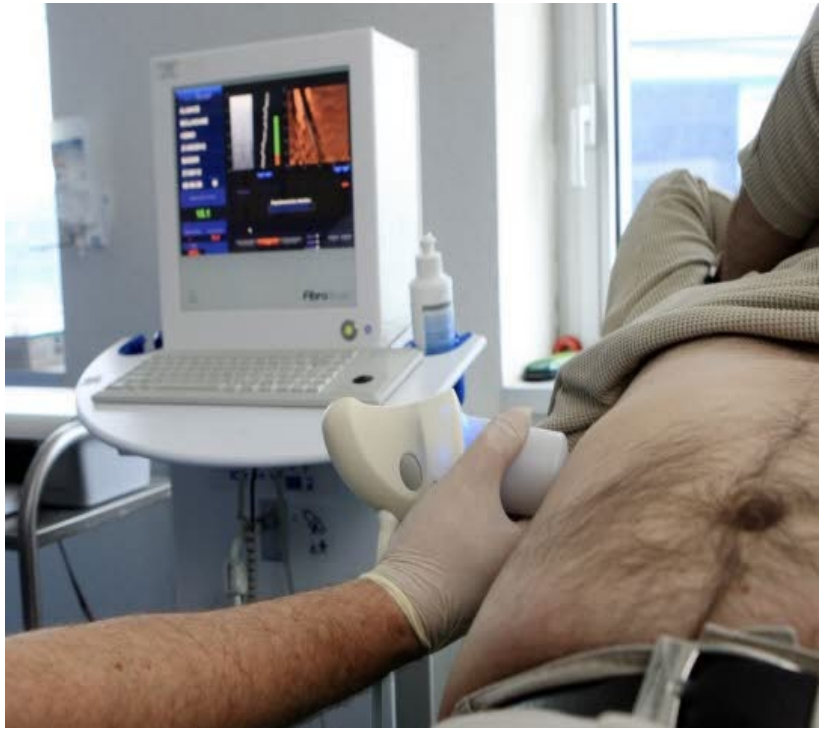
$$\text{FIB-4} = \frac{\text{Age (years)} \times \text{AST (U/L)}}{\text{Platelet Count } (10^9/\text{L}) \times \sqrt{\text{ALT (U/L)}}}$$

- Slightly harder to calculate but online calculators
- Age important factor
- Initially developed for HIV/HCV but validated well in HCV and fairly well in other liver diseases
- **>3.25 – likely cirrhosis**
- **<1.45 – very unlikely advanced fibrosis**
- **1.45-3.25 – a bit less helpful**



Liver Stiffness by Transient Elastography (Fibroscan)

- Ultrasound-based technique
- Determines liver “stiffness”
- Correlates well with fibrosis
- No ceiling, ie, increases with worsening cirrhosis → predicts complications (eg, varices)
- Simple to use – minimal training
- Other methods in development



Caveats: -Fails in up to 20% (especially in obese patients) – improved with XL probe.
-Influenced by inflammation – it falsely elevates measurements

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Hepatitis C is a Systemic Disease

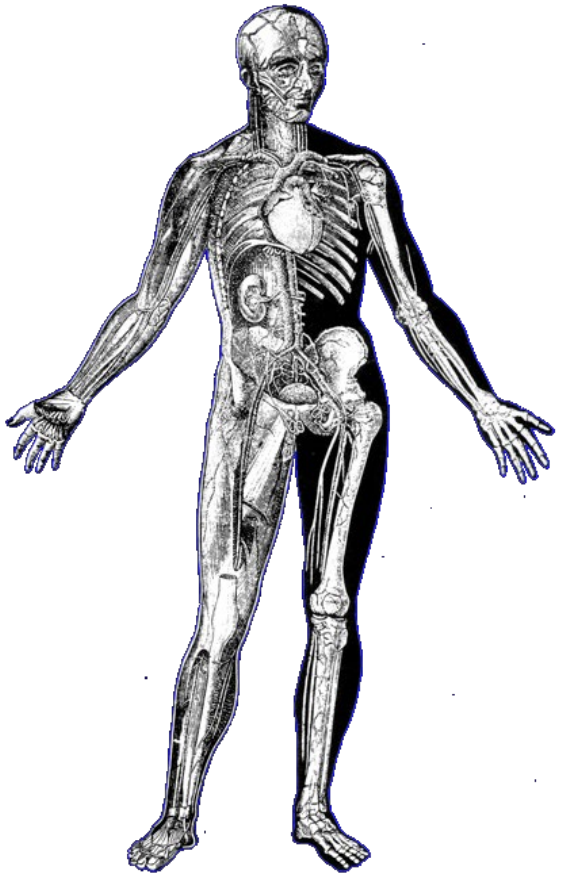
Haematological
- Mixed cryoglobulinemia
- Aplastic anaemia
- Thrombocytopenia
- Non-Hodgkin's b-cell lymphoma

Dermatological
- Porphyria cutanea tarda
- Lichen planus
- Cutaneous necrotising vasculitis

Renal
- Glomerulonephritis
- Nephrotic syndrome

Endocrine
- Anti-thyroid antibodies
- Diabetes mellitus

Salivary
- Sialadenitis



Ocular
- Corneal ulcer
- Uveitis

Vascular
- Necrotising vasculitis
- Polyarteritis nodosa
- Pulmonary fibrosis

Neuromuscular
- Weakness/myalgia
- Peripheral neuropathy
- Arthritis/arthralgia

Autoimmune Phenomena
- CREST syndrome
- Granuloma
- Autoantibodies

Hadziyannis. *J Eur Acad Dermatol Venereol.* 1998.

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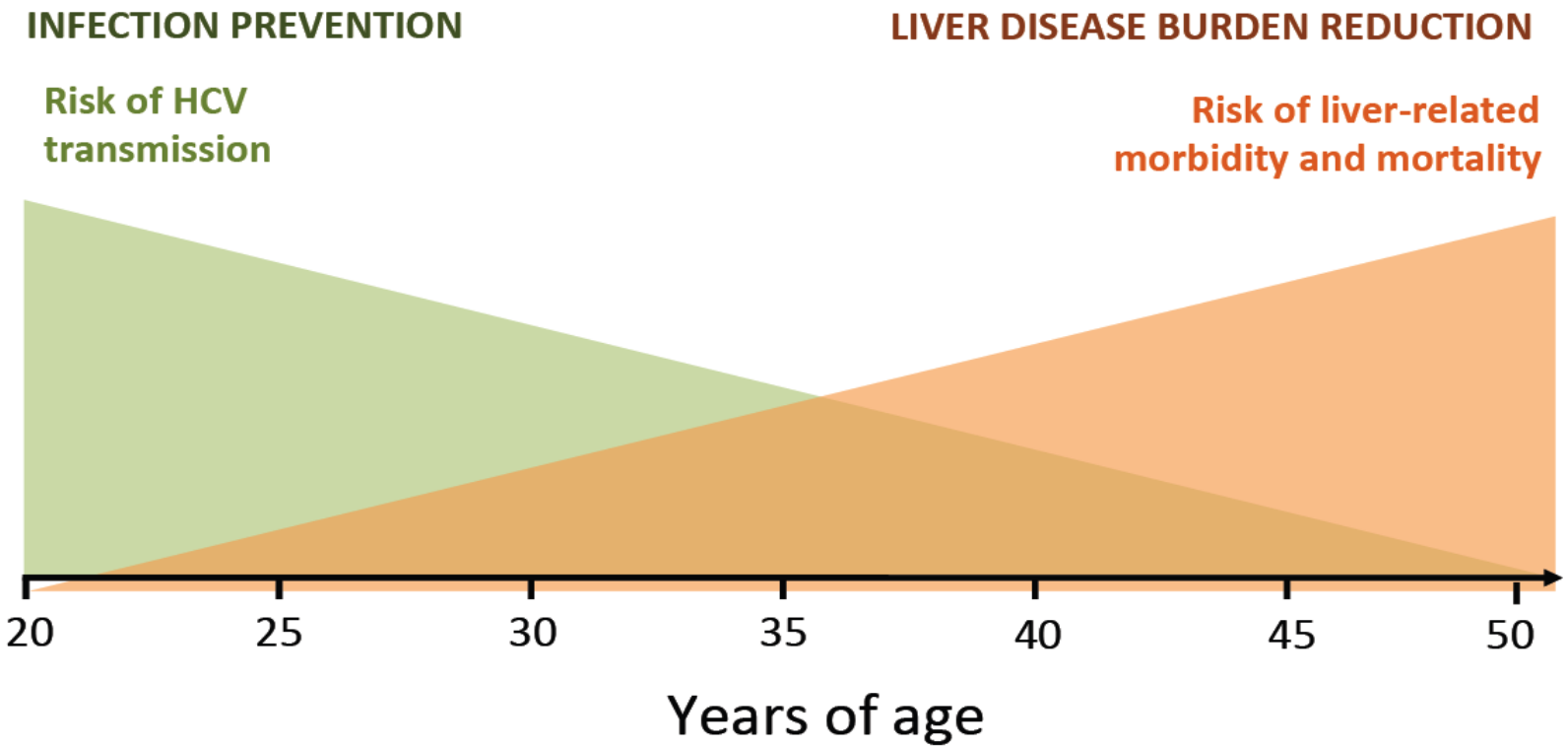
Incidence vs. Morbidity – Who To Target?



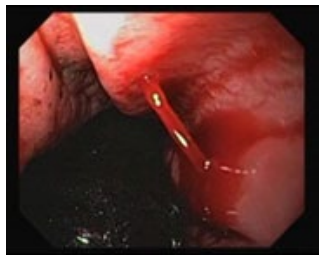
Grebely J, et al. *Clin Infect Dis* 2013

CENTRE FOR
R DISEASE

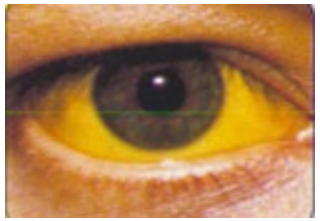
Treatment Access Criteria in Ontario (ODB)

- Access for all!
  - No fibrosis restrictions
  - No sobriety restrictions
- All patients with chronic HCV are eligible for treatment by LU Codes (easy) IF:
  - HCV RNA positive x 2 more than 6 months apart (exclude spontaneous clearance)
  - OR…One HCV RNA and clinical evidence of chronicity (prior positive anti-HCV Ab, advanced fibrosis, etc.)
  - AND prescribed by Gastroenterologist, Infectious Disease Specialist or “provider experienced in HCV treatment” (including Nurse Practitioners)

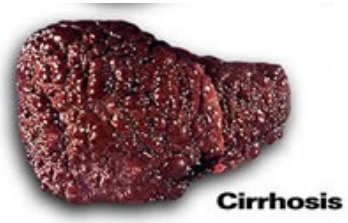
What we're trying to prevent

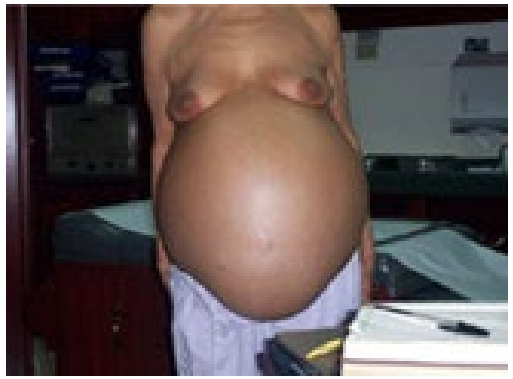


Esophageal Varices

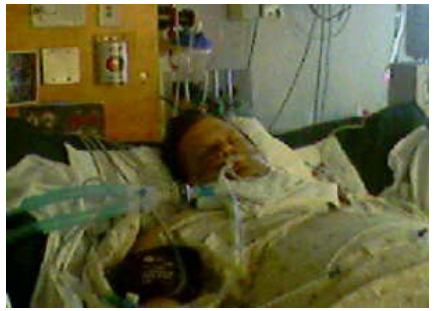


Jaundice

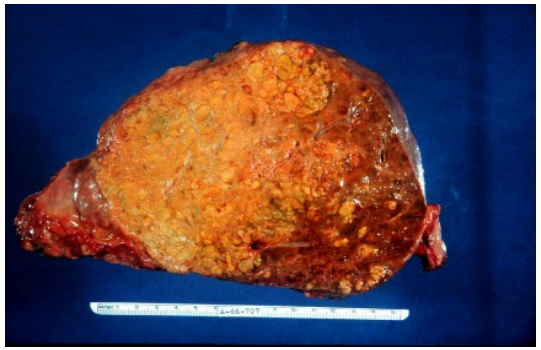




Fluid Retention
Ascites

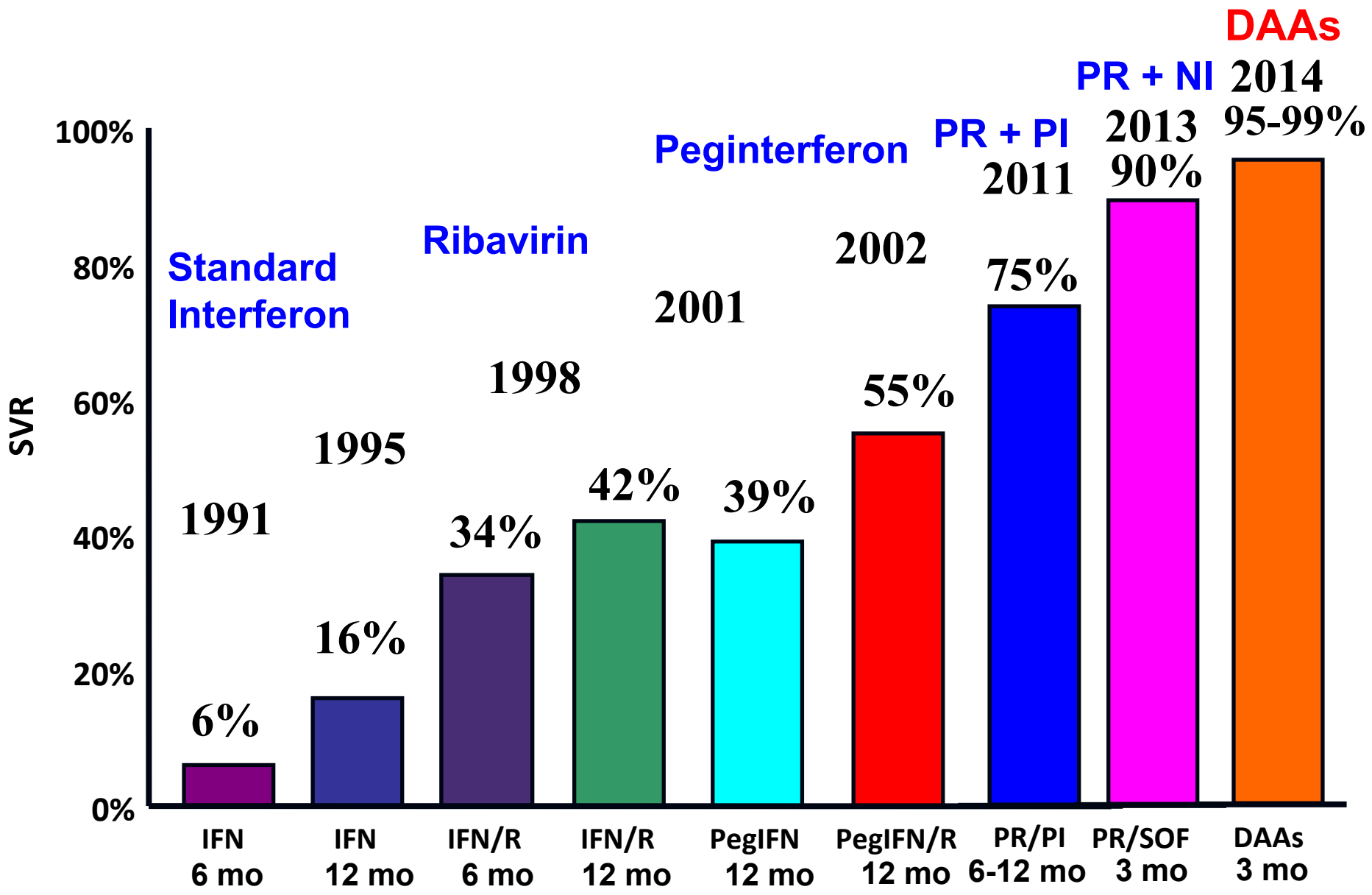


Hepatic Encephalopathy



Liver Cancer

But we have treatment



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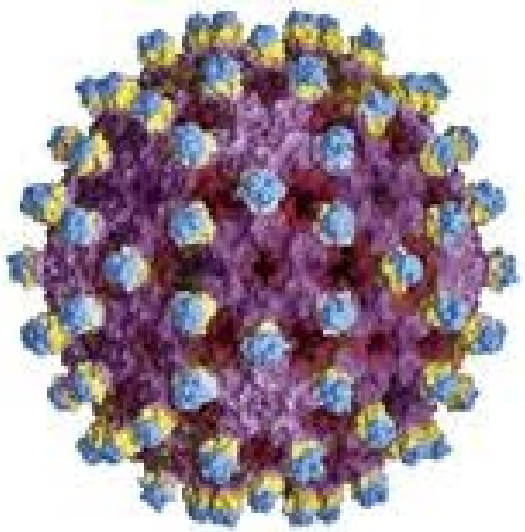
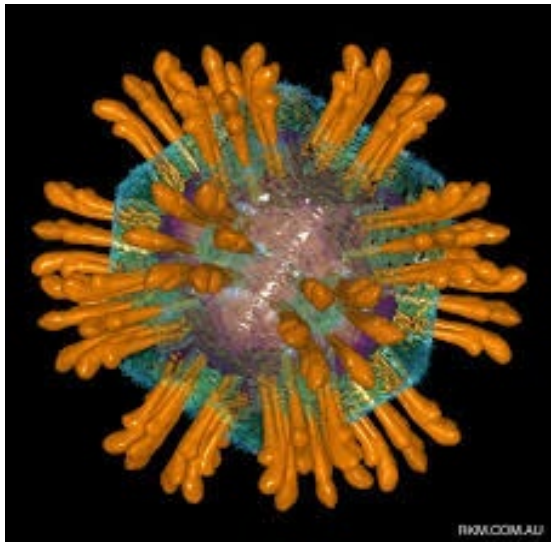
No small feat

Controllable

Curable





HIV

Hep B

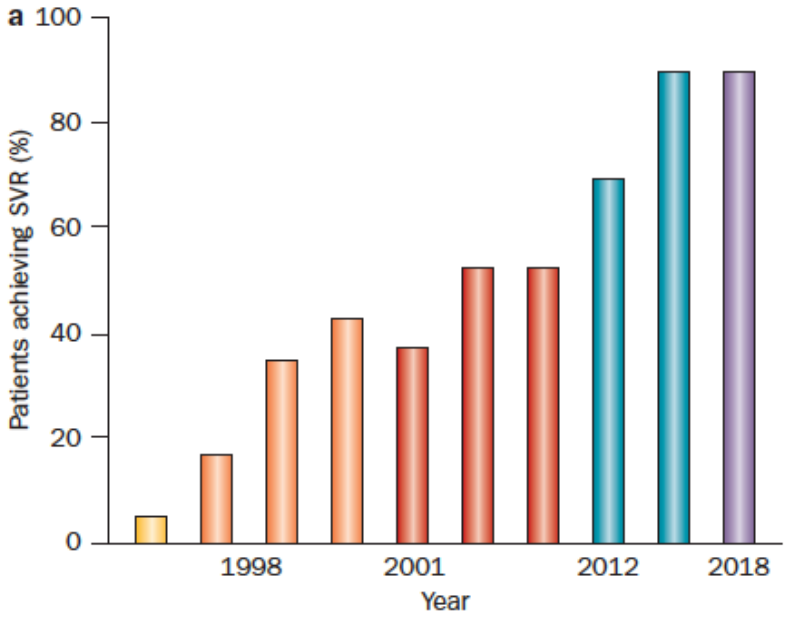
Hep C

Hep C is the first curable chronic viral infection

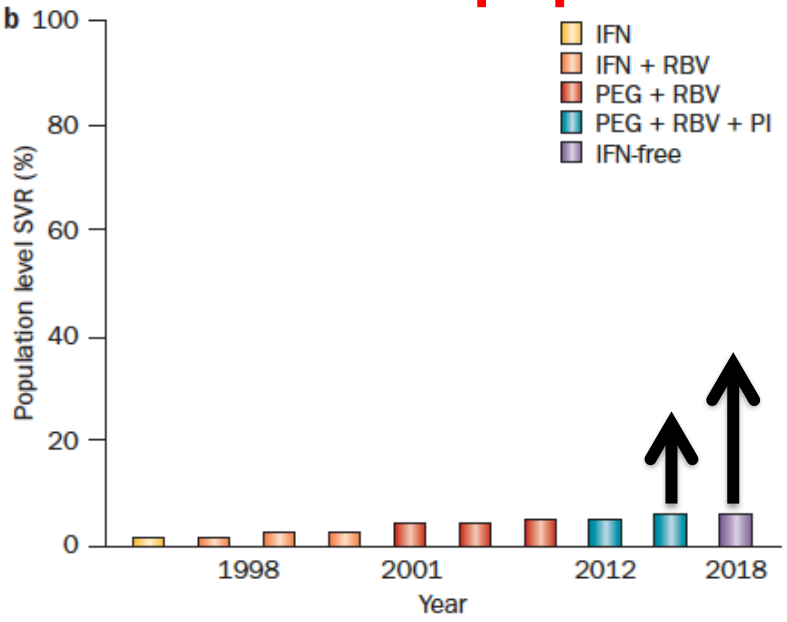
HCV Elimination…We need more than great drugs

- Curing the individual is now easy
- Curing the population will take a lot more work…

SVR in individuals



SVR in the population



Thomas Nature Medicine 2012

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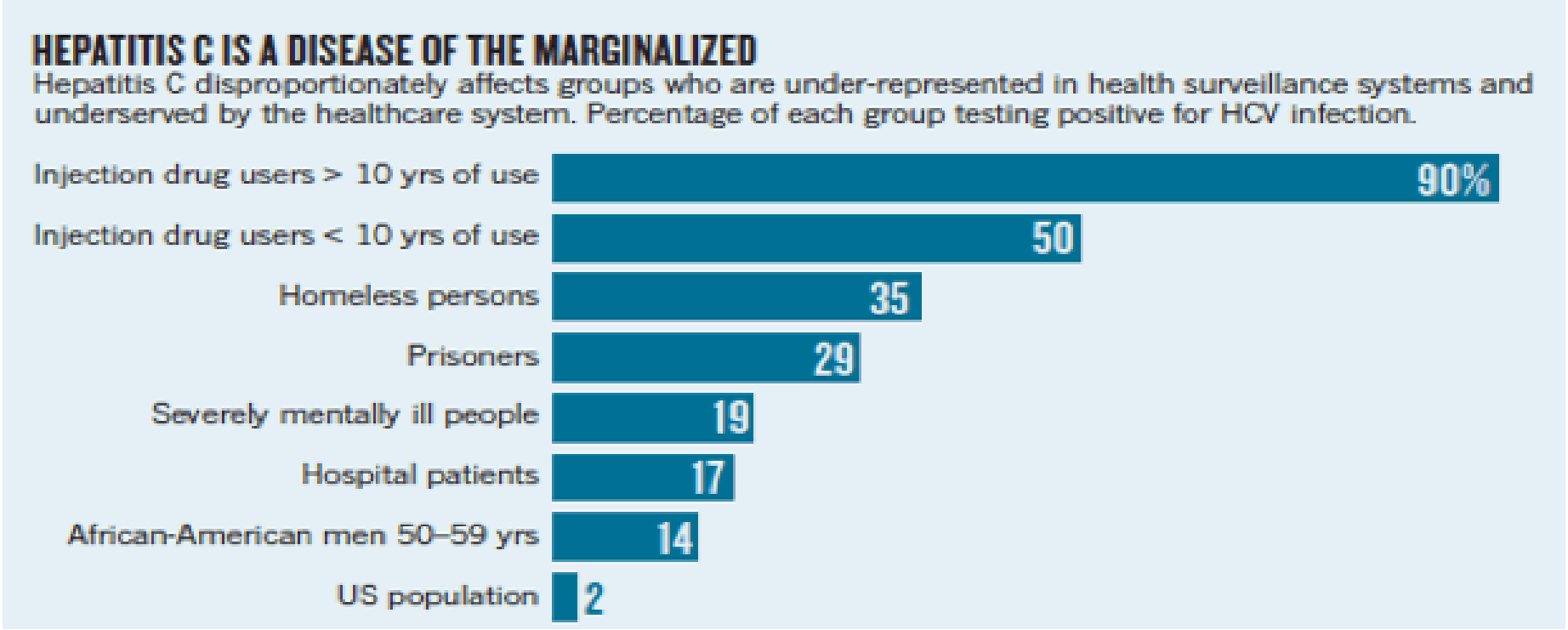
HCV: The Underfunded Disease



HCV is a disease of the marginalized

Edlin Nature 2011

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We can’t cure those we never diagnose

100 Canadians with Hep C…	30 know they have it

Canadian Health Measures Survey 2013

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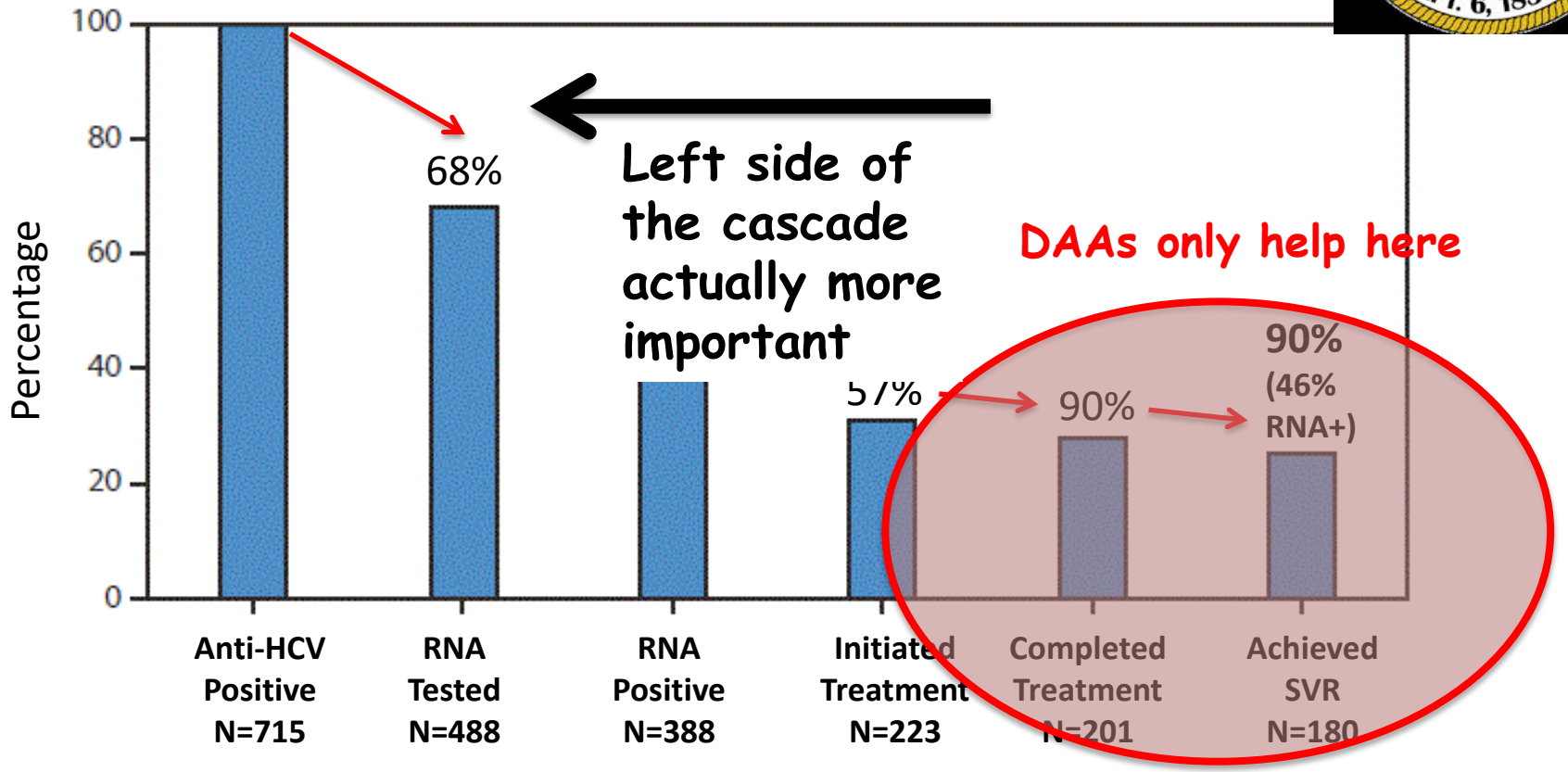
An elimination strategy

Reminder in EPR → 92,012 visits → 16,772 (18%) tested → 715 Ab + (4.2%)



Even with effective treatment, major gaps in cascade of care!

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Improving diagnostics

Saliva or blood
rapid antibody test

Point-of-care
PCR test

Dried Blood Spot

- Point of care Ab and RNA testing possible
- Dried blood spot – particularly attractive for PWID populations
- Ab test approved in Canada…not funded…not used

Blueprint - Purpose

- **POLICY TOOL** designed to complement the Pan-Canadian STBBI Framework for Action
- Provide **GUIDANCE** with specific and measurable **OBJECTIVES** and **TARGETS**
- Includes suggested **ACTIVITIES** and **GOOD PRACTICES** as well as a **RESEARCH AGENDA**
- Uses an **EQUITY** lens across its objectives and for all priority populations

Support provinces/territories and the federal government to develop action plans (*MENU OF OPTIONS*)

The WHAT but not the HOW or the WHO

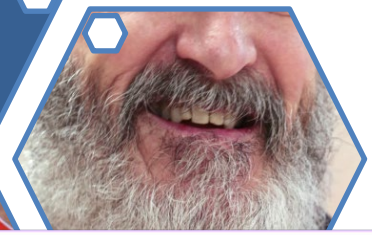
TORONTO CENTRE FOR LIVER DISEASE

Canada's Priority Populations

People who inject drugs

gbMSM

Older Adults



SPECIFIC FOCUS IN HCV STRATEGIES

experience

Indigenous

INTERSECTIONALITY

Immigrants and newcomers

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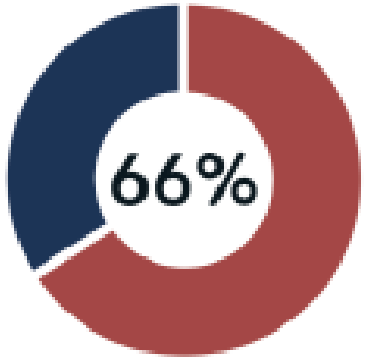
People who inject drugs/people who use drugs (PWID/PWUD)

- Support community-based harm reduction treatment models
- Overdose prevention measures



Up to 66% of people who inject drugs have past or current HCV infections.

- Offer voluntary stigma-free HCV testing
- Move care and treatment where PWID/PWUD are already accessing services

HCV Prevention

Objectives	2025 Targets	2030 Targets
Reduce new HCV infections	**80%** ↓ incidence*	**80%** ↓ incidence*
Increase the number of sterile needles and syringes provided per person who injects drugs per year	**500** sterile needles/syringes	**750** sterile needles/syringes
Increase the number of persons who inject drugs accessing opioid agonist therapy	**40** OAT recipients per 100 PWID	**40** OAT recipients per 100 PWID

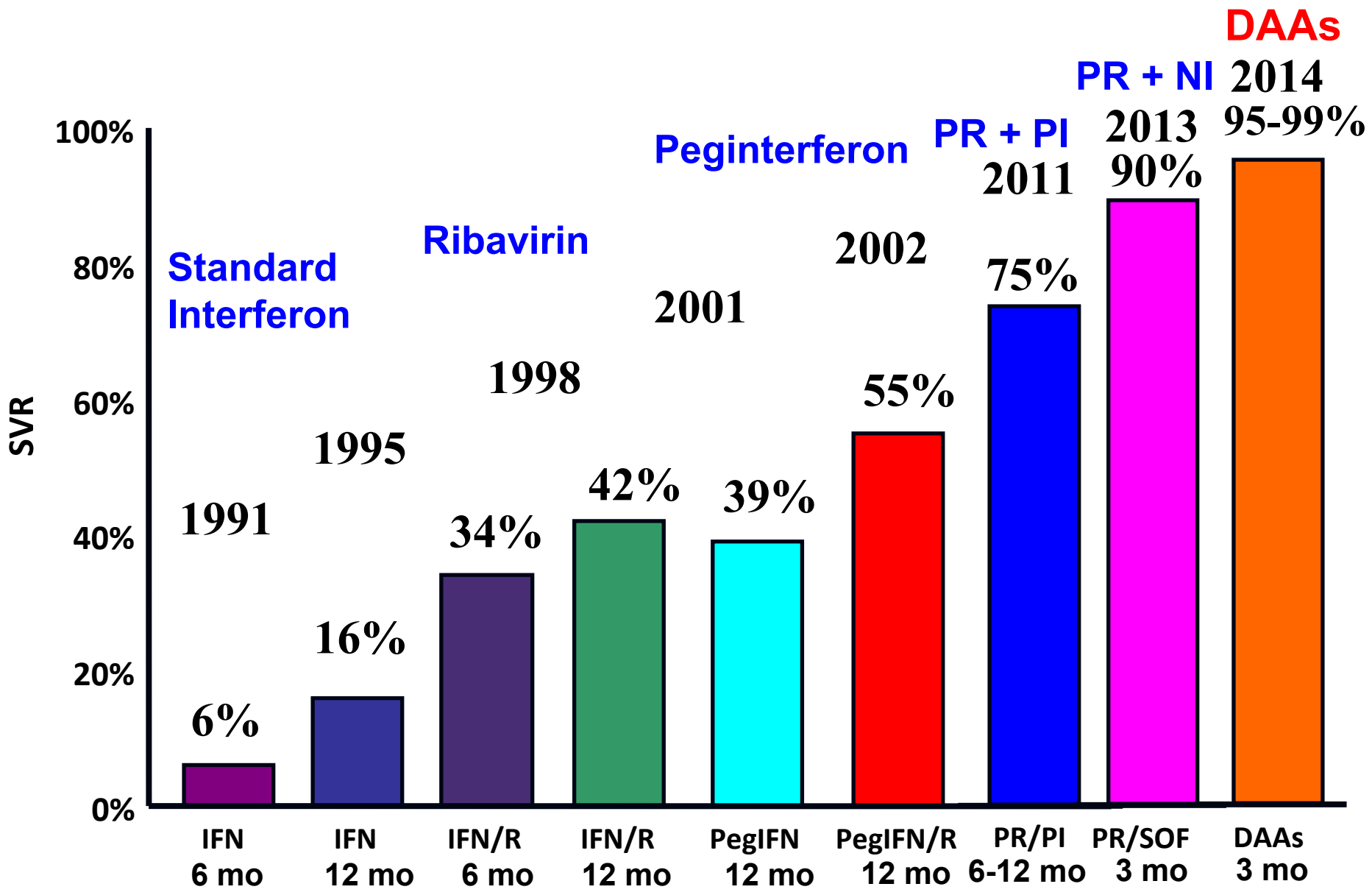
**compared to 2015*

- Scale-up Needle and Syringe programs / Opiate Agonist Treatment
- Implement effective peer-based interventions
- Monitor the implementation and impact of supervised consumption sites

Over to Dr. Feld…

Chronic HCV Infection

But we have treatment



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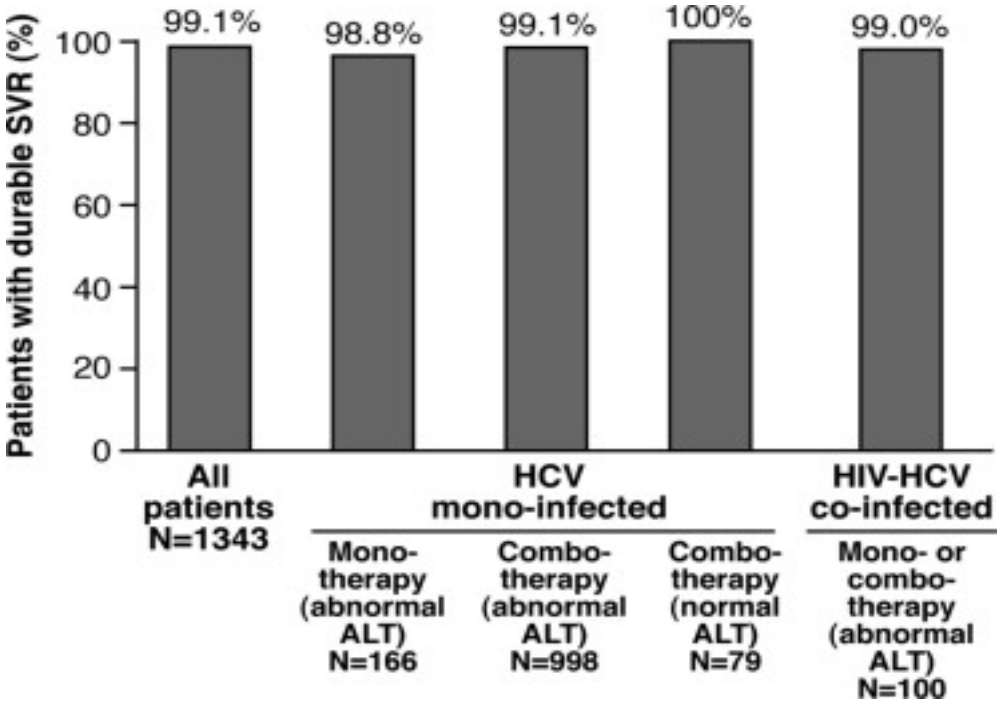
SVR is a durable endpoint

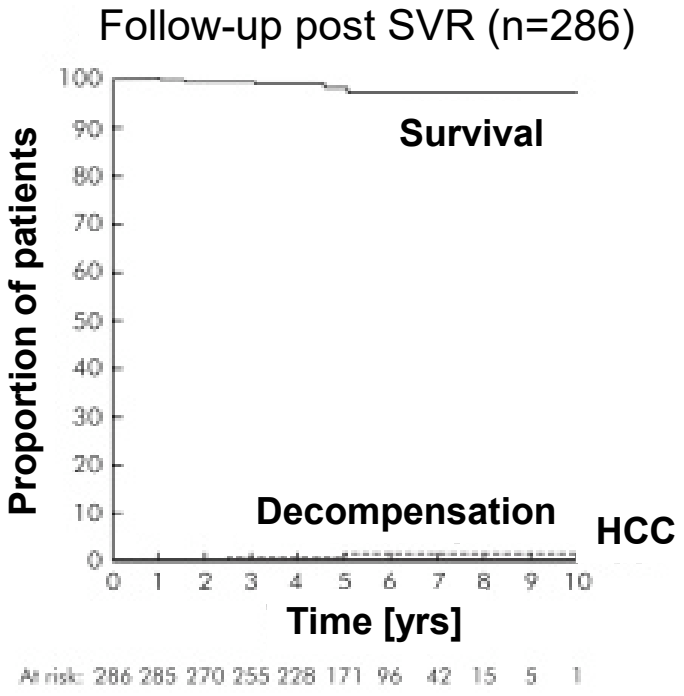
1,343 patients who achieved SVR followed for mean 3.9 yrs

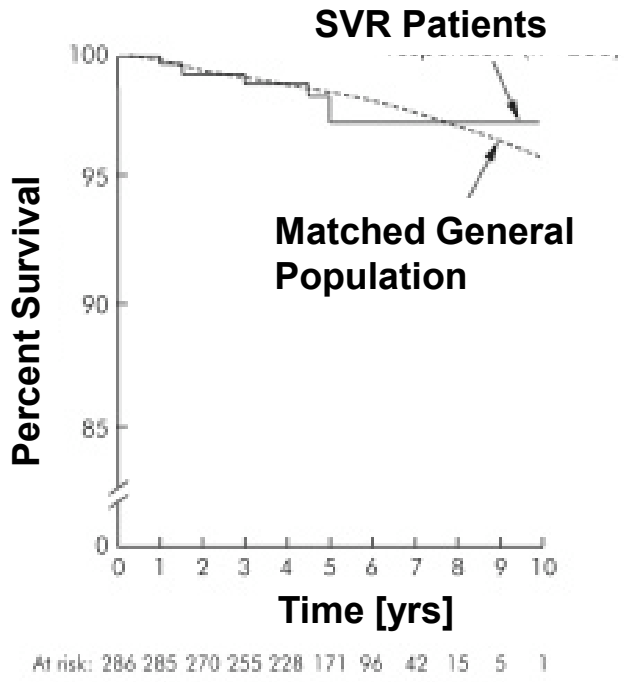


- Late relapse is extremely rare
- **SVR is truly a virological cure**

Is SVR is a cure of liver disease?

286 pts with mild fibrosis and SVR after IFN therapy





- SVR stops progression of liver disease
- Normal survival in those with mild disease

Veldt Gut 2002

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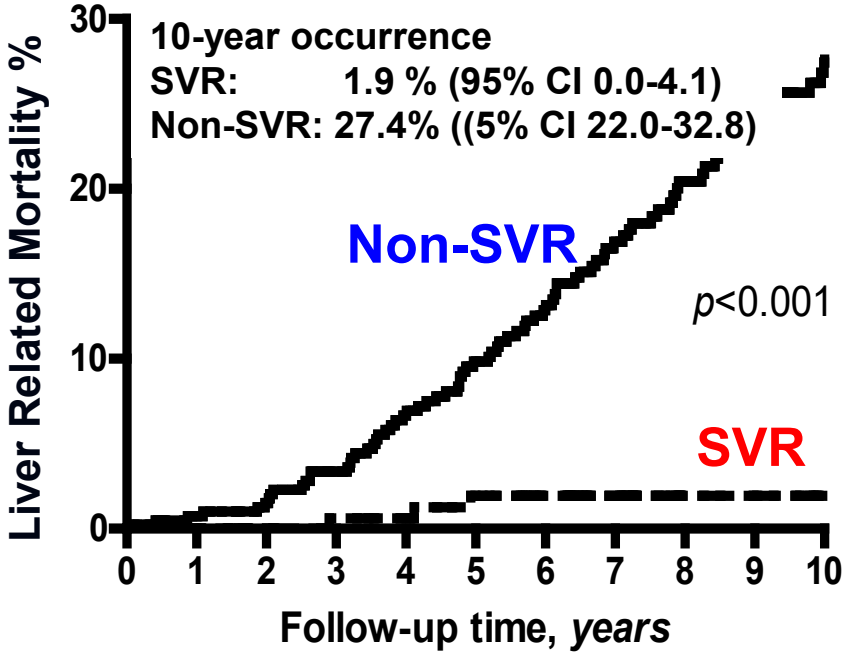
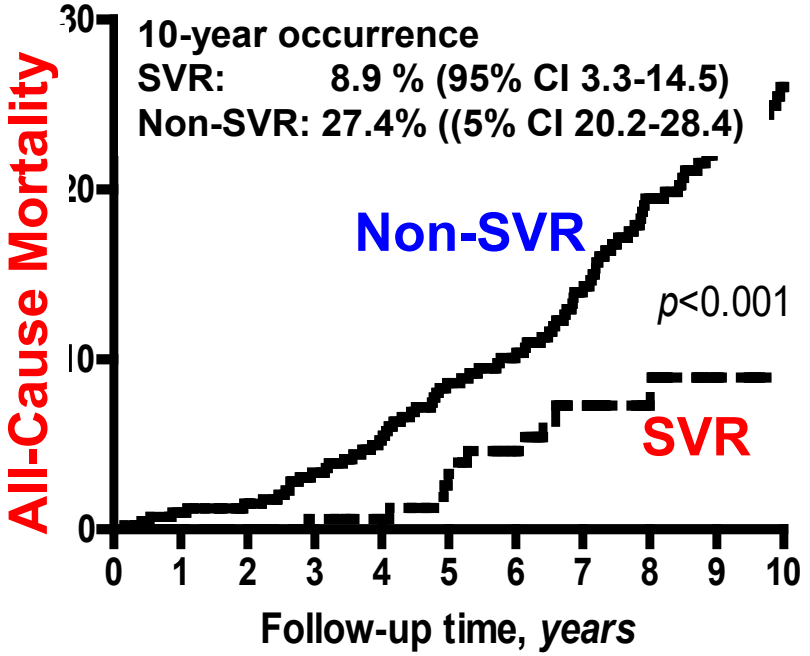
What about patients with cirrhosis?

Long-term follow-up of 534 patients with F3/F4 post-treatment





- SVR eliminates liver failure & liver-related death
- **SVR is not a surrogate** = reduced ***all-cause*** mortality

Van de Meer et al JAMA 2012

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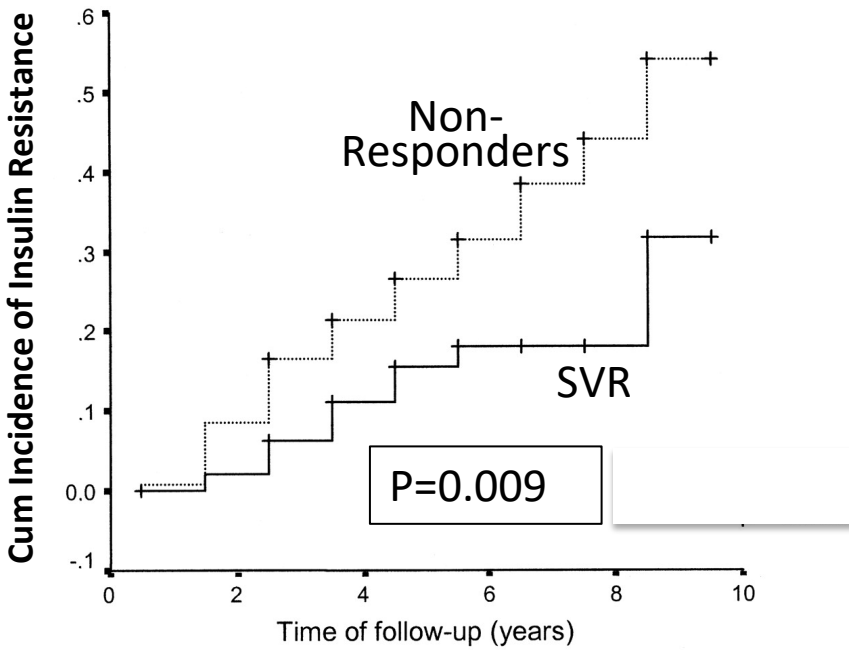
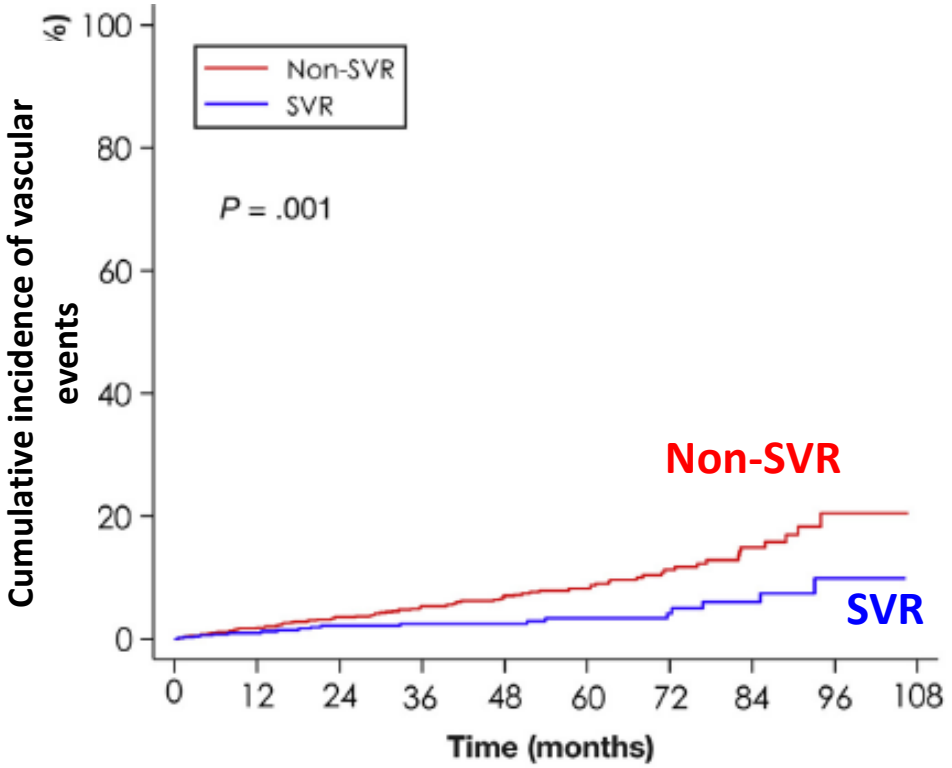
Benefits beyond the liver

Risk of Insulin Resistance/DM



Risk of MI & Stroke



SVR reduces diabetes and heart disease

Simo Diabetes Care 2006
Guiltinan Am J Epi 2008, Nahon Gastro 2017

TORONTO CENTRE FOR LIVER DISEASE

Bottom line on SVR

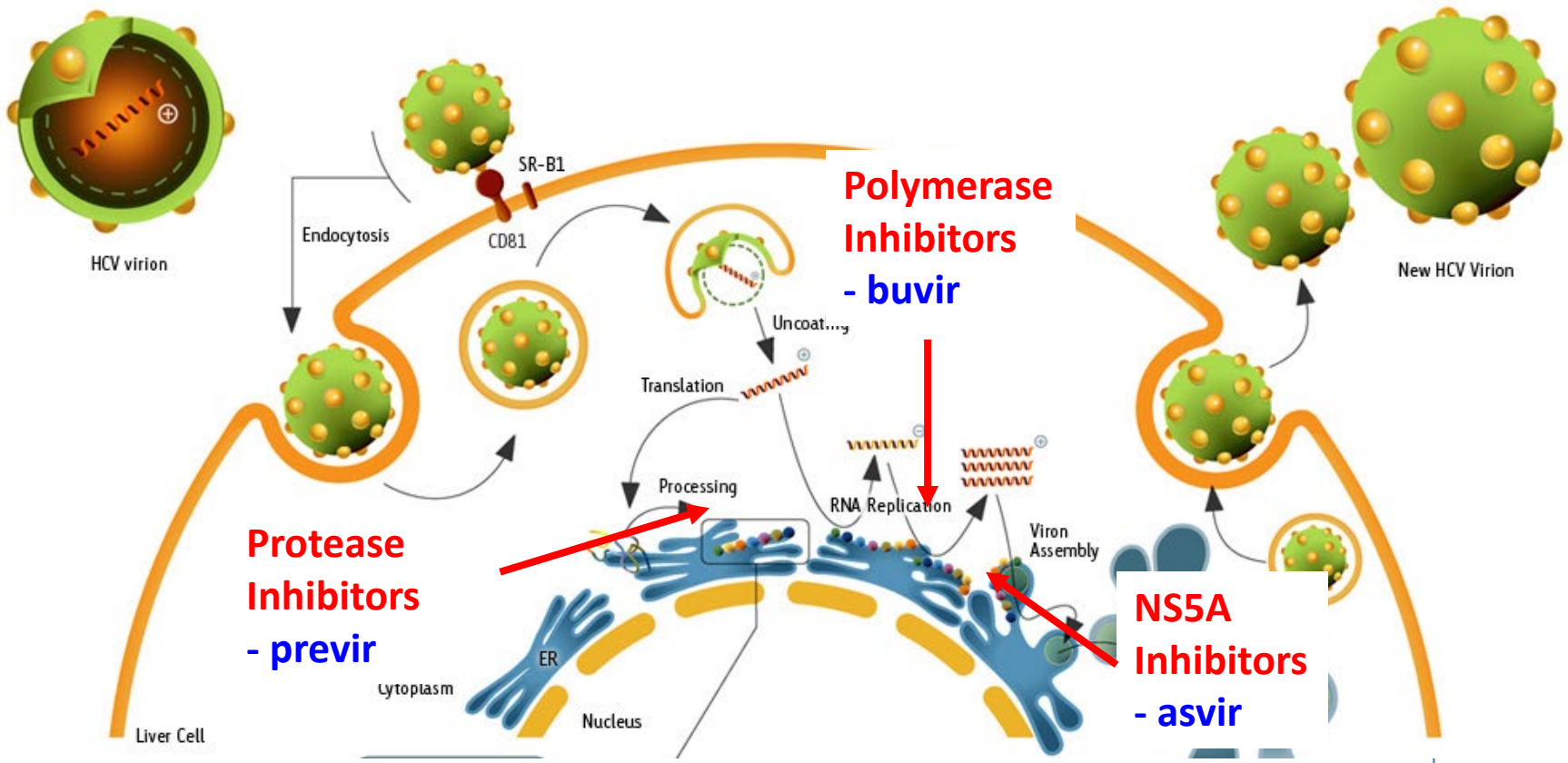
Without cirrhosis

- SVR = cure → normal life expectancy

With cirrhosis

- SVR eliminates liver failure
- SVR greatly reduces the risk of HCC
- SVR improves liver-related *AND* overall survival
- Reduces risk of non-liver complications of HCV

The Lifecycle - Lots of Targets



Manns Nat Rev 2007

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Treatment options

DAA Classes

Nuc Polymerase	Protease Inhibitor	NS5A Inhibitor	~~Non~~ Nuc Polymerase
-buvir	**-previr**	**- asvir**	**- buvir**
Sofosbuvir	Paritaprevir	Ombitasvir	Dasabuvir
	Grazoprevir	Elbasvir	**G1 specific**
	Glecaprevir	Pibrentasvir	
	Simeprevir	Ledipasvir	
	Voxilaprevir	Velpatasvir	
		Daclatasvir	

Recommended Treatment Regimens

- **Genotype-specific**
  - Elbasvir/Grazoprevir: GT 1, 4
  - Ledipasvir/Sofosbuvir: GT 1, 4, 5, 6
- **Pangenotypic**
  - Sofosbuvir/Velpatasvir – GT 1-6
  - Glecaprevir/Pibrentasvir – GT 1-6
  - Sofosbuvir/Velpatasvir/Voxilaprevir – GT 1-6 (reserved for salvage therapy)

AASLD/IDSA. HCV Guidance. 2018. Shah et al CMAJ

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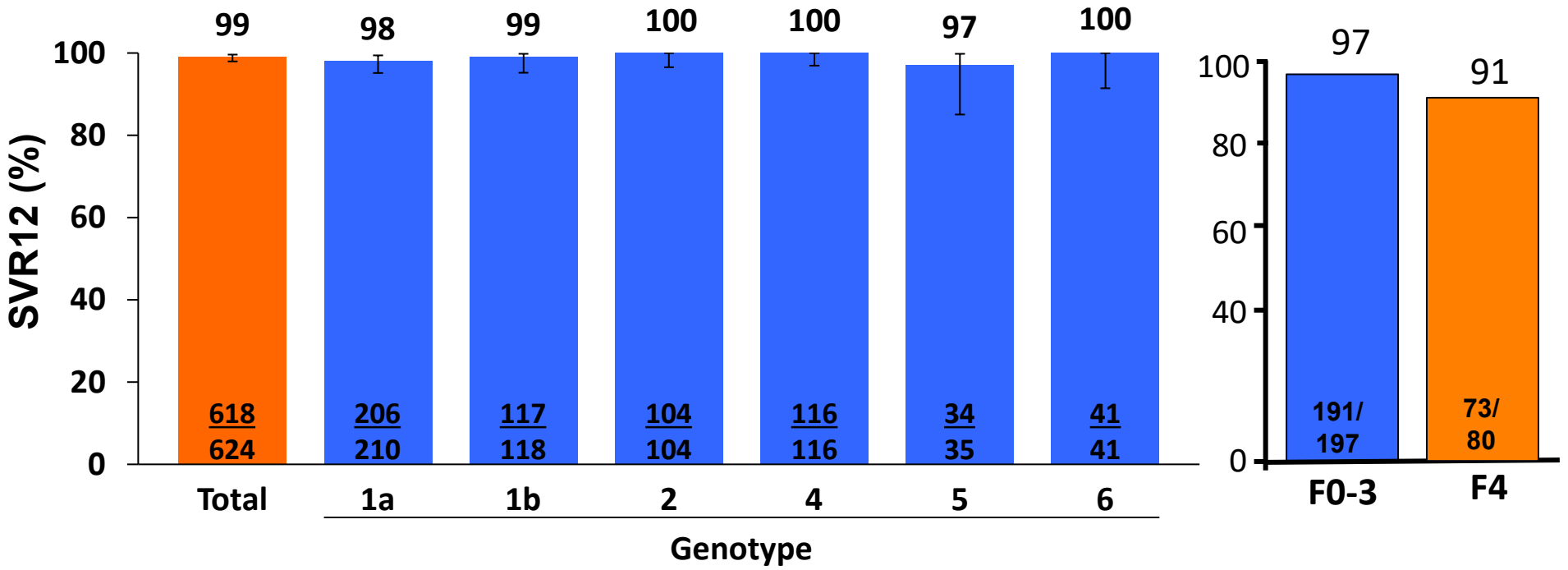
Pangenotypic regimens

SOF + Velpatasvir (Epclusa) x 12 wks in
G1, 2, 4, 5, 6 – Naïve/Experienced +/- cirrhosis

G3: SOF/RBV x 24
vs SOF/VEL x 12



Highly effective single-tablet, pan-genotypic regimen

Feld NEJM 2015, Foster NEJM 2015

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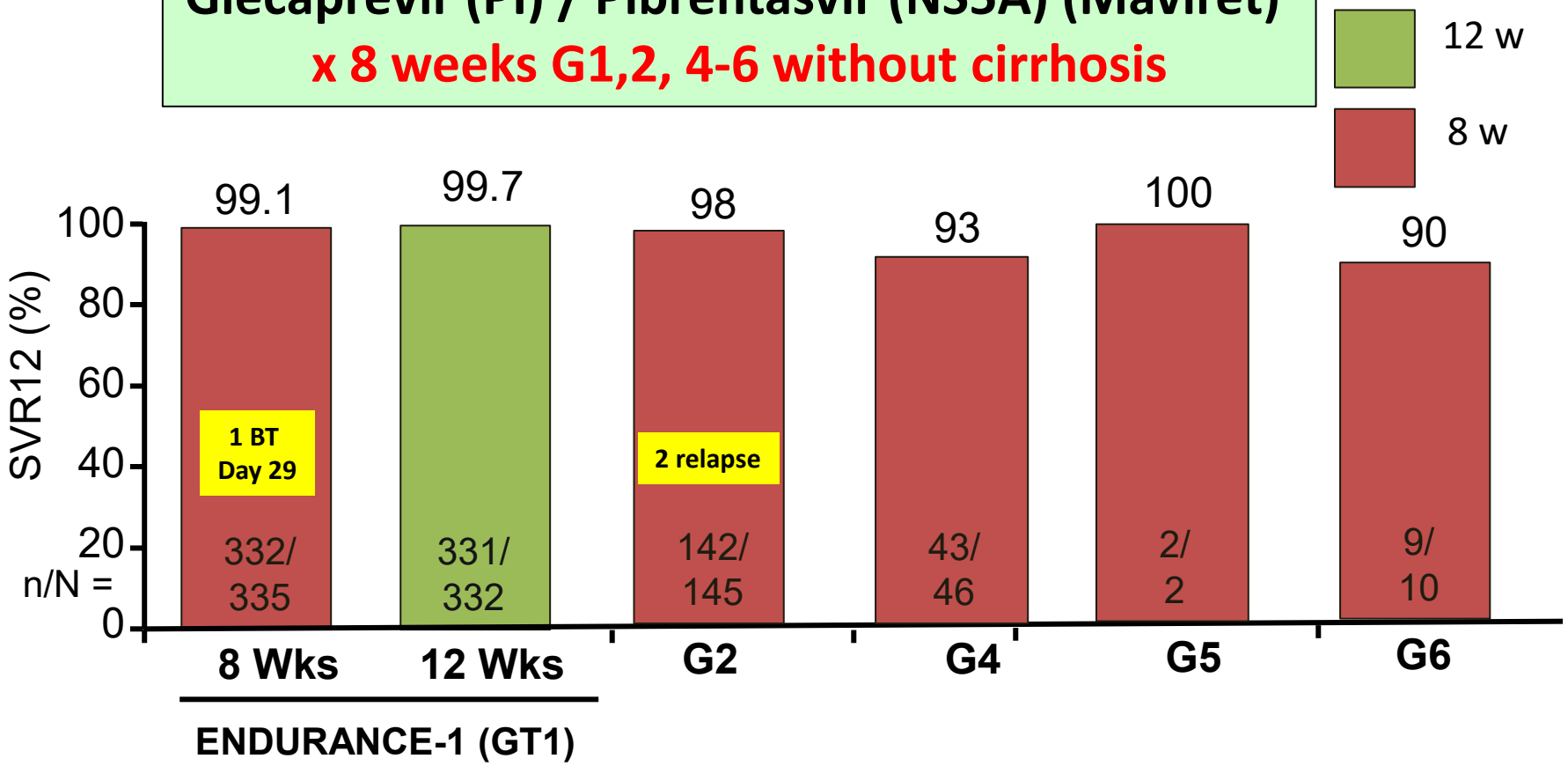
An 8 week option for all non-cirrhotics

Glecaprevir (PI) / Pibrentasvir (NS5A) (Maviret)
x 8 weeks G1,2, 4-6 without cirrhosis



- Highly effective 2 pills per day x 8 weeks G1, 2, 4–6 without cirrhosis
- Equally effective naïve or experienced (PR +/- SOF)

Zeuzem S, et al. NEJM 2017

TORONTO CENTRE FOR LIVER DISEASE

Pan-genotypic Regimens

SOF/VEL (Epclusa)

- 1 pill per day
- 12 weeks for all
- DDI
  - PPI
  - Statins

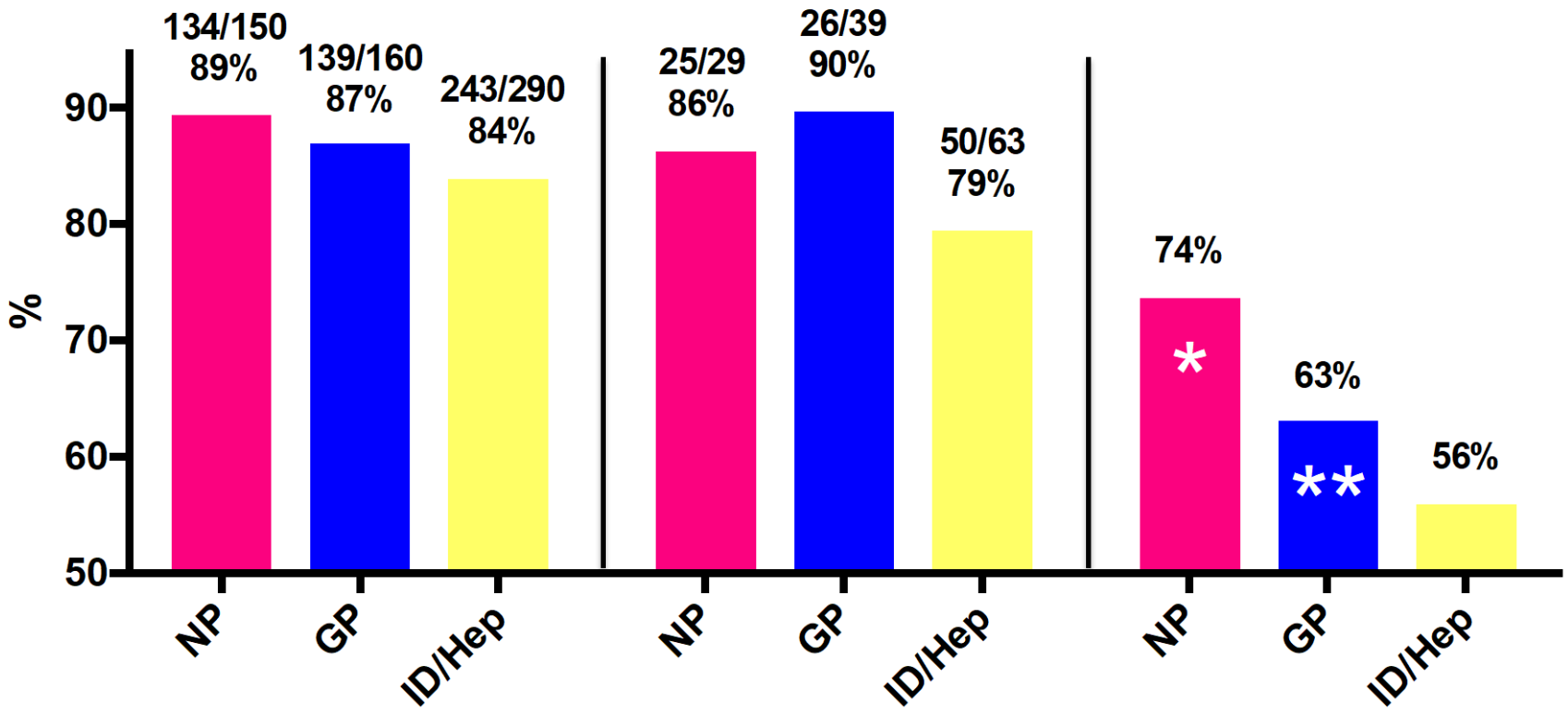
GLE/PIB (Maviret)

- 3 pills once daily – **with food**
- 8 weeks – non-cirrhotic
- 8 weeks – cirrhotic
- Safe renal failure (incl ESRD)
- **Not safe decompensated cirrhosis – past or presen‘**
- DDI
  - BCP
  - Statins

Now that we have perfectovir…

We need you…to treat!

Treatment should move out of specialty clinics



So my how many years of training and research are reduced to 3 hours???

TORONTO CENTRE FOR LIVER DISEASE

Lots of options…how do you choose the right one?

- The good news is they all work very well!
- SVR rates consistently >95% in clinical trials and real-world studies
- Safety/tolerability excellent
- For most patients, any of the recommended options are fine
- ***Choice of 'preferred' regimen based on relatively minor considerations***
  - **Drug interactions**
  - **Pill burden**
  - **Duration → 1 pill x 12w vs 3 pills x 8 weeks**

Choosing a regimen – checklist

- A few things to know:

1. **Fibrosis assessment**
   - Cirrhosis?
   - If yes – any history or signs of decompensation
2. **Genotype**
   - When is it required?
3. **Treatment history (mostly treatment naïve)**
   - Regimen + duration
4. **Co-morbidities**
   - CKD, co-infection (HIV/HBV)
   - Drug interactions
   - Ongoing risk exposures: Drug use, sex, alcohol

If Cirrhosis is Present

- Need to exclude **current or past decompensation**
  - Affects choice of regimen – No PIs, add RBV
  - Affects safety – warn patient & monitor closely
- Calculate Child Pugh Score – **if > 5 pay attention!**
  - **Bilirubin - Ascites**
  - **Albumin - Hepatic encephalopathy**
  - **INR**
- Calculate MELD – **if > 18 pay attention!**
  - **Bilirubin - Creatinine**
  - **INR**

If compensated - still reasonable to treat in primary care…but if unsure, send our way!

If you treat people with cirrhosis

- **Safety first**

A very simple rule for safe trt
- **Albumin ≥ 38**
- **Platelet ≥ 130**
- **Normal bilirubin**
- **No current/past ascites**

- **Genotype relevant**
  - **Genotype 3** – less responsive with SOF/VEL (epclusa)
  - If you can use GLE/PIB (maviret) then no issue…**if not, send to us**

Choosing a regimen – checklist

- A few things to know:

1. **Fibrosis assessment**
   - Cirrhosis?
   - If yes – any history or signs of decompensation
2. **Genotype & subtype for G1**
   - **Skip this step if no cirrhosis – if cirrhosis, need to know if genotype 3**
3. **Treatment history**
   - Regimen + duration
4. **Co-morbidities**
   - CKD, co-infection (HIV/HBV)
   - Drug interactions
   - Ongoing risk exposures: Drug use, sex, alcohol

Choosing a regimen – checklist

- A few things to know:

1. **Fibrosis assessment**
   - Cirrhosis?
   - If yes – any history or signs of decompensation
2. **Genotype & subtype for G1**
   - **Skip this step if no cirrhosis**
3. **Treatment history**
   - Regimen + duration – rarely an issue in your population
4. **Co-morbidities**
   - CKD, co-infection (HIV/HBV)
   - Drug interactions
   - Ongoing risk exposures: Drug use, sex, alcohol

Choosing a regimen – checklist

- A few things to know:

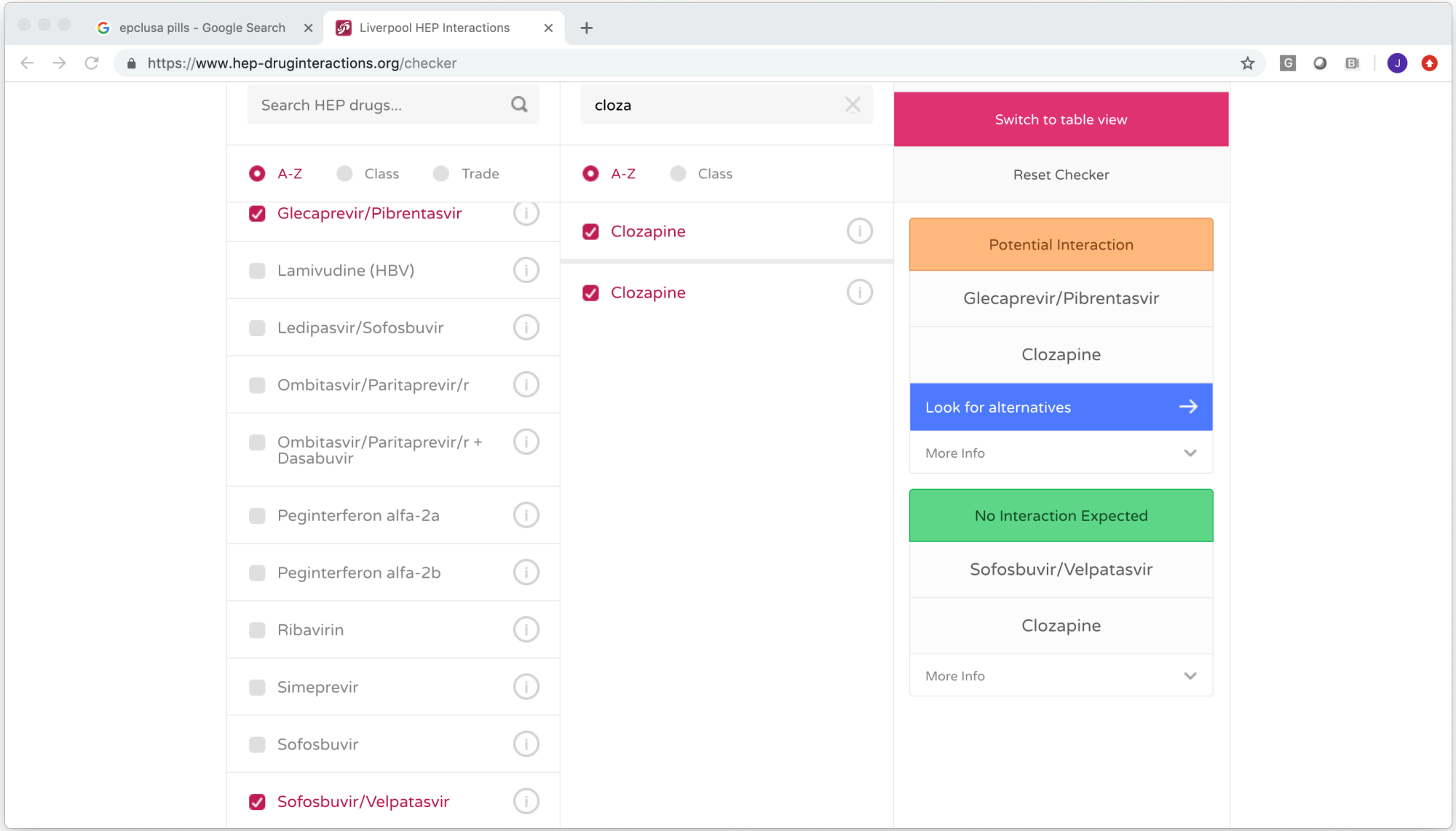
1. **Fibrosis assessment**
   - Cirrhosis?
   - If yes – any history or signs of decompensation
2. **Genotype & subtype for G1**
   - **Skip this step if no cirrhosis**
3. **Treatment history**
   - Regimen + duration – rarely an issue in your population
4. **Co-morbidities**
   - CKD, co-infection (HIV/HBV)
   - Drug interactions
   - Ongoing risk exposures: Drug use, sex, alcohol

Drug Interactions

http://www.hep-druginteractions.org/

(or just google Hep C drug interactions)

Don't trust your memory – look up all drugs including OTC!



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But fortunately most patients with HCV have mild disease

- New HCV diagnoses
  - Younger
  - More women
  - Milder fibrosis (>75% without cirrhosis)
  - Treatment-naive

Simplified approach to treatment*

1. **Confirm infection** – RNA + genotype
2. **Exclude cirrhosis** – APRI < 0.7
3. **Exclude drug interactions – www.hep-druginteractions.org**
4. **Start!**

Regimen	Genotype							Duration (weeks)	Pills per day
	1a	1b	2	3	4	5	6		
SOF/LDV (Harvoni)	■	■			■		■	8-12	1
ELB/GZV (Zepatier)		■			■			(8)-12	1
SOF/VEL (Epclusa)	■	■	■	■	■	■	■	12	1
GLE/PIB* (Maviret)	■	■	■	■	■	■	■	8	3

* Non-cirrhotic, no prior treatment → Once daily dosing, no need for ribavirin or resistance testing

TORONTO CENTRE FOR LIVER DISEASE

Some relevant drugs

- Traditional antipsychotics – no issues
- Clozapine
  - Weak DDI with GLE/PIB, none with SOF/VEL
- SSRIs – no issues
- Mood stabilizers
  - Li, lamotrigine, valproate - no issues
  - Carbamazepine – major DDI with all
- Sleep aids incl benzodiazapines – no issues
- **Street drugs – fentanyl** – theoretical risk with GLE/PIB – not borne out in clinical studies…not likely an issue

Getting started

- Pre-treatment labs
  - Liver profile (ALT, AST, Bilirubin, Albumin, INR)
  - CBC
  - Creatinine
  - HBV serology (HBsAg, anti-HBc, Anti-HBs)
  - HIV

On-treatment monitoring

No cirrhosis

- No on-treatment monitoring required, unless concerned
- If anti-HBc positive – not a bad idea to check ALT at 4 weeks…but not critical
- **RNA 12 weeks after last dose**
- No post-treatment monitoring **(unless concerned about reinfection)**

Cirrhosis

- Week 4: CBC, Liver enzymes, liver synthetic function (Bilirubin, Albumin, INR), SCr, lytes
- RNA 12 weeks after last dose

Post-Treatment Follow-up

- **SVR (cure)**
  - No cirrhosis → no specific follow-up required
    - No need for US
    - No need to check HCV RNA unless ALT elevated
    - **Don't forget the risk factors…IDU/alcohol – if reinfection risk, HCV RNA q6-12m**
  - If cirrhosis → **US every 6 months for HCC surveillance**
- **Non-SVR**
  - Rare
  - Prevent progression → alcohol/BMI…**drink coffee**
  - **Send to us for retreatment**

Case

- 56 yo Caucasian long-term resident of CAMH found to be HCV+ on screening
- Remote heroin use – on methadone x 16 years - stable
- PMHx: DM, HTN, Obesity
- Meds: Methadone, Metformin, Ramipril, Omeprazole, Olanzapine, Trazadone

Case - Labs

- HCV RNA 3.4E6 IU/mL
- ALT 78 AST 56 ALP 96
- Bilirubin 1.0 INR 1.0 Albumin 4.3
- Hb 14.3 WBC 4.7 Plt 327

- Do we need anything else?
  - Ultrasound?
  - Genotype?
  - Other labs?

Other labs?

- **Work-up for other liver diseases?**
  - Could do pre-treatment or else wait for post-SVR if ALT still high
  - Fe Saturation
  - Maybe nothing else
- **HBV**
  - HBsAg is important
  - Anti-HBc not very important (but very common!)
- **HIV**
  - Important due to common risk factors and importance of diagnosis
- **US**
  - Not unless cirrhosis present

What do you want to do?

- Non-cirrhotic, HBV and HIV-negative, no prior treatment, (genotype 1b)

- Options
  - GLE/PIB (Maviret) – 8 weeks (3 tabs once daily)
  - SOF/VEL (Epclusa) – 12 weeks (1 tab daily)

- Only relevant drug interaction
  - PPI with SOF/VEL…manageable or could just use GLE/PIB

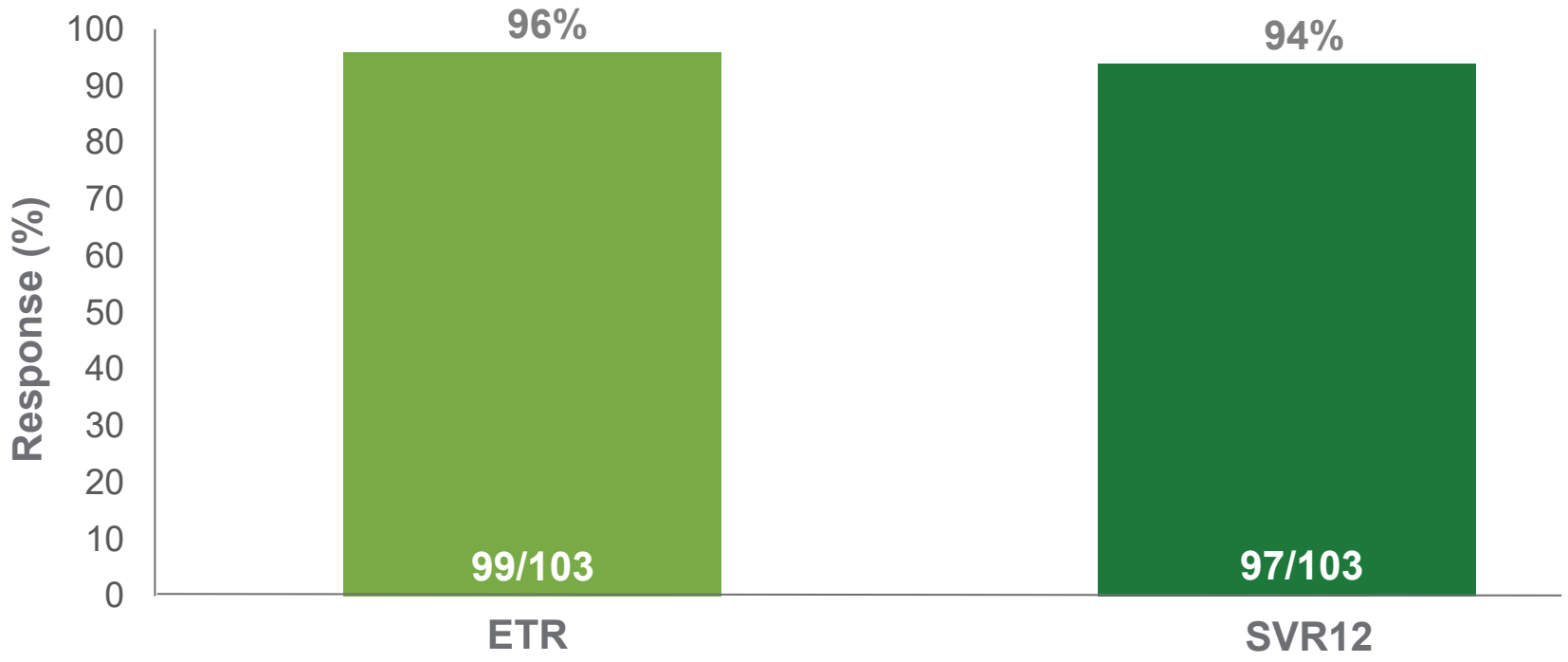
It's really that easy!

What about less stable patients

- Same case but recently started OAT
- Still using heroin and fentanyl relatively regularly
- Can we still treat?

Treatment in people actively injecting?

- 100% injecting in past 6 months, 35% G1a, 58% G1, 9% cirrhosis, DAA-treatment naïve
- **SOF/VEL x 12w → No virological failures, no viral relapse, 1 case of reinfection**



Recent or current drug use is not a contraindication to HCV treatment

Grebely Lancet Gastro Hep 2018

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Can we treat people with ongoing substance use?

- Yes!
- May need more support
  - Virtual contact – texts, video, peer meetings
  - Reasonable to wait for some stability…**but sobriety NOT required**
- Dispense with other meds – may give full course
- Issues:
  - **Incarceration** – HCV meds available (similar to OAT)
  - **Lost meds** – contact manufacturer – may be able to replace (not always)
  - **Missed doses** – key is to finish full course…even if it takes longer than planned
    - If stop in first week…start over, if later, probably best to just continue (drugs are forgiving!)

In the right setting…RNA can be your first test

- **Offering HCV testing in KeepSIX SCS**
  - Xpert HCV RNA at entry – high uptake
  - 54/124 (**43%**) positive @ BL + 10 in f/u
  - 43/64 (**67%**) linked to care
  - 29/43 (**67%**) treated
  - 25/29 (**86%**) SVR

- High acceptability
- Very high prevalence
- High incidence too…still work to do!

Lettner B…Feld/Powis. Submitted

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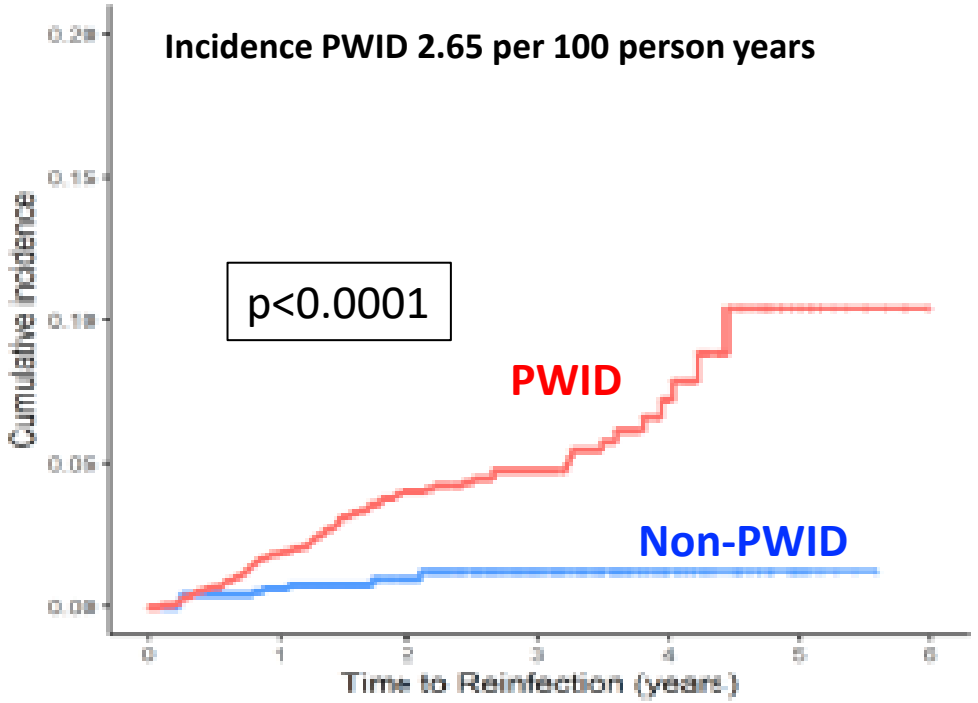
What about reinfection?

BC Testers Cohort – all tests done in BC & linked to health administrative data



Risk factors for reinfection among PWID

- Younger age
- Male
- Opioid use
- HIV co-infection

Reduced risk

- **Anti-psychotic & OAT use**

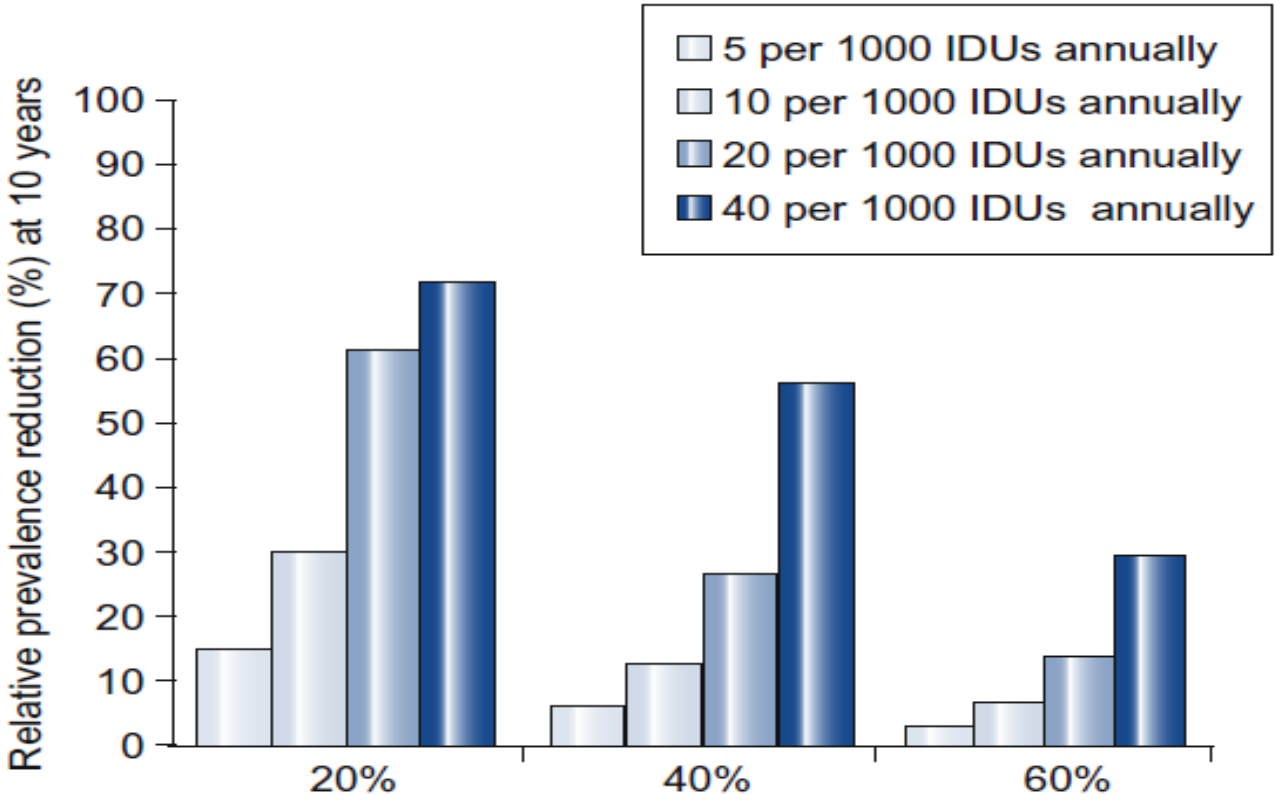
- Relatively low rate of reinfection – stable over time
- Treatment of addiction and mental illness key to long-term success

How do we handle reinfection

- *"if we don't see reinfections, we're not treating high risk individuals" "* Greg Dore – UNSW, Australia
- Look for it
  - Serial testing of HCV RNA – q6-12 m if ongoing risks
  - Do not test Ab – it will always be positive after initial infection

- Treat again
  - **No stigma, no discrimination – don't retreat, just re-treat!**
  - Same regimens as if treatment-naïve (resistance rare)

Cure as prevention for HCV



- Modest treatment required to reduce prevalence
- Cost-effective to treat PWID even with reinfection unless prevalence VERY high

Martin J Hepatology 2011, Martin J Hepatology 2016, Walsh Gut 2017

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If you need some support…

Project ECHO

- Linking PCPs to specialists
- Facilitates linkage to care
- Allows people to be treated by people and in settings they know & trust

ECHO Liver Ontario

- Monday 12-1:30
- Free
- CPD Credits

ECHO Liver Ontario – please join

Arora NEJM 2011

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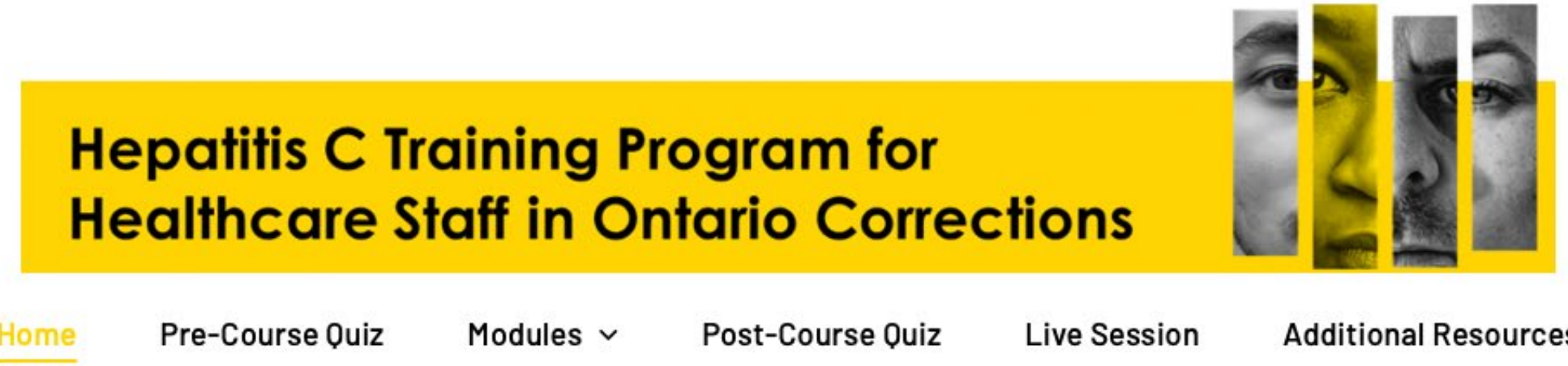
HCVtraining.ca



- 4 short video modules covering many aspects of HCV treatment with a focus on corrections and high-risk populations

Summary

- HCV is common and causes a huge burden of illness
- HCV is curable with simple therapy
- Work-up is simple
  - Fibrosis – no cirrhosis, no HBV, no HIV → start!
- Treatment is more successful with providers they know
- We can help – ECHO Liver
- Treatment in RAAM and addiction setting generally can be very effective and rewarding!