Aids Essay, Research Paper

AIDS – What’s new ?

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Is the message getting through? We already know enough about AIDS to

prevent its spread, but ignorance, complacency, fear and bigotry continue to

stop many from taking adequate precautions.

We know enough about how the infection is transmitted to protect ourselves

from it without resorting to such extremes as mandatory testing, enforced

quarantine or total celibacy. But too few people are heeding the AIDS

message. Perhaps many simply don’t like or want to believe what they hear,

preferring to think that AIDS “can’t happen to them.” Experts repeatedly

remind us that infective agents do not discriminate, but can infect any and

everyone. Like other communicable diseases, AIDS can strike anyone. It is not

necessarily confined to a few high-risk groups. We must all protect ourselves

from this infection and teach our children about it in time to take effective

precautions. Given the right measures, no one need get AIDS.

The pandemic continues:

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Many of us have forgotten about the virulence of widespread epidemics, such

as the 1917/18 influenza pandemic which killed over 21 million people,

including 50,000 Canadians. Having been lulled into false security by modern

antibiotics and vaccines about our ability to conquer infections, the Western

world was ill prepared to cope with the advent of AIDS in 1981. (Retro-

spective studies now put the first reported U.S. case of AIDS as far back as

1968.) The arrival of a new and lethal virus caught us off guard. Research

suggests that the agent responsible for AIDS probably dates from the 1950s,

with a chance infection of humans by a modified Simian virus found in African

green monkeys. Whatever its origins, scientists surmise that the disease

spread from Africa to the Caribbean and Europe, then to the U.S. Current

estimates are that 1.5 to 2 million Americans are now probably HIV carriers,

with higher numbers in Central Africa and parts of the Caribbean.

Recapping AIDS – the facts:

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AIDS is an insidious, often fatal but less contagious disease than measles,

chicken pox or hepatitis B. AIDS is thought to be caused primarily by a virus

that invades white blood cells (lymphocytes) – especially T4-lymphocytes or

T-helper cells – and certain other body cells, including the brain. In 1983

and 1984, French and U.S. researchers independently identified the virus

believed to cause AIDS as an unusual type of slow-acting retrovirus now

called “human immunodeficiency virus” or HIV. Like other viruses, HIV is

basically a tiny package of genes. But being a retrovirus, it has the rare

capacity to copy and insert its genes right into a human cell’s own chromo-

somes (DNA). Once inside a human host cell the retrovirus uses its own

enzyme, reverse transcriptase, to copy its genetic code into a DNA molecule

which is then incorporated into the host’s DNA. The virus becomes an integral

part of the person’s body, and is subject to control mechanisms by which it

can be switched “on” or “off”. But the viral DNA may sit hidden and inactive

within human cells for years, until some trigger stimulates it to replicate.

Thus HIV may not produce illness until its genes are “turned on” five, ten,

fifteen or perhaps more years after the initial infection.

During the latent period, HIV carriers who harbour the virus without any

sign of illness can unknowingly infect others. On average, the dormant virus

seems to be triggered into action three to six years after first invading

human cells. When switched on, viral replication may speed along, producing

new viruses that destroy fresh lymphocytes. As viral replication spreads, the

lymphocyte destruction virtually sabotages the entire immune system. In

essence, HIV viruses do not kill people, they merely render the immune system

defenceless against other “opportunistic: infections, e.g. yeast invasions,

toxoplasmosis, cytomegalovirus and Epstein Barr infections, massive herpes

infections, special forms of pneumonia (Pneumocystis carinii – the killer in

half of all AIDS patients), and otherwise rare malignant tumours (such as

Kaposi’s sarcoma.)

Cofactors may play a crucial contributory role:

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What prompts the dormant viral genes suddenly to burst into action and

start destroying the immune system is one os the central unsolved challenges

about AIDS. Some scientists speculate that HIV replication may be set off by

cofactors or transactivators that stimulate or disturb the immune system.

Such triggers may be genetically determined proteins in someone’s system, or

foreign substances from other infecting organisms – such as syphilis,

chlamydia, gonorrhea, HTLV-1 (leukemia), herpes, or CMV (cytomegalovirus) -

which somehow awaken the HIV virus. The assumption is that once HIV

replication gets going, the lymphocyte destruction cripples the entire immune

system. Recent British research suggest that some people may have a serum

protein that helps them resist HIV while others may have one that makes them

genetically more prone to it by facilitating viral penetration of T-helper

cells. Perhaps, says one expert, everybody exposed to HIV can become

infected, but whether or not the infection progresses to illness depends on

multiple immunogenic factors. Some may be lucky enough to have genes that

protect them form AIDS!

Variable period until those infected develop antibodies:

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While HIV hides within human cells, the body may produce antibodies, but,

for reasons not fully understood, they don’t neutralise all the viruses. The

presence of HIV antibodies thus does not confer immunity to AIDS, nor prevent

HIV transmission. Carriers may be able to infect others. The usual time taken

to test positive for HIV antibodies after exposure averages from four to six

weeks but can take over a year. Most experts agree that within six months all

but 10 per cent of HIV-infected people “seroconvert” and have detectable

antibodies.

While HIV antibody tests can indicate infection, they are not foolproof.

The ELISA is a good screening test that gives a few “false positives” and

more “false negatives” indicating that someone who is infected has not yet

developed identifiable antibodies.) The more specific Western Blot test, done

to confirm a positive ELISA, is very accurate. However, absence of antibodies

doesn’t guarantee freedom form HIV, as someone may be in the “window period”

when, although already infected, they do not yet have measurable levels of

HIV antibodies. A seropositive result does not mean someone has AIDS; it

means (s)he is carrying antibodies, may be infectious and may develop AIDS at

some future time. As to how long seropositive persons remain infectious, the

June 1987 Third International Conference on AIDS was told to assume “FOR

LIFE”.

What awaits HIV-carriers who test positive?:

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On this issue of when those who test HIV positive will get AIDS, experts

think that the fast track to AIDS is about two years after HIV infection; the

slow route may be 10, 15, or more years until symptoms appear. Most

specialists agree that it takes at least two years to show AIDS symptoms

after HIV infection, and that within ten years as many as 75 per cent of

those infected may develop AIDS. A report from Atlanta’s CDC based on an

analysis of blood collected in San Francisco from 1978 to 1986, showed a

steady increase with time in the rate of AIDS development among HIV-infected

persons – 4 percent within three years; 14 percent after five years; 36

percent after seven years. The realistic, albeit doomsday view is that 100

percent of those who test HIV-positive may eventually develop AIDS.

Still spread primarily by sexual contact:

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AIDS is still predominantly a sexually transmitted disease: The other main

route of HIV infection is via contaminated blood and shared IV needles. Since

the concentration of virus is highest in semen and blood, the most common

transmission route is from man to man via anal intercourse, or man to woman

via vaginal intercourse. Female HIV carriers can infect male sex partners.

Small amounts of HIV have been isolated from urine, tears, saliva, cereb-

rospinal and amniotic fluid and (some claim) breast milk. But current

evidence implicates only semen, blood, vaginal secretions and possibly breast

milk in transmission. Pregnant mothers can pass the infection to their

babies. While breastfeeding is a rare and unproven transmission route, health

officials suggest that seropositive mothers bottle feed their offspring.

AIDS is not confined to male homosexuals and the high risk groups: There

are now reports of heterosexual transmission – form IV drug users, hemo-

philiacs or those infected by blood transfusion to sexual partners. There are

a few reported cases of AIDS heterosexually acquired from a single sexual

encounter with a new, unknown mate. And there are three recent reports of

female-to-female (lesbian) transmissions.

Spread of AIDS among drug users alarming:

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In many cities, e.g. New York and Edinburgh, where IV drug use is wide-

spread, IV drug users often share blood-contaminated needles. In New York,

more than 53 percent of drug users are HIV-infected and may transmit the

infection to the heterosexual population by sexual contact and transmission

from mother to child. Studies in Edinburgh, where 51 percent of drug users

are HIV-infected, show that providing clean needles isn’t enough to stem

infection. Even given free disposable needles, many drug abusers preferred

the camaraderie of shared equipment. Only with added teaching programs and

free condom offers, are educational efforts likely to pay off. In New Jersey,

offering free treatment coupons plus AIDS education brought 86 percent of

local drug users to classes. A San Francisco program issued pocket-size

containers of chlorine bleach to IVDAs with instructions on how to kill HIV

viruses. The Toronto Addiction Research Foundation notes a similar demand for

AIDS information.

Risk of infection via blood transfusion very slight:

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Infection by blood transfusion is very rare in Canada today. As of November

1985, the Red Cross, which supplies all blood and blood products to Canadian

hospitals, had routinely tested all blood donations for the HIV antibody. In

1986, when we last discussed AIDS, the Red Cross reported the incidence of

HIV-positive blood samples as 25 in 100,000. Now, at the start of 1988, only

10 per 100,000 blood samples are found to be infected – which, of course, are

discarded. Only a tiny fraction of HIV-positive blood (from HIV-infected

people who haven’t yet developed detectable antibodies) can now slip through

the Red Cross screening procedure. The minimal risk is further decreased by

screening methods, medical history-taking, questionnaires and donor inter-

views. Very few people at risk of AIDS now come to give blood. The “self-

elimination form”, filled out in a private booth, allows any who feel

compelled by peer pressure to donate blood, total privacy to check the box

that says “Do not use my blood for transfusion.”

As to banking one’s own blood, or autologous donations, the Red Cross

permits a few “medically suitable” people, referred by their physician, to

store their blood if they are likely to need blood transfusion in upcoming

elective surgery. They can bank up to four units of blood, taken in the five

weeks before surgery.

Finally – it can be categorically stated – IT IS ABSOLUTELY IMPOSSIBLE TO

GET AIDS BY GIVING BLOOD!!!

Minimal risk to health care workers:

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While health care personnel face a slight risk of HIV infection, all cases

reported to date have been due to potentially avoidable mishaps or failure to

follow recommended precautions. Of thousands caring for AIDS patients

worldwide, only a tiny percentage has become infected, and so far no Canadian

health personnel have become HIV-infected. A survey done by the Federal

Centre for AIDS (FCA) of 50 workers occupationally exposed to AIDS showed

that none became infected. A british hospital study on staff looking after

400 AIDS patients over several years found none who became HIV-positive. In

one U.S. survey, 7 out of 2,500 health care workers seroconverted and

developed HIV antibodies all by potentially avoidable accidents such as

needle pricks, exposure to large amounts of blood, body fluids spattered into

unprotected mouth, eyes or open sores. The reported mishaps underscore the

need for rigorous, vigilant compliance with preventive guidelines.

Universal body substance precautions (BSP) urged:

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The newest guidelines suggest that every health care worker, including

dentists, should handle all blood and body fluids as if infectious. Testing

all patients for HIV is not practical and does not confer protection. Rely-

ing on tests that are not 100 per cent accurate would only induce a false

sense of security. Rather than trying to identify infected persons, the CDC

and Ottawa’s FCA now promote a philosophy that regards all patients as

potentially infected. (At Johns Hopkins in Baltimore, about six percent of

admissions to the Traumatic Emergency Unit recently tested HIV-positive.)

Hospital and health care workers (including those caring for patients at

home) are encouraged to “think AIDS” and protect themselves. All patients

should be handled in a way that minimizes exposure to blood and body fluids,

e.g. by always wearing gloves when touching open sores, mucous membranes,

taking blood, attending emergencies, putting in IV needles, touching blood-

soiled items, with scrupulous hand-washing between patients (and whenever

gloves are removed), wearing masks, eye protection, plastic aprons and gowns

when appropriate. Taking such precautions will not only protect against AIDS

but also against more infectious agents such as hepatitis B and some hospital

acquired infections. We are all being forced to remember stringent anti-

infection rules!

Absolutely no evidence of spread by casual contact:

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All the research to date points to the fact that AIDS is not very easy to

catch. One University of Toronto microbiologist speculates that those with

high antibody counts are probably not very infectious. The most infectious

appear to be seemingly healthy persons carrying HIV without any sign of

disease as yet.

AIDS CANNOT BE PICKED UP CASUALLY via doorknobs, public washrooms, shared

school books, communion coups, cutlery or even by food handlers with open

cuts. A relatively weak virus, HIV is easily killed by a dilute 1 in 10

solution of Javex/bleach, rubbing alcohol and other disinfectants. Even where

parents or caregivers have cleaned up HIV-infected blood, vomit or feces, HIV

has not been transmitted. It is perfectly safe to share a kitchen, bathroom,

schoolroom or workbench with HIV-infected individuals. But it is inadvisable

to share toothbrushes, razors, acupuncture needles, enema equip-

ment or sharp gadgets, which could carry infected blood through the skin.

ORDINARY, NONSEXUAL WORKPLACE AND CHILDHOOD ACTIVITIES DON’T TRANSMIT AIDS.

The rare exception might be direct blood-to-blood contact via cuts or wounds

if infected blood (in considerable amounts) spills onto an open sore. Even in

such cases a swab with dilute bleach can kill HIV viruses.

Not spread by mosquitoes and other insects:

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There’s no evidence of HIV transmission by insects. Researchers report that

the AIDS virus cannot multiply or survive inside a mosquito. The infection

pattern in Africa – where children who are not sexually active might be

expected to have AIDS if mosquito bites were a real threat – shows no sign of

insect transmission.

Vaccines still a way off:

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Scientists caution that a safe, effective vaccine against HIV may be at

least a decade away, mainly because, like the influenza virus, HIV mutates

(changes structure) quickly, producing different strains. (Several different

HIV strains have already been isolated.) An ideal vaccine must be able to

stimulate neutralization of both “free” viruses and those hidden within

lymphocytes, such as T-helper cells. Researchers in various countries have

developed and are testing a fe