Ultrasound: A New Bibliography Human Studies Indicate Extreme Risk

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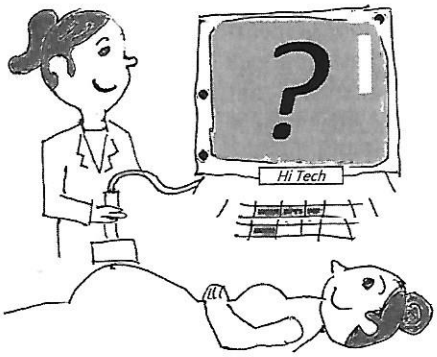

Ultrasound is a highly controversial topic. It can now be said, without hyperbole, that an understanding of its mysteries is essential to the well-being of the individual and the human species.

The word "ultrasound" commonly refers to diagnostic ultrasound (DUS), an acoustic technology utilized for medical examinations, often to view real-time images of the fetus and the mother's reproductive tract.

History

Ultrasound imaging technology for diagnostic examinations evolved from a type of echo-imaging, originally developed as SONAR, an acoustic technology developed for underwater navigation. This functions by pinging sound waves off ship and submarine hulls, electronically measuring echo, the duration required to reflect ultrasound from an object back to the source.

Ultrasound is commonly used by industry to disintegrate and blend materials, and to weld steel. Since the mid-20th century, ultrasound has been employed to generate "echo images" of the fetus.

DUS is not natural sound. It is usually at a frequency of 3 to 9 megahertz with harmonics and random sonic effects. Its fundamental frequencies are higher than the EMF carrier frequencies for the AM radio band. Human hearing range is only 20 to 20,000 hertz. DUS wave pressures can be thousands times that of the hearing pain threshold.

The physics are dramatic. "Environmental Health Criteria 22: Ultrasound," published in 1982 by The World Health Organization (WHO), states that ultrasound cavitation can create powerful shockwaves far above the speed of sound. It can create cavitational bubble collapse temperatures of thousands of degrees[1]:

> It seems reasonable to assume that effects on biological systems may be induced at least by the mechanical shock waves and high temperatures generated during the bubble collapse.

This is common knowledge among ultrasound scientists, e.g., Krasovitski (2011).[2]

Ultrasound has largely supplanted the earlier common imaging technology, Xrays. That earlier technology is now admitted to be hazardous; however, it took decades for that knowledge to become public. Despite professional awareness, the practice continued inappropriately in shoe stores, hospitals, and doctors' offices. The history of medical Xray imaging serves as a parallel to ultrasound history.[3]

Economics

Diagnostic ultrasound (DUS) may be an economic boon for medical practitioners who advocate its routine use. There is another economic: Women who avoid DUS should be able to command a $10,000,000 dowry. Let me explain.

DUS is now being applied to most of the entire world population during its fetal stage and applied to nearly all pregnant women in the United States. Fearing the process of birth, women are driven towards this invasive procedure, accepting it as a standard medical routine.

DUS is widely declared to be "harmless," despite mothers describing on internet forums, such as *The Thinking Moms' Revolution*, fetal trauma, maternal pain, and events preceding ultrasound-associated damage to their child.[4] Other forums describe vaginal bleeding following DUS.[5]

The negative health implications are vast for the individual and society. DUS appears to have set the human species on a tragic path due to its subtle and not-so-subtle biological effects. Critics argue that the exponential rise in autism incidence is largely the result of fetal exposure to ultrasound.[6,7] If they are correct, then it may take many generations to recover from this misguided application of medical technology.

While this may seem alarming, it bears a similarity to the aforementioned WHO document, "Criteria 22." Many scientists worldwide signed the document, including Wesley Nyborg, PhD, of the US Food and Drug Administration (FDA), Melvin Stratmeyer, PhD, of the FDA, and William O'Brien, Jr., PhD, of

the Bioacoustics Research Laboratory, University of Illinois.

> ...more than 35 published animal studies suggest that in utero ultrasound exposure can affect prenatal growth... ***A number of biological effects have been observed*** following ultrasound exposure in various experimental systems. These include reduction in immune response, change in sister chromatid exchange frequencies, cell death, change in cell membrane functions, degradation of macromolecules, free radical formation, and reduced cell reproductive potential... The data on clinical efficacy and safety **do not allow a recommendation for routine screening....**[1]

The WHO Criteria was published 34 years ago. Its concerns have never been refuted. These concerns are supported by most modern science, though, to date, that science has not been acknowledged by the dominant politic. What was described by WHO as an unacceptable risk three decades ago is now a much greater risk because the FDA has since raised allowed machine intensities by a factor of 8x15x.

Newnham (1993)

Newnham (1993) is a human exposure study with two follow-up studies published later focusing on child development. The studies concern children exposed *in utero* during the years 1989-1991. A total of 2,834 maternal-fetal pairs were exposed to DUS from early generation machines, low ultrasound intensity. Many sessions were at less than 5mW/cm2 SPTA, none more than 25mW/cm2 SPTA.[8] Disease was found.

> Our findings suggested that [five or more ultrasound sessions] increase the proportion of growth-restricted fetuses by about one third. ...it would seem prudent to limit ultrasound examinations of the fetus...[9]

These observations of growth restriction are important in that these were found despite attempts to dismiss data with statistical significance filters.[10] Newnham hides data behind significance filters and dismisses positive results with such filters.

The study compared children from two groups of women exposed to DUS, a "regular" group, and an "intensive" group. The intensive group had more DUS sessions and higher exposure per session. The study results might have been much stronger had it not diluted its results by omitting the control group (zero-exposure group).

Growth restriction makes sense, as growth restriction had been found in earlier animal and cell studies.[11] Growth restriction is a big problem in itself, and it can imply the possibility of other problems, such as malformations, neurological impairment, etc.[12]

Eight years later, Newnham followed up on the same population and published a study claiming that by year one, the smaller children had caught up to the norm, employing statistical significance arguments.

Twenty years later, Newnham followed up on the same population, studying intraocular development. It played down "differences" with statistical significance arguments: "There was no statistically significant difference between the two groups with regard to ocular biometric or visual outcomes...."[13]

Most statisticians agree that it is bad practice to omit data and discussion because of "statistical significance." In the article "Are There Benefits from NHST?" (*Amer Psychologist.* 2002;57(1):65-66), Schmidt and Hunter stated:

> Significance testing almost invariably retards the search for knowledge by producing false conclusions about research literature...a disastrous method for testing hypotheses.

Newnham could not dismiss everything. The study found a significant persistent disease, which could be indicative of other, unstudied problems: "...slightly higher intraocular pressure...." The problems found by Newnham resulted after exposure to older machines, i.e., low intensities, ranging from less than 5mW/cm2 to 25mW/cm2. Newer machines, manufactured after 1991, range up to the 720mW/cm2 limit and sometimes higher.

Stalberg (2008)

This Swedish study reviews four population studies by Stalberg et al.[14] This is categorized here as an early study despite being published in 2008 because it reviews the records of large populations of children who had been exposed to prenatal DUS during the 1970s and 1980s, the era of relatively mild intensity machines. It admits a dilution of its results by its economy of design.

Stalberg nevertheless finds some increased risk for boys (not girls) in the following categories: schizophrenia, lower intellectual ability, lower performance in school, lower performance in physical education, and a tendency towards left-handedness.

Stalberg concludes that the increased risks did not reach statistical significance, though with important exceptions.

> Boys exposed to ultrasound at any time during gestation had lower mean grades in physical education and a tendency towards lower school grades in general.[14]

Stalberg suggests that DUS may contribute to a general stress-induced vulnerability to disease.

> Ultrasound and other prenatal and environmental events may be the elements that 'turn on' susceptibility genes in predisposed individuals.[14]

Thanks to Stalberg for this description of ultrasound-initiated fetal vulnerability; however, I will demonstrate later that it is not turned-on genes but simple toxic damage from ultrasound that predisposes individuals.

Stalberg provides a grim warning:

> ...these studies assessed ultrasound exposure in the 1970 and 1980s, with average intensity output levels for ultrasound machines of around 20 mW/cm2. This is very low compared to the maximum limit of 720 mW/cm2 set by the U.S. FDA... outputs are probably ten times higher today.... Further, the intensities for ultrasound machines are based on the manufacturer's data and high discrepancies have been found....[14]

Early Animal and Cell Studies

Siegel (1979) observed increased cell detachment at low exposure. This relates to problematic embryo implantation and fetal growth restriction.[15] The study was discussed in the WHO Criteria 22 as a reason to deny routine DUS.

Cachon (1981) observed damage to cell microtubules with only 10 seconds exposure[16] at low intensity of 8mW/cm2.[17] The study was discussed in the WHO Criteria 22 as a reason to deny routine DUS.

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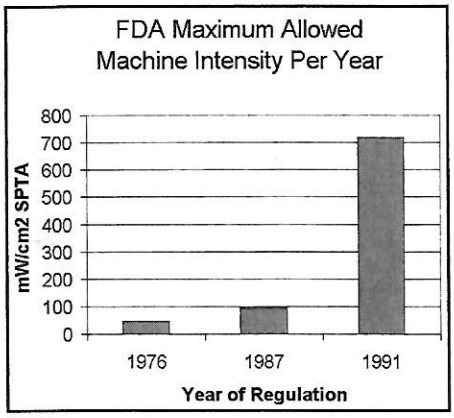
Ellisman (1987) observed myelination disruption at the extremely low intensity of 0.135mW/cm2.[18] This is a rat pup study emulating the human fetal scenario. No serious discussion followed this essential, devastating study of DUS. Though initially given a high quality rating by the National Institutes of Health (NIH), it was later denied funding for continuation.[19]

Beverley Beech, of AIMSUK, characterizes the importance of animal studies:[20]

> Over the years there have been numerous studies on rats, mice and monkeys which have found reduced fetal weight in babies... in the monkey studies, the ultrasound babies sat or lay around the bottom of the cage, whereas the little control monkeys were climbing up the bars and were up to the usual monkey tricks... What happens when the monkeys grow up?... as Jean Robinson has pointed out, monkeys do not learn to read, write, multiply, sing opera, or play the violin.[20]

1991: Intensities Increase by 8x

This great historical event marks the huge increase in DUS intensities and epidemics of childhood disease. During 1991, FDA negotiations among "interested parties" resulted in an 8x15x increase in allowable DUS machine intensities with safety responsibility entirely on the operator.[21]



Since 1976, negotiations have always had a proposition on the table for unlimited machine intensities. This is to ensure that technological progress is not obstructed. D.L.Miller (2008) says:

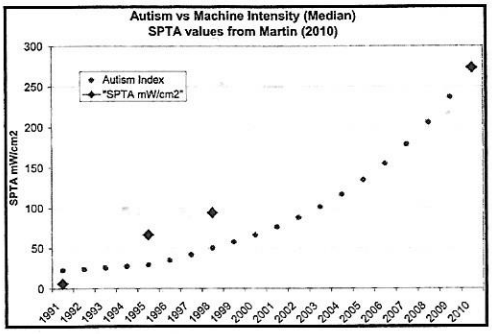
> [T]o liberalize the upper limit categories in some way to avoid inhibiting the [technological] development of diagnostic ultrasound and restricting the patient benefit which should follow [from the technological development].[22]

FDA provides some guidelines and special limits regarding intensity and exposure duration. However, the 720mW/cm2 limit applies for nearly all prenatal applications, even for the very sensitive eye of the fetus. This represents a dangerous paradox: The FDA intensity limit for the adult eye is 50mW/cm2. The limit for the fetal eye is 720mW/cm2. D.L. Miller says:

> The new [DUS] limits were essentially made uniform across [application] categories, except for [adult] opthalmological examinations, for which consideration of possible heating indicated exceptional risk to the [adult] eye lens. The obstetrical ultrasound limit for the SPTA intensity was elevated to the highest 720 mW/cm2....[22]

The bracketed text is mine. The brackets shouldn't be necessary, i.e., D.L. Miller, if not under censure, should have been forthright enough to discuss this paradox, which is known to him but not his readership.

It should not be surprising that from 1991 onward, rising machine intensity levels[23] correlate with rising autism incidence.[24] See graph.



Inappropriate Science

As intensities and disease increased, did the NIH step up, appropriately fund studies? No. The opposite. Only a few studies were conducted after 1991. Most of these studies found ultrasound hazardous but were denied funding for continuance, and/or, their observations were ignored.

The IACC, a federal agency, directs U.S. tax dollars to autism research.[25] Funds go almost entirely towards genetic studies, a few environmental studies, and no ultrasound studies.[26] There resides industry's great profit and low liability.

From 1950 to the mid-1980s, there were over 700 studies reporting ultrasound-induced bioeffects, yet without resolution of human risk.[27] Anderson and Barrett (1979) write:

> The medical application of low-energy ultrasound as a diagnostic aid has developed in the **absence of appropriate** studies of its hazards.[28]

Ellisman (1987) says:

> Several reviews of the literature... reveal that **most studies were inadequately designed** or inconclusive for the human medical situation; information on exposure conditions was frequently incomplete, markedly different from diagnostic ultrasound or in some instances sample size and follow-up were less than optimal.[18]

No Science

Worse than inappropriate science is no science. Abramowicz (2013) says:

> ...for fetal imaging, the ISPTA was allowed to increase by a factor of almost 16 from 1976 and almost 8 from 1986 to 1992, yet... ***all epidemiological information*** available regarding fetal effects ***predates 1992***.[29]

D.L. Miller says:

> [As of 1992] the allowable output for obstetrical ultrasound was increased [8x15x]... There has been little or **no subsequent research...** to systematically assess potential risks to the fetus....[30]

D.L. Miller is authoritative, funded by the NIH. With his humble admission of "little or no research," he confirms the dismal state of ultrasound science. With his silence, he denies the powerful existence of ultrasound science that indicts DUS.

Science vs Policy

See the following table, "Science vs Policy." The exposure ratios provide a stunning measure of the disjunct between science and public policy. I would have graphed this data, but the differences

would be too large to be visualized unless the axes were compressed logarithmically.

The table contains three science studies (Siegel,[15] Cachon,[16] and Ellisman[18]) and two official policy statements (AIUM, FDA). The studies specify intensities where damage was observed. The policies specify intensities of official safety thresholds.

With exposure ratios, I compare science versus policy. Ratios are calculated by dividing policy exposures by science exposures. The ratios are huge, i.e., the difference between science and policy is huge.

	Science			Policy	
	Siegel	Cachon	Ellisman	AIUM (1987)	FDA (1991)
Seconds	30	10	1,800	500	500
Est Intensity (SPTA)	3	8	0.135	100	720
Exposure=T x I	90	80	243	50,000	360,000
Exposure Ratios					
AIUM : Science	556	625	206		
FDA1991 : Science	4,000	4,500	1,481		
Intensity Ratios					
AIUM : Science	33	13	741		
FDA1991 : Science	240	90	5,333		

The three studies above were selected for their low exposures. They have never been properly discounted by the mainstream. Example of impropriety: Del Cerro (1994) claims to have overturned Ellisman but did not use Ellisman's expert methods. It claims to have duplicated Ellisman, but it did not.[31] Ellisman is a renowned neuroscientist. The senior author of Del Cerro (1994) is Morton W. Miller, a botanist, accused of incompetence and conflicts of interest with the radiation industries. For example, Andrew Marino, PhD, writes, "With reference to performing experiments, he [M.W. Miller] stated, 'I follow the golden rule - he who has the gold makes the rules.'"[32]

There is no critical discussion regarding Del Cerro or Ellisman. Del Cerro is cited only when implying that Ellisman is moot.[33] Not wanting to be too harsh on M.W. Miller, the reader is invited to confirm these views.

The usual industrial defense against indicting studies is, "Who would ever expose a fetus to such long dwell times?" Answer: Cachon is only 10 seconds. Siegel is only 30 seconds. Ellisman is 30 minutes (1,800 seconds). However, when its extremely low intensity is extrapolated to the very high clinical intensities of present-day, probable damage could be indicated within a few seconds exposure.

The disjunct between public perception and scientific reality is described by Jacques Abramowicz, MD, a highly respected authority, prestigious member of AIUM,[34] professor, and consultant to ultrasound machine manufacturers.

> If asked, the vast majority of end users (and patients) will respond that ultrasound is not Xrays and is completely safe. In reality, there is **a marked lack of knowledge** on effects of ultrasound in tissues being examined (bioeffects) among the majority of these end-users.[35]

Profit adores "a marked lack of knowledge."

Recent Studies

It is generally agreed among mainstream experts that ultrasound has the potential to produce harmful biological effects in the fetus. For example, the WHO Criteria describes risks as determined by animal and cell studies. However, because these risks have not been confirmed by human studies, the practice of DUS continues, as the FDA definitively declared, in 2013:

> Although ***laboratory studies have shown*** that diagnostic levels of ultrasound ***can produce physical effects*** in tissue, there is **no evidence from human studies of a causal relationship** between diagnostic ultrasound exposure during pregnancy and adverse biological effects to the fetus.[36]

Paradoxically, funding for animal and cell laboratory studies has virtually disappeared since the allowed machine levels were raised 8x in 1991. Evidence? Try to find a modern dose/response study in the Euro-American realm that was conducted after 1991. There are few. I found only four such studies, and they all indicate ultrasound to be considerable risk: Stanton (2001),[37] Ang (2006),[38] Krasovitski (2011),[39] and Hočevar (2012).[40]

Stanton (2001), a mouse study, found increased cell death in the intestine at medium intensity DUS.[41] Funding for continuation to find lower thresholds was declined.[42]

Ang (2006) caused public concern when it reported dysfunction of neuron migration in the brains of mice fetuses, caused by low intensity DUS. The senior author, Pasko Rakic, was interviewed on PBS. He is a prominent neuroscientist at Yale University. The mouse study was played down without any apparent objection from Rakic. Later, in 2010, it was rumored that Rakic received funding for continuation in the form of a monkey study, and that the study was then quietly discontinued without an explanation.[43] The funding was reported to be $3,000,000.[44]

Hočevar (2012) is a high-tech rat study designed to approximate the human fetal scenario for DUS exposure. It studies cellular gene expression following low intensity DUS exposure. It unexpectedly found bioeffects similar to Xray exposure, i.e., the gene *Gadd45a was* several hundred times differentially expressed. Given that ultrasound radiation is not categorized as ionizing radiation (e.g., Xrays), this was previously thought to be impossible.

Hočevar (2012) inadvertently and indirectly supports the earlier research of Doreen Liebeskind, MD, at Columbia University, as follows. Liebeskind (1981) is a cell study designed to be relevant to both clinical DUS and Xray exposure. Ultrasound damage was identical to Xray damage as observed under an electron microscope. When the results were extrapolated to a typical clinical session, they indicated an equivalent risk of 250 chest Xrays.[45] A chest Xray in 1981 was much higher intensity, i.e., much more destructive than present-day.

Liebeskind (1981) is thus even more relevant to present-day clinical sessions. Damage was permanent, heritable through cell division, demonstrating like Cachon (1981) that DUS exposure could conceivably affect many human generations. This is discussed in the WHO Criteria as a reason not to endorse routine DUS.

Krasovitski (2011)[46] presents a sensitive mathematical model for ultrasound damage. This study reviews many experiments including its own experiments to develop its model.

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Cellular damage was found at intensities 38x less than the FDA guideline of 1.9 MI (Mechanical Index).

Looking for the industrial defense to Krasovitski (2011), I discovered that immediately after the study was published, the NIH funded a paper by Charles Church, PhD, which attempts to refute Krasovitski (2011) and defend the FDA.[47]

The oversight scientist for Krasovitski (2011) is Eitan Kimmel, PhD, professor of biomedical engineering at the prestigious Technion Institute in Haifa, Israel.

Church never contacted Kimmel to discuss his objections.[48] Church's paper consists largely of copy-pasted material with some old-school argument interspersed, and it ignores the Kimmel's supporting studies. Church cites six references. Kimmel cites 39 references. An updated version of Kimmel's study cites 45 references with several new experiments that support its risk model.[49]

Surprise: Hazards Confirmed

In early 2013, I began my research for undeniable documentation. My motivation was due to my inability to convince people of DUS hazards with the existing critical material. There is also a general inability. For example, Emma Ashworth of AIMS-UK[50] relates a story of her mother, an experienced midwife who spoke to all of her clients about the hazards of DUS. All accepted DUS except for one.

After several weeks' study, I found, as described by the FDA and D.L. Miller, that the mainstream allows only human studies as definitive evidence. I then used a working theory, that somewhere there must be a study that used a type of chromatography called "electrophoresis" to reveal ultrasound damage. This sensitive technology uses electric currents to enhance chromatographic analyses of biochemical compounds. For example, crime labs use electrophoresis to analyze DNA samples gathered from crime sites.

I wrote to ultrasound scientists, asking if they knew of an electrophoresis study, and I received no answer. I assumed there was no such study.

I persisted and eventually found J. Zhang (2002).[51] Not only was this an electrophoresis study, but it was a human study. Big Bonanza!

Through its references, I was then able to assemble a large number of arcane studies from the emerging online Chinese databases. I worked to gain an understanding of ultrasound science, to be able to evaluate and defend the studies from industry and plagiaristic corruption. I assembled my material as a book containing the new bibliography with extracts, commentary, illustrations, graphs and tables. I rewrote the book as a more formal version, keeping only the essentials with negligible speculation, shock, and angst. The book was published under the title, *50 Human Studies Indicate Extreme Risk for Prenatal Ultrasound: A New Bibliography.*

Unknown to Western scientists and the public, the hazards of ultrasound to the human fetus have been confirmed in China since the late 1980s. This involved approximately 50 human studies, over 100 scientists, and 2,700 pregnant women (maternal-fetal pairs). These women were volunteering for abortion. Before abortion, they were exposed to carefully controlled DUS exposure levels, relevant to the clinical scenario. The studies were conducted over a period of 23 years, with the last, found so far, published in year 2011. These studies analyze abortive matter via electron-microscopy and biochemical assays.

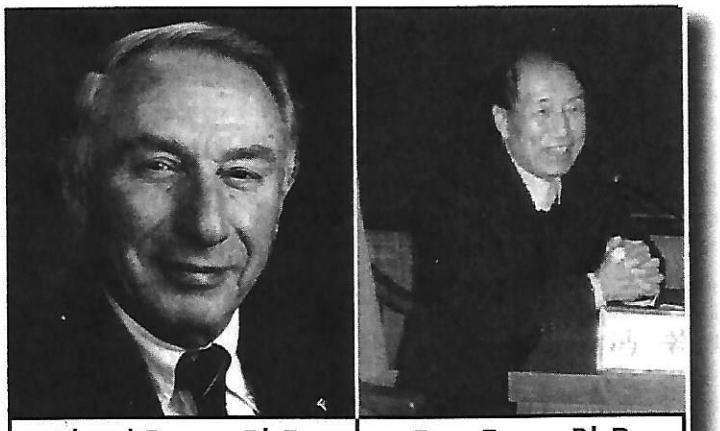
This book is an unprecedented East-West bridge, bringing essential arcana, the unknown Chinese Human Studies (CHS). Pardon my enthusiasm.

The CHS now allow us to say the previously unthinkable: **Human in utero exposure studies are the most prevalent form of modern ultrasound science.**

In this context, with the CHS and other appropriately designed studies, it would seem impossible that the practice of DUS could continue without major adjustments to protocol and machine settings.

The CHS began in 1988 with the disclosure of a study of DUS bioeffects on human embryos. This presentation occurred at a convention in Washington D.C. sponsored by the World Federation for Ultrasound in Medicine and Biology (WFUMB). With reference to the human studies, several Chinese scientists were presented an award during a special ceremony: Xin-Fang Wang, Yong-Chang Chou, Wang-Xue Guo, Zhi-Zhang Xu and Ruo Feng.[52]

The CHS continued with the encouragement of, arguably, the most influential ultrasound scientist in the United States, Floyd Dunn, PhD.[53] In 1989, Dunn wrote a key letter to the most influential ultrasound scientist in China, Professor Ruo Feng, PhD, of Nanjing University. Feng was editor of the *Chinese Journal of Ultrasound in Medicine*, a



Floyd Dunn, PhD | Ruo Feng, PhD

根本不可能进行的。如果在你们国家可以进行，那么依我之见，它对于国际诊断超声将是重大贡献。

(……**This topic would be extremely difficult, possibly even impossible, to carry out in this country because of a prevailing view regarding abortion. If this could be carried out in your country, in my view, it would be a major contribution to international diagnostic ultrasound.**) »

五、如周文与苗文所说，巩文在研究工作中使用了明显大于临床上常用的超声诊断剂量。因而由

member of editorial boards for journals internationally, and well-known at ultrasound conventions throughout the world.[54] See photos.

In 1990, Feng published an overview of the hazards of DUS where he stresses the importance of the ongoing CHS studies. With an understanding of the political importance of Dunn's letter, Feng documented the letter in Chinese and English language.[55] See image of letter extract, with my highlight.

With Dunn's encouragement, the Chinese continued the human studies project over the next two and a half decades. These studies cite and support the observations of several earlier studies in the Western realm.

The CHS are human studies of *in utero* fetal exposure to diagnostic ultrasound. These generally exceed the legacy of Western science in terms of technical sophistication, era relevancy, volume of work, and number of subjects. They bring empirical human evidence for ultrasound hazards.

The CHS are simple. Pregnant women, volunteering for abortion, were carefully selected and then exposed to controlled ultrasound sessions, using standard clinical devices at various intensity settings and exposure durations. Abortive matter was examined via state-of-the-art technology, e.g., electron microscopy, flow cytometry, and various biochemical analyses (immuno- and histo-). The results were compared against the results of sham-exposed pregnant women (maternal-fetal pairs exposed at zero intensity).

Chinese scientists measured damage to the fetal brain, kidney, cornea, chorionic villi, and immune system. They determined that low exposure is able to damage the human fetus, ovum, and embryo.

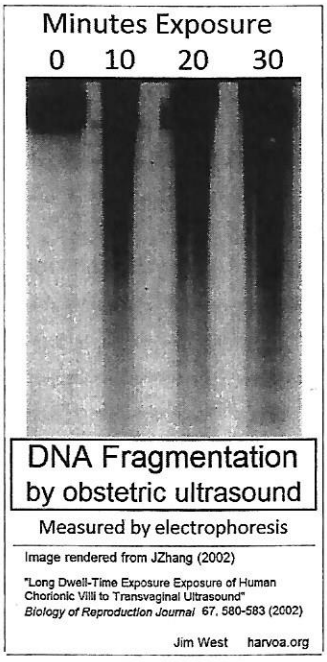
Despite their success, the CHS were not acknowledged by the industrial mainstream. Apparently, Dunn (and/or his colleagues) remained silent. Dunn is deceased as of January 24, 2015. Ruo Feng is presently retired and not in good health.

J. Zhang (2002)

J. Zhang (2002) is the amazing electrophoresis study, a human *in utero* exposure study. The study is unknown and never discussed, like nearly all of the CHS, despite being published in pristine English and in modern scientific format.[56] The study finds DNA fragmentation in the chorionic villi caused by low intensity DUS at only 10 minutes exposure.

The study's results are so strong that we could assume possible damage at less than 10 minutes. Given that clinical sessions are conducted at much higher intensities, a simple extrapolation to the clinical scenario could indicate damage within seconds, not minutes. The chorionic villi comprise the essential nutrient-waste exchange apparatus between mother and fetus.

See image, rendered from J. Zhang (2002) that represents DNA fragmentation caused by DUS exposure at four different time durations.



At the end of 2014, I brought J. Zhang (2002) to the attention of the prominent scientist, William O'Brien, Jr., PhD. With input from his colleague, Jacques Abramowicz, MD, O'Brien immediately wrote an article for publication, describing J. Zhang (2002) as an important study requiring serious attention. A review of J. Zhang (2002) was also expected from the AIUM Bioeffects Committee.

O'Brien's publication date and a Committee review has only been recently announced, with publication imminent. I will review when possible. Despite O'Brien's strong reputation, progress has been slow. Since 2002, J. Zhang's publication date, it has now been 14 years for this mainstream recognition.

J. Zhang (2002) is supported by many other CHS, as described and/or listed in my book. DNA fragmentation would also relate to the fetus, as the fetus is intimate to the chorionic villi.

J. Zhang (2002) has huge implications for the present epidemic of chorioamnionitis (inflammation of the chorion and amnion membranes in pregnant women). This disease has been declared to be caused by infection despite a frequent failure to associate germs with this disease.

J. Zhang (2002) has huge implications for many childhood diseases, for example, the present-day emergence of childhood cancers and leukemia. DNA fragmentation happens to be the foremost theory for cancer causation.[57] The epidemic of neonatal jaundice should be considered because the CHS confirm the older Euro-American studies that found dysfunction of immune systems caused by DUS. Those studies were discussed in the WHO Criteria.

Conclusion

What could be a more clear and undeniable damnation of DUS? Why are clinicians instructed to expose the fetus to this controversial form of radiation during early gestation, during a period of rapid cellular division, of well-known vulnerability to ultrasound? Why is DUS routinely advocated for determination of pregnancy, thereby ensuring exposure to any existing zygote? These questions, posed long ago by the history of Xrays on pregnant women, remain unresolved.

Many professionals recognize DUS hazards, but they claim that the greater hazard is birth without DUS. This brings an innate contradiction, as their views are often determined from assessments of data gathered from DUS examinations. Such assessments seem bizarre, given the evidence that DUS itself is teratogenic.[58] The mainstream inability to mention the obvious brings suspicion.

Catch-22

The Western realm generally claims the following: 1) Only human studies can resolve the DUS controversy. 2) Few human studies exist. 3) For ethical reasons, human studies should not exist.[59]

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Human studies are basically two types: a) epidemiological reviews, and, b) *in utero* or *in vivo* exposure studies, such as the CHS, where abortive matter is evaluated in a laboratory following DUS exposure to the mother and conceptus.

Epidemiological studies that exonerate DUS should be approached skeptically. They are complex and, thus, vulnerable to political bias. Epidemiologists have stated that tweaking studies down is common in order to ensure publication, that this is common and acceptable practice.[60]

Animal and cell studies already indicate that ultrasound has the potential to damage the human fetus. Scientists claim they are waiting for confirmation from human studies. For example, Shankar and Pagel (2011) write:

> The potential for ultrasound to cause adverse effects in experimental animals is well established, but whether similar effects also occur with humans in susceptible tissue (e.g., neural) requires further investigation...
>
> No human investigations conducted to date have documented major physiologic consequences of ultrasound exposed during imaging... The relative safety of ultrasound has been well established based on its use... over several decades...
>
> One could postulate that humans are resistant to ultrasound-related biologic effects...[61]

That is the absurd mainstream consensus. Safety is "based on its use" with the medical industry in conflict of interest and science in unresolved contradiction. Humans in the clinical scenario are assumed to be "resistant" to bioeffects known to occur via laboratory studies. The mainstream maintains stasis with the Catch-22.

The ethical concern over human studies is false because abortion has long been legal, ethical, and ubiquitous in the Western realm. Placental pathology is a well-established discipline. Appropriate science could have begun decades ago by merely including the toxicology of DUS into that pathology.

But all that could be the past. There is a lot more to say. With my book, *New Bibliography*, there is a strong authoritative challenge to the industrial establishment. This, I argue, should bring a serious reconsideration of the risk/benefit of ultrasound practice. The book offers the following:

1. ***Introduces the Chinese Human Studies***, and includes a review of the prior status quo;
2. ***Supports Western critics*** who have long argued that ultrasound contributes to child disease epidemics;
3. ***Revives Western cell and animal studies*** that indicate ultrasound hazards;
4. ***Enables toxicological arguments for childhood disease causation***, for example, GI tract dysfunction, immune dysfunction, rashes, cancer, leukemia, and a wide variety of diseases related to wide-spectrum hormone and cell dysfunction;

5. ***Describes how to minimize*** unavoidable ultrasound exposure; and,
6. ***Presents* an *Ultrasound Toxic Synergy Model***: This resolves contradictions within the vaccine argument for autism causation. For example, the Cuban history includes full vaccine compliance among the Cuban population and yet there is virtually no autism. This is resolved: There were few functional ultrasound machines in Cuba due to poverty, and now with international trade opening up, there is rising autism.

The Synergy Model supports parents who witness vaccine causation: More often they are actually witnessing an increase in child vulnerability to vaccines and antibiotics via a prior DUS initiation of fetal vulnerabilities. Note this parallel: "Ultrasound potentiation of drug delivery" is already an established medical procedure.[62]

* * *

Disclaimer: Jim West is not an authority. If the reader has medical concerns or wishes to confirm the information herein, then without delay, consult a doctor or other appropriate professional. The intent of this article is to educate and bring important issues into discussion.

For further information, see harvoa.org.

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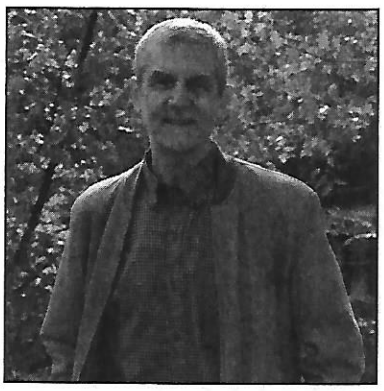

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