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# On the risk of contracting AIDS at the dissection table

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SUMMARY

Didactic dissection of the human body is still considered the best tool to teach and learn anatomy. Although the risk of being infected with pathogens during dissection has dramatically decreased, fear of infection is still widespread among medical students and health care professionals. The fear of contracting AIDS at the dissection table is of particular relevance because of the emotional implications accompanying the syndrome. In this study we analyze the actual risks of contracting AIDS during dissection in Italy by evaluating health policies and proportions of the epidemic. According to the Italian Ministry of Health, HIV infection and AIDS are not to be considered relevant threats to public health from the epidemiological point of view, and it is estimated that 99.7% of health care workers, who are exposed to HIV, will not be infected. In fact, there is only one well-documented case of an autopsy acquired HIV infection that happened in 1992 the United States. Furthermore, HIV infection is not necessarily associated with AIDS, and most HIV-positive subjects do not develop AIDS, provided that they do not assume toxic drugs or engage in risky behaviours. Conversely, according to the Ministry, AIDS can occur in the absence of signs of HIV infection. Taken together these considerations should help rationalizing the fear of contracting AIDS at the dissection table. The dissection hall can still be a dangerous place and the adoption of safe working practices and awareness of potential risks are mandatory; HIV serophobia, however, is unjustified.

## INTRODUCTION

Knowledge of human anatomy is essential for all types of health care professionals and the teaching of gross anatomy at the beginning of the course of studies has always been considered fundamental for the future doctor. It appears that by learning human anatomy students adapt to fundamental values in the medical profession and are thus transformed into real medical students, learning to be health care professionals while learning anatomy (Netterstrøm and Kayser, 2008). Until recently, the study of gross anatomy was synonymous of cadaver dissection: the concept of dissection for the purpose of knowing the structure of human body was developed in the 15th century and surgeons (who often performed also as barbers) used to demonstrate the various structures of the human body at the professors' command. Andreas Vesalius (1514-1564) was one the first recorded medical student to dissect the cadaver and continued with dissection even as a professor of medicine. From history of medicine to arts, it is generally recognized that dissection is a key feature of medical education and it stands out as the most universal and universally recognizable step in becoming a doctor. In recent years, however, a number of diverse reasons have conspired against the teaching of human anatomy through dissection: the traditional anatomy education based on topographical structural anatomy, taught with the help of complete dissection of the body with personal tuition, has been progressively replaced by other teaching tools. Most often plastic models and computer-generated images are the only tools that accompany didactic lectures and in many universities and teaching hospitals dissected cadaver-based anatomy is no longer taught (Older, 2004). This situation is particularly evident in Italy, and it risks to be detrimental for the medical education of future generations of health care professionals; in fact, studies on cognitive learning demonstrated that dissection is still considered the best way to learn anatomy (Soliz *et al.*, 2000). In order to overcome this potential problem, the Department of Anatomy, Histology and Forensic Medicine of the University of Florence recently implemented a novel dissection hall that satisfies legal and technical requirements of modern days dissection. In order to achieve the greatest educational advantage from dissection, we analyzed the results of previous studies describing the psychological approach of students to cadavers and dissection. There is general agreement that students often acquire memorable experiences from cadaver dissections and in some institutions they are even asked to write their reflections about it. For many students, facing a dissection for the first time evokes a wide range of emotions that include thoughts of their own mortality as well as the consideration that the cadaver is a teacher, a person who helps others learn about medicine, even in death. In certain universities the writings of medical students experiencing dissections are collected and shared (Wagoner and Romero-O'Connell, 2009). There is, however, also a less romantic side to the experience of dissection; many students report to feel afraid to enter the dissection hall and one of the major fears is that of being infected. Thus, a recent study performed in Jordan reported that about 50% of students were afraid of in-

fection (Bataineh *et al.*, 2006). This kind of fear is not totally unjustified; the mortuary or the dissection hall could still be dangerous places despite the fact that there has been a decline in mortuary acquired infections such as tuberculosis and blood borne hepatitis in the past decades. This decline can be largely attributed to the increased awareness of the risks and adoption of safe working practices (Grist, 1983; Grist and Emslie, 1989; Grist and Emslie, 1991). Among infectious pathogens in cadavers that present particular risks there are *Mycobacterium tuberculosis*, hepatitis B and C viruses, the human immunodeficiency virus (HIV), and prions that cause transmissible spongiform encephalopathy (Burton, 2003). Among these, the fear of contracting AIDS at the dissection table has been a major one, and, according to Burton "HIV serophobia has been documented among staff working in mortuaries handling high risk cases since the 1980s, although there is no evidence that HIV is readily acquired in the mortuary" (Burton, 2003).

In this paper we focus on the actual risk of being infected with HIV and contracting AIDS at the dissection table in Italy, in order to provide teachers, technicians and students with the appropriate tools to cope with such fears, that is by rationalization, as demonstrated by about 90% of students interviewed in such a context (Bataineh *et al.*, 2006).

## MATERIALS AND METHODS

We searched the official data published by the Ministry of Health and by the Italian National Institute of Health ("Istituto Superiore di Sanità"), looking over the web and in a library specialized in law texts and decrees (Marucelliana Library, Firenze, Italy). We also consulted the Archives of the Regional Administrative Court of Tuscany (TAR Toscana, Firenze, Italy). Within these sources, we found a significant amount of documentation that is publicly available. Whenever applicable we included in the text the updated (September 2009) web pages of the Italian Ministry of Health that we used to gather information. These are only in Italian language; we tried to translate them as literally as possible.

Given the known relationship between HIV, AIDS and drug abuse, we also searched data about drug use (and abuse) in Italy, focusing on intravenous drug use, and we used the documents of the European Monitoring Centers for Drugs and Drug Addiction (EMCDDA, 2006).

To better understand and compare the HIV/AIDS phenomenon to other European realities, we referred also to the "HIV/AIDS Surveillance in Europe" by the European Centre for the Epidemiological Monitoring of HIV/AIDS, an half-yearly updated report that analyzes, wherever possible, the AIDS and HIV spread in every European country (Alix et al., 2007a, b).

The data concerning the HIV/AIDS epidemic in Tuscany were extracted from Buiatti et al. (2007).

## RESULTS AND DISCUSSION

### *The definition of AIDS in Italy*

We first reviewed the policies concerning the definition of AIDS in Italy, with particular emphasis on the criteria used for the diagnosis. According to the HIV/AIDS web page of the Ministry of Health (updated at September, 2009, under the voice "*normativa*") the definition of AIDS is reported in a document of 1994, *i.e.* official instruction ("circolare") of April 29, 1994, No. 9, on the revision of the definition of AIDS case for purpose of epidemiological surveillance. It is worth noting that some of the definitions listed in that instruction, *e.g.* those concerning the number of lymphocytes, have been repeatedly updated (in 1999 and 2001), thus confirming that the policy (*i.e.* the document) is still considered "alive" and valid. This document, although a public act published in the Official Bulletin of the Italian Republic No. 110 of May 13, 1994, is not easily available. In this document, the Ministry considers two forms of AIDS: one HIV-associated, and another not associated with HIV infection and thus *bona fide* non infective. In fact, according to the document, AIDS can be diagnosed in the absence of signs of HIV infection if one of the diseases (mainly, but not uniquely, opportunistic infections) used to define AIDS is definitely diagnosed. In other words, AIDS can be diagnosed in the absence of signs of HIV infection (and in the absence of other known causes of immunodeficiency), if one of the diseases defining the syndrome is definitely diagnosed. From this definition, it follows that, for example, an HIV-free patient with chronic *Herpes simplex* mucosal infection (chronic here is intended as lasting at least one month) has to be classified as an AIDS patient. Thus, for the purposes of dissection, in the case of a cadaver with the diagnosis of AIDS, this does not necessarily mean that the cadaver is also infected with HIV and further collection of data could be required. This point (AIDS in the absence of signs of HIV infection) is consistent with the conclusions of a recent paper (Duesberg *et al.*, 2003) that states: " ... the AIDS literature has described at least 4621 HIV-free AIDS cases according to one survey, irrespective of, or in agreement with allowances made by the CDC (Centers for Disease Control) for HIV-free AIDS cases".

Another point that has to be taken into consideration is the possibility of a diagnosis of AIDS in the absence of signs of HIV infection, but in the presence of other causes of immunosuppression. In fact, looking into the details of the Ministry of Health's definition, we read that " ... in the absence of other known causes of immunodeficiency, AIDS can be diagnosed, even in the absence of signs of HIV infection, if a definitive diagnosis is made of a disease indicative of immunosuppression, such as cerebral toxoplasmosis, *Pneumocistis carinii* pneumonia or oesophageal candidiasis". In these cases the diagnosis of AIDS seems to be justified by the fact that these conditions identify a patient as immunodeficient, and this literal interpretation of the acronym "AIDS" appears to be logical and justifiable.

As far as the "other known causes of immunodeficiency" are concerned, the Ministry of Health recognizes that immunosuppression is caused by a variety of known factors, and it lists a number of conditions that justify *per se* immunosuppression and that do not allow the diagnosis of AIDS in the absence of signs of HIV infection. Among these, high dosage steroid therapy, Hodgkin's disease, multiple myeloma, and lymphocytic leukemia. Consistent with this logic approach, if a (HIV-negative) patient on high-dosage steroid regimen shows signs of immunosuppression with the onset of an opportunistic infection (including one of those used to define AIDS), this patient (or the cadaver) cannot be labelled as "AIDS". The same reasoning, however, does not hold true for other common causes of immunodeficiency, *i.e.* if a HIV-negative patient has diabetes, sarcoidosis or if she is pregnant. This is explicitly stated in a paragraph where the Ministry of Health lists the immunosuppressive conditions that still justify the diagnosis of AIDS in the absence of signs of HIV infection (given the presence of an opportunistic infection) and writes that those conditions and diseases do not exclude that the opportunistic infection is indicative of AIDS. Thus, if an HIV-negative patient with a known immunosuppressive condition (diabetes, sarcoidosis or pregnancy) develops an opportunistic infection has to be labelled as "AIDS" although not harbouring signs of HIV infection.

For the sake of clarity, another point in the AIDS definition that has to be taken into consideration is the possibility to diagnose AIDS in the presence of signs of HIV infection without the need to confirm the diagnosis of the diseases that define the syndrome (this approach is termed "presumptive diagnosis"). In other words, when just the symptoms and clinical signs of one of the following diseases are present in a HIV-positive person, the diagnosis of AIDS is allowed without the need to confirm the diagnosis of the disease causing those symptoms. The list of the diseases that do not require confirmation encompasses: oesophagitis by *Candida albicans*, Kaposi's sarcoma, diffuse mycobacteriosis, pneumonia by *Pneumocystis Carinii*, cytomegalovirus retinitis, extrapulmonary tuberculosis, and recurrent pneumonia ("recurrent", here indicating two, or more, episodes in one year). Therefore, if a HIV-positive subject, otherwise healthy, develops, for example, two episodes of pneumonia, one in January and one in December, the diagnosis of AIDS has to be made, without the need to assess or confirm the cause of pneumonia. The same holds true for another pathology that has worried anatomists for centuries, *i.e.* tuberculosis. Thus, if a HIV-positive subject develops symptoms and a radiological picture suggestive of tuberculosis, the diagnosis of AIDS (in this case given by the combination of HIV-positivity and presumptive tuberculosis) has to be made, without the need to confirm the diagnosis of tuberculosis by microscopic or cultural demonstration of the microbe.

From all these considerations, it follows that particular care is required to gather information about the processes that led to the diagnosis of AIDS in the individual subject.

*The difficulty of assessing the HIV status of unclaimed bodies*

In the past, cadavers for didactic dissections were obtained from grave robbing and mortuaries; this was followed by an Anatomy Act of 1832 by which unclaimed bodies were provided to the anatomy departments. There also have been many persons donating their bodies to the departments of anatomy for teaching purposes: most notable is the example of the philosopher Denis Diderot, chief editor of and contributor to the *Encyclopédie*. Today, most cadavers for didactic dissections are unclaimed bodies, often homeless people with poor or no medical records. In this case, it would be reasonable to be able to collect information about the HIV status of the cadaver before performing dissection. Viable HIV could be isolated from blood obtained 16.5 days post-mortem, from pleural liquid effusion obtained 13.8 days post-mortem, and from pericardial liquid effusion obtained 15.5 days post-mortem (Douceron *et al.*, 1993). In the literature we found a well-documented case of autopsy-acquired HIV infection in a pathologist who sustained a scalpel wound to the hand (Johnson *et al.*, 1997). The simplest way to know whether the cadaver to be dissected is HIV-infected would be to consult a national registry of HIV infections, if available as it is customary in some countries. In fact, for example, the Bureau of Epidemiology of the Pennsylvania Department of Health maintains a secure, confidential registry of all reported cases of HIV/AIDS that includes epidemiologic, demographic, and clinical information for individual cases. In particular, the HIV/AIDS Case Reporting/Surveillance services design, coordinate and conduct surveillance activities to assure all HIV/AIDS and perinatal exposure cases diagnosed or treated in Pennsylvania are reported, collaborate with local Health Departments and provide consultation, professional and technical assistance, and training (additional information can be accessed at: http://www.health.state.pa.us/hiv-epi/). Even in that case, the confidentiality of the information may be an obstacle to the timely availability of data in cases of dissections. More than 25 years after the onset of the AIDS epidemic in Italy such a national registry is not implemented in this country. As of today, only 6 out of 20 regions of Italy have implemented a surveillance system and Tuscany is not among these. Only in 2008 a decree of the Italian Ministry of Health established the national surveillance system for newly diagnosed cases of HIV infection and added HIV infection to the list of infectious diseases which must be declared to the health authority, as a class III disease (see below for the classification of infectious diseases for administrative purposes in Italy). This is at odd with the fact that such a registry was implemented in 1985 in the regions Lazio and Friuli Venezia Giulia, and in the provinces Modena, Trento and Bolzano. Furthermore, more than one year after publication of the above mentioned decree, when we checked the Ministry's web page for the list of infective diseases requiring mandatory notification (on September, 2009), we were unable to find HIV infection. Thus, as of today, a physician or any other health professional who looks at the Ministry's web site to gather information about infective disease notification, has to conclude that HIV infection must not be communicated. There-

fore, if the deceased subject had performed a HIV test before March 31, 2008, in Tuscany or in one of the 14 regions that do not have such a registry, since there was no obligation to communicate this information, there would be no means to know the cadaver's HIV status. Italy, Spain and the Principality of Monaco are the only Western European countries that do not report national HIV data: only scant regional data from Italy and Spain (representing less than a third of the population in each country) are available (Alix et al., 2007a, b). It is possible that one of the main reasons behind this lack of information is linked to the Italian stringent privacy law and to the commendable desire to avoid discrimination against HIV-positive people. In fact, such a problem about HIV registry and privacy arose in Spain in 2004, when the Spanish National Court sentenced that the national registry of HIV-infected individuals had to be abolished. The verdict was applauded by HIV advocates who the previous year had filed a lawsuit against the Spanish Health Ministry, arguing that the database did not respect anonymity (Bosch, 2004).

Even though Tuscany has not such a registry as yet, some information about the HIV status of the deceased could still be gathered by consulting the regional AIDS registry of Tuscany (http://www.arsanita.toscana.it/RRA/LINKS/registro.html), which however is not easily available for consultation, at least from the web. By that registry the subject could be identified as HIV-positive through matched analysis of antiretroviral drug prescriptions and fiscal code. In addition, since the diagnosis of HIV infection is labelled in regional hospitals with the code 042-043-044, a search for this code in hospital databases could provide information if the deceased was hospitalized. It is worth noting that this code refers to the principal diagnosis (for which the patient was hospitalized) as well as to the so called secondary diagnoses, up to five diagnoses (Buiatti et al., 2007). However, these pathways to information are laborious and time consuming and their practical use in view of dissection is of limited use.

### *The proportions of the HIV/AIDS epidemic in Italy*

In order to provide teachers, technicians and students with the appropriate rational tools to cope with the fear of contracting AIDS during a dissection, knowledge of the proportions of the epidemic is relevant. In Italy, there have been about 60.500 AIDS cases in 26 years, *i.e.* from the beginning of the epidemic in 1982 until December 2008. Of these, 39.000 have died. Although this is only a rough estimate, the number of HIV-positive subjects is about 150.000. The estimated incidence of new HIV infections is 6 new cases for 100.000 residents per year (these data derive from the Regions that implement a registry). Because of such limited proportions, the Ministry of Health does not classify AIDS among infective disease that are of particular interest or relevant because of high frequency or of susceptibility to control interventions. These statements are extracted from the Ministry of Health's Decree of 15th December 1990 (published in Official Bulletin of the Italian Republic, No. 6 of January 8, 1991). In the introduction, the Decree remembers that: "there

is the obligation for the physician to notify to the competent Health Authority any infective or diffusive disease, or suspected to be such, of which she/he had notice during the exercise of her/his profession". Infectious diseases are classified into five classes, in order of importance for the threat to public health. The first class is defined as "diseases for which immediate notification is required either because under international health rule or because they are of particular interest". In this class there are 13 diseases including, e.g., cholera, botulism, tetanus, influenza and rabies. The second class is defined as "diseases that are relevant because at high frequency and/or susceptible of control interventions". In this class there are 25 diseases including, e.g., hepatitis, measles, mumps, scarlet fever and whooping cough. AIDS is in a third class, for which special documents are requested; this class is not qualified in respect to the disease relevance. Consistent with this point is the decision of the Ministry to include, from March 2008, also the notification of new HIV infections in this third class. For the sake of completeness, the fourth class includes diseases to be notified only in case of localized epidemics and the fifth class includes diseases "not included in the preceding classes".

In addition, other epidemiological data have to be considered. In Italy, more than 25 years after its onset, AIDS is still confined to intravenous drug (mainly heroin) users and male homosexuals. Thus, according to the official data, in the years 2006-2007, AIDS incidence in general (heterosexual) population was 1/100.000, in homosexuals, almost 5-fold higher, and in intravenous drug users, about 100-fold higher (Suligoi et al., 2008; Eurispes, 2003; EMCDDA, 2006). Furthermore, estimates from data provided for by Regione Lazio (that includes Rome) demonstrate that AIDS in Italy still shows a preference for male patients. At the beginning of the epidemic, the number of males with AIDS was 4-fold higher than that of females, but since then, the ratio changed very little: during the first years, the ratio male/female grew to 5/1, then it decreased, fluctuating around 2.5-3/1 between 1995 and 2006, just to rise again, in 2007, to more than 3.5/1 (Pezzotti et al., 2008). The percentage of affected males is not decreasing, but just fluctuating. Furthermore, the decrease in 1995 can be explained with the fact that in 1994 the list of conditions used for the diagnosis of AIDS was modified by adding invasive cervix cancer: adding a women-only disease forced the female patient count to go up (Ministry of Health, circular No 9 of 29th April, 1994). This point is also consistent with the conclusions of a recent paper (Duesberg et al., 2003) stating: " ... in the US and Europe AIDS is restricted since 1981 to two main risk groups, intravenous drug users and male homosexual drug users".

Analysis of AIDS-related deaths in Italy might also prove useful in evaluating the risk of encountering previously undiagnosed HIV-infected or AIDS cadavers. Short after the beginning of the epidemics, AIDS lethality rate in Italy significantly decreased from 93.1% to 80.1% in five years (1990-1994); it can be assumed that this significant drop in lethality was due to early diagnosis and treatment of AIDS-defining diseases (such as tuberculosis), since no anti-retroviral treatment was available at that time. Lethality further decreased from 1994 to 1995, i.e. when the

antiretroviral drugs (mainly azidothymidine, AZT) became available (Suligoi et al., 2008); however, in 1997 (i.e. about two years after the introduction of antiretroviral treatment), there was a decrease of prevalence of 820 cases (Suligoi et al., 2006). In that year the disease specific lethality dropped, (2144 deaths vs. 4198 in the year 1996), thus meaning that less AIDS patients died of their disease while about 1.200 new AIDS cases were reported. Nonetheless, prevalence also decreased from 14.596 (1996) to 13.776 (1997) (Suligoi et al., 2006). These data are commonly interpreted as if causes other than AIDS itself were responsible for the death of these 2000 AIDS patients in 1997. High toxicity of early antiretroviral treatment is usually blamed for these deaths as stated in a recent paper (Duesberg et al., 2003) "A sudden 10-fold increase in the mortality of HIV-positive British haemophiliacs, right after the introduction of AZT in 1987, made scientific headlines in 1995 ...".

In the past few years, the number of deaths attributed to AIDS in Tuscany was very low: 7 deaths in 2005, and 4 deaths in 2006, with a lethality rate of 4.7% (lethality rate here is calculated by the Public Health Service as the ratio between the number of new AIDS cases diagnosed in the year 2006, i.e. 85 cases, and the number of deaths, i.e. 4) (Buiatti et al., 2007). From these considerations, it could be concluded that the probability of encountering an AIDS cadaver in Tuscany is very low.

Even though it is unlikely that didactic dissection is performed on newborn cadavers, considerations on pediatric AIDS are worth mentioning. Pediatric AIDS cases in Italy are about 1.3% of total AIDS cases since the beginning of the epidemic (Suligoi et al., 2009). This point is consistent with a recent paper (Duesberg et al., 2003) that states: " ... less than 1% of AIDS in the US and Europe is pediatric. ... HIV must be a passenger virus in newborns". In the years 2007-2008 there were only five pediatric cases of AIDS in Italy (Suligoi et al., 2009). It is also interesting the fact that, according to the data from the Italian National Institute of Health, in certain years (for example in the years 1999-2000 and 2000-2001) a significant percentage of pediatric AIDS cases (25% in the years 1999-2000; 29.2% in the years 2000-2001) could not be attributed to mother-son (vertical) transmission. The causes of these apparently non-transmissible cases of AIDS in newborns are not known at present. In total, from the beginning of the epidemic there have been 28 newborn babies with AIDS of unknown origin (*i.e.* not attributable to vertical transmission, haemophilia or blood transfusions). In fact, no pediatric AIDS cases were reported as associated with haemophilia or blood transfusions, thus indicating that adoption of safe working practices produced valuable results in preventing AIDS by transfusion.

### *The risks of nosocomial AIDS*

Since the beginning of the epidemic it was postulated that health care workers were at high risk of being exposed to HIV and developing AIDS and, consequently, HIV serophobia became widespread among health care professionals including

those working in mortuaries (Lucas, 1993). Knowledge of the actual risks of infection is therefore essential because accidental exposures to high risk pathogens are uncommon but not infrequent, and many could be prevented. The most common exposure that may place a health care professional at risk for HIV infection is due to percutaneous injury. Others involve contact of mucosa or non-intact skin with blood, tissue, or other body fluids such as semen, vaginal secretions, cerebrospinal, synovial, pleural, and peritoneal fluids (Bell, 1997). However, occupational exposure to HIV is uncommon, and the overall risk of seroconversion after contact with HIV positive blood is extremely low (seroconversion rate, 0–0.42%). It is calculated that, on average 99.7% of health care workers, who are exposed to HIV, will not be infected (Ippolito et al., 1993; Marcus, 1988). As far as pathologists or anatomists are concerned, there is only one well-documented case of autopsy-acquired HIV infection in a pathologist who sustained a scalpel wound to the hand (Johnson et al., 1997). In general, most health care professionals found to be HIV-positive have a history of behavioural (male homosexual contact or intravenous drug use) or transfusion exposure (Chamberland et al., 1995; Duesberg et al., 2003).

It can be concluded that the risk of being infected by HIV during dissection is very low and furthermore that there is no epidemiological justification to test corpses for HIV before necropsy, except where the deceased is known to have been exposed to particular high risk activities (such as intravenous drug use) (Evans et al., 2001).

## CONCLUSIONS

A logical and rational approach to cope with the fear of contracting AIDS at the dissection table has to take into consideration the following points:

I. There is only one well-documented case of an autopsy acquired HIV infection in 1992, with isolation of the virus nineteen months later. However, the infection was not associated with the development of AIDS, and repeated attempts to isolate HIV from the wounded pathologist after the first, positive test were unsuccessful (Johnson et al., 1997).

II. It is estimated that 99.7% of health care workers, who are exposed to HIV, will not be infected (Ippolito et al., 1993; Marcus, 1988).

III. In Italy, HIV infection and AIDS are not considered relevant threats to public health from the epidemiological point of view (Official Bulletin of the Italian Republic, No 6 of 8th January, 1991); in this country, and in Tuscany in particular, it is virtually impossible to know whether a corpse destined to dissection is infected by HIV.

Taken together these considerations should help rationalizing the fear of contracting AIDS at the dissection table. The dissection hall can still be a dangerous place and the adoption of safe working practices and proper awareness of the potential risks are mandatory to minimize the dangers to teachers, technicians and students; HIV serophobia, however, is unjustified and, given the actual frequency

of infection, the risk of transmission to people engaged in dissections and that of developing AIDS as a consequence of such an infection, the time and money consuming effort of assessing HIV infection in each cadaver to dissect may be considered unjustified.

As an additional consideration, HIV infection is not necessarily associated with AIDS and most HIV-positive subjects do not develop AIDS provided that they do not assume toxic drugs or engage in risky behaviours (Chamberland et al., 1995; Duesberg et al., 2003), whereas AIDS can occur even in the absence of HIV infection (Italian Ministry of Health official instruction No. 9 of April 29, 1994).

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