

LYMERIX Meeting; LDA Meets with FDA

SPECIAL REPORT: LDA MEETS WITH FDA ON LYMERIX

On January 22, 2002 in Bethesda, MD., the LDA was able to get a private meeting with the FDA on the vaccine issue, despite reluctance by the FDA to grant the meeting. Congressman Chris Smith helped facilitate the setup of this meeting.

Patricia Smith, President, Lyme Disease Association

LDA president Pat Smith invited Andrea Gaito, MD, President, International Lyme & Associated Disease Society, ILADS; Donald Marks, MD, former lab director for Cannaught; Steven Sheller, Esq., member, LDA's Professional Advisory Board; Albert Brooks, Esq.; and Pam Weintraub, former editor, Omni magazine, to present material to the FDA.

About a dozen major FDA officials involved with the vaccine were present. These included:

Karen Midthun, MD

Director, Office of Vaccine Research and Review
Center for Biologics Evaluation and Research

Susan Ellenberg, PhD

Director, Office of Biostatistics and Epidemiology
Center for Biologics Evaluation and Research

Peter Beckerman, JD

Office of the Chief Counsel, FDA

Norman Baylor, PhD

Associate Director for Regulatory Policy
Office of Vaccine Research and Review
Center for Biologics Evaluation and Research

Miles Braun, MD

Director, Division of Epidemiology
Office of Biostatistics and Epidemiology
Center for Biologics Evaluation and Research

Robert Ball, MD
Chief, Vaccine Safety Branch
Division of Epidemiology, Office of Biostatistics and Epidemiology
Center for Biologics Evaluation and Research

Mary Meyer
Director, Office of Communication, Training and Manufacturers Assistance
Center for Biologics Evaluation and Research

Cap Uldriks, JD
Acting Director, Division of Communication and Consumer Affairs
Office of Communication, Training and Manufacturers Assistance
Center for Biologics Evaluation and Research

Julie Zawisza
Chief, Consumer Affairs Branch
Division of Communication and Consumer Affairs
Office of Communication, Training and Manufacturers Assistance
Center for Biologics Evaluation and Research

A summary of the meeting follows, beginning with a digest of LDA presentations:

Patricia Smith, President, Lyme Disease Association

Most patients with adverse events are not reported to VAERS by physicians. I attend many events all over the Northeast, and the vaccine and associated problems are always brought up to me, unsolicited on my part. Last week I was at a large sportsmen's show. Just at this show alone, I heard about seven individuals who received the vaccine and experienced problems. One man had joint pains all over his body and his doctor did not think it related to the vaccine, nor did he report it. The man had cut down on hunting and fishing. He had stopped running.

When this individual went back to his physician and asked him to report the adverse response to VAERS, the doctor blew him off. The doctors are very much in the dark about this vaccine. We have doctors who do not understand that boosters are

required. One man came up to me at the event and told me his doctor said no booster was required and he thought he was fully protected forever. Many physicians do not know the vaccine is contraindicated with a history of arthritis. Most people I spoke with who report side effects mentioned they occurred after the second shot. An employee at Rutgers approached me and said the University gave Lymerix. The professor knows four Lymerix recipients at Rutgers who are having significant trouble.

I hear the same thing from other groups. There are a lot of problems I do not think you are aware of. I hear from physicians that the vaccine causes Lyme disease to be retriggered. I'm out there a lot. I have no stake other than to keep people from getting Lyme disease.

Our organization has always had questions about the vaccine, and at the last FDA meeting in January 2001 we requested a moratorium.

Andrea Gaito, MD, President, International Lyme & Associated Disease Society, ILADS:

I have 35 patients with problems stemming from the vaccine. There are three categories of problem.

The first category includes arthritis-like presentations. These patients have symptoms that present, clinically, like rheumatoid arthritis. They seem to have an autoimmune reaction stemming from the presence of a genetic marker theorized to be a source of trouble, HLA-DR4. Some of these patients may have other relevant HLAs. Perhaps there are a cascade of other immunological reactions, including cytokines.

What I have found is that people with Lyme who become asymptomatic may, upon vaccination with Lymerix, experience a retriggering of symptoms. Those who never had symptoms of Lyme disease, meanwhile, will, upon vaccination, experience the symptoms of Lyme disease.

One example is a 55 year-old woman with no history of Lyme disease. She presented with acute synovitis and in her hands, wrists, ankles, and feet. The physician who administered the vaccine told her there was no relationship between these symptoms and the vaccine. He did not report them. It is possible that, like so many other physicians, he did not want to trouble with the paperwork. When the woman thereafter came to me, I ran tests. Her rheumatoid factor was negative but her Western Blot was

suggestive of active Lyme disease, with eight IgM and three IgG bands. I prescribed for her a course of doxycycline, but she had minimal response. So I put her on anti-inflammatory medication. Now, two years later, she is *still* on anti-inflammatory medication.

The scenario for this woman is that of an autoimmune disease.

Even though she reacted to the vaccine in this adverse fashion, her physician made her feel guilty. Many patients have complaints but doctors are not receptive to them. The bottom line is that the doctor is afraid of being sued.

The second case I would like to present involves a 20-year-old white male with a history of Lyme meningitis. Previously, he had 4 weeks of intravenous Rocephin and before receiving Lymerix was asymptomatic. After receiving Lymerix, however, he had the onset of Obsessive Compulsive Disorder, headache, and fatigue. He had to leave college. Upon testing, he had a positive ELISA and a Western Blot with every band positive. We retreated him with another course of IV Rocephin, but he has remained sick.

The third case involves a 48-year-old woman and gardener. She received three shots of Lymerix and then, subsequently, was bitten by a tick. She had presumed she was one hundred percent protected, but she went on to develop symptoms of Lyme disease, including night sweats and fatigue. We performed a Western Blot test for this woman and found every band to be positive. She received two course of antibiotic therapy and had no response. She also tested positive for the HLA markers that have been associated with Lyme-related autoimmune disease. This patient now has Lyme disease but does not respond to treatment.

As I review my experience with Lymerix, I find the issues to be confusing. How can we get a handle on the efficacy of this vaccine? What about the efficacy of booster shots? Will vaccinated individuals with prior Lyme who ultimately present with symptoms respond to retreatment? Is the vaccine itself retriggering an autoimmune response?

One final word: It is possible that the difference between the pre- and post-marketing results of Lymerix relates to the fact that those using it post-marketing lived in endemic areas for Lyme disease.

Donald H. Marks, MD, PhD, former lab director for Cannaugh:

First let me describe my background. I have fourteen years of clinical research and regulatory affairs experience in the pharmaceutical industry. My positions have included Associate Director of Clinical Research, Hoffman-LaRoche Pharmaceuticals, where I worked on Lyme disease; Vice President of Medical Affairs, Immunomedics; and finally, Director of Clinical Research, Aventis Pasteur, where I was in charge of the Lyme disease vaccine program.

The focus of my medical practice today is on diagnosis of adverse events from medications, vaccines, biologicals, and medical devices. Among the issues I have worked on are the associations between Accutane and seizures, psychosis and suicide; Ephedra and hemorrhagic stroke; Fen-Phen and heart valve problems; Lotrenex and ischemic bowel disease; Posicor and Propulsid and arrhythmias, in the case of the former medicine, fatal arrhythmias; Quinolone antibiotics like Floxin and Trovan and tendon neuropathy, seizures, and hypoglycemia; Rezulin and liver toxicity and cardiomyopathy; SSRI antidepressants like Prozac, Zoloft and Paxil and suicide, psychosis, and seizures; and Lymerix and rheumatologic and neurologic complications.

Today I am here as a consultant of the Lyme Disease Association, which has asked me to review a series of adverse events associated with Lymerix: These include athralgias and arthritis as well as complicated neurological problems. They include adverse events that are long-lasting.

Dr. Marks proceeded to present a series of slides. We reproduce them here, with explanation and some editing, where needed, for clarity and brevity in the current context.

WHY MORE ADVERSE EVENTS WERE SEEN AFTER THE VACCINE REACHED THE MARKET:

- People receiving Lymerix after product launch were at greater risk for adverse events because they lived in Lyme-endemic areas.
- Many of these people may have had prior exposure and clinical or subclinical infection. In these cases, Lymerix could be triggering or reactivating the damage caused by old and presumably cured Lyme disease.
- Pattern of symptoms experienced after Lymerix mimicked pattern of prior infections in many individuals. In these patients, Lymerix-related symptoms seemed to respond to antibiotics, as did the initial infection, bolstering the theory of disease reactivation.

HOW SMITHKLINE BEECHAM (GLAXO SMITHKLINE) USED CONFUSING LANGUAGE, KEEPING FDA AND PHYSICIANS IN THE DARK:

- The Company dismissed the significance of adverse events reported since marketing by stating the vaccine's profile had not changed "except as described below..." The description referred to, rendered with numbers but given no contextual explanation, in fact implied a huge change in safety. The company's confusing language made it sound as if the adverse events, many of them severe, had no particular significance at all.
- As proof of safety, the company inoculated arthritis-prone mice with Osp-A. But since the mice did not possess the HLA marker known to interact with Osp-A in humans, the experiment was, in fact, meaningless.
- The company has masked serious causally-related adverse events behind qualifiers, such as "...and which may have no causal relationship with the vaccine" and "...cannot be distinguished from the natural history of the underlying disease," all the while knowing these are confusing the issues.
- The company tries to shift the blame from the vaccine to the patient with statements such as "the possibility of a severe rheumatologic, neurologic, autoimmune adverse event is inherent in Lyme disease." The company does not inform physicians that the adverse events can result from Lymerix, completely apart from the disease.
- As a result of these actions, GPs in the US were kept in the dark about the life-threatening side effects of Lymerix.

SOME BASIC PROBLEMS.

- Non-specific hyper-activation of the immune system, often evidenced through swollen hands or arthritis, is an adverse event associated with Lymerix. This may be due to the presence of adjuvant.
- This hyper-activation creates "dirty" Western blots in which multiple Lyme disease bands appear, whether the individual has Lyme disease or not.
- The dirty banding makes it impossible for physicians to differentiate between Lymerix vaccination, new infection with *Borrelia burgdorferi*, or reactivation of infection.
- The net result is that cases of Lyme disease will go undiagnosed and untreated.
- Adverse reactions to Lymerix will be misdiagnosed with Lyme disease and

people will be unnecessarily treated with antibiotics.

- The vaccine manufacture provides no warnings as to these possibilities.
- Physicians unaware of the spectrum of problems cannot appropriately treat these patients.
- The intention of FDA regulations is to provide a vaccine that is safe and effective. The intention of prescribing regulations is to provide sufficient information to prescribing physicians to enable safe and effective use of the vaccine. In both regards, SKB's actions appear to be contrary to FDA regulations and intentions, and contrary to accepted standards within the vaccine industry.

Dr. Marks provided some case assessments based on stringent parameters. His conclusions were based on pre- and post-marketing as well as supplemental data; internal company documents; published literature; international meetings; special reports; patient medical files; and patient examinations. He used the standard methodological rule of "more likely than not" as well as objective, scientific criteria and objective procedures. The assessments themselves, according to Dr. Marks, were arrived at based on "clinical presentation, the medical records, telephone interviews and/or physical exams, temporal relatedness of the event to the vaccination, known adverse event profile of Lymerix, mechanism of action of Lymerix, opinions of the treating physician, articles from the medical literature on adverse events occurring as a result of vaccination with OspA-based vaccines for Lyme disease, my experience as a pharmaceutical industry medical safety officer, my experience having reviewed hundreds of clinical cases of potential medication adverse events, my experience as a vaccinologist and clinical researcher developing vaccines and antibiotic treatments against Lyme and other diseases, and my examination of alternative explanations." Added Marks: "The adverse events I have examine from Lymerix ARE SIMILAR TO THOSE I AM FAMILIAR WITH FROM ANOTHER OSP A VACCINE."

Marks examined 22 cases in all. In each of these cases, he said, the adverse event was not anecdotal but was, instead, a medical certainty:

- 4 of 4 neurological adverse events were related to Lymerix with presentations including transverse myelitis, inflammatory polyneuropathy, radiculopathy and cervical throacic myelopathy with multiple neurologic including CNS symptoms, and memory loss and difficulty concentrating with immune-related complex of joint pain and fatigue.

- 15 of 17 rheumatologic adverse events were related, including inflammatory seronegative spondyloarthropathy, polyarthropathy, arthralgias, and arthritis.
- 2 of 2 miscellaneous reports were unrelated. These included chest pain and myofacial pain.

Based on his research, Marks told FDA officials, "SKB (Glaxo) has acted in an unreasonable manner by marketing Lymerix without adequate warnings about the risks of severe rheumatologic, neurologic, autoimmune and other adverse events, and by failing to caution and educate physicians about these dangers. In view of the evidence of a strong and likely causal relationship between Lymerix and severe rheumatologic, neurologic, autoimmune and other adverse events, SKB should market this vaccine, if at all, with prominent warnings and cautionary statement."

"In my opinion, SKB should have devised and conducted clinical trials, epidemiological studies, or after-the-fact investigations to study the causal relationship between severe rheumatologic, neurologic, autoimmune and other adverse events and the use of Lymerix."

Given that Dr. Marks lead the clinical trials for Lymerix's competitor, the OspA vaccine produced and then abandoned by Aventis Pasteur, his conclusions mean a lot. "In my opinion," he told FDA officials, "there is sufficient evidence that Lymerix is causally related to severe rheumatologic, neurologic, autoimmune, and other adverse events in some individuals. This evidence is such as to warrant a significantly heightened degree of warnings and possible limitations or removal from marketing of Lymerix."

FDA answers LDA vaccine questions in writing weeks after meeting.

LDA PRESUBMITTED QUESTIONS TO EPA (Below)

The floor was then handed over to FDA to answer the following questions:

1. What does the FDA intend to do about the lyme vaccine?
2. Questions on the follow-up study of VAERS reports, especially, what is the primary endpoint and study design for the on-going telephone survey of a subset of individuals who have reported adverse reactions to VAERS. Specifically, what is the inclusion/exclusion criteria? Subquestions

include:

A. Assuming an inclusion criteria includes arthritis and/or arthralgia, which VAERS codes and/or keywords are used to identify such individuals? And, if the inclusion criteria consists of a specific injury and/or disease process, why has the study been so limited instead of addressing the various adverse reactions being reported to VAERS, including non-specific pain syndromes and development of Lyme disease-like symptoms, possibly constituting exacerbation of previously asymptomatic Lyme disease and neurological conditions such as Bells' Palsy, optic neuritis, and acute transverse myelitis?

B. Further, what is the FDA's case definition of "definite, probable and possible arthritis" for purposes of this study? The abstract of the "preliminary evaluation" reports completed interviews of 49 patients out of 85 attempted (out of 415 patients with VAERS reports of "arthralgia or possible arthritis following Lyme vaccine") reports 17 cases of "possible arthritis" and 14 cases of "physician-diagnosed definite arthritis"). Does this mean that the remaining 18 had "probable arthritis" and, if so, what if anything is being done to evaluate their cases?

C. How is the FDA dealing with individuals who test positive for Lyme disease after vaccination in terms of distinguishing between a new infection (i.e. vaccine failure) and the exacerbation of a previously asymptomatic or presumably "cured" infection (i.e. an adverse reaction)? It appears from the abstract that 7 of 14 cases of physician-diagnosed arthritis also had what is described as "concomitant exposure or another medical condition, including Lyme disease". What, if anything is the FDA doing to evaluate these individuals, especially in light of the fact that many people who have and who will receive LYMERix reside in Lyme-endemic areas and can presumably be easily dismissed as having "concomitant exposure"?

D. Does the fact that 50% (7 of 14) of cases of physician-diagnosed definite arthritis post vaccination demonstrate the need for a warning and/or contraindication against the vaccination of individuals with "familial history of immune-mediated disease or inflammatory arthritis", "immune-mediated disease", and "prior history of physician-diagnosed Lyme disease"?

E. When does the FDA contemplate completion of the interviews of the 415 VAERS reports identified as "arthralgia or possible arthritis"? And what if anything is being done to identify such reports filed subsequent to October 2000?

F. Given the fact that FDA has now documented 7 case reports of physician-diagnosed definite arthritis which "could not be plausibly explained by concomitant exposure, prior diseases, or familial histories" a number on par with those that triggered regulatory intervention in other pharmaceuticals such as "Fen-Phen", is the FDA prepared to call for an immediate moratorium and/or withdrawal of LYMERix and, if not, what is the threshold number of case reports needed to trigger such action? It should be noted that 14 cases of physician-diagnosed arthritis post vaccination were identified out of 31 patients whose medical records were reviewed (45.2%), and in 7 of those (22.6%) the arthritis could not plausibly be attributed to any other cause. If these rates hold for the remainder of the 415 VAERS reports identified, the FDA will have documented 187 cases of physician-diagnosed arthritis, nearly 93 of which will not have any other plausible explanation.

G. In terms of determining the rate of adverse reactions, how can the FDA determine how many individuals have been vaccinated? The abstract of the preliminary follow-up study reports "approximately 1.4 million vaccine doses were distributed" between December 1998 and October 2000. Given the fact that this is a multiple-dose vaccination and that most vaccinees have received at least two or three (and sometimes actually more) doses of LYMERix, and the fact that the uptake of LYMERix has been unexpectedly low (as demonstrated by the difficulty in reaching even 25% of the enrollment goals for the Phase IV studies), can the FDA rule out the possibilities that the actual number of vaccinees is in the low six-figures, and possibly as low as 100,000?

3. How is the FDA dealing with individuals who participated in the clinical trials, but began experiencing adverse reactions (or recognized such reactions) only after the study site was closed? Since VAERS will not accept their reports, and it has been reported that GlaxoSmithKline has been dismissive of such reports, how can the FDA ensure that these reactions are

included in the total number of adverse event reports?

4. More specifically, how does the FDA deal with study participants who were in the placebo group during the trial (with no adverse reactions) but who received the vaccine after the study was unblinded and went on to experience adverse reactions to the actual vaccine?
5. If an individual gets the vaccine and they show Lyme disease symptoms, how does the FDA distinguish between 1. someone who had asymptomatic Lyme disease, 2. a new case of Lyme (vaccine failure), 3. an immune response
6. Why has the FDA not contacted and interviewed physicians who oversaw the study sites for the clinical trials, particularly in light of the fact that some such doctors, ..., have publicly endorsed LYMERix stating that they saw no adverse reactions when the FDA is aware of reports of adverse reactions by several of ...'s study participants?
7. What steps if any has the FDA taken to analyze the data gathered during the clinical trials of the Connaught (now Aventis Pasteur) OspA-based Lyme disease vaccine ImmuLyme for adverse reactions?
8. Why has the FDA failed to invite scientists and physicians not affiliated with, or employed by GlaxoSmithKline, such as Ronald Schell, Ph.D. who has published an article documenting serious adverse reactions to OspA in hamsters, and Carlos Rose, M.D. and Paul Fawcett, Ph.D., who have published an article documenting arthritogenic reactions to LYMERix in adults and the exacerbation of pre-existing asymptomatic Lyme disease in participants in the pediatric trials of LYMERix, to present their findings and opinions to the Advisory Committee or any other body considering the safety and efficacy of LYMERix?
9. Why was LYMERix permitted to include an adjuvant, especially given that the manufacturer used a lipidated version of the OspA protein? Further, since the inclusion of the adjuvant in LYMERix necessitated the inclusion of the adjuvant in the placebo, what if anything was done to adjust for the likelihood that complaints of adverse reactions to the adjuvant among the placebo group were not permitted to improperly "cancel out" adverse reactions to OspA among the vaccinees, and therefore reduce the likelihood of finding a "statistically significant difference" in adverse event rates between the two groups?
10. What if any steps has the FDA taken to implement the recommendations of members of its Advisory Committee from the January 31, 2001 meeting regarding enhanced warnings and limits on the indicated use of LYMERix

(including geographic limits) as well as increased education of both the general public and the medical community of the continued unanswered safety risks associated with LYMERix?

11. Is the FDA, and/or its Vaccine Advisory Committee aware that the Tufts Laboratory run by Dr. Steere, the principal investigator for the Phase III clinical trials of LYMERix, filed for a patent on March 21, 2000 with the World International Property Organization, which received an International Publication Date of September 27, 2001 (patent # WO 01/70252 A1), and that the official patent holders, including Doctors Meyer, Huber and Gross are the scientists who worked along with Dr. Steere on his research documenting the auto-immune responses exhibited by people with certain genetic markers to OspA?
12. Is the FDA aware that "this invention was supported by National Institutes of Health Grant AR45386 and the government of the United States has certain rights thereto?"
13. Is the fact that this group of scientists, working under a grant from the government of the United States of America, has demonstrated in this patent that "An additional problem with OspA as a protective immunogen [i.e.: vaccine] is cross-reactivity at the T cell level observed between OspA and LFA-1." Id. At 4, and "Given the potential cross-reactivity between OspA and LFA-1, the use of OspA as a protective immunogen in vaccines may be associated with the induction of an auto-immune reaction in certain populations, including individuals expressing the HLA-DRB1-0401 allele. Thus it would be highly desirable to generate modified OspA polypeptides with diminished or no binding to the DRB1-0401 allele.
14. How does the FDA reconcile the fact that research conducted and completed by the principal investigator for LYMERix prior to FDA's approval of the vaccine, and largely ignored by the FDA or dismissed as "theoretical" in its review and oversight of LYMERix, nevertheless led the scientists involved to pursue and patent a genetically modified version of OspA aimed specifically at avoiding the risk of auto-immunity from the OspA utilized in LYMERix demonstrated in that research?
15. Does the FDA believe that the medical community and the public at large should be advised of the fact that scientists and researchers of this caliber consider the risk of auto-immunity from LYMERix so great that they applied for, received, and worked pursuant to, a NIH grant to produce a modified version of OspA to minimize or eliminate the risk? If not, why?

16. In light of this documentation, why has the FDA not demanded that GlaxoSmithKline produce in full any and all research which they claim disproves the risk of auto-immunity from LYMERix rather than simply accepting the manufacturer's summary claims without supporting data?
17. In the abstract of the researchers' application for the NIH Grant #1R01AR045386-0, they state that "LFA-1/DR4 double transgenic mice on an MHC class II -/- background will be created and tested for the development of chronic Lyme arthritis after exposure to Bb. This is based on the observation that mouse LFA-1 does not express the OspA cross-reactive epitope." Indeed, the researchers observed an auto-immune arthritic reaction when these mice were exposed to natural OspA, but not when they were exposed to the patented, modified version of OspA. In this regard, what will the FDA do to determine what if any steps GlaxoSmithKline took to "create and test LFA-1/DR4 double transgenic mice" for its research, as the NIH grantees did, and whether or not the manufacturer did produce such mice and conduct studies which supported the risk of auto-immunity and suppressed those results? Further, what are the implications of GlaxoSmithKline's presentation at the January 31, 2001 Advisory Committee Meeting of a study on mice which it claimed disproved any auto-immune arthritic risk, without revealing the fact, until questioned, that the mice used in their study lacked the cross-reactive epitope, and therefore rendering the study, as one member of the committee stated, "irrelevant"?

FDA said they would answer most questions in writing since time was running short, but asked LDA to choose a particular question. LDA's Pat Smith chose question number 5: If an individual gets the vaccine and they show Lyme disease symptoms, how does the FDA distinguish between 1. someone who had asymptomatic Lyme disease, 2. a new case of Lyme (vaccine failure), 3. an immune response?

The issue, emphasized the LDA team, was answering this question in light of all the *dirty* Western blots labs have been generating from Lymerix recipients. If Lymerix Western blots are dirty, asked LDA, how could FDA and its pharmaceutical sponsor differentiate between actual Lyme disease and an adverse event? The question was not, just, were the blots disguising the safety of the vaccine but, also, did the filthy blots make it impossible to arrive at any true conclusion as to the efficacy of the vaccine, estimated by the sponsor at almost 80 percent?"

Attempting an answer was FDA's Karen Midthun, MD, Director, Office of Vaccine

Research and Review Center for Biologics Evaluation and Research. Midthun said vaccine investigators attempted to confirm Lyme disease itself through culture or polymerase chain reaction (PCR) of joint fluid, spinal fluid or the erythema migrans rash itself. "In cases identified as definite Lyme disease," she said, "seventy to eighty percent of the individuals were identified by culture and fifty to seventy percent via seroconversion by Western blot."

The LDA team responded that this answer was further proof the FDA could not, in fact, answer the question. Indeed, no one debated cases of "definite" Lyme disease proven through culture, but rather, those cases of "possible" Lyme disease—especially in light of the fact that the manufacturer's studies embraced the faulty CDC standard for Western blot by excluding consideration of two definite Lyme disease markers—bands showing presence of *Borrelia burgdorferi's* two outer surface proteins, OspA and OspB.

Commented attorney Steven Sheller, "When I hear that disregarding OspA and OspB is not a problem, when I hear people say there are no dirty blots, or that they are not a factor, I have to wonder how this research was done. You can't just take the manufacturer's word for it. You have to look at the original Western blots to come to your own conclusion. You might just be surprised."

LDA's team advised FDA to look at data in its rawest form in just two or three of the study sites.

Dr. Marks added that FDA would have to rethink its notion of "statistical significance" for Lymerix. "You'll never find statistical significance for the worst adverse events," he told FDA, "because they are so rare. You have to look at individual patients. You should have individual cases analyzed in depth by an impartial group of observers." Just because an adverse event is rare, he said, does not mean it is not associated with a vaccine. In these instances, you must weight the risk of the disease with the risk, even if extremely low, that an individual could be damaged by the vaccine.

FDA asked LDA if the team had anything to add. Here, Pat Smith responded: "We have found that, due to word of mouth on the dangers of this vaccine, physicians will no longer give it out in their offices. Even HMOs and clinics no longer want to be involved. Instead, Glaxo is marketing the vaccine on college campuses, where nurses who distribute it may be unaware of the issues involved. We are very concerned that

our young students will be the next victims of this vaccine.”

Smith concluded with this query: “We want to know if you are going to do anything with the information we have presented today.”

“We’ll need to discuss this among ourselves,” said FDA’s Susan Ellenberg, PhD, Director, Office of Biostatistics and Epidemiology, Center for Biologics Evaluation and Research. “We take your presentation very seriously. Any action will be announced to everyone in the public at the same time.”

On February 25, 2002, a month after meeting with FDA, LDA received written answers to its questions from FDA and, also, learned that Glaxo SmithKline had quietly pulled Lymerix from the market, citing “poor sales.”

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