WORLD WIDE MED

GLOBAL PERSPECTIVES ON MEDICAL PRACTICE

DR. BOYD SHOOK, who started going to in a remote area of western Nicaragua, the

Nicaragua to provide medical care in 1993, now spends time there two to four times each year. He practices in Bethany, Okla., during the rest of

the year. Dr. Shook recently supervised the completion of a building that will soon become a clinic. Located in Mina El Limón, a village clinic will serve a population of 5,000-7,000 people. visited Having Mina El Limón many times, he

has come to know some of the people well. Manos Juntas, a nonprofit group established

in 1997 by Dr. Shook and two of his colleagues (www.manosjuntas.com), has contracted with a local physician who works to maintain continuity of care as much as possible.

In the United States, Dr. Shook practiced internal medicine and hematology/oncology in one- and two-physician settings from 1965 to 1988. Since then he has practiced internal medicine in group settings.

What do you like most about practicing in Nicaragua?

I like the people. They are most grateful for the care that they receive. I went into medicine because I love people and enjoy being of service. The ability to improve the life of someone who is ill is humbling and heartwarming. The need there was great, so the opportunity was wonderful.

I first went to Nicaragua in 1993 with a brigade from a church in Tulsa. To say that it was a life-changing experience would be a serious understatement. I was drawn to Nicaragua by the incredible level of poverty and the need for basic care.

At that time, Nicaragua was the poorest (per capita) country in this hemisphere. The national debt was so high that the country's entire budget was used to pay interest. The median age at that time was 15

Now when I go to Nicaragua, I treat about 100 patients each day. Their illnesses range from trivial to quite serious. I am not the only U.S. physician involved in such work in Nicaragua, but I have no collaborators for my particular effort. At first, I felt the need for more physicians, but I came to realize that I could accomplish something alone, and gradually found strength to operate on my own.

I spend about 30 days each year, including my vacation, on this volunteer ef-Continued on following page

LOVAZA™

Brief Summary of Prescribing Information

(omega-3-acid ethyl esters) Capsules

CLINICAL STUDIES

High Triglycerides: Add-on to HMG-CoA reductase inhibitor therapy

The effects of Lovaza 4 g per day as add-on therapy to treatment with simvastatin were evaluated in a randomized, placebo-controlled, double-blind, parallel-group study of 254 adult patients (122 on Lovaza and 132 on placebo) with persistent high triglycerides (200 - 499 mg/dL) despite simvastatin therapy (Table 1). Patients were treated with pen-label simvastatin on control their LDL-C to no greater than 10% above NCEP ATP III goal and remained on this dose throughout the study. Following the 8 weeks of open-label treatment with simvastatin, patients were randomized to either Lovaza 4 g per day or placebo for an additional weeks with simvastatin or before heraph. The median baseline triglyceride and LDL-C levels in these patients were 268 mg/dL and 89 mg/dL, respectively. Median baseline non-HDL-C and HDL-C levels were 138 mg/dL and 45 mg/dL,

The changes in the major lipoprotein lipid parameters for the Lovaza plus simvastatin and the placebo plus sim-vastatin groups are shown in Table 1.

Table 1: Response to the Addition of LOVAZA 4 g per day to On-going Simvastatin 40 mg per day Therapy in Patients with High Triglycerides (200 to 499 mg/dL)

Parameter	LOVAZA + Simvastatin N=122			Placebo + Simvastatin N=132			Difference	P-Value
	BL	EOT	Median % Change	BL	EOT	Median % Change		
Non-HDL-C	137	123	-9.0	141	134	-2.2	-6.8	< 0.0001
TG	268	182	-29.5	271	260	-6.3	-23.2	< 0.0001
TC	184	172	-4.8	184	178	-1.7	-3.1	< 0.05
VLDL-C	52	37	-27.5	52	49	-7.2	-20.3	< 0.05
Apo-B	86	80	-4.2	87	85	-1.9	-2.3	< 0.05
HDL-C	46	48	+3.4	43	44	-1.2	+4.6	< 0.05
LDL-C	91	88	+0.7	88	85	-2.8	+3.5	=0.05

BL = Baseline (mg/dL); EOT = End of Treatment (mg/dL) LOVAZA Median % Change - Placebo Median % Change

Lovaza 4 g per day significantly reduced non-HDL-C, TG, TC, VLDL-C, and Apo-B levels and increased HDL-C and LDL-C from baseline relative to placebo.

LDL-C from baseline relative to piaceuu.

Very High Triglycerides: Monotherapy
The effects of Lovaza 4 g per day were assessed in two randomized, placebo-controlled, double-blind, parallel-group studies of 84 adult patients (42 on Lovaza, 42 on placebo) with very high triglyceride levels (Table 2). Patients whose baseline triglyceride levels were between 500 and 2000 mg/dL were enrolled in these two studies of 6 and 16 weeks duration. The median triglyceride and LDL-C levels in these patients were 792 mg/dL and 100 mg/dL, respectively. Median HDL-C level was 23.0 mg/dL.

The changes in the major lipoprotein lipid parameters for the Lovaza and placebo groups are shown in Table 2.

Table 2: Median Baseline and Percent Change From Baseline in Lipid Parameters in Patients with Very High TG Levels (>500 mg/dL)

Parameter		AZA :42	Pla N:	Difference	
i arameter	BL	% Change	BL	% Change	Difference
TG	816	-44.9	788	+6.7	-51.6
Non-HDL-C	271	-13.8	292	-3.6	-10.2
TC	296	-9.7	314	-1.7	-8.0
VLDL-C	175	-41.7	175	-0.9	-40.8
HDL-C	22	+9.1	24	0.0	+9.1
ו חו - ר	80	144.5	100	10	140.2

LDL-C 89 +44.5 108 -4.8 +49.3
BIL = Baseline (mg/dL); % Chg = Median Percent Change from Baseline; Difference = Lovaza Median % change - Placebo Median % Change Lovaza 4 g per day reduced median TG, VLDL-C, and non-HDL-C levels and increased median HDL-C from baseline relative to placebo. Lovaza treatment to reduce very high TG levels may result in elevations in LDL-C and non-HDL-C in some individuals. Patients should be monitored to ensure that the LDL-C level does not increase excessively. The effect of Lovaza on the risk of pancreatitis in patients with very high TG levels has not been evaluated. The effect of Lovaza on cardiovascular mortality and morbidity in patients with elevated TG levels has not been determined.

INDICATIONS AND USAGE

Very High Triglycerides
Lovaza is indicated as an adjunct to diet to reduce triglyceride (TG) levels in adult patients with very high (≥500 mg/dL) riglyceride levels.

Disage Considerations:

In individuals with hypertriglyceridemia (HTG), excess body weight and excess alcohol intake may be important contributing factors and should be addressed before initiating any drug therapy. Physical exercise can be an important ancillary measure. Diseases contributory to hyperlipidemia, (such as hypothyroidism or diabetes mellitus) should be looked for and adequately treated. Estrogen therapy, thiazide diuretics, and beta blockers are sometimes assorted with massive rises in plasma TG levels. In such cases, discontinuation of the specific etiologic agent, if medically indicated, may obviate the need for specific drug therapy for HTG.

The use of lipid-regulating agents should be considered only when reasonable attempts have been made to obtain satisfactory results with non-drug methods. If the decision is made to use lipid-regulating agents, the patient should be advised that use of lipid-regulating agents does not reduce the importance of adhering to diet (See PRECAUTIONS).

CONTRAINDICATIONS

Lovaza is contraindicated in patients who exhibit hypersensitivity to any component of this medication.

General:

Initial Therapy: Laboratory studies should be performed to ascertain that the patient's TG levels are consistently abnormal before instituting Lovaza therapy. Every attempt should be made to control serum TG levels with appropriate diet, exercise, weight loss in overweight patients, and control of any medical problems (such as diabetes mellints and hypothyroidism) that may be contributing to the patient's TG abnormalities. Medications know to exacerbate HTG (such as beta blockers, thiazides, and estrogens) should be discontinued or changed, if possible, before considering TG-lowering drug therapy.

Information for Patients:

Lovaza should be used with caution in patients with known sensitivity or allergy to fish. Patients should be advised that use of lipid-regulating agents does not reduce the importance of adhering to diet.

In some patients, Lovaza increased low-density lipoprotein cholesterol (LDL-C) levels. As with any lipid-regulating product, LDL-C levels should be monitored periodically during Lovaza therapy.

Drug Interactions:
Anticoagulants: Som of bleeding time report bleeding episodes actions:

Authors: Some studies with omega-3-acids demonstrated prolongation of bleeding time. The prolong time reported in these studies has not exceeded normal limits and did not produce clinically signifiepisodes. Clinical studies have not been done to thoroughly examine the effect of Lovaza at anticoagulants. Patients receiving treatment with both Lovaza and anticoagulants should be morified.

 $^{-COA}$ reductase inhibitors: In a 14-day study of 24 healthy adult subjects, daily co-administrat 80 mg with Lovaza 4 g did not affect the extent (AUC) or rate (C _{max}) of exposure to simvastati e metabolite, beta-hydroxy simvastatin at steady state.

LOVAZA™

(omega-3-acid ethyl esters) Capsules

Cytochrome P450-Dependent Monooxygenase Activities: Omega-3-fatty acid containing products have been shown to increase hepatic concentrations of cytochrome P450 and activities of certain P450 enzymes in rats. The potential of Lovaza to induce P450 activities in humans has not been studied.

Carcinogenesis, Mutagenesis, Impairment of Fertility:
In a rat carcinogenicity study with oral gavage doses of 100, 600, 2000 mg/kg/day by oral gavage, males were treated with omega-3-acid ethyl esters for 101 weeks and females for 89 weeks without an increased incidence of tumors (up to 5 times human systemic exposures following an oral dose of 4 g/day based on a body surface area comparison). Standard lifetime carcinogenicity bioassays were not conducted in mice.

Omega-3-acid ethyl esters were not mutagenic or clastogenic with or without metabolic activation in the bacterial mutagenesis (Ames) test with Salmonella typhimurium and Escherichia coli or in the chromosomal aberration assay in Chinese hamster V79 lung cells or human lymphocytes. Omega-3-acid ethyl esters were negative in the *in vivo* mouse micronucleus assay.

mouse micronucleus assay.

In a rat fertility study with oral gavage doses of 100, 600, 2000 mg/kg/day, males were treated for 10 weeks prior to mating and females were treated for 2 weeks prior to and throughout mating, gestation and lactation. No adverse effect on fertility was observed at 2000 mg/kg/day (5 times human systemic exposure following an oral dose of 4 g/day based on a body surface area comparison).

Pregnancy Category C:
There are no adequate and well-controlled studies in pregnant women. It is unknown whether Lovaza can c:
harm when administered to a pregnant woman or can affect reproductive capacity. Lovaza should be us
pregnancy only if the potential benefit justifies the potential risk to the fetus.

Omega-3-acid ethyl esters have been shown to have an embryocidal effect in pregnant rats when given in doses resulting in exposures 7 times the recommended human dose of 4 g/day based on a body surface area comparison. In female rats given oral gavage doses of 100, 600, 2000 mg/kg/day beginning two weeks prior to mating and con-tinuing through gestation and lactation, no adverse effects were observed in the high dose group (5 times human systemic exposure following an oral dose of 4 g/day based on body surface area comparison).

systemic exposure following an oral dose of 4 g/day based on body surface area comparison). In pregnant rats given oral gavage doses of 1000, 3000, 6000 mg/kg/day from gestation day 6 through 15, no adverse effects were observed (14 times human systemic exposure following an oral dose of 4 g/day based on a body surface area comparison). In pregnant rats given oral gavage doses of 100, 600, 2000 mg/kg/day from gestation day 14 through lactation day 21, no adverse effects were seen at 2000 mg/kg/day (5 times the human systemic exposure following an oral dose of 4 g/day based on a body surface area comparison). However, decreased live births (20% reduction) and decreased survival to postnatal day 4 (40% reduction) were observed in a dose-ranging study using higher doses of 3000 mg/kg/day (7 times the human systemic exposure following an oral dose of 4 g/day based on a body surface area comparison).

comparison). In pregnant rabbits given oral gavage doses of 375, 750, 1500 mg/kg/day from gestation day 7 through 19, no find-ings were observed in the fetuses in groups given 375 mg/kg/day (2 times human systemic exposure following an oral dose of 4 g/day based on a body surface area comparison). However, at higher doses, evidence of maternal tox-icity was observed (4 times human systemic exposure following an oral dose of 4 g/day based on a body surface

mounts.

known whether omega-3-acid ethyl esters are excreted in human milk. Because many drugs are excreted in human milk. Because many drugs are excreted in hilk. caution should be exercised when Lovaza is administered to a woman who is breastfeeding.

Pediatric Use:
Safety and effectiveness in pediatric patients under 18 years of age have not been established.

Geriatric Use:A limited number of patients over 65 years of age were enrolled in the clinical studies. Safety and efficacy findings in subjects over 60 years of age did not appear to differ from those of subjects less than 60 years of age.

ADVERSE REACTIONS

IVERSE REACTIONS
satment-emergent adverse events reported in at least 1% of patients treated with Lovaza 4 g per day or placeboring 8 randomized, placebo-controlled, double-blind, parallel-group studies for HTG are listed in Table 3. Adverse ents led to discontinuation of treatment in 3.5% of patients treated with Lovaza and 2.6% of patients treated with

Table 3: Adverse Events in Randomized, Placebo-Controlled, Double-Blind, Parallel-Group Studies for Very High TG Levels (≥ 500 mg/dL) that Used LOVAZA 4 g per Day

BODY SYSTEM		AZA 226)	Placebo* (N = 228)		
Adverse Event	n	%	n	%	
Subjects with at least 1 adverse event	80	35.4	63	27.6	
Body as a whole Back pain Flu syndrome Infection Pain	5 8 10 4	2.2 3.5 4.4 1.8	3 3 5 3	1.3 1.3 2.2 1.3	
Cardiovascular Angina pectoris	3	1.3	2	0.9	
Digestive Dyspepsia Eructation	7 11	3.1 4.9	6 5	2.6 2.2	
Skin Rash	4	1.8	1	0.4	
Special senses Taste perversion	6	2.7	0	0.0	

Additional adverse events reported by 1 or more patients from 22 clinical studies for HTG are listed below: BODY AS A WHOLE: Enlarged abdomen, asthenia, body odor, chest pain, chills, suicide, fever, generalized edema, fungal infection, malaise, neck pain, neoplasm, rheumatoid arthritis, and sudden death.

CARDIOVASCULAR SYSTEM: Arrhythmia, bypass surgery, cardiac arrest, hyperflipemia, hypertension, migraine, myocardial infanct, and collisis, gastrointestinal disorder, increased appetite, intestinal obstruction, melena, pancreatitis, tenesmus, and vomiting. HEMATOLOGIC-LYMPHATIC SYSTEM: Lymphadenopathy.

INFECTIONS AND INFESTATIONS: Viral infection.

MUSCULOSKELETAL SYSTEM: Arthralgia, arthritis, myalgia, pathological fracture, and tendon disorder.

NERVOUS SYSTEM: Central nervous system neoplasia, depression, dizziness, emotional lability, facial paralysis, insomnia, vasodilatation, and vertigo.

insomnia, vasodilatation, and vertigo. EESPIRATORY SYSTEM: Asthma, bronchitis, increased cough, dyspnea, epistaxis, laryngitis, pharyngitis, pneum rhinitis, and sinusitis.

rninius, and sinusius. SKIN: Alopecia, eczema, pruritus, and sweating. SPECIAL SENSES: Cataract. UROGENITAL SYSTEM: Cervix disorder, endometrial carcinoma, epididymitis, and impotence.

DRUG ABUSE AND DEPENDENCELovaza does not have any known drug abuse or withdrawal effects. OVERDOSAGE
In the event of an overdose, the patient should be treated symptomatically, and general supportive care measures instituted, as required.

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Reliant Pharmaceuticals, Inc. Liberty Corner, NJ 07938

Address Medical Inquiries to: Reliant Medical Inquiries c/o PPD 2655 Meridian Parkway Durham, NC 27713-2203

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fort. I am paid well in smiles and hugs. I have been fortunate to be a physician and feel as if my oath of service includes this sort of activity.

How did the project develop?

I helped to found Manos Juntas (the name means "hands together") in 1995. I collaborated with physicians who live in Nicaragua to develop an effective team. It took several years for Manos Juntas to develop into its current structure and to become recognized as a viable charitable foundation. Most of our initial trips were arranged by FUNDECI, a nongovernmental organization in Managua, and the funding was provided by Oklahoma entities

The new clinic grew after Hurricane Mitch in 1998. The people in Mina El Limón had no water and no contact with medical personnel. We worked in a small building that was in poor repair. I thought that the women in my church might take on the challenge of improving the building. It just grew from there.

An important factor was the dedication to the people that was shown by a couple of local women who begged, cajoled, and threatened me into developing a clinic of excellence. The project has involved the contribution of many hands working together.

What are the key practice challenges in Nicaragua?

The high cost of medications and the lack of laboratory and radiologic facilities to assist with diagnosis are the greatest challenges to providing health care in Nicaragua.

Also, although I have studied Spanish for several years now, I do not speak Spanish well. I can conduct a clinic in Spanish, but still need assistance when I leave the clinic and move into a social environment. But

I continue to try.

What do you miss most about U.S. medical practice when in Nicaragua? In Mina El Limón, we have less opportunity to use high technology and less ready availability of specialty backup. This is both a blessing and a curse.

What do you see as the main disadvantages of U.S. medical practice? Ironically, in the United States we focus too

much on high technology and the use of specialists. It is almost as if we go from one extreme to the other: In Nicaragua we have almost no high technology, so our evaluations are totally cognitive. In the United States, we order lots of tests and images even when the answer is obvious. The expense to our patients can be a huge impediment to good care.

Based on your experience

working in Nicaragua, what should be done to improve medical practice and health care in the United States?

We must modify our financial incentives. In the United States, we are paid very well for using things of marginal benefit and underpaid for using our thinking skills. From the patient's perspective, we go for high-tech things of dubious value. The annual income differential between high-tech specialists and low-tech specialists is staggering.

What should be done to improve medical practice and health care in Nicaragua?

Several things would help the overall health of the people in Nicaragua. I believe that this may apply to other countries as well, but I have no personal knowledge of that. A reliable source of potable water is a good starting place.

We need to educate the people about simple and inexpensive methods of handling common problems. Inexpensive



Dr. Shook treats about 100 patients each day while working in Nicaragua, which he started doing in 1993.

medications for common problems also are essential.

Good medical records would help immensely. I have developed a simple, inexpensive, user-friendly, computerized medical record system that allows me in Oklahoma to know what is being done at a clinic in Nicaragua.

If they had access to high-tech equipment, doctors in Nicaragua would love to use it. As in the United States, teaching doctors to use less technology in their day-to-day practices can be beneficial—and such an approach is needed if we want to straddle the health care chasm that exists between Nicaragua and the United States.

Think globally. Practice locally.

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