UNIVERSITÀ
DEGLI STUDI DI BARI
ALDO MORO

CORSO DI IGIENE

Scuola
di
Medicina

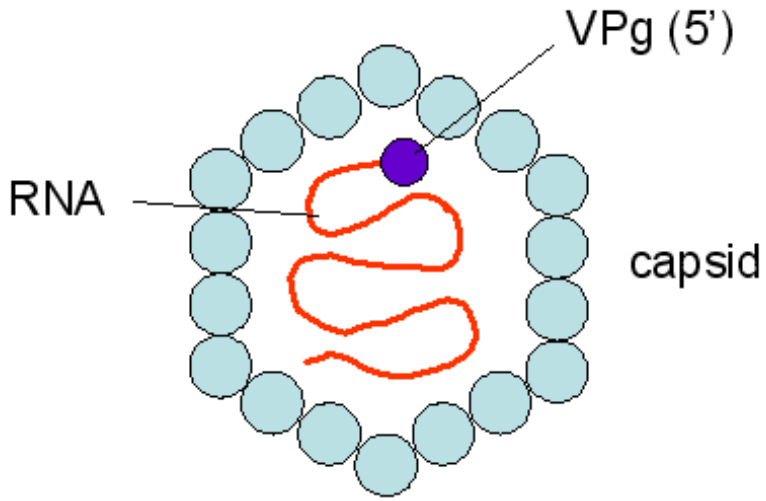
Hepatitis A

Hepatitis A

- Epidemic jaundice attributed to Hippocrates
- Differentiated from hepatitis B in 1940s
- Serologic tests developed in 1970s
- Vaccines licensed in 1995 and 1996

Hepatitis A Virus

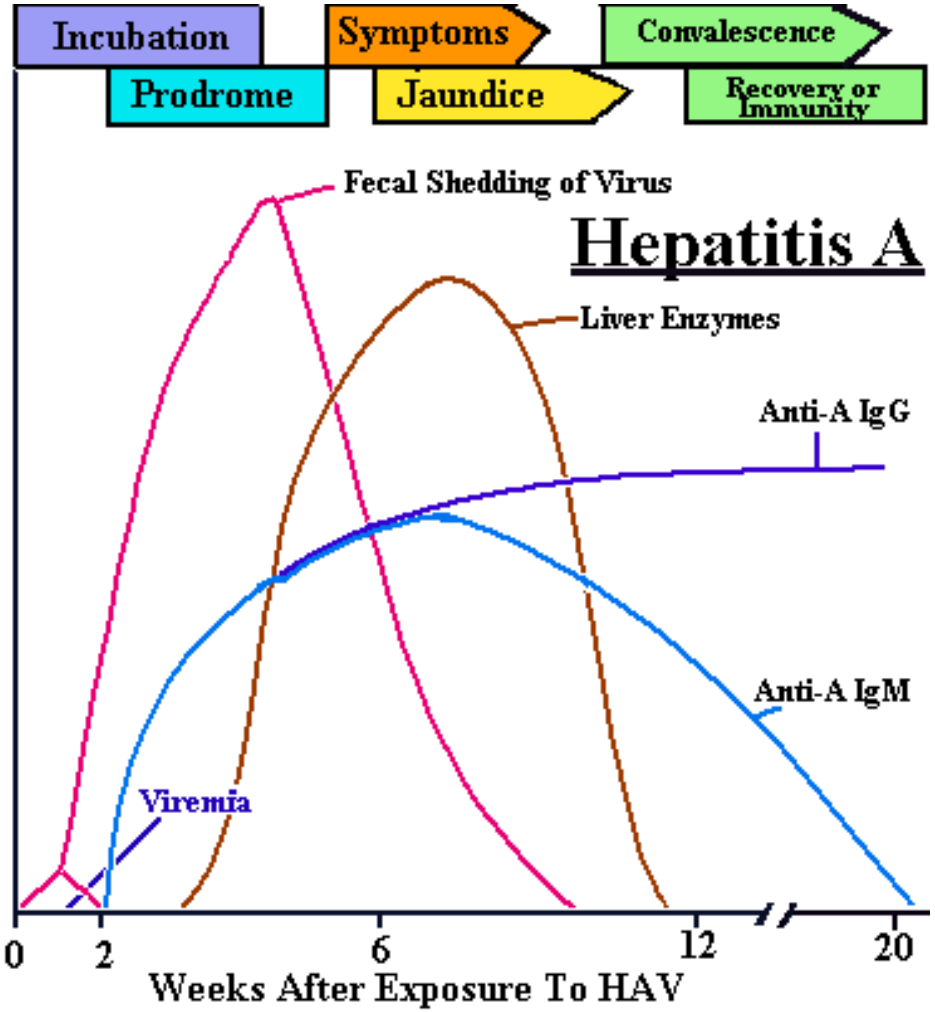
- Picornavirus (RNA)
- Humans are only natural host
- Stable at low pH
- Inactivated by temperature of 185°F or higher, formalin, chlorine



Hepatitis A Pathogenesis

- Entry into mouth
- Viral replication in the **liver**
- Virus present in **blood** and **feces** 10-12 days after infection
- Virus **excretion** may continue for up to 3 weeks after onset of symptoms

Hepatitis A Pathogenesis



Hepatitis A Clinical Features

- **Incubation** period 28 days (range 15-50 days)
- Illness not specific for hepatitis A
- Likelihood of symptomatic illness directly related to age
- **Children generally asymptomatic**, adults symptomatic

Case Definition

acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis

- fever
- headache
- malaise
- anorexia
- nausea
- vomiting
- diarrhea
- abdominal pain

and either

- Jaundice
- elevated serum alanine aminotransferase (ALT) or aspartate aminotransferase (AST) levels

Jaundice

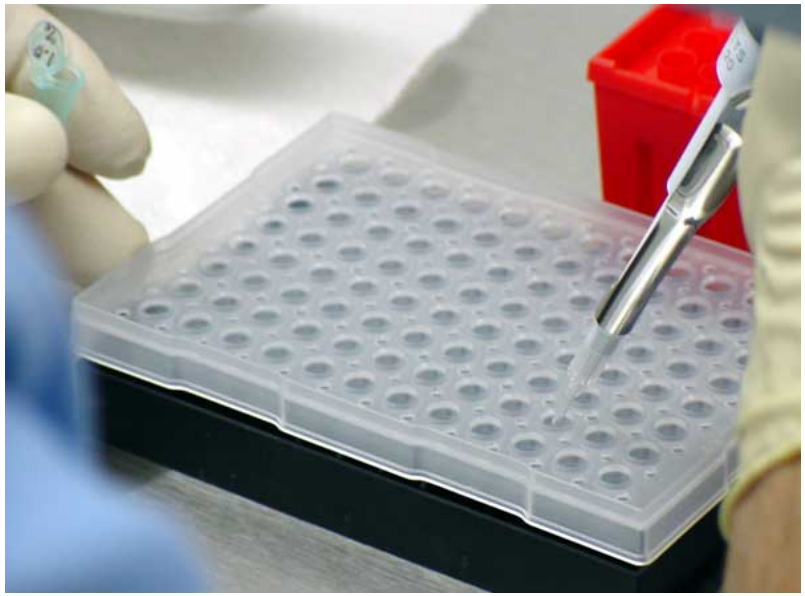
Complications

- autoimmune hepatitis
- subfulminant hepatitis
- fulminant hepatitis

case-fatality rate among persons of all ages was approximately 0.3% but may have been higher among older persons (approximately 2% among persons 40 years of age and older)

Laboratory Diagnosis

- Serologic testing (IgM anti-HAV)
- PCR on stools



Hepatitis A Epidemiology

- **Reservoir**
  - human
- **Transmission**
  - fecal-oral
- **Temporal pattern**
  - none
- **Communicability**
  - 2 weeks before illness to 1 week after onset of jaundice

Hepatitis A: source of infection

Int J Food Microbiol. 2002 May 5;75(1-2):11-8.

Detection of hepatitis A virus in mussels from different sources marketed in Puglia region (South Italy).

Chironna M[1], Germinario C, De Medici D, Fiore A, Di Pasquale S, Quarto M, Barbuti S.

⊕ **Author information**

Abstract

Hepatitis A virus (HAV) infection is endemic in Puglia (South Italy). Epidemiological stu
mussels, is a major risk factor for HAV infection, since these products are eaten raw or
chain reaction (RT-PCR) has been shown to be a sensitive technique for the detection
detect the presence of HAV in a large sample of mussels by nested RT-PCR and to co
samples by cell culture infection and RT-PCR confirmation. Two hundred and ninety sa
between December 1999 and January 2000. One hundred samples were collected bef
100 were sampled in different seafood markets. HAV-RNA was detected in 20 (20.0%)
samples, and in 23 (23.0%) of samples collected in the shellfish markets, without any s
collection sources (chi2 = 4.79, p = 0.09). Of the 53 samples found positive by nested
No relationship between viral contamination and bacterial contamination was found (p
techniques in detecting HAV in shellfish and, thus, for the screening of a large sample
depuration methods are needed to obtain virus-safe shellfish and reduce the risk for pu

Hepatitis A: source of infection

Eurosurveillance, Volume 20, Issue 29, 23 July 2015

Research articles

FOOD-BORNE DISEASES ASSOCIATED WITH FROZEN BERRIES CONSUMPTION: A HISTORICAL PERSPECTIVE, EUROPEAN UNION, 1983 TO 2013

L Tavoschi (Lara.Tavoschi@ecdc.europa.eu)[1], E Severi[1], T Niskanen[1], F Boelaert[2], V Rizzi[2], E Liebana[2], J Gomes Dias[1], G Nichols[1,3], J Takkinen[1], D Coulombier[1]

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2. European Food Safety Authority (EFSA), Parma, Italy
3. Current affiliation: Public Health England (PHE), Colindale, London, United Kingdom

Citation style for this article: Tavoschi L, Severi E, Niskanen T, Boelaert F, Rizzi V, Liebana E, Gomes Dias J, Nichols G, Takkinen J, Coulombier D. Food-borne diseases associated with frozen berries consumption: a historical perspective, European Union, 1983 to 2013. Euro Surveill. 2015;20(29):pii=21193. Article DOI: http://dx.doi.org/10.2807/1560-7917.ES2015.20.29.21193

Date of submission: 12 February 2015

Epidemiological investigations of outbreaks of hepatitis A virus (HAV) and norovirus (NoV) infections in the European Union/European Economic berries as a vehicle of infection. Given th we undertook a review of the existing evi this product. We searched the literature a outbreak/contamination events associate evaluation of the sources to identify area (i.e. outbreak, food contamination) in the identified pathogens were NoV, HAV and 27 events with over 15,000 cases reporte overlapping sources for the period 2005- 62%. Consumption of frozen berries is as contamination events, particularly after 2

Hepatitis A: source of infection

Int J Food Microbiol. 2002 Feb 25;73(1):29-34.

The survival of hepatitis A virus in fresh

Croci L[1], De Medici D, Scalfaro C, Fiore A, Toti L.

⊕ **Author information**

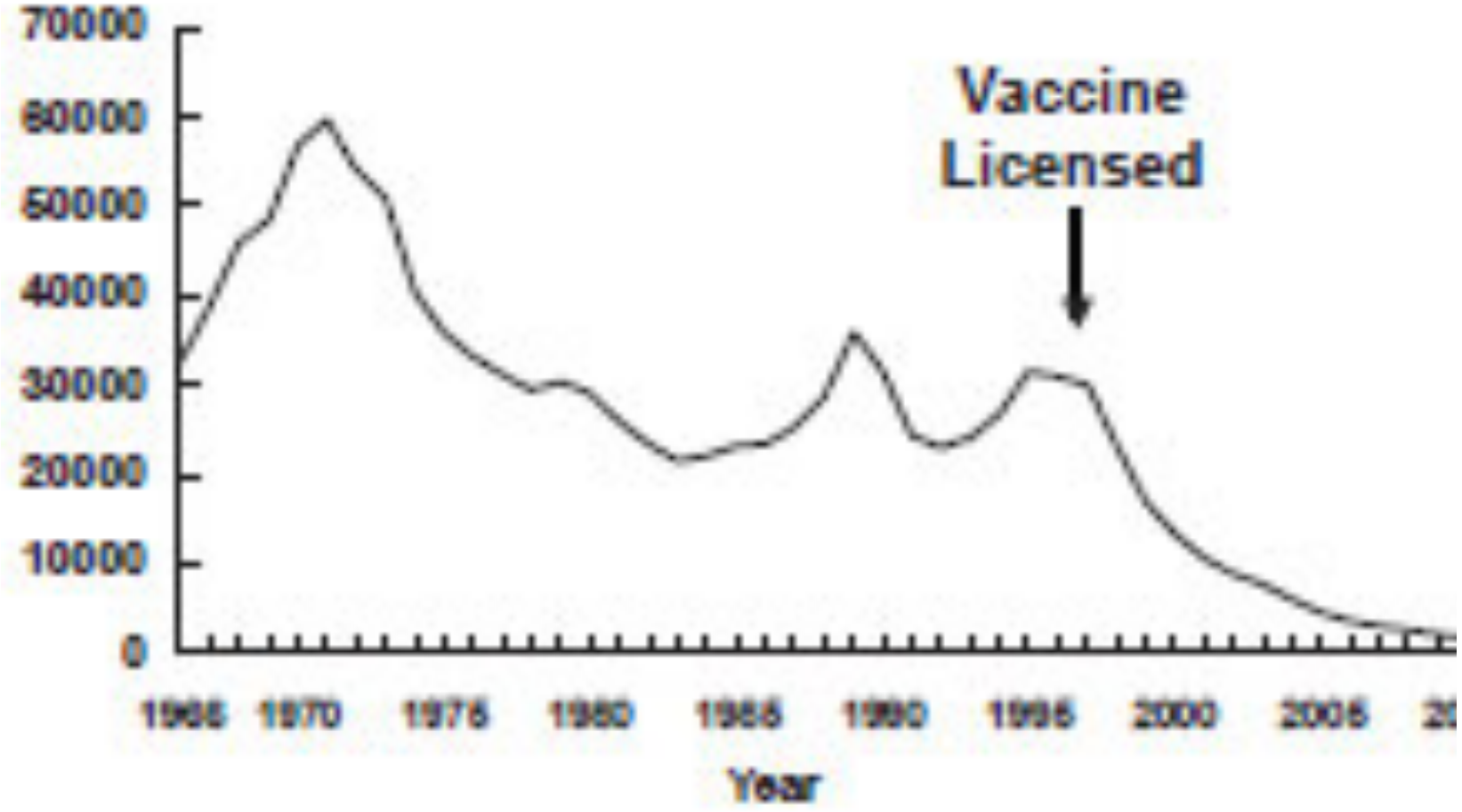
Abstract

Fresh produce has been repeatedly implicated as the
objective of the present study was to evaluate the HA
and the persistence of the HAV. To this end, the autho
sterile distilled water supplemented with an HAV susp
contamination, the samples were stored at 4 degrees
positive samples were subjected to the quantitative determination using cell cultures. The three vegetables differed in terms of their adsorption capacity. The highest quantity of virus was consistently detected for lettuce, for which only a slight decrease was observed over time (HAV titre = 4.44 +/- 0.22 log TCID50/ml at day 0 vs. 2.46 +/- 0.17 log TCID50/ml at day 9, before washing). The virus remained vital through the last day of storage. For the other two vegetables, a greater decrease was observed, and complete inactivation had occurred at day 4 for carrot and at day 7 for fennel. For all three vegetables, washing does not guarantee a substantial reduction in the viral contamination.

Groups at increased risk for hepatitis A

- international travelers
- contacts of recent international adoptees from HAV endemic countries
- men who have sex with men
- users of illegal drugs

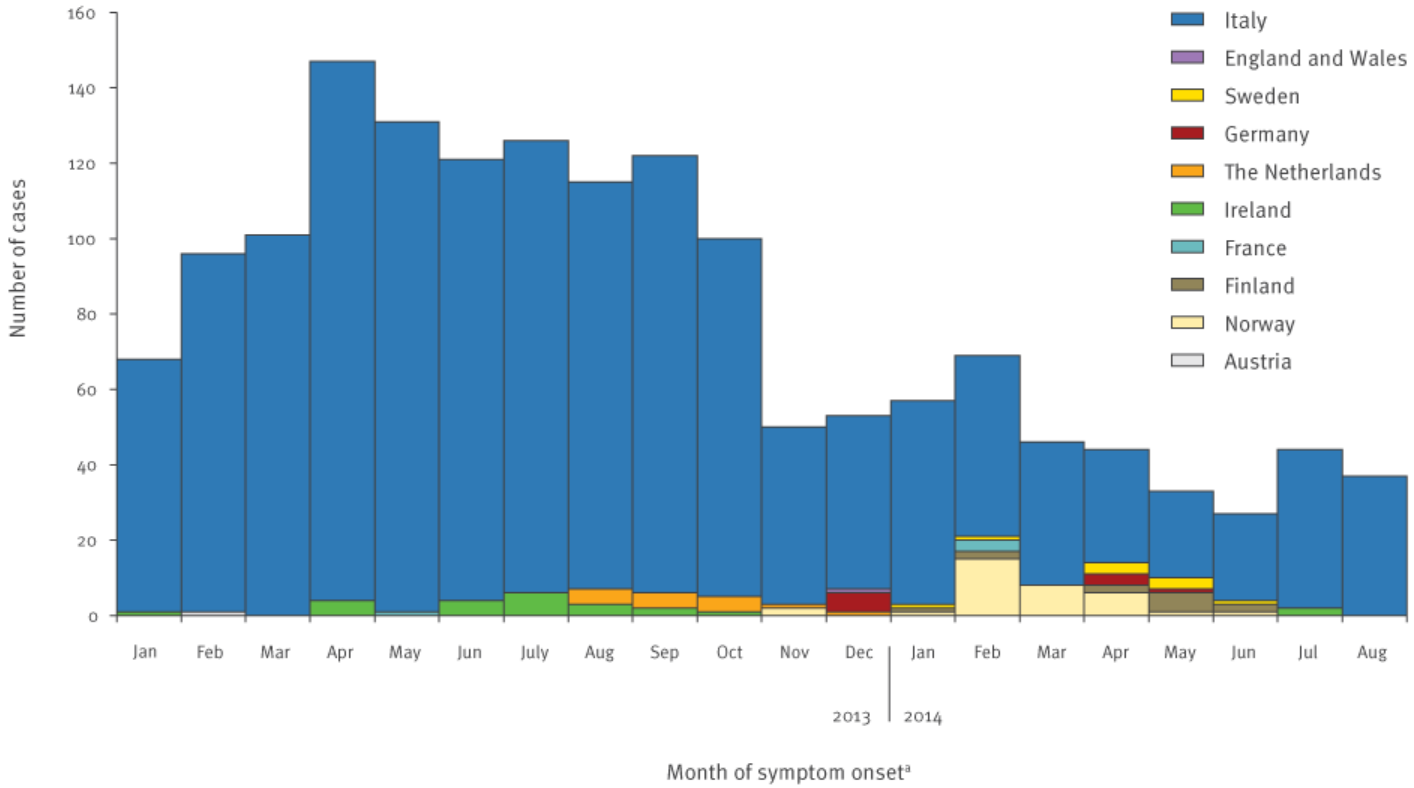
Hepatitis A — United States, 1966-2011



Hepatitis A — Europe 2013-14

FIGURE 2

Hepatitis A cases by probable country of infection and month of symptom onset[a], European Union/European Economic Area countries, 1 January 2013–31 August 2014 (n = 1,587[b])



[a] Or month of testing when symptom onset date was unavailable.
[b] Information on month of symptom onset was unavailable for two cases.

Hepatitis A Vaccines

- Inactivated whole-virus vaccines
- formulations
  - pediatric formulations approved for persons 12 months through 18 years
  - adult formulations approved for persons 19 years and older

Hepatitis A Vaccine Immunogenicity and efficacy

- **Adults**
  - more than 95% seropositive after one dose
  - nearly 100% seropositive after two doses
- **Children and Adolescents**
  - more than 97% seropositive after one
  - 100% seropositive after 2 doses (in clinical trials)
- Efficacy among adults and children arounded 94-100%

ACIP Recommendation for Routine Hepatitis A Vaccination of Children

- All children should receive hepatitis A vaccine at **12 through 23 months of age**
- Vaccination should be integrated into the routine childhood vaccination schedule
- Children who are not vaccinated by 2 years of age can be vaccinated at subsequent visits

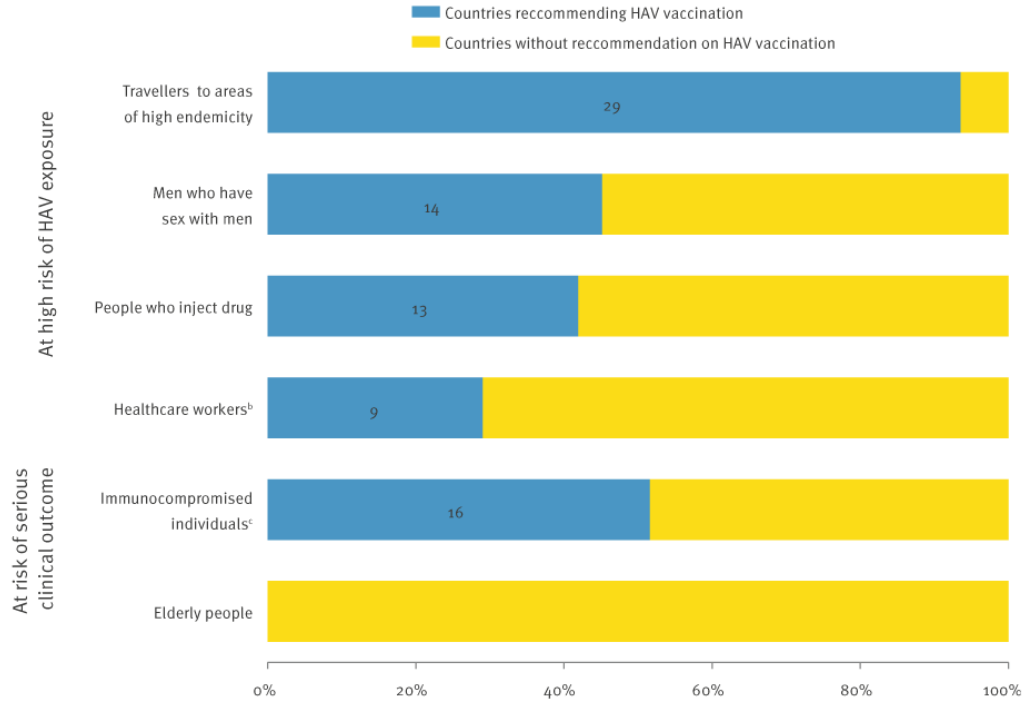
ACIP Recommendation for Routine Hepatitis A Vaccination of Children

- States, counties, and communities with existing hepatitis A vaccination programs for children 2 through 18 years of age should maintain these programs
- New efforts focused on routine vaccination of children 12 months of age should enhance, not replace ongoing vaccination programs for older children
- In areas with without an existing hepatitis A vaccination program catch-up vaccination of unvaccinated children 2 through 18 years of age can be considered

EU/EEA countries recommending hepatitis A virus vaccination to groups defined by the WHO as at high risk for exposure or at risk of serious clinical outcome, 2013

FIGURE 2

EU/EEA countries recommending hepatitis A virus vaccination to groups defined by the WHO as at high risk for exposure or at risk of serious clinical outcome, 2013 (n = 30[a])



EEA: European Economic Area; EU: European Union; HAV: hepatitis A virus; HIV: human immunodeficiency virus; WHO: World Health Organization.

[a] Data from Cyprus were not available.
[b] Some countries recommend HAV vaccination only for specific groups of healthcare workers (e.g. laboratory staff).
[c] Countries recommending HAV vaccination to HIV patients and/or chronic liver disease patients have been included in this category.

Source: Epidemic Intelligence Information System for Vaccine Preventable Diseases, websites of National Public Health Institutes and Ministries of Health in the European Union and European Economic Area.

Twinrix

- Combination hepatitis A vaccine (pediatric dose) and hepatitis B (adult dose)
- Schedules
  - 0, 1, 6 months, or
  - 0, 7, 21to 30 days and a booster dose 12 months after first dose
- Approved for persons 18 years of age and older

Hepatitis A Serologic Testing

- Prevaccination
  - not indicated for children
  - may be considered for some adults and older adolescent
- Postvaccination
  - not indicated

Hepatitis A Vaccine Contraindications and Precautions

- Severe allergic reaction to a vaccine component or following a prior dose
- Moderate or severe acute illness

Hepatitis A Vaccine Adverse Reactions

- Local reaction
  - 20%-50%
- Systemic reactions (malaise, fatigue)
  - <10%
- No serious adverse reactions reported

Postexposure Prophylaxis

- Hepatitis A **vaccine** may be used for postexposure prophylaxis in healthy persons 12 months through 40 years of age
- **Immune globulin** is preferred for persons older than 40 years of age, children younger than 12 months of age, immunocompromised persons, and persons with chronic liver disease.

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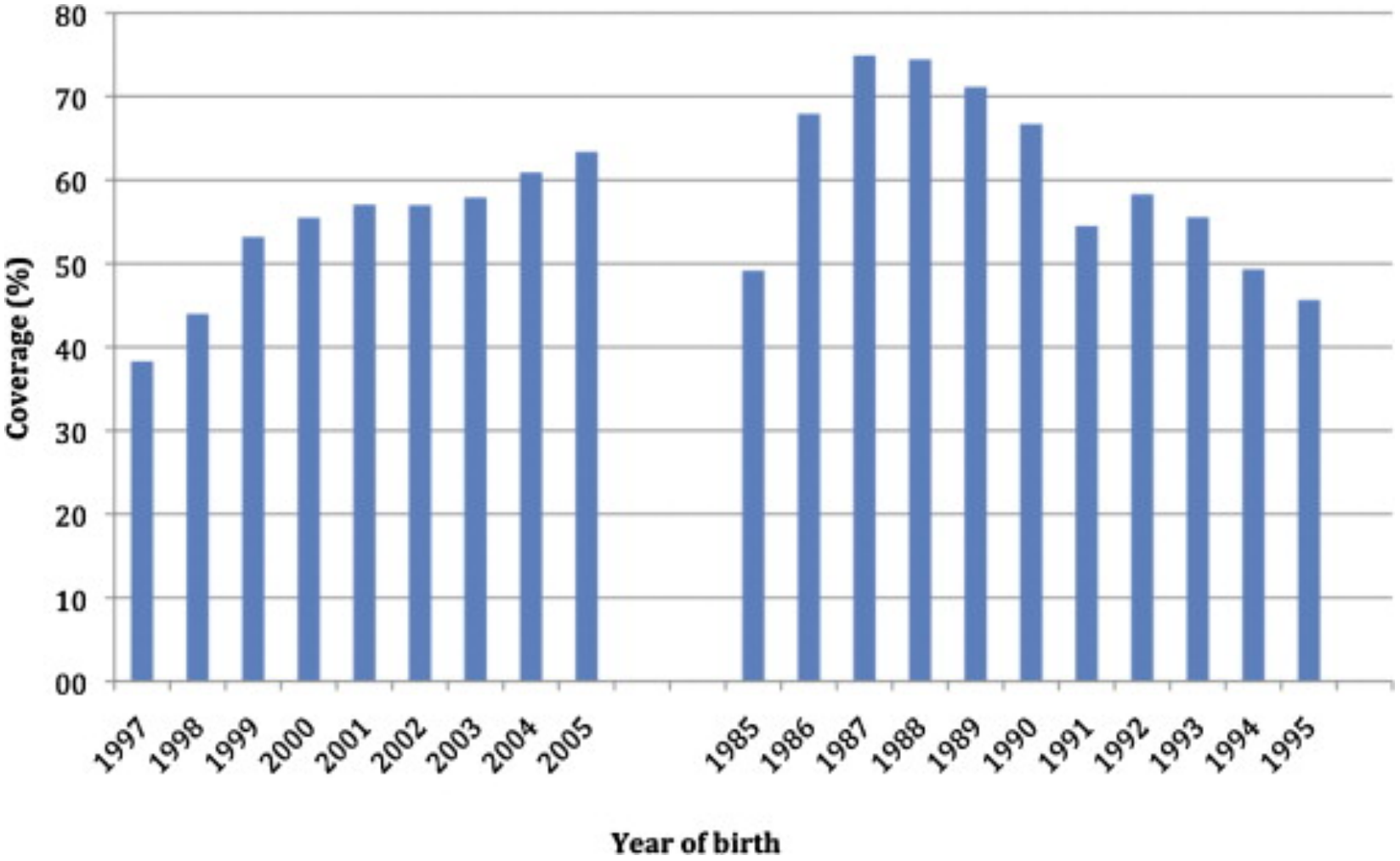
Post marketing evaluation of Hepatitis A UVM: the Apulian case



Hepatitis A vaccine coverage in Puglia. Routine data, 1998–2007

Martinelli D et al, Vaccine 2010

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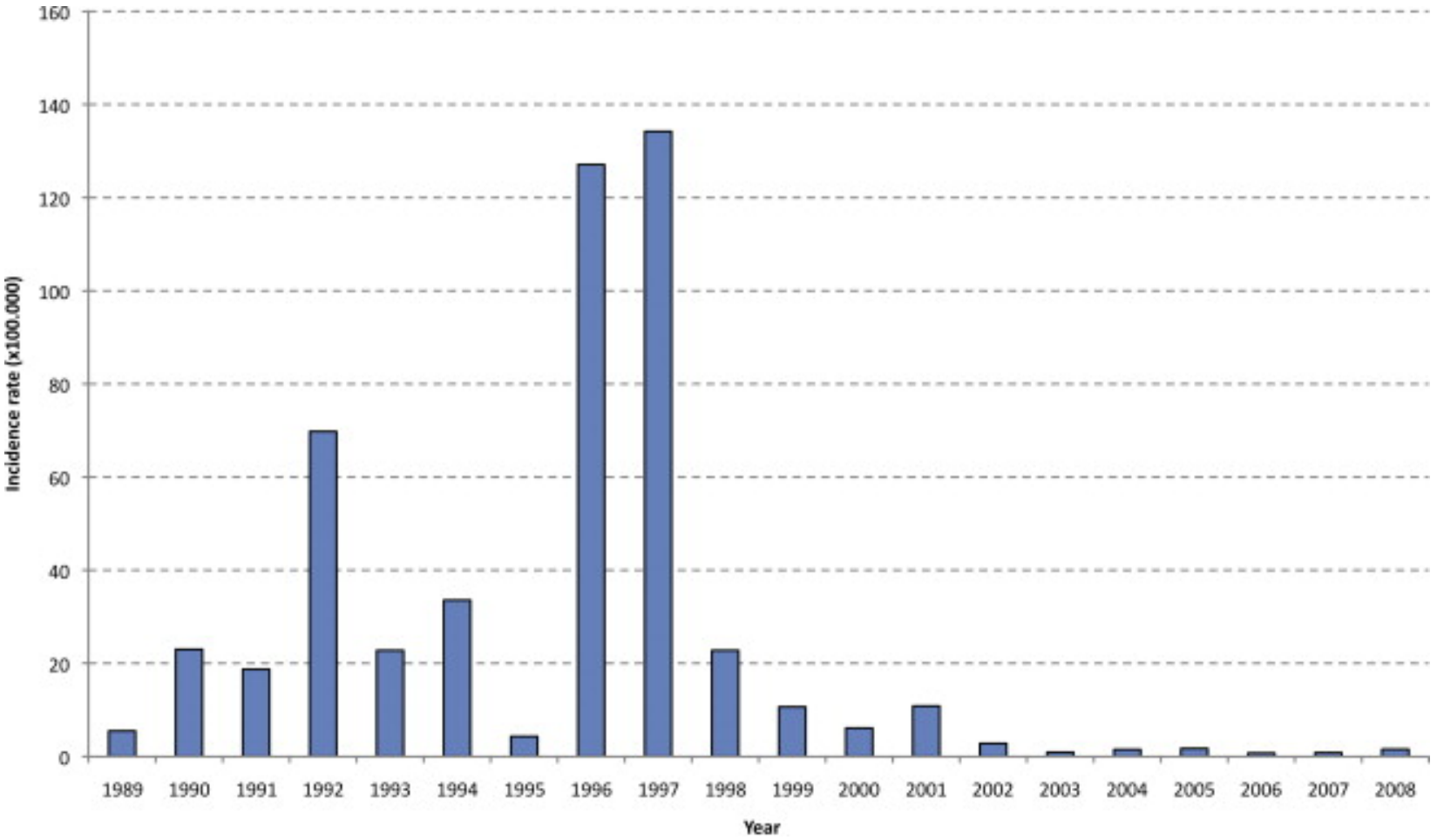

Hepatitis A incidence rate in Puglia, 1989–2008

Martinelli D et al, Vaccine 2010

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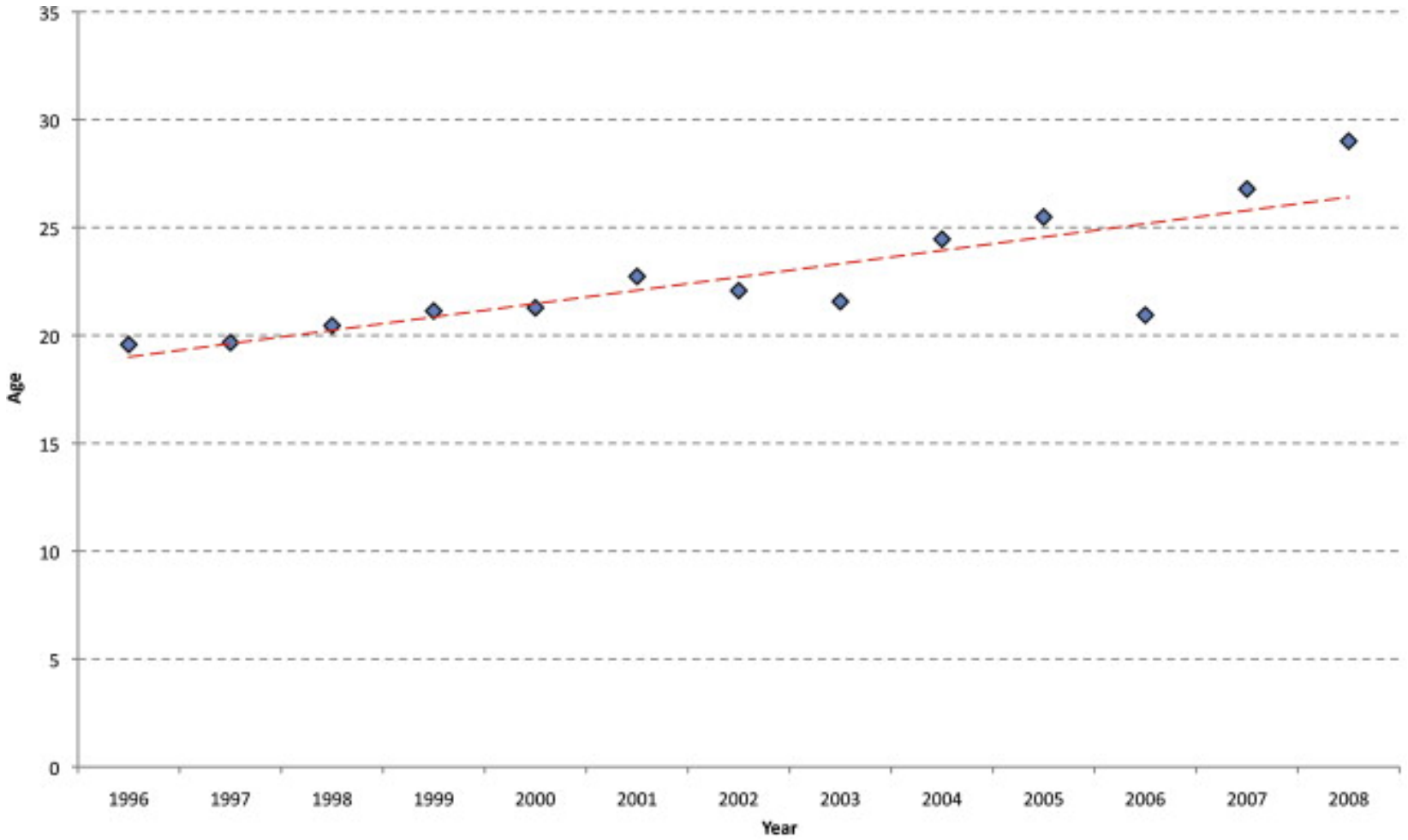


Average age at infection of Hepatitis A cases in Puglia, 1996–2008

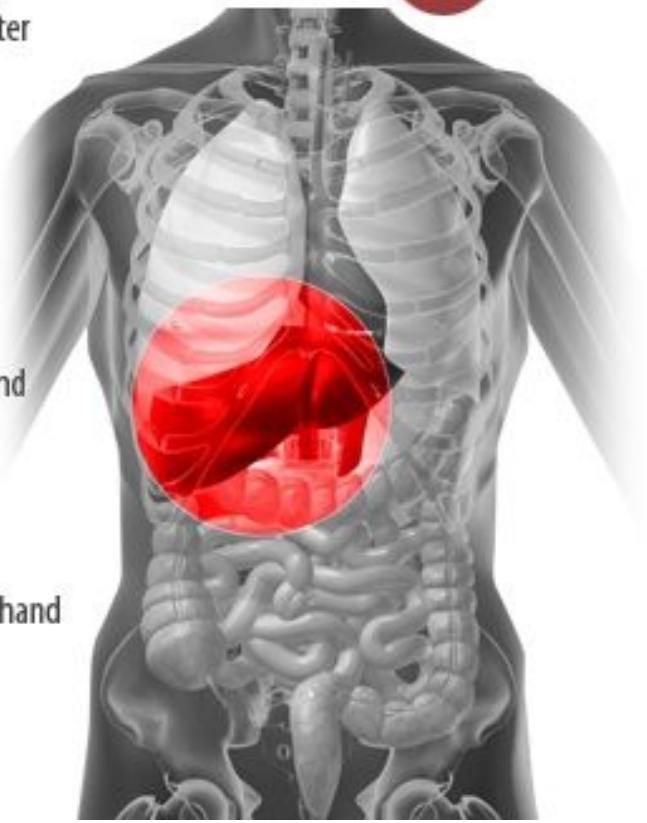
Martinelli D et al, Vaccine 2010

HEPATITIS A FACTS

1. Is a viral infection of the liver spread when faecal matter enters the mouth

2. May last several weeks and can be debilitating but most people recover completely

3. Preventable with careful hand washing, keeping toilets and bathrooms clean, avoiding infected water sources



SYMPTOMS INCLUDE

nausea

vomiting

SPREAD BY

direct contact

food & beverages

cups & spoons

and any other objects handled by the infected person