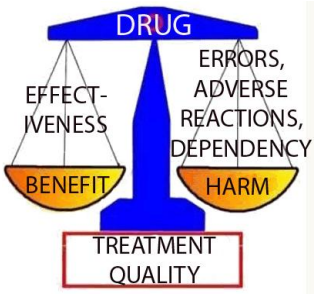
HARM FROM DRUGS
IN SHORT-TERM MISSIONS
A Review of the Current Medical Literature
November 2009

"For all medicines there is a trade-off between the benefits and the potential for harm."
WHO Policy Perspectives on Medicines [1]

"Adverse drug reactions are among the leading causes of death in many countries."
WHO The Safety of Medicines [2]



BACKGROUND: There are numerous areas where short-term healthcare missions (STMs) routinely provide quality (safe and effective) care in accordance with current international standards and practice guidelines.[3] Dental and certain surgical subspecialties, in particular, relieve the suffering of numerous patients; and when combined with teaching of host country providers and patients, can have a meaningful impact on the health of a community.

Properly trained physicians providing primary care can also be of great value under certain conditions; such as assisting host country providers in their hospitals or long term clinics and participating in healthcare provider and promoter training programs.

However, the critical need for continuity of care and integration of primary care with community health is increasingly stressed by the World Health Organization (WHO), as well as the U. S. Department of Health and Human Services (HHS) and the American Medical Association (AMA), even for patients in our country. [4,5] The Institute of Medicine of the National Academies (IOM) also reports: "Patient value is found in the integrated care of a patient's medical condition, rather than care from a single specialist or discrete intervention." [6]

Christians have been following the "Great Commission" for nearly two thousand years. However, our attempt to provide drug-based primary care in the typical STM setting is of recent onset and it is very unique. And it is being increasingly criticized by our secular colleagues. [7-9]

Unfortunately, reports from our long-term in-country missionary colleagues are also very highly critical; and are being published in our own missionary books, journals and websites, [10-23] as well as our highly acclaimed Christian community health and evangelism texts. [24-26] And as STMs are by their very definition short-term, it is our in-country missionary colleagues who are best qualified to evaluate the safety and effectiveness of our STM primary care on their patients and their communities.

At the same time, the harm due to drug treatment is being increasingly recognized and reported, even in the US, under ideal circumstances. For example, the IOM's recent report on *Preventing Medication Errors* "conservatively estimates that on average, a hospital patient is subject to at least one medication error per day." [27]

In addition, adverse drug reactions ("Harmful, unintended reactions to medicines that occur at doses normally used for treatment."), alone, are now among the leading causes of death.[2] Adverse drug events are now reported to be the 3rd to 6th leading cause of death,

even in the US, with all our emergency systems and intensive care facilities available for treatment. [1, 2, 29-35]

For example, the FDA website reports that drug adverse events are "the 4th leading cause of death; ahead of pulmonary disease, diabetes, AIDS, pneumonia, accidents and automobile deaths." [36]

In addition, the Harm side of the Drug Treatment Balance must also include the unnecessary morbidity and mortality due to Dependency, Abuse ("Pharming"), Accidental poisoning, Economic impact (especially on poor families), etc. [24-26, 29-37]

An article in the Journal of the American Medical Association reflects the current medical literature and quotes Oliver Wendell Holmes: "If the whole materia medica (all our medicines), as now used, could be sunk to the bottom of the sea, it would be all the better for mankind, and all the worse for the fishes." [37]

So it is important that we not ignore our in-country missionary colleagues. The criticism concerns the adverse effects of our STM drug-based approach on the spiritual and psychological, as well as, the physical well being of their patients.

NOTE: The principle author has over 15 years experience in long-term and 18 years experience in short-term missions, including over 45 short-term medical missions with various organizations all over the world.

The 15 years long-term experience included several days per month at a clinic in an area 200 miles from the US border that was very popular with short-term medical missions groups. The short-term experience included ongoing STM medical record reviews. The above resulted in an awareness of the harm that can be done to patients, the community and the Church due to the drug-based approach to patient care by well intentioned short-term missions.

However, evidence-based medicine clearly demonstrates that our clinical "experience" is a very poor predictor of the quality of our care. This is especially true for primary care STMs, as we are nearly always gone before the harm of our treatment can be recognized. For these reasons, this paper will be based almost entirely on the best available medical literature.

And though the principle author continues to attend both long and short-term missions, when mission-specific recommendations are addressed in this document, they will be those of our most highly honored and respected (from a secular scientific, as well as Christian standpoint) physician missionary mentors (See Section 33). A major objective of this paper was to provide an awareness of the now extensive evidence-based scientific foundation for our missionary mentors' work and teaching.

The references (including the 2008 WHO World Health Report devoted entirely to primary care) will document that, from a modern scientific evidence-based standpoint, primary-care missions need to return to our missionary mentors' and Jesus' holistic Biblically-based (versus the current drug-based) approach to treatment.

We are, of course, not advocating that medications not be used, only that they be used appropriately**,** in accordance with Biblical and evidence-based international standards and practice guidelines**.** We also believe it is possible for a number of essential medicines to be used safely and effectively in selected STM settings. However, this is a very complex area, and will therefore be addressed in separate papers and websites. [9,95-97,142,143]

Because of space limitations, in this paper we can address only the "Harm" side of the Drug Treatment Balance, and even here, space allows only a cursory review of the volumes of evidence-based reports related to the harm of just the two most commonly used types of drugs.

Also, as we are limiting ourselves to the "Harm" side of our treatment, we expect this paper will often be as discouraging to read as it was to research and write, and may even result, initially, in anger from some of our most highly valued friends and esteemed colleagues in the STMs field.

Such anger is easily understood. No other profession requires greater sacrifice, and we have all dedicated our very lives to serving our patients. So there is always tremendous heartache, and absolutely no comfort, in addressing the harm our medicines may have caused them.

As Christians we have absolutely no desire to argue with or upset our colleagues. And we have repeatedly delayed publication of this paper for this very reason, seeking further guidance and rewriting again and again to try to "soften" the wording. Yet, we also know from the teaching and example of Jesus, that the truth is never an option--Especially when it involves the wellbeing of those whose lives are entrusted to our care.

As with all papers related to the quality of medical care, the truth of the words of this document is based solely on its references, and not experience or opinion. Unfortunately, the content of this paper is complex and there are over 140 references. So until the reader becomes familiar with those references, there may well be disagreement.

Therefore, if you have questions concerning this document, we must ask you to please review the references. For it is the best available references and evidence-based guidelines, and not our own personal experience or opinion that is relevant.

And if the references identify errors in practice, please also remember that the principle author was probably committing those errors long before you. For it is only through addressing our quality of care problems that we can resolve them. And though the problems we must address are very serious and can cause great harm; because of the work of our missionary mentors, we also know that they can be resolved.

WHY PATIENTS ARE AT MUCH GREATER RISK OF SERIOUS HARM FROM DRUGS IN THE SHORT-TERM MISSIONS (STM) SETTING:

1. Lack of understanding of the critical importance of the STM setting itself on the increased risk of serious patient harm. Care provided by medical missions must meet the legal requirements and medical standards and practice guidelines of the host country. Until relatively recently, very few standards and guidelines were available, and those were rarely enforced. Over the past several years, numerous international standards and guidelines have been established for the care of patients in developing countries; and host countries are in various stages of adopting and enforcing these standards.

In nearly all cases, medical standards for host developing countries are based on World Health Organization (WHO) standards and guidelines. Even when not yet officially adopted by host country governments, they are now being used by Ministry of Health officials to evaluate the quality of care provided in their country. [3, 97]

The clinical setting affects the relevance of all international standards and practice guidelines, and its critical importance has been emphasized by the World Health Organization. [38]

For example, a drug that could be safely dispensed in the usual hospital or clinic setting with continuity of care and patient safety standards and pharmacy regulations in place, would often be far too dangerous to dispense in the usual STM setting, even if it was on the country's "Essential Drug List" and was recommended by other evidence-based guidelines. [39]

2. Lack of knowledge of the patient (Every patient is a new patient). This risk factor, alone, significantly limits the kinds of drugs even the very best physician, under ideal conditions, could prescribe safely. [4]

3. Lack of adequate medical record, medication list, allergy record, list of diagnoses, etc to determine whether a drug may be contraindicated. (This risk factor alone is responsible for greater than 15% of errors in ambulatory care, even in the US.) [40]

4. Lack of adequate time for obtaining accurate and complete history.

5. Lack of adequate time/facilities for obtaining accurate and complete physical exam.

6. Lack of availability of reliable laboratory testing.

7. Misdiagnosis and inappropriate treatment of psychosomatic symptoms. The WHO reports that depression alone "is soon to become the second leading cause of disability worldwide, affecting between 5% and 10% of the population, and it is the third most common reason for consultation in primary care. For the reasons listed in pargraphs 2 through 6, these conditions are rarely diagnosed correctly in the STM setting; and are often treated with drugs with serious, even lethal, adverse side effects. [4, 41]

8. **Lack of adequate provider training and knowledge of WHO evidence-based international standards and practice guidelines for patients of developing countries.** Many STMs allow primary care to be provided by sub-specialists who are not practicing primary care in their home country. Although we are not aware of any primary care physicians routinely attempting to practice as cardiac surgeons on the missions field, the opposite is not the case.

However, harm can occur even when very highly trained primary care physicians, experienced in tropical medicine, are attempting to provide care in the typical STM setting. For example, the principle author was very blessed to have received four years of the very best pediatric primary care training the US had to offer and included Childrens Hospital of Philadelphia, Yale-New Haven Medical Center, and numerous US Navy training programs. He was also taught by the foremost medical world leaders and textbook authors of the time (Oski, Barness, Koop, Rashkind, DiGeorge, etc). This was followed by almost immediate extensive experience treating patients ill with tropical diseases, including malaria, with CDC consultation, in the Vietnamese refugee camps.

Yet twenty years later, in the middle of an African jungle, he made a critical mistake in the drug treatment of five children with malaria. The guidelines, although the best available, were not written clearly. Both he and the PhD pharmacist lacked previous experience with the local treatment protocol, both were overwhelmed with patients, and in this typical STM setting, both simply misread the document.

He discovered the mistake later that night when clinic was over and he had time to cross-reference the protocol. Until that moment, he had been overwhelmingly blessed

throughout his entire twenty year naval medical career with never having made a single mistake, that as far as he knew, caused any patient any harm. And this from practicing in Navy medical centers where the patient load is also very great, but practice very closely monitored, and errors very easily identified.

He immediately gathered the entire team together to pray and sought the help of the local authorities. Unfortunately, many of the patients had walked more than a day to get to the site. And the teams' medical record forms were inadequate and it was not possible to identify where any of the patients lived.

So even well trained and experienced primary care providers and pharmacists can very easily make critical mistakes in the STM setting. And, as with nearly every STM, we never get to know the extent of the harm we have done with our drug-based treatment. And compliance with WHO International Standards and Guidelines, even in such mundane areas as medical records, can be lifesaving.

It is also important to recognize that WHO standards and guidelines are often based on the work of our Christian missionary physician mentors and faith based organizations. This is especially true of guidelines related to primary care, which is what most healthcare missions attempt to provide. Current WHO standards and guidelines for primary care, are in fact, based on the work of the Christian Medical Commission (CMC) of thirty years ago, whose members worked very closely with the WHO.

For example, the WHO 2008 World Health Report is devoted entirely to Primary Care and emphasizes the need to return to the Alma Ata principles. [4] Those principles emphasize the integrated holistic (mind, body spirit or Christ-centered) approach to healthcare and were co-authored by Dr Carl Taylor, a member of the CMC and long-term missionary to China. [26]

9. **Confusion due to language and cultural differences.** This risk factor, alone, significantly limits the number of patients per hour even the very best physician, under ideal conditions, can evaluate and treat safely.

For example, the WHO reports that worldwide "50% of patients fail to take medicines correctly." [42] and there are numerous unnecessary deaths on and off the missions field due to this risk factor alone. This is especially tragic when the medicine has only symptomatic benefit, at best, and no therapeutic benefit (e.g. NSAIDs, Cold and Cough Medicines, Anti-diarrhea Medicines, etc).

Yet the IOM reports that this problem "often goes unrecognized" by health care providers. [43] This is true for therapeutic medicines as well.

For example, a missionary from Mexico recently reported the death of a child treated by a STM with metronidazole because the parents thought it would be more effective if all the medication was given at one time.

10. **Increased mortality due to lack of emergency medical systems and intensive care units for timely and appropriate treatment of adverse effects.** Although prevention is always of greatest importance, the proper use of therapeutic medicines, such as those for AIDS, can, of course, be lifesaving. [4] However, by far the great majority of medicines donated and dispensed by STMs are for symptomatic, not therapeutic, treatment (The medicines do not beneficially affect the course of the disease or condition, but only give temporary symptomatic relief). Never-the-less, these are among our most dangerous medicines. [44, 45]

As NSAIDs are usually the most frequently dispensed medicine for STMs, we will use NSAIDs as an example in this document. NSAIDs are effective for temporary symptomatic relief of the aches and pains which are our STM patient's most common complaints. However, as noted above, a medicine's true value is always a balance between "Benefit" (Effectiveness) and "Harm" (Inherent adverse effects, Medication errors, Drug interactions, Dependency, Abuse, Accidental poisoning, Economic impact, Etc).[29-37]

Concerning adverse effects alone, The New England Journal of Medicine (NEJM) reports that NSAIDs cause 16,500 deaths/year in arthritis patients alone, due to GI complications alone, in the USA alone. [45]

Deaths due to cardiovascular, renal, and other NSAID adverse effects were not included. And arthritis, though-out history, was previously a non-lethal condition. (The NEJM chart puts this in perspective by showing that the number of GI deaths alone in these arthritis patients alone was about equal to the total number of deaths due to AIDS, and many more deaths than due to conditions such as multiple myeloma, asthma, cervical cancer, etc in our entire country.)

Unfortunately, the cardiovascular adverse effects of NSAIDs are reported to be even greater—Other NEJM articles report that the numbers of myocardial infarctions and strokes due to Rofecoxib alone was estimated to be greater than 160, 000. [46, 47]

The various NSAIDs vary somewhat in their specific toxicities and more data is available for Rofecoxib than the others. Although Rofecoxib has been withdrawn from the market, all NSAIDs continue to share extensive black box warnings for the above, and even ibuprofen lists the following adverse effects in the serious (life-threatening) category alone: "heart attack, stroke, high blood pressure, heart failure from body swelling (fluid retention), kidney problems including kidney failure, bleeding and ulcers in the stomach and intestine, low red blood cells (anemia),life-threatening skin reactions, life-threatening allergic reactions, liver problems including liver failure, and asthma attacks…"

The mortality rates for NSAIDs would be much higher in countries without emergency systems and medical and surgical ICUs to care for these patients. (Please also see section 13.)

11. **Lack of patient awareness of medicine's adverse effects**. When drug deaths are reported in the media, drug company representatives nearly always respond: "Our (drug name) is approved by the FDA and is therefore effective and safe, when taken as directed."

It is true that tens of thousands of deaths are caused by the "not taken as directed" part, and can be blamed on us and our patients. This is especially true when "taken as directed" means complying with all the physician requirements as stated in a drug's typical package insert which can go on for over 20 PDF pages.

However, inherent drug adverse effects alone are a leading cause of death in the US, even with all our modern facilities for treatment. [1,2, 29-37] The U.S. Government Accountability Office (GAO) reports that 51% of new drugs have serious adverse effects which are undetected at the time of FDA approval.[48] And 10.2% of the 548 most recently FDA approved medications were subsequently withdrawn from the market or given a black box warning. [49]

However, drug company physician detailer and public relations departments are very highly effective; and the IOM reports that even with our educated population, medication harm goes unrecognized by both physicians and patients and "many individuals believe that drugs approved by the FDA carry no significant risks." [50]

In addition, most STM patients know we are Christians and do not believe we would "travel all that way to give them a medicine that would harm them." Poor, uneducated patients from developing countries are particularly at risk.

For example, a patient with musculoskeletal pain taking NSAIDs experiences stomach pain. He knows the medicine is for pain so continues to take more. Many poor patients in developing countries die "unexpectedly" without ever seeing a doctor.

The IOM and the Agency for Healthcare Research and Quality (AHRQ) report that medication safety and health outcomes are directly related to health literacy; and that health literacy problems are very common and often go unrecognized, even for patients in the US. [51, 52]

Another IOM report states "Individuals with limited literacy are also less likely to seek out information or ask for clarification during medical encounters…"[53]

For the above reasons, drug related morbidity and mortality usually goes unrecognized by health care providers, even for patients in the US, and would be much more common for STMs in developing countries. [51-53]

12. Lack of package inserts, patient medication guides, black box warnings or other informed consent information legally required in our country. Even when they are available, they are rarely in the patient's language.

The IOM reports: "Patient rights are the foundation for the safe and ethical use of medications. Ignoring these rights can have lethal consequences. Many, but not all, patient rights relating to medical care have been established broadly in the U.S. Constitution (Amendments I and XIV) and articulated by the courts through common law." [54]

A "core component" of the WHO *Rational Use of Medicines* requires that even OTC medicines include: "adequate labeling and instructions that are accurate, legible, and easily understood by laypersons. The information should include the medicine name, indications, contra-indications, dosages, drug interactions, and warnings concerning unsafe use or storage." [55]

This also results in STM failure to comply with international standards for informed consent. For Example the UNESCO Universal Declaration on Bioethics and Human Rights (October 2005) Article 6.1 requires: "Any preventive, diagnostic and therapeutic medical intervention is only to be carried out with the prior, free and informed consent of the person concerned, based on adequate information."

13. Lack of adequate time for counseling concerning adverse effects by either the physician or the pharmacist. This is especially difficult for drugs with numerous serious adverse effects such as NSAIDs where the drug company's informed consent requirements for physicians can go on for several pages (For example the drug company's package insert for Ibuprofen (Motrin) is now more than 20 PDF pages).

Yet this counseling is often much more important for patients in developing countries, than for our patients in the US.

For example, the frequency of ulcers in patients taking NSAIDs is even higher in the presence of H. pylori ("There is synergism for the development of peptic ulcer and ulcer

bleeding between H pylori infection and NSAID use."). [56, 57] And H. pylori infection is much more common in developing countries than in the U.S. (For example, 70-90% of all patients in Mexico, Central and South America, Africa, etc) [58]

So the number of NSAID deaths reported in paragraph 10 would almost certainly be much higher for STM patients, even if the country's emergency response and intensive care facilities for treatment of adverse effects were similar to those in the US.

14. Increased risk of drug interactions and drug overdose: Because our medicines are free or low cost, poor patients often deny they are taking any medicines or have medicines at home in order to be certain they will receive ours. Yet if you visit their homes, you will find numerous packages of drugs and little or no knowledge of their appropriate use. This is a very common and very serious problem (It often takes repeat questioning and reassurance to obtain the true history). The frequent use of traditional medicines also increases the risk of adverse drug interactions.

15. Disrupts the patient/physician relationship and continuity of care for chronic conditions such as hypertension. The patient may, in fact, be well cared for by a local primary care physician or other practitioner who is using the best treatments available in the community for the patient's condition. This also is a very common problem and again, often takes repeat questioning and reassurance to obtain the true history. Disruption of continuity of care has been documented to cause significant increased morbidity and mortality. [4]

Also, poor compliance with physician treatment recommendations is already a major problem world-wide. The WHO reports: "In developed countries, adherence to long-term therapies in the general population is around 50% and is much lower in developing countries." Our STM treatment may, therefore, adversely affect local physician-patient relationships and continuity of care and result in increased morbidity and mortality. [59]

16. Significant increased risk of accidental poisoning by STM children. The Medical Letter reports "Every pharmaceutical drug is a dose dependent poison." [60] Reasons STM children are at much greater risk of poisoning include:

a. Lack of knowledge of child safety requirements by STM patients.

b. Lack of safe storage area in home.

c. Lack of child-safe containers (Again legally required in our country and proven to decrease unnecessary deaths in children). Some STMs even dispense their medicines in sandwich "baggies".

17. Increased mortality due to lack of poison control centers, emergency medical systems and intensive care units for timely and appropriate treatment of accidental poisoning or overdose.

18. Failure to comply with International Standards and Guidelines that require "There should be no double standards in quality," even if our patients happen to be poor. [61] This even applies to use of drugs that were originally given to health professionals as free samples and then donated: "No drugs should be donated that have been issued to patients and then returned to a pharmacy or elsewhere, or were given to health professionals as free samples. *Justification and explanation* Patients return unused drugs to a pharmacy to ensure their safe disposal; the same applies to drug samples that have been received by health workers. In most countries it is not allowed to issue such drugs to other patients, because their quality cannot be guaranteed."

The above demonstrates the tremendous importance of the "double standard" to the international community (including the Christian Medical Commission of the World Council of Churches which originated the guidelines); and it has resulted in useful drugs not being donated which might have helped patients.

This seemingly over-emphasis on preventing double standards cannot be understood until the effects of lack of compliance in other areas of drug use are considered. For once the use of a double standard becomes acceptable in one (even extremely minor) area, it easily becomes acceptable in others. For example, our double standards in areas such as informed consent (Sections 12 & 13) and patient safety and pharmacy regulations (Sections 1-6 & 16), especially place our STM patients at tremendous increased risk of serious harm.

19. Neither the prescribing provider nor the dispensing pharmacist will be available when there are adverse effects from the treatment.

20. Local in-country health care providers and pharmacy personnel usually have little knowledge of our drugs and their adverse effects, and/or lack the resources to treat our patient's drug related complications.

For example, headaches in field workers are very common and are frequently treated with NSAIDs by STMs. However, headaches in field workers are commonly caused by dehydration. Even small, limited doses of NSAIDs have caused renal failure in previously healthy patients with minimal dehydration. And even in the very best tertiary centers in our country, the correct diagnosis can be missed without renal biopsy, and treatment require dialysis. [62-74]

US Pharmacist reports "Each year, up to 5% of people who take NSAIDs will develop renal toxicity" and "20% of hospital admissions for acute renal failure are reportedly caused by drugs, particularly NSAIDs." [63-65]

Dehydration is also very common in children with fever, and increasing numbers of acute renal failure due to NSAIDs are being reported in children as well. [66-67]

This is very difficult to rationalize when the American Academy of Pediatrics and other guidelines have long reported that "Fevers are generally harmless and help your child fight infection." [75]

21. Medications used by STMs are often donated and lack compliance with WHO international standards and practice guidelines for donated medicines. The Christian Medical Commission initiated WHO *Guidelines for Drug Donations* reports: "Prescribers are confronted with many different drugs and brands in ever-changing dosages; patients on long-term treatment suffer because the same drug may not be available the next time. For these reasons this type of donation is forbidden in an increasing number of countries and is generally discouraged." [61]

Also as noted by the above, donated medicines often appear to meet the needs of the donor rather than our patients. For example: Donated meds often include various combinations of drugs that lack scientific sense or validity, or are not on WHO Essential Drug lists for other evidence-based reasons. [61]

Donated medicines also often include samples of newly released preparations for marketing purposes. Many doctors are now refusing to dispense these samples to their patients because of the lack of evidence of drug safety. [76] (Please also see sections 11 and 18 concerning increased safety risks of newly approved drugs.)

Also, after cold and cough medicines were recently removed from the market in the US for children under two years of age because of increased morbidity and mortality, our mission clinic was inundated with donations of these preparations.

Additional "Examples of problems with drug donations" are included in the annex to the WHO *Guidelines for Drug Donations.* [61]

22. Increased patient harm due to STM use of drugs which the CDC, AAP, WHO and other evidence-based guidelines report are of no therapeutic value and increase morbidity and mortality, especially in children. Numerous drugs fall into this category. For example, a recent CDC report provides examples of unnecessary children's deaths due to anti-diarrhea medicines.[77] However, as cough and cold medicines remain the most frequently dispensed medicines for children, we will use those as an example for this report:

The American Academy of Pediatrics (AAP) Practice Guidelines since 1997 report the following concerning cough and cold medicines:

-"The over the counter availability of numerous cough and cold preparations promotes the perception that such medications are safe and efficacious…Education of patients and parents about the lack of proven antitussive effects and the potential risks of these products is needed ."

-"Cough serves as a physiologic function to clear airways."

-"Cough suppression may adversely affect patients … by promoting pooling of secretions, airway obstruction, secondary infection, and hypoxemia."

-"Decongestant (sympathomimetic, stimulant) components of these mixtures administered to children have been associated with irritability, restlessness, lethargy, hallucination, hypertension and dystonic reactions."

-"Cough due to acute viral airway infections is short-lived and may be treated with fluids and humidity." [78]

More recent (2007) AAP reports continue to emphasize: "The few pediatric studies that have been conducted have failed to document beneficial effects of any of the compounds studied." [79-81]

Clinical evidence-based practice guidelines concerning prevention of complications such as "Otitis media with Effusion(OME)" from the American Academy of Family Physicians, American Academy of Otolaryngology, and American Academy of Pediatrics: "Because antihistamines and decongestants are ineffective for OME, they should not be used for treatment" [82]

This is also confirmed by European evidence-based guidelines: "Likely to be ineffective or harmful" (Worst possible rating-"demonstrated by clear evidence.")…"Antihistamines can cause behavioral changes, seizures and blood pressure variability." [83]

American College of Chest Physicians Evidence-Based Guidelines: "In children (<15 years) with cough, cough suppressants and other over-the-counter cough medicines should not be used, as patients, especially young children, may experience significant morbidity and mortality." [84]

Adverse effects of medicines usually go unrecognized, especially in children, and deaths are easily blamed on SIDS, or electrolyte imbalance or other disease related conditions. [77, 84-91] It therefore takes many years to obtain the documentation necessary to remove a drug from the market. Until that time, full page advertisements for cough

and cold medicines continue to be published, even in AAP journals, leading even pediatricians to believe that use of these preparations is indicated (See also Section 28). This is in direct opposition to the above practice guidelines, as well as ongoing reports from the FDA and CDC documenting that cold and cough medicines are responsible for numerous otherwise unnecessary ER visits, and have turned the common cold into a lethal disease for children, even in the US. [85-87]

These child morbidity and mortality risks are magnified in STM settings by the lack of health literacy leading to overdose and inappropriate use, lack of facilities for treatment of adverse effects, and under-nutrition related health problems with inability to overcome the harmful effects of these drugs. [78-87]

In addition, cold and cough medicines contain mind-altering drugs and are frequently abused by children, teenagers and young adults (As children often get 6-10 colds per year, conditioning children to "take a drug" whenever life isn't perfect also contributes to drug dependence and abuse.). For example:

-In May 2005 the FDA reported: "FDA Warns Against Abuse of Dextromethorphan ." In addition to five recent teenage deaths, the FDA reported "brain damage, seizure, loss of consciousness, and irregular heart beat. Dextromethorphan abuse, though not a new phenomenon, has developed into a disturbing new trend." [88]

- The National Institute of Drug Abuse reports that the incidence of prescription drug abuse ("pharming") is on the rise; and that two of the four most commonly abused prescription drugs by college students are the cold & cough medicines, pseudoephedrine & dextromethorphan. [89]

-The same is true for Over-the-Counter (OTC) cold meds and children and adolescents. The CDC reports "In 2006, about 3.1 million persons aged 12 to 25 (5.3 percent) had ever used an OTC cough and cold medication to get high." [90]

-The National Institute of Drug Abuse reported the "Percent of children who used over-the-counter cough and cold medicines during the past year for the explicit purpose of getting high: 8th-Graders 4%. 10th-Graders 5%. 12th-Graders 7%." [91]

Simple, evidence-based holistic (Christ-centered) guidelines for teaching parents how to appropriately care for their children have long been available free for downloading [96], yet are rarely used by STM physicians.

23. STM emphasis on drugs leads our patients to over-value them, resulting in additional increased patient morbidity and mortality, especially for children, long after we are gone. For example, because of the frequency of colds, the costs of these medicines can be substantial. This is true for our families in Baja. Parents whose children are treated with cold medicines by STMs are led to believe they are important and subsequently use their food money to purchase them. Over 50% of the unnecessary deaths in children of developing countries are already related to under nutrition. [92]

24. Lack of compliance with International Standards and Practice Guidelines for the 70% of our patients problems requiring health education and other preventative care. [3, 4]

The critical need for integration of community health into primary care practice has been emphasized, not only for quality care, but for the very sustainability of our health care systems.[4,5] This is necessary in developed as well as developing countries, and is increasingly emphasized by the U. S. Department of Health and Human Services (HHS) and the American Medical Association (AMA), for our patients in the US. [5]

Curative primary care is essential for at least 30% of our patient's healthcare problems, and we must continue our efforts to provide and teach high quality curative services (includes proper use of essential medicines). However, if we wish to provide quality, evidence-based care for the remaining 70%, integration of community health with primary care in accordance with HHS, AMA and WHO standards is essential-especially on the mission field.

For example: The WHO's *Preventing chronic diseases: a vital investment* (Oct 2005) reports that at least 80% of Premature Heart Disease (#1 Cause of Death), 80% of Stroke (#3 Cause of Death), 80% of Type 2 Diabetes (#6 Cause of Death), and 40% of Cancer (#2 Cause of Death) could be prevented through simple measures such as stopping smoking and appropriate diet and exercise. [3,4,5, 24-26, 96]

Highly acclaimed Christian community health and evangelism texts are assisting long-term missions in meeting the above requirements**.** [24-26]

The number of guidelines available through the WHO website (www.who.int) is now almost overwhelming, and they vary significantly in quality and value. The "Best Practices in Global Health Missions" website [97] seeks to point to those guidelines that are of particular importance in developing countries, such as the Integrated Management of Childhood Illness (IMCI) and Integrated Management of Pregnancy and Childbirth (IMPAC). [93, 94]

The above evidence-based, holistic guidelines have also been incorporated into educational programs for use by STMs, as well as long-term missions, at all levels of care (hospital, clinic and church/community) and are available free for downloading from Christian websites.[95, 96, 143] These can empower local healthcare providers, as well as church educators, to appropriately address their communities' most critical healthcare needs, and do so in a self-sustaining manner, without the adverse effects of drug-based treatment.

25. STM emphasis on drugs impairs and often delays local community health worker's efforts to resolve true causes of illness, resulting in increased morbidity and mortality. Even on those occasions when our drugs are highly effective, such as for treatment of worm infections, our patients will soon be re-infected unless latrines are built and appropriately utilized.[4] Our temporary STM treatment leads patients to believe it is the drugs (rather than the latrines or other preventative care) that are important, and can easily lead to more deaths in the future than would otherwise have occurred.

Delays in appropriate treatment due to reliance on STM drugs can also result in more immediate deaths. For example, a moribund child was brought to a STM clinic in Nepal after being ill with vomiting for 5 days. She had a ruptured appendix. When the parents were asked why they had not taken her to the local hospital where she could have been saved, they replied, "We would have, but we knew the Americans were coming with their wonderful medicines and thought it was better to wait."

26. The adverse effects of STM drug-based approach on our Christian colleague's efforts in Community Health Evangelism continues to be emphasized: "If an outside change agent (i.e. STM) is viewed as a supplier of goods (i.e. relief), it is very difficult to switch to a developmental, self-reliant process…Eighteen months later the project was still trying to overcome this dependence attitude."p82 [25]

"BEWARE THE CURSE OF MALINCHE. Malinche was a Mexican who helped the foreign soldier Cortes invade Mexico and conquer the country. The Curse of Malinche is the belief that anything foreign or western is good and must be better than

things made in our own country. The Curse of Malinche makes poor people want to buy the latest drink, food , cigarette, or drug from the nearest 'smart' country…This in turn leads them deeper into poverty. p186 [24]"

"Each year drug manufacturers, especially multinational corporations, are developing new and more effective ways of persuading ordinary people that a whole range of medicines and injections are necessary…Two examples illustrate the pressures against rational drug use. Example (1) recently one drug company offered Peruvian pharmacists a bottle of wine if they ordered three boxes of its cough and cold remedy. Example (2) another company told doctors to suspect Giardia or amoeba in all cases of diarrhea and treat immediately with metronidazole In fact, this drug is only needed in a very small proportion of diarrhea cases." [24] (See also Section **33**, Dr Ted Lankester.)

"If you really understand what we mean, doctors automatically get not only resistant, they get angry. Because what we are saying is the most important health workers in the world...are mothers. It is that reality that we have not been willing to face...the arrogance with which we have carried out our professional roles-taking ownership from the community and assuming that the ownership of the health system is in the hands of the doctors and other health workers…

That simple message is that if we are really going to do what Jesus showed us to do, it is building up the capacity of the people to solve their own problems." [144] (See also Section **33**, Dr Carl Taylor.)

27. Because our patients are poor and drugs are expensive, medicines are often sold on the "black market" in developing countries.[98] Long term missionaries report major increases in these sales at local markets after STM clinics. [99]

This also leads to STM patients presenting with "shopping lists" of complaints. And after the second or third day of clinic, many patients are quite adept at presenting the kinds of history necessary to obtain a variety of drugs. (This is not to criticize our STM patients-- most of us would do the same if our families were desperately poor and we were placed in their position) Interviews with STM patients document that even if the drugs are not sold, they are often given to relatives or friends.

28. The STM emphasis on drugs supports and increases the effectiveness of pervasive world-wide drug advertising. Advertising of prescription drugs is of relatively recent onset; and over 200 prominent medical professors from our very best medical schools as well as medical editors from our very best journals, have pleaded with Congress and the FDA to withdraw the approval for such advertising, even in the US with our educated population. [100] As reported on the FDA website:

"Direct-to-consumer marketing of prescription drugs should be prohibited… Advertising does not promote public health. It increases the cost of drugs and the number of unnecessary prescriptions, which is expensive to taxpayers, and can be harmful or deadly to patients… All drugs, including those that can heal, can also cause harm... Prescription drug advertising is not educational. It is inherently misleading because it features emotive imagery and omits crucial information…"[100]

Medical journals, US consumer groups and the WHO also report that drug advertising is responsible for much of the harm due to the "irrational use" of medicines. For example:
-"In 2006, drug companies spent nearly $5 billion on direct ads to consumers. Every dollar spent results in $6 in increased sales."
-"Doctors do not have time to argue with patients and so give in to their requests."

-"An additional $7 billion/year is spent on drug advertising to doctors."
-Scientific medical journals as well as Consumer Reports warn: "Don't be taken in (or deceived) by drug ads" and "Drug advertising is misleading, results in unnecessary treatment and cost and is harmful or deadly to patients." [46, 101-105, 108, 115]

The same is true concerning industry representatives as the source of medical information provided to physicians. As reported in the New England Journal of Medicine and elsewhere "94% of even the information drug companies provide to doctors was shown to have "no basis in scientific evidence." [106, 107, 108, 115]

The WHO reports "Over 100 million people annually fall into poverty because they have to pay for health care." [4] As noted in sections 23, 26 and 33, the economic impact alone, of this irrational use of drugs can be devastating, especially to the children of poor families in developing countries. In contrast to integrated holistic primary care; drug-based STMs very strongly support this advertising-based drug culture. [24-26]

29. **In spite of our very best intentions, the previously listed problems inherent in the typical STM setting magnify the very worst of our drug-based system's harmful effects.** As noted previously, we believe dental and other STM specialty services can provide high quality care and can be of great value, especially when combined with teaching. Our intentions for the welfare of our primary care patients and for the Kingdom also meet the very highest of ethical and moral standards. And when we have the time, the Christian love we are able to demonstrate to our patients can be a life-changing blessing to the patient as well as the provider.

Unfortunately, our primary care medicines also have numerous adverse effects and are a leading cause of death, even in the US long-term setting, with all our safeguards in place. So in spite of our very best intentions, the previously listed problems inherent in the typical STM setting magnify the very worst of our drug-based system's harmful effects.

The WHO reports a critical, world-wide need for teaching and demonstrating quality health care.[109, 110] However, even minimum quality care by the most skilled and experienced physician takes time (and for the reasons listed above, the amount of time required is many times multiplied in the STM setting).--While a prescription can be done in seconds by anyone, regardless of their competence. The WHO reports: "Irrational use of medicines is a major problem worldwide. It is estimated that half of all medicines are inappropriately prescribed, dispensed or sold." [33]

So even the very least qualified provider can easily see extremely large numbers of patients, especially in the typical STM setting where there is very little oversight and virtually no legal consequences (Autopsies are rarely performed and lethal drug adverse effects are rarely considered as a cause of death of poor people in developing counties).

And, unfortunately, even on the missions field, the true emphasis is often no longer on providing and teaching meaningful quality care and thus demonstrate Christ's love and healing; but on "How many patients did we see?" or even "How many prescriptions did we dispense?"

"Best Practices" and "Quality care" are often mentioned in STM literature and, as noted above, that is certainly always our intention and our fondest hope. However, we were unable to find a single study to indicate that this optimism was in any way justified for STM drug-based primary care.

This is in sharp contrast to the historical record of our physician missionary mentors (See Section 33) and other long-term missions colleagues who have been world leaders in establishing WHO standards and guidelines, as well as medical schools and hospitals, for the provision and teaching of the highest possible quality care throughout the world. [24-26, 119, 129-135]

30. For the above reasons, the typical STM primary care setting provides a very poor teaching example for medical students and local health care providers and results in perpetuation of irrational use of medicines and resulting poor quality care.[1-38, 108-110] The WHO *World Health Report for 2008* states "Moving towards health for all requires that health systems respond to the challenges of a changing world and growing expectations for better performance. This involves substantial reorientation and reform of the ways health systems operate in society today: those reforms constitute the agenda of the renewal of Primary Health Care."[4]

Perhaps the primary justification for STMs is "evangelism" and the "opportunity to demonstrate Christ's love." However, this requires more than just an emotional feeling and "good intentions." *Practice by the Book-A Christian Doctors Guide to Living and Serving* states: "The quality of our work and service is more than just a part of our professional persona; it is an important part of our witness for Christ…We are commanded to be excellent… Jesus healed the sick because he loved them … Love does not reach out with leftovers." [111]

31. STM emphasis on drugs inappropriately utilizes the placebo (belief or self-healing) effect, resulting in drug dependency. Our missionary mentors have long emphasized the critical importance of our beliefs and self-healing (See Section 33 and references). This has now been overwhelmingly confirmed by the scientific community. As reported by National Institutes of Health (NIH) *The Science of the Placebo*, "The placebo has been considered a 'nuisance factor' in clinical trials when, in fact, it represents a powerful therapeutic ally in health care." [112]

The critical importance of the placebo (Belief or self-healing) effect for all our treatments has been unequivocally documented, and is now being increasingly emphasized in evidence-based reports. [108, 112-115]

A review of almost any medical journal will also document that the benefit of many of our most frequently used drugs is very often primarily due to the placebo (Belief or self-healing) effect, even for those drugs that have been shown to be "highly effective". [108, 112-115]

For example, drug company physician literature for one of our most expensive NSAIDs, Celecoxib, report (correctly) that it is very highly effective with p =.008. This study was one of the most frequently quoted in the medical literature and also showed that herbal medicines, though probably safer, were of no benefit at all. However, a review of the original article shows that the placebo (or belief or self-healing effect) helped 6 times more patients than the Celecoxib itself (Number needed to treat to benefit one patient =10). [116]

So it is not Celecoxib's p value of .008 that is so remarkable, but the six-fold greater numbers who responded to belief and self-healing. If we lead patients to falsely believe it was the drug that healed them instead of their own natural healing, we create a dependency on a drug that did not exist before, and is based on false belief (6 of 10 responded to self healing, only 1 of 10 to Celecoxib). Our culture and STM drug-based

therapy give credit for this self-healing to the drug and drug companies.--Our missionary mentors (See Section 33) and Jesus gave the credit to a loving God for this healing.

Our physician missionary mentors have long emphasized the critical importance of the adverse effects of our drug treatment on the spiritual and psychological wellbeing of our patients (See Section 33 and its references). For example:

If the 6 of the 10 who responded with self-healing were taught the scientific truth and that it was the result of a loving God who created their bodies to be self-healing, it then creates self-empowerment, strengthens the patient's personal relationship with God, and it is God who is given the glory. In addition, we create no psychological or spiritual dependency on drugs or drug companies or "magic."

If the 6 of the 10 who responded with self-healing are allowed to believe that the healing was due to the Celecoxib, it creates drug dependency related to the patients' false belief that it was the drug that helped them, their resulting need to purchase more of the drug, and the patients give the credit (or glory) falsely to drugs or "magic."

And as noted above, this scientifically proven false belief also always comes with the NSAIDs tens of thousands of deaths per year due to adverse effects alone, as well as the harmful effects on poverty, etc.

NOTE: It should be emphasized that although the above self-healing has in the past sometimes been classified as "miraculous," our missionary mentors are not referring to "supernatural" healing here (See Section 33).

Although they (and we) strongly believe that supernatural healing can also take place, many "miraculous" healings can now be explained by medical science such as reported by the NIH's *The Science of the Placebo*: "Beliefs/Values initiate a neuro-hormonal cascade that results in the healing response."[112]

This type of healing no longer needs to be classified as "miraculous" in the supernatural sense. Rather, as especially noted by Dr Paul Brand[129-131] and Dr Dan Fountain[133-135] and Section 33, a loving God created our bodies to be naturally self-healing and to respond to our beliefs. Their teaching is now being overwhelmingly confirmed by scientific reports such as the NIH *The Science of the Placebo* as well as, every day, in our very best medical journals:

For example, in the above Celecoxib and similar studies, we now know that patients with pain who believed they were being given the drug or herbal medicine were just responding with their own belief-induced, natural endorphans.[112-115]

In the view of many Christian physicians, this "natural" healing is no less miraculous than "supernatural" healing. Jesus repeatedly emphasized this same belief/self-healing relationship over 2000 years ago, and time and again told his patients "Your faith has healed you" (Mark 11:24, Luke 8:48, Luke 8:50, Luke 18:42, etc.) And numerous additional books by pastors, evangelists and our Christian colleagues in the healing prayer ministries now contain thousands of case reports of healing as a result of belief in Jesus' words and prayer.[117-123]

Unfortunately, Jesus' instructions concerning the "Great Commission" and his holistic teaching on the importance of Love and Faith for healing are no longer considered relevant by most modern western-trained doctors and are not reflected in their practice. However, the large numbers of case reports and the overwhelming strength of the scientific evidence concerning belief and healing can no longer be ignored. (Google

search April 2009 shows 4,740 entries for books and references on "healing prayer" alone.)

The randomized controlled trial (RCT) is absolutely essential for evaluating the effectiveness of drugs, and is therefore of utmost importance in a drug-based culture. However, it must be emphasized that although the RCT is considered the "gold standard" for drugs, it does a very poor job of measuring the effectiveness of other treatments; and is very poor at even evaluating the safety (adverse effects) of drugs, which is always just as important, and often much more important, than the drug's effectiveness. [108, 112-115]

Also, as most studies are now funded by drug companies, it often takes many years before evidence-based guidelines have enough information to appropriately evaluate the safety of drugs, or the effectiveness of non-drug therapy[115] For example, the December 2000 issue of *Clinical Evidence* listed NSAIDs as "Likely to be Beneficial"(Second highest rating) for treatment of Chronic Low Back Pain. However, with more evidence over the years, NSAID's rating fell to the current "Tradeoff Between Benefits and Harms." While the benefit of "Back Exercises" now has the highest possible rating "Beneficial."* [124]

For the same reasons, although randomized controlled trials (RCTs) quantifying love and faith and the resulting healing effects are not possible, there is now an overwhelming abundance of non-RCT scientific evidence that Jesus' and our missionary mentors' teaching and holistic methods are as valid and relevant today as 2000 years ago. [4, 112-123]

(*Note: Chronic low back pain is one of the most common STM complaints and is nearly always treated with STM's NSAIDs (#3 rated "Tradeoff Between Benefits and Harms.") for temporary symptomatic relief of pain, which also must often be continued indefinitely, and also results in all the drug dependency related problems documented above. In contrast, the very best possible (#1 rated) evidence-based treatment (Back Exercises) is holistic and patient-empowering and often results in therapeutic benefit (Beneficially effects the course of the condition). When combined with prayer, it also strengthens the patient's personal relationship with God, and it is God who is given the glory for self-healing vs drugs or "magic" described above.)

32. Drugs as used in the typical STM setting do not support Jesus' teaching and holistic (Mind, Body, Spirit) approach to healing, but rather supports a belief in drugs and magic. The sign on Tenwek Hospital has long stated "We treat, Jesus heals." The use of essential medicines in accordance with current international standards and guidelines for integrated holistic (Mind, Body, Spirit) primary care is very much in accord with the teaching and example of Jesus. In fact, we have not been able to find a more perfect example of holistic care than that demonstrated by the ministry and teaching of Jesus and our missionary mentors in the long-term clinic or hospital setting (See especially Dr Paul Brand[129-131] and Dr Dan Fountain[133-135]).

However, as noted previously (Beginning with Section 1 onward), the typical STM practice setting is far different from the typical long-term setting. And the resulting emphasis on drugs in the typical STM setting has absolutely no Biblical basis.

The words of Jesus are often used as a rallying call, and the reason why Christian doctors should sign up for drug-based STMs. The following are most often quoted: Mark 6:12-13, Jesus Sends Out the Twelve. Luke 10:9-17, Jesus Sends Out the Seventy two. Matthew 28:19-20, The Great Commission.

However, a review of those Biblical verses finds nothing that supports the emphasis on drugs in the typical STM setting. In fact we find just the opposite. Though medicines existed for centuries before Christ, that is not how Jesus instructed his followers to heal patients, ever. Not even in the writings of Luke the physician.

It is, rather, our pastors, evangelists and Christian colleagues in the healing prayer ministries who are actually following the instructions of Jesus. [117-123]

Dr Paul Brand[129-131], Dr Dan Fountain[133-135] and Stan Rowland[25] especially, have for many years emphasized the critical importance of the holistic healing example and teaching of Jesus. And Dr Paul Brand [129-131] and Dr Ted Lankester[24], especially, have emphasized the harm of our culture's over-emphasis and dependency on drug treatment. And the scientific evidence confirming the truth of their Biblically-based teaching in these areas is now overwhelming. For Example:

Drugs are man-made and among the most frequent causes of death even in the US, under ideal conditions.[125] (See also previous reverences. [1, 2, 29-35]) Contrary to drug industry claims, the great majority of adverse drug events are due to non-preventable causes and occur within the FDA approved dosage and labeling recommendations.[2] "Most adverse reactions are the result of an exaggerated but otherwise usual pharmacologic effect of the drug."[126]

In addition, the IOM concludes "there are at least 1.5 million preventable adverse drug events that occur in the United States each year. The true number may be much higher." [127]

It is also important to evaluate the effectiveness side of the drug treatment balance from an evidence-based standpoint. Evidence-based medicine and Jesus' ministry are based on Truth. In sharp contrast to advertising claims, evidence–based sites such as *Clinical Evidence "The State of Our Current Knowledge"* continue to report that only 13-15% of our current, modern treatments have actually been proven to be beneficial (Beneficial = Same level of effectiveness as "Back Exercises" in "Chronic Low Back Pain"). [128]

This seems nonsensical and preposterous until we review the scientific evidence for the placebo (Belief/ Self-healing) effect in each of our treatments,[112-116] and the thousands of case reports of healing due to belief in prayer.[117-123]

It should also be noted that many of our pastors, evangelists and colleagues in the healing prayer ministries, by following the teaching and example of Jesus, have experienced beneficial success rates much greater than 13-15%; and without the Harm side of the treatment balance, inherent in each and every drug.

The use of STM clinics with free or low cost drugs is often justified as a means to attract large crowds of people for evangelical purposes. And it is true that such clinics attract large crowds. We also very much agree with the importance of evangelism, and also with those who believe true supernatural healing can take place on STMs (See John 14:12).

However, the above should not be conducted in a manner that places large numbers of patients at risk of the harmful and lethal effects of drugs. And when supernatural (as well as natural) healing does take place, we believe it should be done in a setting that gives credit and glory to God, and not drugs and drug companies. For example:

Because of our patient's belief in "magic pills" they are very insistent that they receive them. (Long term missionaries report that patients often put our medicines in the

very same category as witch-doctor's magic potions.[99] Some STMs intentionally purchase red pills whenever possible, as many cultures view these as especially powerful.) Even those who no longer believe in "magic" place an extremely high value on our drugs, and many have walked for miles and/or waited for hours to obtain them. For these reasons, an inexpensive baggie of drugs brings STM patients great joy, and results in heartfelt demonstrations of appreciation for the healthcare team members.

As a result, nearly every STM patient leaves with at least one package of pills. And with every package of pills, we reinforce their beliefs in drugs and/or magic, and not the beliefs and example of Jesus, our Christian colleagues in the healing prayer ministries, our missionary mentors, or evidence-based medicine.

33. Drugs as used in the typical STM setting also impairs the efforts of the WHO and our Christian physician missionary mentors to promote an evidence-based holistic (mind, body, spirit or Christ-centered) approach to healing.[24-26]

Curative care (including appropriate use of essential medicines) is necessary for at least 30% of our patient's healthcare problems and is very much a part of integrated holistic primary care.[4,96] Our missionary mentors' integrated holistic approach to care has been adopted by the WHO, and its scientific validity again reconfirmed in the 2008 WHO World Health Report devoted entirely to primary care.[4,26]

However, for the reasons documented throughout this report, our STM emphasis on drugs is not in accordance with the above international guidelines, and promotes a drug dependent culture. This is very much opposed to our missionary mentors' holistic Christ-centered approach to healing which emphasizes the teaching of individual and community empowerment and responsibility, love, faith and a personal relationship with God. The following and numerous other Christian missionary authors offer time-tested, scientifically-sound, Biblically-based alternatives to the STM drug-based approach to missions.[95, 96, 129-140]

And as documented previously, irrefutable scientific studies have now proven what these Christian healers have long reported, that our bodies were created by a loving God to be self-healing and that our beliefs affect that healing.--The very same God-honoring, self-empowering effect Jesus repeatedly taught and emphasized 2000 years ago: "Therefore I tell you, whatever you ask for in prayer, believe that you have received it, and it will be yours." Mark 11:24 (Over 150 additional references to "Belief/Faith" just in Matthew-John.)[141]

In all of evidence-based modern medicine, it is this Biblical and Scientific Truth that is most important for our patients, as well as our medical students, to understand.[117-123, 112-115, 129-141]

In the words of our Christian physician missionary mentors:

Dr Paul Brand (Long term missionary to India. Author of *Fearfully & Wonderfully Made; In His Image; Pain-The Gift Nobody Wants*.[129-131]):

"We in medicine need to restore our patients' confidence in the most powerful healer in the world: the human body."

"Doctors tend to exaggerate their own significance in the scheme of things…"

"The mind, not the cells of the injured (part) will determine the final extent of rehabilitation."

"In the United States advertising further feeds the victim mentality by conditioning us to believe that staying healthy is a complicated matter far beyond the grasp of the average person."

"A human being, unlike any machine, contains what Schweitzer called 'the doctor within,' the ability to repair itself and to affect consciously the healing process."

Dr Carl Taylor (Long term missionary to India and China. Author of *Just and Lasting Change: When Communities Own Their Futures.* [26])

"The key to better lives is not technological breakthroughs, but changing behavior at the community level. p17

The most important health workers in the world are not physicians or surgeons, but mothers. p29

Outsiders and outside resources are crucial…however their role is to stimulate commitment and practical alternatives, not to do the actual work. p33

When officials and experts demonstrate humility, community energy becomes contagious. p36

Behaviors do change when, one by one, individuals and families see that a particular change is in their self interest. p36

Six criteria help participants…monitor whether particular events…are positive, or will create later problems: 1.Collaboration. 2. Equity. 3. Sustainability. 4.Interdependence not dependency. 5. Holistic action. 6. Iterative action. p.41"

Dr Dan Fountain (Long term missionary to Africa. Author of *God, Medicine & Miracles-The Spiritual Factor in Healing; Health the Bible & the Church; Let's Build Our Lives.* [133-135])

"The biomedical approach to healthcare separates physical care from psychological, social and spiritual care. The heavy investment of time and resources in physical care and technology largely precludes consideration of care for the other dimensions of human life.

This model is in sharp contrast to what Jesus did and to what the Bible teaches about wholeness. Furthermore, the health sciences are now recognizing the interdependence of body, mind, and spirit. Integrating medicine, pastoral care, prayer, and Christ's power to heal body, mind, and spirit will make healing of the whole person possible.

Putting into practice an approach to caring for the whole person requires a major paradigm shift from the biomedical compartmentalized view of human life to the biblical view of wholeness.

This paradigm shift is essential for health professionals who must learn new patterns of history-taking so as to include questions about the personal and social life of their patients, about emotions, feelings, and attitudes, and about their faith and spiritual activities." [14]

Dr Ted Lankester (Long term missionary to India. Author of *Setting Up Community Health Programs: A Practical Manual for Use in Developing Countries.* [24])

"Many health program staff spend most of their time running clinics and curing illnesses. They give health education only if there is time left over. Such an approach will never improve the health of a community…

Health teaching with the active involvement of the people is probably the most important of all community health activities. It must be the top of our priority list…" p.38

"One of our main tasks as community health workers is to educate the people about correct and incorrect use of medicine. If we succeed, communities will become healthy and self-reliant. If we fail, communities will become poorer, more exploited and more dependent...

The commonest reason why doctors over-prescribe is this: Patients expect many medicines … If they don't receive them they seek out another doctor willing to provide them." p327

"Unless the whole health team understands and practices the appropriate use of medicines at all times, community members will never be taught how to change their expectations." p331

"It must be our aim to create awareness in the people so successfully that, when tempted by glossy advertisements or TV commercials promoting the latest health tonic, they refuse to buy it." p332

CONCLUSIONS: For the reasons listed above, the emphasis on drugs in the typical STM setting, although well intentioned, is not in accordance with the teaching and example of Jesus, our pastors and colleagues in the healing prayer ministries, our physician missionary mentors, evidence-based medicine, or international standards and guidelines; and places our patients at very high risk of serious harm.

However, there is much that missions have done, and can continue to do, to meet the requirements of The Great Commission. Paul Brand, Carl Taylor, Dan Fountain, Ted Lankester, Stan Rowland and the Christian missionary authors included in the references offer numerous, now scientifically proven, Biblically-based alternatives to the typical STM drug-based approach to missions.

In addition, the international guidelines based on their work, such as the WHO 2008 World Health Report[4], are essential reading for all who wish to attempt the practice of primary care, especially on the missions field.

Short-term healthcare missions remain essential for teaching high quality evidence-based care in all areas of medicine and surgery. The WHO continues to document a critical, world-wide need for the teaching of safe and effective, integrated, community-based primary care. [4]

And as noted in section 24, properly trained primary care providers can teach and demonstrate integrated evidence-based holistic (Christ-centered) care that has a meaningful, long-term, lifesaving impact on the physical as well as spiritual and psychological wellbeing of a community. The use of selected essential medicines in appropriate health care settings can also provide very important benefits, especially when integrated with community health evangelism and teaching in accordance with current Biblically-based international and national standards and practice guidelines. [4,24-26,93-96]

The Best Practices in Global Health Missions website contains efforts to demonstrate the above integrated community health/primary care guidelines in the short-term as well as long-term missions setting. [9,96,142,143]

The quality of care provided to our primary care patients in the US has also been the subject of numerous increasingly critical reports, and only a very few of those reports have been addressed in this paper. However, because of those reports, the need for integration of community health into primary care has also been stressed by the U. S.

Department of Health and Human Services (HHS) and the American Medical Association (AMA), even for patients in the US. [4,5]

So from a modern, scientific, evidence-based standpoint, our primary-care practice, even in the US, needs to return to our missionary mentors' integrated, holistic Biblically-based (versus drug-based) approach; and their work is essential reading for each and every physician, in or out of the missions field. [24-26,129-131,133-135] And though the problems addressed in this paper are very serious and can cause great harm; we also know, based on the evidence, that through following the guidelines of our Christian missionary mentors, they can be resolved.

We need to thank the many colleagues and mentors who have supported and contributed to this work. We are especially indebted to the members of the Best Practices in Global Health Missions Working Group for their thorough reviews and numerous contributions to this paper. (Please also see Endnote, page 29.)

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END NOTE: Request for Evidence-based Peer Review and Call for Papers

As part of our work for Best Practices in Global Health Missions, we plan to continue our ongoing review and publication of best available international standards and practice guidelines.

We are confident that future evidence will continue to strongly support the guidelines of our Christian missionary mentors. However, if you find any areas where you are in disagreement with this paper, please send the evidence-based documentation (with references) to: arnoldgorske@gmail.com (As noted previously, opinions based on experience differ widely among physicians and organizations, and remain our lowest level of evidence. As demonstrated by this paper's references, the more our practice becomes evidence-based, the closer we come to our missionary mentors' and Jesus' holistic approach to healing. Evidence-based recommendations for improvement are, therefore, essential to high quality Christ-centered care, and are very much appreciated.)

We very much need your help. Our greatest need is for additional papers that document resolution of the quality of care problems identified by our in-country colleagues. Our goal is to continue to provide missions with additional "best practices" solutions to those problems.

Papers for publication on the CrossNetworkJournal website may be submitted to Peter Yorgin at pyorgin@ucsd.edu

Papers for publication on the Best Practices in Global Health Missions website may be submitted to Michael Solderling at mjsolderling@gmail.com

Thank very much, in advance, for your help.

God Bless You,

Arnold Gorske, MD

Member, Best Practices in Global Health Missions Working Group

http://csthmbestpractices.org/ConsensusDocuments.html