Do we still need Human Albumin? The Egyptian Experience

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Outline

- Human Albumin Overview
- Hepatitis C in Egypt; Magnitude of the problem
- HCV Elimination; lessons from Egypt
- Conclusion

ALBUMIN

Pharmacologic Category :

Blood Product Derivative, Plasma Volume Expander, Colloid

Albumin: Indications for use

- Cirrhotic ascites, therapeutic paracentesis
- Spontanous bacterial peritonitis
- Hepatorenal syndrome (type I)
- Nephrosis (acute)
- Acute respiratory distress syndrome
- Hypovolemia
- Ovarian hyperstimulation syndrome
- Plasma exchange

Albumin: Adverse reactions

- Cardiovascular
- Hypersensitivity
- Dermatologic
- Endocrine
- Coagulation abnormality
- Electrolyte imbalance

Albumin: contraindications

- Hypersensitivity
- Severe anemia
- Heart failure
- Patients at risk of volume overload

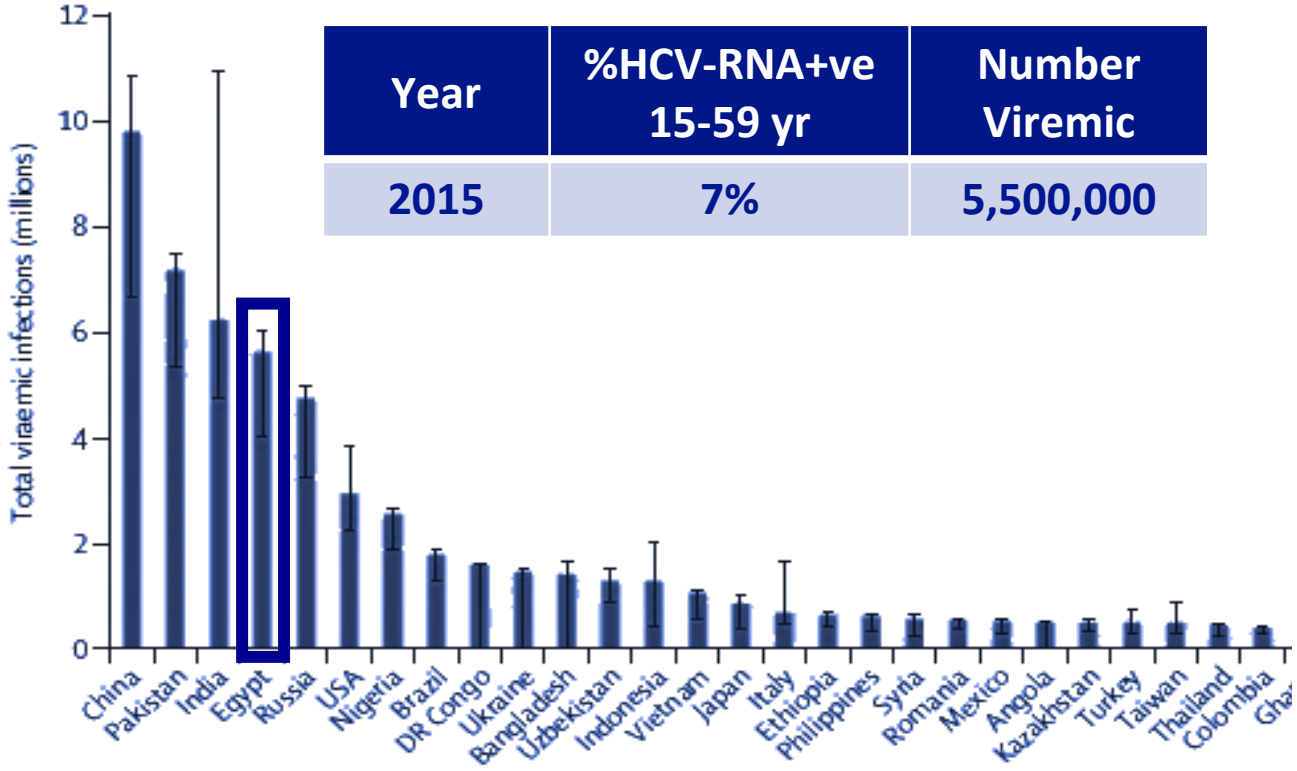
HCV Elimination on Target - Lessons from Egypt

Outline

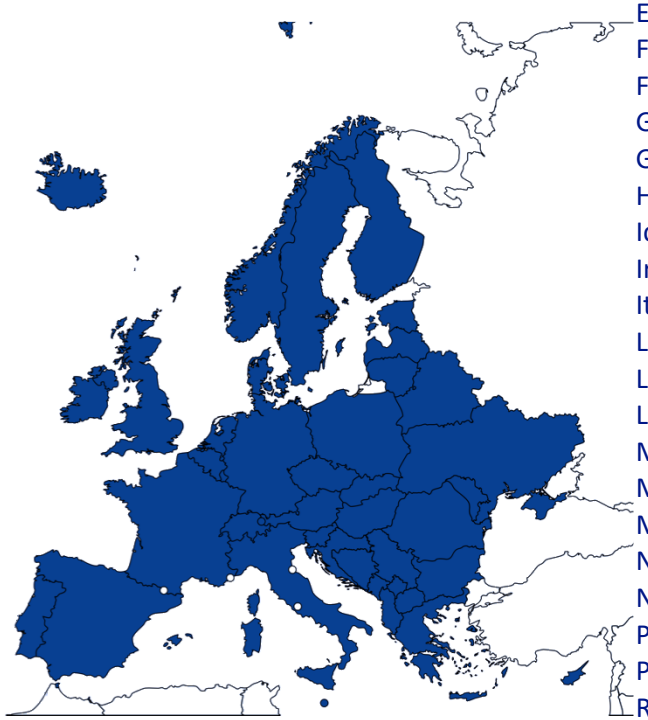
- Magnitude of the problem
- National treatment program
- Screening & elimination campaign
- Key lessons & success factors

HCV in Egypt: Magnitude of the Problem

Till 2016, Egypt had the highest prevalence of HCV in the world



Year	%HCV-RNA+ve 15-59 yr	Number Viremic
2015	7%	5,500,000



Albania	8
Austria	23
Belarus	310
Belgium	65
Bosnia and Herzegovina	37
Bulgaria	93
Croatia	26
Cyprus	7
Czech Republic	42
Denmark	20
Estonia	18
Finland	22
France	183
Germany	238
Greece	130
Hungary	52
Iceland	1
Ireland	30
Italy	933
Latvia	43
Lithuania	33
Luxembourg	5
Macedonia (FYROM)	20
Malta	1
Montenegro	6
Netherlands	16
Norway	22
Poland	183
Portugal	97
Romania	548
Serbia	85
Slovakia	32
Slovenia	6
Spain	450
Sweden	40
Switzerland	80
Ukraine	1448
United Kingdom (UK)	167
	5520

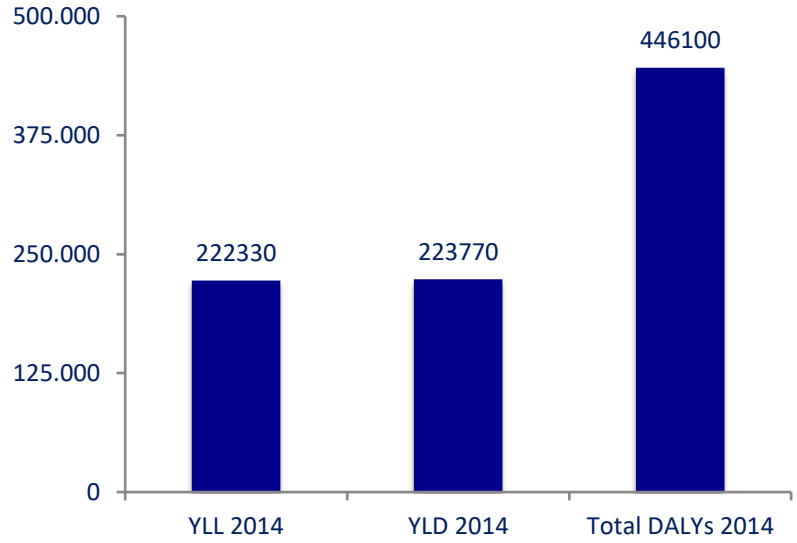
– As many patients with HCV in Egypt as there are in 38 countries in Europe (population 600 MM) (excluding Russia)

El-Zanaty and Associates, and ICF International. 2015. Polaris observatory: http://polarisobservatory.org/polaris/map.htm

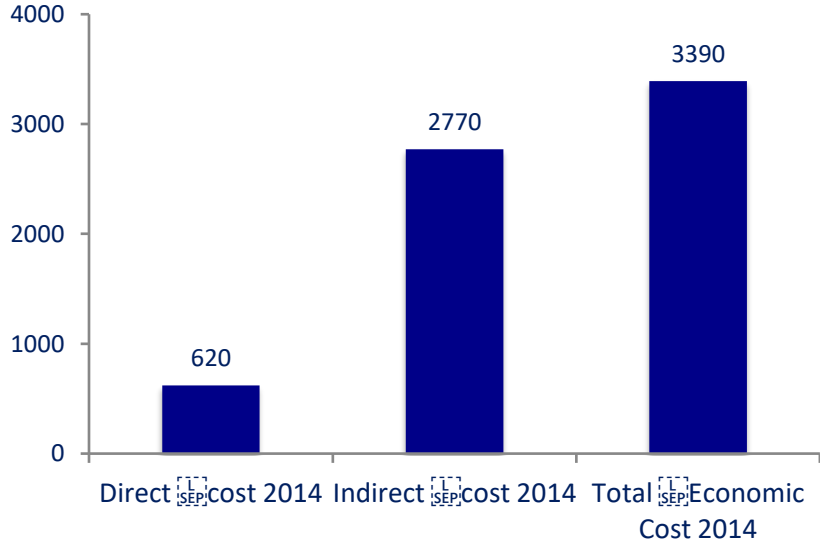
Magnitude of the Problem

Disease Burden

- **Years Lost:**
  - 30,000 mortalities, 220,00 YLL
  - 225,000 YLD
  - Total ~450,000 DALYs



- **Economic burden**
  - $620 MM direct healthcare costs, ~ 5% of total health expenditure
  - $2.70 BN Indirect costs (YLD, YLL)
  - $ 3.4 BN total economic burden (1.3% of GDP)



- Curing one patient saves $10,000 over 20 years
- Avoiding one infection saves $20,000 over 40 years

Estes et al. Aliment. Pharmacol. Ther. 2015

National Treatment Program

The National Committee for the Control of Viral Hepatitis (NCCVH)

- The treatment program started in 2006 with the establishment of the NCCVH
- A volunteer board of experts
- Set national plans to reduce prevalence of HCV & HBV
- Set treatment guidelines to be adopted by the MoH and all government health facilities
- Obtain quality data (DHS in 2008 & 2014 included HCV-RNA)

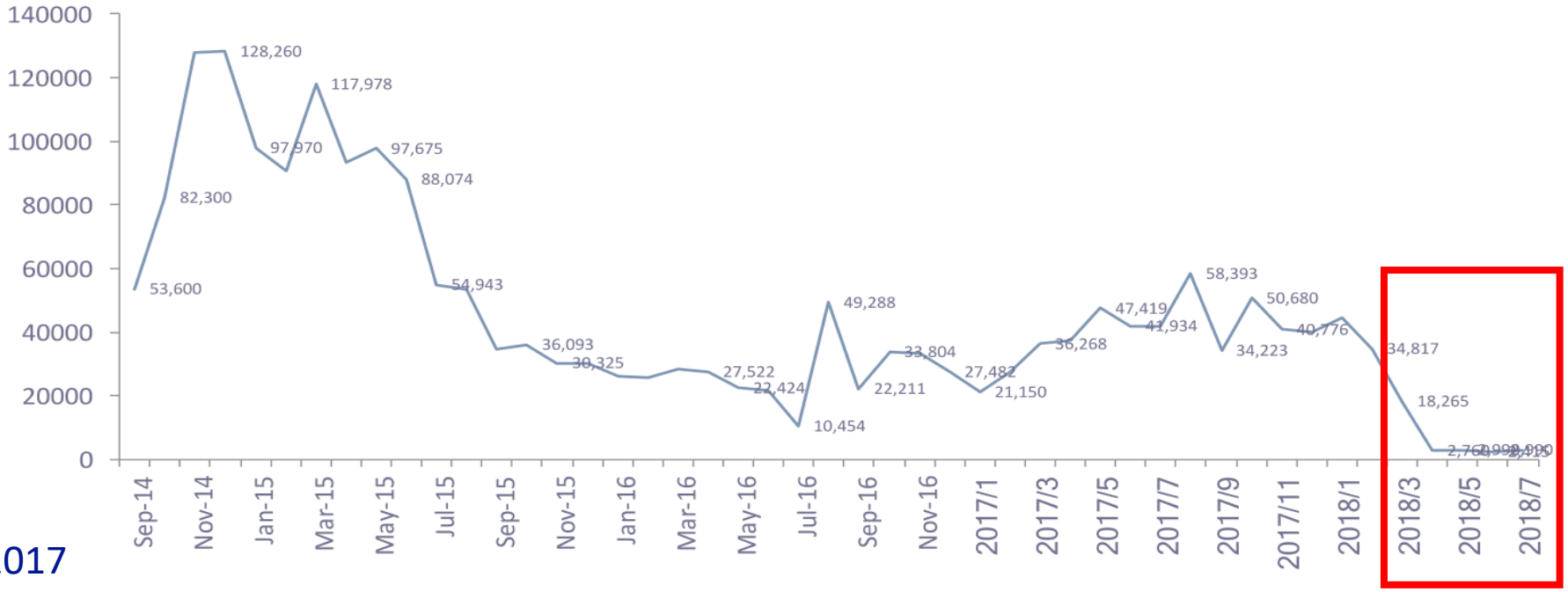
- During IFN, the NCCVH established specialized IFN treatment centers
- Started with one center in 2007, now >70
- HIO >120 hepatitis clinics & centers
- All centers connected through a closed VPN to a central server
- Data entered in real time



National Treatment Program

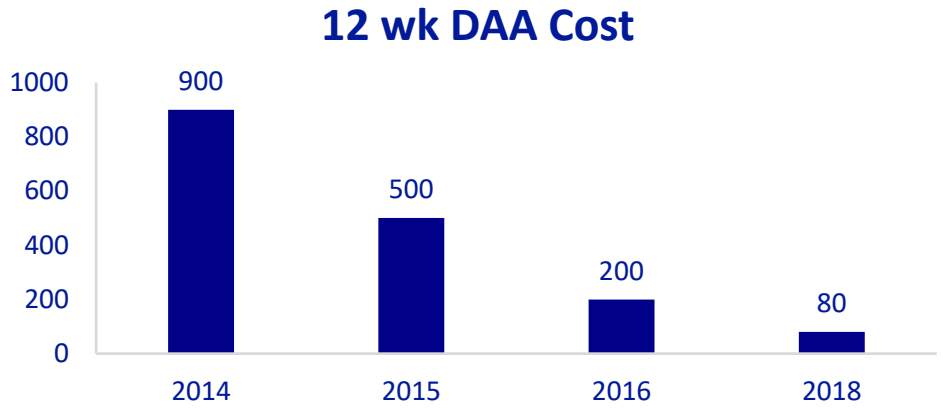
- In 2014: Introduced SOF, Gilead, cost $900 for 12 wks
- National DAA treatment program on the expense of the state
- Patients aware of the diagnosis register for treatment

- By 2018: >2 Million started treatment
- Almost all were those living with the diagnosis
- ~2-3 million with undiagnosed HCV infection untreated
- Program losing momentum



- El Akel et al, JVH, 2017

Finding Patients: Screening



- By 2018, treatment cost decreased further

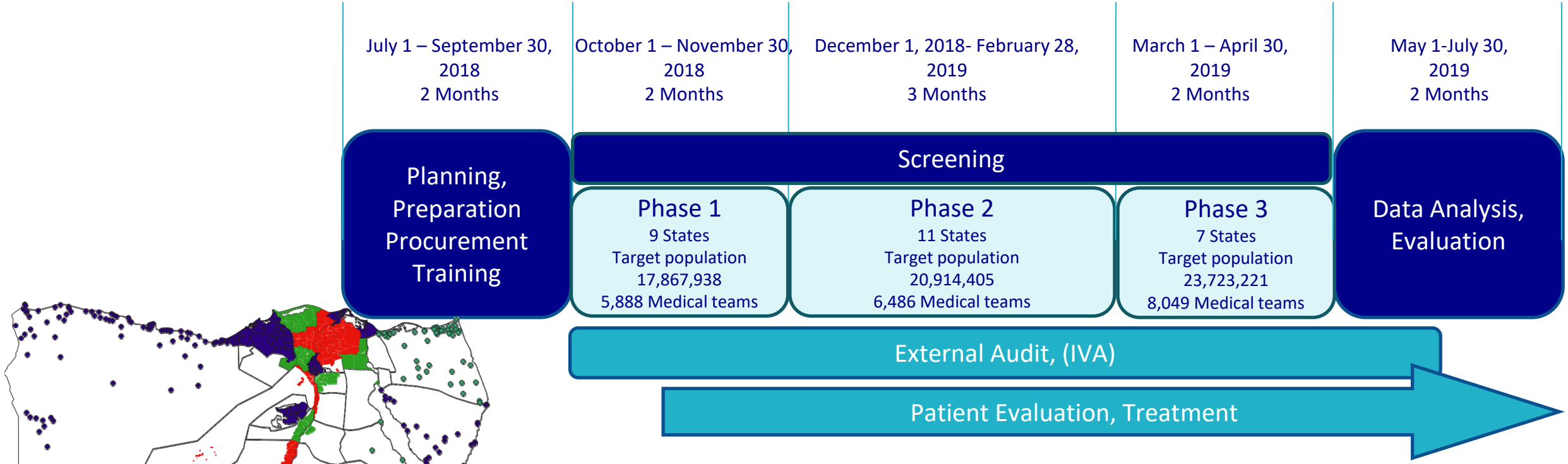
- National HCV screening program
  - Screen all > 18 years old (62.5 Million) if not previously treated
  - All 12-18 years old (12 Million) (if parent consent)
- Changed screening test to RDT using blood drop, decreased cost US$ 0.56
- Viral load test to <US$ 5.0
- Treatment cost (12 week SOF-DCV+/-RBV) down to US$ 45

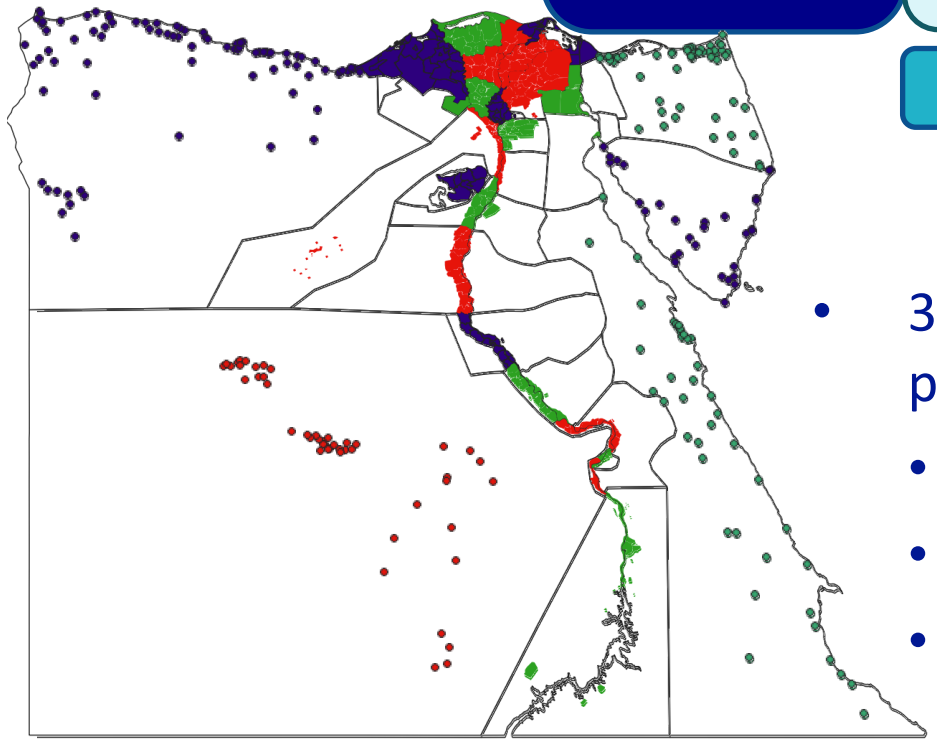




Esmat et al. Lancet Gastroenterol Hepatol. 2018

National Screening Campaign





- 3 phases: 2-3 months, 7-11 states, 18-24 million target population
  - 4,000-6,000 screening sites
  - 9 to 9, 7/7, 30/30
  - 20,423 medical teams

National Screening Campaign

- Training started two months prior to screening launch in each phase
- 800 trainers were trained to train the screening teams to use RDT & to electronically record data & results into the database.
- Screening team:
  - physician, nurse, data-entry











National Screening Campaign

- All hospitals, primary health clinics, rural health facilities

- Mobile units augmenting screening effort:
  - Mosques, churches, clubs, factories, subway stations
- Huge media campaign: billboards, TV, radio, meetings, 3M SMS /phase
- Persons walk into any test site
- Immediate link to evaluation & treatment center
- Call center contracted to call seropositive “no-shows” for evaluation

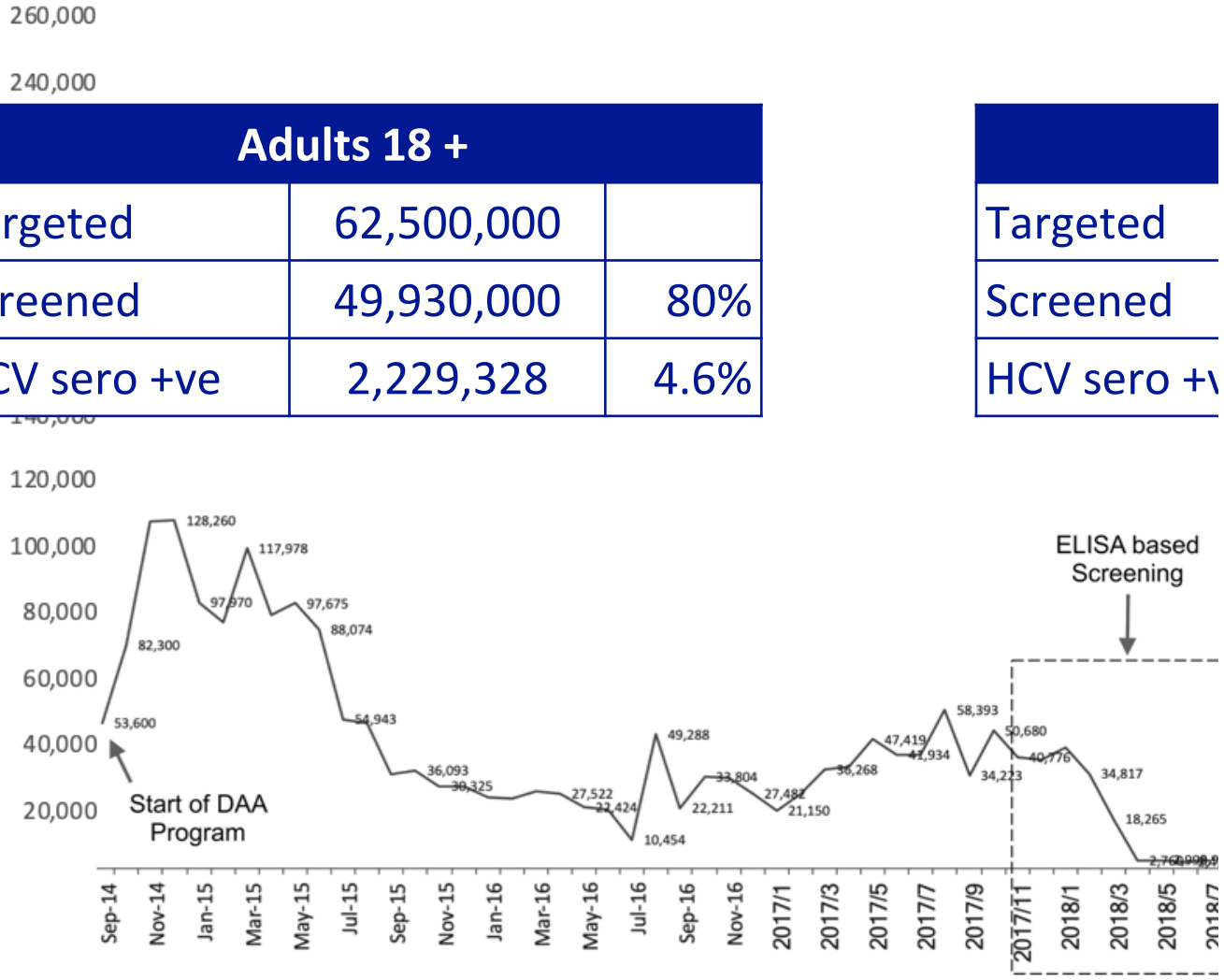


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National Screening Campaign Screening Outcome

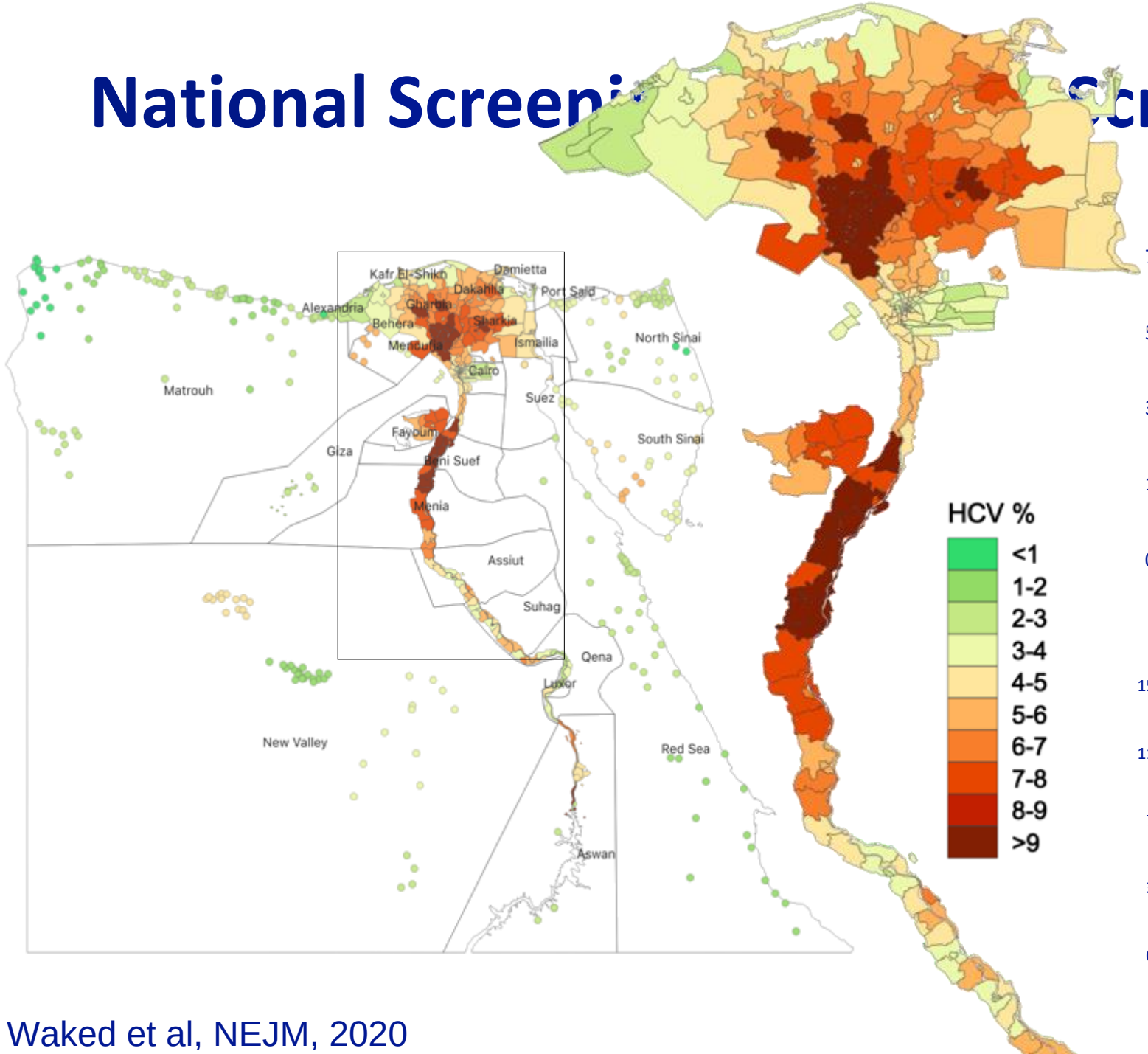
Adults 18 +		
Targeted	62,500,000	
Screened	49,930,000	80%
HCV sero +ve	2,229,328	4.6%

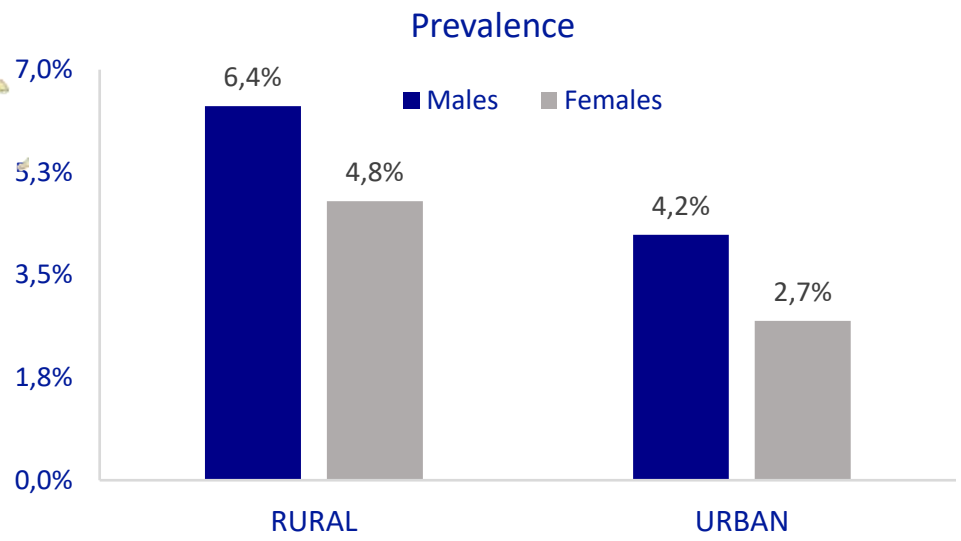
Targeted
Screened
HCV sero +v

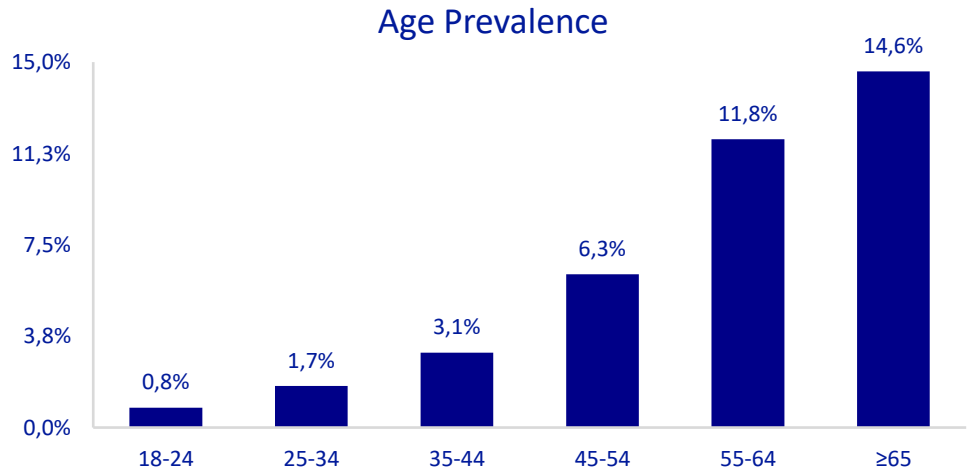


NCCVH, 2019

National Screeni… …Screening Outcome



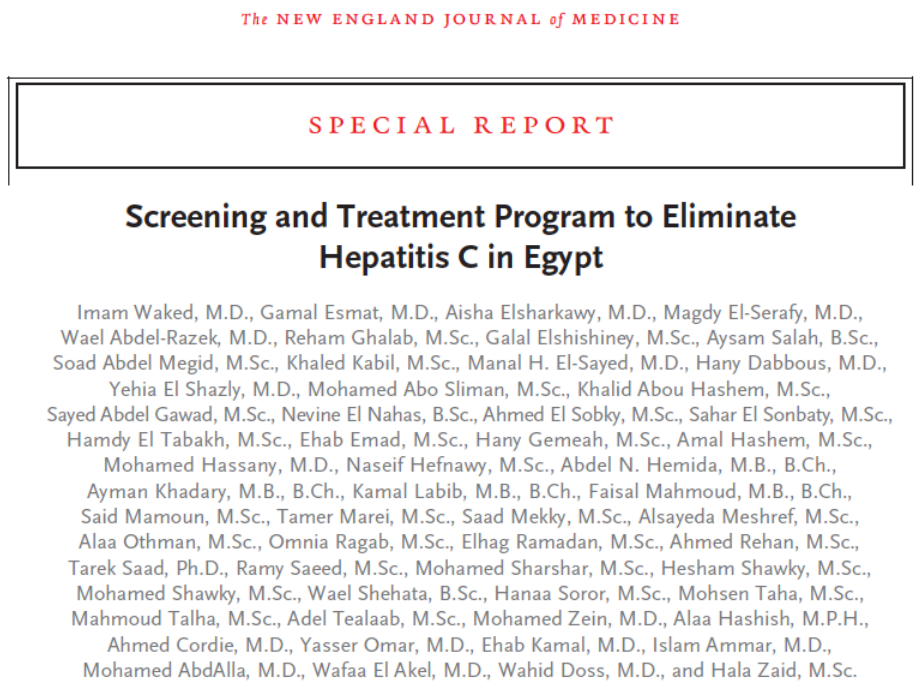




Waked et al, NEJM, 2020

National Screening Campaign Treatment Outcome

Total cost of screening & treatment	**US $ 207,139,177**
Recorded SVR-12	**98.8%**
Identifying 1 viremic adult	US $ 70
Cost of Cure	US $ 114
Identifying 1 viremic child	US $ 290
Cost of Cure	US $ 365



Waked et al. NEJM, 2020

National Screening Campaign Outcome

Year	2017	2020
Patients registering for evaluation and treatment during the last 3 months	47,890	2,131

96% decrease

On Target

Egypt achieved all WHO set targets for HCV elimination:

- > 90% Diagnosed
- > 90% Treated
- > 90% Cured
- Prevalence: 0.4%

Key Lessons & Success Factors

- **Society pressure essential** to drive policy-makers to adopt national treatment program
- Continuous **political will & support crucial** for initiating & maintaining successful program
- National program with **all government agencies & civil society** aligned
- Allocate **sufficient resources** to initiate & maintain program
- Management **guidelines simple** & allowed task-shifting to non-specialists.
- Guidelines **adaptable** reflecting most most effective regimens, availability, & cost

Key Lessons & Success Factors

- **Mass procurement through single negotiating body** ensured cheap prices for investigations & treatment
- **All investigations & treatment free,** key factor driving compliance & program success
- **Treat all patients** regardless of fibrosis stage. Treatment prioritization to patients with advanced fibrosis proved major hindrance.
- Use **biomarkers of fibrosis** to decide on follow-up.

Conclusion

- The largest disease screening campaign in the history of medicine
- Egypt on fast-track to HCV elimination
- Over 7 months
  - 57 Million screened
  - 2.3 Million seropositive identified (~4.6%), ~1,600,000 viremic
- 4.2 Million treated, mainly with generics, with >95% SVR rate
- First country to screen & treat teenage population
- Potential to be the first country to eliminate HCV, despite highest burden & limited resources
- Example easy to follow in similar resource limited settings

Conclusion Cont.

With HCV elimination in Egypt , Use of Albumin expected to decrease dramatically

Thank You