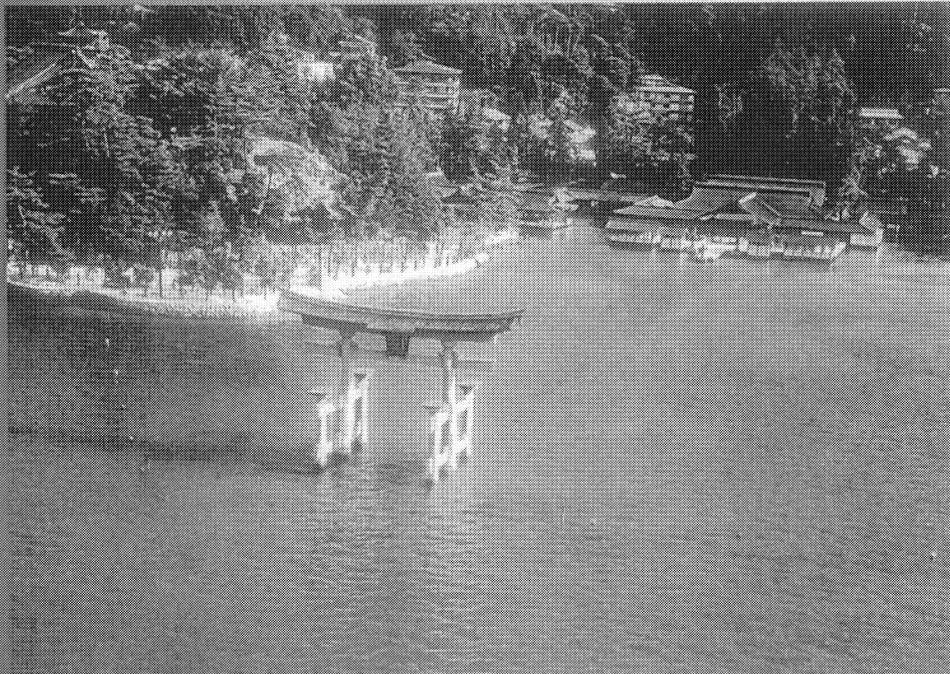


IRPA-10

10th International Congress of
The International Radiation Protection Association

*"Harmonization of Radiation,
Human Life and the Ecosystem"*



Proceedings

**International Conference
Center Hiroshima
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Klaus E. Duftschmid, IRPA President

The International Radiation Protection Association (IRPA) is a world-wide organization made up of over 16000 individual members who are members of an affiliated national or regional IRPA Associate Society. At present 38 Associate Societies are active in 44 different countries and IRPA is still growing.

The primary purpose of IRPA is to provide a medium whereby those engaged in radiation protection activities in all countries may communicate more readily with each other and through this process advance radiation protection in many parts of the world. This includes relevant aspects of such branches of knowledge as science, medicine, engineering, technology and law, to provide for the protection of man and his environment from the hazards caused by radiation, and thereby to facilitate the safe use of medical, scientific, and industrial radiological practices for the benefit of mankind. It is a major task for IRPA to provide and support international meetings for the discussion of radiation protection. The International Congresses of IRPA itself are the most important of these meetings. These have been held about every four years since 1966.

1966 Rome, Italy
1970 Brighton, UK
1973 Washington, D.C., USA
1977 Paris, France
1980 Jerusalem, Israel
1984 Berlin, Germany
1988 Sydney, Australia
1992 Montreal, Canada
1996 Vienna, Austria
2000 Hiroshima, Japan

For all Associate Societies of IRPA and individual members, it is an important objective to attend this International IRPA Congress in Hiroshima. For many other related professions it is an excellent opportunity to communicate on the achievements, scientific knowledge and operational experience in radiation protection. During the Congress the General Assembly of IRPA will be convened. As an adjunct to the business function of this meeting, the Associate Societies Forum will take place which will provide ample opportunities for exchange of information between the IRPA Societies.

Professional training will be an important part of the Congress programme. Additional to the scientific sessions the IRPA10 Congress will offer a wide selection of "Eye-Openers".

IRPA and the Japanese host society, with the help of related international organizations and the Associate Societies of IRPA, will provide support mechanisms for a substantial number of qualified colleagues who otherwise would be unable to participate in the Hiroshima Congress, solely for financial reasons. This is the first time that the IRPA World Congress will be convened in Asia, therefore the support will be focused on colleagues from the Eastern hemisphere.

It is my pleasure and privilege to invite you all on behalf of IRPA to the international IRPA10 Congress in Hiroshima, Japan.

Authors' Index

H

- Ha, S.W. P-7-65, P-7-66
Hachiya, M. P-3a-194
Hacon, S. P-1a-24
Hada, M. P-7-13, P-7-38
Hadley, S.A. T-9-2, P-1b-35
Hahn, F.F. T-3-4, P-2a-105
Haider, H. P-8-82
Haim, M. P-3a-150
Hajek, M. T-13-3, P-1a-36, P-3b-157
Hakanson, L. T-6-3, P-11-219
Hall, P. T-12-1, P-11-251
Hamada, T. P-3b-140
Hamada, T. T-23-5, P-7-39
Han, M.H. P-11-208, P-11-221, P-11-287
Han, X.F. P-2b-76
Hanawa, I. P-6a-296
Handa, H. P-3b-159
Handl, J. P-4a-229, P-11-254
Hannah, X.H. P-2b-S7
Hara, S. P-6a-295
Haraguchi, K. P-6a-290
Harangozo, M. P-3b-220
Harato, K. P-6a-292
Hardeman, F. P-3a-139
Harder, D. P-2b-66
Haridasan, T.K. P-3a-168
Hartshorne, M. P-2a-S3
Haruta, R. T-23-5, P-7-39
Hasai, H. P-3b-151, P-3b-153
Hasegawa, H. P-4a-242, P-4a-250
Hasegawa, S. P-2b-84, P-2b-91
Hasegawa, T. P-2b-95, P-2b-96, P-8-72
Hashiguchi, Y. P-1b-1
Hashimoto, S. P-7-27
Hattori, S. P-2a-91
Hattori, T. P-4a-288, P-5-324
Hauck, B.M. P-3a-137, P-3a-138
Hauk, W. T-2-4, P-5-320
Havlik, E. P-7-51, P-7-58, P-7-59
Hayakawa, H. P-4a-235
Hayashi, K. P-4b-226
Hayashi, N. P-7-27
Hayashi, N. P-3b-175
Hayashi, Y. P-3a-141
Hayata, I. T-17-3, P-2a-90
Haylock, R. P-2a-111
Hazin, C.A. T-23-4, P-1a-6, P-1b-25, P-7-41
He, S. T-22-2, T-23-2, P-2b-109
He, X.Z. P-2a-67
Heaton, B. P-6a-317
Hedemann Jensen, P. T-6-4, P-5-343
Hedin, A. T-18-3, P-5-337
Hedvall, R.H. P-4a-226
Hefner, A. P-6a-309
Heiberg, A. P-1b-13
Heinemann, G. P-2b-130 P-11-273, P-11-300
Heinrich, W. T-4-4, P-1a-45
Heinrichs, U. P-3a-186
Heling, R. T-6-3, P-11-219
Helling, K. P-3a-187
Helming, M. P-9-118
Hemdal, B. P-4a-227
Her, R.J.V. P-10-151
Hériard Dubreuil, G. P-10-169
Hermanne, A. P-5-315
Hernández, A. T-5-5, P-3b-183
Hernandez, D.A. P-7-5
Hesse, H. P-5-311
Hesse, M. P-4a-247
Hieber, L. P-2b-66
Hietanen, M. EO-13
Hikoji, M. P-3b-205
Hill, P. P-11-255, P-11-272
Hill, R.A. T-19(2)-6, P-4a-261
Hille, R. P-3a-143, P-11-255, P-11-272
Hinchcliffe, A.J. P-11-302
Hindié, E. P-2b-94
Hioki, T. P-7-15

ISD Technology: A Strategy for Reduction of Low-Dose Radiation Exposure in Human Beings

D.A. Hernandez¹, K. Larsen², D. Fertel³

¹The Union Institute, Graduate School, Cincinnati, Ohio USA

² Bay Front Medical Center, Bay Front Cancer Center, Saint Petersburg, Florida USA

³Louisiana State University Medical School, Department of Radiology, New Orleans, Louisiana USA

ABSTRACT

The primary purpose of this project is to refocus the current national health care debate. It is the first attempt to provide scientists, health care providers, health care policy makers, politicians, health care payers and public health advocates with a method to improve health care and cut costs through decision-making strategies based primarily on medical standards and secondarily on fiscal considerations. The method for decision-making described in this paper proves more cost-effective and medically sound than current practices.

Illness Specific Diagnostic (ISD) tables are introduced as a method to reduce inappropriate use of ionizing radiation in medicine. The use of ISD tables destroys the myth of a single medical standard of care and focuses on the diagnostician as the individual most capable of diagnosing disease(s) in human beings. Additionally, ionizing radiation has been used routinely under the guise that the resulting benefits outweigh the risks involved in a procedure. This dubious tradition is questioned in this document. Attention is drawn to the inappropriate amount of radiation patients receive when ionizing diagnostic tests are performed with marginal or no diagnostic benefit. The results of a pilot study are presented that explicate the reduction of needless radiation to patients and associated reduction of costs that becomes possible in the presence of appropriate scientific medical standards. Ultimately, quality medicine is indeed the most cost-effective medicine possible.

The current practice by which the United States Congress issues laws aimed at dictating quality medicine is both desperate and dangerous. Politicians and legislators would be wise to focus their efforts on methodologies that establish standards of care in a scientific manner that does not interfere with medical practice. ISD technology is precisely such a scientific method. It establishes the standard of medical care at the facility from which the ISD tables are generated.

ISD tables bring much needed order to diagnostic testing and create a level playing field with which to evaluate medical centers' specificity, sensitivity, and ability to diagnose and treat diseases in humans.

Introduction

This manuscript introduces an interdisciplinary method for disease diagnosis (1). This method addresses difficult issues that face health care in the United States today. Health care cost containment, development of medical standards, and reducing ionizing radiation risk are discussed in this report.

It is known that physicians, for a variety of reasons, order diagnostic tests inappropriately (2). It has been estimated that as much as 95% of all human-made ionizing radiation exposure is caused by medical use (3,4,5). Overall, between 120 million and 180 million diagnostic radiographic tests are performed annually. Traditionally, the risk associated with radiographic diagnostic testing was outweighed by the resulting benefit. However, more recently, the validity of this tradition has come under scrutiny (6).

Diagnostic tests that utilize ionization radiation have an associated risk (7). The NRC adopted the linear non-threshold dose-effect relationship. Although there are some who argue the scientific merit of the NRC's adoption of the LNT model, there are those who support the NRC's position (8,9,10). Archer's epidemiological work in this area continues to illuminate the risks associated with ionizing radiation.

The risk of unnecessary or inappropriate ionizing radiation is more than an academic debate (11). On September 9, 1994, the FDA issued "Important Information for Physicians and Other Health Care Professionals" (12). That communiqué warned practitioners about burns to patients from fluoroscopically-guided invasive procedures. The report noted cases of severe erythema caused by cardiological and interventional radiological procedures involving long fluoroscopic beam time (60 minutes or more) and high dose rates (20 R/ minutes), with estimated doses of approximately 2000 R/min. Injuries ranged from early transient erythema to secondary ulceration. Among other risks cited by the FDA advisory were concerns about late effects, the recessive nature of radiation injury, and "Delayed Symptoms" in which (other than erythema) the effects of radiation may not appear until weeks following the exposure. Moreover, the practitioner who administers radiation and reportedly, the one with the expertise to diagnose radiation toxicity may not come in direct contact with the patient after the procedure has been performed (13,14).

Finally, the risk is not limited to ionizing radiation. On April 25, 1995, the FDA issued "Warning" notices instructing video companies and the public to cease using ultrasound equipment for non-medical purposes or risk confiscation of the equipment. When non-medical video companies create "keepsake" inutero fetal ultrasound images, they are engaging in the inappropriate use of a medical device, an illegal activity. Generally,

public health experts agree that casual exposure to ultrasound should be avoided. As a result, the FDA concluded that exposing humans to ultrasound with no medical benefit cannot be justified (15).

Diagnostic testing contributes significantly to healthcare spending in the United States which exceeded \$1 trillion dollars in 1997 (16). In an effort to hold down costs, the United States Congress passed the Balance Budget Act of 1997, which among other activities, cut medicare funding to healthcare providers across the board. Once heralded by the US government as a mechanism to reduce health care cost, managed care health maintenance organizations (HMO) are reported in a state of financial crisis (17). The shift toward managed care, HMOs, and capitation is embraced as the answer to the ever-increasing cost of health care. A consequence of this shift in reimbursement strategies includes a rapid increase in outpatient services (18). Outpatient services shift costs and, in certain cases, increase the rate at which testing is performed (19). Moreover, despite all incremental efforts from reform to reduce cost, not much really has changed fundamentally (20, 21). Additionally, medical errors are on the rise (22).

Although much effort has gone into health care cost reduction and cost containment, very little effort has gone into the development of new medical standards that fit the current economic reality.

Health care resources consumption reduction is a secondary consequence when providers improve their accuracy in selecting diagnostic tests. A methodology to reduce ionizing radiation exposure to human beings by decreasing diagnostic testing is presented. Illness Specific Diagnostic (ISD) tables assist providers at a specific medical center in selecting the most accurate diagnostic test for their patients. Each center creates its own ISD table base on the historical performance of the medical staff.

Materials And Methods

Problem Definition

Fundamentally, this paper challenges the current standard of care applied in medical disease diagnosis. It seeks the modification of physicians' behavior as it relates to the selection of a diagnostic test for confirmation of a disease in a human host in an effort to decrease the health risk that patients are exposed to with no medical benefit.

Also addressed in this study is the introduction of *Diagnosimetrics*¹ (The application of quantitative analysis to the art of disease diagnosis) as the appropriate method for the development of medical center's ISD tables. *Diagnosimetrics* are the complementary opposites of "outcome studies". They are tangentially connected in that they study medical-diagnostic-testing.

The question of a medical center's diagnostic capacity and its effect on the center's ISD table values is explored. The thorny questions of what constitutes a competent medical diagnostic work-up and the related issue of needlessly exposing patients to ionizing radiation exposure are addressed. This study tests the following hypotheses:

1. Ho: The mean number of positive and negative diagnostic tests used by a physician to diagnose a specific disease at a specific medical facility pre-ISD application
= the mean number of positive and negative diagnostic tests used by a physician to diagnose a specific disease at a specific medical facility post-ISD application.
H1: The mean number of positive and negative diagnostic tests used by a physician to diagnose a specific disease at a specific medical facility pre-ISD application
≠ the mean number of positive and negative diagnostic tests used by a physician to diagnose a specific disease at a specific medical facility post-ISD application.
2. Ho: The mean amount of radiation absorbed dose (rad) exposure received by a patient for the diagnosis of a specific disease at a specific medical facility pre-ISD application
= the mean amount of Roentgen exposure received by a patient for the diagnosis of a specific disease at a specific medical facility post-ISD application.
H1: The mean amount of Roentgen exposure received by a patient for the diagnosis of a specific disease at a specific medical facility pre-ISD application
≠ the mean average amount of Roentgen exposure received by a patient for the diagnoses of a specific disease, at a specific medical facility, post-ISD application.

Pilot Study Design: Practical Applications

Locations for this pilot study were medical centers within the United States. Initially, 10 medical centers were invited to take part in the pilot study. A medical center could consist of all types of hospitals, outpatient

¹ **Diagnosimetrics** is a term Hernandez developed in graduate works as a student at the University of Tennessee at Knoxville. *Diagnosimetric* = di-ag-nos, - NL. Gr. Diagnosis, fr. *diagnoskenin* to, Fr. *dia* through, as under + *gignoskein* - to know.

= si =(se) adv. [It., Sp., & Pg., fr. L. sic So, That] musical, artistic

= Metric = Met ric - L. *Metricus*, fr. Gr. *Metrikes* - relating to measuring.

diagnostic centers, and HMO-owned hospitals or clinics. Physician-based Health Maintenance Organizations (HMOs) and other medical facilities were also suitable subjects for this pilot study. The only requirement for participation was that the medical center be able to trace a patient's diagnostic work-up to a Diagnostic Related Group (DRG) intervention (23). Of the 10 respondents, 2 are presented in this limited trial.

The procedures were as follows:

Prior to the disease selection, an individual was identified as the pilot study coordinator (PSC) at each medical center. The PSC developed the data-base abstraction team (DBAT). DBAT is a collection of interdisciplinary experts from across an array of departments within the medical center. Each diagnostic modality from all ancillary areas should have representation on the DABT team. An expert may be a physician, technologist, nurse or physician's assistant (PA).

Once a medical center was identified, the selection of the diseases to undergo ISD analysis was open to discussion. The only restriction was that the diseases could not be related to psychiatric disorders. The utilization review department identified the number of disease occurrences per unit of time, so the hospital disease occurrence rate defined the number of medical records to pull per unit of time. The answer to the questions, "How many medical records do I need to pull? How far back in time do I go?" was related to the occurrence rate of the disease and diagnostic capacity.

Once the disease selection was complete, the pilot study took on four distinct phases:

Phase-I Medical records abstraction. The medical records department's library staff located the medical records identified by the utilization review department. The records were DRG-sorted and stacked. The medical records were abstracted according to the variables identified on the ISD data collection sheet.

Phase-II ISD Table generation. Once abstracted, the data was entered into the ISD data base generator. The result was the production of ISD tables and their correspondent diagnosimetric values. The ISD generator contains the algorithm programs that produce the relative diagnosimetric value of each diagnostic test. The explication of which is beyond the scope of this work. The tables were validated and returned to the medical centers.

Phase-III Education and communication. The DBAT was reconvened and expanded to include members of management and executive management. The purpose of this meeting was the creation of timetables and subcommittees.

Phase-IV Establishment of the medical center's specific disease diagnostic profile (DDP). A team of medical staff (possibly peer review members) perused the diagnosimetric results, and selected and agreed on the spread of diagnostic test(s). This step is key because it defines and establishes the new medical standard for the diagnosis of the disease in question. The DDP's date of implementation was established.

The DDPs were shared with the medical staff. The staff was instructed to order the diagnostic test(s) as outlined by DDP findings. Any physician member was free to order any test. However, for the purpose of this study, physicians were instructed to order the test(s) identified by the DDP and then proceed with their course of diagnostic testing. The DDP's date of implementation was given.

The DBAT was convened, and the medical records for the same DRGs classification were abstracted for the same variables abstracted in Phase I. Only those medical records post-DDP implementation date were selected for this review.

Illness Specific Diagnostic Technology Design

As previously discussed, ISD technology is parametric. ISD diagnosimetric results are experiential, discrete, nominal data sets. ISD technology evaluates a known universe of data and produces values that are absolute and free from the uncertainty of inferential statistical analysis. ISD diagnosimetric results are real number values whose roots are derived from the historical concatenation of diagnostic testing results performed at a specific medical center with prospective application where they are created.

Operationally, the dependent variable of this study is the diagnostic test that is dependent on a specific disease and diagnostic capacity at a medical center.

The patient's medical record is abstracted in accordance with the variables identified in the ISD data collection sheet. The ISD data collection sheet is divided into the following three sections: hospital characteristics, patient demographics, and diagnostic procedure characteristics.

Each medical record, which consists of a unique individually numbered file, is given a specific identification number. The "key", which correlates the patient's medical record number and ISD's unique case identifier is held by, and belongs to, the center. In this way, patient confidentiality is maintained. This study reflects a medical staff's pattern of test utilization, and, as such, is not concerned with individual medical records. Each procedure is identified by a unique Physicians' Current Procedural Terminology (CPT) code (24).

The medical center's name, type, region, and number of hospital beds are the center characteristic variables that are analyzed. The case number, date of birth, religion, insurance type, sex, occupation (before retirement), tobacco use, admission date, and discharge date are the patient demographics variables that are analyzed. The DRG number, DRG name, modality, diagnostic test name, diagnostic test CPT, diagnostic test

result, physician ordering the test, physician generating the test result, evaluative test date, and evaluative test result are the diagnostic procedure characteristic variables that are analyzed. Diagnostic and evaluative test result variable has three possibilities: positive, negative and equivocal. A diagnostic test is the first use of a test. An evaluative test is the second application of the same diagnostic test. It evaluates the efficacy of an intervention, or disease progression.

The ISD data collection sheets are gathered, and their contents are entered into a computer-spread sheet function for analysis (ISD Generator). The data are contained in one large master file. A diagnosimetric value is an approximation of the odds ratio that assumes the specificity of a diagnostic test will exceed 0.50. This assumption holds true for most diagnostic tests.

The odds ratio is modified to account for a specificity of 0.50. An additional modification is made to account for the inherent values of negative findings in the diagnosis of a disease. Additionally, a further adjustment is applied to account for the fact that not every DRG medical record will include all diagnostic tests in the master file. A weight is also required to account for evaluative tests. Finally, the diagnosimetric results are ranked by absolute values, and a negative sign (-) is an indication of the spread from the most positive diagnostic test.

Findings

The ISD table and its diagnosimetric values from Hospital 1A and Outpatient Center 1 are presented in Tables 3 and 5 respectively. Among diseases studied at Hospital 1A, pneumonia is presented below. The disease pneumonia uncomplicated was abstracted and generated 112 medical records (cases). The 112 medical records contained 1003 diagnostic tests.

Hospital 1A DRG NAME: PNEUMONIA		
Procedure	Modified Odds Ratio (+/-)	Diagnosimetric Result
Arterial Blood Gas	98/0	0.947
CBC	115/3	0.740
SMA 18	96/6	0.521
Chest x-ray	119/15	0.512
SAM 6	58/3	0.343
Sputum culture	58/29	0.117
EKG (ECG)	43/22	0.084
Urine Culture	6/24	0.083
Cold AGG	3/17	0.038
Urinalysis	47/55	-0.062
TB Skin Test	1/19	-0.114
Acid-Fast Bacilli	1/32	-0.220
Blood Culture	2/58	-0.382
Cytology	0/43	-0.692
Syphilis	0/63	-0.919

Table 3. ISD table for Pneumonia.

Of the 1003 diagnostic procedures performed, 647 had positive values, and 356 had false negative values. All 112 cases were confirmed at discharge with the disease pneumonia. Therefore, this hospital’s sensitivity for the disease pneumonia is 65%, and the specificity was 100%. Because ISD tables are disease-specific, there are no false positive or true negative results. This value is unique to this hospital and reflects the medical center’s diagnostic capacity.

The test at this hospital that is most likely to appropriately identify pneumonia is the arterial blood gas (See Table 3). It is 100% sensitive in identifying the disease pneumonia in patients at this facility. The test most likely not to identify the presence of the disease pneumonia is the test for syphilis.

A reduction of 905 total diagnostic tests was recorded. This reduction represents an approximate reduction in the number of diagnostic tests used to diagnose the disease pneumonia at this facility. Moreover, this reduction of 90% increases the facility specificity for this disease to 100%. This is the maximum savings possible if only one diagnostic test is performed. Pre-ISD application, the average number of diagnostic tests per admission was approximately 9 tests. Post-ISD application, if the only diagnostic test used to diagnose the disease pneumonia is the arterial blood gas, the average number of diagnostic tests per procedure drops to 1 — approximately an 89% maximum reduction in diagnostic test consumption per admission. The ISD tables identify the test with the greatest propensity to identify the disease in question. However, the DDP is an interdisciplinary convention. The choice of the number of tests to include in the facility’s DDP is facility-specific.

Therefore, the specific reduction in diagnostic test resource consumption is more accurately described in greater detail later in this work.

Outpatient Center-1 underwent diagnosimetric assessment for the disease peptic ulcer uncomplicated. The abstraction generated 133 medical records for diagnosimetric evaluation. The results are presented in Table 5. The 133 records generated 1251 diagnostic tests. Of the 1251 tests performed on the 133 patients, 297 had positive results, and 954 had false negative results. The specificity for the disease peptic ulcer uncomplicated at Outpatient Center-1 measured approximately 74%. At this facility, the test most likely to confirm the disease peptic ulcer uncomplicated is the upper GI series. The test most unlikely to confirm the disease peptic ulcer uncomplicated is the test Computer Axial Tomography Scan (CT) of the abdomen.

Here we find a maximum reduction in diagnostic test consumption of approximately 90%. Pre-ISD application, the number of diagnostic tests per admission was approximately 10. Post-ISD application, the average number of diagnostic tests drops to 1, if only 1 diagnostic test is invoked to diagnose the disease peptic ulcer uncomplicated. This represents an approximate 90% maximum reduction in diagnostic resource consumption per illness.

Outpatient Center-1 DRG NAME: Peptic Ulcer Uncomplicated				
Procedure	Modified Odds Ratio (+/-)	Diagnosimetric Results	Radiation Exposure in mR/hr ^a	
			mR Procedure Total ^c	mR/Patient ^b
Upper GI	132/2	0.972	933,846.0	6,969.00
Right Shoulder	0/1	-0.020	2,381.00	2,381.00
Oral Cholecystogram	43/67	-0.160	633,600.00	5,760.00
Pelvic Ultrasound	28/67	-0.272		
IVP	45/93	-0.300	422,970.00	3,065.00
Chest PA/LAT	32/178	-0.310	42,000.00	200.000
EKG (ECG)	4/89	-0.810		
Abdominal MRI	1/132	-0.850		
Abdominal Ultrasound	4/91	-0.885		
Barium Enema	3/115	-0.996	1,333,400.00	11,300.00
CT Abdomen	1/123	-0.997	27,825,600.00	224,400.00

^a Average measured skin exposure per film or unit of fluoro time in milliroentgen (mR).
^b Average measured skin exposure per diagnostic test at this facility in mR.
^c Average calculated exposure per diagnostic cohort.

Table 5. ISD table for Peptic Ulcer Uncomplicated

Of interest in this diagnosimetric table are the columns, “mR Procedure Total” and “mR/Patient Total.” These columns represent the radiation exposure a patient was likely to receive and the total amount of radiation exposure this cohort of patients was likely to receive — a maximum reduction in radiation exposure of about 96%. The maximum radiation reduction per patient is approximately 97%.

ISD tables are nominal scale frequency counts, dichotomous, exhaustive categories that are nonparametric data sets. The question of whether the observed decrease in values post-ISD technology application is significant is addressed with the use of Fisher’s Exact Test for Significant Changes (Philips 1978). Given Fisher’s equation

$$P = \frac{(a + b)!(c + d)!(a + b)!(b + d)!}{n!a!b!c!d!}$$

substituting the values in Table 6 and solving the above equation, a P value of 0.566 is obtained. The null hypothesis is rejected with a confidence of 99%. This is a significant reduction. There are no other possible permutations to explore. ISD technology restricts the possible results to the one tail.

Mean Test Scores Pre- and Post-ISD Application		
	Positive Results ^a	Negative Results ^b
Pre ISD Mean	5.78	3.17
Post ISD Mean	1.00	0.00

^a The total number of positive results divided by the total number of cases.
^b The total number of negative results divided by the total number of cases.

Table 6 Pre- and Post-Mean Diagnostic Test Results--Hospital 1A

The same is the case with the mean radiation exposure at Outpatient Center-1. Of the 1251 diagnostic tests, 853 used ionizing radiation. Of the 853 ionizing radiation diagnostic tests used to diagnose the disease uncomplicated peptic ulcer disease, 232 had positive findings, and 621 had negative findings. The mean average radiation exposure for the 232 positive diagnostic tests is 9.94 R, and the average radiation exposure for the 621 negative diagnostic tests is 26.6 R. Post-ISD average positive test radiation exposure decreases to approximately 6.969 R; post-ISD application radiation exposure decreases to approximately 0.00 R. The question of whether the observed decrease in the average amount of positive and negative diagnostic tests radiation exposure is significant is again addressed with the use of Fisher’s Exact Test for Significant Changes. Arranging the data into a table (Table 7) and solving Fisher’s equation results in a P value of 0.458. The null hypothesis is rejected with a 99% confidence. This is a significant reduction. There are no other possible permutations to explore. ISD technology restricts the possible results to the one tail.

Mean Radiation Exposure Pre- and Post-ISD Application		
	Positive Results ^a	Negative Results ^b
Pre-ISD Mean Radiation Exposure	9.94	26.6
Post-ISD Mean Radiation Exposure	6.97	0.00

^a Mean radiation exposure in Roentgen.
^b Mean radiation exposure in Roentgen.

Table 7. Pre- and Post-Mean Exposure Results Medical Center-1

The findings of this report support the null hypothesis that the mean radiation exposure a patient is likely to receive pre-ISD application is not equal to the mean radiation exposure a patient is likely to receive post-ISD application. Similarly, the mean number of diagnostic tests used by a physician pre-ISD application is not equal to the mean number of diagnostic tests used by a physician post-ISD application, and both findings are not related to chance.

The findings are significant. ISD technology is effective in reducing inappropriate diagnostic testing and has the capability to significantly reduce the amount of ionizing radiation a patient receives at a specific medical center. The pilot study demonstrates that it is possible to change physician behavior in ordering diagnostic tests. The use of ionizing radiation in diagnostic medicine under the tradition that the radiation risk is outweighed by the benefit of results is no longer valid, and the current use of radiation in medicine violates As Low As Reasonably Achievable (ALARA) principles.

Moreover, the study refutes the myth of a single medical standard of care and supports the assertion that the diagnostician is the person most capable of performing the clinical diagnosis of disease(s) in human beings.

Finally, the study supports the researcher’s position as it relates to refocusing the national health care debate in such a way that scientists, health care providers, health care policy makers, health care payers, politicians, and public health advocates begin to base medical decisions first on medical standards, before focusing on secondary financial considerations. Indeed, the failure to do so has proved short-sighted and counterproductive.

Discussion and Implication for Usage

As stated earlier, high quality medicine is cost-effective medicine. When policy makers and politicians center health care policy primarily on economic considerations, the quality of health care suffers. This dangerous practice must be discouraged. It misplaces the emphasis of analysis.

Once the DDP is agreed upon, it sets the diagnostic medical standard at the medical center in which ISD tables are constructed and applied. Symptom-based diagnostic testing should not be allowed.

For instance, the diagnostic work-up cost at Hospital 1A for the 1003 procedures was \$40,131.90 and represents \$120,360.41 in charges, as illustrated in Table 8. The maximum cost savings post-ISD implementation was about 98%. The maximum reductions in charges was about 97%. Works in progress continue to identify real reduction in the cost of health care in the order of 60-90%

Hospital 1A				
DRG Name: Pneumonia				
Procedure	Unit Cost	Global Charges	Total Cost	Total Charges
Arterial Blood Gas	6.66	69.80	652.68	6,840.40
CBC	47.50	112.50	5,605.00	13,275.00
SMA 18	87.98	169.80	8,973.96	17,319.60
Chest x-ray	23.50	75.00	3,149.00	10,050.00
SAM 6	32.50	64.30	1,982.50	3,922.30
Sputum Culture	50.00	153.70	4,350.00	13,371.90
EKG (ECG)	8.95	119.24	581.75	7,750.60
Urine Culture	58.00	167.00	348.00	1,002.00
COLD AGG	35.59	89.60	106.77	268.80
Urinalysis	42.50	128.60	4,675.00	14,146.00
TB Skin Test	6.50	18.90	130.00	378.00
Acid fast Bacilli	37.98	90.67	1,253.34	2,992.11
Blood Culture	34.50	134.20	2,070.00	8,052.00
Cytology	107.83	323.50	4,636.69	13,910.50
Syphilis	25.67	112.40	1,617.21	7,081.20
Totals	\$605.66	\$1,829.21	\$40,131.90	\$120,360.41

Table 8. Hospital 1A Cost and Charges

The DDP adopted at Hospital 1A is presented in Table 9. Two procedures used together were identified as a comprehensive approach to diagnosing the disease pneumonia. The arterial blood gas and the chest x-ray (PA/LAT) establish the new standard for diagnoses of the disease pneumonia uncomplicated at Hospital 1A.

Procedure	Hospital 1A DDP Global Charges	Unit Cost
Arterial Blood Gas	69.80	6.66
Chest x-ray	75.00	23.50
Total	\$144.80	\$30.16

Table 9. Hospital 1A DDP Table for Pneumonia

The new standard of diagnostic medicine significantly increased the quality of care as defined by the improved accuracy with which Hospital 1A was able to diagnose pneumonia. The cost to diagnose the disease fell approximately \$30.16, a reduction of 95% in direct costs. It was a meaningful reduction in direct cost because the primary focus was on establishing an appropriate standard of care. This cannot be overemphasized. The reduction in charges was equally impressive. Instead of charging \$1,829.21 for the 112 cases of pneumonia, the global charge calculates to approximately \$148.00 or about a 92% reduction. This is an extremely significant reduction. The reduction in global charges represents the relative diagnostic risk that medical centers take on when entering into a capitated arrangement.

ISD tables draw physicians to the most efficient diagnostic work-up. As medical centers build and use diagnosimetrics technology to gain diagnostic accuracy, the rise in sensitivity results in an optimal diagnostic standard of care at that facility.

It was stated earlier that outcome is to business what diagnosimetrics is to medicine. By their statistical design, outcomes always carry a degree of uncertainty. Outcome studies, yield insight on patterns of diagnostic resource consumption in isolation from diagnostic capacity. Berenson and Holahan’s work to categorize the Health Care Finance Administration Common Procedure Coding System (HCPCS) into a new system of 21 types-of-service categories were supported by: completeness of the new category definitions, and immunity to changes in technology and variations among facilities. Their analysis of more than 7000 procedure codes into a new system of service categories, is a classic case of outcomes analysis — by its very design riddled with measures of uncertainty, qualification of measured values and a desire for broad application (25).

Similar results to those presented in this study occurred at other facilities. This was the case at Outpatient Center-1, as outlined in Table 10.

The DDP at Outpatient Center-1 was established in selection of the upper GI series. In this manner, a new diagnostic standard was set. This new diagnostic standard resulted in significant cost reduction to this

facility. Specifically, a reduction in real total cost was measured at approximately 82%. The 133 peptic ulcer uncomplicated disease cases represented a total reduction of cost from \$55,159.00 to approximately \$9,990.00. Furthermore, the reduction in charges was equally impressive. Global charges were reduced from \$4,659.00 to approximately \$375.00, or a 92% reduction in charges.

Outpatient Center-1				
DRG NAME: Peptic Ulcer				
Procedure	Unit Cost	Global charge	Total Cost	Total Charges
Upper GI	75.00	375.00	9,900.00	50,250.00
Right Shoulder	25.00	125.00	25.00	125.00
Oral Cholecystogram	58.00	225.00	6,380.00	24,750.00
Pelvic Ultrasound	27.00	400.00	2,565.00	38,000.00
IVP	36.00	425.00	4,968.00	58,650.00
Chest PA/LAT	21.00	125.00	4,410.00	26,250.00
EKG (ECG)	6.00	109.00	558.00	10,137.00
Abdominal MRI	56.00	1,100.00	7,448.00	146,300.00
CT Abdomen	48.00	825.00	5,952.00	102,300.00
Barium Enema	51.00	450.00	6,018.00	53,100.00
Abdominal Ultrasound	73.00	500.00	6,935.00	47,500.00
Total	\$467.00	\$4,659.00	\$55,159.00	\$557,362.00

Table 10. Outpatient Center-1

Moreover, a significant reduction in the amount of radiation exposure received by patients is reported. The mean radiation exposure per patient admission was reduced from 254,075.00 mR to approximately 6,969.00 mR, or an approximate 98% reduction post ISD application. By any measure, that is a significant reduction of needless and inappropriate ionizing radiation exposure.

Future Applications

The cost to equip a hospital to treat all diseases will become increasingly prohibitive. A significant portion of a medical center's annual expenditures goes toward acquiring and maintaining patient care equipment. Health care organizations in the United States spend approximately 7.3 billion dollars annually to purchase or replace this equipment. Another \$700 million is spent annually to maintain it (26).

Additionally, the process administrators use to determine which patient care equipment to procure in a capitated environment is currently in transition (27).

Medical centers are keenly aware of the pitfalls associated with facility planning (28). No one hospital will be able to afford to treat every disease. Strategically, medical facilities will need to network within health systems. Moreover, health care delivery systems will need technologies that can provide the scientific understanding of how to redistribute resources.

At Outpatient Center-1, we found the frequent use of the 116 negative CT scans of the abdomen intriguing. Why 134 MRI scans of the abdomen, of which only one was positive? In part, the answer was found in the center's diagnostic capacity. Outpatient Center-1 had recently (less than 1¼ years ago) purchased a state-of-the-art CT scanner. At about the same time, the center entered into an arrangement with a mobile MRI service.

Health care delivery systems would be wise to formulate long term strategies using the level of detail provided by diagnosis-metrical technologies. The decision of which medical center in a health alliance system to designate as a "center of excellence" in cardiology, diseases of the alimentary tract, diseases of the urinary system and others is extremely complicated. The lack of an objective scientific tool for the assessment of the standard of care has made these decisions highly problematic.

Diagnosis-metrics allows for the evaluation of diagnostic capacity across medical facilities as it relates to DDP. ISD tables provide the level field of analysis currently missing in today's outcome-driven atmosphere. ISD tables make possible the comparison and evaluation of medical centers' diagnosis-metrical values. This comparison could be useful as integrated health systems begin the task of facility planning.

Currently, federal, state, and local government regulations have refrained from defining the appropriateness of a diagnostic test because they lacked diagnostic tools which define appropriateness at a specific medical center. Consequently, patients are needlessly exposed to risk associated with ionizing radiation. The notion that such radiation risks are outweighed by the resulting benefit(s) is clearly outdated. Politicians and public health policy makers would be well served by diagnosis-metrical technology because it defines the appropriateness of a medical test at a specific medical facility, and consequently, delineates the appropriate medical standard. Federal, state, and local governments would provide a greater degree of public safety by requiring medical centers to define appropriateness in terms of a center's DDP.

Diagnosimetrics brings much needed order to the process of disease diagnosis, and in doing so, shifts the focus of the current health care debate from an ill-advised and chaotic decision-making process based primarily on financial considerations, to a systematized decision-making process based first on medical standards and then on important, although secondary financial factors.

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February 22, 2010

Current Conversations in Healthcare Reform

David A. Hernandez, Ph.D.
The Center of Excellence in
Diagnosimetrics

Property of The CEID

Four Factors to Remember

- **Access**
- **Cost**
- **Quality**
- **Litigation**

Background Noise

- I was asked
“David, I hope that you will include in your talk the question that a lot of people worry about: George Bush spent \$580 Billion on the prescription drugs a few years ago and now we are considering hundreds of Billions of Health Care - - How are we to pay for these continuing programs???”

Background Facts

- What is in play is
 - 2.4 Trillion
 - The USA already pays 1.2-1.4 Trillion
 - The issue is about the remaining 1.2 Trillion

Access

- Traditionally healthcare cost have been addressed in two ways as it relates to access
 - Republicans have limited/restrict access
 - Democrats grant access to all

Cost

- Cost is the singular driver
The realization that left alone, healthcare cost will reach 25% of the GDP in 2025

Quality

- If we had a hospital episode and left in better condition than when we arrived there would be no healthcare concern.
 - Radiation Toxicity
 - Nosocomial Infections
 - End of life usage

Litigation

- Litigation is highlighted as the primary source for increased medical resource consumption, by healthcare providers.

Defensive Medicine

Increase diagnostic testing

Needless surgeries

How do we fit It?

- What is needed is a new science
 - A new method for disease diagnosis
 - A new mathematics that is free from Inference
 - A standard of care that is local rather than national or regional

Diagnosimetrics it the new science

Diagnosimetrics

Is the application of
quantitative analysis to the
art of disease diagnosis in
humans

Diagnosimetrics Solves

- Access
- Cost
- Quality
- Litigation

Project Title: Health Care for All through Diagnosimetrics and ISD Technology
President & Chief Science Officer: Dr. David A. Hernandez

Healthcare reform will occur in President's Barack Obama's first term in office. The political stage is set to provide healthcare for all. Although health policy experts are divided across the landscape of reform, all agree reform must occur. Healthcare providers, payers, and consumers equally seek a comprehensive solution to the nearly 45 million uninsured and almost 16 million under insured Americans.

Currently the nation's healthcare bill stands at about 2.2 Trillion dollars, of which the federal government pays about 1.1 Trillion dollars, according to the congressional budget office. Moreover, although long-standing problems that have faced healthcare reform over the last 29 years have been studied and analyzed, by the best and brightest minds, little to no progress has been made to reduce the rate of healthcare growth. Further more, the OMB has it right a "...substantial share of spending on healthcare contributes little if any to the overall health of the nation." ..."The challenge is to find ways to reduce such spending without affecting services that improve health."— the real money that represents the real savings (see OMB report <http://www.cbo.gov/doc.cfm?index=9925>).

Illness Specific Diagnostic (ISD)^(PP) technology is an innovative scientific method to diagnosis diseases in humans.¹ ISD tables assist diagnosticians at a specific medical center select the most accurate and precise test for a specific disease. They are not decision trees, but rather use Diagnosimetrics, the application of quantitative analysis to the art of disease diagnosis, as the method for construction of non-parametric, retrospective, disease cohort, rank ordered, weighted concatenation unique to a disease, and specific to the medical center where they are created. ISD technology destroys the myth of a single medical standard of care, and focuses the diagnostician as the individual most capable of diagnosing disease(s) in human beings.

The transformation of physician behavior is rooted in science, and influenced by money. This relationship is best illustrated in the congressional records of 1983 within Title VI legislations. Public Law 98-21 contained the new payment system for Medicare—Diagnostic Related Grouping (DRG). A quality control initiative developed by John Thompson, in the State of New Jersey quickly gained national recognition as a tool to control cost. DRG shifted physician behavior and increased quality by reducing a patient's length of hospital stay— days in the hospital. Providers of healthcare would no longer present a bill for payment after a patient's discharge. Instead, once the patient is discharged, a review of the medical record assigned a disease code to that hospital stay—DRG, that prescribe a monetary amount paid based on the confirmation of a specific disease. That quality control initiative transformed healthcare payment from a retrospective to a prospective payment system. By all accounts, it worked; a reduction in healthcare consumption occurred, with increased medical quality.

We seek regulatory reform to carryout a national feasibility study in order to define and apply a disease specific diagnostic workup standard, through the application of a scientific method, and in so doing, create a real reduction in the nation's healthcare bill estimated at more than 1 Trillion dollars. Our approach will provide Obama, Baucus and others the method to usher in healthcare for all at below or current spending, while enjoying support of the all stakeholders.

We seek your participation to demonstrate that when healthcare reform is science based primarily, fiscal reductions follow.

What we bring to the table is the shovel-ready solution that OBM says would be difficult to find—the isolation of medical waste.

David Antonio Hernandez

37848 Bougainvillea Avenue
Dade City, Florida 33525
DrHernandez@RPA1LLC.com
(352) 567-9254

Education

The Union Institute, Cincinnati, Ohio - Ph.D.

Certification; November 9, 1996

Graduation: May 2, 1997

Title: Applied Radiological physics

Field of Study: ISD Technology: a Strategy for Reduction of Low-Dose Radiation Exposure in Human Beings

Dissertation Published & Presented: The 10th International Congress of the International Radiation Protection Association, on May 14-19, 2000, in Hiroshima Japan.

University of Tennessee at Knoxville, Divisions on Public Health, Master of Public Health, March 1987. Concentration in Health Radiation Risk Assessment. Emphasis in Biosatistics, Radiation Safety, Diagnostic Radiology Instrumentation, Radiation Exposure/Benefit Cost Analysis/Utilization Review and Financial Management

Yale University, New Haven, Connecticut School of Medicine, Department of Epidemiology. Research project development – Graduate Student- Illness Specific Diagnostic Table, September 1985, Project of Excellence

Saint Leo University, St. Leo, Florida Bachelor of Arts in Political Science. Emphasis in Management and Marketing of Medical Services, June 1984

Hillsborough Community College, Tampa, Florida, Electrical Engineering Student with emphasis in nuclear physics. Radiation Safety, and Radiation Biology

Post Graduate Studies

Baylor College of Medicine, Houston, Texas, The Physics & Application of PET/CT imaging, AAPM Summer School June 25-27, 2008

University of Washington, College of Medical Physics, Accreditation Programs and The Medical, AAPM Summer School, June 24-28, 2001

Licenses and Registrations:

Diagnostic Radiological Physicist - State of Florida, Florida Department of Health, Division of Medical Quality, Advisory Council of Medical Physicists, License number DPR00000043

Medical Nuclear Physicist - State of Florida, Florida Department of Health, Division of Medical Quality, Advisory Council of Medical Physicists, License number DPR0000044

Radioactive Materials License - State of Florida, Department of Health, and Rehabilitative Services, Office of Radiation Control, license number 2345-1

Radiation Machine Calibrations - State of Florida, Department of Health, and Rehabilitative Services, Office of Radiation Control, Identification Number V-521

Certified Medical Physicist - State of Florida, Department of Health and Rehabilitative services, Office of Radiation Control, Identification Number 002, other Certificates available on request

Experience:

December 1992-1993

Touro Infirmary, New Orleans, Louisiana - A 575 bed acute care teaching hospital

Medical Radiological Physicist, Director Diagnostic, and Therapeutic Radiology; Authority over all matters of radiation safety, Staff Chief Medical Physicist. Serve as Radiation Safety Officer (RSO) report directly to Radiation Safety Committee (RSC). Legal agent empowered with the authority to legally binding statements to Nuclear Regulatory Commission (NRC), Louisiana Department of Environmental Quality and City of New Orleans. Responsible for the management of a Broad Scope Radioactive Materials for both diagnostic and Therapeutic use. License monitored by the RSC.

Performed all medical physics services as it relates to calibration of all diagnostic, therapeutic and quantification instruments utilized in diagnostic and therapeutic radiology to include, but not limited to, emergency walk-in clinics X-ray, 2 CT scanners, 17 x-ray rooms, 7 Portable X-ray, 7 C-arms, 3 OR suites. Special Procedures Suites, Cardiac Catheterization Laboratory, Mammography units, and Magnetic Resonance Imaging, 4 Nuclear Gamma Cameras, 4 Ultrasound units, Linear Accelerators, Simulator and other medical imaging instruments.

Span of control over Diagnostic Radiology Managers, Educational Support Manager, Radiation Therapy Manager, Medical Radiation Physicists, support Service Manager, and 67 technologists, 37 Diagnostic and Therapeutic radiology Student Technologists.

Responsible to Executive Officers for continued development, implementation, evaluation, and corrective action of administrative organization, management design for strategic planning, responsible for fiscal management and functional organization, under one policy and procedure structure, payroll plan with equivalent pay-grades, quality control (QC) program, Continual Quality Improvement plan (CQI), and one hospital wide radiation safety program. Fiscal development, implementation and evaluation of a business plan, operational budget, budget and payroll for approximately an 8 million dollar budget, responsible to the Chief Fiscal Officer for implementation of departmental economic budget. Serve as public point of contact for matters of radiation concerns. Work directly with purchasing agents, architects, contractors and governments for obtaining certificates of needs for building of a new hospital building.

Business and Contract Development

March 1981-Present

Radiation Protection Associates, LLC, Dade City, Florida

Founder and President - Radiation Protection Associates, LLC, is a triad medical service organization. Medical Physics services are provided to hospitals, clinics, medical doctors, universities, Insurance Payers, and government agencies.

Radiation Protection Services, LLC, delivers the following services:

Radiation Physics Support - Responsible to the Radiation Safety Officer for all matters of ionizing radiation safety, radioactive materials license, ionizing radiation education, x-ray machine compliance, Nuclear Regulatory Commission compliance, Environmental Protection Agency and local agency guideline adherence. Responsible for planning, developing and implementing performance standards, quality control program and instrumental safety.

Health System Diagnostic Specialty - A utilization review, quality service which evaluates diagnostic resource consumption patterns, alternative allied health reimbursement mechanisms with an interest in maximizing clinician/hospital revenues while decreasing costs and patient radiation exposure and increasing the quality of patient care.

Current Research

Development of a comprehensive CR-QC Program

Departure from traditional film-based radiology towards Computed Radiology (CR) fundamentally transformed disease diagnosis, and establishes the video image as the method for disease diagnosis and record. It is a significant alteration of a hospital's medical record. Simultaneously, many hospitals, across the country, continue to develop from a facility specific diagnostic practice, into regional/divisional diagnostic center(s). That is, disease diagnosis may no longer be related to the facility where the diagnostic test occurred. The consequence of this non-local diagnosis is far reaching.

Vital to the success of non-local models for disease diagnosis are the components of the CR system. Success in this case is defined as the CR system's ability for consistent reproduction of the clinical image that generated the initial diagnosis, anywhere in the system, at any time. The responsibility for the consistency of that image falls on hospitals and clinics.

The standards for a comprehensive approach to CR QC have not been written. The speed at which hospitals continue to march towards complete digitalization of all disease diagnosis reflects an

industry wide change. Medical facilities on the cutting edge of the movement may find themselves at risk in the absence of a CR CQ program.

A comprehensive CR/DR QC Beta trail was initiated in June 2005 in the state of Florida and concluded in December 2007.

The research outcome is a marketable product that addresses the questions raised above and numerous publications related to CR/DR QC.

Anthony J. Bergman, Ph.D.

2242 Tarragon Lane - New Port Richey, FL 34655 - (727) 420-6476

CAREER OBJECTIVE:

To partner with clients who wish to develop new, or enhance their existing products, utilizing my skills, experience, and proprietary technologies.

PROFESSIONAL EXPERIENCE:

Woolsthorpe Technologies LLC, Tampa, FL. (www.woolsthorpe.com) 2002-2008

Chief Software Architect

Under the direction of Dr. Alexander K. Mills, Chief Product/System Architect, developed the "Flowave 1000," non-invasive Cardiac Output (CO) Monitor

Designed a flexible software framework, based on Windows CE (*Win32s and Embedded Visual C++*) for Dr. Mills and his two chief science advisors, and Hardware/DSP engineers, to interactively develop and test proprietary CO algorithms in real-time

Implemented a version of my "Y-Trends" pattern recognition system to help analyze Plethysmograph waveforms and relate them in real-time to ECG QRS patterns which assisted Dr. Mills in developing his CO algorithms

Designed a general interface for the DSP driver, managing DSP engineering development as well as designing, coding and executing Software Requirements and Specifications (*SRS*), Embedded Visual C++ program code, Software Design Descriptions (*SDD*), and Design Verification Tests (*DVT*) for the Flowave 1000 product, for eventual 510(k) Food and Drug Administration (*FDA*) submission

Helped assimilate, review, test, and submit 510(k) paperwork to the FDA, with resulting submittal date of 06/27/2008

- Awarded co-inventor status, along with Dr. Alexander Mills, Dr. Bernhard Sterling, and Dr. Gregory Voss, for "Cardiac Output Method and Apparatus" (*Patent pending*)
- Awarded company partnership in recognition of technical accomplishments

Millennium Software Inc, Tampa, FL. 1993-Present

President and Computer Scientist

Designed the following product solutions:

-"PenEase(TM)," a pen-based Graphical User Interface (GUI) extension to the Epson EHT 20/30 handheld PC's, allowing real-time signature collection and verification (biometric)

- "Silent Screen," a method of multi-dimensional pattern recognition
- Generic multi-state driver's license decoder software for auto dealers
- An embedded controller for a Cryogenic Vibration Cleaning System
- Real-time facial recognition system for Microsoft Windows
- Proprietary biometric waveform analysis engine "Y-Trends"
- Real-time Application framework for Embedded Windows programs
- Proprietary Robot Control Language

Currently designing targeted algorithms for Silent Screen and enhancing my Robot Control Language (RCL). Also, working on an environmental testing robot for the University of South Florida

- Awarded U.S. Patent for "Pattern Recognition Apparatus & Method," No. 5,838,820

KeyTrak Inc, Tampa, FL. (www.KeyTrak.com) 1989-2001

Director of Software Development

Supported key control systems which track keys for automotive dealers & multi-family properties:

Reinvented the entire system (*called KT2*) allowing company expansion from several hundred to over two thousand active installations

Designed and managed many variations of the baseline security application for special customer requests, i.e. Stratosphere Casinos (*Las Vegas*), Berkeley High School (*CA*), Holmes Security (*NY*), Fort George Mead "NSA" (*MD*)

Enhanced the Key-Net LAN to provide a real-time interface to Reynolds & Reynolds

Designed and implemented all Year-2000 (Y2K) error correction code to prevent Y2k crashes for the entire customer base (> 2000 systems)

Implemented a version of my proprietary barcode Pattern Recognition System to allow the key tracking system to read "dirty" barcodes by statistically estimating the missing data

Invented the Key-Net Local Area Network protocols in order to network multiple KeyTrak systems over any distance via Digiboard hardware

- Awarded company ownership for redesigning the product to utilize the Dallas One-Wire (DOW) bus rather than barcodes

Software Design Consultants, Clearwater, FL. 1988-1992

President

Designed and created the first generic laser printer driver for the Apple Macintosh Computer, "JetConnect™" to allow the Macintosh to be used with the inexpensive Hewlett Packard LaserJet printer

Invented a barcode Pattern Recognition System to extract good data from "dirty" barcodes

Developed System Software for the "Smart Start 2" twin engine security system for Beechcraft using 8051 based hardware

Worked on the "Neuro-Oximeter" development team for Dr. Robert Pike, via EDA (*Tampa, FL*)

Perdata Corporation, Clearwater, FL. 1986-1988

Software Engineer

Developed two custom Fixed Point mathematical libraries (from scratch) for the Introl 'C' compiler in Assembly Language, one for the Motorola 8-bit 6809, the other for the 16/32-bit 68000 microprocessor, to prevent losing penny fractions over multiple monetary transactions

Created the Fuel Information System Interface "FISI" for TokHeim Corp. to help detect the amount of fuel remaining in a storage tank

Provided 'C' programming support for the "GENPAC" application development team

The Programming Force, St. Petersburg, FL. 1980-1984

Vice President and Computer Programmer

Designed a quality control system for InterConics (*Tampa, FL*) Quality Assurance department, using automated barcode readers and a custom IBM-PC database application

Created the original CNC robotic "Intraocular Lens" cutting software for DGR Inc.

Designed software to convert a Radio Shack TRS-80 model 3 computer to a Computer-Vision Mainframe Terminal Emulator for Honeywell (*Clearwater FL*), using Z-80 Assembly Language, to help design the new Space Shuttle gyroscope

Designed custom microfiche replacement software for MicroFile Inc. (*St. Pete, FL*)

Created "ForceFiles" Database Management System for Aerts Construction Company (*St. Pete, FL*), using MS-Basic & Z-80 Assembly on the TRS-80. One of the first PC-based DBMS' with an interactive Graphical User Interface. Resold package with custom screen forms to many business clients

SUMMARY OF QUALIFICATIONS:

- Automated Pattern Recognition systems, Biometrics detection and analysis (*ECG, Plethysmography, fingerprints and facial comparison*) to solve problems detecting real-world conditions, i.e. pathogens in a liquid, or a criminal on camera
- Real-time embedded software and hardware systems (*multi-threaded/parallel processing*) to solve real-world problems: Maxim iButton/DOW bus, Rabbit™ Core Modules and Single-Board Computers, Analog to Digital conversion and interfacing, Robotics and Controllers for factories and laboratories
- GUI and graphics algorithm development: programming Microsoft Operating Systems and Compilers (*WinCE, WIN32, DLLs*), especially Visual C++, i.e. designing a custom windowing user interface for a portable handheld computer
- Custom Networking (*Client-Server/Star-Topology, RS-232/485, ISO Stacks, Winsock*), Distributed databases, Embedded wireless networking for remote controlled equipment monitoring
- WIN32, ISAPI, MFC, .NET, Embedded Dynamic-C, Unix, ASP, VBScript, HTML, HTTP/FTP, TCP/IP, Blue-tooth, Ethernet, most microprocessors and Assembly languages, Digital Signal Processing

Additional References Available Upon Request

CURRICULUM VITAE

Richard David Schulterbrandt Gragg, Ph.D.

Associate Professor and Associate Director Environmental Sciences Institute
Director, Florida Center for Environmental Equity and Justice
Florida A&M University
Tallahassee, Florida 32307
Phone: 850-599-8549
E-mail: richard.dgragg@famuc.edu / richarddgraggiii@mac.com

Education

1994, Ph.D. Pharmaceutical Sciences, Florida A&M University, Tallahassee, FL
1996, MS Pharmacology, Florida A&M University, Tallahassee, FL
1981, BS, Biochemistry, Binghamton University, State University of New York, Binghamton, NY
1979 – 1980, Student, Florida A&M University

Continuing Education

Commissioned Officer, United States Public Health Service
Commissioned Student Training and Extern Program, U.S. Public Health Service
National Center for Toxicological Research; Jefferson, Arkansas, May 1988 - August 1988,

Analyzing Risk: Science, Assessment, and Management, Harvard Center for Risk Analysis
Harvard School of Public Health, May 1996

Photobiological Techniques, NATO Advanced Study Institute
Royal Military College of Canada, Kingston, Ontario, June 1990

Summer School on Photochemistry, European Photobiology Association
Spiez, Switzerland, June 1989

Liquid Chromatography, Electrochemistry/Voltametry, Bioanalytical Systems, Inc.
Indianapolis, Indiana, August 1983

Membership in Professional Organizations

American Association for the Advancement of Science
American Public Health Association
Ecological Society of America
Association of Environmental Professional

Research and Professional Experience

8/04 – present, Associate Director and Associate Professor, Environmental Sciences Institute
Florida A&M University

2003 -2004, Interim Director, Environmental Sciences Institute, Florida A&M University
Selected by Provost and Vice President for Academic Affairs to serve during leadership transition.

2001 – present, Associate Professor, Environmental Sciences Institute, Florida A&M University

Research Interests: Environmental Toxicology, Environmental Health Disparities, Environmental Justice, and Community-Based Participatory Research.

Teaching and Instruction: Graduate and undergraduate courses in environmental toxicology and human health; environmental health; environmental ethics; and environmental justice. Training and directing undergraduate, masters and doctoral students, in biomolecular science, and environmental policy and risk management, research.

1998 – present, Associate Director, Environmental Sciences Institute, Florida A&M University
Provide primary support to the Director, and act for and assume full direction in the absence of the director; supervise Institute staff, coordinate academic programs.
Program Development: Co-led efforts to establish BS and Ph.D. programs in Environmental Sciences in 1998 and 1999, respectively.

1998 – present, Director, Florida Center for Environmental Equity and Justice, Florida A&M University
Directs and coordinates the efforts of Institute staff and associates to conduct environmental justice research, outreach, education, technical advice, and policy development and recommendations.

1995 – 2001 Assistant Professor, Environmental Sciences Institute, Florida A&M University
Teaching and Instruction: Taught graduate and undergraduate courses in environmental toxicology and human health, environmental health, environmental justice, and environmental ethics.

Research Interests: Environmental toxicology, and environmental justice.
Program Development: Co-led efforts to establish and fund Florida Center for Environmental Equity and Justice

1995 – 1997, Research Director, Florida Commission on Environmental Equity and Justice
Led efforts to conduct and publish Commission research and report.

1991 – 1995, Assistant Professor and Coordinator, Ronald E. McNair Post-Baccalaureate Achievement Program, School of Graduate Studies, Florida A&M University
Managed and coordinated the efforts, of staff and affiliated faculty, to prepare and mentor undergraduate students for admission to Ph.D. programs.

Contracts and Grants

Title: *FAMU Harvard Center for Health Disparities Research - Social and Environmental Determinants of Hypertension*

Agency: National Institutes of Health: National Center for Minority Health Disparities

Project Period: October 2008 - Present

Amount: \$1,200,0000

Title: *Five Year Entry Level BS/MS Degree Program in Environmental Science*

Agency: U.S. Department of Education

Project Period: October 2007 – September 2010

Amount: \$900,000

Title: *Household Pesticide and Chemical Exposures*

Agency: U.S. Department of Housing and Urban Development

Project Period: October 2006 - Present

Amount: \$350,000

Title: *Doris Duke Conservation Fellowship*

Agency: *Doris Duke Charitable Foundation*

Project Period: February 2007 - present

Amount: \$225,000

Title: *South Florida/Caribbean Cooperative Ecosystem Studies Unit*

Agency: U.S. Department of Interior

Project Period: 2000 - present

Amount: Cooperative Agreement

Title: *FAMU Harvard Center for Health Disparities Research - Social and Environmental Determinants of Hypertension*

Agency: National Institutes of Health: National Center for Minority Health Disparities

Project Period: September 30, 2003 – August 2008

Amount: \$6,000,000

Title: *South Florida Ecosystem Restoration Interdisciplinary Science Participation Plan*

Agency: National Oceanic and Atmospheric Administration

Project Period: October 2002 - September 2005

Amount: \$255,000

Title: *Advanced Research Cooperation in Environmental Health Sciences*

Agency: *National Institute of Environmental Health Sciences*

Project Period: October 2001 – September 2006

Amount: \$5,657,0000

Title: *Environmental Cooperative Science Center*

Agency: National Oceanic and Atmospheric Administration

Project Period: October 2001 – September 2006

Amount: \$7,486,343

Title: *Marine/Estuarine Biotechnology*
Agency: U.S. Department of Energy
Project Period: August 1, 1997 – August 31, 2001
Amount: \$5,400,000

Title: *Marine Biotechnology Supplemental*
Agency: U.S. Department of Energy
Project Period: August 1, 1997 – August 31, 2001
Amount: \$1,273,908

Title: *South Florida Ecosystem Restoration Strategic, Interdisciplinary Science Participation Plan*
Agency: U.S. National Oceanographic and Atmospheric Administration
Project Period: September 29, 1997 – September 15, 2000
Amount: \$250,000

Title: *Clearwater Florida Environmental Justice Strategy*
Agency: U.S. Environmental Protection Agency/International City and County Managers Association
Project Period: October 1, 1999 – December 31, 1999
Amount: \$25,000

Title: *Center for Environmental Equity and Justice*
Agency: Florida Legislature
Project Period: April 1998 - present
Amount: \$8,064,000

Title: *Proximity and Demographic Analyses and Case Studies of Targeted Environmental Hazards in the State of Florida*
Agency: Florida Legislature – Florida Commission on Environmental Equity and Justice
Project Period: August 1, 1994 – August 31, 1997
Amount: \$300,000

Title: *Southeast Center for Community Environmental Health*
Agency: U.S. Environmental Protection Agency
Project Period: October 1, 1997 – September 30, 1999
Amount: \$250,000

Title: *Environmental Justice Implementation Plan Partnership*
Agency: US Department of Energy
Project Period: July 16, 1997 – December 31, 1998
Amount: \$153,000

Doctoral Dissertations Directed

Sekeenia Haynes, Ph.D. 2006: *Spatial And Trophic Distribution Of Total Mercury In The South Florida Ecosystem*

Franklin Nwagbara, Ph.D. 2006: *The Cytotoxicity Effects of Benzo[a]pyrene and its Selected Metabolites on LNCaP, DU145 and PC3 Prostate Carcinoma Cell Lines*

Milton Clarke, Ph.D. 2004: *Effects of Photo-Oxidation and Co-Metabolism on Marine Petroleum Biodegradation and Bacterial Community Structure*

Doctoral Dissertations Supervising

Faith Clarke, Doctoral Candidate: *Development of a Remote Identification Technique for Assessing Lygodium Microphyllum on Tree Islands in the Arthur R. Marshall Loxahatchee National Wildlife Refuge*

April Croxton, Doctoral Candidate: *Trophic Transfer of Sediment-Associated Contaminants from Microphytobenthic Communities to Bivalve Species*

Adesuwa Erhunse, Doctoral Candidate: *An Assessment of Perfluorinated Organic Compounds and Source Inputs on the Potential Impacts to Water Quality and Biota in Coastal Ecosystem*

Sherriette Stokes, Doctoral Candidate: *A Cumulative Risk-Based Approach to Land-Use Planning*

Masters Theses Directed

Adesuwa Erhunse, MS 2002: *Implications of Elevated Blood Levels in Committed Juveniles for Environmental Health Risk Policies in the State of Florida*

Qiang Cao, MS 2002: *Impact of Photo-oxidation and Co-metabolism on Naphthalene Degradation by Indigenous Marine Bacteria*

Sekeenia Haynes, MS 2001: *Investigation of Polycyclic Aromatic Hydrocarbons and Quinone Photoproducts in Everglades Canals C-11 and C-111*

Antanasio Joao Brito, MS 2001: *Prediction of Shrimp Biomass and Catch Using Biomass Dynamic and Recruitment Modeling*

Milton Clarke, MS 2000: *Impact of Ultra-Violet Radiation on the Petroleum Hydrocarbon Degradation by Indigenous Marine Bacteria*

Colette Brown, MS 2000: *Degradation of Naphthalene in Seawater Using Selected Marine Algae*

Naemon Matthews, MS 1999: *The Contribution of Concrete and Component Materials to Indoor Radon Concentration in Commercial Buildings*

Cheri Wright, MS 1998: *Elevated Blood Lead Policies in Florida: Issues and Answers*

Masters Theses Supervising

Dao Lam: *Pesticide Exposures in Urban and Rural Households*

Marc Aarons: *The Impact of the Environmental Justice Movement on Brownfields Public Policy in Florida*

Publications and Oral Presentations

1. Selina Rahman, MBBS, PhD, MPH, Howard Hu, MD, ScD, Eileen McNeely, PhD, Saleh M. M. Rahman, MBBS, PhD, MPH, Nancy Krieger, PhD, Pamela Waterman, MPH, Junenette Peters, ScD, Cynthia Harris, PhD, DABT, Cynthia H. Harris, PhD, Deborah Prothrow-Stith, MD, Brian K. Gibbs, PhD, Perry C. Brown, DrPH, Genita Johnson, MD, MPH, Angela Burgess, Richard D. Gragg, PhD. (2008) Social and Environmental Risk Factors for Hypertension in African Americans. *Florida Public Health Review* 5, 64-72
2. Onyinye Nwagbara, Selina F. Darling-Reed, Alicia Tucker, Cynthia Harris, Michael Abazinge, Ronald D. Thomas, and Richard D. Gragg (2007) Induction of Cell Death, DNA Strand Breaks, and Cell Cycle Arrest in DU145 Human Prostate Carcinoma Cell Line by Benzo[a]pyrene and Benzo[a]pyrene-7,8-diol-9,10-epoxide. *International Journal of Environmental Research and Public Health* 4(1), 10-14
3. Haynes S., Orazio C.E., Gragg R.D., Lebo J.A., Cranor W., Clark R., and Robinson L. (2006) Semipermeable Membrane Device Sampling of Polycyclic Aromatic Hydrocarbons, Quinones and Organochlorine Pesticides in Everglades Canals C-11 and C-111. *Journal of Environmental Toxicology and Chemistry*. Submitted for publication.
4. Haynes, S., Johnson, E., Orazio, C. E., Robinson, L., Gragg, R. (2006) An Evaluation Of A Reagentless Method For The Determination Of Total Mercury In Aquatic Life. *Water, Air, and Soil*, Accepted for publication.
5. Croxton, A., Wikfors, G.H., and Gragg, R.D. (2007) Immunomodulation in Eastern Oysters, */Crassostrea virginica/*, Exposed to PAH-contaminated Benthic Diatoms. Oral presentation given at the 99th Annual National Shellfisheries Association Meeting, San Antonio, TX, 2007.
6. Croxton, A., Wikfors, G.H., Soudant, Philippe, Gragg, R.D. Method Determination for Identifying */In vitro/* Effects of PAHs on Eastern Oyster, */Crassostrea virginica/*, Hemocytes. Poster presentation given at the Northeast Aquaculture Conference & Exposition/27th Annual Milford Aquaculture Seminar, Groton, CT, 2006.
7. Croxton, A., Wikfors, G.H., and Gragg, R.D. Immunomodulation in Eastern Oysters, */Crassostrea virginica/*, Exposed to PAH-contaminated Benthic Diatoms. Oral presentation given at the NOAA/EPP 4th Annual Education and Science Forum, Tallahassee, FL, 2006.
8. Croxton, A., Wikfors, G.H., and Gragg, R.D. Immunomodulation in Eastern Oysters, */Crassostrea virginica/*, Exposed to a PAH-Contaminated Benthic Diatom. Oral presentation given at the 26th Milford Aquaculture Seminar, Meriden, CT, 2006.

9. Croxton, A., Wikfors, G.H., and Gragg, R.D. Trophic Transfer of Sediment-Associated Contaminants from Microphytobenthic Communities to Bivalve Species. Oral presentation given at the 8th International Conference on Shellfish Restoration, Brest, France, 2005
10. Croxton, A., Wikfors, G.H., and Gragg, R.D. Immune Responses of the Eastern Oyster, *Crassostrea virginica*, Exposed to Polycyclic Aromatic Hydrocarbons Via Microphytobenthic Diatoms. Poster presentation given at the 97th Annual Meeting of the National Shellfisheries Association, Philadelphia, PA, 2005.
11. Croxton, A. Wikfors, G.H., and Gragg, R.D. Trophic Transfer of Sediment-Associated Contaminants from Microphytobenthic Communities to Bivalve Species. Oral presentation given at the 25th Milford Aquaculture Seminar, Milford, CT, 2005.
12. Onyinye Nwagbara Selina Darling-Reed, Alicia Tucker, Cynthia Harris, Michael Abazinge, Ronald Thomas, and Richard D. Gragg. The cytotoxic effects of benzo[a]pyrene, benzo[a]pyrene-7-8-dihydrodiol, and benzo[a]pyrene-7,8-9,10-epoxide on human-insensitive prostate carcinoma cell line PC3. American Association for Cancer Research, 98th Annual Meeting, April 18- 21, 2007, Los Angeles, CA.
13. Onyinye Nwagbara, Selina F. Darling-Reed, Ronald D. Thomas, and Richard D. Gragg. Induction of PC3 Cell death and DNA damage by benzo[a]pyrene-7,8-diol-9,10-epoxide (BPDE). Society of Toxicology 45th Annual Meeting, San Diego, CA, March 2006.
14. Onyinye Nwagbara, Selina F. Darling-Reed, and Richard D. Gragg. Cell Death, DNA strand Breaks, and Induction of p53 Accumulation by benzo[a]pyrene-7,8-diol-9,10-epoxide (BPDE) in PC3 and DU145 Prostate Carcinoma Cell lines. American Association for Cancer Research, 97th Annual Meeting, April 1-, 2006, Washington D.C.
15. Onyinye Nwagbara, Selina F. Darling-Reed, and Richard D. Gragg. The induction of apoptosis and possible G2/M arrest on androgen insensitive human prostate carcinoma cell line (DU145) by benzo[a]pyrene 7,8-diol-9,10-epoxide(BPDE). American Association for Cancer Research 96th Annual Meeting Anaheim, CA, April 2005.
16. Onyinye Nwagbara, Selina F. Darling-Reed, and Richard D. Gragg. Effect of polycyclic aromatic hydrocarbon on human prostate carcinoma cell line (LNCaP). Environmental Mutagen Society 35th Annual Meeting, Pittsburgh, Pennsylvania, October 2-6, 2004.
17. Onyinye Nwagbara, Selina F. Darling-Reed, and Richard D. Gragg. B[a]P-7,8-diol induced cell cycle arrest and apoptosis in LNCaP prostate carcinoma cells. Experimental Biology, Washington D.C., April 2004.
18. Onyinye Nwagbara, Selina F. Darling-Reed, and Richard D. Gragg. B[a]P and B[a]P-7,8-diol induced cell cycle arrest and apoptosis in LNCaP cell. Society of Toxicology, Baltimore, Maryland, March 2004.

19. Richard D. Gragg, Onyinye Nwagbara, Selina Faith Darling-Reed, Yasmeen Barnes-Nkurumah, and Tom Kocarek. Mechanisms involved in AhR modulation of androgen dependent prostate cancer cell cycling. American Association for Cancer Research, 95th Annual Meeting, Orlando, FL, March 2004.
20. Richard D. Gragg, Selina Faith Darling-Reed, Tom Kocarek, Onyinye Nwagbara, and Kim Zukowski. AhR modulation of androgen dependent prostate cell growth (Manuscript in preparation)
21. Richard D. Gragg, Selina Faith Darling-Reed, Tom Kocarek, Onyinye Nwagbara, and Kim Zukowski. TCDD induced cell cycle arrest and apoptosis in LNCaP prostate carcinoma cells. American Association for Cancer Research, Washington D.C., AACR 2003.
22. Gasana, J. and Christaldi, R. (2002) Measuring Environmental Equity and Justice: A Proposed Health Assessment Paradigm. *International Journal of Public Administration* 25: 281-304.
23. Molly Singer, Richard Gragg, Renu Khator, Miles Ballog, Angela Wright, Lisa Milligan, Lori Hernandex, Carol Forthman, The Greenwood Neighborhood Community Action Team (2001) Righting the Wrong: A Model Plan for Environmental Justice in Brownfields Redevelopment. International City/County Management Association Superfund/Brownfield Research Institute.
24. Richard D. Gragg in conjunction with the Army Corps of Engineers and the South Florida Water Management District. (August 2001) Public Outreach Program Management Plan for the Comprehensive Everglades Restoration.
25. Richard D. Gragg in conjunction with the Army Corps of Engineers and the South Florida Water Management District. (August 2001) Environmental and Economic Equity Program Management Plan for the Comprehensive Everglades Restoration Plan.
26. Preston, B. L., Warren, R. C., Gragg, R. D. and Walker, B. (2001) Environmental Health and Anti-Social Behavior: Implications for Public Policy. *Journal of Environmental Health* 63: 9-21
27. B. Kranzer and R. Gragg (2000) Incorporating Environmental Justice into the Comprehensive Everglades Restoration Management Plan. *Greater Everglades Ecosystem Restoration Science Conference, Naples Florida*
28. Khator, R., Gragg, R., Forthman, R., Ballog, M., White, A., Smith, M., and Hernandez, L. (2000) City of Clearwater Brownfields Area Environmental Justice Action Agenda Report
29. Haynes, S, Gragg, R, D, Orazio, C, E, Lebo, J, , Huckins, J, , Petty, J, (2001) Investigation Of Polycyclic Aromatic Hydrocarbons And Quinone Photoproducts In Everglades Canals C-11 And C-111. ASLO 2001 Aquatic Sciences, Albuquerque, New Mexico

30. Clarke, M, A, Gragg, R, D, Ding, X, Cherrier, J, Hogg, R, Chanton, J, (2001) Impact of Ultra-Violet Radiation on Petroleum Hydrocarbon Degradation by Indigenous Marine Bacteria. ASLO 2001 Aquatic Sciences, Albuquerque, New Mexico
31. B. Kranzer and R. Gragg (2000) Incorporating Environmental Justice into the Comprehensive Everglades Restoration Management Plan. Greater Everglades Ecosystem Restoration Science Conference, Naples Florida
32. Clarke M., Gragg R., Cherrier, Ding X., Hogg R., and J. Chanton. (2000). Impact Of Ultra Violet Radiation On Petroleum Hydrocarbon Degradation By Indigenous Marine Bacteria. Department of Energy Biotechnological Investigations Ocean Margins Program Conference (Tallahassee, Florida March, 2000), National Organization of Black Chemists and Chemical Engineers (Miami, Florida April, 2000), and the Florida Marine Biotechnology Summit II (Tampa, Florida October, 2000)
33. Brown H., Hogg, R. Cherrier, J, Chanton J. Ding X. and R. Gragg. (2000) Isotope Study Of Hydrocarbon Degradation By Indigenous Nearshore Bacterial Populations Through Co-Metabolism. Department of Energy Biotechnological Investigations Ocean Margins Program Conference, Tallahassee, FL.
34. Haynes, S. and Gragg, R. (2000) Investigation of Polycyclic Aromatic Hydrocarbons & Quinone Photoproducts in Everglades Canals C-11 and C-11. Greater Everglades Ecosystem Restoration Science Conference, Naples Florida.
35. Florida's Environmental Equity and Justice Program: Environmental Justice Panel: The 3rd Annual Brownfields Conference; 2000, Miami Beach, Florida.
36. Dialogue: Interpretation and Implementation of Community Vision and Voice: Environmental Justice Panel: Balancing Brownfields-Building Strength Through Partnerships (2nd Florida Brownfields Conference, 1999) Jacksonville, Florida;
37. Dialogue: Interpretation and Implementation of Community Vision and Voice Environmental Design Research Association Meeting (1999) Orlando, Florida.
38. Environmental Justice Issues in the United States: Environmental Justice Panel: The 5th Annual Florida Public Interest Environmental Law Conference, 1999, University of Florida Law School, Gainesville, Florida.
39. Interpretation and Implementation of Community Vision and Voice: Balancing Brownfields-Building Strength Through Partnerships, 2nd Florida Brownfields Conference, 1999, Jacksonville, Florida; Environmental Design Research Association Meeting, 1999, Orlando, Florida.
40. Chemical Mixtures: Florida Environmental Health Association Meeting, Environmental Health Advisory Board, Environmental Justice Workshop (May, 1999) Orlando, Florida.
41. Proximity and Demographic Analyses of Targeted Environmental Hazardous Sites in Florida: Florida House of Representatives Environmental Protection Committee (1997) Tallahassee, Florida

42. Environmental Justice Issues in America: National Association of Environmental Law Societies Annual Meeting, Environmental Justice Panel (1996) Florida State University College of Law, Tallahassee, Florida
43. Environmental Justice Issues in America: National Association of Black Public Administrators Annual Meeting, Environmental Justice Panel (1996) Houston, Texas
44. Gragg, R., Christaldi, R., Leong, S. and Cooper, M. (1996) The Location and Community Demographics of Targeted Environmental Hazardous Sites in Florida *Journal of Land Use and Environmental Law* 12:1-44.
45. Gragg, R., (1996) Proximity and Demographic Analyses of Targeted Environmental Hazardous Sites in Florida. *Florida Environmental Equity and Justice Commission Final Report*, 9-36.
46. Environmental Justice Issues in Florida: Florida Environmental EXPO, Environmental Justice Workshop (1995) Tampa, Florida
47. Environmental Hazards Proximity Protocol: Florida Environmental Equity and Justice Commission; (1995) Tallahassee, Florida
48. George, A., Gragg, R., Jack, N. (Eds.). (1994) *Caribbean Rhythm*; Magazine of the Caribbean Carnival™ Tallahassee, North Florida Caribbean Organization.
49. McCune, B.C. and Gragg, R.D. (Eds.). (1993) *National McNair Journal*, 4.
50. McCune, B.C., Gragg, R.D., Hobbs, V. and Benson, S.M. (Eds.). (1993) *McNair Journal*, 3
51. McCune, B.C., Gragg, R.D (Eds.). (1993) *National McNair Journal*, 1.
52. McCune, B.C., Gragg, R.D., Hobbs, V., Jacques, J. and Benson, S.M. (Eds.). (1992) *McNair Journal*, 2.

Professional Service

Member, 2008 – present: Leon County Health Advisory Board

Commissioner, 2006 – April 2008: Florida Environmental Regulation Commission

University Representative, 2004 – present: Council of Environment Deans and Directors; Member, Executive Council

University Representative, 2003 – present: Gadsden Community Health Council

Board of Directors, 2002 –2006: Florida Brownfields Association; Co-Chair Environmental Justice and Public Health Committee

Executive Council; 2001 –2005: National Environmental Justice Advisory Council; US Environmental Protection Agency; Member Health and Research Subcommittee

Board of Directors, 2001 –present: Audubon of Florida

Community Environmental Health Advisory Board, 1998 – 2000: Florida Department of Health

Contaminated Soils Forum, Chair Environmental Justice Committee, 1998 – 1999: Florida Department of Environmental Protection

Faculty Senate, 1996 - 1998: Florida A&M University

Advisory Board, 1996 -present: Institute of Public Health—Florida A&M University

Science Advisory Committee, 1995 - 1999: Leon County, Board of County Commissioners

Admissions Committee, 1996 -1997: Program In Medical Sciences—Florida State University

Staff Research Director, 1995 - 1997: Florida Environmental Equity & Justice Commission

Board of Trustees, Odyssey-Tallahassee Science Center, Inc. (Mary T. Brogan Museum of Arts and Sciences)

Finance Chairman, Board of Directors, Odyssey-Tallahassee Science Center, Inc. (Mary T. Brogan Museum of Arts and Sciences)

Honors and Awards

1993	McKnight Achievers Society, Florida Education Fund
1987, 1988	Delores Auzenne Graduate Fellowship, FAMU
1986-1992	McKnight Doctoral Fellowship, Florida Education Fund
1983, 1984	Award for Excellence in Research, FAMU
1981-1986	Minority Biomedical Research Fellowship, FAMU

DAVID P. GEORGES

710 Frederic Drive ~ Fleming Island, Florida 32003

904-614-8752

dgeorges@prsinc.biz

QUALIFICATIONS

Accomplished and dedicated executive specializing in medical imaging Management, Product Development, Sales, Marketing and Distribution with a proven track record of achieving dynamic bottom line results positively impacting each company's growth and success. Experienced and recognized leader in the field of diagnostic imaging equipment supplies and services market with extensive experience in the Women's imaging segment. Established innovator skilled in sales launch strategies that introduced leading edge technologies into the Women's imaging segment including; film screen mammography systems, digital mammography systems, stereotactic and ultrasound guided breast biopsy systems, computer aided detection systems, and automated 3D breast ultrasound systems. Strategic developer and creative thinker skilled in building sales and marketing implementation programs, management structure, and sales teams.

PROFESSIONAL EXPERIENCE

PROFIT RETENTION STRATEGIES, INC., Fleming Island, FL 2005 – Present

President / Owner

Technical and Marketing consultants of new technologies in the field of early stage breast cancer detection.

- Strategic planning for new product launches
- Women's Imaging Center Business Consultant
- Work Flow and IT Specialist for Breast Imaging

U-SYSTEMS, INC., San Jose, CA

Vice President, Sales

Early stage developer of Automated, 3D, Breast Ultrasound technology. 2002-2005

- Reported to President.
- Divisional P&L Responsibility
- Established start-up sales team, pre-launch sales planning and implementation, and represented the corporation and product concepts to industry leading breast imagers.
- Developed the business and technical value proposition for use in pre-launch marketing.
- Established proof of concept and luminary relationships with leaders in Women's imaging.
- Managed a start up staff of 3 technical sales representatives, 3 applications specialists and 1 admin.

SOURCE ONE HEALTHCARE TECHNOLOGIES, Mentor, OH 1997 - 2002

-DIAGNOSTIC IMAGING, Inc.

-SOUTHEAST IMAGING SYSTEMS.

Retained through three merger and acquisition conversions.

Nations largest radiology products distributor formed by merging DI and Marconi HCP

Vice President, Marketing.

- Reported to President.
- Divisional P&L responsibility
- Merged two sales and service teams of 250 sales and 1200 service representatives.
- \$1.4 billion in revenue.
- Developed initial strategic marketing plan and implementation tactics to maximize revenue.
- Product portfolio development & vendor management.
- Provided technical sales training for 400+ sales representatives.
- Managed a marketing staff of 17 in 2 locations.

Retained as VP of Marketing post acquisition of Diagnostic Imaging, Inc.

PROFESSIONAL EXPERIENCE*(Continued)*

-DIAGNOSTIC IMAGING, INC., Jacksonville, FL; Division of PSS World Medical (PSSI)

National focused radiology products distributor created by purchasing and consolidating 56 regional distributors.

Vice President, Marketing (2000-2002)

- Reported to President
- Developed and implemented a corporate strategic business unit (SBU) structure that resulted in effective utilization of the existing 76 capitol equipment sales representatives, 250 consumables sales representatives and 700 service personnel.
- Managed a marketing staff of 8
- Most successful distribution partner for over 20 manufacturers of imaging equipment or supplies including *Hologic, R2, Lorad, Kodak, Shimadzu, and Dell.*
- Developed technical sales training programs for all SBU's.
- Managed strategic planning, product development, and vendor management.
- Launched first CAD product for mammography achieving top distribution partner with *R2.*
- Structured and managed national meetings and industry conferences.

National Sales Manager, Women's Health SBU (1999-2000)

- Established the first national sales team dedicated to selling Women's imaging equipment.
- Generated the highest revenue SBU through the development of a national technology based sales team consisting of 30 representatives and 2 regional managers focused on Women's imaging equipment sales.

Southeast Imaging Systems was acquired by Diagnostic Imaging, Inc. and I was retained for the positions detailed above.

-SOUTHEAST IMAGING SYSTEMS (acquired by DIAGNOSTIC IMAGING in 1999), Apopka, FL

Vice President, Women's Imaging

- Reported to President
- Developed a technical sales and service team dedicated to Women's imaging equipment.
- Managed a staff of 30 sales, service and administrative personal.
- Achieved top selling distributor by all key vendors.
- Fastest growing revenue section of the company.
- After the DI purchase of SE Imaging, I was recruited to replicate Women's imaging strategy for *Diagnostics Imaging* on a national scale.

CMS IMAGING, INC., Orange Park, FL

1993-1997

A \$12M regional distributor of imaging equipment, products and service.

Vice President of Sales and Marketing

- Reported to president
- Recruited, trained and managed 4 technical sales representatives expanding sales by multiples.
- Responsible for product portfolio, marketing, sales and vendor management.
- Negotiated exclusive regional distribution contracts.
- Grew revenue from \$3 million in 1994 to \$12 million in 1997.

SOUTH FLORIDA MED-X, INC., Ft. Myers, FL

1979-1994

An \$8M regional distributor of imaging equipment, products and service.

Sales Manager and Business development

- Reported to President
- Achieved rapid and steady growth and expansion by initiating a management structure to coordinate purchasing, operations, distribution, sales, marketing, and service.
- Negotiated and managed all vendor contracts.

**FINANCIAL IMPLICATIONS OF ISD
UPON MEDICAL COSTS**

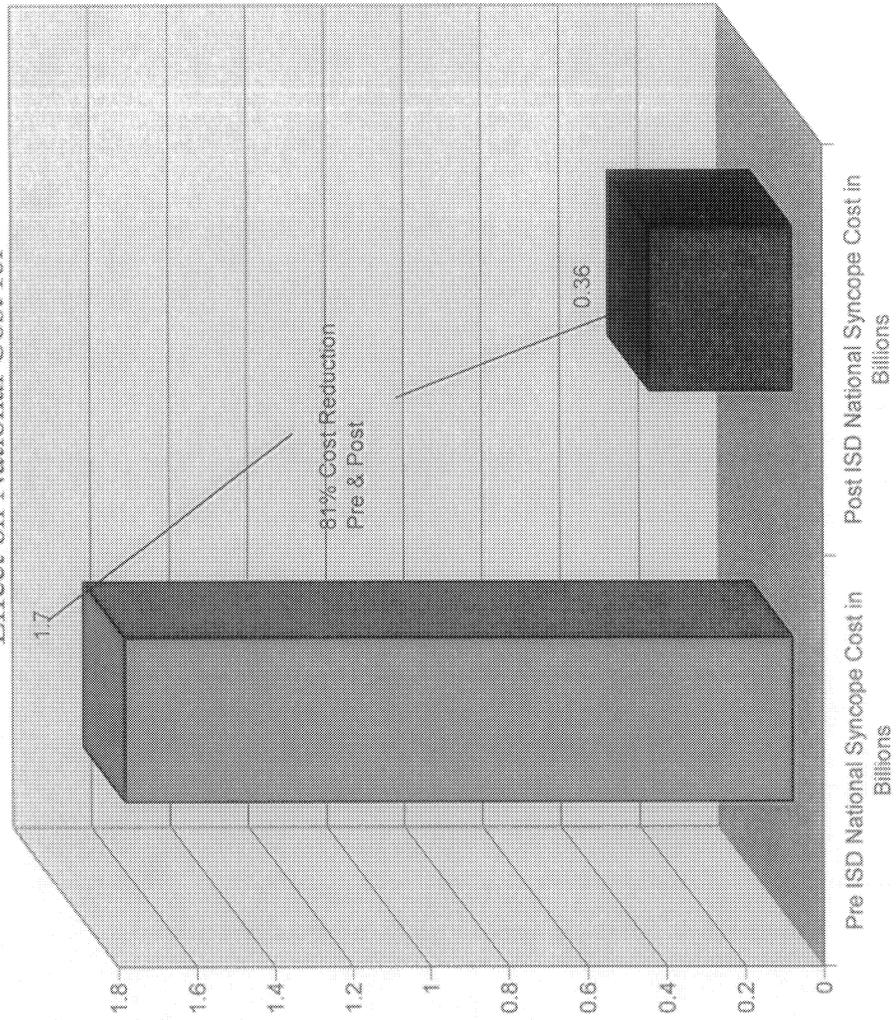
Tom Buckridge
VP Finance & Investments
Healthcare Resource Development, Inc.
September 8, 2009

DIAGNOSTIC COST IMPACTS OF ISD

- HRD is building hospital-level experience in Florida and will, by the end of 2009, have sufficient results to confirm hospital diagnostic costs reductions where ISD is implemented
- Experience is being gained that implies an 80+% reduction of diagnostic testing against DRG's where ISD is embraced
- There are both national & local hospital implications which have benefits to healthcare reform and the profitability of hospitals

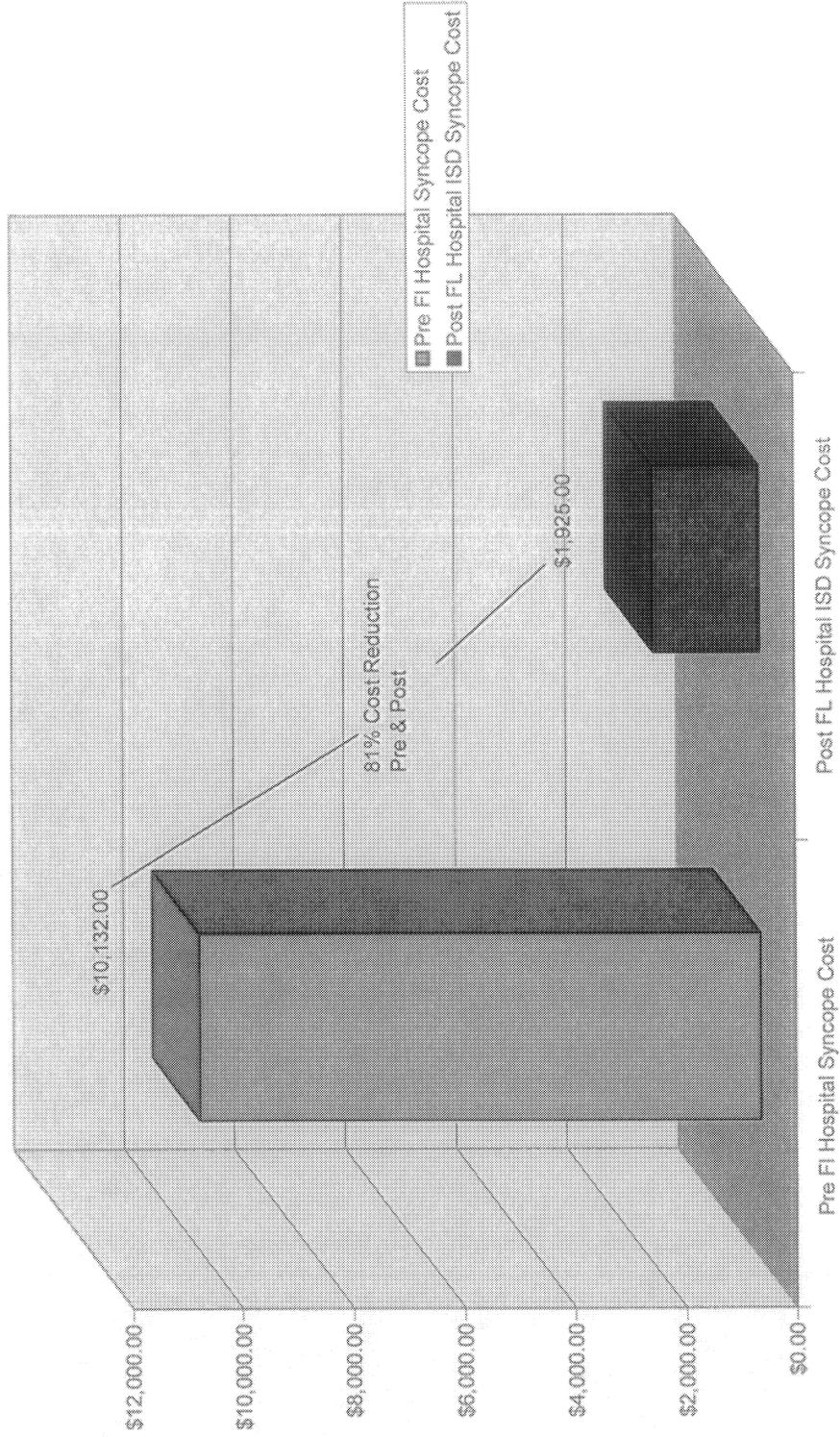
NATIONAL IMPLICATIONS

ISD Systems Pre & Post
Effect on National Cost for

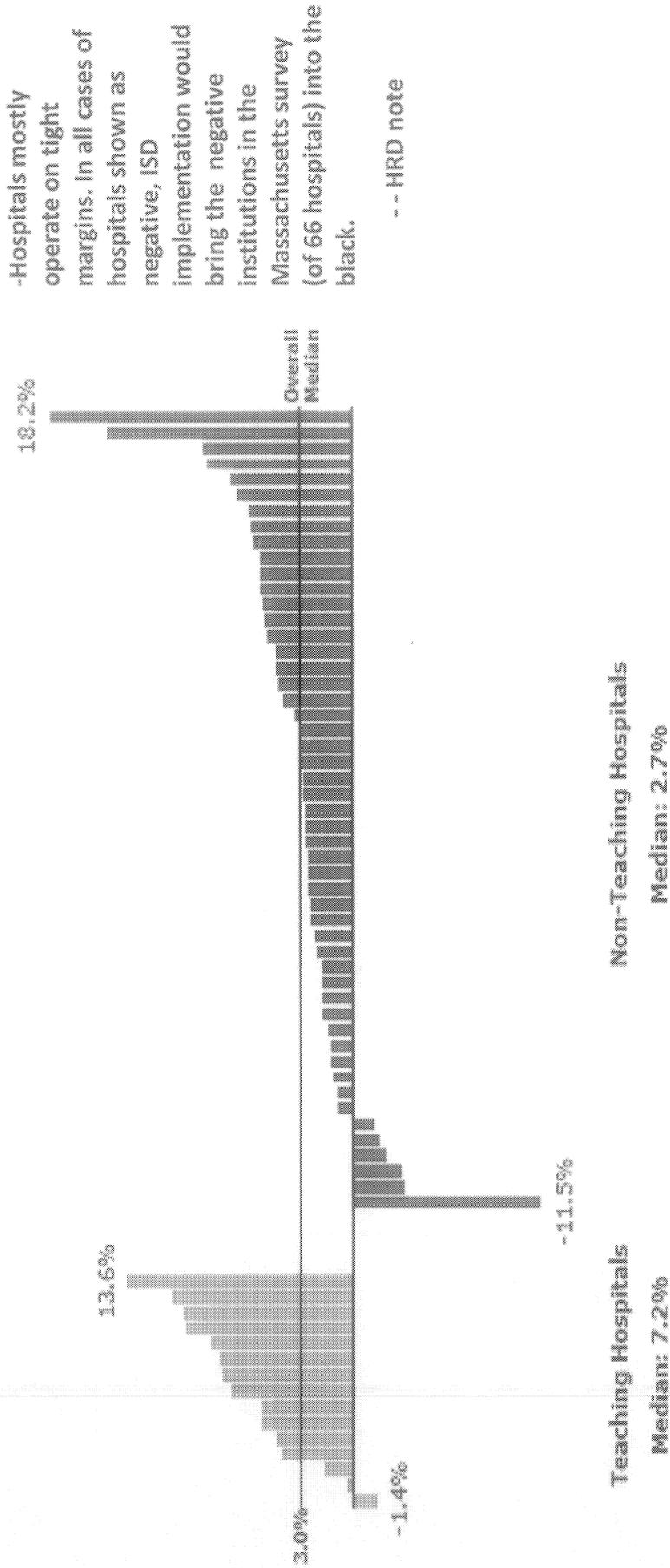


HOSPITAL LEVEL IMPLICATIONS

ISD Systems Pre & Post
Effect on Hospital Cost



Acute Hospitals: Total Margin by Teaching Status for Fiscal Year 2007



-Hospitals mostly operate on tight margins. In all cases of hospitals shown as negative, ISD implementation would bring the negative institutions in the Massachusetts survey (of 66 hospitals) into the black.

-- HRD note

Healthcare
Longstanding Issues

Access

Cost

Quality

Litigation

ISD Systems Resolves
Longstanding Medical Issues

**Solves Healthcare Access by
Displacement of medical waste
with Affordable Access**

**Resolves Healthcare Cost issues
by reducing Diagnostic Testing**

**Improves Healthcare Quality
through reduced patient wait time
and fewer invasive tests**

**Establishes Litigious Resistant
Standards**

Proprietary - For meeting Use Only
NOT for Distribution

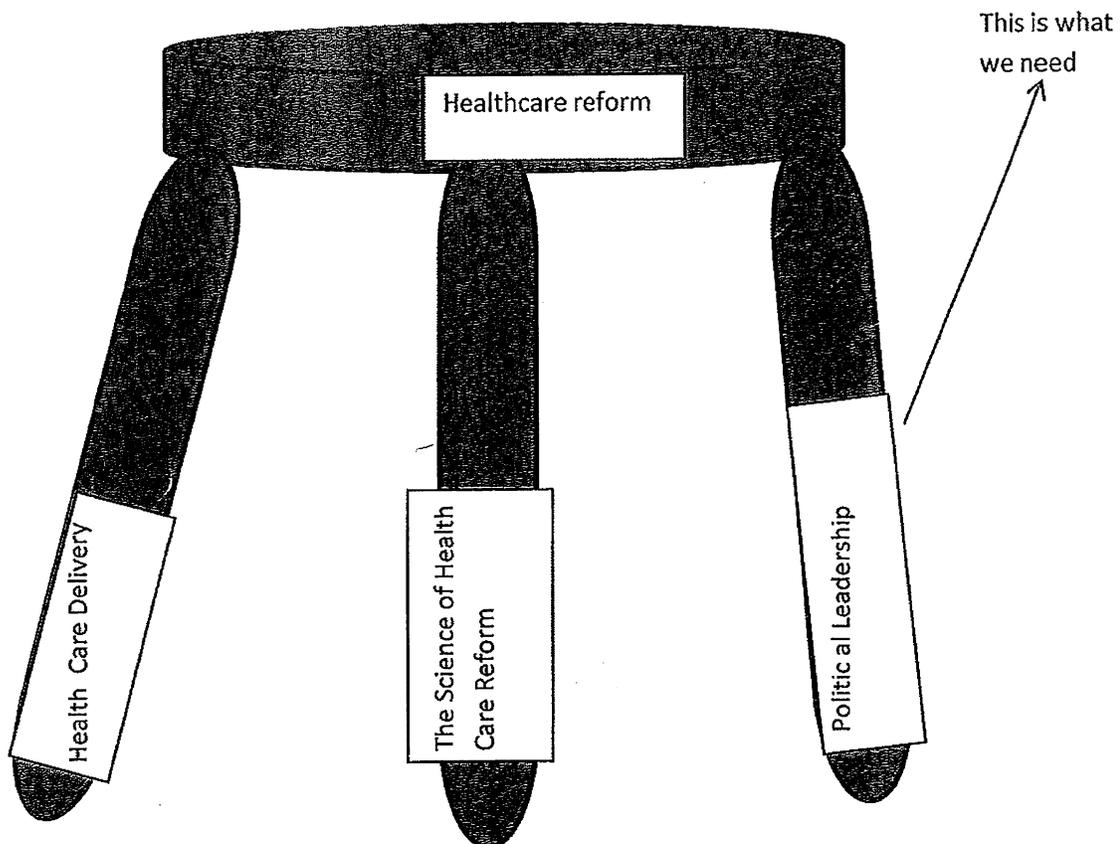
5 pages

The Characteristics for Business Driven Health Care Reform in the State of Florida

- Bring Scientific Method to Reduce Cost and Improve Quality—medicine is driven by science and influenced by money
 - ✓ Adventist Health System is an industry leader, and our strategic partner.
 - ✓ Tested Successfully in the State of Florida

- Florida will serve as a model of health care reform to the rest of the nation
 - ✓ Provide the catalyst for the economic transformation necessary for a business incentivized health care reform

- Innovation necessary for the transformation requires special dispensation from the Agency for Health Care Administration (AHCA)
 - ✓ To provide the relief from the expected decrease in diagnostic medical resource consumption—a consequence of the application of our scientific method
 - ✓ We need you help to insure ACHA thinks out-the-box



Project Summary/Abstract

This demonstration project seeks to reduce health care diagnostic resource consumption and patient health risk, while increasing health care quality, and solves long standing policy resistant issues of access, quality, cost and litigation through the application of Illness Specific Diagnostic technology (ISD), rooted in the science of diagnosimetric. The method for decision-making described in this paper proves more cost-effective and medically sound than current practices. Once ISD technology is the accepted national medical standard for disease diagnosis, dissimilar medical diagnostic capacity are understood through the mathematics of small area clusters, and creates the level playing field of analysis required for successful the application of national medical standards, creates the lens of understanding regional diagnostic resource patterns.

In order for meaningful health care reform to succeed, physician behavior must be modified. Specifically, the referring/attending physician must cease to order diagnostic tests based on symptomology. Through this demonstration project, attending physicians will be educated to perform a thorough clinical assessment and derive a provisional disease diagnosis based on the patient's clinical symptoms. A community based outreach program to members of the medical staff, initially presented in medical staff meetings, and subsequently reinforced through concurrent medical discipline group cluster meetings (internist, clinical specialties, etc.), that include key medical staff private office personnel, i.e. office manager, nurses, physician's assistant, etc., will be the audience whose behavior is targeted for change.

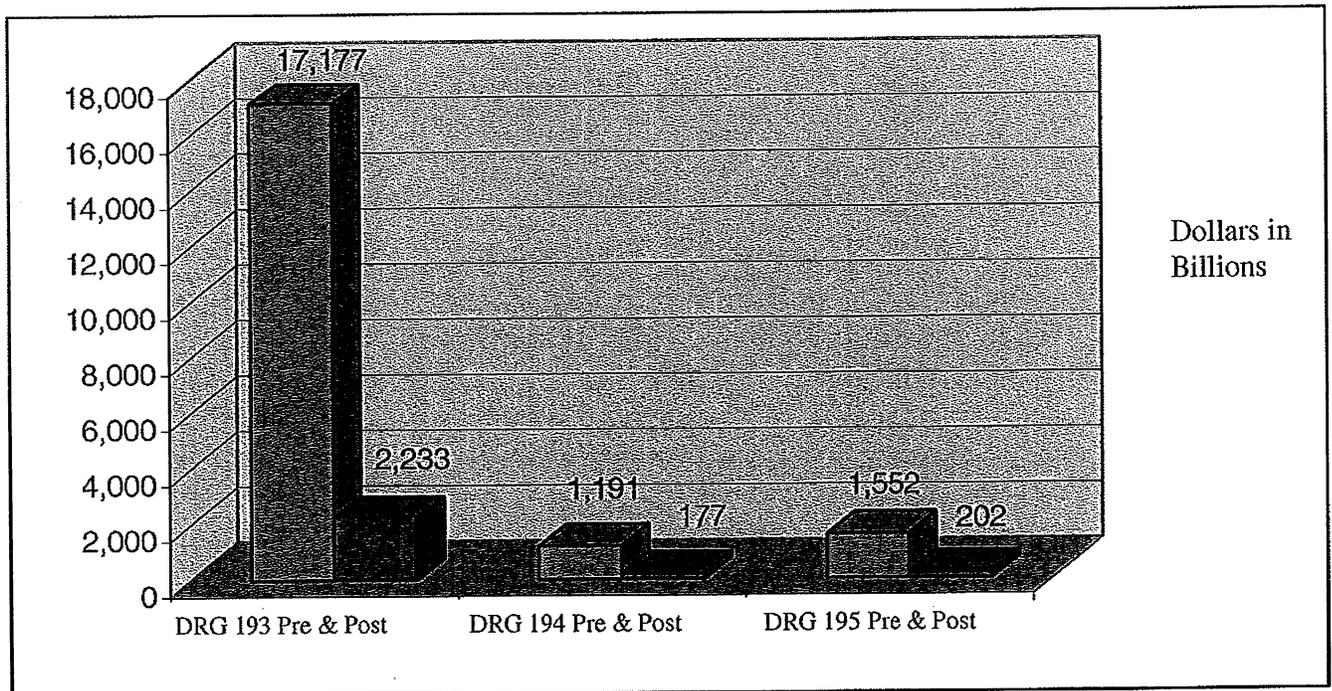
Implementation of ISD technology will occur in two hospitals in the state of Florida, in partnership with the Adventist Health System our delivery system of record for this demonstration. Through a focus of medical education lectures and applications sessions the medical staff members—the referring physician is educated not to order diagnostic tests base on clinical symptoms, but rather on perform a through clinical assessment and arrive at a provisional diagnose, and write a prescription to confirm or deny the disease. The patient presents to the hospital with the prescription, and the hospital is the expert at knowing what diagnostic test is associated with confirming or denying the disease in question.

ISD technology evaluates a known universe of data, the cohort of DRG specific medical records, and produces values that are absolute and free from the uncertainty of inferential statistical analysis. ISD diagnosimetric results are experiential, discrete, nominal data sets. ISD diagnosimetric results are real number values, whose roots are derived from retrospective concatenation of diagnostic testing results performed at a specific medical center with prospective application at the site where they are created. ISD tables are not static, but rather require temporal validation directly to the hospital's diagnostic capacity.

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NOT for Distribution

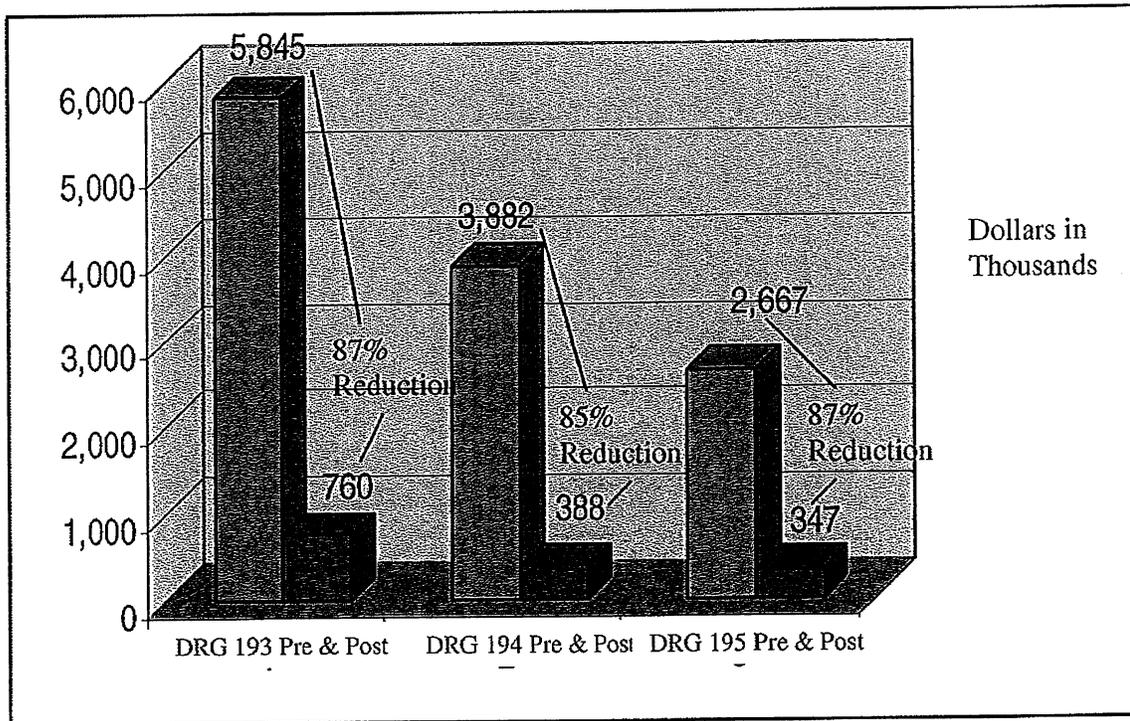
4 pages

ISD System Pre & Post Effect National Healthcare Cost DRG Pneumonia & Pleurisy 193, 194, 195



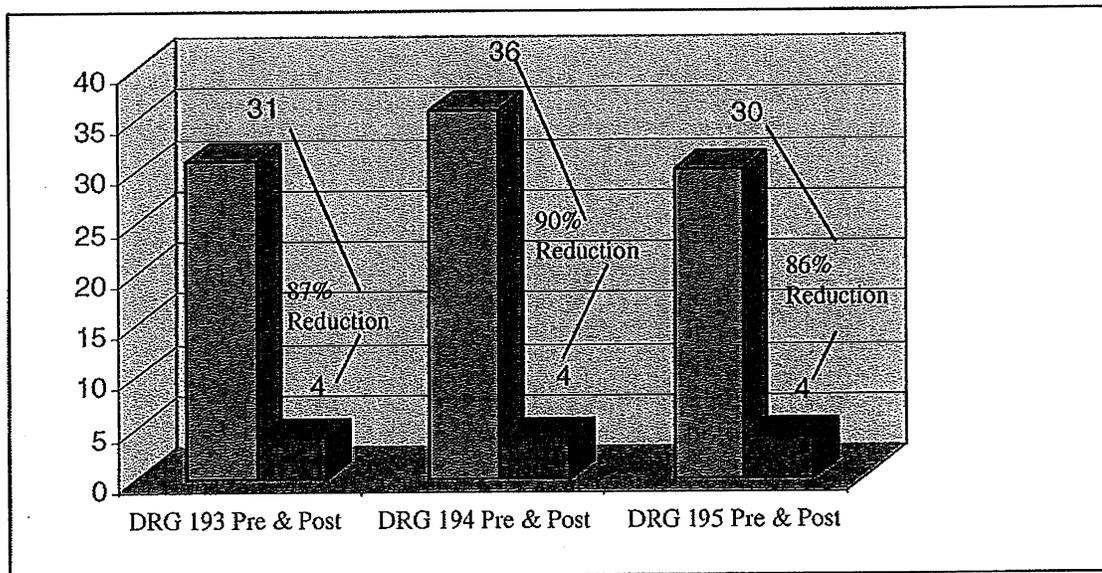
Note: Charge and cost data provided by AHRQ, H-CUPnet indicate the average National cost for the disease Pneumonia & Pleurisy for DRG 193, 194 and 195 is about \$20 Billion Dollars. Once the medical staff is trained to use ISD tables, a reduction in diagnostic resource consumption in dollars will occur. The reduction should be about 86%, and will result in annual costs of about 2.8 Billion, and a savings of about 17.2 Billion.

ISD System Pre & Post Effect Hospital Cost DRG Pneumonia & Pleurisy 193, 194, 195



Note: Charge and cost data provided by AHRQ, H.CUPnet indicate the median hospital cost for the disease Pneumonia & Pleurisy for DRG 193, 194 and 195 is about \$5,845, \$3883, and \$2667, or about \$12,398 total. Once the medical staff is trained to use ISD tables, a reduction in diagnostic resource consumption in dollars will occur. The reduction should be about 86%, and will result in costs per patient of about \$1,736 for all 3 Pneumonia DRGs, and a savings of about \$10, 662. per patient for all 3 DRGs.

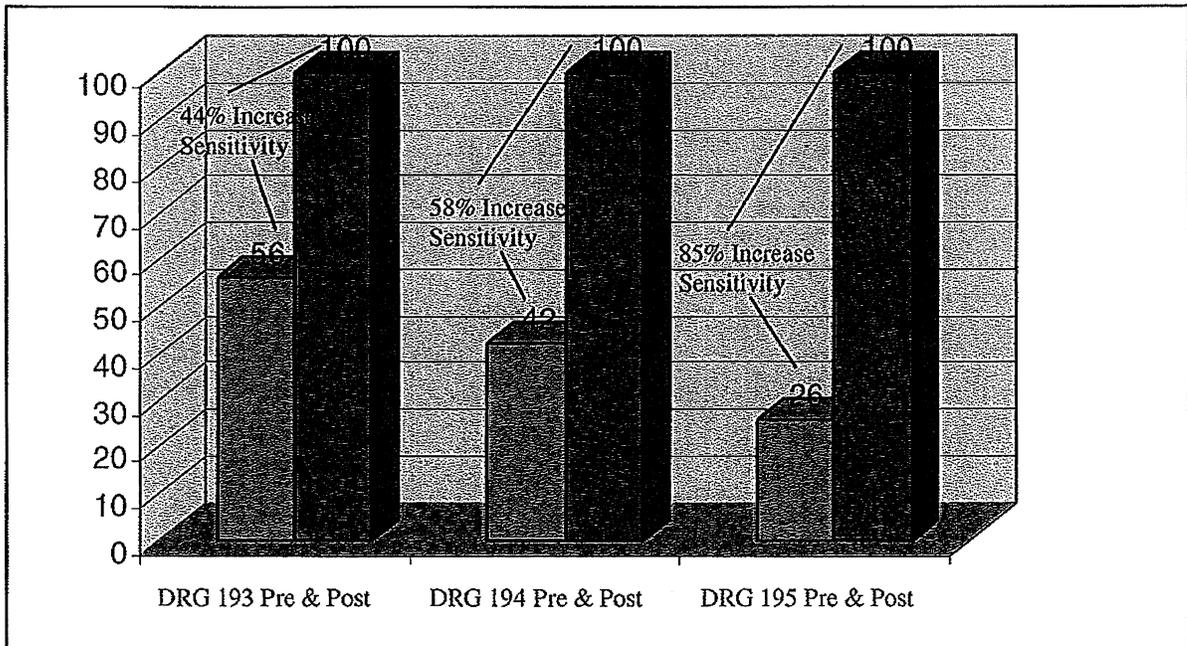
ISD System Pre & Post Patient Diagnostic Test Reduction DRG Pneumonia & Pleurisy 193, 194, 195



Note: Prior to ISD intervention Florida Hospital consumed 1473 diagnostic tests to diagnose the disease Pneumonia on 51 patients. A reduction of about 87% occurs after ISD intervention for DRG 193. DRG 194 was reduced by about 90%, and 86% for DRG 195. These reductions are possible and will be automated by digital medical records when three actions happen:

- 1) referring physicians order diagnostic tests based on a specific disease
- 2) diagnosticians include in the reports a finding of positive, negative or equivocal for the disease in question
- 3) Digital Medical Records are required to track discharge DRGs, and diagnostic test results,

ISD System Pre & Post Effect Sensitivity DRG Pneumonia & Pleurisy 193, 194, 195



Notes: Prior to ISD system application, the Florida Hospital's sensitivity (a medical quality indicator) for Pneumonia 193 was 56%. Post ISD, the Hospital's sensitivity is 100%, since only the top selected diagnostic tests are used. The same is true for Pneumonia 194 and 195 with a pre-ISD sensitivity value of 42%, once ISD is applied sensitivity is 100%. The increase in medical quality occurs because ISD systems educate referring clinicians to order diagnostic tests for a specific disease, not symptoms, this allows for use of ISD tables. ISD tables identify the diagnostic test most likely to confirm the disease in question, in this case Pneumonia & Pleurisy 193, 194, and 195, and provides clinicians feedback for a correct disease diagnosis.

PROPRIETARY - For Meeting Use Only
NOT For Distribution

4 pages

Illness Specific Diagnostic Table						
Florida Hospital Heartland-Lake Placid						
DRG 193, 194, 195		Simple Pneumonia & Pleurisy w MCC, w CC, w/o MCC				
Diagnostic Test	Negative Results	Positive Results	Equivocal Results	Total Test Count		Diagnosimetric Test Value
CBC	34	106		140		32.767
BMP	20	74		94		23.150
CMP	26	50	1	77		17.717
XR Chest 1v	35	45		80		17.400
GLUCOSE POC	25	36	1	62		13.818
Glu POC	7	39	5	51		12.789
PT	24	23		47		9.975
BNP	9	25		34		8.484
GLUCOSE PEC	2	28		30		8.364
ABG	4	23		27		7.225
CPK	30	7	6	43		7.145
CKMB	38	5		43		6.859
MAGNESIUM	46		2	48		6.835
PTT	32	6	1	39		6.449
Culture - Blood	44			44		6.283
PHOSPHORUS	31			31		4.467
XR Chest 2v	3	13		16		4.222
TROP	22	3		25		4.052
BLOOD CULTURE	28			28		4.043
URINE ANALYSIS	17	4		21		3.628
UA	15	2	6	23		3.623
SPUTUM CULTURE	8	7		15		3.205
Troponin	20			20		2.904
US Ext Lower	18			18		2.617
CT Chest w/o	3	6		9		2.195
CT Chest PE	2	6		8		2.050
Folate	6	3		9		1.756
CT Brain w/o	12			12		1.752
PROTIME	5	3		8		1.610
TSH	11			11		1.607
US Echo	11			11		1.607
D Dimer		5		5		1.467
Lipid	6	2		8		1.464
Culture - Urine	8	1		9		1.463
GRAM SPUTUM STAIN?	1	1	7	9		1.463
Gram	6		4	10		1.462
CBC-DIFF	7	1		8		1.318

HEMOGLOBIN		4		4	1.174
CT Abdomen	2	3		5	1.174
C Sput	4	2		6	1.173
DIGOXIN	8			8	1.171
Liver fx	8			8	1.171
Sputum AFB	8			8	1.171
GLUCOSE POC X3		3	1	4	1.028
H & H		3		3	0.881
SED RATE	1	2	1	4	0.881
Cell Count		2	2	4	0.881
AMYLASE	6			6	0.880
LIPASE	6			6	0.880
OCC Blood	4		2	6	0.880
Vitamin B12	6			6	0.880
BNP SCREEN	1	2		3	0.735
LIVER FUNCTION	1	2		3	0.735
CRAM STAIN	2	1	1	4	0.734
US Chest	3	1		4	0.734
US Abdomen	5			5	0.734
24 UR Prot		2		2	0.588
D-DIMER		2		2	0.588
GLUCOSE F		2		2	0.588
Hgb A/C		2		2	0.588
Ur Prot ELP		2		2	0.588
XR Abdomen 2v		2		2	0.588
C Body #1d	4			4	0.587
Culture - Sputum	4			4	0.587
Cytology	2		2	4	0.587
GLU POC PLA	4			4	0.587
Legionella Urine	4			4	0.587
T4 FREE	4			4	0.587
TP BF	2		2	4	0.587
US Retroperit	4			4	0.587
24 UR Creat	1	1		2	0.441
CT Chest	1	1		2	0.441
XR Ribs	1	1		2	0.441
CBC DIFF	3			3	0.441
CT Pelvis	3			3	0.441
NM Lung	3			3	0.441
Urinalysis	3			3	0.441
BRUP		1		1	0.294
C SPOT		1		1	0.294
CKMP		1		1	0.294
CT Abdomen w/c		1		1	0.294
CT Chest w/c		1		1	0.294
CT Lumbar		1		1	0.294
CULTURE URINE?		1		1	0.294
D-DMIER		1		1	0.294
FERRITIN?		1		1	0.294
Glu		1		1	0.294
SED RATE WOST		1		1	0.294
T3 TOT		1		1	0.294

URINE DRY SCREEN		1		1	0.294
BLOOD CULTURE X2	2			2	0.294
C Diff	2			2	0.294
C Fungus	2			2	0.294
CAFB	2			2	0.294
Calcium	2			2	0.294
CD4/CD8	2			2	0.294
CT Pelvis w/c	2			2	0.294
CULTURE SPUTUM	2			2	0.294
CULTURE URINE	2			2	0.294
Flu A/B Ag	2			2	0.294
FOLATE?	2			2	0.294
HIV 1/2 Scr	2			2	0.294
LDH	2			2	0.294
LIQID PF	2			2	0.294
LIPID?	2			2	0.294
NMGI Bleed	2			2	0.294
O & P	2			2	0.294
PREKLBUMIN?	2			2	0.294
Prot	2			2	0.294
PT	2			2	0.294
PTH	2			2	0.294
Serum Iron	2			2	0.294
Theoph	2			2	0.294
TSH 3RD GEN	2			2	0.294
U Creat	2			2	0.294
U Sodium	2			2	0.294
UA CL	2			2	0.294
URINE CULTURE	2			2	0.294
US Carotid	2			2	0.294
VIT B12	2			2	0.294
WBC Stool	2			2	0.294
2X BLOOD CULTURE	1			1	0.147
ALCOHOL	1			1	0.147
C BLOOD	1			1	0.147
C BLOOD X2	1			1	0.147
C-BLOOD X2	1			1	0.147
CELL COUNT PLERD FLD	1			1	0.147
CFMB	1			1	0.147
CKMB X3	1			1	0.147
CPK X3	1			1	0.147
CRP	1			1	0.147
CT Abdomen/stone	1			1	0.147
CT Pelvis/stone	1			1	0.147
CT Soft tissue neck	1			1	0.147
CULTURE BLOOD X2	1			1	0.147
C-URINE	1			1	0.147
D-DIMER QNT	1			1	0.147
FERRITA	1			1	0.147
Ferritin	1			1	0.147
GLU	1			1	0.147
Hb A 1 C	1			1	0.147

HB A1C	1			1		0.147
HBA1C	1			1		0.147
HGB AIC?	1			1		0.147
K/POTASSIUM	1			1		0.147
MRA Neck	1			1		0.147
MRA Venous Head	1			1		0.147
NM Hepatobiliary	1			1		0.147
NON-GYN C-AWAY?	1			1		0.147
POTASSIUM	1			1		0.147
T3 UPTAKE	1			1		0.147
T4 TOT	1			1		0.147
T4 TOTAL	1			1		0.147
TROP X3	1			1		0.147
TSH	1			1		0.147
UA	1			1		0.147
UIT B12	1			1		0.147
UR MICRO	1			1		0.147
URIC ACID	1			1		0.147
URINE CHLORIDE	1			1		0.147
URINE K	1			1		0.147
URINE NA	1			1		0.147
URINE OSMO	1			1		0.147
URINE PROTEIN	1			1		0.147
VIT B-12	1			1		0.147
VIT B12	1			1		0.147
ANA			2	2		0.000
Glu BF			4	4		0.000
GLU POC X2			1	1		0.000
GRAM STAIN			1	1		0.000
IRON TRP			1	1		0.000
LDH BF			2	2		0.000
LDH Glu			2	2		0.000
POC GLU			3	3		0.000
Sp Grav			2	2		0.000
Spec Grav			2	2		0.000
THEOPHYLLINE			1	1		0.000
Grand Total	831	577	65	1473		



FLORIDA HOSPITAL
Heartland Division

P. O. Box 9400, 4200 Sun 'n Lake Blvd.
Sebring, FL 33871-9400
863/314-4466
863/402-3110 FAX

To whom it may concern:

The purpose of this letter is to speak to the benefits of Illness Specific Diagnostics (ISD).

Our hospital staff members have often speculated that diagnostic procedures are over ordered by physicians. There are many theories regarding its cause but none have been investigated to prove this phenomenon either exists or is preventable. HRD came to us in early 2009 to present their method of finding the over use and reducing it significantly. We were very interested and have come to realize the following benefits of implementing their technology:

1. It will lead to faster diagnosis of disease. Often our Emergency Rooms are busy while doctors run test after test looking for the correct diagnosis. The quicker a diagnosis can be found the sooner the patient can begin receiving therapeutic interventions. In this way it will improve clinical outcomes.
2. It will free up limited resources for patients. Freeing up time from diagnostic equipment and technicians will provide more available resources for emergencies and critical patients that need these tests and procedures. This will improve the hospital's ability to treat patients.
3. Finally, performing the *right* test on each patient instead of performing the right test *plus* a number of additional tests will reduce the amount of variable dollars spent per patient. This will create a total reduction in the cost of healthcare while not reducing the patients' access to healthcare resources.

As I opened with, this is just a theory. This grant will allow Florida Hospital Heartland Medical Center to test this product in a live environment to prove its effectiveness.

While we are hopeful, it is important to note that this project's success will result in a significant loss of revenue to the hospital. The hospital is supportive of reducing healthcare costs, but for obvious reasons we are not supportive of reducing the availability of healthcare resources. As a non-profit healthcare provider we use our net income to invest in healthcare equipment, facilities and staff that provide a great benefit to the community. A significant reduction in revenue will leave little available to make the continued improvements our community depends. This grant will greatly offset a definite lost in revenue.

Further, if this test project is successful and wide spread adoption is warranted the hospital will need a mechanism whereby the achieved savings are shared by the hospital and its payers. This will incent the hospital to correctly implement and will protect the hospital's net income.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read 'Isaac Palmer'.

Isaac Palmer, COO



FLORIDA HOSPITAL
Heartland Division

P. O. Box 9400, 4200 Sun 'n Lake Blvd.
Sebring, FL 33871-9400
863/314-4466
863/402-3110 FAX

To whom it may concern:

Illness Specific Diagnostics (ISD) creates an opportunity to pull unneeded cost out of the organization while maintaining a level of service that our community needs.

The principle source of savings is from the variable cost to run diagnostic tests in the hospital. Imaging and laboratory tests make up the majority of expenses related to diagnostics. For every test performed the hospital incurs staff and supply costs that are variable. A much higher cost, and more difficult to determine, is the over head and equipment costs. These are not variable and as such are not realized as savings when a test is avoided.

The variable costs alone represent a significant number but it is greatly over shadowed by the loss of revenue represented by avoiding a test. Tests in the ER are billed separately and the revenue collected from these procedures fund the overhead and equipment needed to operate the hospital. Losing this revenue and the net income it provides will create significant financial challenges. I have included the details of these challenges in the grant application.

This grant will make it possible to test the ISD methodology in a live environment without risk to revenue.

Our organization has already invested a significant amount of hours developing the tables needed to implement ISD. In 2009 we invested close to 600 hours in staff time to abstract a year's worth of medical records in 6 DRGs. This information was used by HRD to create the ISD tables we will use in the demonstration project.

Most concerning to the hospital and its board of directors is the hospital's ability to maintain its net income. This is why the grant money is so necessary. We are moving forward with this demonstration project with hopes of resolving the revenue issue with our payers prior to implementing ISD hospital-wide.

Thank you for your consideration.

Sincerely,

Dima Didenko, CFO



FLORIDA HOSPITAL
Heartland Division

P. O. Box 9400, 4200 Sun 'n Lake Blvd.
Sebring, FL 33871-9400
863/314-4466
863/402-3110 FAX

April 2, 2010

TO WHOM IT MAY CONCERN:

We physicians, in large part, choose our clinical actions based on structured learning that is often many years or decades old. This information may have been derived from patient populations that have little similarity to our patients, and may lead to conclusions and suggestions that are totally irrelevant to our local practice.

We try to be informed of, and follow practice recommendations of well conducted and published studies. These studies, unfortunately, are often conflicting, unclear and occasionally fouled by an over-reliance on experts' opinions. We often change practices based more on anecdotal experiences, impressions and prejudices.

Illness Specific Diagnostics has now presented us an opportunity to be in the vanguard of reasoned practice. The advent of the Electronic Medical Records and Computerized Physician Order Entry will produce an exciting amount of data that should allow careful and thorough analysis. The prior age's analog, hand written media, usually buried these data.

We at Florida Hospital Heartland Division are excited to participate in a local, data-driven process that we hope will create rational heuristics for a gradually increasing set of disease diagnoses.

Our ultimate goal is to achieve a rationalized system for test ordering. This will increase the value of our healthcare delivery to individual patients and our community. An efficiency will be achieved allowing limited resources to provide for a larger number of patients. Also, the myriad risks of unnecessary testing to individual patients will be avoided, including the unneeded financial cost, loss of time, physical pain, exposure to ionizing radiation, or risk of complications.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Edwin Cary Pigman".

Edwin Cary Pigman, MD, FACEP,
Emergency Department Medical Director



Florida Agency For Health Care Administration

Office of Medicaid Cost Reimbursement Planning and Analysis
 Computation of Hospital Prospective Payment Rates
 For Rate Semester January 1,2010 through June 30, 2010

100064 - 2010/01
940.37 / 123.66

Bay Medical Center

Type of Control: Government (4)
 Fiscal Year : 10/1/2006-9/30/2007
 Hospital Classification: Special

Type of Action: Unaudited Cost Report [1]

County: Bay (3)
 District 2

Type of Cost/Charges	Total		Medicaid		Statistics (E)	
	Inpatient (A)	Outpatient (B)	Inpatient (C)	Outpatient (D)		
1. Ancillary	59,507,072.00	65,694,937.00	6,918,537.00	5,203,227	Total Bed Days	150,745
2. Routine	42,578,914.00		8,420,544.00		Total Inpatient Days	84,882
3. Special Care	20,719,632.00		1,400,483.00		Total Newborn Days	1,272
4. Newborn Routine	657,953.00		349,151.00		Medicaid Inpatient Days	15,896
5. Intern-Resident	0.00		0.00		Medicaid Newborn IP Days	5
6. Home Health					Medicare Inpatient Days	48,741
7. Malpractice					Prospective Inflation factor	1.1028093246
8. Adjustments	-1,191,800.98	-634,157.02	-164,958.35	-50,227.05	Medicaid Paid Claims	37,992
9. Total Cost	122,271,770.02	65,060,779.98	16,923,756.65	5,152,999.95	Property Rate Allowance	0.80
10. Charges	\$464,031,120.00	359,712,571.00	\$50,487,486.00	27,828,986.00	First Semester in effect:	2008/07
11. Fixed Costs	16,561,424.00		1,801,915.06		Last Rate Semester in Effect:	2010/01

Ceiling and Target Information							
	IP (F)		County Ceiling Base	OP (G)		Inflation/FPLI Data (H)	
	1,207.01	172.15		Exempt	Exempt	Semester DRI Index	1.8450
1. Normalized Rate	2009/01	2009/07	Variable Cost Base	Exempt	Exempt	Cost Report DRI Index	1.673
2. Base Rate Semester	1991/01	1993/01	State Ceiling	1,591.01	173.14	FPLI Year Used	2007
3. Ultimate Base Rate Semester	1.008146	1.014567	County Ceiling	1,382.43	150.44	FPLI	0.8689
4. Rate of Increase (Year/Sem.)							

Rate Calculations			
Rates are based on Medicaid Costs			
		Inpatient	Outpatient
AA	Total Medicaid Cost	16,923,756.65	5,152,999.95
AB	Apportioned Medicaid Fixed Costs = Total Fixed Costs x (Medicaid Charges/Total Charges)	(-) 1,801,915.06	
AD	Total Medicaid Variable Operating Cost = (AA-AB)	15,121,841.59	5,152,999.95
AE	Variable Operating Cost Inflated=AD x Inflation Factor (E7)	16,676,507.91	5,682,776.39
AF	Total Medicaid Days (Inpatient E4+E5) or Medicaid Paid Claims (Outpatient)	15,901	37,992
AG	Variable Cost Rate: Cost Divided by Days (IP) or Medicaid Paid Claims (OP)	1,048.77	149.58
AH	Variable Cost Target = Base Rate Semester x Rate of Increase (G2 x F4)	Exempt	Exempt
AI	Lesser of Inflated Variable Cost Rate (AG) or Target Rate (AH)	1,048.77	149.58
AJ	County Rate Ceiling = State Ceiling (70% for Inpatient & 80% for Outpatient) times the 07 Florida Price Level Index (0.8689) for Bay county	Exempt	Exempt
AK	County Ceiling Target Rate = County Ceiling Base x Rate of Increase (G1 x F4)	Exempt	Exempt
AL	Lesser of County Rate Ceiling (AJ) or County Ceiling Target Rate (AK)	Exempt	Exempt
AM	Lesser of Variable Cost (AI) or County Ceiling (AL)	1,048.77	149.58
AN	Plus Rate for Fixed costs and Property Allowance = (C11/AF) x E9	90.66	
AO	Plus Rate For Return on Equity	0.00	
AP	Total Rate Based On Medicaid Cost Data (AP=AM+AN+AO)	1,139.43	149.58
AQ	Total Medicaid Charges, Inpatient (C10): Outpatient (D10)	\$50,487,486.00	27,828,986.00
AR	Charges divided by Medicaid Days (Inpatient) or Medicaid Paid Claims (Outpatient)	3,175.11	732.50
AS	Rate based on Medicaid Charges adjusted for Inflation (AR x E7)	3,501.54	807.81
AT	Prospective Rate (Lesser of rate based on Cost (AP) or Charges (AS))	\$1,139.43	\$149.58
AU	Medicaid Trend Adjustment IP% : 17.470 OP% : 17.326	\$199.06	\$25.92
AV	Final Prospective Rates	\$940.37	\$123.66



Florida Agency For Health Care Administration

Office of Medicaid Cost Reimbursement Planning and Analysis
 Computation of Hospital Prospective Payment Rates
 For Rate Semester January 1, 2010 through June 30, 2010

101338 - 2010/01

1,644.36 / 146.32

Orlando Regional Medical Center

Type of Control: Non-Profit (Other) (3)

Fiscal Year : 10/1/2007-9/30/2008

Type of Action: Unaudited Cost Report [1]

County: Orange (48)

District 7

Hospital Classification: Statutory Teaching Hospital

Type of Cost/Charges	Total		Medicaid		Statistics (E)	
	Inpatient (A)	Outpatient (B)	Inpatient (C)	Outpatient (D)		
1. Ancillary	452,489,409.00	288,647,225.00	57,506,378.00	19,720,259	Total Bed Days	486,414
2. Routine	296,599,718.00		33,918,846.00		Total Inpatient Days	369,222
3. Special Care	62,969,487.00		8,304,085.00		Total Newborn Days	69,103
4. Newborn Routine	53,691,750.00		25,076,835.00		Medicaid Inpatient Days	43,663
5. Intern-Resident	0.00		0.00		Medicaid Newborn IP Days	19,856
6. Home Health					Medicare Inpatient Days	104,163
7. Malpractice					Prospective Inflation factor	1.0341928251
8. Adjustments	-10,038,577.18	-3,346,931.82	-1,447,156.32	-228,661.00	Medicaid Paid Claims	120,436
9. Total Cost	855,711,786.82	285,300,293.18	123,358,987.68	19,491,598.00	Property Rate Allowance	0.80
10. Charges	3,195,148,879.00	1,481,229,975.00	389,799,284.00	93,905,984.00	First Semester in effect:	2009/07
11. Fixed Costs	114,681,725.00		13,990,851.75		Last Rate Semester in Effect:	2010/01

Ceiling and Target Information							
	IP (F)		County Ceiling Base	OP (G)		Inflation/FPLI Data (H)	
	2009/01	2009/07		Exempt	Exempt	Semester DRI Index	1.8450
1. Normalized Rate	1,839.37	172.90	Variable Cost Base	Exempt	Exempt	Cost Report DRI Index	1.784
2. Base Rate Semester	2009/01	2009/07	State Ceiling	1,591.01	173.14	FPLI Year Used	2007
3. Ultimate Base Rate Semester	1991/01	1993/01	County Ceiling	1,540.26	167.62	FPLI	0.9681
4. Rate of Increase (Year/Sem.)	1.008146	1.014567					

Rate Calculations			
Rates are based on Medicaid Costs		Inpatient	Outpatient
AA	Total Medicaid Cost	123,358,987.68	19,491,598.00
AB	Apportioned Medicaid Fixed Costs = Total Fixed Costs x (Medicaid Charges/Total Charges)	(-) 13,990,851.75	
AD	Total Medicaid Variable Operating Cost = (AA-AB)	109,368,135.93	19,491,598.00
AE	Variable Operating Cost Inflated=AD x Inflation Factor (E7)	113,107,741.47	20,158,070.80
AF	Total Medicaid Days (Inpatient E4+E5) or Medicaid Paid Claims (Outpatient)	63,519	120,436
AG	Variable Cost Rate: Cost Divided by Days (IP) or Medicaid Paid Claims (OP)	1,780.69	167.38
AH	Variable Cost Target = Base Rate Semester x Rate of Increase (G2 x F4)	Exempt	Exempt
AI	Lesser of Inflated Variable Cost Rate (AG) or Target Rate (AH)	1,780.69	167.38
AJ	County Rate Ceiling = State Ceiling (70% for Inpatient & 80% for Outpatient) times the 07 Florida Price Level Index (0.9681) for Orange county	Exempt	Exempt
AK	County Ceiling Target Rate = County Ceiling Base x Rate of Increase (G1 x F4)	Exempt	Exempt
AL	Lesser of County Rate Ceiling (AJ) or County Ceiling Target Rate (AK)	Exempt	Exempt
AM	Lesser of Variable Cost (AI) or County Ceiling (AL)	1,780.69	167.38
AN	Plus Rate for Fixed costs and Property Allowance = (C11/AF) x E9	176.21	
AO	Plus Rate For Return on Equity	0.00	
AP	Total Rate Based On Medicaid Cost Data (AP=AM+AN+AO)	1,956.90	167.38
AQ	Total Medicaid Charges, Inpatient (C10): Outpatient (D10)	\$389,799,284.00	93,905,984.00
AR	Charges divided by Medicaid Days (Inpatient) or Medicaid Paid Claims (Outpatient)	6,136.74	779.72
AS	Rate based on Medicaid Charges adjusted for Inflation (AR x E7)	6,346.57	806.38
AT	Prospective Rate (Lesser of rate based on Cost (AP) or Charges (AS))	\$1,956.90	\$167.38
AU	Medicaid Trend Adjustment IP% : 15.971 OP% : 12.581	\$312.54	\$21.06
AV	Final Prospective Rates	\$1,644.36	\$146.32



Orlando Regional Cost Report a modified Report for Demonstration Only

Totals Pre & Post ISD Cost & Charges

Type of Cost/Charges	Inpatient (A)		Outpatient (B)		Medicaid Total Cost & Charges	
	Inpatient (A)	Outpatient (B)	Inpatient (C)	Outpatient (D)	Inpatient (C) ISD	Outpatient (D) ISD
Ancillary	452,489,409.00	67,873,411.35	288,647,225.00	43,297,083.75	\$57,506,378.00	\$2,958,038.85
Routine	296,599,718.00	148,299,859.00	0.00	0.00	\$33,918,846.00	\$0.00
Special Care	62,969,487.00	62,969,487.00	0.00	0.00	\$8,304,085.00	\$0.00
Newborn Routine	53,691,750.00	53,691,750.00	0.00	0.00	\$25,076,835.00	\$0.00
Intern-Resident	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Home Health	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Malpractice	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Adjustments	-10,038,577.18	-1,505,786.58	-3,346,931.82	-502,099.77	-\$1,447,156.32	-\$228,661.00
Total Cost	855,711,786.32	331,328,720.77	285,300,293.18	42,795,043.98	\$123,358,987.68	\$2,923,739.70
Charges	3,195,148,879.00	479,272,331.85	1,481,229,975.00	222,184,496.25	\$389,799,284.00	\$14,085,897.60
Fixed Cost		114,681,725.00				13,990,851.75

Rate Calculations

Type of Cost/Charges	Inpatient		Outpatient	
	Inpatient (ISD)	Outpatient (ISD)	Inpatient (ISD)	Outpatient (ISD)
AA (Total Medicaid Cost)	123,358,987.68	58,749,226.25	19,491,598.00	2,923,739.70
AB (Appropriated Med Fix Cost)	-13,990,851.75	-13,990,851.75		
AD (Total Medi Variable Operating Cost)	109,368,135.93	44,758,374.50	19,491,598.00	2,923,739.70
AE (Variable Operating Cost)	113,107,741.47	46,288,789.77	20,158,070.80	3,023,710.62
AF (Total Medicaid Days)	63,519	63,519	120,436	120,436
AG (Variable Cost Rate)	1,780.69	728.74	167.38	25.11
AH (Variable Cost Target)	Exempt	Exempt	Exempt	exempt
AI (Lesser of Inflated Variable Cost Rate)	1,780.69	728.74	167.38	25.11
AJ (Country Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AK (Country Ceiling Target Rates)	Exempt	Exempt	Exempt	Exempt
AL (Lesser of county Rate Ceiling)	1,780.69	728.74	167.38	25.11
AM (Lessor of AI or AJ)	176.21	176.21	0.00	0.00
AN (Plus Rate for Fix Cost & Property Allowance)	0.00	0.00	0.00	0.00
AO (Plus Rate For Return on Equity)	1,956.90	904.95	167.38	25.11
AP (Total Rate Based on Medicaid Cost Data)	389,799,284.00	58,469,892.60	93,905,984.00	14,085,897.60
AQ (Total Medicaid Charges)	6,136.74	920.51	779.72	116.96
AR (Charges divided by Medicaid Days)	6,346.57	951.99	806.38	120.96
AS (Rate Based on Medicaid Charges adjusted for Inflation)	1,956.90	904.95	167.38	25.11
AT (Prospective Rate)	312.54	144.53	21.06	4.35
AU (Medicaid Trend Adjustment)	1,644.36	760.42	146.32	20.76

ISD % Decrease

53.76%

86%



Florida Agency For Health Care Administration

Office of Medicaid Cost Reimbursement Planning and Analysis
 Computation of Hospital Prospective Payment Rates
 For Rate Semester January 1, 2010 through June 30, 2010

101133 - 2010/01

1,264.11 / 105.31

Tallahassee Memorial Regional M.C.

Type of Control: Non-Profit (Other) (3)

Fiscal Year : 10/1/2007-9/30/2008

Hospital Classification: CHEP

Type of Action: Unaudited Cost Report [1]

County: Leon (37)

District: 2

Type of Cost/Charges	Total		Medicaid		Statistics (E)	
	Inpatient (A)	Outpatient (B)	Inpatient (C)	Outpatient (D)		
1. Ancillary	100,152,857.00	114,054,537.00	11,278,438.00	5,106,814	Total Bed Days	180,438
2. Routine	71,825,672.00		9,701,918.00		Total Inpatient Days	100,477
3. Special Care	15,896,211.00		1,761,325.00		Total Newborn Days	19,476
4. Newborn Routine	10,294,059.00		4,542,819.00		Medicaid Inpatient Days	13,688
5. Intern-Resident	0.00		0.00		Medicaid Newborn IP Days	4,448
6. Home Health					Medicare Inpatient Days	29,448
7. Malpractice					Prospective Inflation factor	1.0341928251
8. Adjustments	-2,461,364.49	-1,416,619.51	-338,888.36	-63,429.41	Medicaid Paid Claims	41,626
9. Total Cost	195,707,434.51	112,637,917.49	26,945,611.64	5,043,384.59	Property Rate Allowance	0.80
10. Charges	\$607,285,079.00	486,912,589.00	\$73,249,816.00	20,322,736.00	First Semester in effect:	2009/07
11. Fixed Costs	20,661,495.00		2,492,158.56		Last Rate Semester in Effect:	2010/01

Ceiling and Target Information							
	IP (F)	OP (F)		IP (G)	OP (G)	Inflation/FPLI Data (H)	
1. Normalized Rate	1,461.98	131.37	County Ceiling Base	Exempt	Exempt	Semester DRI Index	1.8450
2. Base Rate Semester	2009/01	2009/07	Variable Cost Base	Exempt	Exempt	Cost Report DRI Index	1.784
3. Ultimate Base Rate Semester	1991/01	1993/01	State Ceiling	1,591.01	173.14	FPLI Year Used	2007
4. Rate of Increase (Year/Sem.)	1.008146	1.014567	County Ceiling	1,517.51	165.14	FPLI	0.9538

Rate Calculations			
Rates are based on Medicaid Costs			
		Inpatient	Outpatient
AA	Total Medicaid Cost	26,945,611.64	5,043,384.59
AB	Apportioned Medicaid Fixed Costs = Total Fixed Costs x (Medicaid Charges/Total Charges)	(-) 2,492,158.56	
AD	Total Medicaid Variable Operating Cost = (AA-AB)	24,453,453.08	5,043,384.59
AE	Variable Operating Cost Inflated=AD x Inflation Factor (E7)	25,289,585.73	5,215,832.16
AF	Total Medicaid Days (Inpatient E4+E5) or Medicaid Paid Claims (Outpatient)	18,136	41,626
AG	Variable Cost Rate: Cost Divided by Days (IP) or Medicaid Paid Claims (OP)	1,394.44	125.30
AH	Variable Cost Target = Base Rate Semester x Rate of Increase (G2 x F4)	Exempt	Exempt
AI	Lesser of Inflated Variable Cost Rate (AG) or Target Rate (AH)	1,394.44	125.30
AJ	County Rate Ceiling = State Ceiling (70% for Inpatient & 80% for Outpatient) times the 07 Florida Price Level Index (0.9538) for Leon county	Exempt	Exempt
AK	County Ceiling Target Rate = County Ceiling Base x Rate of Increase (G1 x F4)	Exempt	Exempt
AL	Lesser of County Rate Ceiling (AJ) or County Ceiling Target Rate (AK)	Exempt	Exempt
AM	Lesser of Variable Cost (AI) or County Ceiling (AL)	1,394.44	125.30
AN	Plus Rate for Fixed costs and Property Allowance = (C11/AF) x E9	109.93	
AO	Plus Rate For Return on Equity	0.00	
AP	Total Rate Based On Medicaid Cost Data (AP=AM+AN+AO)	1,504.37	125.30
AQ	Total Medicaid Charges, Inpatient (C10): Outpatient (D10)	\$73,249,816.00	20,322,736.00
AR	Charges divided by Medicaid Days (Inpatient) or Medicaid Paid Claims (Outpatient)	4,038.92	488.22
AS	Rate based on Medicaid Charges adjusted for Inflation (AR x E7)	4,177.02	504.91
AT	Prospective Rate (Lesser of rate based on Cost (AP) or Charges (AS))	\$1,504.37	\$125.30
AU	Medicaid Trend Adjustment IP% : 15.971 OP% : 15.952	\$240.26	\$19.99
AV	Final Prospective Rates	\$1,264.11	\$105.31



Tallahassee Memorial Cost Report a modified Report for Demonstration Only

Type of Cost/Charges	Totals Pre & Post ISD Cost & Charges			Medicaid Total Cost & Charges		
	Inpatient (A)	Outpatient (B)	Outpatient ISD (B)	Inpatient (C)	Outpatient (D)	Outpatient (D) ISD
Ancillary	100,152,857.00	15,022,928.55	17,108,180.55	11,278,438.00	5,106,814.00	766,022.10
Routine	71,825,672.00	35,912,896.00	0.00	9,701,918.00	4,850,959.00	0.00
Special Care	15,896,211.00	15,896,211.00	0.00	1,761,325.00	1,761,325.00	0.00
Newborn Routine	10,294,059.00	10,294,059.00	0.00	4,542,819.00	4,542,819.00	0.00
Intern-Resident	0.00	0.00	0.00	0.00	0.00	0.00
Home Health	0.00	0.00	0.00	0.00	0.00	0.00
Malpractice	0.00	0.00	0.00	0.00	0.00	0.00
Adjustments	-2,461,364.49	-369,204.67	-1,416,619.51	-338,888.36	-50,833.25	-9,514.41
Total Cost	195,707,434.51	76,756,829.88	112,637,917.49	26,945,611.64	12,796,035.45	756,507.69
Charges	607,285,079.00	91,092,761.85	486,912,589.00	73,249,816.00	10,987,472.40	3,048,410.40
Fixed Cost		20,661,495.00			2,492,158.56	

Type of Cost/Charges	Rate Calculations		
	Inpatient	Outpatient	Outpatient ISD
AA (Total Medicaid Cost)	26,945,611.64	5,043,384.59	756,507.69
AB (Appportioned Med Fix Cost)	-2,492,158.56		
AD (Total Medl Variable Operating Cost)	24,453,453.08	5,043,384.59	756,507.69
AE (Variable Operating Cost)	25,289,585.73	5,215,832.16	782,374.82
AF (Total Medicaid Days)	18,136	41,626	41,626
AG (Variable Cost Rate)	1,394.44	125.30	18.80
AH (Variable Cost Target)	Exempt	Exempt	exempt
AI (Lesser of Inflated Variable Cost Rate)	1,394.44	125.30	18.80
AJ (Country Rate Ceiling)	Exempt	Exempt	Exempt
AK (County Ceiling Target Rates)	Exempt	Exempt	Exempt
AL (Lesser of country Rate Ceiling)	1,394.44	125.30	18.80
AM (Lesser of AI or AL)	109.93	0.00	0.00
AN (Plus Rate for Fix Cost & Property Allowance)	0.00	0.00	0.00
AO (Plus Rate For Return on Equity)	1,504.37	125.30	18.80
AP (Total Rate Based on Medicaid Cost Data)	73,249,816.00	20,322,736.00	3,048,410.40
AQ (Total Medicaid Charges (Charges divided by Medicaid Days)	4,038.92	488.22	73.23
AS (Rate Based on Medicaid Charges adjusted for Inflation)	4,177.02	504.92	75.74
AT (Prospective Rate)	1,504.37	125.30	18.80
AU (Medicaid Trend Adjustment)	240.26	19.99	3.26
AV (Final Prospective Rate)	1,264.11	105.31	15.54

ISD % Decrease 53.65% 85%



Florida Agency For Health Care Administration

Office of Medicaid Cost Reimbursement Planning and Analysis
 Computation of Hospital Prospective Payment Rates
 For Rate Semester January 1, 2010 through June 30, 2010

100030 - 2010/01

1,771.91 / 178.92

Shands Teaching Hospital

Type of Control: Non-Profit (Other) (3)

Fiscal Year : 7/1/2006-6/30/2007

Type of Action: Unaudited Cost Report [1]

County: Alachua (1)

District 3

Hospital Classification: Specialized: Statutory Teaching

Type of Cost/Charges	Total		Medicaid		Statistics (E)	
	Inpatient (A)	Outpatient (B)	Inpatient (C)	Outpatient (D)		
1. Ancillary	355,540,429.00	175,406,180.00	57,785,575.00	22,152,492	Total Bed Days	324,966
2. Routine	181,052,351.00		34,309,605.00		Total Inpatient Days	250,772
3. Special Care	73,733,105.00		7,875,749.00		Total Newborn Days	28,499
4. Newborn Routine	19,333,644.00		12,478,922.00		Medicaid Inpatient Days	45,241
5. Intern-Resident	0.00		0.00		Medicaid Newborn IP Days	13,186
6. Home Health					Medicare Inpatient Days	96,028
7. Malpractice					Prospective Inflation factor	1.1154776300
8. Adjustments	-7,996,017.08	-2,227,474.92	-1,427,995.43	-281,313.47	Medicaid Paid Claims	115,443
9. Total Cost	621,663,511.92	173,178,705.08	111,021,855.57	21,871,178.53	Property Rate Allowance	0.80
10. Charges	1,434,928,466.00	537,805,993.00	246,427,937.00	64,042,044.00	First Semester in effect:	2008/07
11. Fixed Costs	51,115,853.00		8,778,398.72		Last Rate Semester in Effect:	2010/01

Ceiling and Target Information

	IP (F)		OP (F)		IP (G)		OP (G)		Inflation/FPLI Data (H)	
1. Normalized Rate	2,201.93	238.39	County Ceiling Base	Exempt	Exempt	Semester DRI Index	1.8450			
2. Base Rate Semester	2009/01	2009/07	Variable Cost Base	Exempt	Exempt	Cost Report DRI Index	1.654			
3. Ultimate Base Rate Semester	1991/01	1993/01	State Ceiling	1,591.01	173.14	FPLI Year Used	2007			
4. Rate of Increase (Year/Sem.)	1.008146	1.014567	County Ceiling	1,410.43	153.49	FPLI	0.8865			

Rate Calculations

Rates are based on Medicaid Costs		Inpatient	Outpatient
AA	Total Medicaid Cost	111,021,855.57	21,871,178.53
AB	Apportioned Medicaid Fixed Costs = Total Fixed Costs x (Medicaid Charges/Total Charges)	(-) 8,778,398.72	
AD	Total Medicaid Variable Operating Cost = (AA-AB)	102,243,456.85	21,871,178.53
AE	Variable Operating Cost Inflated=AD x Inflation Factor (E7)	114,050,288.93	24,396,810.39
AF	Total Medicaid Days (Inpatient E4+E5) or Medicaid Paid Claims (Outpatient)	58,427	115,443
AG	Variable Cost Rate: Cost Divided by Days (IP) or Medicaid Paid Claims (OP)	1,952.01	211.33
AH	Variable Cost Target = Base Rate Semester x Rate of Increase (G2 x F4)	Exempt	Exempt
AI	Lesser of Inflated Variable Cost Rate (AG) or Target Rate (AH)	1,952.01	211.33
AJ	County Rate Ceiling = State Ceiling (70% for Inpatient & 80% for Outpatient) times the 07 Florida Price Level Index (0.8865) for Alachua county	Exempt	Exempt
AK	County Ceiling Target Rate = County Ceiling Base x Rate of Increase (G1 x F4)	Exempt	Exempt
AL	Lesser of County Rate Ceiling (AJ) or County Ceiling Target Rate (AK)	Exempt	Exempt
AM	Lesser of Variable Cost (AI) or County Ceiling (AL)	1,952.01	211.33
AN	Plus Rate for Fixed costs and Property Allowance = (C11/AF) x E9	120.20	
AO	Plus Rate For Return on Equity	0.00	
AP	Total Rate Based On Medicaid Cost Data (AP=AM+AN+AO)	2,072.21	211.33
AQ	Total Medicaid Charges, Inpatient (C10): Outpatient (D10)	\$246,427,937.00	64,042,044.00
AR	Charges divided by Medicaid Days (Inpatient) or Medicaid Paid Claims (Outpatient)	4,217.71	554.75
AS	Rate based on Medicaid Charges adjusted for Inflation (AR x E7)	4,704.76	618.81
AT	Prospective Rate (Lesser of rate based on Cost (AP) or Charges (AS))	\$2,072.21	\$211.33
AU	Medicaid Trend Adjustment IP% : 14.492 OP% : 15.337	\$300.30	\$32.41
AV	Final Prospective Rates	\$1,771.91	\$178.92



Shands Teaching Hospital Cost Report a modified Report for Demonstration Only

Type of Cost/Charges	Hospital Totals Pre & Post ISD Cost & Charges			Medicaid Total Cost & Charges			
	Inpatient (A)	Inpatient A (ISD)	Outpatient (B)	Outpatient (C)	Inpatient (C)	Outpatient (D)	Outpatient (D) / ISD
Ancillary	355,340,429.00	53,331,064.35	175,406,180.00	26,310,927.00	8,667,836.25	22,152,492.00	3,322,873.80
Routine	181,052,351.00	90,526,175.50	0.00	0.00	17,154,802.50	0.00	0.00
Special Care	73,733,105.00	73,733,105.00	0.00	0.00	7,875,749.00	0.00	0.00
Newborn Routine	19,333,644.00	19,333,644.00	0.00	0.00	12,478,922.00	0.00	0.00
Intrn-Resident	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Home Health	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malpractice	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adjustments	-7,996,017.08	-1,199,402.56	-2,227,474.92	-334,121.24	-3,427,995.43	-214,199.31	-42,197.02
Total Cost	621,663,511.92	235,724,586.29	173,178,705.08	25,976,805.76	111,021,855.57	21,871,178.53	3,280,676.78
Charges	1,434,928,466.00	215,239,269.90	537,905,993.00	80,670,898.95	36,964,190.55	64,042,044.00	9,606,306.60
Fixed Cost		51,115,853.00			8,778,398.72		

Rate Category/ Medicaid Cost	Rate Calculations			
	Inpatient	Inpatient (ISD)	Outpatient	Outpatient (ISD)
AA (Total Medicaid Cost)	111,021,855.57	45,963,110.44	21,871,178.53	3,280,676.78
AB (Apportioned Med Fix Cost)	-8,778,398.72	-8,778,398.72		
AD (Total Medl Variable Operating Cost)	102,243,456.85	37,184,711.72	21,871,178.53	3,280,676.78
AE (Variable Operating Cost)	114,050,288.94	41,478,714.10	24,396,810.39	3,659,521.56
AF (Total Medicaid Days)	58,427	58,427	115,443	115,443
AG (Variable Cost Rate)	1,952.01	709.92	211.33	31.70
AH (Variable Cost Target)	Exempt	Exempt	Exempt	Exempt
AI (Lesser of Inflated Variable Cost Rate)	1,952.01	709.92	211.33	31.70
AJ (Country Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AK (County Ceiling Target Rates)	Exempt	Exempt	Exempt	Exempt
AL (Lesser of county Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AM (Lesser of AI or AJ)	1,952.01	709.92	211.33	31.70
AN (Plus Rate for Fix Cost & Property Allowance)	120.20	120.20	0.00	0.00
AO (Plus Rate For Return on Equity)	0.00	0.00	0.00	0.00
AP (Total Rate Based on Medicaid Cost Data)	2,072.21	830.12	211.33	31.70
AQ (Total Medicaid Charges)	246,427,937.00	36,964,190.55	64,042,044.00	9,606,306.60
AR (Charges divided by Medicaid Days)	4,217.71	632.66	554.75	83.21
AS (Rate Based on Medicaid Charges adjusted for Inflation)	4,704.76	705.71	618.81	92.82
AT (Prospective Rate)	2,072.21	830.12	211.33	31.70
AU (Medicaid Trend Adjustment)	300.30	120.30	32.41	3.66
AV (Final Prospective Rate)	1,771.91	709.82	178.92	28.04

ISD % Decrease 59.94% 84%



Jackson Memorial Hospital Cost Report a modified Report for Demonstration Only

Type of Cost/Charges	Hospital Totals Pre & Post ISD Cost & Charges				Medicaid Total Cost & Charges			
	Inpatient (A)	Inpatient-A (ISD)	Outpatient (B)	Outpatient (B)	Inpatient (C)	Inpatient (C) ISD	Outpatient (D)	Outpatient (D) ISD
Ancillary	\$40,164,037.00	81,024,605.55	373,309,901.00	55,996,485.15	201,341,309.00	30,201,196.35	36,268,693.00	5,440,303.95
Routine	370,252,222.00	185,126,111.00	0.00	0.00	122,354,456.00	61,177,228.00	0.00	0.00
Special Care	135,369,849.00	135,369,849.00	0.00	0.00	34,045,312.00	34,045,312.00	0.00	0.00
Newborn Routine	47,044,686.00	47,044,686.00	0.00	0.00	18,458,515.00	18,458,515.00	0.00	0.00
Intern-Resident	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Home Health	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malpractice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adjustments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Cost	1,092,830,794.00	448,565,251.55	373,309,901.00	55,996,485.15	376,199,592.00	143,882,251.35	36,268,693.00	5,440,303.95
Charges	2,958,338,870.00	443,750,890.50	925,793,118.00	198,868,967.70	943,170,382.00	141,475,557.30	70,360,031.00	10,554,004.65
Fixed Cost		82,810,716.00				26,401,510.47		

Medicaid Costs	Rate Calculations			
	Inpatient	Inpatient (ISD)	Outpatient	Outpatient (ISD)
AA (Total Medicaid Cost)	376,199,592.00	143,882,251.35	36,268,693.00	5,440,303.95
AB (Apporportioned Med Fix Cost)	-26,401,510.47	-26,401,510.47		
AD (Total Medi Variable Operating Cost)	349,798,081.53	117,480,740.88	36,268,693.00	5,440,303.95
AE (Variable Operating Cost)	361,758,666.15	121,497,739.31	37,508,822.08	6,068,537.36
AF (Total Medicaid Days)	155,615	155,615	175,176	175,176
AG (Variable Cost Rate)	2,324.70	780.76	214.12	34.64
AH (Variable Cost Target)	Exempt	Exempt	Exempt	exempt
AI (Lesser of Inflated Variable Cost Rate)	2,324.70	780.76	214.12	34.64
AJ (Country Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AK (County Ceiling Target Rates)	Exempt	Exempt	Exempt	Exempt
AL (Lesser of county Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AM (Lessor of AI or AL)	2,324.70	780.76	214.12	34.64
AN (Plus Rate for Fix Cost & Property Allowance)	135.73	135.73	0.00	0.00
AO (Plus Rate For Return on Equity)	0.00	0.00	0.00	0.00
AP (Total Rate Based on Medicaid Cost Data)	2,460.43	916.49	214.12	34.64
AQ (Total Medicaid Charges)	943,170,382.00	141,475,557.30	70,360,031.00	10,554,004.65
AR (Charges divided by Medicaid Days)	6,060.92	908.14	401.65	60.25
AS (Rate based on Medicaid Charges adjusted for Inflation)	6,268.16	940.22	415.39	62.31
AT (Prospective Rate)	2,460.43	916.49	214.12	34.64
AU (Medicaid Trend Adjustment)	366.14	136.38	25.99	4.20
AV (Final Prospective Rate)	2,094.29	780.10	188.13	30.44

ISD % Decrease

62.75%

84%



Bethesda Memorial Cost Report a modified Report for Demonstration Only

Types of Cost/Charges	Totals Pre & Post ISD				Medicaid Total	
	Inpatient (A)	Inpatient A (ISD)	Outpatient (B)	Outpatient ISD (B)	Inpatient (C)	Outpatient (D)
Ancillary	79,844,456.00	11,976,688.40	58,774,467.00	8,816,170.05	\$10,644,984.00	\$4,929,459.00
Routine	56,892,621.00	28,446,310.50	0.00	0.00	\$7,838,328.00	\$0.00
Special Care	13,410,281.00	13,410,281.00	0.00	0.00	\$4,230,908.00	\$0.00
Newborn Routine	7,018,577.00	7,018,577.00	0.00	0.00	\$4,967,353.00	\$0.00
Intern-Resident	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Home Health	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Malpractice	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Adjustments	0.00	0.00	0.00	0.00	\$0.00	\$0.00
Total Cost	157,165,935.00	60,851,836.90	58,774,467.00	8,816,170.05	\$24,681,573.00	\$4,929,459.00
Charges	772,120,498.00	115,818,074.70	467,685,743.00	70,152,861.45	\$107,285,805.00	\$37,606,717.00
Fixed Cost		19,297,230.00			2,681,341.66	

Rates Based on Medicaid Costs	Rate Calculations			
	Inpatient	Inpatient (ISD)	Outpatient	Outpatient (ISD)
AA (Total Medicaid Cost)	24,681,573.00	11,714,172.60	4,929,459.00	739,418.85
AB (Apporportioned Med Fix Cost)	-2,681,341.66	-2,681,341.66		
AD (Total Medi Variable Operating Cost)	22,000,231.34	9,032,830.94	4,929,459.00	739,418.85
AE (Variable Operating Cost)	22,714,284.74	9,326,006.21	5,089,452.63	763,417.89
AF (Total Medicaid Days)	16,711	16,711	46,044	46,044
AG (Variable Cost Rate)	1,359.24	558.08	110.53	16.58
AH (Variable Cost Target)	Exempt	Exempt	Exempt	exempt
AI (Lesser of Inflated Variable Cost Rate)	1,359.24	558.08	110.53	16.58
AJ (Country Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AK (Country Ceiling Target Rates)	Exempt	Exempt	Exempt	Exempt
AL (Lessor of country Rate Ceiling)	Exempt	Exempt	Exempt	Exempt
AM (Lessor of AI or AL)	1,359.24	558.08	110.53	16.58
AN (Plus Rate for Fix Cost & Property Allowance)	128.36	128.36	0.00	0.00
AO (Plus Rate For Return on Equity)	0.00	0.00	0.00	0.00
AP (Total Rate Based on Medicaid Cost Data)	1,487.60	686.44	110.53	16.58
AQ (Total Medicaid Charges)	107,285,805.00	16,082,870.75	37,606,717.00	5,641,007.55
AR (Charges divided by Medicaid Days)	6,420.07	963.01	816.76	122.51
AS (Rate Based on Medicaid Charges adjusted for Inflation)	6,628.44	994.27	843.27	126.49
AT (Prospective Rate)	1,487.60	686.44	110.53	16.58
AU (Medicaid Trend Adjustment)	259.88	119.92	19.15	2.87
AV (Final Prospective Rate)	1,227.72	566.52	91.38	13.71

ISD % Decrease 55.86% 85%