

Is Therapy Cost-Effective?

Maria Buti

Liver Unit. Hospital General Universitario
Valle de Hebron and Ciberehd. Barcelona.
Spain

Summit Conference Hepatitis B and Hepatitis C
Brussels, 14-15 October 2010

JOURNAL OF HEPATOLOGY

Official Journal of the European Association for the Study of the Liver

Register or Login: Password: **SIGN IN** Auto-Login [\[Reminder\]](#)

Search for **GO**

[Advanced Search](#) - [MEDLINE](#) - [My Recent Searches](#) - [My Saved Searches](#) - [Search Tips](#)

JOURNAL HOME

CURRENT ISSUE

ARTICLES IN PRESS

PREVIOUS ISSUES

SEARCH THIS JOURNAL

COLLECTIONS

FREE CONTENT

- Editorials
- Editor's selection
- EASL Practice

Guidelines: Management of Chronic Hepatitis B

- FREE Special Issue: Management of Liver Diseases 2008

CONTACT US

INFO FOR ADVERTISERS

AUTHOR INFORMATION

ONLINE SUBMISSION

JOIN EASL

PRICING INFORMATION

SUBSCRIBE TO THIS JOURNAL

 RSS

Most Read Articles in *Journal of Hepatology*

The 20 articles listed below are those most read on <http://www.jhep-elsevier.com> from September to November 2009.

Novel advancements in the management of hepatocellular carcinoma in 2008 , 13 February 2008

Josep M. Llovet, Jordi Bruix

Journal of Hepatology

2008 (Vol. 48Supplement 1, Pages S20-S37)

[Abstract](#) | [Full Text](#) | [Full-Text PDF \(437 KB\)](#)

Cost-effectiveness of oral treatments for chronic hepatitis B , 06 August 2009

Geoffrey M. Dusheiko

Journal of Hepatology

October 2009 (Vol. 51, Issue 4, Pages 623-625)

[Full Text](#) | [Full-Text PDF \(80 KB\)](#)

Portal vein thrombosis: A predictable milestone in cirrhosis? , 29 June 2009

Juan Carlos Garcia-Pagan, Dominique-Charles Valla

Journal of Hepatology

October 2009 (Vol. 51, Issue 4, Pages 632-634)

[Full Text](#) | [Full-Text PDF \(88 KB\)](#)

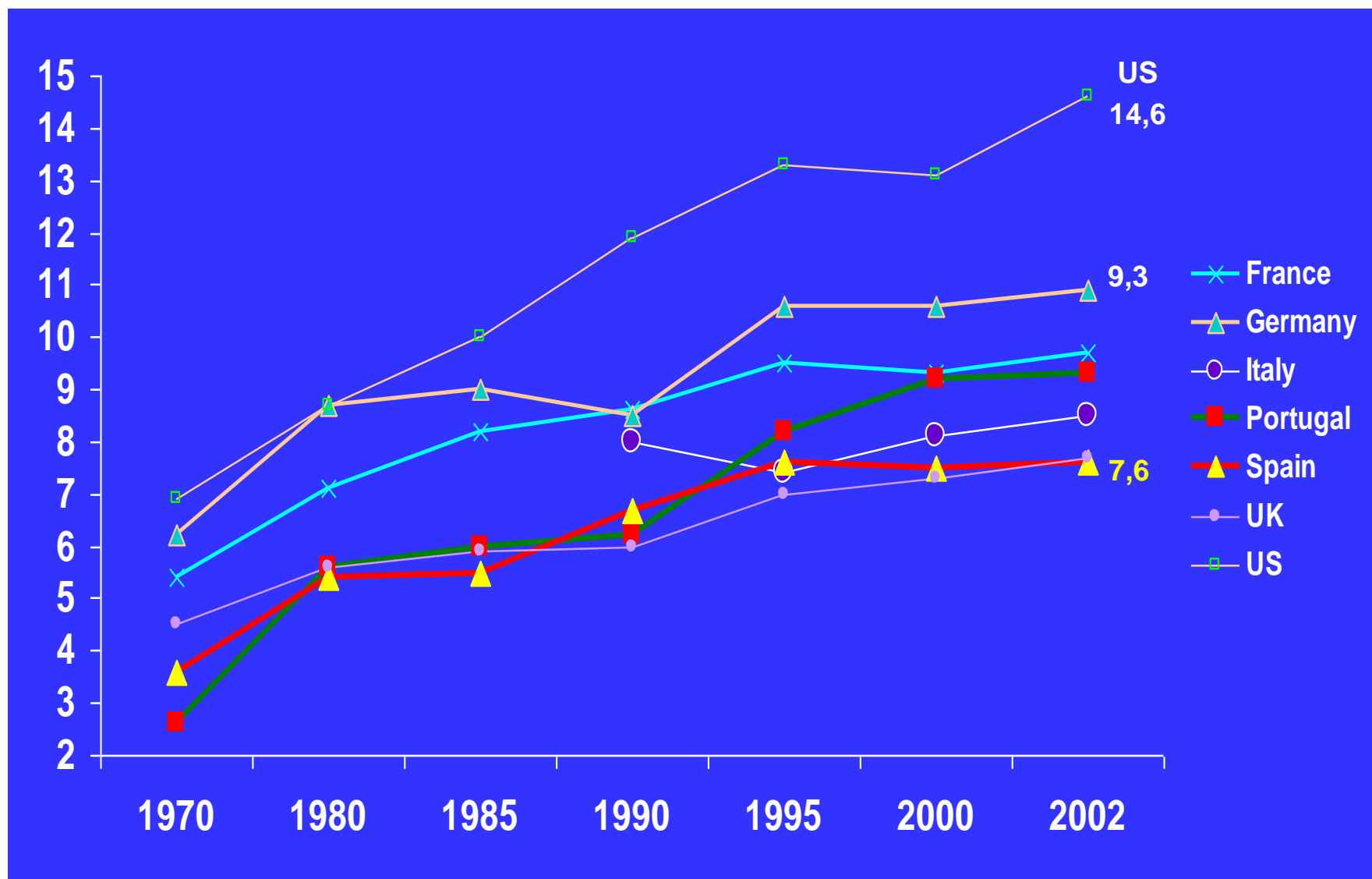
Pathogenesis and management of hepatorenal syndrome in patients with cirrhosis , 13 February 2008

Paolo Angeli, Carlo Merkel

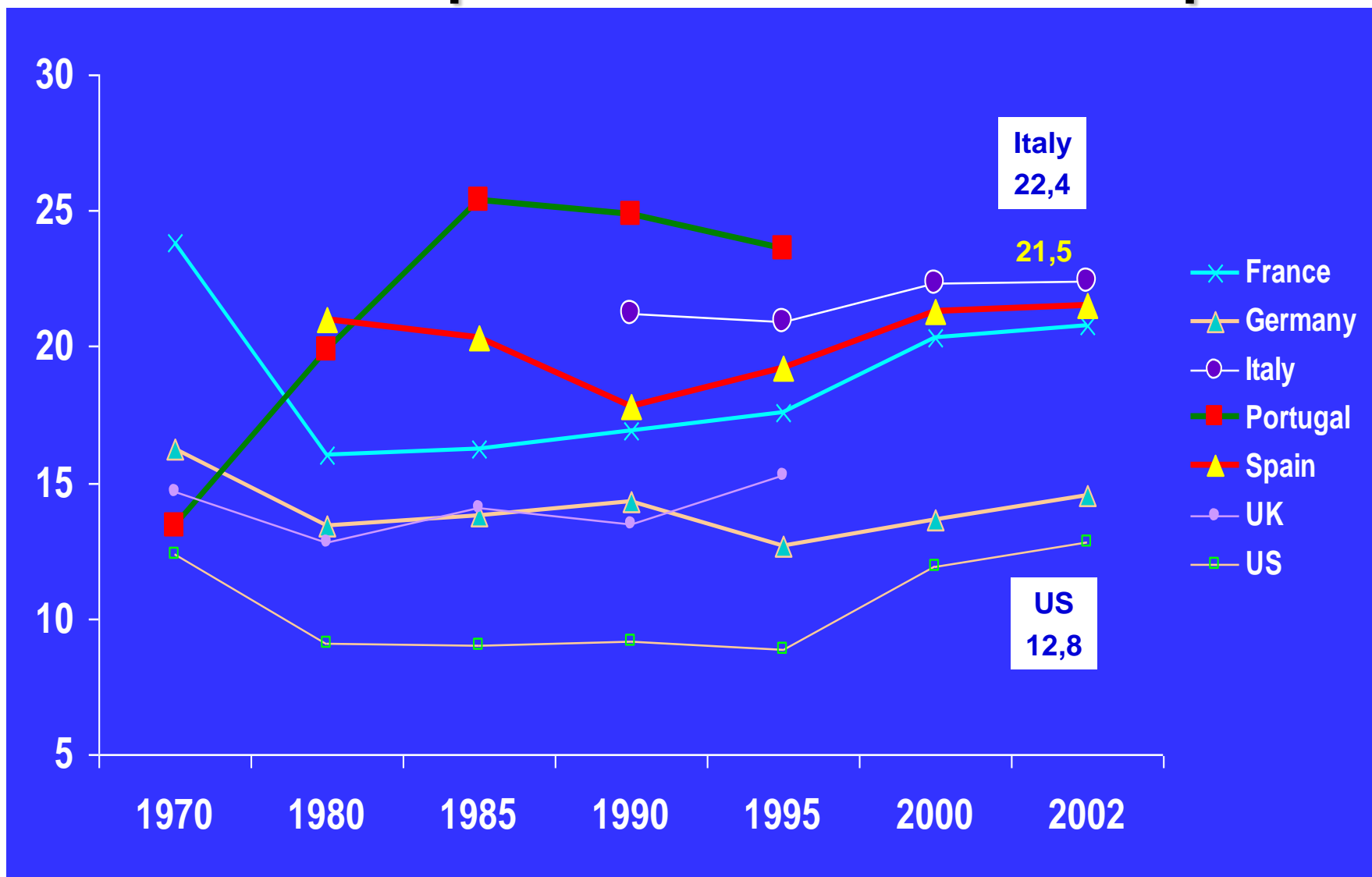
Journal of Hepatology

2008 (Vol. 48Supplement 1, Pages S93-S103)

Health Care Expenditures. Percentage of GDP



Pharmaceutical Expenditure as % of Health Spending



Public Health Burden of HCV for 2010-2019

- **Predicted 1.5-2-fold ↑ HCV mortality for US, France, Spain, Switzerland, England, Australia and Canada—1 million years of advanced liver disease**
 - \$11 billion direct medical care costs
- **Observed increase –resource use England, US, Canada**
 - mortality rates in England, US

→ Wong JB *Am J Pub Health*2000;90:1562; Armstrong GL *Hepato* 2000;31:777; Kim WR *Hepato*2002;36:S30; El-Serag H *Hepato*2002;36:S74; Sagmeister M *Eur J Gastroenterol Hepato*2002;14:25; Davis GL *Liv Transpl* 2003; 9:331; Deuffic J *Hepato*2004;40:319; Buti M *J Hepato*2005;42:639; Grant WC *Hepato*2005;42:1406; Nguyen GC *Clin Gastroenterol Hepato*2007;5:1092; Sweeting MJ *J Vir Hep*2007;14:570; Wise M *Hepato*2008;47:128; Mann *EpiInfect*2009;137:513

Antiviral Treatments

→ Hepatitis B

- Interferon or Pegylated interferon. Limited duration
- Nucs: Lamivudine, Adefovir Dipivoxil, Entecavir, Telbivudine and Tenofovir. Indefinite duration
- Control viral replication

→ Hepatitis C

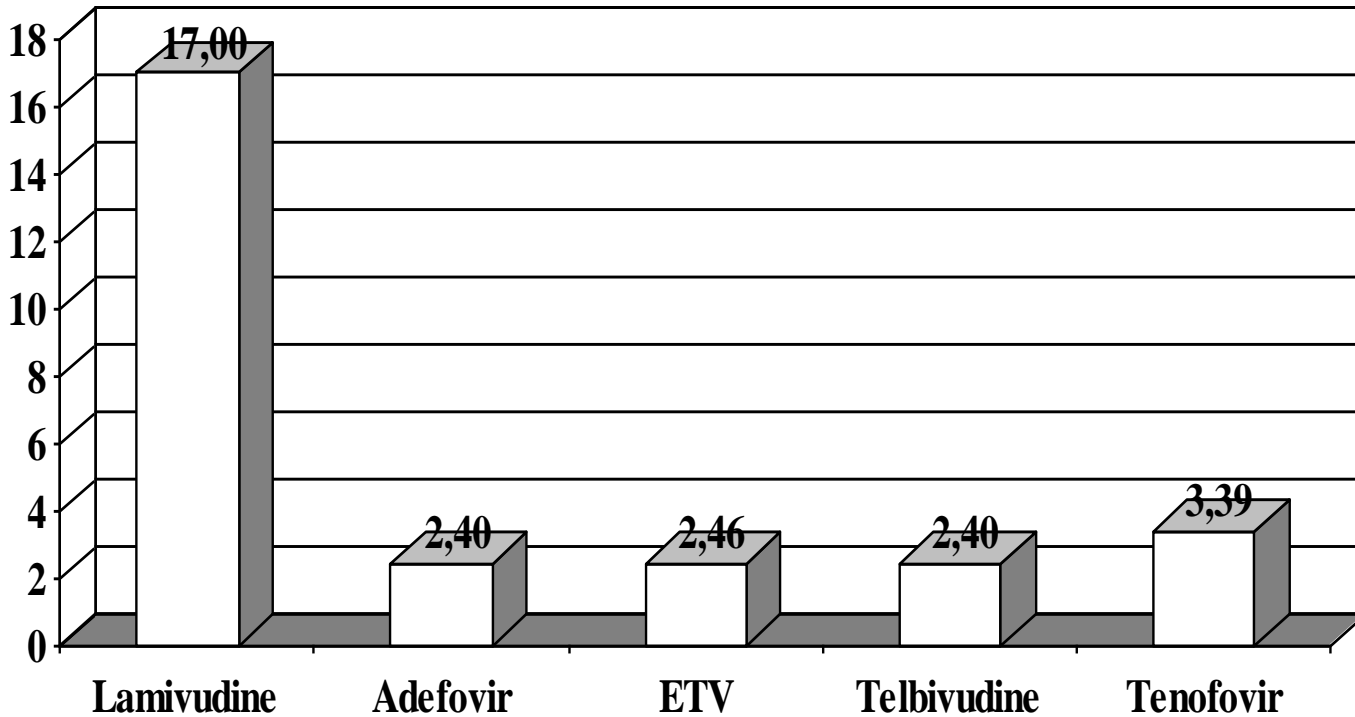
- Pegylated Interferon plus Ribavirin
 - Genotype 1 48 weeks
 - Genotype 2&3 24 weeks
 - Response Guided therapy
- Hepatitis C is a curable disease. Limited duration

Hepatitis B Drug Costs in Spain

Drug cost	Annual cost (€)
Lamivudine	679
Adefovir dipivoxil	4,895
Entecavir	4,745
Telbivudine	4,745
Tenofovir	3,475
Pegylated Interferon	11.800
Rescue therapy (LAM+ADV)	5,574
Rescue therapy (ETV and TDF)	8,220

Years of Drug Yielding Identical 1-year Pegylated Interferon Cost in Spain

Years



Cost-effectiveness Analysis

- Accounts for death, disability, discomfort, drug toxicity and costs
- Considers drugs, tests and disease costs
- Permits comparison between alternative uses of resources

Cost with New Drug - Cost with Standard Care

Effectiveness with New Drug – Effectiveness with Std Care

Incremental Costs

Dominated

Cost-Effectiveness Ratio

**- Effectiveness
+ Cost**

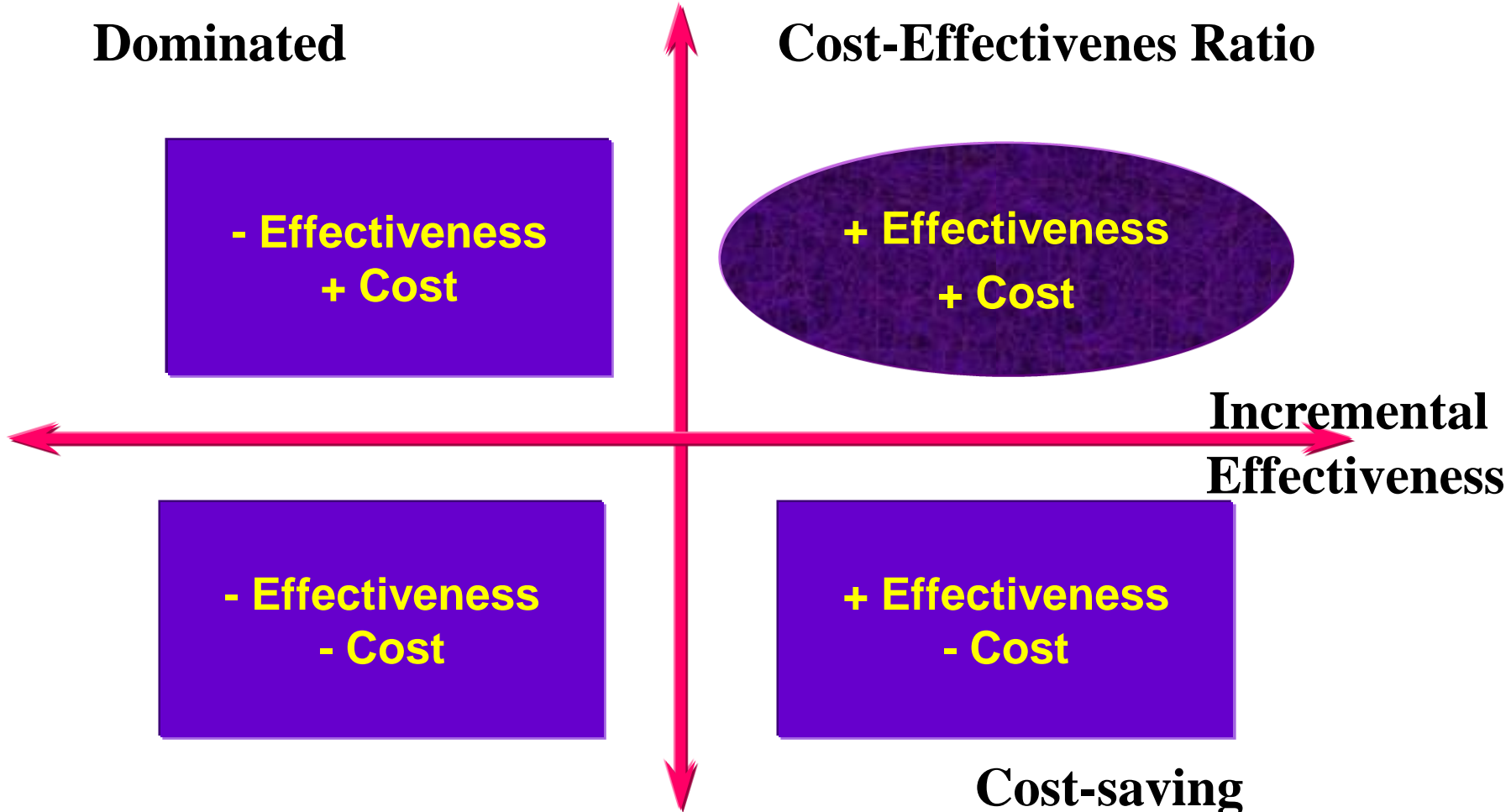
**+ Effectiveness
+ Cost**

Incremental Effectiveness

**- Effectiveness
- Cost**

**+ Effectiveness
- Cost**

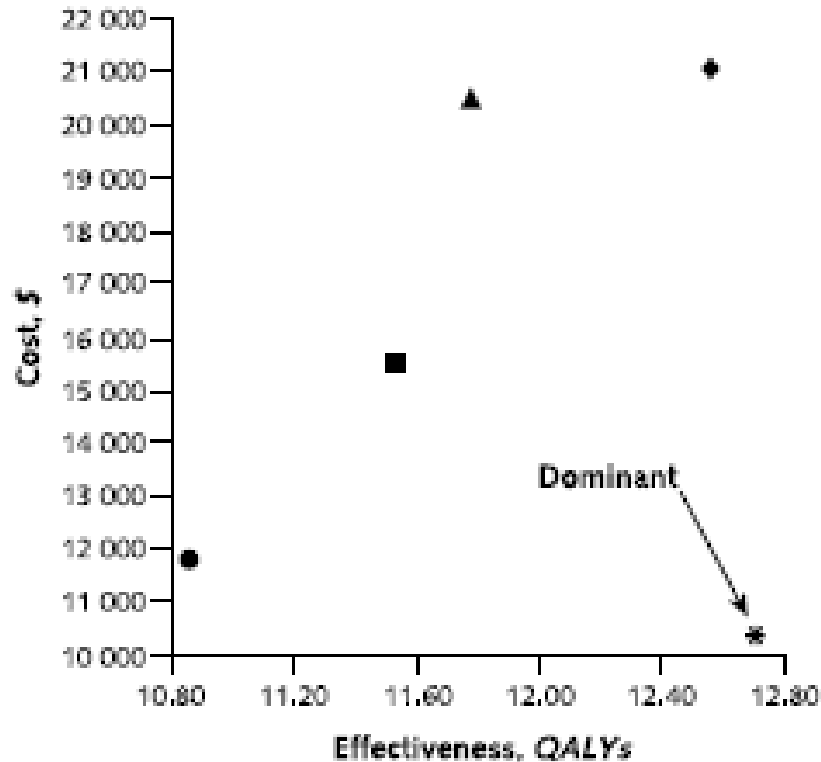
Cost-saving



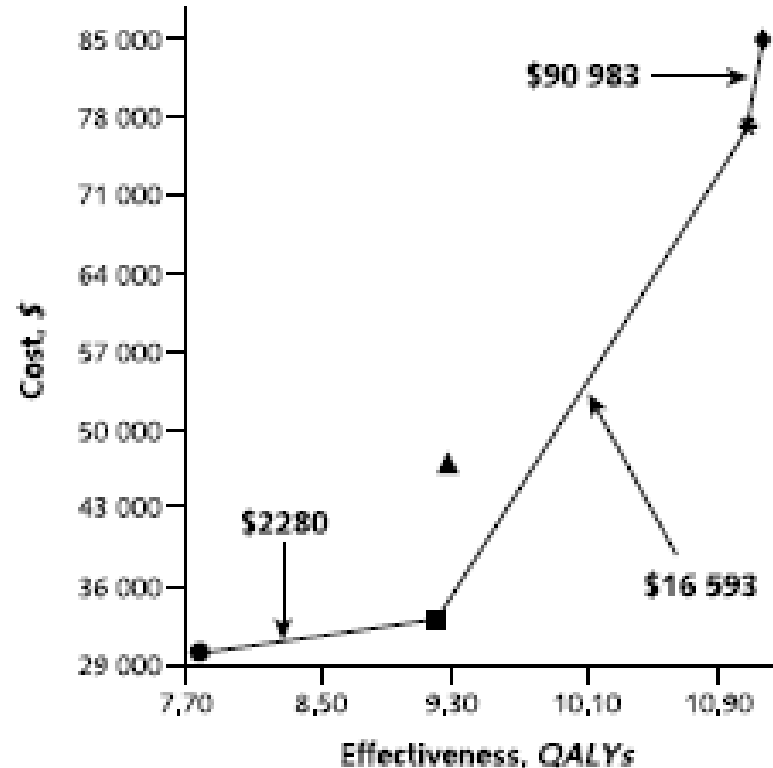
Chronic Hepatitis B

Cost-effectiveness analysis

HBeAg positive

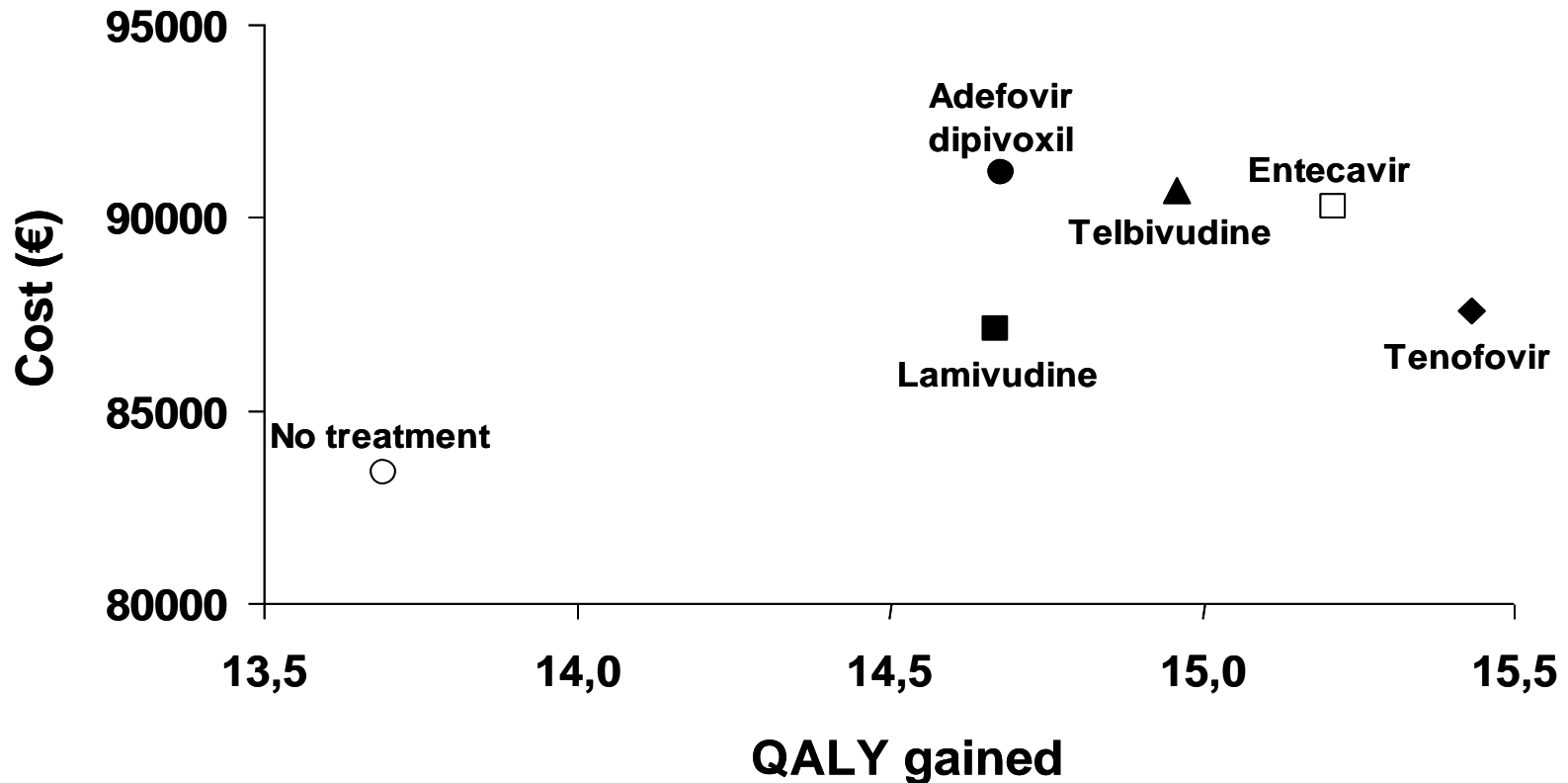


HBeAg negative

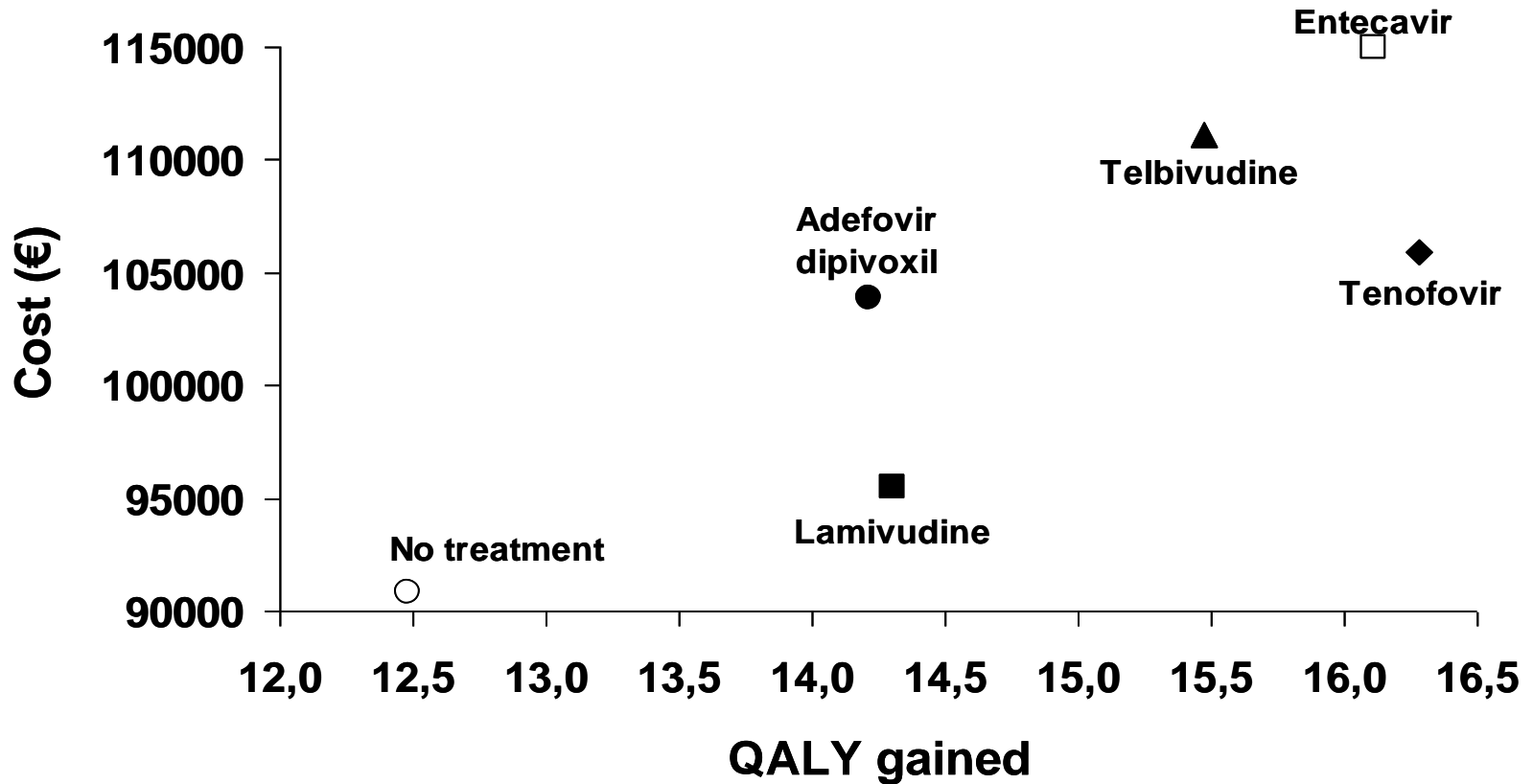


- No treatment
- Interferon
- ▲ Lamivudine
- ◆ Adefovir
- * Adefovir salvage

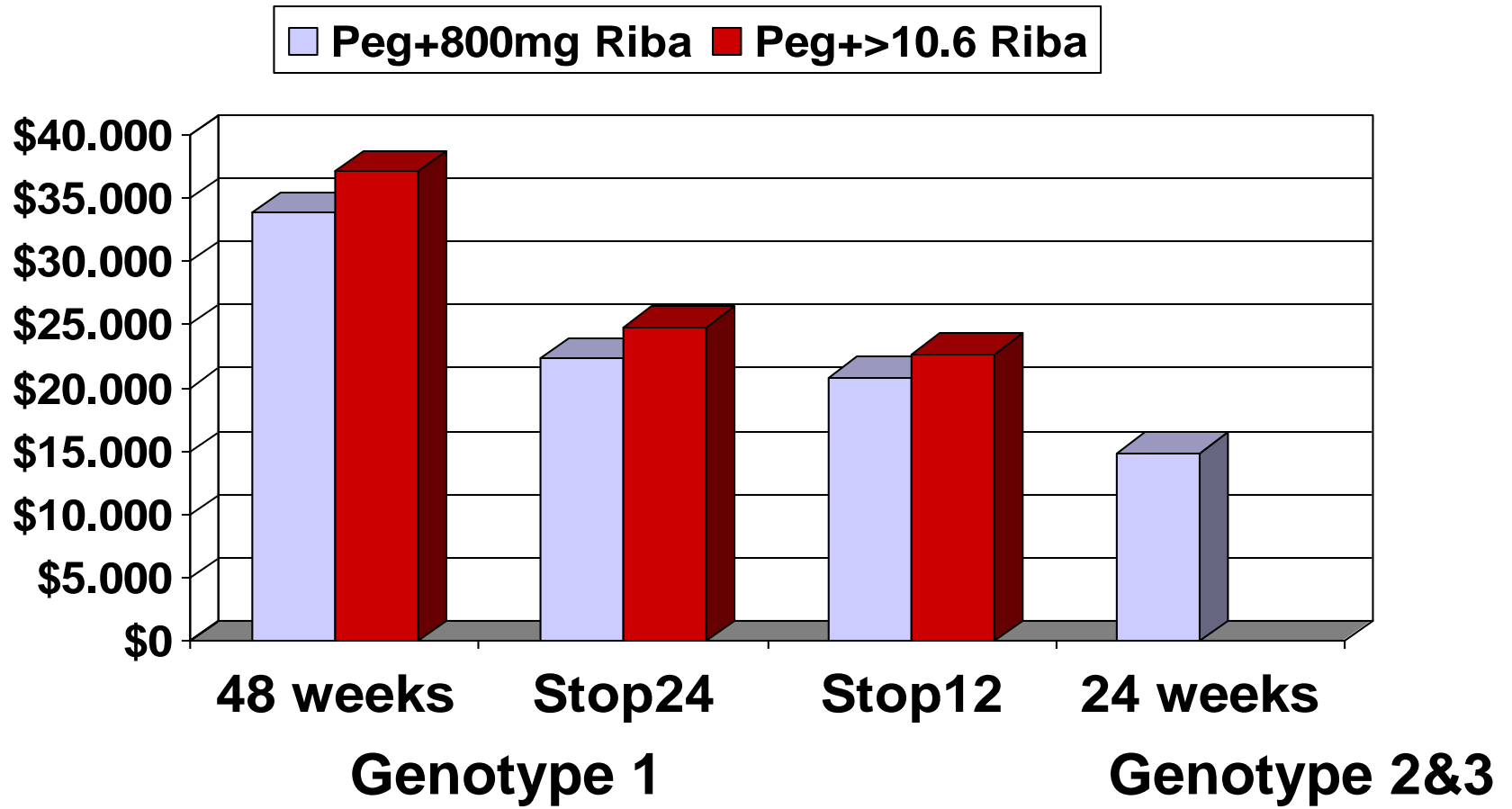
Lifetime costs (€, year 2008 values) and QALY gained in HBeAg positive patients



Lifetime costs (€, year 2008 values) and QALY gained in HBeAg negative patients



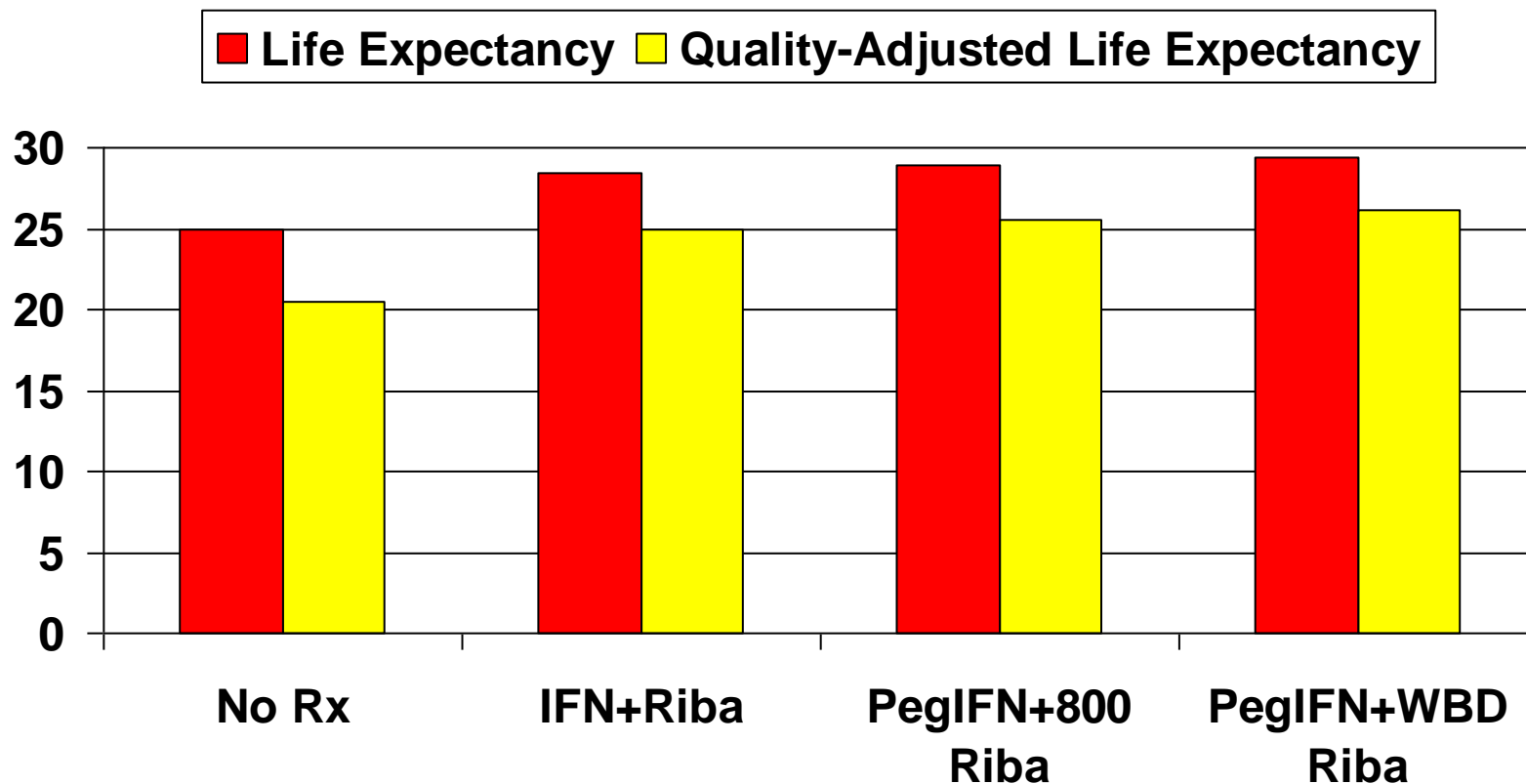
Hepatitis C. Antiviral Drug Costs



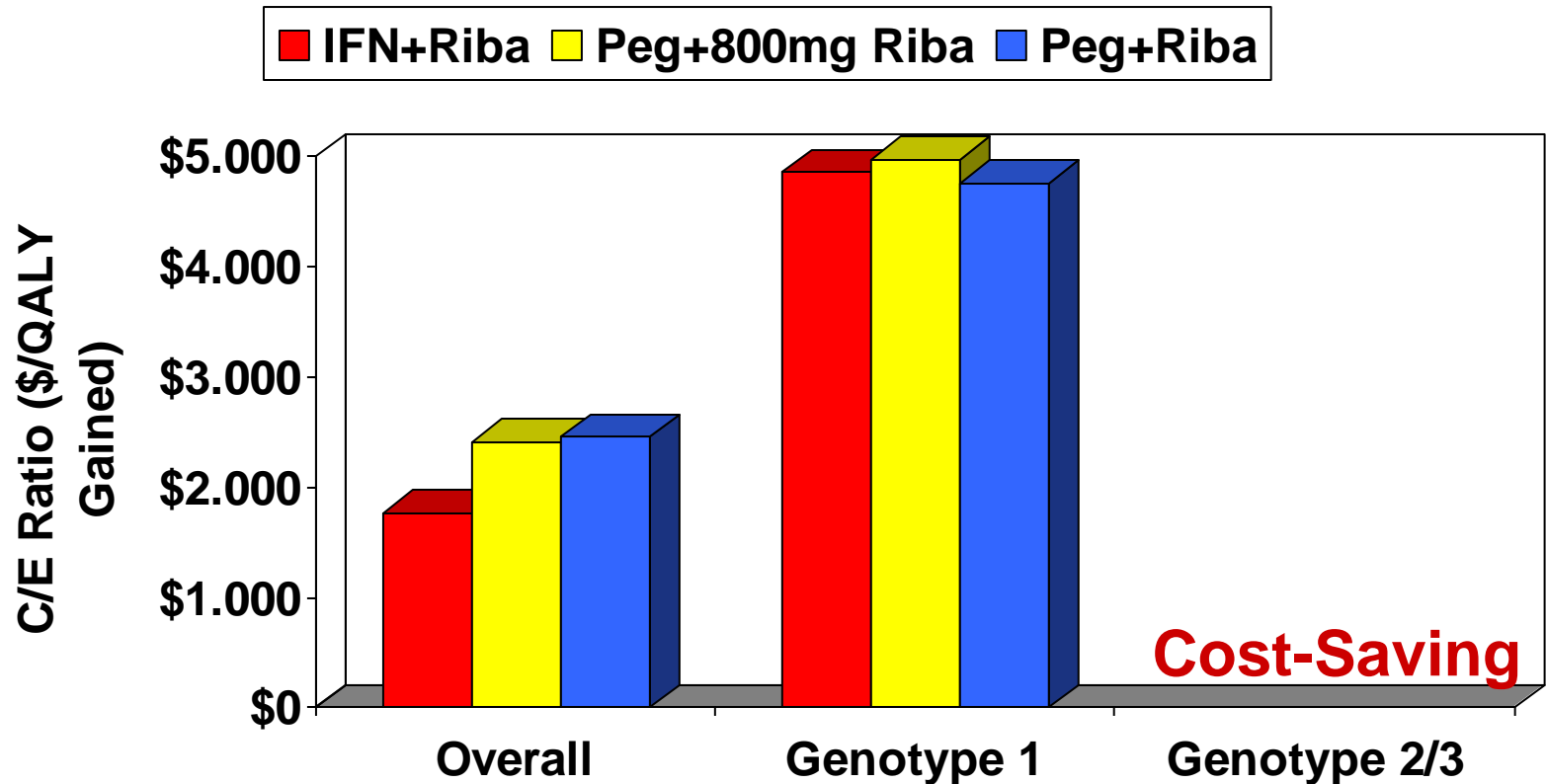
Management algorithms decrease drug costs by ~43%

Chronic Hepatitis C

Long-Term Effectiveness of Antiviral Therapy



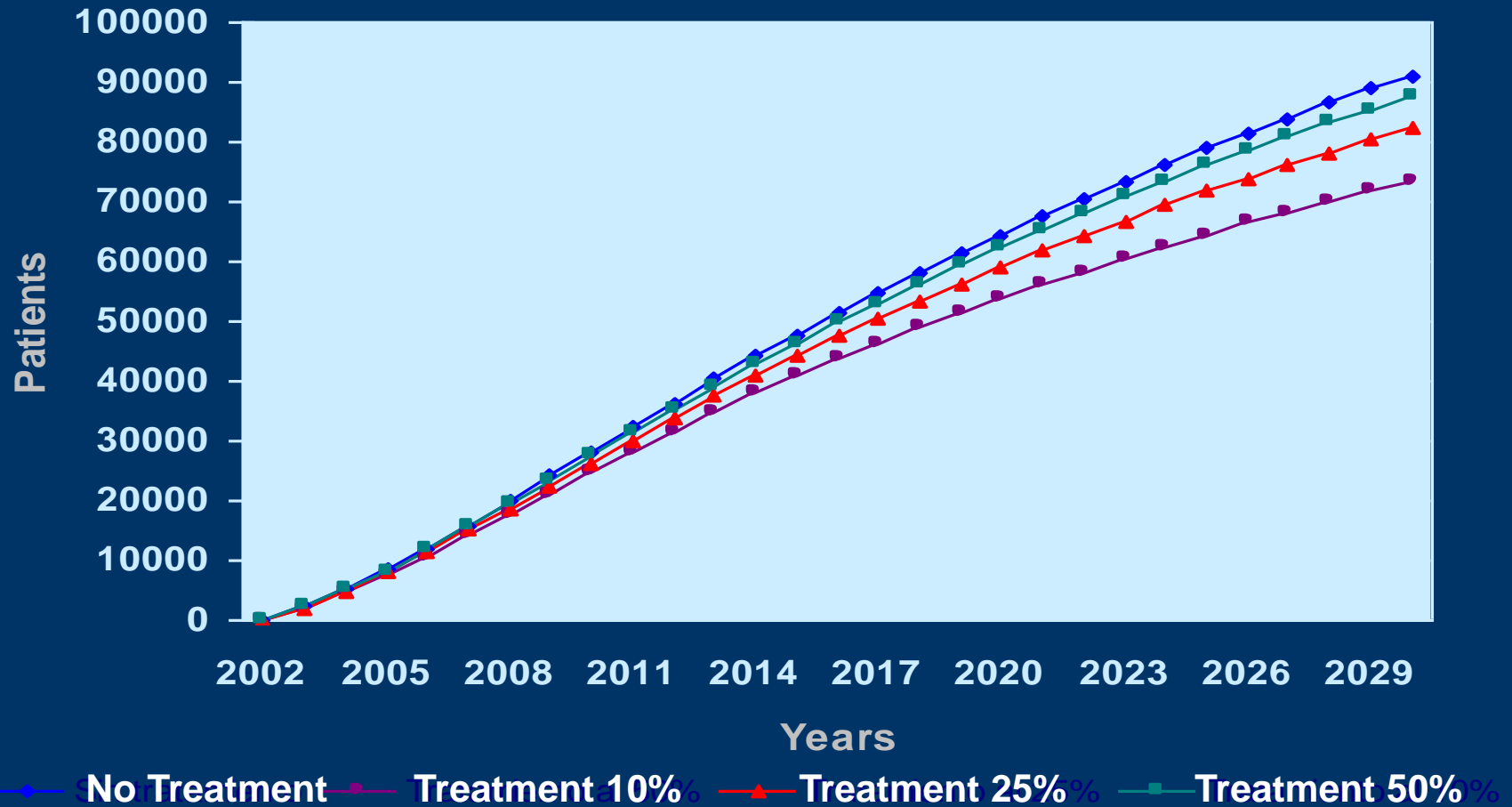
Marginal Cost-effectiveness vs No Antiviral Therapy



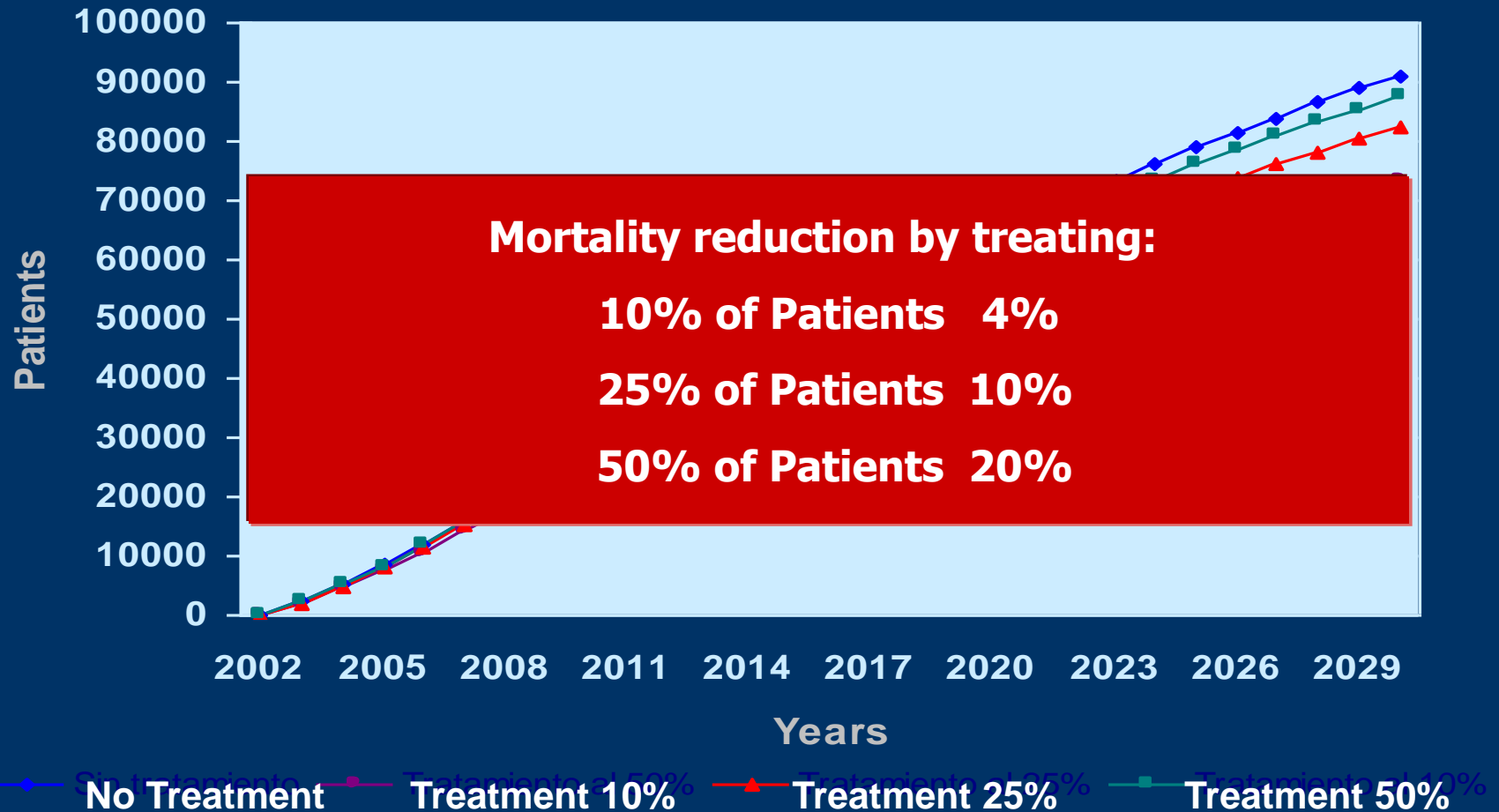
Hepatitis C Treatment Cost-Effectiveness Analyses

- 1990-March 2007: 42 publications
- Interferon, Interferon and Ribavirin and Pegylated interferon and ribavirin
- “Naïve”, Relapse and Non-responsive Patients
- Most effective treatment
 - 3,6-4,7 Life years gained
- Reasonably cost-effective
 - ICUR ranged from cost-saving to 84.700Euros/QALY compared to Interferon and ribavirin

Impact of Hepatitis C Therapy on Liver Related Mortality



Impact of Hepatitis C Therapy on Liver Related Mortality



Limitations

- Analysis based in several assumptions
- Efficacy Rates of Treatment obtained from studies with short medium follow-up (2-5 years)
- No long-term results
- Cost of stages of the disease and drugs are country -dependent
- Only Direct Cost are evaluated

Conclusions

Hepatitis B and C are associated with substantial morbidity, mortality, and costs

Prior studies suggest that treatments for hepatitis B and C should be cost-saving or cost-effective

There is a need to continue to perform health economic analyses to assess value

Acknowledgments

VIrGIL

Berlian I. Idris

Max Brosa

Jan H. Richardus

Solko W. Schalm

Rafael Esteban

Pharmacoeconomics & Outcomes

Research Iberia

Miguel Angel Casado

**University School Of Medicine, Boston,
Massachusetts, USA**

John Wong