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Statistical Review of UBI Treatments when Using Flat Cuvettes

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August 2019

ALL RELEVANT STUDIES OF UBI USE A FLAT BLOOD IRRADIATION CHAMBER OR CUVETTE. THERE EXIST NO STUDIES USING THE TUBE SHAPED CUVETTE

We have researched to find ALL available research and testing which has been published concerning the effectiveness of UBI. Below, we report on all research found concerning studies utilizing flat cuvettes and irradiation chambers over the past 20 years.[1]

We first note that all of these studies utilized irradiation chambers or cuvettes which were flat in shape. None of them utilized anything approaching a tubular shaped chamber or cuvette. Laboratory testing demonstrates that the tube shaped cuvettes do not allow material transmission of UV light. There exists no study or evidence indicating that the use of tubular shaped or other non-flat cuvettes provide any efficacious value at all. To the contrary, all objective evidence leads to the clear conclusion that non-flat chambers or cuvettes provide no therapeutic benefit whatsoever.

Note: The above statement that tubular and other non-flat cuvettes are totally ineffective is based on science: First, the application of Snell's Law, a well established law of optics/physics predicts that a very high percentage of UV light is refracted, and not transmitted with a tubular cuvette. The same is true with other non-flat shapes. Second, this theory has been tested by The Solar Light Company in testing the tubular cuvette. This Company found that most of the UVC light at the critical germicidal frequency of 254 nm was refracted away and did not transmit through the cuvette. By contrast, the flat Superior Cuvette (™) has around a 90% transmission rate at this frequency.

As noted, our source of information is The Solar Light Company. They have 65,000+ clients in the area of testing physics and optics. Lead clients include NASA, Microsoft, and J&J. ChampionUltimate has no testing to the contrary. On its cuvette website, it references "cuvette analysis". There, you will find a letter by Ed Kadush that the curly cue within the cuvette causes a greater flow of blood. They don't mention the harm that this item does to the blood cells. They don't mention anything about their low transmission of UV light. Mr. Kadush, who died around 5 years ago, was a chemical engineer, with no training or expertise at all in optics, light, or physics.

The only other support that the tubular cuvettes have are statements from its proprietors that 'we have really good cuvettes'. However, their claims have no support or basis in fact or science.

The reason that all serious studies use the flat chamber or cuvette is very simple — it is the only design that can work in that it maximizes the transmission of light. It is the only shape recognized by the FDA. The tube is much cheaper to produce, but it does not work. If it did, then perhaps its manufacturers would register themselves with the FDA.

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[1] We have not included studies done for the Therakos Cellex machine, previously owned by Johnson and Johnson, which studies have been submitted to the FDA. Those studies are persuasive as to treatments at longer wavelengths in the UVA part of the spectrum. However, we do note that the blood irradiation chamber used by this device is flat is shape i.e. tubular in shape.

Before detailing the studies which have been performed, one thing to note is that the sample sizes chosen do not allow for statistical modeling. However, using techniques otherwise available for such modeling, probabilities for each event or series of events can be calculated. As discussed, we have tried to estimate the probability of the various events.

KNOTT AND MILEY/CHRISTENSEN

Emmett Knott did a lot of research in the 1920s - 1940s. In 1947, George Miley and Jens Christensen published a study detailing UBI treatments performed on 445 patients.[2] 100% of the many patients treated by these scientists had the benefit of a flat shaped blood irradiation chamber. The results published are impressive. We do not attempt any type of statistical analysis on the data because these studies did not provide a control or any type of data or information as to what would have occurred had the patients not received treatments. Therefore, while one can review this research and conclude that UBI must have been highly effective, we do not currently have the data points for quantification in terms of a statistical or probability based model.

SIMIAN STUDY:

Tulane University; December 2005
Project # 3370

3 monkeys treated with SIV virus.[3] In vitro study: culture grown SIV was 99% killed in 1 treatment.

Actual Monkey Study: 3 monkeys studied.
Each received 2 series of treatments. Each series was 6-7 treatments.
Two responded very materially. One did not. As measured by the decline in the virus:

1. Monkey 1: 4 fold decrease.
2. Monkey 2: 24 fold decrease.
3. Monkey 3: none.

The above is inadequate to develop a statistical model or statistical conclusions. However, it is suggested that this can be viewed in terms of probabilities. The chance of spontaneous recovery is not known, but will be assumed to be zero for now.

While small, the sample size is should be viewed as reasonable. A study done by Scripps regarding simian SIV consisted of 4 monkeys, against which, conclusions could be drawn. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC314358/ July 2001 in JCI

There is a very small probability of spontaneous recovery of this disease in monkeys.

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[2] from the Blood Irradiation Clinic of Hahnemann Medical College and Hospital of Philadelphia, PA, 1947

[3] SIV has been identified as the simian version of the HIV-2 virus in humans.

Based on the above, the probability of the UBI being effective is close to 100%.

BOVINE CORONA VIRUS LUNG ISOLATE

Published by Louisiana State University, May 27, 2003

3 titers in the test group.

There were 3 titers in the control group.

After a single treatment, the results were that there was 15x less of the disease in the treated groups than in the non treated groups.

The information cannot be structured into a statistical model; however, probabilities of this outcome can be calculated. In this case, the average control result is 301.5.

> In the absence of treatment, results were 311 and 296.
> With treatment, results were 27,17, and 14. S.D. 6.8. Mean =19.33.

While not suggesting a statistical model, in statistics parlance, the null hypothesis =H^o is 301.5.

While a statistical model is not possible, for purposes of calculating probabilities, these numbers imply a Z score of 73. This equates to the actual outcome being 73 standard deviations away from the null hypothesis result, which implies a probability of this being a random occurrence of something approaching 0. In fact, taking the decimal to 10^{-40}, it still results in a probability of zero. In other words, at 10^{-40}, the result shows zero. (this would equate to a percentage probability of 10^{-38}%.

Case Report, Prostate Cancer; Nov. 2010; Journal of Medicine and Medical Science:

This is a single case study. It provides evidence on a cumulative sort of basis, but this evidence cannot and should not be quantified.

Study: Single prostate cancer patient. Result was that the rate of increase in PSA went from doubling every 2.3 months to doubling every 4 months. There is no null scenario that can be accurately forecasted. As such, while the results seem to indicate that there could be a positive effect of the treatments, no conclusions can be drawn from this.

WEST NILE VIRUS STUDY, (WNV)
2003
Performed by LSU
In Vitro Study

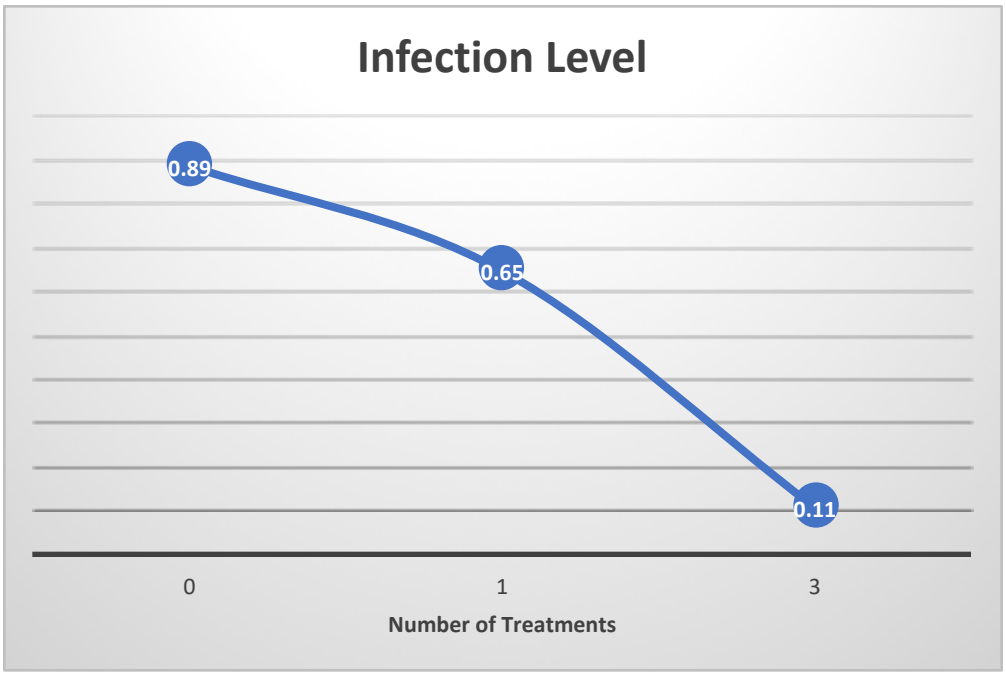
There are aspects of this study about which clarification is still required.
However, for the time being, it appears that different loads of WNV were created.
Different treatment categories:

group one: 1 treatment;
group two: 2 treatments;
group three: 3 treatments;
control: no treatments.

Preliminary read of results, based on Infection levels:

group 1: Infection Level @ .65;
group 2: Infection Level — information not provided;
group 3: Infection Level @ .11
Untreated, control: Infection Level @ .89

The below chart shows the results:



Again, more information is needed in order to figure out the probability of the above occurring on a random basis. Intuitively, it would seem that the likelihood of the above results occurring, assuming no effect of the treatment, is remote. Clearly, the probability of the occurrence is far less than 50%. For the purposes of the below analysis, we will assume that 50% is the likelihood of randomly achieving this result.

Further, because we do not know enough about how the study was done, we cannot reach any conclusions about the thoroughness of this study.

HEPATITIS C

FDA approved trials.

2 clinical trials approved.

Important: All of the patients had chronic hepatitis. They had all been previously treated with available treatments. None had improved.

As with other studies discussed, all testing was done with use of a flat shaped blood irradiation chamber.

In establishing a null hypothesis for the UBI treatments, a spontaneous rate of improvement should be examined. With acute Hep C, spontaneous improvement occurs to some extent approximately 15% of the time. However, the relevant groups tested did not have acute Hep C, but rather chronic. Given that all available treatment had failed, it is rational to assume a null hypothesis at zero improvement. Regardless, an additional analysis will be done below.

The information on the Phase 2 was published in ***The International Journal of Infectious Diseases***, 37, (2015), e58-e63. In addition to the actual Phase 2 study, that article references the treatment of two individuals treated before the study. At this point, we do not know whether theirs was chronic or acute Hep C. The reported results were as follows:

"Prior to the development of the treatment protocol used in this study, a preliminary study of two patients with HCV infection treated with a predecessor UVBI device showed substantial reductions in viral load and liver function tests accompanied by symptomatic improvement.[4] The results are shown in Table 1. For patient A, the viral load tests were done at Specialty Laboratories Inc. (Santa Monica, CA, USA) with the PCR RNA Ultraquant method and the reference range was <200 copies/ml. For patient B, the viral load tests were done at Medical Diagnostic Laboratories LLC (Mount Laurel, NJ, USA) by PCR and the reference range was <100 HCV copies/ml serum. Based on these observations and on the previously cited literature, a Phase II study for the FDA was designed and conducted as described below.", at e59.

If confirmed, the results generated by these two patients is important and impressive. Statistical studies cannot be formulated based on a population of 2; however, probabilities can. Reference is made to, ***the Journal of Medical Virology 71:56-61 (2003).*** The study was a ten year study of people with Hep C, and it tracked spontaneous changes in viral load for a period of up to 10 years. The actual tracking period was stated to be 7.2 years +/- 2.4 years. Tracking was done between 1991 and 2001. The study was done at Yamagata University School of Medicine, Yamagata, Japan. Of the group of 435, 16 cases spontaneously resolved. This is a sufficient sampling to reach a conclusion as to spontaneous resolution. Specifically, based on the data developed, the probability of spontaneous resolution is the number arrived at by dividing 16 by 435, or 3.7%. With the reported pre-Phase 2 results involving 2 patients, it is suggested that, in both cases, their viral loads were completely resolved. Based on this, the probability of a random occurrence of two patients both, randomly, having their viral loads resolved is $.037^2$, or .14%, or approximately 1 chance out of 714 of achieving these reported results. Again, this does not represent a statistical conclusion. Rather, it is a singular probability of an event. The significance of the probabilities generated are a combination of the actual results generated regardless of the sample size, with more significance being attributed to the sample size. For example, if we have a sample size of 25 and we can conservatively derive a probability of 1 in 100 that the subject event would have occurred randomly, then that would provide the basis for a very strong conclusion (as well as, possibly, a statistical model).

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1. [4] Reductions in viral load and the log of the viral load were selected as relevant measures because sustained reductions correlate directly with decreases in the hepatic, liver markers, AST and ALT.

However, if we have a sample size of two, but we can accurately assess the probability of certain events, and the probability of the events occurring randomly are 1 in 700, then that result, although not conclusive, must also be viewed as very strong evidence for a positive conclusion. The ultimate probability derived for all events will allow for a subjective conclusion to be made.

Phase 1: Tests were conducted at Warren Hospital, Phillipsburg, NJ, USA. The protocol was approved by the Warren Hospital Institutional Review Board (IRB) following approval by the FDA on 21 February 2006 in Supplement 8.

Twelve patients enrolled in the study. Ten patients went for all the treatments. Note: FDA established the small size of these clinicals. While substantive results were desired, the samples were kept small until safety was established.

Results:

Mean viral load reduction of 56%;

Mean viral load log change of –0.596

P, based on a zero improvement null hypothesis, of .017.

Z: for viral load measurements, z=-1.784, refers to the end of the bell curve including 3.75% of its area.

for log change in viral load, z=-1.682, refers to 4.65% of the area.

Standard Deviations: For Viral Load Reductions(VLR): 47.87; For log change: .51

List of VLR of .49 or greater:

-1.38
-1.08

-1.05
-0.62
-0.54
-0.49

So, 6 out of 10 met this criteria.

Phase 2:

Same protocol as with Phase 1. Warren Hospital played the same role.

Eleven patients started. Nine patients completed.

Note: measurements are not as strong as with Phase 1 because significant time elapsed from the time of the treatments i.e. six months passed without treatment before measurement.

After six months, mean reduction in viral load. P=.023

The below table is a list of percent changes in viral load:

Percentage change and log change in viral load, comparing the baseline to the end of study viral load. The baseline viral load was the average of the viral loads on days −14 and 0, while the end of study viral load was the average of the viral loads on days 323 and 327[a]

Patient	Baseline viral load (IU/ml)	Final viral load (IU/ml)	% Change in viral load	Baseline log viral load	Final log viral load	Change in log viral load
1	1 560 000	535 000	−65.71%	6.193	5.728	−0.46
2	5 665 000	5 630 000	−0.62%	6.753	6.751	−0.0027
3	1 028 500	1 107 500	+7.68%	6.012	6.044	+0.032
4	2 530 000	518 000	−79.53%	6.403	5.714	−0.69
6	739 500	1 050 500	+42.06%	5.869	6.021	+0.15
7	3 010 000	2 925 000	−2.82%	6.479	6.466	−0.012
9	3 140 000	2 730 000	−13.06%	6.497	6.436	−0.061
11	657 500	313 500	−52.32%	5.818	5.496	−0.32
12	3 095 000	2 685 000	−13.25%	6.491	6.429	−0.062
13	4 040 000	2 525 000	−37.50%	6.606	6.402	−0.20
Mean	2 546 550	2 001 950	−21.51%	6.312	6.145	−0.163

The above appears to be at the conclusion of the study. Change in viral load: p = 0.023, t-statistic = 2.31. Change in log viral load: p = 0.038, t-statistic = 1.99

The study used the t statistics. I chose the z statistic, which I believe better for this sample size. I also did two tail tests, in order to be conservative.

Results:

Change in viral load:

z=-2.03, implies area equating to .0217

p=.042

Mean -21.51

s.d. 35.13

Change in Log of Viral Load

z=2.17, implies area equating to .015

P=.03

Mean -.16

s.d. .24

List of VLR greater than .49: 3 had greater than .5 reduction.

Those results were: .69, .56, and .91.

The most informative number appears to be the log of the viral change. Further, the sample sizes are too small to be able to rely on traditional statistical testing. However, we should be able to look at probabilities. Further, the most conservative way to look at the probabilities is to correlate them to the z statistics. In Phase 1, the resulting z score percentage is 4.65%. In Phase 2, the z number corresponds to 1.5%. So, the probability of the results obtained in

Phase 1 and the results in Phase 2 should be the result of the respective probabilities. That resulting number is **.0698%**, which represents the probability that the results of the two phases were a fluke, rather than the results of the treatments provided.

There is another way to analyze the probability.

"Fluctuations in Viral Load are relatively insignificant in untreated patients with chronic HCV Infection" by T.T. Ngyuen, et Al, Journal of Viral Hepatitis, 1996, 3, 75-78.

In that case, 37 patients with chronic Hep C were studied. The degree of spontaneous improvement was extremely small. None approached an improvement approaching a log change of .5. In the results obtained in Phase 1 and 2, it is likely valid to include the one result of .49 which occurred in Phase 1. There are 6 such cases in Phase 1. There are 3 in Phase 2, for a total of 9 out of 19 people studied.

Based on the above referenced study of 37 patients, there is no conclusion as to the probability of this level of improvement because nobody improved to this extent. However, in order to achieve a conservative result from analyzing this information, we first arrive at a probability for the log change of > .49, which is clearly an overstatement of the true probability. In other words, if we arrive at a probability which is too high, and analyze the actual results from such a number, then we will arrive at an overstated probability of achieving 9 results of >. 49 out of a sample of 19, and that would provide a valid number for analysis and assessment.

It is suggested that an arbitrary probability estimate of 1/6 (16.67%) as being the chances of achieving a result of .49 or greater. Assuming this probability number, then the next question is, what is the probability in the context of the above referenced test of 37 patients of all achieving a result of less than .49.

Using the above assumed number, this means that the likelihood of not achieving a .49 or better result is 5/6, or 83.33%. Therefore, the chances that none of the scores are >.49 is . $8333^{37.}$ In turn, this computes to 0.001175693 or .1176%. That result is approximately 1 in 1,000 of the experiment turning out the way that it did. While a subjective statement, we conclude that it is fair to assume that the underlying reality that caused the subject test results i.e. the result of >.49 implies that the chances of not achieving the >.49 result are very materially greater than 83.33%. Therefore, the chances that this result will be achieved are much less that the 16.67%. Therefore, this somewhat arbitrary guesstimate is most certainly an overstated probability number. In other words, this number is wrong, in that it is over stated. However, if we use this number to assess the probability of achieving the results in the actual studies done, then that result will be an overstatement of the chances of achieving the actual results, assuming that the results were a fluke, and not a result of the UBI treatment. That will establish an upper boundary of probability with the knowledge that it is most certainly less than this.

Going back to the Phase 1 and 2 results, there were a total of 9 patients out of 19 who achieved the result of >.49. Assume that this result was a fluke and that the UBI treatments did not contribute to it.

First, figure out how many combinations of 9 can be created from the sample of 19. In calculating this number, the order of the groups i.e. which patients came first, second, etc makes no difference. All we care about is the identity of the patients within each group. Using that criterion, there are 191unique potential combinations.

For each combination, look at the probability of every single patient generating results of .49 or greater. For there to be 9 patients who meet the above criteria, within one of the groups of the 191 combinations, all of the patients must have met the criteria. That result is $.1667^9$ — the chances of one patient meeting said criteria multiplied by itself 9 times. The result of that is 9.94×10^{-8} or, stated as a percentage, it would be 9.94×10^{-6}%. However, to then get to the probability that, at least one of the groups has all 9 patients which yielded these results, the above must be multiplied by the number of possible combinations, or 191. This results in 0.0019%. This roughly equates to 2 chances out of 100,000, or 1 chance out of 50,000. Again, this is an overstatement of the true probability. It is subjective as to whether this demonstrates a compelling result. Based on all information collected, while we may need greater sample sizes to do statistical modeling, we do not need more information to develop a probability of the event (or, rather, an estimate of that probability, which we have demonstrated is almost certainly an overstatement of the true probability). In other words, assuming away the efficacy factor of UBI then the likelihood of the outcomes achieved in terms of >.49 has a probability which is most certainly less than .0019%.

Z Test:

We can also create a z test to assess that outcome. In constructing this test, a score of .49 or greater gets a 1. A lesser result receives 0. The population mean is assumed to be 1/6 or . 1667. Given the above, the variance is 0.26315789. Given these results and a one tail test, yields the following:

Z =2.608, equates to area in the bell curve of .9973, or the remaining end of the tail at 0.0027, or .27%

P is .00453, or .453%

Null hypothesis of .01 is rejected.

From this, and equating the results to a normal curve, if this were a fluke, then the results generated tie to the end of the bell curve equating to .27% of its area. Given, first of all that the stated population mean is most certainly an overstatement i.e. the real probability is much

less, that the .1667 assumed, this means that the population mean is actually less than the . 1667. Therefore, the true Z statistic is most certainly greater than the above result. Therefore, the resulting area it corresponds to is less than .27% and the real P is less .00453.

With the sample of 19, and the results generated, the conclusions reached and rejection of the null hypothesis are valid.

FLU STUDY

Reported by Louisiana State University; Report June 10, 2006 by Gus Kousoulas, Ph.D. — currently Associate Vice President, LSU School of Veterinary, Department of Pathology. He is the lead researcher of the LSU-Tulane "Center for Experimental Infectious Diseases," which is funded by the National Institutes of Health.[5]

Study

This was an animal study where animals (mice) were infected with $TCID_{50}$ flu virus.

Protocol

Two different doses of influenza virus were injected into the animals.[6] The stronger dose was stated to be similar to the H1N1 human virus.

Note: The report does not specifically speak to sample size. We are pursuing that information at this time. Until ascertained, we make the most conservative assumption

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[5] Awards & Honors
Honors Program,Phe Zeta Kappa. Fairleigh Dickinson University (1972-1975)
Phi Omega Epsilon; Magna Cum Laude. Fairleigh Dickinson University (1974-1975) (B. S. in Physics)
Beecham Award for Research Excellence. SVM, LSU (1990)
Aesculapian Lecturer. SVM, LSU (1997)
Distinguished Faculty Scholar Award. SVM, LSU (1999)
LSU Distinguished Faculty Award. LSU (1999)

[6] The different doses were 500 $TCID_{50}$ and 5000 TCID

i.e. each Group contained a sample size of 1. That will yield the most conservative analysis.

Qualitatively, the findings were to the effect that, on a consistent basis, the animals who were treated showed improvement in clinical disease as well as pulmonary function. Also,

1. For treated animals, minimal disease was observed on day 9. For the Control Group, severe disease was developed by day 6, which had not resolved by day 13.

2. On Day 13, the untreated groups were severely ill. The treated groups had little to no evidence of disease.

Test: UBI treatment given on Day 3 post infection. Graph of treated vs. untreated is attached. Based on the Disease Scale set forth, it appears that on Day 4 (day after treatment), the Disease Score of the untreated was around 4x that of the treated. On Day 7, it appears that the untreated is around 3x worse. By Day 13, the treated group has mild disease. The untreated group has severe disease. (Note: The reference to 'p' after the number indicates that treatment was provided. The reference to 'Sham' refers to cases refer to the cases where no treatment was provided).

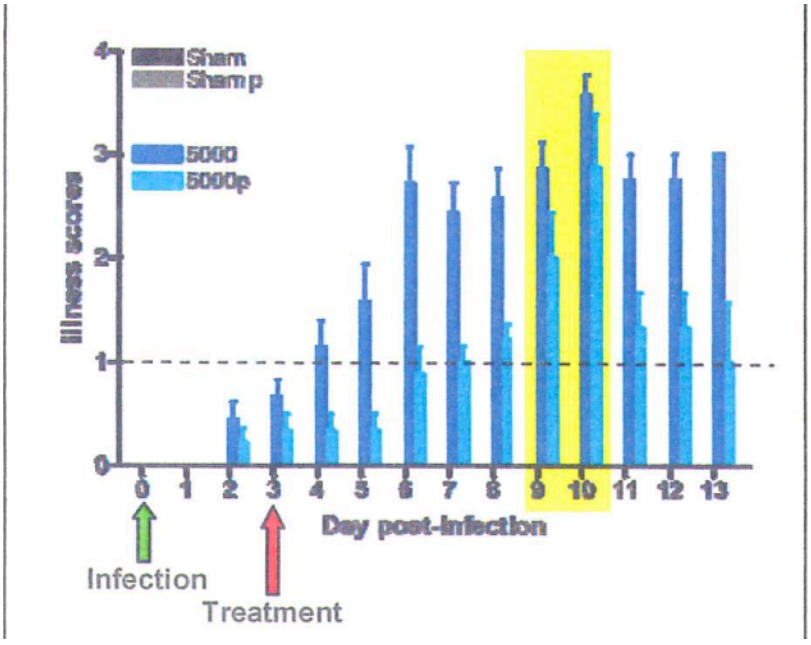

Fig. 1

Lungs:

Treated animals showed greater improvement in lung function. See below diagram:

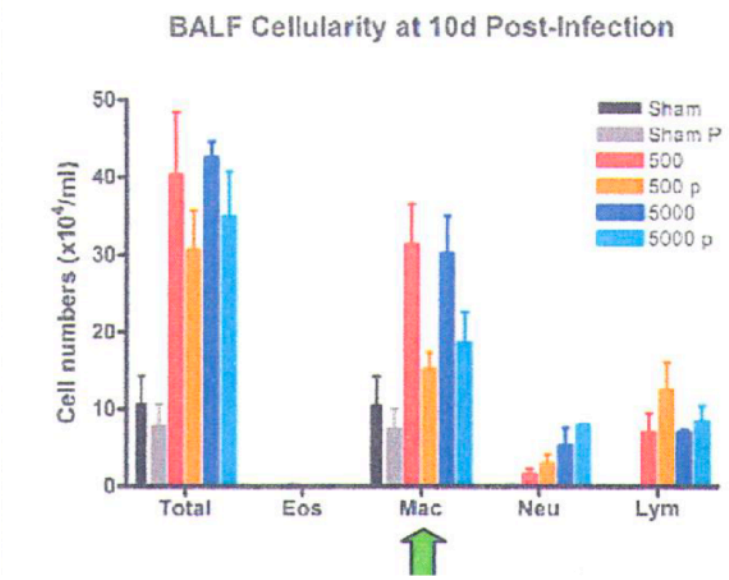

Fig. 2

Note green arrow: This references a measure of microphages after 10 days. The orange and light blue represent the treated animals. The black and grey are for animals that were not infected. The treated cases are around midway between the ones with no disease and the ones who were not treated.

The LSU Study contain sub-studies other than the above. Currently, we do not have the data to apply probabilities to the results. Clearly, one case will most always improve more than another case. Further, if one case improves more early on, then it makes sense that that same case would be improving more in future days. So, we cannot look at the days of improvement as independent events. However, two separate infected groups can, however, be viewed as independent.

RELATED CASES OF CROHN'S DISEASE (CD) AND COMPLEX REGIONAL PAIN SYNDROME (CRPS).

Reported by World Journal of Gastroenterology, 2015 April 7; 21(13): 3763-4102

Cases involve a brother and sister. Case 1 — male was diagnosed with CD. Case 2 — female, diagnosed with CRPS. Both of these parties were also interviewed in July 2019.

Case 1: Treatments occurred in 2006. His case encompassed the entire GI tract. This patient was initially treated only with antibiotics. After five months in remission, the patient had a relapse. His antibiotic dosages were increased, and he received 11 concurrent UVBI treatments once a week, with a flat chamber, UBI device Three months after the conclusion of the treatments, the patient felt substantially better. In 2011, the patient stopped taking antibiotics and the CD has not since returned. In 2007, a year after remission started, he tested negative for MAP as well as negative for other inflammation. In 2014, endoscopy and colonoscopy showed normal results. In 2006 patient was very undernourished and was unable to eat without severe pain.

Case 2: The patient was completely incapacitated in mid to late 2012. She was, ultimately, diagnosed with complex regional pain syndrome (CRPS). UBI treatments occurred once per week. In 2013, she started to substantially improve. She has some, occasional recurring symptoms, however, for the most part, she is symptomatic and has resumed a full range of normal physical and other activities.

In each case, the patient received an ongoing regimen of antibiotics. Neither patient has received any antibiotic, drug or other therapy since 2011 for the CD patient and since April, 2015 for the CRPS patient.

Probabilities are still subject to verification. It appears that the likelihood of a spontaneous and sustained recovery of CD is approximately 10% and of CRPS (complicated by hypothyroidism and Raynaud's, as was the case here) is 30%.[7] Those are still subject to verification. Based on the above, the likelihood the both of the cases would have gone into substantial remission on a sustained basis is the result of multiplying these amounts, or 3%.

PROBABILITIES

[7] For this case of CRPS, the spontaneous resolution rate is calculated by taking the result of spontaneous resolution rate for 74% for a general case of CRPS, 62% for the spontaneous resolution rate for the complication of hypothyroidism, and 64% for the spontaneous resolution rate for the complication of Raynaud's disease.

Currently, we do not have a probability for one level of improvement vs. another. If one looks at Fig. 1, intuitively, the likelihood of the difference of improvement between the Treated and Untreated cases would be very small without intervention. By definition, the difference observed would be 50%, or less. We will assume it at 50% (again, intuitively, this number is much smaller). Then, look at Fig. 2. There are 4 cases: two with treatments and two without. Assuming that that improving is just a 50/50 random event, which it is not, then we can calculate the probability of the above occurrence. Specifically, of all the possible combinations of the 4 treated cases, we are looking for the one in which the two treated cases both turned out the best. With a sample of 4, there are 6 different combinations of 2. Therefore, without factoring in other probabilities, or the degree of difference in improvement, the random probability of having the two treated cases be the most improved is 1 out of 6, or 16.67%. Using a completely random approach to the data generated results in the percentage derived from multiplying the first percentage (50%) by the second result (16.67%), or 8.33%. Again, the actual probability is, most likely, much less; however, we will use the above an overstatement of probability.

Recap of Probabilities:

Simian Study: Chances of it being a random occurrence — approximately 0.

Bovine Corona Virus Lung Isolate: less that 10^{-40} (or less than 10^{-38}%).

West Nile Study: 50%

Hep C Study: .0698%

Flu Study: 8.33%

CD and CRPS Study: 3% Z`

If and only if we were certain that we have documented the complete universe of all studies done with flat cuvette UBI Devices, then to calculate the probability of all of these events occurring, one would multiply the different probabilities. We have done thorough research and believe that all available studies were found. However, we cannot be certain of that.

Because we cannot be certain that we have all studies, we do not suggest reliance on a probability calculation which is the result of multiplying all probabilities. However, going through the process could be instructive in understanding the likelihood of efficacy. In doing this calculation, since the chances of the Simian results being random approach 0, that result is not included in the calculation.

Similarly, calculated probability that the results of the Bovine Corona Virus treatments being a random result are also extremely low. Because including such a low result could bias the conclusion so as to understate the probability, we also excluded that result.

With these exclusions, the result obtained is that the chance of the latter three events being random is .0000872%, which equates to a likelihood of around 8 in 10 million (a bit less than 1 in a million chance) of the combination of these events being random. **Again, this calculation is done for instructive purposes. Unless and until we are totally certain that all study results have been included in the calculation, it cannot be relied upon as the actual probability of the results being simply random.**

RELEVANCE OF VARIOUS STUDIES

Since the time of the clinical which utilized UBI to treat Hepatitis C, an effective, albeit costly, cure has been discovered for that affliction. Therefore, one might suggest that those clinical and the associated findings have no present day relevance; however, such is not the case. Specifically, these studies suggest an efficacy for UBI. Some of the relevant logic is set forth below.

Since the time of Finsen's work referenced above, theories have been developed to the effect that UV light, administered in different ways, could have a curative effect by way of eradicating harmful viruses and bacterial infections. Below is a table listing some afflictions where UBI has been successfully tested as a treatment. Certain characteristics of each affliction are also noted. In assessing the various cases/afflictions discussed in this report, there could have been more than one relevant issue at a given time which impacted the situation. The Table below sets forth certain of the afflictions treated as well as a characteristic of these afflictions.

Treated Affliction	RNA Virus	Comments
West Nile Virus	Yes	Single Stranded RNA virus
Influenza (resembling H1N1)	Yes	Single Stranded RNA virus
Bovine Corona Virus	Yes	Single Stranded RNA virus
Hepatitis C	Yes	Single Stranded RNA virus
Crohn's Disease	See comment	A recent study reveals that all tested children who had CD had a commonly occurring virus - an enterovirus, which is a single stranded RNA virus.

Below are various afflictions listed by Miley and/or Knott as showing successful outcomes when treated with UBI.

Pneumonia - single stranded RNA viruses. Effective treatments reported by Miley and Christensen (Miley). Specifically, 10 cases treated. All ten recovered.

Polio— single stranded RNA virus. In fact, in Miley reported 7 cases of polio which were treated, all of the Bulbo spinal type. While we do not currently have statistics concerning the rate of spontaneous remission, our information is that the percentage was quite low. Of the 7 patients reported by Miley, 6 recovered and 1 died.

Mumps —single stranded RNA virus.

The above indicates something of a trend. It is not set forth as proof of any theory. However, it would suggest that single stranded RNA viruses would be interesting to investigate in terms of UBI treatments.

Some such diseases include the following:

Borna Disease

Ebola

Rabies

Measles

Henipavirus

Human orthopneumovirus, formerly Human respiratory syncytial virus (HRSV)

While actual effectiveness is not known, the above afflictions would seem to fall within a group that might lend itself to successful treatment using the UBI.

