EVOLUTION OF THE HIV EPIDEMIC IN ITALY

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Broad General Figures
Estimated adult HIV prevalence in 2007 (UNAIDS)

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
## Western Europe HIV Statistics

<table>
<thead>
<tr>
<th>Country</th>
<th>Est. n. living with HIV/AIDS</th>
<th>Prevalence % 2007</th>
<th>Deaths 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>140.000</td>
<td>0.4</td>
<td>1800</td>
</tr>
<tr>
<td>Germany</td>
<td>53.000</td>
<td>0.1</td>
<td>&lt; 500</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td><strong>150.000</strong></td>
<td><strong>0.4</strong></td>
<td><strong>1900</strong></td>
</tr>
<tr>
<td>Netherlands</td>
<td>18.000</td>
<td>0.2</td>
<td>&lt; 200</td>
</tr>
<tr>
<td>Portugal</td>
<td>34.000</td>
<td>0.5</td>
<td>&lt; 500</td>
</tr>
<tr>
<td>Spain</td>
<td>140.000</td>
<td>0.5</td>
<td>2300</td>
</tr>
<tr>
<td>Switzerland</td>
<td>25.000</td>
<td>0.6</td>
<td>&lt; 500</td>
</tr>
<tr>
<td>UK</td>
<td>77.000</td>
<td>0.2</td>
<td>&lt; 500</td>
</tr>
</tbody>
</table>
AIDS cases per year of diagnosis, with correction for notification delay

N. di casi

- Caso corretti per ritardo di notifica
- Caso notificati per anno di diagnosi

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* Dati a Nov. 2009
A surveillance system no longer based on AIDS diagnosis but on new serologically established infections is being implemented, following a long political fight.
New diagnoses of HIV infection in 2008: 6,7* cases per 100,000 population

* nelle regioni/province dove è attivo un Sistema di Sorveglianza delle nuove diagnosi di infezione da HIV
Evolution of new diagnoses of HIV infection according to gender

(Piemonte, Liguria, Friuli Venezia-Giulia, Veneto, Puglia, Emilia Romagna, Lazio, Bolzano, Trento, Sassari e Catania)
1985: here is the test...

- FDA approved the first serologic test for HIV
- LAV and HTLV-III → HIV-1
- Identified HIV-2
Cumulative number of persons living with HIV/AIDS according to calendar year

N. di casi

Anno

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*Dati a Nov. 2009*
Median age of new diagnoses of HIV infection, according to gender and year

(Piemonte, Liguria, Friuli Venezia-Giulia, Veneto, Emilia Romagna, Lazio, Puglia, Bolzano, Trento, Sassari e Catania)
New diagnoses of HIV infection according to nationality

(Piemonte, Liguria, Friuli Venezia-Giulia, Veneto, Emilia Romagna, Lazio, Puglia, Bolzano, Trento, Sassari e Catania)

- stranieri
- italiani

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Proportional distribution of new HIV infections according to transmission modality

(Piemonte, Liguria, Friuli Venezia-Giulia, Veneto, Emilia Romagna, Lazio, Puglia, Bolzano, Trento, Sassari e Catania)
Impact on awareness and prevention by opinion leaders

Nombre de tests sérologiques VIH pratiqués
Comté d'Orange, Californie, de Juillet 1985 à Mai 1992

The New England Journal of Medicine

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National network of outpatient facilities for the treatment of drug abuse (SERT)

HIV serological screening

Infectious Diseases Clinics
Evolving features of the AIDS epidemic in Italy over time

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>2009*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total n. AIDS cases</strong></td>
<td>~62,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total n. AIDS deaths</strong></td>
<td>~39,500</td>
<td></td>
</tr>
<tr>
<td><strong>Proportion of women</strong></td>
<td>~27%</td>
<td>~24%</td>
</tr>
<tr>
<td><strong>Total n. of cases transmitted from M to C</strong></td>
<td>~716</td>
<td></td>
</tr>
</tbody>
</table>

**1995 (peak of the epidemic)**

- **New AIDS cases/yr:** 5,655
- **Main transmission modality:** IVDU (62,5%)
- **Median Age at diagnosis:** 35 years
- **Proportion of foreign-born:** 4,7%

**2009***

- **New AIDS cases/yr:** ~1,200
- **Main transmission modality:** Eterosexual/MSM (~69%)
- **Median Age at diagnosis:** 43 years
- **Proportion of foreign-born:** ~24%

* Dati aggiustati per ritardo di notifica  
* Dati a Nov. 2009
Switch from IVDU to sexually-acquired infections.....
Established in 1991 with 48 NHS-based centers specialized in the diagnosis and treatment of STDs.

Istituto Superiore di Sanità

National Surveillance System for STDs

O Gynecological

O Dermatological
HIV prevalence:
Proportion of HIV-tested and HIV-positive
Sorveglianza Nazionale MST 1991-2003 (83,279 casi)

Non testati 42%
Testati 58%

9% HIV+
HIV Infection in patients with STDs: seroprevalence by year

National Surveillance 1991-2004 (86,215 cases, 49,490 tested for HIV)
HIV incidence in STDs patients

*National Surveillance STDs*

- Longitudinal 1-year study carried out in 1998 on 1754 STDs patients repeatedly found to be HIV-negative in the past
- 47 STDs patients seroconverted for HIV
- Mean follow-up: 1.5 persons-year

**Incidence: 1.8% p-y**
# STDs-HIV relationship

*(historical knowledge)*

<table>
<thead>
<tr>
<th>Condition</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>no STDs</td>
<td>1</td>
</tr>
<tr>
<td>Condylomata</td>
<td>6</td>
</tr>
<tr>
<td>Urethritis</td>
<td>5.8</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>4.8</td>
</tr>
<tr>
<td><em>Chlamydia</em></td>
<td>3.6</td>
</tr>
<tr>
<td><em>Trichomonas vaginalis</em></td>
<td>1.9</td>
</tr>
<tr>
<td>Ulcerative diseases</td>
<td>7.2</td>
</tr>
</tbody>
</table>
## HIV prevalence according to specific STD

*National Surveillance 1991-2002 (76,108 cases)*

<table>
<thead>
<tr>
<th>STDs</th>
<th>HIV prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condylomata</td>
<td>13.9%</td>
</tr>
<tr>
<td>Genital herpes</td>
<td>12.8%</td>
</tr>
<tr>
<td>Syphilis I-II</td>
<td>10.5%</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>6.8%</td>
</tr>
<tr>
<td>Bacterial vaginosis</td>
<td>3.7%</td>
</tr>
<tr>
<td>Bacterial urethritis</td>
<td>3.5%</td>
</tr>
<tr>
<td>Chlamydia infections</td>
<td>2.7%</td>
</tr>
</tbody>
</table>
Syphilis and HIV in the Russian Federation: 10 years
Source: Renton et al Imperial College 1999

![Graph showing the number of syphilis and HIV cases from 1987 to 1997. The graph compares syphilis cases to HIV cases among IDUs and non-IDUs. The data suggests a sharp increase in HIV cases among IDUs and non-IDUs, especially from 1995 onwards.](image)
STDs surveillance network in Piedmont

1° Cl. Dermatologica
Centro MST

Osp. Ginecologico S. Anna
Centro Diagnosi MST

Osp. Mal. Infettive
- Ambulatorio IST
- Ambulatorio Immigrati

Cl. Dermatologica Novara
Centro MST

Dermatologia Biella
Centro MST
SYPHILIS and HIV in Piedmont - 2009

11% HIV+

Grafico 7. Andamento delle diagnosi di sifilide tra uomini presso i Centri MST

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
AIDS cases among adults who acquired HIV infection through the heterosexual route: distribution according to the partner’s serostatus

**Females**
- HIV non noto: 80.3%
- HIV+ noto: 19.7%

**Males**
- HIV non noto: 93.0%
- HIV+ noto: 7.0%

*Data as of Nov. 2009*
What about the consequences of such IVDU to sexual transmission risk?
Persons found to be HIV+ at AIDS diagnosis

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010

*Dati a Nov. 2009
## Factors associated to late HIV diagnosis

<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>95% IC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;32</td>
<td>1.17*</td>
<td>1.04-1.31</td>
</tr>
<tr>
<td>&gt;32 - &lt;39</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>&gt;39</td>
<td>1.32*</td>
<td>1.20-1.45</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.96*</td>
<td>1.76-2.19</td>
</tr>
<tr>
<td><strong>Area of origin</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Centre</td>
<td>1.22*</td>
<td>1.10-1.36</td>
</tr>
<tr>
<td>South</td>
<td>1.29*</td>
<td>1.15-1.44</td>
</tr>
<tr>
<td>Islands</td>
<td>1.52*</td>
<td>1.32-1.74</td>
</tr>
<tr>
<td>Other</td>
<td>2.67*</td>
<td>2.31-3.09</td>
</tr>
<tr>
<td><strong>Transmission category</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDU</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Male-to-male sex</td>
<td>6.24*</td>
<td>5.57-6.98</td>
</tr>
<tr>
<td>Hetero contact</td>
<td>9.43*</td>
<td>8.44-10.53</td>
</tr>
<tr>
<td>Other/ND</td>
<td>15.60*</td>
<td>13.56-17.95</td>
</tr>
<tr>
<td><strong>Year of diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996-97</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1998-99</td>
<td>2.15*</td>
<td>1.95-2.36</td>
</tr>
<tr>
<td>2000-02</td>
<td>2.36*</td>
<td>2.12-2.61</td>
</tr>
</tbody>
</table>
Antiretroviral treatment before the AIDS diagnosis according to the modality of HIV transmission

- **IDU**
  - Yes: 3116
  - No: 2449
  - Unknown: 173

- **Hetero contact**
  - Yes: 861
  - No: 2218
  - Unknown: 89

- **Male-to-male sex**
  - Yes: 1416
  - No: 4900
  - Unknown: 163

- **Blood**
  - Yes: 30
  - No: 45
  - Unknown: 2

- **Vertical transmission**
  - Yes: 36
  - No: 35
  - Unknown: 9

- **Other/ND**
  - Yes: 200
  - No: 827
  - Unknown: 81
Proportion of late diagnoses according to risk group and year

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
Higher Risk of AIDS, Death at Lower CD4+ Counts Despite VL Suppression

- Prospective, longitudinal study of 249 virologically suppressed patients from MACS cohort with BL CD4+ cell count < 200 cells/mm³
- Disease progression observed after achieving HIV-1 RNA < 50 copies/mL on HAART (most patients remained suppressed)
  - 17 (6.8%) developed new AIDS-defining illness
  - 25 (10.0%) died
- Greater ↑ in CD4+ cell count during virologically suppressive HAART associated with decreased risk of AIDS-defining illness or death

<table>
<thead>
<tr>
<th>CD4+ Cell Count During HAART With HIV-1 RNA &lt; 50 copies/mL</th>
<th>Risk of AIDS-Defining Illness</th>
<th>Risk of Death</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HR</td>
<td>P Value</td>
</tr>
<tr>
<td>&lt; 200 cells/mm³</td>
<td>1 (reference)</td>
<td>1 (reference)</td>
</tr>
<tr>
<td>201-350 cells/mm³</td>
<td>0.54</td>
<td>.286</td>
</tr>
<tr>
<td>&gt; 350 cells/mm³</td>
<td>0.25</td>
<td>.038</td>
</tr>
</tbody>
</table>

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
HIV-infected, antiretroviral-naive patients have not the same chance of a favourable outcome....

- Analysis of 15 cohorts from US and Europe (ART Cohort Collaboration) N = 24,444


Graphic reproduced with permission for educational use only.
Survival outcomes and effect of early versus deferred combination antiretroviral therapy (cART) among HIV-1-infected patients diagnosed at the time of an AIDS-defining event in Europe and Canada: a collaborative cohort analysis (1997-2004)

Jose M. Miró, et al. CROI 2010, Abstr. n. 529
<table>
<thead>
<tr>
<th>Preferred regimens</th>
<th>Alternative regimens</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NNRTI</strong></td>
<td><strong>NNRTI (alphabetic order)</strong></td>
</tr>
<tr>
<td>EFV/TDF/FTC (AI)</td>
<td>EFV/ABC or ZDV)/3TC (BI)</td>
</tr>
<tr>
<td><strong>PI (alphabetic order)</strong></td>
<td>NVP/ZDV/3TC (BI)</td>
</tr>
<tr>
<td>• ATV/r + TDF/FTC (AI)</td>
<td>• ATV/r + ABC or ZDV/3TC (BI)</td>
</tr>
<tr>
<td>• DRV/r qd + TDF/FTC (AI)</td>
<td>• FPV qd or bid + TDF/FTC or ABC/ZDV 3TC (BI)</td>
</tr>
<tr>
<td><strong>INSTI</strong></td>
<td><strong>INSTI (alphabetic order)</strong></td>
</tr>
<tr>
<td>RAL + TDF/FTC (AI)</td>
<td>• LPV/r qd or bid + ABC or ZDV/3TC or TDF/FTC (BI)</td>
</tr>
<tr>
<td><strong>Pregnancy</strong></td>
<td>• SQV/r + TDF/FTC (BI)</td>
</tr>
<tr>
<td>LPV/r bid + ZDV/3TC (AI)</td>
<td></td>
</tr>
</tbody>
</table>

Guidelines for the use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents

December 1, 2009

Developed by the DHHS Panel on Antiretroviral Guidelines for Adults and Adolescents - A Working Group of the Office of AIDS Research Advisory Council (OARAC)
HIV-associated opportunistic infections
In Italy
Studio I.Co.N.A.
Frequenza di patologie opportunistiche AIDS definenti all’arruolamento in extracomunitari e non

Non extracomunitari (n=641)

Patologie definenti AIDS (n=809)

<table>
<thead>
<tr>
<th>Patologia</th>
<th>Non extracomunitari (n=641)</th>
<th>Extracomunitari (n=99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patologie definenti AIDS (n=809)</td>
<td>Patologie definenti AIDS (n=121)</td>
<td></td>
</tr>
<tr>
<td>PCP</td>
<td>29,4</td>
<td>18,2</td>
</tr>
<tr>
<td>Cand Esof</td>
<td>15,3</td>
<td>9</td>
</tr>
<tr>
<td>TB Polm</td>
<td>7,7</td>
<td>24</td>
</tr>
<tr>
<td>CMV</td>
<td>6,7</td>
<td>5</td>
</tr>
<tr>
<td>Toxo</td>
<td>4,9</td>
<td>4,1</td>
</tr>
<tr>
<td>MAC</td>
<td>4,1</td>
<td>3,3</td>
</tr>
<tr>
<td>TB extra</td>
<td>2,5</td>
<td></td>
</tr>
</tbody>
</table>

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
Proportional distribution of AIDS cases according to origin and period of diagnosis

- South America
- North America
- Asia
- Europe
- Italy
- Not specified

- 2007-08
- 2005-06
- 2003-04
- 2001-02
- 1999-00
- 1997-98
- 1995-96
- 1993-94
- <1993
Nosocomial Tuberculosis Outbreak in a Hospital in Verona, Italy

8/18 HIV+ pts developed active TB after exposure to an index, chest x-ray negative and AFB sputum negative case (*M. tuberculosis* grown in culture):
- High attack rate
- Risk associated to lower CD4+ cell count

MDR-TB: Case report

- **hospitalized**: 72 days, 37 days, 61 days, 84 days
- **sputum smear**: ++++, ++, +, -
- **new R**: none, none, none

DAYS

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
Consecutive Epidemics of Q Fever in a Residential Facility for Drug Abusers: Impact on Persons with Human Immunodeficiency Virus Infection
Antonio Boschini, Giovanni Di Perri, Delfino Legnani, Paola Fabbri, Paolo Ballarini, Roberta Zucconi, Stefano Boros, and Giovanni Rezza
Clin Inf Dis 1999; 28: 866-72

Visceral leishmaniasis in those infected with HIV: clinical aspects and other opportunistic infections.

Presented at the 11th International Workshop on Clinical Pharmacology of HIV Therapy - 2010
Conclusions

• The incidence of AIDS tends to decrease but the incidence of new infections is rather stable

• The prevalence of HIV infection tends to increase

• The characteristics of the HIV-infected population have changed over time

• Most new infections are acquired through the sexual route

• Increasing importance of foreign-born persons

• Delay in HIV testing, particularly in some risk-groups, is on the increase, with severe consequences in terms of access to care and treatment outcome