APPENDICES

Unit 4

I. The history of using HIV antibodies to diagnose HIV infection (2012) by Rodney Richards

Available online under the title "The birth of antibodies equal infection," at <http://barnesworld.blogs.com/barnes_world/2007/01/rodney_richards.html>.

II: Why the AIDS Test doesn't work in Africa (2002) by Christine Johnson

This is the predecessor of Unit 4 Section 2, published in the Townsend Letter for Doctors and Patients, April 2002. Reprinted here with author's permission. Available at <http://findarticles.com/p/articles/mi_m0ISW/is_2002_April/ai_84211152/?tag=content;col1>

III: Manufacturing certainty (2003) by David Crowe

Abridged for this course reader with the kind consent of the author, from *Red Flags Weekly* online newsletter <http://www.redflagsweekly.com> posted June 23, 2003. Accessed October 9, 2011.

UNIT 4
Appendix I

The history of using HIV antibodies to diagnose HIV infection[1]

By Rodney Richards

The following lays out the historical events leading up to the CDC declaring that persons who test positive for antibodies to HIV are also infected with HIV. Note that "human T-lymphotropic virus type III," "HTLV-III," "lymphadenopathy-associated virus," "LAV," and "HIV" are synonymous. Also, other than "Pneumocystis carinii," all italicized words in the selected quotes below represent my own emphasis.

April 1984: The US Department of Health and Human Services (DHHS) announces the probable cause of AIDS has been found.

May 4, 1984: Gallo and colleagues publish 4 back-to-back articles in the journal Science. One of these papers reports on the "isolation" of virus from 36% (23/64) of AIDS patients investigated, and from 86% (18/21) of pre-AIDS patients investigated. (Gallo RC, et al. Science 1984; 224: 500-03.)

Comment: Assuming for a moment that the criteria used to declare "isolation" of HIV in these studies were valid, it is important to note that nearly two-thirds (64%) of the AIDS patients evaluated in this study had no evidence of infection with HIV whatsoever. In spite of this observation, the authors contend this provides "strong evidence of a causative involvement of the virus in AIDS." This is remarkable, because prior to the publication of these articles, scientists were reluctant to suggest a causative role for a germ even if it were found in 100% of patients with a particular illness. Here, a 36% correlation is held out as "strong evidence" of causality; strong enough for the Department of Health and Human Services to announce to the global media that the probable cause of AIDS had been found.

July 13, 1984: The CDC comments on the significance of antibody tests as follows (CDC. Antibodies to a retrovirus etiologically associated with acquired immunodeficiency syndrome (AIDS) in populations with increased incidences of the syndrome. *MMWR* [*Mortality and Morbidity Weekly Report*] July 13, 1984; 33: 377-9):

"For some, the result may be a false positive caused by infection with an antigenically related virus or nonspecific test factors. The determination of the frequency and cause of falsely positive tests is essential for proper interpretation of test results, but remains to be established, particularly in populations, such as blood donors who belong to no known AIDS risk groups, where the prevalence of true infection with HTLV-III/LAV is expected to be very low."

Regarding the significance of antibodies in those at risk: "A positive test for most individuals in populations at greater risk of acquiring AIDS will probably mean that the individual has been infected at some time with HTLV-III/LAV. Whether the person is currently infected or immune is not known, based on the serologic test alone ..."

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And regarding the notion that antibodies equal infection; "... the frequency of virus in antibody-positive persons is yet to be determined."

January 11, 1985: The CDC comments on the pending FDA approval of Abbott Laboratories ELISA for screening the blood supply (CDC. Provisional public health services inter-agency recommendations for screening donated blood and plasma for antibody to the virus causing acquired immunodeficiency syndrome. *MMWR* January 11, 1985; 34: 1-5):

"Tests to detect antibody to HTLV-III will be licensed and commercially available in the United States in the near future to screen blood and plasma for laboratory evidence of infection with the virus."

"Persons accepted as donors should be informed that their blood or plasma will be tested for HTLV-III antibody. Persons not wishing to have their blood or plasma tested must refrain from donation. Donors should be told that they will be notified if their test is positive and that they may be placed on the collection facility's donor deferral list..."

"When the ELISA is used to screen populations in whom the prevalence of HTLV-III infection is low, the proportion of positive results that are falsely positive will be high. Therefore, the ELISA should be repeated on all seropositive specimens before the donor is notified."

"If the repeat ELISA test is positive or if other tests are positive, it is the responsibility of the collection facility to ensure that the donor is notified."

Regarding the significance of a repeatedly positive ELISA: "At present, the proportion of these seropositive donors who have been infected with HTLV-III is not known. It is, therefore, important to emphasize to the donor that the positive result is a preliminary finding that may not represent true infection. To determine the significance of a positive test, the donor should be referred to a physician for evaluation."

And even if infected: "The prognosis for an individual infected with HTLV-III over the long term is not known."

March 2, 1985: The FDA approves Abbott's ELISA for blood screening. Among other things, the package insert for this product emphasizes:

"At present there is no recognized standard for establishing the presence or absence of HIV-1 antibody in human blood." And: "The risk of an asymptomatic person with a repeatably reactive serum sample developing AIDS or an AIDS-related condition is not known."

August 9, 1985: The CDC reports on the use of ELISA for screening blood, and hints at the possible use of antibody tests for diagnosing infection (CDC. Update: Public Health Service Workshop on Human T-Lymphotropic Virus Type III Antibody Testing – United States. *MMWR* August 9, 1985; 34: 477-8.)

"The Atlanta Region of the American Red Cross (ARC) and CDC reported data from testing more than 51,000 blood donors, of whom 0.23% were repeatedly reactive by the Abbott EIA method. Among the specimens from 106 blood donors with repeatedly reactive tests, 34 (32%) were strongly reactive .... EIA tests categorized as strongly reactive

correlated highly with both positive Western blot tests (94%) and culture for HTLV-III/lymphadenopathy-associated virus (LAV) (56%)."

In other words, 44% of blood donors found to be strongly positive for antibodies to HIV had no evidence of virus by culture.

[Note, the full results or this study–along with the notion that antibodies can be used to diagnose infection–would come to be published in July of 1986. See below.]

Regarding high risk individuals: "... virus isolations were attempted from homosexual men attending a clinic for sexually transmitted diseases in San Francisco, California. None of 70 men with negative HTLV-III antibody tests had a positive culture, while 43 (60%) of 72 with repeatedly reactive tests were culture positive."

Or stated conversely, 40% of confirmed antibody positive high-risk individuals had no evidence of virus by culture.

March 14, 1986: The CDC says antibody positive individuals should be presumed to be infected (CDC. Additional recommendations to reduce sexual and drug abuse-related transmission of human T-lymphotropic virus type III/lymphadenopathy-associated virus. *MMWR* March 14, 1986; 35: 152-5).

"Since a large proportion of seropositive asymptomatic persons have been shown to be viremic (5), all seropositive individuals, whether symptomatic or not, must be presumed capable of transmitting this infection."

Remarkably, the reference (5) used to justify this statement is the January 11, 1985 CDC publication referred to above which states among other things:

"At present, the proportion of these seropositive donors who have been infected with HTLV-III is not known."

May 23, 1986: The CDC again hints that antibody positive individuals should be considered to be infected (CDC. Current trends classification system for Human T-lymphotropic virus type III/lymphadenopathy-associated virus infections. *MMWR* May 23 (1986) 35(20): 334-9).

"For public health purposes, patients with repeatedly reactive screening tests for HTLV-III/LAV antibody (e.g., enzyme-linked immunosorbent assay) in whom antibody is also identified by the use of supplemental tests (e.g., Western blot, immunofluorescence assay) should be considered both infected and infective (8-10)."

References 8-10 are to: 8) The July 13, 1984 CDC report that states, "... the frequency of virus in antibody-positive persons is yet to be determined;" 9) The August 9, 1985 CDC report, which makes no mention of whether or not antibody tests should be used to declare infection; and 10) the March 14, 1986 CDC report, which references the January 11, 1985 report that states, "the proportion of these seropositive donors who have been infected with HTLV-III is not known."

Comment: It is important to note that up to this point, study after study has demonstrated that a large proportion of patients considered positive by antibody testing had no evidence

of virus by culture (and this further presupposes that the criteria used to call a culture positive for HIV is valid in the first place). So why on earth would the CDC tells us that all such patients should be considered, or presumed to be infected? Well, it is important to note the distinction, "for public health purposes," in the above quote. In other words, what is the proper thing to do with antibody test results if we want to keep the hypothetical HIV from spreading (i.e., further infecting the general public)? Well, given that there may be, lets say a 50-60% chance that persons with positive antibody tests are also "infected" (i.e., they would score positive on culture if it could be done), you have to consider, or presume, all of them to be infected (i.e., sacrifice the individual for the well being of the public).

July 18, 1986: Researchers from the CDC publish an article in the Journal of the American Medical Association (JAMA), which defines antibodies as equal to infection (Ward JW, et al. Laboratory and epidemiologic evalustion of an enzyme immunoassay for antibodies to HTLV-III. JAMA July 18, 1986; 256: 357-61).

This study is a final report of the data collected on blood donors in Atlanta, which the CDC reported on in their August 9, 1985 report.

Regarding "isolation" of virus from blood donors found to be positive for antibodies (i.e., positive on ELISA and WB), the authors report: "... 23 (63.9%) of the 36 Western blot-positive specimens cultured for HTLV-III/LAV were positive..."

In other words, no evidence of virus could be found in 36% of "confirmed" antibody positive blood donors.

Regarding the notion of using antibody tests for diagnosing infection, the authors emphasize: "Evaluation of a new test requires an established or known standard for comparison. At this point, however, no established standard exists for identifying HTLV-III infection in asymptomatic people."

How can that be? Well, citing Gallo's work (Science 1984; 224: 500-03), they emphasize, "Current culture methods for HTLV-III identify virus in only 36% to 85% of persons with AIDS or related conditions and cannot be used as an absolute standard for HTLV-III/LAV infection."

Comment: The reason these researchers assert that culture cannot be used as an absolute standard for the detection of HIV is because it is not telling them what they want to hear. They want 100% of persons with AIDS or related conditions to test positive on culture -- a necessary (but not sufficient) requirement to declare a possible causative role between HIV and AIDS. So somehow, they already know HIV is the cause of AIDS, and since culture does not score positive on 100% of these patients, there must be something wrong with the culture.

The authors go on: "For this reason, we defined specimens positive on Western blot or culture as positive for infection with HTLV-III/LAV."

In other words, for those samples that don't behave properly (i.e., positive for antibodies, but negative on culture), one must simply define them as positive. [Note, five of the six authors on this paper worked at the CDC. Clearly, the CDC is pushing the notion that antibodies equal infection.]

March 19, 1987: FDA approves AZT (Retrovir) for "management of certain adult patients

with symptomatic HIV infection (AIDS and advanced ARC) who have a history of cytologically confirmed Pneumocystis carinii pneumonia (PCP) or an absolute CD4 (T4 helper/inducer) lymphocyte count of less than 200/mm3 in the peripheral blood before therapy is begun."

April 30, 1987: FDA approves Western blot "for screening blood and for validating an initial screening of donated blood for antibodies to the virus that causes AIDS, acquired immunodeficiency syndrome." "Robert E. Windom, M.D., HHS assistant secretary for health, emphasized that individuals with antibody-positive Western blot results should be referred for medical evaluation, which may include additional testing. The significance of antibodies in an asymptomatic individual [blood donor] is not known" (Susan Cruzan. FDA News 4/30/1987; P87-11).

According to the manufacturer of this test (Biotech Research Laboratories, Inc. of Rockville, Md. Marketed by Du Pont de Nemours and Company of Wilmington, Del.), "a Positive result may indicate infection with HIV-1." According to the manufacturer of another Western blot, "A sample that is reactive in both the EIA [i.e., ELISA] screening test and the Western blot is presumed to be positive for antibody to HIV-1." (Epitope, Inc. U.S. License #1133.)

So what you do here is first presume that samples reactive on ELISA and WB are positive for antibodies, and since the CDC says so (well, they are going to say so on August 14, 1987; see below), you get to further presume that persons with antibodies are infected. Logically, then, all persons reactive on ELISA and WB should likewise be presumed to be infected (i.e., If A = B, and B = C, then A = C; with the exception that in the above equation, there are NO equal signs).

July 23, 1987: Researchers/Burroughs Welcome Corporation publish the results of their clinical trial demonstrating "AZT administration can decrease mortality and the frequency of opportunistic infections in a selected group of subjects with AIDS or AIDS-related complex, at least over the 8 to 24 weeks of observation in this study." (N Engl J Med July 23, 1987; 317: 185-91).

August 14, 1987: Without reference to any scientific study, or any previous report from the CDC, the CDC announces: "The presence of antibody indicates current infection, though many infected persons may have minimal or no clinical evidence of disease for years." (CDC. Perspectives in disease prevention and health promotion public health service guidelines for counseling and antibody testing to prevent HIV infection and AIDS. *MMWR* August 14, 1987; 36(31): 509-15.) Gone is "presumed," "considered," "for public health purposes," etc. Gone is any distinction between "blood donors" and "high risk;" between "asymptomatic" and "symptomatic."

It is important to note that the designated mission of the CDC is public disease surveillance, education, and prevention. Here they are implicitly setting standards for medical practice. More precisely, they are establishing standards for medical practice without any scientific justification. Why the FDA (our consumer protection agency) choose to completely ignore this blatant violation of medical ethics remains an enigma. This is particularly the case when only four months earlier, the FDA warned, "The significance of antibodies in an asymptomatic individual is not known" (Susan Cruzan. FDA News 4/30/1987; P87-11). Without doubt, August 14, 1987 will ultimately come to be known as the day real virology came to its end.

UNIT 4
Appendix II

Why the "AIDS" Test Doesn't Work in Africa (2002)[1]

By Christine Johnson

In light of the summer of 2000 events at the 13th International AIDS conference in Durban, and South African President Thabo Mbeki's refusal to adhere to the "conventional wisdom" on AIDS, it has become even more crucial to re-evaluate all aspects of AIDS in Africa.

It is widely believed that Africa is being devastated by a plague of AIDS. This is in spite of the fact that, according to the World Health Organization's (WHO) Weekly Epidemiological Record, 19 years' worth of AIDS cases for the entire continent of Africa has amounted to only 876,009. (In the US, more people than this die in one year of heart disease.) Africa is generally blamed as being the origin of AIDS, yet statistics point towards a more likely source of this disease: The United States.

It was not until 1997 that the cumulative number of AIDS cases in Africa surpassed those in the United States. The most current stats (as of November 2000) show that the cumulative tally stands at Africa 876,009 and the United States 733,374—not much of a difference considering WHO's estimate that 25.3 million Sub-Saharan Africans have HIV/AIDS, whereas in the United States it is well below one million. Why this huge discrepancy? The main reason is that lots of Africans test positive on HIV antibody tests—while very few Americans do—and few HIV-positive people in any country go on to develop AIDS.

Researchers originally began looking to Africa as the source of AIDS for three rather feeble reasons: (21) 1) Robert Gallo's discredited theory that AIDS was caused by HTLV-1, another retrovirus similar to HIV, and thought to be endemic in Africa; 2) the prevalence of Kaposi's sarcoma in Africa (even though Kaposi's sarcoma was a new disease in American gay men, it had existed in Africa since ancient times, and hence could not indicate a brand-new disease there); and 3) a small number of AIDS patients of African origin who were living in Europe.

When researchers began taking HIV antibody test kits to Africa around 1985, they immediately found verification of the above ideas. Small groups of Africans were tested and found to be positive on these tests, and these numbers were extrapolated to the entire population. On this basis, and although only a few thousand AIDS cases had been reported in Africa at that time, the WHO immediately began estimating that millions of Africans were infected with HIV and that Africa would have to contend with an imminent plague.

In the mid-80s when HIV antibody tests first became available, it immediately became apparent that there were problems associated with using these tests in the African population. (1-5) In 1985, Hunsmann found that positive HIV (then called HTLV-III) ELISA tests had a low frequency of confirmation using a different type of antibody test, the immunoprecipitation method. This led him to question the specificity of ELISA in African blood samples. (1)

Biggar found correlations between positive HIV antibody tests and age and poverty. (2) He also found correlations with malaria and parasitic diseases in Africans (but not in

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Asians or South Americans). Labius Mutanda of the Ugandan Public Health Service and guest lecturer at St. Louis University (US) in 1991 reported that "existing ELISA and Western Blot assays may not always be able to reliably ascertain HIV infection in many African individuals." (3) Mutanda told me that his experience with both ELISA and Western Blot in Uganda was that often an individual could be positive if tested with the test kit from one manufacturer and negative if tested with the kit of a different manufacturer.

Serious questions have arisen as to whether HIV antibody tests are specific in any population, (6) although mainstream AIDS researchers still believe they are accurate, and considerations of test failure in Africa have never prevented the tests from being used there for many purposes including estimating HIV infections. Mulder in 1994 demonstrated that HIV-positive Africans died at a much greater rate than HIV-negative Africans, and offered this as definitive proof that HIV causes AIDS. (7) In reality, the only thing Mulder proved was the utility of HIV antibody tests when employed as generalized indicators that something is wrong, i.e., they can be used as surrogate markers of AIDS risk.

The ELISA test contains a mixture of broken-up HIV proteins called a "whole viral lysate." In theory, if a person's blood contains any HIV antibodies, the ELISA will react. The Western Blot is more sophisticated (and much more expensive). The HIV proteins are separated into bands on a strip. That way, if any antibodies cause a reaction, it can be determined exactly which HIV protein they are reacting to. The most important HIV proteins are p24, p32, gp4l, gp120, and gp160.

In the US, ELISA is considered to be very inaccurate, and no diagnosis of HIV infection is allowed to be made without a Western Blot (considered to be more accurate) as confirmation. Interestingly, in the UK, just the opposite is true and Western Blots are considered to be inaccurate!

For the most part, Africans aren't tested. It's simply too expensive. But when they are tested, the ELISA is used. HIV ELISAs aren't accurate enough to diagnose an American with HIV infection, but they are accurate enough for Africans?

To compound the problem in Africa, AIDS in Africa is diagnosed not with antibody tests but rather on the basis of clinical symptoms. This is called a "clinical case definition," and was originally developed by WHO in 1985. It consists mainly of persistent fever, diarrhoea, and weight loss. These symptoms are identical to those of any number of common African diseases. Only in Africa can you be diagnosed with AIDS on the basis of these symptoms alone. To make matters worse, individual countries have felt free to develop their own clinical case definitions. Thus there is no consistency between countries as to exactly what constitutes an AIDS case, and some of these clinical case definitions are extremely broad, making it easy to classify almost anything as AIDS.(34) Often new cases are registered which don't fulfill even these extremely lax criteria. (34)

Antigen/antibody reactions are non-specific

My search of the scientific literature on HIV antibody testing produced references to approximately 70 diseases or conditions that can possibly cause false-positive reactions on HIV ELISAs and/or Western Blots. (28) Many of the conditions that can cause false-positives are quite prevalent in Africa. These include tuberculosis, malaria, leprosy, Q-fever, tapeworms, or other parasites, and leishmaniasis.

In order for these tests to work properly, it must be true that a protein (also called an antigen) will react only with the antibody that matches it. In reality, antigen/antibody reactions in general are nonspecific, that is, antibodies can and do cross-react with antigens other than the ones that originally elicited them. This is a well-known phenomenon which scientists routinely ignore when it comes to HIV antibody tests.

This wide range of naturally occurring cross-reactivity does not in itself invalidate HIV antibody tests, or any antibody test. However, it does demand, as an absolute requirement, verification by an independent gold standard. The accuracy of any antibody test must be ascertained by determining that all people with positive antibody tests have the microbe in question isolated from their blood, and conversely, that all people who are negative have no microbe isolated from their blood. The fatal flaw in HIV antibody testing is that virus isolation has never been used as a gold standard, and it is the only proper gold standard. (6) Without virus isolation, no one knows what antibodies are causing the reaction when the test comes back positive.

The problems of antibody/antigen cross-reactivity are compounded in relationship to the infectious disease burden of the person being tested. The more varying antibodies a person carries, the more likely that person is to possess some type of antibody that will cross-react on HIV antibody tests. Many Africans have been exposed to a variety of diseases and thus tend to carry a multitude of antibodies. In this regard they can be compared to certain members of the recognized AIDS risk groups in the West (but not the general population of Westerners). The general rule is: The more diseases/microbes/foreign proteins, the more antibodies, and thus the more likely an HIV antibody test will be positive.

Test kit manufacturers "verify" the specificity of their tests (specificity is a measure of how often false-positives will occur) by testing several thousand random blood donors (by definition at low risk for AIDS or HIV infection), with 20 or 30 subjects thrown in who represent several of the more commonly recognized cross-reacting conditions such as rheumatoid arthritis or systemic lupus erythematosus. The other known cross-reacting factors (8) more prevalent in Africa are not added to the equation.

This practice of omitting Africans from the test sample, either healthy Africans or Africans with other similar non-AIDS conditions that might elicit cross-reactions, results in a picture of test accuracy that fits only the type of population in the test sample. This creates severe bias and overestimates test specificity. (9) Constantine stated, "Test parameters thus obtained with this sort of a biased sample cannot be validly extrapolated to assess a test's performance in different diagnostic situations." (10) In other words, an HIV antibody test kit developed in the West will yield different results in Westerners and Africans.

ELISAs with estimated specificities in the high 90s have been used in Africa, with very poor results, for exactly this reason. Constantine reports "unsatisfactory test performance has been described in studies with east African serum from Tanzania and Egypt." (10) Indeed, the specificity of one test dropped to an abysmal low of 51% when used in Africa. (11) (The way the math works out, even a specificity of 99% would produce extremely high numbers of false positives, (29) so you can imagine how inaccurate a specificity of 51% would be!). Confounding this is the widely-acknowledged propensity of antibodies to one retrovirus to cross-react with the antigens of other retroviruses. (12, 13) Gallo and his colleagues have repeatedly stated that the p24 of HIV and of two other human retroviruses, HTLV-I and HTLV-II, which Gallo claims to have isolated from humans, immunologically cross-react. (14) Since HTLV-1 is endemic in sub-Saharan Africa,(1) people infected with HTLV-1 may be misdiagnosed as being HIV infected.

Are the new "third generation" test kits any better?

The World Health Organization (WHO) attempted to deal with this problem by instituting a program in Africa whereby local clinics would be set up to offer testing using techniques that employed genetically engineered HIV antigens called recombinent antigens (as opposed to the usual whole viral lysate antigens which contained many cross-reacting contaminants). Local lab techs were trained to use these tests properly. Gordon Stewart, a British epidemiologist (and member of RA's editorial board) who had visited Kenya,

described such a clinic to me. However, several years ago Panafrica News Agency correspondent Eliezer Wangulu described another part of Kenya where "most health facilities have dysfunctional laboratories that have also run out of reagents."

There are many centers where testing is performed by trained staff using recombinant antigen for ELISA tests (Western Blot is used by some, but certainly not even the majority, of centers as a confirmatory test). However, Stewart told me he suspected that "much of the testing in Africa is done with miscellaneous test kits, unsupervised and unvalidated."

Proper performance and interpretation of Western Blots requires a high degree of expertise. Lab proficiency is highly variable and sometimes completely unacceptable. (30) Even reference labs (the highest quality labs) in the United States have quality control issues, (31) and it can be expected that the specificity of any test kit will deteriorate by an order of magnitude or more in less experienced labs (where most of the testing is done). (32,33) So one must wonder how good quality control could exist in Africa, where health care budgets are often minuscule, and lab experience is much less in comparison. In addition, the chaos of civil unrest and warfare in several countries has had a profound effect on health care budgets and the ability to organize proper health care resources.

Whether or not a significant portion of African populations has access to properly run and equipped labs and testing programs, the use of recombinant antigen test kits will not solve the problem. It is claimed that these "third generation" test kit antigens are "purified" to the extent that unwanted cross-reactions (and thus false-positives) will not occur. However, recombinant antigens are derived from E. coli and may contain additional bacterial epitopes, and in test sera from some individuals with antibacterial antibodies, false positives occur as a result of the interaction of these antibodies with the antigens of the enteric bacilli. (15,16)

Other false positives can occur for reasons unique to recombinant technology, e.g., immunoreactive epitopes may rely on either primary amino acid sequence or conformational shape for antigenicity and therefore, nonspecific reactivity may result if similar epitopes exist on different viruses (such as the common flu virus). (15) The fact that other microbes share epitopes with HIV has often been documented. (17) Test systems based on recombinant HIV antigens have yielded positive results much more often than those based on whole viral lysate due to cross-reaction with antigens of enteric bacilli. (16) A study of two groups of random blood donors (which should have yielded similar results) showed positives to occur twice as frequently in the group tested with recombinant-antigen-based tests (617/119,004) as in the group tested with lysate-antigen-based tests (246/119,178). (18)

Another study was done in the former USSR to determine the positive predictive value (how often a positive test result indicates a true infection) of various confirmatory tests. This study yielded the following results in AIDS high-risk groups: (19)

* Whole viral lysate antigens: 99.4% specificity
* Recombinant peptide antigens: 95.1% specificity
* Synthetic peptide antigens: 86.1% specificity

As mentioned above, a specificity of 95% indicates an extremely inaccurate test in terms of potential false-positives.

Yet another study demonstrated cross-reactions between the sera of people with autoimmune disorders (for example, systemic lupus erythematosus and Sjogren's syndrome) and HIV synthetic peptides or recombinant gp120, gp4l, and p24 proteins. (17)

The purity of the antigens is really not the issue. Regardless of the source of antigens, all serological tests are subject to nonspecific and unpredictable reactivity. (15) It does not matter whether the HIV antigens are natural or engineered, or even derived from HIV itself (e.g., a serological test for infectious mononucleosis employs sheep red blood cells). (20)

What does matter is whether the reactions of patients' sera with these antigens are shown to be specific for the presence of HIV in vivo. A fundamental principle of antibody testing is that "for a test to be valid, regardless of time of development, generation, or appellation, its specificity must be authenticated by the use of an independent gold standard." (20)

Mycobacterial diseases can cause false-positive HIV antibody tests

In 1994, Essex found significant levels of false-positive reactions on both ELISA and Western Blot in people with leprosy, a disease associated with Mycobacterium leprae infection. (5) Antibodies to the carbohydrate structures found in the mycobacterial cell wall, lipoarabinomannan (LAM) and phenolic glycolipid (PGL), were noted to "[yield] significant cross-reactivities with the HIV-1 pol [p31] and gag [p24] proteins." Essex stated that the "data suggest that mycobacterial cell wall antigens may share common epitopes with HIV" and warned that "ELISA and Western Blot may not be sufficient for HIV diagnosis in AIDS-endemic areas of Central Africa where the prevalence of mycobacterial diseases is quite high."

These carbohydrate-containing antigens are also present in other mycobacteria, in particular Mycobacterium tuberculosis. It is particularly significant to note:

1. Of the 661 million people in sub-Saharan Africa, 2-3 million have active TB with an annual mortality of 790,000; (21)
2. TB has now become an AIDS-defining illness, and 30-50% of African "AIDS" deaths are from TB; (21)
3. "HIV infection" as defined by a positive HIV antibody test does not precede TB infection but rather follows it; (21)
4. In a tuberculosis sanatorium in Kinshasa, Zaire, half of the suspected pulmonary cases, one-third of the confirmed cases, and two-thirds of the confirmed extra-pulmonary cases had a positive HIV Western Blot test. (21,22)

The presumption is that HIV infection leads to tuberculosis as an AIDS indicator disease, but from the above data it is more reasonable to conclude the opposite—that tuberculosis causes false-positive HIV seropositivity, without HIV infection being present.

Anti-carbohydrate antibodies cross-react with HIV proteins

It has been recognized at least since 1980 that naturally-occurring anti-carbohydrate antibodies cross-react with HIV proteins. (23) Healy speculated that false-positive Western Blot gp4l bands were actually due to anti-carbohydrate antibodies, since gp4l and non-viral proteins share similar antigenic structures. (24) Tomiyama stated that "normal human serum contains antibodies capable of recognizing the carbohydrate moiety of the HIV envelope glycoproteins (gp4l, gp120, and gp160)." (25) This is of particular significance when one realizes that African criteria for reading Western Blots allow a positive diagnosis based on two envelope bands alone.

Eleopulos states "Not only mycobacteria (M. leprae, M. tuberculosis, M. avium-intracellulare) but also the walls of all fungi (Candida albicans, Cryptococcus neoformans, Coccidioides immitis, Histoplasma capsulatum including Pneumocystis carinii), contain carbohydrate (mannans). One hundred percent of AIDS patients (even those with 'no Candida clinically') have Candida albicans antibodies.... Since antibodies to mannans react with the 'HIV proteins' then, as Essex and his colleagues have pointed out for mycobacterial infection in Africa, one would expect the sera of all people infected with fungi and mycobacteria to cross-react with the HIV-1 glycoproteins as well as to cause 'significant cross-reactivities with HIV-1 pol and gag proteins." (17)

The vast majority of opportunistic infections experienced by AIDS patients in the West are due to PCP, candidiasis, cryptococcosis, coccidioidomycosis, histoplasmosis,

tuberculosis or Mycobacterium avium-intracellulare disease (88% of AIDS cases diagnosed between 1988 and 1992 had one or more fungal or mycobacterial infections). (17) At the very least tuberculosis and histoplasmosis (26) are endemic in many parts of Africa, and if AIDS in Africa and AIDS in the West are the same disease, it can be presumed that many African AIDS patients will be infected with the above organisms. (26)

A mannose-type oligosacharride is furanose, from which the antibiotic nitrofurantoin is derived. O.M. Mulugheta, an African who had worked for two years as a tropical medicine doctor in Malawi, was concerned about possible exposure from his practice and decided to take an HIV antibody test. It was positive (both on ELISA and Western Blot). Three weeks prior to the testing, he and his wife had both taken the antibiotic nitrofurantoin for minor urinary tract infections. Several weeks later they both experienced the symptoms of polyneuropathy, dermatitis, allergic pneumonitis, herpes zoster, and severe headaches. AIDS was immediately suspected by other local physicians, but Mulugheta was convinced he wasn't infected with HIV (as well he shouldn't have been, since these aren't typical presenting symptoms of "HIV infection" but rather are more typical of a drug reaction).

Refusing to accept a diagnosis of HIV infection or AIDS, and a prognosis of death, he researched his problem and developed the theory that it was the furanose sugar (of which nitrofurantoin is made) or its metabolites the furans, which lead to reactive HIV antibody tests in Africans. Mulugheta pointed out: "Furanose is found in the husks of maize, barley, and oats. Maize is a dietary mainstay of the Central African states and much, if not all, of their local homebrew is made from maize. To concentrate the alcohol content, the husks are mainly employed."

Estimates of HIV infections in Africa have no scientific basis

In spite of the facts, the myth that Africa is suffering a catastrophic AIDS epidemic still persists. Last year Newsweek joined the incessant proclamations that Africa is being ravaged by AIDS, citing "2.2 million [AIDS deaths] in 1998 alone." (27) One might be astounded at this figure, given that only 876,009 actual cases have been reported in 19 years. However, Newsweek is merely doing their duty by mindlessly repeating the estimates promulgated by WHO. (34)

According to Stewart, WHO bases its estimates on the numbers of both positive tests and of AIDS cases reported by member states, "accepted at face value and, with rare exceptions, unvalidated." Estimates are extrapolated from this data using flawed mathematical models.

Christian Fiala, an Austrian doctor who has extensively researched the global epidemiological data on HIV and AIDS, states that WHO produces its estimates by multiplying reported cases by a certain factor (on the reasonable assumption that actual cases are more than reported cases). However, this multiplication factor arbitrarily and inexplicably increases every year. In 1996 it was 12; only a year and a half later it had increased to 38! (34) Fiala states: "The well-known horror scenarios about an epidemic of a new infectious disease exist exclusively in the heads of the statisticians through untenable and escalating multiplications." (34)

Conclusion

The huge (and alleged) AIDS epidemic in Africa is based on several factors which simply have no scientific basis: 1) WHO's faulty estimates, 2) nonspecific clinical case definitions, and 3) /grossly inaccurate HIV antibody tests which simply do not work in Africa.

According to AIDS authorities, 25.3 million Africans are doomed to die, but in reality, no one knows if a single one of them is infected with HIV.

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Unit 4
Appendix III

Manufacturing Certainty[1]

By David Crowe

Medical tests are a common way to create the illusion of certainty. A test usually measures a 'surrogate marker' for a condition, something that is otherwise invisible, or at least much more difficult, expensive and time consuming to find directly. A nicely packaged test can instil confidence and, in a sense, create a disease when a positive test result is accepted without any symptoms being present.

An HIV test is perhaps the best example. A positive test is devastating to most people subjectively, particularly those who are outside the traditional risk groups and completely unprepared. Feelings of doom come, not surprisingly, even to those who are perfectly healthy at the time of the test [Gala, 1992]. Objectively, HIV tests can destroy people's lives due to the social stigma attached. Apart from the social stigma, desperate feelings lead to desperate actions, and, for HIV, the desperate action is to take AIDS medications. Antiviral drugs have fatal side effects, and even those who avoid that are likely to experience a destruction of their quality of life, even if they were completely healthy at the time of the test [Goodman, 2002].

Obviously, the doctor and patient must feel certain that tests are accurate. If the patient was told that there was only a 90% certainty that the test was accurate they might be much less likely to take medications carrying such risks. The almost universal impression among scientists, the media, governments and the general public that HIV tests are accurate enough to stake your life on is, strangely enough, so strong because there is no absolute measure against which the tests can be validated. Instead of accepting this as uncertainty over whether the tests are meaningful, it is accepted as lack of proof that they are not highly accurate. All that Robert Gallo's and Luc Montagnier's research teams found was a high correlation between their antibody tests and AIDS. People with AIDS had a high probability (88% in the case of Gallo [Sarngadharan, 1984]) of testing positive, and people without AIDS had a very low probability of testing positive. A huge conceptual leap over a chasm of uncertainty was to conclude from this evidence that a positive test in a healthy person proved they had a condition that would inevitably kill them.

The science of HIV testing has progressed since then, but only in technological ways (such as the use of monoclonal antibodies); the original logical uncertainties still exist. Almost every scientific paper concerning HIV tests still uses antibody tests as the "gold standard." This is unusual because antibody tests, even if one ignores the possibility of cross reactions, can only prove past exposure to a virus, not current infection.

HIV antigen tests, which are more direct, are only positive in about half the people who are HIV-antibody positive [McKinney, 1991; Semple, 1991]. This finding is explained away through an immune reaction that masks the antigen. But, this implies that the HIV infection is conquered, which is not compatible with the notion that HIV infection is incurable. Virus cultivation, often erroneously called 'isolation' is an even older method than antibody testing for HIV, but apart from being time consuming, expensive and difficult to perform, it also is negative quite frequently, and a positive antibody test usually trumps a negative culture [Layon, 1986] (and vice-versa [Eur Coll, 1991; Imagawa, 1989]).

The major new test since the early days of AIDS is the Polymerase Chain Reaction, often called 'viral load' when used for HIV tests. This also takes a back seat to antibody tests [Roche, 1996], likely because it is so ultra-sensitive that the risk of a false positive is high.

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[1] Abridged for this course reader with the kind consent of the author, from *Red Flags Weekly* online newsletter <http://www.redflagsweekly.com> posted June 23, 2003. Accessed October 9, 2011.

Furthermore, detecting a snippet of genetic material (RNA or DNA, depending on the type of test) does not prove that the entire genome is present, and obviously does not prove that infectious virus particles are present. This test is particularly uncertain because the genetic material does not come from purified virus. Even accepting the test's ability to specifically detect HIV DNA or RNA, one research team estimated that only one infectious virus particle was present for every 60,000 measured by viral load! [Piatak, 1993; Roche, 1996]

All HIV tests are indirect, even virus 'isolation' by culturing. Consequently, some 'gold standard' is necessary to validate them [Cleary, 1987; Abbott, 1997; Meyer, 1987; Daar, 2001; Papadopulos, 2003]. The only standard that is reasonable for a virus is actual purification direct from body fluids of people who are HIV infected and the inability to purify from people who are not. Virus purification would allow the proper characterization of the virus, so that antigens, antibodies, DNA and RNA that are generally believed to be from HIV could be proven to be from HIV (or not).

Without a 'gold standard' for HIV infection the only way to validate the test is by repeating the test or by comparing it against different (also unvalidated) tests. This can establish the reproducibility of the test, but not its specificity (ability to react with the target and therefore avoid false positives) or sensitivity (ability to react to cases of infection and therefore avoid false negatives).

US army researchers claimed that the specificity of HIV antibody tests was only 1 false positive out of 135,187 tests [Burke, 1988]. However, although they claimed to have established a high specificity for antibody tests, they were actually verifying only reproducibility, and the researchers did not actually prove that the 15 people from this low risk population who were deemed to have had true positive tests actually had the virus in them.

Modern diseases that are blamed on a virus are often little more than the test because the disease can exist without clinical symptoms. There is an average of 10 years between becoming HIV positive and the first signs of AIDS in both rich countries [Munoz, 1995] and poor [Morgan, 2002]. In that time the HIV test is the only sign that anything is wrong. Worse yet, a low CD4 cell count test can result, in the United States, in a diagnosis of AIDS (not just HIV infection), again without any clinical symptoms. But even without symptoms a diagnosis of HIV infection or AIDS will still often result in treatment because of everyone's confidence in the tests.

Other viral diseases might not have a long incubation period, but the test still plays the prime role in defining the condition. West Nile disease, for example, is associated with no illness in the majority of people who test positive, and serious illness in only about 1 out of 150 [Petersen, 2002]. The symptoms, when they do occur, are indistinguishable from many other viral diseases [CDC, 2002]. This has not resulted in a call to question the accuracy of the tests. Instead, the certainty that any symptoms found along with a positive test are due to the virus is so great that when the symptoms are uncharacteristic scientists want to add them to the definition, rather than to ask whether the tests are accurate and whether presence of a virus is proof of pathogenicity [Glass, 2002; Leis, 2002]

One of the strange phenomena with HIV and AIDS science was overwhelming feeling of certainty that crept over scientists in the mid-1980s. Only 3.4% of papers in 1984 associated a reference to Gallo's original 1984 papers on HIV (HTLV-III) with "explicit and unqualified" assertions that HIV caused AIDS but this increased to 25% in 1985 and 62% in 1986, even when these papers were referenced alone. [Epstein, 1996]

Kary Mullis, who received the 1993 Nobel for Chemistry (ironically because of his invention of the Polymerase Chain Reaction) has asked many scientists for a set of references that constitute proof that HIV causes AIDS [Duesberg, 1996] and has not yet received them. Yet, even without this proof being written down in a scientific paper, certainty still reigns.

SARS[2] illustrates how quickly researchers can manufacture certainty today. The mainstream media (which claim to be "responsible") have ensured us that everyone knows SARS is caused by a Coronavirus. Reports from Dr. Frank Plummer, one of Canada's top virologists, that a diminishing percentage of patients (30% by mid-April) are testing positive do not dissuade them from this belief [Altman, 2003]. Everyone knows that there is no possible explanation for all the patients having some connection with the original cases other than an infectious agent, even though for some outbreaks there was no solid connection, and tautologically, the epidemiologic connection is supposed to be present before diagnosing SARS (as opposed to some other disease with similar symptoms). And, everyone also knows that there is no other explanation for the severity of the disease, certainly not the new phenomenon of aggressive prescription of steroids and the antiviral ribavirin that occurred as the fear of the outbreak spread [Koren, 2003].

What HIV/AIDS science took two years to do, SARS science took only two months to accomplish. I predict that a Coronavirus test will soon become part of the SARS case definition, which will immediately create a 100% correlation between the Coronavirus and SARS symptoms. Just as with AIDS, the same symptoms without a positive test will be another disease, and not taken nearly as seriously.[3]

People demand simple answers to complex problems and modern medical science delivers. We are told that tests are highly accurate, that drugs will cure conditions or, if that is not possible, that they are the best bet. We are told that environmental conditions play little role in modern, emerging diseases. Alternative therapy is scoffed at because it has not been 'proven' effective through randomized, placebo-controlled clinical trials.

The fundamental reason why this confidence game continues to be played is because of human laziness. It is much easier to learn about science by rote than by examining evidence and making up one's own mind. Obviously, not every pronouncement on science can be taken seriously, so the status of a person or publisher becomes the way to distinguish between "good science" and "junk science." Many people do not believe that they have the ability to understand scientific papers. The media, even most science reporters, are much more productive if they also adopt this attitude. Among scientists, there is a hierarchy that is constructed from the anonymous peer review system for publication and grant support. This allows longer-serving officers of science to anonymously subvert the attempts of younger scientists (and outsiders) to reappraise current dogmas, by denying them the ability to publish and obtain research funding.

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[2] Severe acute respiratory syndrome (SARS) is a serious form of pneumonia. It is presumed to be caused by a virus that was first identified in 2003.

[3] [The need to define diseases operationally, independent of suspected causes, in order to establish their cause, is discussed Unit 8, section 4 of this course reader.—Ed.]

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