



**UNIVERSITÀ
DEGLI STUDI DI BARI
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**Department of Biomedical
Science and Human Oncology**

Vaccination coverage in healthcare workers in Italy

**Technical Viral Hepatitis Prevention Board
Meeting**

Barcelona, Spain, November 15-16, 2012

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Agenda

- ✓ Current recommendations in Italy
- ✓ Epidemiology background and national coverage data
- ✓ Perspectives

Current recommendations

- ✓ All HCWs
 - Hepatitis B vaccine
 - Influenza vaccine
- ✓ Susceptible HCWs
 - MMR vaccine
 - Varicella vaccine
- ✓ HCSWs working in Maternal and Child Health Departments
 - Pertussis vaccine (booster)

Italian Framework

- ✓ Occupational Health Physicians must recommend and administer vaccinations
- ✓ Hospital Director is responsible for nosocomial infection control
- ✓ Nationwide and/or regional estimates of vaccination coverage among HCWs are not current available

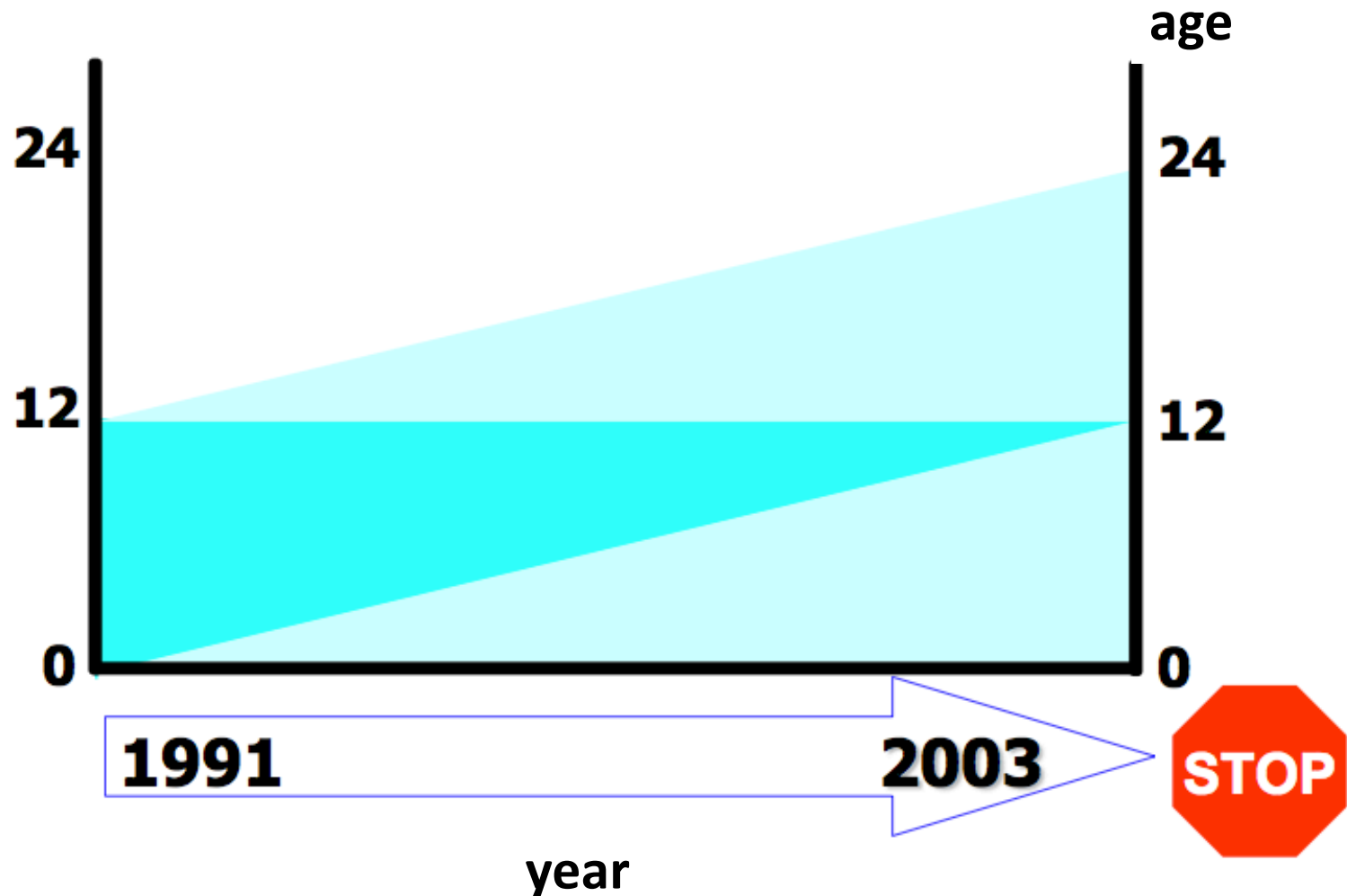


Hepatitis B

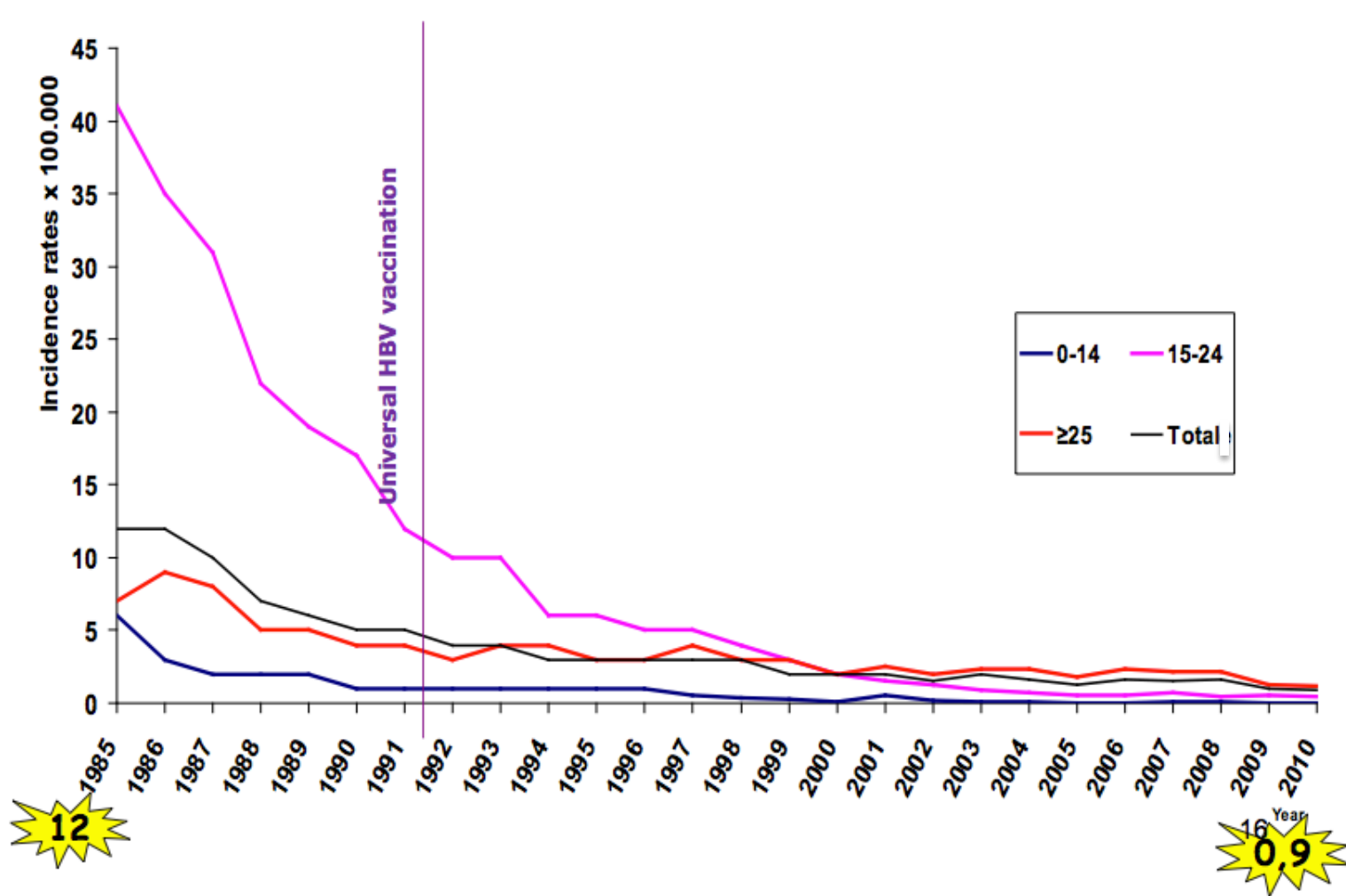
- ✓ Italian Ministry of Health recommends vaccination against Hepatitis B to HCWs since 1983
- ✓ Vaccine has been offered free of charge to all new employees and to those already working in high risk of infection environments since 1988



HBV immunization strategy in Italy



Yearly trend in Hepatitis B incidence rates, Italy 1985-2010



HBV vaccination coverage in HCWs

- ✓ A survey performed in 1996 among >3000 HCWs showed an overall vaccine coverage of 64.5%¹
- ✓ A study performed in 2006 in 15 public hospitals showed a coverage of 85.3%²
- ✓ Youngest age and residence in the North of Italy are predictors of vaccine acceptance²

1. *Stroffolini et al, 1998*

2. *Stroffolini et al, 2008*

Influenza

- ✓ Before 2004, the Ministry of Health recommended influenza vaccination to essential public health services workers
- ✓ Since 2004, a specific recommendation for HCWs has been made



Influenza vaccination coverage in HCWs

- ✓ A study conducted in **1999/2000** among HCWs from 22 Italian Hospitals showed a mean of **13.6%**¹
- ✓ A cross sectional study conducted in **2006** in an University Hospital showed very low coverage in all departments, ranging from **17.6%** of the HCWs in the emergency department to **24.3%** of those in the surgery department²
- ✓ A population-based cross-sectional survey in **2007/2008** showed a coverage of **10.9%**³
- ✓ A negative time trend was noted from 2001/2002 to 2007/2008³

1. Brusafferro et al, 2004

2. Esposito et al, 2008

3. Blank et al, 2009

Pandemic Influenza Vaccination in HCWs

- ✓ On 11th June 2009 WHO declared the start of 2009 influenza pandemic
- ✓ On 11th September 2009 Ministry of Health made the recommendation for vaccinating HCWs¹
- ✓ Achieved an average national coverage in HCWs: 15%²

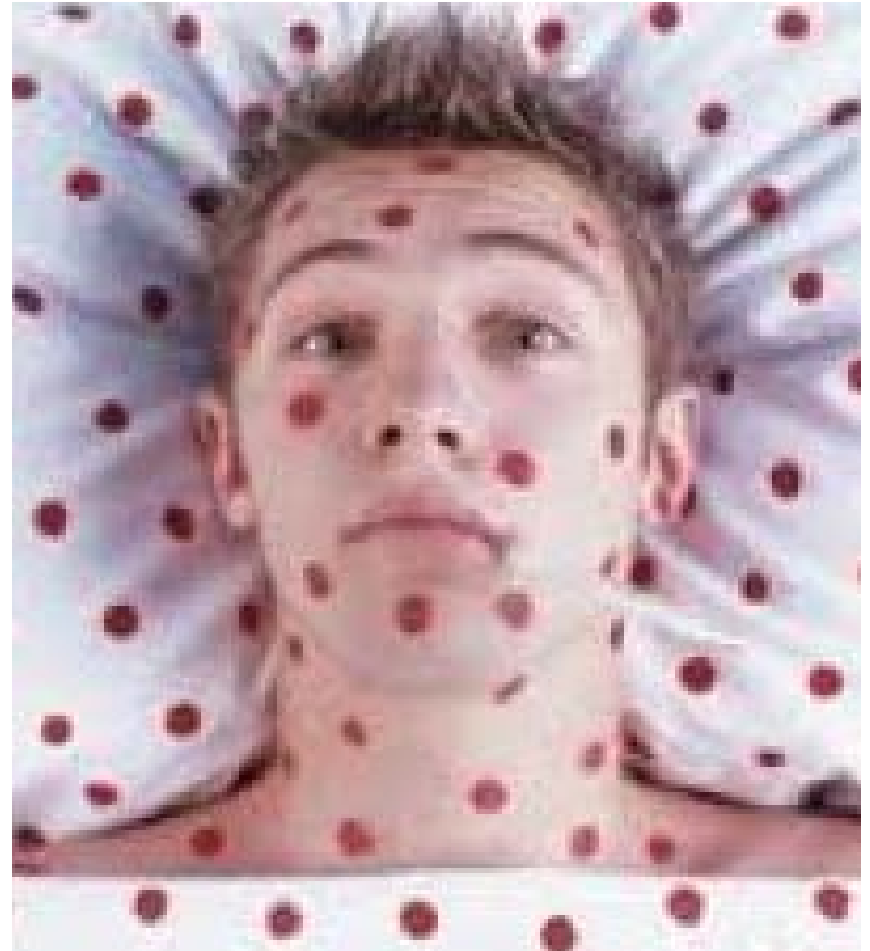


The screenshot shows the WHO website's media centre page. At the top, there is a navigation bar with links for 'World statistics', 'Media centre', 'Publications', 'Countries', and 'Programmes and projects'. Below this is a search bar with a magnifying glass icon and a 'Search' button. The main heading is 'Media centre'. The featured article is titled 'World now at the start of 2009 influenza pandemic'. The author is 'Dr Margaret Chan, Director-General of the World Health Organization'. The text of the statement begins with 'Ladies and gentlemen,' and mentions that WHO announced the emergence of a novel influenza A virus in late April. It states that this particular H1N1 strain has not circulated previously in humans and is entirely new. The statement concludes by noting that the virus is contagious, spreading easily from one person to another, and from one country to another, with nearly 30,000 confirmed cases reported in 74 countries as of that date.

1. Ministry of Health, 11.9.2009 Order
2. http://www.nuovainfluenza.salute.gov.it/nuovainfluenza/paginaInternaNuovaInfluenza.jsp?id=74&menu=dativacc&id_dettaglio=74

Measles, Mumps and Rubella

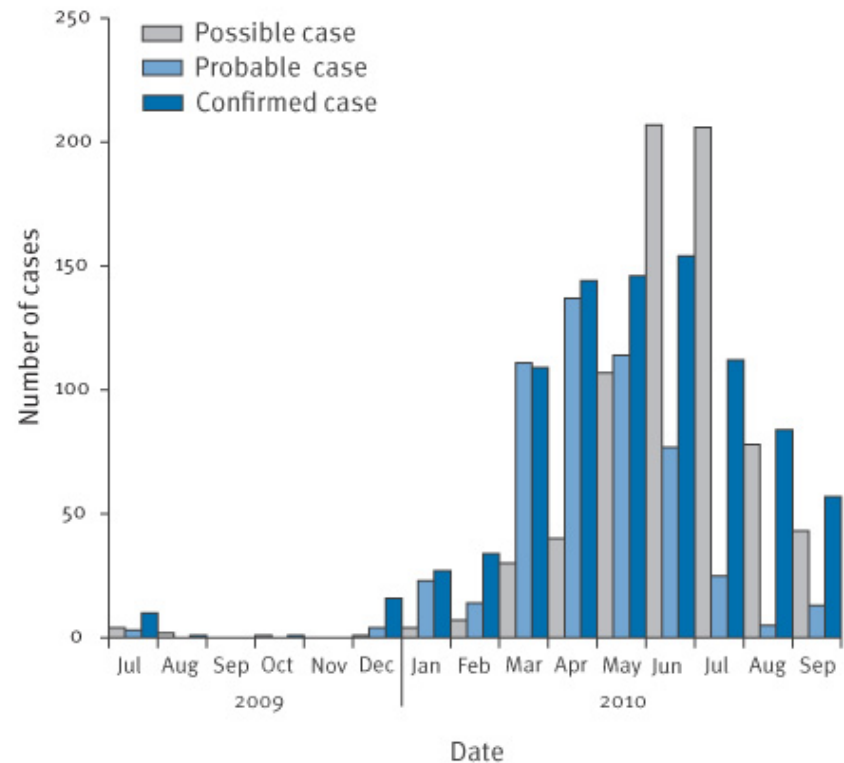
- ✓ Vaccinations against rubella and measles have been recommended by Ministry of Health more than 30 years ago
- ✓ Since 1999, trivalent MMR vaccine has been used
- ✓ In 2003 the National Measles Elimination Plan (MEP) started in Italy



Measles in Italy

- ✓ Target MMR coverage for the WHO European Region ($\geq 95\%$ for both dose in new borns and adolescents) has not yet been reached
- ✓ Outbreaks in susceptible adults, such as HCWs, are occurring

Reported measles cases by month and type of case, Italy, July 2009–September 2010 (n=2,151)



Case Study

Occupational Risk from Measles in Healthcare Personnel: A Case Report

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Key words: Measles, Health workers, Biohazard

In 2006 and 2008 two different outbreaks of measles, both occurring during winter seasons, were reported in the region of Apulia in south-eastern Italy. The second of these epidemics involved both young adults and children younger than 13 mo, the latter being the age range established by the Regional Vaccination Schedule for the first dose of the measles, mumps, rubella (MMR) vaccine^{1,2}.

The present epidemiological pattern of measles in Apulia reflects the vaccination efforts conducted in Italy from 2003, when the implementation of the National

show an increase in the average age

The vaccination of susceptible individuals against measles is recommended by the employee from complications of infection.

In March, in an Apulian hospital was reported in a nurse, who worked in a Paediatric Unit where a child infected by measles was hospitalized.

Case Report

On 8th March 2008 a 10-yr-old child was admitted to a Paediatric Unit, where she was taken care of.

On 14th March, seven days after the child, the nurse became unwell with a temperature $>38^{\circ}\text{C}$, cough, rhinitis and conjunctivitis. The nurse presented maculopapular rash extending to the rest of her body; therefore she was admitted to the Infectious Disease Unit.

At admission, examination revealed hepatomegaly, diffused maculopapular rash and cervical lymphadenopathy. Pathology revealed that the nurse had never been vaccinated for measles or rubella and had never received the vaccine.

On 20th March 2008 investigation revealed a white blood cell count of $3,400 \times \text{ml}$, neutrophils 84.1%, lymphopaenia of 10%, n

[J Occup Health](#). 2012 May 18. [Epub ahead of print]

Measles among Healthcare Workers in a Teaching Hospital in Central Italy.

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Abstract

Objectives: The aim of this report is to describe a measles cluster involving health-care workers (HCWs) that occurred in a teaching hospital in central Italy during winter 2011 and the efforts made to promptly identify all the susceptible contacts in order to stop, as soon as possible, transmission of the infection within the hospital. **Methods:** An epidemiological investigation took place. The immunization status of all the exposed individuals was assessed by personal interviews (history of measles or measles vaccine). Serologic screening for personnel not immune to measles was performed. **Results:** Four cases of measles infection in HCWs were identified; of the 72 HCWs tested for measles immunity, 50 reported a past history of measles, while 22 underwent serological screening, which showed that all were IgG positive except for one case, which was excluded from duty as recommended. Strict adherence to use of alcohol-based hand rub and rapid implementation of appropriate isolation precautions are essential but insufficient to prevent measles outbreaks in hospital settings. Vaccination is the only reliable protection against nosocomial spread of measles. Therefore, assessing the immunization status of HCW and implementing vaccination strategies are needed in order to virtually set to zero the risk of acquiring and spreading measles in health-care settings.

PMID: 22673644 [PubMed - as supplied by publisher] [Free full text](#)

Varicella

- ✓ Varicella vaccination of subjects at high risk of complications due to varicella zoster virus infection has been indicated since 1992
- ✓ Italy has not adopted a national strategic plan to control or eliminate varicella



Varicella immunization strategies in Italy

- ✓ Different regional immunization programs have been implemented
- ✓ Seven Regions (33%) have adopted a universal vaccination programme targeting children and susceptible adolescents
- ✓ Incidence is decreased from $164 * 100.000$ in 2006 to $67 * 100.000$ in 2010
- ✓ The average age of infection is increasing and outbreaks in susceptible adults, such as HCWs, can occur

Measles, Mumps, Rubella and Varicella pattern in HCWs

- ✓ A seroprevalence study conducted in 2007 among >1000 HCWs showed a seropositivity of 92% for measles, 89% for rubella, 80% for mumps and 91% for varicella¹
- ✓ A serological survey carried out in 2006 among >1000 paramedical students showed susceptibilities of 5.5% for varicella, 5.1% for rubella, 12.9% for mumps and 6.7% for measles²
- ✓ A study performed in 2009 among >3000 medical and paramedical students showed a prevalence of antibodies to **mumps** of **76.8%**³

1. Porru S et al, 2007

2. Prato R et al, 2010

3. Morandin et al, 2009

Pertussis

- ✓ UMV has markedly changed epidemiology of pertussis in the last 20 years
- ✓ A shift in age among cases was observed from children to adolescents and adults
- ✓ Pertussis outbreaks in nosocomial settings are described in many countries

Pertussis

- ✓ During nosocomial outbreaks, index case is often recognized in health care staff
- ✓ Transmission of *B. Pertussis* occurred frequently among HCWs
- ✓ Pertussis immunization of HCWs reduces the morbidity associated with pertussis outbreak
- ✓ Since the pertussis vaccination recommendation for HCWs is quite recent, no data about coverage are available

Conclusions

- ✓ Current organizational framework for the protection of HCWs' health is badly affected by the lack of up-to-date information
- ✓ Emergence of new biohazard (measles, varicella, pertussis) in hospital settings has been noted in recent years
- ✓ Coverage for recommended vaccinations are generally low
- ✓ Screening by OHPs for staff member susceptible to MMR and varicella is extremely limited
- ✓ More adequate training is required for OHPs