

IS THE UNIVERSAL POPULATION HEPATITIS C VIRUS SCREENING A COST-EFFECTIVE STRATEGY? A SYSTEMATIC REVIEW OF THE ECONOMIC EVIDENCE

Buti M¹, Ledesma F², Domínguez-Hernández R³, Casado MA³, Esteban R¹

¹ Liver Unit, Hospital Universitari Vall d'Hebron, Barcelona, Spain. ² Máster en Evaluación Sanitaria y Acceso al Mercado. Universidad Carlos III, Madrid, Spain. ³ Pharmacoeconomics & Outcomes Research Iberia (PORIB), Madrid, Spain

Background

- To achieve the World Health Organization (WHO) goal for the elimination of Chronic Hepatitis C Virus (HCV), efficient strategies are necessary.
- HCV infection can be cured by direct acting antivirals (DAAs) regimens, but many individuals remain undiagnosed^{1,2}.

Methods

- A systematic review of articles was performed in eleven databases (Web Of Science, MEDLINE, EMBASE, ProQuest, Premier-EBSCO, Springer Link, Google Scholar, Science Direct, Cochrane, Scopus and Open Access), plus manual search of abstracts of 2018 EASL Conference.
- The key words used for the systematic search were "HCV OR Hepatitis C" AND "screening" AND "Cost Analysis"

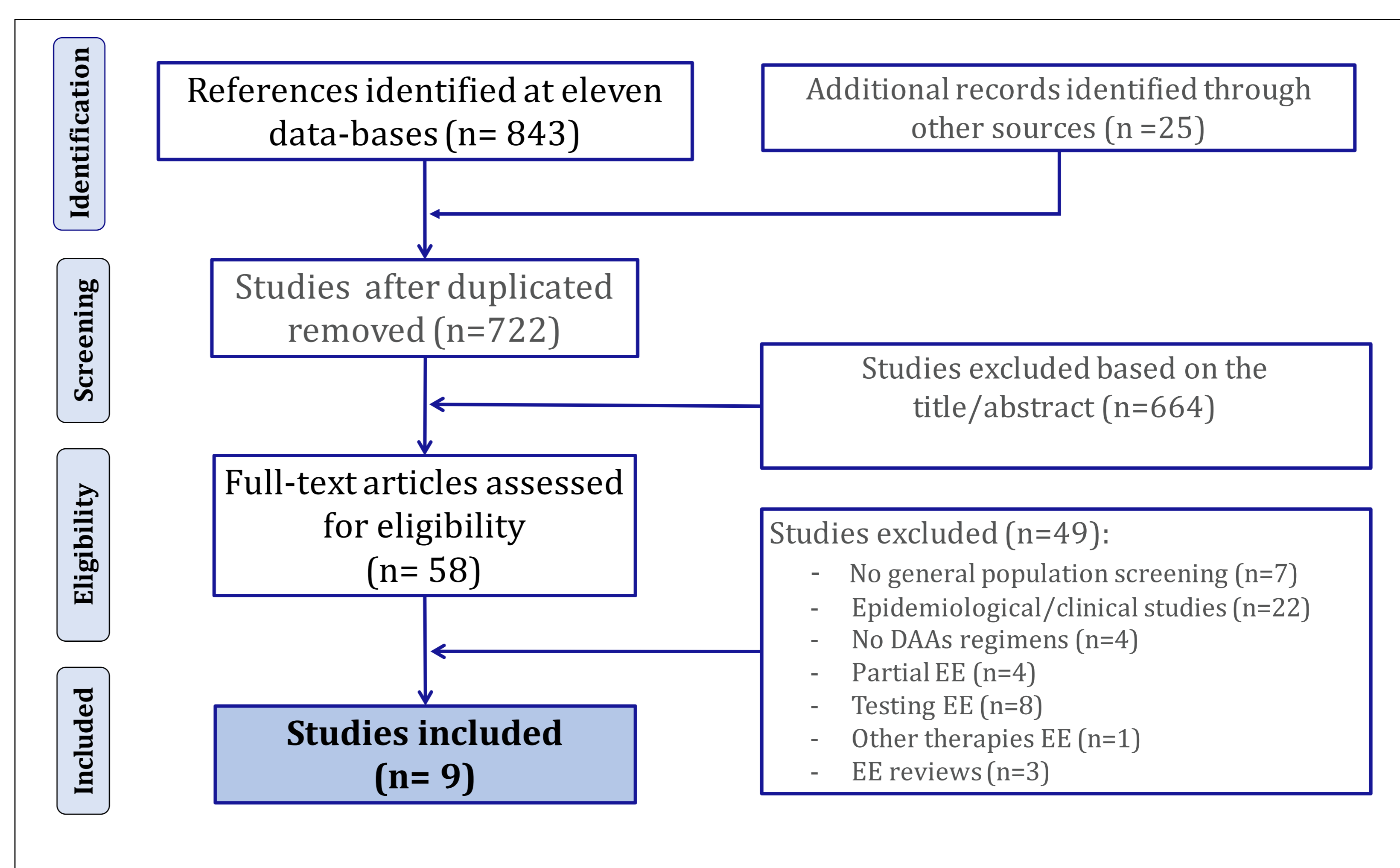
Results

- From 843 references identified, nine met inclusion criteria comparing HCV general population screening to other screening strategies (**Figure 1**).
- Studies were from USA (3), Spain (2), Canada (1), France (1), India (1) and Korea (1).
- All analysis used Markov models and adopted a healthcare payer's perspective (including direct medical costs), except for one that used societal perspective (direct and indirect medical costs). Discount rate varies from none to 5%, and time horizon from 5 years to lifetime.
- General population ages showed variability between studies.
- General population HCV screening plus DAAs was associated with an increase in total costs in a short-time period, but showed to be cost-effective in a lifetime horizon, increasing QALY and reducing future related-disease costs.
- The ICERs ranged from cost-saving to around C\$50,000 showing to be below of accepted willingness-to-pay (WTP) thresholds in each setting (**Table 1**).
- In addition, five studies reported the effects of HCV screening plus DAAs on the decrease of liver-related complications (decompensated cirrhosis, hepatocellular carcinoma and liver-related deaths).

Objective

Review the evidence on economic evaluations to identify HCV screening plus oral DAAs therapies looking at studies focus on general population.

- Inclusion criteria were economic evaluations published in English language during 2015-2018 that included incremental cost-effectiveness ratio (ICER) in terms of cost per life year gained or quality-adjusted life year (QALY).
- CHEERS checklist was used for selected articles quality assessment^{3,4}.



DAAs, direct acting antivirals; EE, economic evaluations

Figure 1. Flow diagram of included studies

Table 1. Summary of Cost-Effectiveness Results

Study	Population	Model	Perspective	Horizon & Discount	ICER (per patient)	WTP
Deuffic-Burban, 2016 (France) ⁵	GP (18-80 yr) vs current-screening	CUA, Decision tree and Markov model	Third-Party Payer	Lifetime, 4%	€27,600 – 46,300	n/a
Linthicum, 2016 (USA) ⁶	GP (born before 1992) vs current-screening	CUA, Markov model	Societal	20 years, 3%	-\$6,747	n/a
Chaillon, 2017 (India) ⁷	GP vs non-screening	CUA, Markov model	Healthcare Provider	Lifetime, 3%	\$1,471 – 2,942	\$1,580
Rattay, 2017 (USA) ⁸	GP vs current-screening	CUA, Decision tree	Societal	Lifetime, 3%	\$10,351	\$100,000
Wong, 2017 (Canada) ⁹	GP (15-79 yr) vs non-screening	CUA, State transition model	Third-Party Payer	Lifetime, 5%	C\$31,468 – 50,490	C\$50,000 – 120,000
Younossi, 2017 (USA) ¹⁰	GP (>20 yr) vs BC (1945-1967) and GP (>20 yr) vs HR	CUA, State transition model	Third-Party payer	Lifetime, 3%	\$15,968 – 8,660	\$50,000
Buti, 2018 (Spain) ¹¹	GP (20-79 yr) vs HR and GP (20-79 yr) vs the highest prevalence	CUA, Decision tree and Markov model	National Health System	Lifetime, 3%	€226 – 8,914	€22,000 – 30,000
Cuadrado, 2018 (Spain) ¹²	GP (20-74 yr) vs standard	CEA Epidemiological and Markov model	Third-Party Payer	Lifetime, n/a	-€336 – 3,904	n/a
Kim KA, 2018 (Korea) ¹³	GP vs non-screening	CUA, Markov model	Healthcare System	Lifetime, 5%	\$7,218 – 7,787	\$27,205

CUA, Cost-utility analysis; CEA, Cost-effectiveness analysis; n/a, not available at the paper/poster; GP, General Population; BC, Birth Cohort Population; HR, High Risk Population; ICER, incremental cost-effectiveness ratio; WTP, willingness to pay; yr, years

Conclusion

An universal HCV screening plus DAAs therapies has shown to be cost-effective and it should be the recommended strategy to achieve the WHO objectives for HCV elimination by 2030.

References

- WHO. Updated version, July 18, 2018. Available from: www.who.int/;
- WHO. Available from: www.who.int/;
- Husereau D, et al. Value Health 2013;16:e 1-5;
- Stawowczyk E, et al. Pharmacoeconomics 2018;36:419–34;
- Deuffic-Burban S, et al. AASLD 2016 Hepatology 2016; 64 (Supplement 1): 375A-376A.
- Linthicum MT, et al. Am J Manag Care 2016; 22:SP 227-35;
- Rattay T, et al. Gastroenterology 2017;153:1531-43;
- Chaillon A et al. Hepatology 2017;66:410a;
- Rattay T, et al. Gastroenterology 2017;153:1531-43;
- Wong W, et al. CMAJ open 2017;E662-E672;
- Younossi ZM, et al. Liver Inter 2017;38:258-65;
- Buti M, et al. J Hepatol 2018;68. Poster THU-140;
- Cuadrado A, et al. J Hepatol 2018; 68. Poster THU-087;
- Kim KA, et al. J Hepatol 2018;68. Poster THU-433.

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