6th Annual Research Day

May 14, 2015

“The Importance of Research in Clinical Practice”

Sponsored by:

SHRP Dean’s Office and SHRP Office of Research &

SHRP Office of Student Affairs and the SHRP Rutgers Alumni Association
Rutgers School of Health Related Professions
6th Annual Research Day

Rutgers SHRP Research Day 2015 is an event sponsored by the Office of Research at SHRP and hosted by members of the Committee on Research. This year, Research Day, is supported in part by a generous donation from “The Arnold P Gold Foundation”, and also by the SHRP Office of Student Affairs, and SHRP Rutgers Alumni Association. The primary goal of Research Day is to foster research endeavors and scholarly activities of students and faculty, and provide a means to share accomplishments with the university community. This year, a special emphasis on the importance of research in clinical practice is highlighted. A panel of speakers will identify the role of research in clinical practice: SHRP alumna Dr. Carrie King, University of Alaska at Anchorage, Associate Professor, Dietetics and Nutrition and Ms. Christine Charles, Independent Consultant and former Director of Clinical Research at Johnson and Johnson Consumer & Personal Products Worldwide. Dr. Scott Parrott, Associate Professor, will moderate the keynote session.

theme

“The Importance of Research in Clinical Practice”

Great Hall & Main Lecture Hall
Robert Wood Johnson Medical School; Piscataway Campus

Committee on Research (2014-2015)
Michelle Zechner, Chair, Department of Psychiatric Rehabilitation and Counseling Professions
Michael Giantini, Chair Elect, Department of Psychiatric Rehabilitation and Counseling Professions
Annette Backs, Department of Psychiatric Rehabilitation and Counseling Professions
Rebecca Brody, Department of Nutritional Sciences
Christine Casile, Department of Allied Dental Education
Giovanna Giacobbe, Department of Psychiatric Rehabilitation and Counseling Professions
James Scott Parrott, Department of Interdisciplinary Studies
Claire O’Connell, Department of Primary Care
Shashi Mehta, Chair Emeritus, Department of Clinical Laboratory Sciences
Masayuki Shibata, Chair Emeritus, Department of Health Informatics
Robert Denmark, (ex-officio) Office of Research
Alexis Fulks, (ex-officio) Office of Research
James Scheirer, (ex-officio) Office of Research
Carrie D. King, PhD, RD, LD, CDE  
*Associate Professor*  
*Dietetics and Nutrition*  
*University of Alaska Anchorage*

Carrie King is currently an Associate Professor of Dietetics and Nutrition at the University of Alaska Anchorage. King has been with UAA for 12 years, during which time she was the Dietetic Internship director at UAA for seven years.

King completed her PhD in Health Sciences – Nutrition Track at the University of Medicine and Dentistry of New Jersey (now Rutgers University) in January 2013. The topic of King’s dissertation research, a comparison of two educational interventions on the research outcome constructs of registered dietitians, originated in observing the struggles of her students, interns and colleagues with learning and applying research knowledge and skills. She wanted to do something to help preceptors and interns feel more confident regarding their research involvement. King’s current research interests are in equipping current and future health care professionals to increase their research involvement, beginning with applying an evidence-based approach to practice.

Christine Charles, RDH, BS  
*Independent Consultant*  
*Former, Director, Clinical Research/Operations*  
*Johnson and Johnson*

Christine Charles is a dental hygiene professional with forty years of clinical research experience in the development and launch of personal and oral care healthcare products from consumer product companies. She has a thorough understanding of the drug and consumer product development process, Good Clinical Practices, and pharmaceutical Standard Operating Procedures, claims development and support, professional communications and publications. She has presented at research meetings and authored over 45 articles.
6th Annual SHRP Research Day Program

9:00 - 10:30  
**Poster Setup**

9:30 - 10:30  
**Breakfast**- Hosted by Office of Student and Alumni Affairs*

10:30 - 10:45  
**Introduction to SHRP 6th Annual Research Day**  
Shashi Mehta, Department of Clinical Laboratory Sciences

Welcome to Annual Research Day  
Michelle Zechner, Chair, SHRP Committee on Research

10:45 - 11:30  
**Student Presentations**  
Introduced by: Christine Casile  
Department of Allied Dental Education

E. Adams  
Department of Biomedical Informatics  
Clinical Decision Support System as A Risk Assessment Tool to Aid in Earlier Diagnosis of Pancreatic Cancer

W. He, D. Bishundeo, M. Chang, A. Pickman  
Department of Clinical Lab Science  
Targeted Therapy for BRAF V600E-mutated Metastatic Melanoma

T. Manuweera, S. Saleh, M. Yarossi, S. Adamovich, T. Tunik  
Department of Rehabilitation and Movement Sciences  
Cortical Activation and White Matter Integrity in Stroke Patients  
Performing Hand Movements with Mirrored Feedback

11:30 - 12:30  
**Keynote Panel: “The Importance of Research in Clinical Practice”**  
**Dr. Carrie D. King**, University of Alaska at Anchorage, Associate Professor, Dietetics and Nutrition  
**Ms. Christine Charles**, RDH, B.S. Independent Consultant and former Director of Clinical Research at Johnson and Johnson Consumer & Personal Products Worldwide.  
**Dr. Scott Parrott**, Moderator

12:30 - 2:15  
**Poster Sessions, Lunch and Career Fair**  
Review of Posters** (Lunch provided for Registrants in Old Student Lounge)

2:15 - 2:30  
**Faculty Interprofessional Presentation**  
Introduced by Michelle Zechner, Department of Psychiatric Rehabilitation & Counseling Professions

V. Singhal*, C. Breen*, C. Gill, M. Zechner, M. McKay, C. Kwiatkowski  
Department of Allied Dental Education*  
Healthy Smiles, Body, and Mind Initiative

* Special thanks to Douglas Lomonoco SHRP Assistant Dean for Student Affairs & the SHRP Office of Student Affairs for the sponsorship of breakfast

** Authors must be present at their respective posters for a review by judges
Program (con’t)

2:30 - 3:30  
**Student Presentations**  
Introduced by Michelle Zechner, Department of Psychiatric Rehabilitation & Counseling Professions

**M. Domingues**  
Department of Primary Care  
*Intervening Beyond the Athlete: A New Strategy for Increasing Concussion Symptom Reporting*

**B. Cole, K. Gill, A. Spagnolo**  
Department of Psychiatric Rehabilitation and Counseling  
*Online Peer Certification for Mental Health Workers in New York*

**W. Romney, S. Perry, N. Salbach, D. Deutsch**  
Department of Interdisciplinary Studies  
*Evidence based practice confidence upon entry to physical therapy school is related to previous research-related experience*

3:30 - 3:40  
**Concluding Remarks**  
Gwendolyn Mahon, PhD, Dean, SHRP

3:40 - 4:00  
**Winners of Research Poster Awards**  
Michelle Zechner, Chair, SHRP Committee on Research

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The judging will be conducted by the members of the Committee on Research, elect SHRP Faculty, and a SHRP alumna, **Anjali Shah, PhD**.

Anjali Shah is Assistant Professor in the department of Health Information Management at Temple University’s College of Public Health. She is also Program Director for M.S. in Health Informatics program at Temple. She received her B.Tech. in Information Technology from SNDT Women’s University (Mumbai), M.S. in Computer Science from University of Maryland, Baltimore County, and Ph.D. in Biomedical Informatics from Rutgers University. Her research interests are in the area of principles of evidence-based decision support, use of analytic and interpretive methods to discover and manage knowledge from clinical data, outcomes research, health care policies and coding standards, and translating health care research into practical applications. She has over ten years of experience in software development in different industries including telecommunications, finance and health care. She has led and delivered several projects, including electronic health record (HER) system at Rutgers School of Dental Medicine. She has done extensive work in the area of graphical user interface development, relational databases, building software for optimizing clinical workflows, and effectively training end users in the use of HER systems.
Recipient of 2015 Excellence in Research Award*

Evan T. Cohen, PT, MA, PhD, NCS
Department of Rehabilitation and Movement Sciences

Dr. Cohen has been a member of the Physical Therapy Program of the Department of Rehabilitation and Movement Sciences since 2005 and is currently an Associate Professor in that Department. He is certified both in Physical Therapy and in Neurologic Rehabilitation Therapy. His major focus within the discipline is on improving the quality of life in patients with Multiple Sclerosis through research and through evidence-based practice. He is an integral part of the doctoral program in Physical Therapy. Dr. Cohen is physically located on the Stratford campus of Rutgers Biomedical and Health Sciences where he maintains his lab, although he has substantial collaborative relationships with practitioners in local settings. He is a frequent collaborator with other members of the SHRP faculty, including Dr. David Kietrys, Dr. Stephanie Muth, and Dr. Susan Gould-Fogerite.

Dr. Cohen is a prolific researcher, being a senior author of 6 peer reviewed articles in major and high impact journal, 3 book chapters, and several dozen research presentations and posters, including a number at national meetings. He has held a UMDNJ Foundation Grant as PI, and has worked on several others grants as a PI and co-PI. He has also been a part of the NIH-funded study in the Center for Complementary and Alternative Medicine.

The focus of Dr. Cohen’s research is on increasing the quality of life among Multiple Sclerosis (MS) patients. Although MS has no cure and is normally progressively debilitating, it has been shown, by Dr. Cohen and others, that some therapeutic intervention can improve mobility and that, in turn, can improve quality of life. Dr. Cohen has approached this issue through clinical research using well-designed studies to advance the understanding of issues associated with fatigue, endurance and gait in MS patients. He also has an interest in the translation of his ideas and methods into clinical practice. Thus some of his work addresses issues concerning the implementation and dissemination of various treatment strategies.

His current research program deals with gait determination in MS patients and is designed to test whether fatigue-related problems are mediated centrally or at the peripheral level.

* Supported by the New Jersey Health Foundation, Inc.
2014: 5th Annual SHRP Research Day
Award Recipients

Undergraduate Scholarship Award
D. Deluca, J. Fonseca
Jackson Shaw Medical Laboratory Sciences Program
Clinical Laboratory Sciences

Undergraduate Research Award
S. Kumari
Cytotechnology Program

Graduate Scholarship Award
K. Reaney-Perrotti
Physician Assistant Program

Graduate Research Award
K. Traughber
Clinical Laboratory Sciences

These students were recognized at the SHRP Convocation on May 18, 2014 and presented with a certificate for their hard work and effort and excellence in research
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**SHRP Faculty Interprofessional Abstracts**

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P2015_0001 :
Dietary Intervention to Decrease Frequency of Migraines

Gross, J.  (Mentor:Erich Vidal )
Physician Assistant, Primary Care
School of Health Related Professions - Rutgers, The State University of New Jersey, Piscataway, New Jersey

Introduction: Migraines are a common debilitating condition that affects almost all aspects of a person’s life. It is hypothesized that a dietary intervention may reduce the number of migraine attacks. This review set out to determine if dietary treatment for people with migraines compared to traditional use of acute and preventative medication to reduce the frequency of migraines. Methods: A search was made using PUBMED and OVID/MEDLINE databases for articles including the terms “migraines, diet, and treatment.” To refine the search further, articles needed to be classified as a clinical trial and the study needed to be less than ten years old. The most current and relevant articles with the best evidence of dietary intervention for migraines looked at dietary interventions only; medication was looked at as an adjunctive variable but not used for comparison. Of the remaining articles, five randomized controlled clinical trials were selected. All trials reviewed had dietary changes as the study intervention and looked at reduction of migraine characteristics and symptoms, especially migraine attacks as the primary outcome. Results: The current evidence was unable to confirm if a dietary intervention reduced the frequency of migraine attacks. However, four of the trials showed statistically significant reduction in migraine attacks and two trials showed reduction in the use of migraine-specific medication while on the dietary intervention. Discussion: Most of the trials did not have a significant power and associated sample size representative of the population. For each respective study, all participants and staff were kept blinded. Intention to treat analysis was performed for most studies. Although some interventions were found to be statistically significant in reducing migraines, the data was tainted because each study suffered a substantial loss rate. Conclusion: Dietary interventions to reduce migraine attacks and reduce the use of migraine-specific medication are showing promising results but the statistical data from the studies reviewed show these dietary interventions are not ready to be transitioned into clinical practice. More research needs to be done with a larger sample size and a patient population with a specific diagnosis of migraine before this treatment option can be recommended for clinical practice.
Online Peer Certification for Mental Health Workers in New York

A Study of Outcomes and Characteristics

Cole, B., Gill, K., & Spagnolo, A.  (Mentor: Amy Spagnolo)
Psych Rehab, Psych Rehabilitation and Counseling Professions
School of Health Related Professions - Rutgers, The State University of New Jersey,
Scotch Plains, New Jersey

In a study of outcomes regarding online certification for peer mental health service providers and residents of New York State with the lived experience of mental illness, researchers compared participant level of education, previous experience with online learning, and work role to post-test scores. The three significant findings that were related to post-test scores accounted for a very small effect in terms of explaining the variance of the entire model (8.5%). Three participant features were significantly correlated to post-test scores; 1) a bachelor’s level of education, or higher, as compared to high school level credentials, 2) previous experience in an online learning environment for academic credit, as compared to no previous online learning experience, and 3) working as an administrator in the field, compared to volunteers, and work roles identified as “other”.
Effectiveness of Instrument-Assisted or Augmented Soft Tissue Mobilization for Patients with Lower Extremity Soft Tissue Conditions: A Systematic Review

Bowen C., Kashdan R., Kelokates S., Ryan J., and Verpeut J. (Mentor:David Kietrys )
Physical Therapy, Rehabilitation and Movement Sci.
School of Health Related Professions - Rutgers, The State University of New Jersey, Stratford, New Jersey

PURPOSE: Review the evidence regarding effectiveness of instrument-assisted or augmented soft tissue mobilization (IASTM/ASTM) for patients with lower extremity (LE) soft tissue conditions.

METHODS: Searches were performed on CINAHL, OvidSP/MEDLINE (1996-current), and PubMed with keywords: instrument-assisted soft tissue mobilization OR augmented soft tissue mobilization OR Graston OR Astym. Duplicates, protocols, abstracts, clinical commentaries, animal studies, and biomechanical or physiological studies were eliminated. Reference lists from retained articles and Graston® and Astym® websites were hand searched. Articles describing treatment outcomes after IASTM/ASTM for individuals with LE soft tissue conditions were retained. Randomized controlled trials (RCTs) were assessed for internal validity (PEDro scale) by five reviewers. Differences in scores were discussed by all reviewers until a consensus was reached. Articles were ascribed a level of evidence (Sackett et al., 2000).

RESULTS: The search yielded 151 citations. After applying exclusion and inclusion criteria, 15 articles remained (level of evidence: 1 article=1b; 1 article=2b; 13 articles=4). Two RCTs, one including subjects with chronic ankle instability and one including subjects with patellar tendinitis, were ascribed PEDro scores of 5 and 3 (out of 10), respectively. The other 13 articles were case studies or case series. In general, all articles reported improvements in symptoms and/or function. None reported harm following treatment.

CONCLUSIONS: We cautiously recommend IASTM/ASTM in conjunction with an individualized rehabilitation program for individuals with chronic ankle instability or patellar tendinitis (Grade B), and for patients with other LE soft tissue conditions, such as other types of tendinopathy, muscle strain, or plantar fasciitis (Grade C). Because the literature to date consists only of case studies, case series, and 2 weak RCTs, further research with rigorous study design is needed to establish the efficacy of IASTM/ASTM compared to other interventions for LE soft tissue conditions.

CLINICAL RELEVANCE: When treating a patient with a LE soft tissue condition, the physical therapist must consider multiple factors when determining to use IASTM/ASTM, including therapist training, resources, patient preferences, and alternative treatments. Recommendations regarding the use of IASTM/ASTM may change as evidence continues to emerge.

KEYWORDS: instrument-assisted soft tissue mobilization, augmented soft tissue mobilization, Graston®, Astym®
Objective: The main purpose of this study was to look at Ischemia modified albumin (IMA) and troponin which are very useful biochemical markers to rule out patient’s suspected of having an acute myocardial infarction.

Design: The types of study designs that were included were cohorts, and case control designs.

Setting: The studies took place in the emergency department and/or intensive care unit of the hospital in various locations of the country such as India, Turkey, Massachusetts, Ukraine, and Switzerland.

Participants: The studies included adult patients in the age range of 30 to 65. These patient’s had a primary complaint of chest pain and/or angina. The size of the participants in the study groups was 60 to 718 patients consisting of both males and females. Studies were included if they had a dropout rate of less than 20 percent. Studies were excluded if patients were less than 30 years of age and found in an inpatient and outpatient clinic. People who were in good health and had medical conditions such as kidney disease, cirrhosis, stroke, skeletal muscle injury, malignancy and trauma were excluded from being included in this systematic review.

Intervention: The intervention in the studies was an IMA index test.

Main outcome measure(s): The primary outcome measurements was the percent sensitivity and percent specificity of both the IMA index test and standard troponin assay.

Results: Ischemia modified albumin compared to a standard troponin assay was found to be very effective in ruling out an acute myocardial infarction based on the percent sensitivity.

Conclusion: Patients that may have a myocardial infarction can have a high mortality rate and they have abnormal findings on the electrocardiogram. Based on numerous clinical studies the new cardiac marker, ischemia modified albumin has been given a great amount of attention and is better for an ischemia than for an infarction.
P2015_0005:
Evidence based practice confidence upon entry to physical therapy school is related to previous research-related experience

Romney W, Perry S, Salbach N, Deutsch D (Mentor:Judith Deutsch)
Health Sciences, Interdisciplinary Sciences
School of Health Related Professions - Rutgers, The State University of New Jersey, Newark, New Jersey

BACKGROUND AND PURPOSE: Evidence-based practice (EBP) skills are a core curricular outcome for entry-level physical therapy (PT) students. Admission pre-requisites and the student’s prior experience and academic preparation may influence their self-confidence in their EBP skills. Therefore, the purpose of this project was to describe and compare students’ EBP self-efficacy and previous experience with research-related activities upon entry to a PT degree program.

METHODS: A cross-sectional online survey of students entering four physical therapy programs (3 American and 1 Canadian; 2 private and 2 public) was conducted. The questionnaire included items about previous research experience and the 11-item evidence-based practice confidence (EPIC) scale. Data reflecting research experience from the four schools were compared using a chi-squared test. Differences in EBP self-efficacy using the EPIC scores were analyzed with a Kruskal-Wallis 1-way ANOVA followed by a Mann-Whitney U post-hoc test. Correlations between previous research experience and scores on the EPIC items were analyzed using a Spearman correlation coefficient. An alpha level of 0.05 determined statistical significance.

RESULTS: Students from the Canadian university had significantly more preparation in conducting literature views (chi square 14, p= .003). Confidence ratings of five questions (EPIC items 2, 3, 8, 9, 11) and the total score were significantly different across schools (range of H= 9-14, p less than 0.01). Canadian students rated higher confidence with asking research questions and applying the literature compared to American students in the public school (range of U= 416 to 482, p less than 0.01). For the Canadian school modest positive correlations were found between self-reported literature review preparation and five EPIC (range of rho= .259 to .456, p=.05 to .01).

DISCUSSION: Students differed in pre-program EBP experience with conducting literature and confidence EBP skills. There were differences across schools in students reports of self-efficacy for both searching and applying the information to patients. Students showed modest positive relationships between prior research experience (literature review and study coordinator)and confidence in patient-related EBP skills. Self-efficacy with EBP skills upon entry to physical therapy school is variable and may inform program admission requirements and curriculum planning to address students learning requirements.
The screening of prostate cancer is usually based on serum PSA level; however, PSA is a marker with low specificity and poor sensitivity for early diagnosis and risk stratification of prostate cancer. We performed a systematic review of publications that evaluated the accuracy and reliability of novel exosomal biomarkers from easily accessible biofluids such as serum, plasma and urine in human subjects when used for diagnosis of early prostate cancer or to risk stratify patients with prostate cancer. We searched PubMed’s-central database (Jan 2009-Jan 2015) and Journal of Extracellular Vesicles for studies pertaining to exosomal biomarkers for prostate cancer. Studies were assessed for methodological quality based on modified STARD criteria. In total, 7 studies evaluated 20 unique biomarkers from serum, plasma and urine. Five of the 7 studies were scored as having good quality. The results of studies indicated that serum miR375 and miR141 performed best for differential diagnosis of prostate cancer. Plasma survivin , and miR107 performed best for early diagnosis of prostate cancer. Urine splice variant transcript AGR2 SV-G and AGR2 SV-H performed best for the accurate and early diagnosis of prostate cancer. In conclusion, published data from serum, plasma and urine exosomal markers suggest that the biomarkers from exosomes may have a great potential to advance the field of cancer and critical care. These exosomal biomarkers need validation in more and larger studies before conclusion can be drawn on their diagnostic potential for prostate cancer.
Shared Decision Making: The Use of Decision Aid Tools in Diabetic Patient Populations

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Introduction: The affordable care act lists patient-centered medicine as one of its key tenants. An essential component of patient-centered medicine is shared decision making (SDM). Tools known as decisional aids are used in SDM to involve patients in their treatment with the goal of better patient satisfaction and improved clinical outcomes.

P: Patients with diabetes
I: Use of decision aids in shared decision-making
C: Traditional primary care
O: Management of risk factors

Methods: A PubMed search was completed in April 2014 using the search terms “diabetes and decision aids.” The results were narrowed using limits and exclusion criteria until 5 relevant articles remained.

Results: Five randomized controlled trials (RCTs) designed to determine to efficacy of decision aids were analyzed for relevant outcomes and factors related to their validity. The five articles differed in the populations they studied, the decision aids they employed, and the outcomes they measured.

Discussion: The outcomes seem to indicate that patients gained knowledge and were more engaged from the use of a decision aid and some studies show a significant reduction in decision conflict and better drug adherence, however the results are conflicted. There was no significant relationship found for use of a decision aid and hemoglobin A1c levels.

Conclusion: While there were no clear-cut results for improved risk factor management, promising trends emerged in knowledge and decision-related outcomes and further studies may be warranted to determine if these outcomes ultimately translate into better risk management over time.
Evaluating the Efficacy of Culturally Based Education Programs for Improving the Self-Management of Diabetes Mellitus Type 2 in Mexican American and African American Adults

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Introduction: Diabetes is much more prevalent among Mexican American and African American individuals compared to those of other ethnicities. In addition, individuals of these populations tend to exhibit poorer control of blood glucose levels. This literature review aims to evaluate the effectiveness of culturally based education programs (I) in improving disease self-management and blood glucose control in Mexican American and African American individuals with diabetes mellitus type 2 (P). Improvement in diabetes self-management will be determined by analyzing reported changes in HbA1c, blood pressure, body mass index (BMI) and weight (O).

Methods: A literature search was carried out in April 2014 using PubMed and OVID databases and the keywords “cultur* AND education AND diabetes type 2”. After applying appropriate limits and exclusion criteria, five articles were selected and analyzed.

Results: All five studies were randomized controlled trials and measured changes in HbA1c as the primary outcome. Four of the studies used a peer-led education model and found significant improvement in HbA1c at the end of the intervention. The majority of the studies did not see significant improvement in blood pressure and BMI.

Discussion: Although some of the studies lacked adequate blinding and one lacked statistical power, all of the intervention models were well structured. Among these studies, females and Mexican Americans were overrepresented. Only one of the studies had follow-up assessments that were more than one month after the end of the intervention and therefore the current results can only be viewed as short-term effects.

Conclusion: While the research studies have shown that culturally based education models can significantly improve HbA1c levels in Mexican Americans and African Americans, further research needs to be conducted in order to assess whether this improvement is sustained in the long-term following completion of the intervention. Further research should also investigate whether these types of interventions have any long-term effect on diabetes-related complications.
P2015_0009:
Stroke Risk in Migraine Patients Using Oral Contraceptives

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Introduction: Both migraine and oral contraceptive use are common in women of reproductive age. Each of these variables is recognized as an independent risk factor for ischemic stroke. An analysis is needed to determine whether the use of oral contraceptives by a woman with migraine poses an increase in stroke risk.

Methods: Several literature searches were performed in Pubmed and Medline in order to find studies that explore this relationship. Seven articles were chosen and analyzed. The studies followed a case-control design to retrospectively identify risk factors common among women with an ischemic stroke while of reproductive age.

Results: Case-control studies focused on assessing the relationship between migraine, oral contraceptive use and ischemic stroke risk were critically appraised. Characteristics such as blinding and the use of objective data collection methods improved the validity and reliability of the studies.

Discussion: Inconsistent results were obtained in the various studies. General agreement was present that migraine and oral contraceptives are each independent risk factors for ischemic stroke. Evidence was inconclusive regarding whether or not the two risk factors combine to cause an even higher risk of stroke.

Conclusion: Further research is needed to find a suitable alternative to Combined Oral Contraceptive(COC) use. Until then, the decision to use or avoid oral contraceptives in patients with a history of migraine should be managed on an individual basis. Evidence was not strong enough to support a definite contraindication to oral contraceptive use in women with migraine.
Increased Endovascular Treatment Success Rates of Unfavorable Intracranial Aneurysms with the Use of the Pipeline Embolization Device

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Introduction: Wide-neck and large intracranial aneurysms pose a severe threat to the affected patient. Rupture of the aneurysm may lead to irreversible neurological damage or death, underscoring the importance of intracranial aneurysm treatment. The traditional endovascular treatment of wide-neck intracranial aneurysms with embolization coils has been criticized based on low success rates and a high percentage of associated stroke and death. The Pipeline Embolization device was introduced in 2011 by Chestnut Medical Technologies, to achieve significantly higher levels of success in the endovascular treatment of intracranial aneurysms. The purpose of this literature review is to determine the impact of the Pipeline Embolization Device in patients with wide neck or unfavorably shaped intracranial aneurysms (P). Specifically, it will explore whether the use of the Pipeline Embolization Device (I) in comparison to other endovascular options such as stents and coils (C), improves the total occlusion/repair success rate of the aneurysm and decreases the rate of stroke and death (O)

Methods: A literature search was completed on April 17, 2014 through PUBMED and TRIP databases. This search yielded four prospective cohort studies and one retrospective cohort study. All of the studies examined patients with wide-neck or previously unsuccessfully treated aneurysms and the use of the Pipeline Embolization Device as the intervention.

Results: The studies demonstrate significant evidence that the Pipeline Embolization Device, when used for wide-neck and giant cerebral aneurysms, is significantly more effective than other endovascular treatments such as embolization coils and stents in increasing success rates and long term positive outcomes.

Discussion: All of the studies had similar objectives, allowing a conclusion to be formed about the research question. Additionally, the studies had high database validity and were overall strong studies due to optimal aneurysm characteristics and adequate follow-up assessments. However, limitations such as gender bias, differences in outcome measurements, and variable follow up rates did exist.

Conclusion: Results from these studies demonstrate that the Pipeline Embolization Device is a superior treatment for unfavorable (wide-neck and giant) and previously untreated aneurysms. Further studies should focus on examining certain risk factors associated with device failure.
The Effects of Abuse/Trauma on Antiretroviral Medication Adherence in HIV-positive Women

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Introduction: The purpose of this literature review is to evaluate the effect of trauma/abuse on antiretroviral medication adherence in HIV-positive women. Underserved women, especially those of color, are specifically targeted by researchers due to the fact that they comprise a large percentage of the HIV population and the issues facing this vulnerable population are unprecedented.

Methods: A literature review search was conducted using both PubMed and Ovid in April of 2014. Search terms included HIV, adherence, domestic abuse, trauma, violence and HAART. A total of five articles were chosen for this literature review based on their study design and relevance.

Results: All of the studies concluded that there was a link between trauma/abuse and medication adherence in HIV-positive women. Three studies discussed the ways in which medication adherence was negatively affected while two studies showed how resilience and a specific sexual risk reduction intervention program could actually increase medication adherence. Certain sequelae, such as drug and alcohol abuse, are known factors contributing to non-adherence in women with history of abuse and were discussed in several of the studies.

Discussion: All of the participants in each of the studies involved HIV-positive women who had experienced trauma/abuse in their lifetime. Most of the studies were a cross-sectional design and therefore relied on medical charts and questionnaires addressing a series of questions to collect and analyze data. The researchers of each respective study concluded that while their results were significant, more research must be done to address this unprecedented topic.

Conclusion: Each of the studies yielded clinically significant results in regards to finding a link between trauma/abuse in HIV-positive women and a positive or negative impact on medication adherence. More studies need to be conducted using larger populations who are followed over an extended period of time. HIV-positive women with a history of abuse/trauma represent a unique population whose needs are specific and should be addressed with sensitivity and the utmost concern by clinicians.
Cardiobacterium hominis Sepsis

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Cardiobacterium hominis is a member of the HACEK group of microorganisms which consists of Haemophilus species, Aggregatibacter actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens and Kingella kingae. These organisms are fastidious, gram negative bacilli which grow slowly in environments with elevated amounts of carbon dioxide and humidity and prefer supplemented media. C. hominis can easily be differentiated from the other HACEK organisms due to its characteristic ability to produce indole. This organism colonizes the normal flora of the oropharynx which includes the nose, mouth, and throat in addition to the gastrointestinal tract. With a very low virulence, this organism is only known to be the cause of a small number of endocarditis cases.

A recent case of Cardiobacterium hominis endocarditis involved a 75 year-old man with a past medical history of coronary artery disease which was treated with a quadruple coronary artery bypass grafting (CABG) and a mitral valve repair. Upon routine examination, the patient complained of episodes of fatigue, sweats and fevers. Chest x-ray revealed an aortic valve vegetation consistent with infective endocarditis. Upon hospital admission, an EKG confirmed aortic valve vegetation in addition to mitral valve thickening. One blood culture bottle grew a gram-negative bacillus on day three of hospitalization and all six blood culture bottles were positive on day four. The risk of stroke is elevated in cases of infective endocarditis. As such, a trans-esophageal echocardiogram (TEE) was performed to rule out the need for surgical intervention. The patient was initially given broad-spectrum antibiotics but after one week, the causative organism was identified as Cardiobacterium and the patient began treatment with a six-week course of ceftriaxone. He was then discharged with a six week oral antibiotic regimen and instructed to follow up with his primary care physician.
INTRODUCTION: Chest pain results in 5-million visits to the emergency department every year. The concurrent measurement of available biomarkers Creatine Kinase-MB and cardiac Troponin I are necessary for the assessment of cardiac injury. The purpose of this study is to explain elevations in the levels of CK-MB and cTnI in diagnosis of myocardial injury.

CASE PRESENTATION: A 65 year old 5’5”, 185lb man with no past medical history of cardiac disease was involved in an automobile accident and suffered cracked ribs along with chest and shoulder bruising. On admission to the ED, he complained of dizziness and chest pain. After several routine tests, the patient was found to possess an increased heart rate along with normal CBC, BMP, and hepatic function ranges and a non-diagnostic ECG. Biological cardiac markers testing, CK, CK-MB and cTnI were measured in the central laboratory. cTnI was also measured in Point-of-Care testing.

LABORATORY INVESTIGATION: cTnI measured in the central laboratory and POCT were within the reference range (0.04- 0.40ng/mL). The total CK and CK-MB values were initially normal, increased at three hours, peaked at six hours (550u/L and 7.2 ng/mL respectively) and decreased to baseline levels after 24 hours. Based on the symptoms and test results presented, cTnI levels show no necrosis in the myocardium. The elevation of total-CK can be attributed to skeletal and muscle trauma received upon impact. CK-MB elevation is associated with vasodilatation and less significant myocardial injury.

DISCUSSION: This study demonstrates that cTnI and CK-MB used collectively are critical to the diagnosis of myocardial injury. By evaluating biomarker levels with the non-diagnostic ECG, it can be concluded that the patient is not suffering from AMI according to the 3rd Universal Definition of Acute Myocardial Infarction published in 2012. Therefore, the patient avoids unnecessary treatment of the administration of high dosages of potentially lethal medication, more invasive procedures, and a lengthy stay in the hospital.
Targeted Therapy for BRAF V600E-mutated Metastatic Melanoma

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Melanoma is a skin cancer of melanocytes, which produces melanin to protect us from UV damage. Many factors including genetic predisposition, sun exposure, tanning bed and family history, contribute to melanoma. It is the fifth and seventh most common cancer that affects men and women, respectively. Metastatic melanoma occurs when the cancer migrates to the lymph nodes, tissues and organs. It is the leading cause of death in skin cancers with an estimation of 9710 deaths in 2014 according to the American Cancer Society.

A 64 year old man presented to his family physician because of unsteadiness in his gait with deviation to the left side. On neurologic examination, he was ataxic and had diminished left peripheral vision with both eyes. A head CT scan with contrast showed multiple enhancing lesions with surrounding edema. No primary tumor was detected. Suspected of having metastatic brain tumors the patient underwent craniotomy with partial removal of the largest lesion. Pathology study revealed tumor cells with pigment depositions. The diagnosis of metastatic melanoma was confirmed by immunohistochemistry. In addition, about 50% of melanomas have BRAF (serine/threonine-protein kinase B-Raf) V600E mutation which constitutively expresses the mitogen-activated protein kinase (MARK) pathway, thereby promoting tumor cell proliferation. The presence of BRAF V600E mutation was detected by real-time PCR-based Cobas 4800 mutation kit with tumor samples.

Target therapy utilizing BRAF inhibitors, e.g., vemurafenib, has a higher response rate and prolonged progression-free survival time compared to conventional chemotherapy. Patients developed resistance and a secondary skin cancer. To address these problems, concurrent inhibition of downstream signal of the mitogen-activated extracellular signal regulated kinase (MEK) has been tested with BRAF inhibitors. Combination therapy has greater survival benefits and received a fast-track approval by FDA in 2014. The other major advances in the treatment of metastatic melanoma are immunotherapy. Ipilimumab, a monoclonal antibody that blocks the activity of a checkpoint protein, cytotoxic T-lymphocyte antigen-4 (CTLA-4), has low toxicity, as well as response rate. Clinical trials with immunotherapy and BRAF inhibition have shown great efficacy in malignant melanoma. In general, these studies highlight the need for more efficacious alternative treatment for metastatic melanoma.
Consumption of High Fructose Corn Syrup and the Increased Incidence of Metabolic Syndrome

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Introduction: The purpose of this literature review is to examine the malignancies of high fructose corn syrup (HFCS) and determine whether it can be linked to the increased prevalence of metabolic syndrome.

Methods: A literature search of PubMed and Ovid conducted in May and July of 2014 yielded six articles that were evaluated for study design and results.

Results: Studies demonstrated statistically significant results that connected high fructose consumption to all metabolic syndrome parameters. While these results were not always statistically significant when compared to glucose control groups, there is enough evidence to point to a trend connecting consumption of large amounts of fructose and metabolic syndrome.

Discussion: Half of the studies included in this review were randomized control trials and 5 out of 6 of the articles were clinical trials. Despite this high level of evidence, most of the studies lacked vigorous subject maintenance and caloric intake was not carefully monitored. However, due to the recent occurrence of the obesity epidemic and increased incidence of metabolic syndrome, these studies were preliminary and were designed to be exploratory in nature. The evidence found warrants further research with more robust study designs.

Conclusion: There is clear evidence presented in this review linking HFCS to an increase in all metabolic syndrome risk factors. However, it is not clear if this is due to fructose alone or increased caloric intake, since when compared with glucose, results were not consistently significant. Additionally, there are many other factors that can account for the increase in metabolic syndrome. More extensive studies that compare glucose and fructose consumption and eliminate possible confounders are recommended.
Intervening Beyond the Athlete: A New Strategy for Increasing Concussion Symptom Reporting

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Background: Concussions are mild traumatic brain injuries that are often attributed to sports participation. Successful concussion diagnosis remains difficult, often due to the propensity for athletes to hide concussion-related symptoms. The National Collegiate Athletic Association (NCAA) has attempted to curb symptom hiding by mandating that all athletes at participating universities view a cognitive-based health education video (“Concussions: Don't hide it. Report it. Take time to recover”) that seeks to stimulate concussion reporting by increasing concussion knowledge. The present study aimed to determine the efficacy of this NCAA educational intervention.

Methods: Participants were 136 NCAA Division I athletes (53% female). They were administered a survey that assessed concussion knowledge, attitudes and beliefs, and subjective norms before viewing the NCAA video intervention. A subset of survey items was administered again to some athletes (n=57) after the intervention. A content analysis of the video was performed. Results were interpreted using the Theory of Reasoned Action.

Results: Pre-intervention knowledge scores (83% ± 12%) did not statistically differ from post-intervention scores (86% ± 9%) (t = -1.41). A regression analysis revealed that knowledge scores were not adequate predictors of behavioral intention. Descriptive analysis of pre-interventional survey responses on athletes’ perceptions of subjective norms suggested athletic trainers as valuable intervention facilitators. Intervention content analysis revealed four main messages. Whereas the interventional messages and design relayed the intended educational objective, attention to behavioral translation was lacking.

Conclusion: This study suggests that the current NCAA intervention incompletely addresses the problem of concussion symptom hiding. Specifically, the NCAA intervention did not appear to increase concussion knowledge nor did concussion knowledge appear to predict symptom reporting intention. Utilizing behavior change theories, such as the Theory of Reasoned Action, to understand the concussion underreporting dilemma may improve intervention efforts by identifying better target points and providing a framework for intervention development.
P2015_0017:
**Hormone replacement therapy and its effects on reducing the risk of atherosclerosis in post-menopausal women**

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Introduction: The purpose of this literature review is to assess if hormone replacement therapy in postmenopausal women is effective in lowering the risk of atherosclerosis.

Methods: An initial literature review was conducted on Ovid and PubMed in April, 2014. This resulted in a total of 5 articles. However, 2 of the articles were research reports and thus their original studies were searched for on PubMed in May, 2014 and evaluated.

Results: Most of the studies resulted in hormone replacement therapy having no effect on atherosclerosis, while 1 study showed a positive effect of hormone replacement therapy on atherosclerosis.

Discussion: More studies need to be done by using a larger population size and a longer time frame. In addition, the study that had differing results had recruited a younger, healthier population group and used a different hormone therapy combination.

Conclusion: The years since menopause, the type of hormone therapy, and the health of the individual's coronary arteries are major factors that come into play when evaluating if hormone therapy for cardiovascular benefit is appropriate. Until further randomized control trials are done on recent findings, healthcare practitioners should refrain from prescribing hormone therapy when used for the purpose of helping to decrease the risk of atherosclerosis.
Maternal Use of SSRI Antidepressants and Pulmonary Hypertension of the Newborn

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Introduction: Pulmonary hypertension of the newborn is a life threatening complication following birth. Suggestions that maternal SSRI antidepressant use during pregnancy may be a risk factor for babies being born with pulmonary hypertension have prompted numerous research studies to be done in this field. The purpose of this literature review was to determine the relationship (if any) between the specific class of drugs and pulmonary hypertension of the newborn.

Methods: PubMed and Google Scholar searches were performed to find five articles that could help answer the research question. All of the studies chosen were cohort or case-control studies.

Results: No consistent trends were seen across the literature. Some of the research found an association between SSRI use late in pregnancy and pulmonary hypertension of the newborn, but there were also contradictory findings.

Discussion: Some of the studies had many weaknesses that made them less valid. One of the main downfalls in most of the studies was having an inadequate power or no mention of a power calculation. Without this there is no way of knowing if the sample sizes were large enough to draw conclusions from.

Conclusion: Although some evidence for SSRI use being associated with pulmonary hypertension of the newborn was found, the results were not consistent. Therefore, no changes to clinical practice should be implemented besides informing all pregnant women of the research done thus far and the possible risks. This allows the mother to make an educated decision with her doctor about the use of medication during pregnancy.
Clinical Decision Support System as A Risk Assessment Tool to Aid in Earlier Diagnosis of Pancreatic Cancer

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Background: Pancreatic cancer is the most aggressive and the most deadly type of cancer. More than 85% of diagnoses are made during the advanced stage. Currently, there is no systematic approach for early diagnosis of pancreatic cancer, hence, a proposal to develop a clinical decision support system in diagnosing pancreatic cancer earlier that later.

Objectives: To develop a clinical decision support system that can identify pancreatic cancer risk levels in individuals, and also provide recommendations and alerts tailored towards each individual’s situation.


Methods: Knowledge and probabilistic basis were used to define the variables and parameters and their respective weighted scores. Five weight groups of 100, 60, 30, 15, and 5 were created with “100” as maximum risk and “5” as minimum risk. Fourteen common risk factors were used and within these risk factors, 87 parameters were defined and categorized into one of the five weight groups. Three risk levels; high risk, moderate risk, low risk and their scores were defined. At the end of the test, the system provides immediate feedback in the form of total risk factor score and other vital information.

Results: Twelve case scenarios were used to validate the system. Among the 12 cases, nine were diagnosed with pancreatic cancer, one was a healthy individual with no diagnosis of any sort and two were diagnosed with other health conditions. The results were as follows; two low risk patients, three moderate risk patients and seven high risk patients. In some cases, recommendations and alerts were generated for patients to seek immediate medical attention, screen for pancreatic cancer or get a scan of the pancreas.

Conclusion: The results show that it is possible to design a system that can identify high risk individuals for pancreatic cancer. The impact the system will have on patient care and whether the system can reduce the number of misdiagnoses, delayed diagnoses, or lead to earlier diagnoses of pancreatic cancer is uncertain. Further studies will need to be conducted to expand the knowledge in using clinical decision support system for pancreatic cancer risk assessment.
Perceived vs. Accuracy: A Comparison of Patient Perceived STI Testing vs. Actual Tests Performed in a Community Health Center

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Objectives: This study aimed to determine whether patients referred to the onsite LabCorp at a community health center (CHC) in San Antonio, TX, could accurately identify for which sexually transmitted infections (STIs) they had been tested during their visit. All staff directly involved with the treatment of patients were blinded to the purpose of the study, survey content, and participants response.

Methods: Patients receiving STI testing that included at least one blood test, STI-related or not, were recruited at the end of their visit from LabCorp during the 3-week study period and provided with a consent form and an eight-item survey. The survey elicited a series of demographic questions (age, gender, race, and highest level of education), the reason(s) for their visit, which STIs (Gonorrhea, Chlamydia, Syphilis, HIV/AIDS, Herpes, HPV, Hepatitis B, Trichomoniasis, or other) had been completed for during their visit, the referring provider, and whether their concerns had been addressed. Surveys were linked to patient charts through a letter provided to patients during check-in and listed on completed surveys in order to match patient perception with actual testing each patient received. Descriptive statistics, frequencies, and other data were analyzed using Microsoft Excel.

Results: During the study period, 101 patients were asked to participate. Only one person declined. Majority of surveys were completed in English (70%). Most of the respondents were Hispanic (55%), females (87%), between 25-34 years old (38%), with at least a high school diploma (30%). Of the participants, 66% stated either they were not tested for or did not know they were tested for STIs during their visit. Only 10% were able to accurately identify all STIs they were tested for during their visit. HIV (94%), Gonorrhea (62%), and Chlamydia (65%), were the most commonly tested STIs.

Conclusions: This study supplements previous research that patients are generally unaware of which STIs they are being tested for during their visit. In order to help prevent and control the increasing rates of STIs, one must evaluate and identify steps along the process of STI screening to identify where difficulties may occur and develop ways to correct those complications.
In persons with Parkinson’s Disease, is LSVT-Big therapy more effective than traditional therapy for improving Gait and TUG speed?

Purpose: To evaluate the evidence supporting the use of the LSVT-BIG treatment compared to conventional physical therapy or similar amplitude oriented treatments to improve gait and mobility for patients with Parkinson’s Disease.


Results: Five articles met the inclusion criteria (Ebersbach et al. in 2010, Ebersbach et al. in 2014, Farley et al., Lowry et al., Janssen et al.). Their levels of evidence varied from 1b-4. Each study had a population consisting of Parkinson’s patients with varying Hoehn & Yahr (H&Y) scores, ranging from I to III. Mean participant age ranged from 58 to 70 years old. Three studies had participants stratified by H&Y score using an amplitude training method (LSVT), while the two other studies compared the LSVT protocol groups to other therapeutic methods. In one study (Ebersbach et al., 2014) LSVT was found to be comparable to other similar methods of amplitude-oriented training for the same outcome measures.

Conclusion: There is modest evidence that LSVT-BIG demonstrates a significant and clinically meaningful difference in improving TUG and gait speed in those with Parkinson's Disease. One of the two studies comparing LSVT-BIG to other forms of treatment showed that LSVT-BIG is superior to a conventional home therapy and Nordic walking program in functional outcomes. Evidence suggests that LSVT may not be more effective than other amplitude training protocols in improving TUG and gait speed. LSVT-BIG has shown greater effects on mild to moderately impaired individuals with Parkinson’s Disease. Further research is warranted before implications can be made concerning the use of LSVT-BIG in severely impaired persons. Based on the evidence, amplitude-training appears to be a viable treatment for restoring functional movement in patients with Parkinson’s Disease.
Examination of Multidimensional Factors Related to Non-Adherence in Adult Kidney Transplant Recipients

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Background: Immunosuppressant medication (ISM) non-adherence is associated with poor transplant recipient outcomes and allograft loss. Identifying recipient characteristics and risk factors that are associated with non-adherence is essential to developing interventions to address modifiable behaviors. Understanding these behaviors can promote allograft survival, improve overall quality of life, and benefit future transplantation health studies and interventions.

Methods: A single center cross-sectional study recruited first time adult kidney transplant recipients who were at least six months post-transplantation and whose allografts were still functioning. Self-reported adherence was measured using the Immunosuppressant Therapy Adherence Scale (ITAS, where scores less than 12 indicated non-adherence). Using logistic regression analysis, predictors of non-adherence were identified among the multidimensional factors in a Semi-Structured Interview Questionnaire (SSIQ) that we developed. The questions in the SSIQ inquired regarding recipients’ therapy, healthcare team, health status, individual beliefs, and demographic characteristics.

Results: Among the 217 participants who completed the SSIQ, 58.5% were male and 57.6% were white, at a median 2.92 years post-transplant. Nearly two-thirds of participants were adherent (61.3%; ITAS=12) and the remainder were non-adherent (38.7%; ITAS less than 12). Potentially modifiable predictors significantly associated with non-adherence included: delay in purchasing ISM (OR 2.34, 95% CI 1.12-4.85), having at least one major life stressor (OR 1.95, 95% CI 1.09-3.51), confusion in taking ISM (OR 3.79, 95% CI 1.43-10.05), not utilizing an ISM reminder system (OR 2.48, 95% CI 1.11-5.54), and low satisfaction with the transplant physician (OR 2.92,95% CI 1.42-6.00). These associations were adjusted for age, gender, education level and average annual income.

Conclusion: Our findings support a conceptual framework that ISM adherence is influenced by multiple dimensions extending from the individual recipient level to external factors. Many of these associated factors are potentially modifiable. Future research could test interventions aimed at addressing these factors, with the goal of improving adherence and thereby prolonging allograft survival.
Enhancing Palliative Care Competency for Respiratory Care Practitioners

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A study out of UCLA, published in the journal RESPIRATORY CARE, notes that a proportion of surveyed respiratory care practitioners (RCP) are knowledge-deficient about palliative care and their role in delivering palliative care to patients. This research analyzes this issue and educates the audience about the importance of palliative care to the RCP and promotes discussion of end-of-life issues among healthcare providers. This discussion is centered on the delivery of palliative care to adult populations, primarily COPD patients, and should inspire RCPs to acknowledge their role and contribute to the delivery of palliative care.
Virtual reality-augmented rehabilitation in the acute phase post-stroke for individuals with flaccid upper extremities: A feasibility study

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Rehabilitation of individuals with flaccid or severely affected upper extremities is challenging due to their limited motor ability and few options for therapeutic training. This initial study tested the feasibility of training individuals with severe hemiparesis using virtual reality (VR) based mirrored feedback and pinch force modulation tasks. The results demonstrated that the simulations were well tolerated early after stroke. Priming effects of the mirror tasks were suggested by increased maximal pinch force immediately after training. Furthermore, despite having no clinically observable movement distally, the subjects were able to consciously activate their muscles as shown by force traces and EMG recorded during the pinch trace task. Motor learning was also suggested by the decrease in Root Mean Square Error (RMSE) during this task. Lastly the benefits of using objective, technology based measurement tools was demonstrated by the ability of the force sensor to detect small changes in force production that could not be measured with a clinical scale of impairment.
Motor behavior is associated with primary motor cortex excitability during relearning of a visuomotor gain

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Recently, savings has been posited to relate to memory of actions rather than of cerebellar-dependent internal models [Huang 2011]. In addition, retention and savings of adapted reaching behavior to a visuomotor rotation has been shown to depend on the form of the unlearning phase interposed between learning and re-learning [Kitago 2013]. We investigated the possible role of the primary motor cortex (M1) in the learning, unlearning, and relearning of a visuomotor gain by tracking its excitability throughout these phases of adaptation. Healthy right-handed subjects (N=23) participated after providing informed consent. Seated with hands under a display, data glove equipped subjects were given visual feedback of a virtual hand and instructed to make ballistic target directed right index finger flexion movements. Subjects completed 2 baseline blocks (40 trials), 4 initial learning blocks (30 trials), 5 unlearning blocks (30 trials), and 4 re-learning blocks (30 trials). Discordant visual feedback was provided by applying a 0.5 (low gain) scaling factor to the glove data during learning and relearning blocks. Subject groups experienced either reversion to veridical gain (Washout), or a period of inactivity (Time). In a third condition (Control), extent was manipulated through changes in target angle. M1 excitability was assessed using transcranial magnetic stimulation to obtain motor evoked potentials (MEPs) from the first dorsal interosseous following each block. In the Washout group, we observed canonical adaptation, deadaptation (with after effects) and re-adaptation (with savings) behavior. The Time group displayed relearning indicative of residual adaptation. Patterns of M1 excitability were similar for Washout and Time during baseline, learning and unlearning. During relearning, however, despite equal asymptotic performance, MEPs were significantly larger in the Washout group (Students t-test, p less than .05), suggesting increased excitability was related to savings rather than residual adaptation. Control subjects increased peak velocity to meet the demand of larger target angles in the learning and re-learning blockswith nominal excitability change. This dissociation between excitability and performance implies that M1 excitability assays learning rather than motor performance. We suggest that for visuomotor gain adaptation M1 excitability relates to both active selection and retrieval of actions when target errors are present.
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Cortical Activation and White Matter Integrity in Stroke Patients Performing Hand Movements with Mirrored Feedback

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We have shown previously that in persons with chronic stroke, activation magnitude and effective connectivity of neural networks recruited during mirror visual feedback of unaffected hand motion involve ipsi- and contralesional sensorimotor cortices and contralesional superior parietal lobe. These findings raise the question of whether these modulations are dependent on the integrity of the underlying white matter. Here, we combined functional magnetic resonance imaging (fMRI) mapping of mirror-based activation with diffusion tensor imaging (DTI) to describe the relationship between (a) activation magnitude, (b) effective connectivity, and (c) white matter integrity related to mirror visual feedback in persons with chronic stroke. Nine chronic stroke subjects (5F, 54±13 years old) performed movement of the unaffected hand during fMRI with real-time Veridical or Mirror feedback presented in virtual reality. fMRI and DTI were acquired for each subject. Mirror feedback was associated with increased activity in ipsi- and contralesional fronto-parietal sensorimotor areas. Effective connectivity measures (analyzed with dynamic causal modeling, DCM) revealed that the ipsilesional Motor cortex (iM1) was significantly modulated by the contralesional Superior Parietal Lobe (cSPL) and contralesional Motor cortex (cM1) in the presence of mirror feedback. Fractional Anisotropy (FA), a measure of white matter integrity, of the cerebral arcuate fibers connecting cSPL with cM1 were positively correlated with the mirror-based modulation of cM1 by cSPL, and with the modulation of iM1 by cM1. This indicates that the structural connectivity of cSPL-cM1 may be a marker for the degree of mirror-based modulation of this network. Interestingly, FA values circumscribed to the iM1 region of interest (as a marker of white matter integrity within iM1) were negatively correlated with the intensity of mirror-based activation in cM1. This latter observation suggests that cM1 may be more sensitive to modulation by mirror visual feedback in those with greater damage to the iM1 white matter. This finding indicates that effective connectivity elicited by mirror feedback is stronger in individuals with severe functional impairment, and the underlying functional and structural neural connectivity mediating mirror feedback training and potentially identify biomarkers in individuals with stroke regarding who may be more likely to benefit from this training.
Background: Papillary thyroid carcinoma (PTC) is the most common human thyroid malignancy in United States. Worldwide, the frequency of PTC has been increasing over past few years. The malignancy is commonly observed between 25-30 and 55-60 age range. Prognosis for papillary carcinoma is characteristically good following detection at a young age and appropriate treatment. One characteristic model of papillary carcinoma include metastasis to neck lymph node.

Case Study: A 61-year-old female presented to her primary physician with left neck mass. Fine Needle Aspiration (FNA) biopsy was performed with 22-gauge needle under ultrasound guidance. The aspirates, described as 0.3 ml of reddish fluid were placed in a thyroglobulin solution and submitted for cytological examination. After the cytological pre-operative diagnosis was made from FNA biopsy, the patient underwent a neck dissection and excision of left skull base. Additional tests were also performed to support the microscopical findings and to confirm the follicular hyperplasia. CD 3, Gross05/2, CD 20, cytokeratin bro, VABBCL2, bcl2, and bcl6 as well as positive and negative controls immunomarkers were utilized.

Results: Patient was diagnosed with metastatic carcinoma to the left neck lymph node that was consistent with papillary carcinoma as primary based on the clinical presentation and cytological features.

Discussion: Papillary thyroid carcinoma, cytologically, is characterized by true papillae formations, nuclear inclusions and grooves, fine powdery chromatin. Colloid is scanty and psammoma bodies can sometimes be appreciated. Studies have shown that the BRAF V600E mutation on exon 15 is associated with classic type of papillary thyroid carcinoma. Also, overexpression of S100A4 gene is found in 86% of metastatic papillary carcinoma. Papillary thyroid carcinoma with lymph node metastasis has a higher expression of the vascular epithelial growth factor-C protein and cyclin D1. Treatment options include the dissection or percutaneous laser ablation.
Atypical Spindle Cell Neoplasm of the Lung with HMB45 Expression

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Background: Spindle cell neoplasm of the lung is a very rare pulmonary malignancy. It can also be referred to as sarcomatoid carcinoma of the lung. Its incidence is estimated in 0.3-1.3% of all lung malignancies. Sarcomatoid carcinoma is classified as a group of poorly differentiated non-small cell lung carcinoma that shows sarcoma or sarcoma-like (spindle) differentiation.

Case Study: On September 11, 2014, a 34 year old female was admitted into a New Jersey Hospital to have an FNA performed on the right middle lobe lung. Based on the findings from this aspiration, the patient case was reported as benign bronchial epithelial cells, pulmonary alveolar macrophages and no pneumocystis carinii, aspergillus or viral inclusions on the Pap stained slides. On September 25, 2014 the patient returned with the same right lung mass and was subjected to a needle biopsy. The preliminary findings of the needle biopsy, was that of a spindle cell lesion. The case was sent for consultation. The sampled right lung mass through needle biopsy obtained atypical cells and additional tissue core was requested.

Results: The final interpretation was that of an atypical spindle cell neoplasm with HMB-45 expression with focal pigment production; positive for HMB45 and negative for S100 and SOX-10 immunostains which are stains associated with melanoma.

Discussion: Lung tumors of rarer types include carcinoids, carcinosarcomas, pulmonary blastomas, and giant/spindle cell carcinomas. Because of its frequency, special immunohistochemical stains are used to identify this malignancy. The cells are singly, fusiform, and with indistinct cell borders. Nuclei are often fusiform and cytoplasmic tails may fade into the background. It may be possible to determine the tissue of origin if there is evidence of collagen, cartilage, bone, fat etc. Due to its rare nature, it is difficult to pin point a specific treatment or evaluate a definite prognosis. Treatment options may include resection, cryotherapy, radiotherapy, hormone therapy and chemotherapy.
Objective: The purpose of this study was to conduct a systematic review and meta-analysis of the diagnostic accuracy of the FilmArray® Blood Culture Identification (BCID) panel (Biofire Diagnostics, Inc. Salt Lake City, Utah) in comparison to routine culture techniques for the identification of microorganisms from positive blood cultures.

Methods: A systematic review of studies published from 2012 to present identified nine studies of diagnostic accuracy. Search syntax included MeSH and free-text terms, as well as diagnosis related search terms found under the “clinical queries” filters on the PubMed website. Data was extracted from studies using the AHRQ Systematic Review Data Repository (SRDR) platform. Extracted data included study design and characteristics, patient populations, baseline details, and measures of diagnostic accuracy.

Results: Results were collected and analyzed within the specifications of the FilmArray, i.e., diagnostic accuracy measures were determined based on the selection of microorganisms that the BCID was designed to detect. Four outcomes were assessed and pertained to the identification of Gram negative and positive organisms, Candida species, and antimicrobial resistance genes. Meta-analyses and subgroup analyses were conducted using OpenMeta[Analyst] software. Pooled positive likelihood ratios (LR+), negative likelihood ratios (LR-), and diagnostic odds ratios (DOR) are reported. Overall, pooled estimates demonstrated that the BCID performs well (DORs are 1761.0, 829.5, 493.4, and 1825.1 for Gram negative and positive organisms, yeasts, and resistance genes respectively), and is highly likely to differentiate disease states based on microorganism classification. However, heterogeneity was high for several measures (I² values are 86.2% and 58.2% for LR+ values for Gram negative identification and resistance gene identification respectively). Subgroup analyses suggested that heterogeneity was attributable to specimen collection methods such as variation in blood culture bottle type, and variation in reference method utilization.

Discussion/Conclusion: All nine studies reported a small sample size as a limitation which coincided with the large confidence intervals that were calculated from the meta-analysis. Additional direct comparison studies are needed in order to attain a more accurate assessment of the FilmArray’s capability to identify rarely encountered microorganisms such as Listeria monocytogenes, Neisseria meningitidis, Acinetobacter baumannii, Candida species, and Klebsiella pneumoniae carbapenemase (KPC) positive Enterobacteriaceae.
Acute Erythroid Leukemia (AEL) is an aggressive erythroid malignancy that accounts for less than 5% of all Acute Myeloid Leukemias (AML). The World Health Organization (WHO) classifies AML according to blood cell morphology, immunophenotyping, molecular, genetic, clinical features, and differential diagnosis. According to the 2008 WHO classification for AML, Acute Erythroid Leukemia falls under the Acute Myeloid Leukemia- Not Otherwise Specified (AML-NOS) category. AEL further divides into two subtypes: Acute Erythroleukemia and Pure Erythroid Leukemia (PEL). Acute Erythroleukemia is identified when 50% or more nucleated cells in the bone marrow are normoblasts and more than 20% of the cells are myeloblasts. PEL is recognized when there is an increase of 80% or more of erythroid precursors. Moreover, PEL is extremely uncommon—there are currently no known mutations to confirm the diagnosis and it has poor prognosis with short survival times. Studies show that the presence of complex karyotypes, specifically on chromosomes 5 and 7, automatically place the patient with PEL in a poor prognosis category. PEL is often seen in patients with a history of Myelodysplastic Syndrome (MDS) and those who have undergone chemotherapy treatments. It is more common in males than in females and the clinical symptoms can vary. Treatment options depend on both the severity of the neoplasm, and the presence of high risk mutations.

In 2007, a 51-year old male patient with a medical history of multi-centric angioendothelioma, elevated PSA levels, proptosis, and brain lesions, was diagnosed with Polycythemia Vera (PV). During that time, the patient received chemotherapy and whole brain radiotherapy. The initial laboratory findings at the time of diagnosis included an increase in platelet counts, CO2, RDW, and glucose, in addition to the presence of hypochromasia in the peripheral blood. Confirmatory results indicated the presence of the JAK2 V617F mutation, with one normal allele. In 2014, the patient’s hematologic condition progressed to AML-Pure Erythroid Leukemia, with the presence of more than 80% erythroid blasts in the bone marrow. The patient was also positive for the DNMT3A mutation and high risk complex karyotypes, indicating the possibility of an adverse clinical course.
Spindle Cell Neoplasm of the Lung

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Case Report: Spindle cell neoplasm of the lung is a very rare malignancy. This case report is of a 74 year old male who presented to a local hospital with angina pectoris. Imaging tests revealed a mass in the upper lobe of the right lung. A fine needle aspiration (FNA) biopsy of the mass was performed. 15ml of bloody material was obtained and a total of 5 smears were prepared and stained with Diff-Quik® and Papanicoloau stain.

Cytologic Findings: The cytologic pattern consisted of uniform population of spindle cells with focal hypercellularity with no necrosis or mitosis seen. The cells tend to be more cohesive than in true sarcoma, but single cells are present. Immunohistochemical stained positive for CD34, Bcl-2, CD99 and desmin. Moreover, it stained negative for MSA, SMA, CD117, S100, pancytokeratin and EMA. Based on the cytologic and immunohistochemical findings, a spindle cell neoplasm of the lung most compatible with solitary fibrous tumor was diagnosed.

Discussion: In general, spindle cell neoplasm of the lung is a rare finding with poor prognosis. The treatment and life expectancy depends solely on how advance the neoplasm is. Molecular studies help to confirm the diagnosis and suggests specific treatment. These tumors are partially or wholly circumscribed. Treatments, including preoperative chemoradiotherapy combined with extensive resection and postoperative adjuvant therapy might be reasonable considerations to prolong the life of pulmonary spindle cell neoplasm patients.

Conclusion: This case report is of a rare spindle cell neoplasm of the lung. Regarding the clinical case in study, the patient received lobectomy and chemotherapy because the tumor was found to invade the pleura. In terms of survival, the patient was not follow up. As a result, there was not any information regarding his well-being after the surgery.

Key words: spindle cell neoplasm, FNA, immunohistochemical, molecular tests.
Methicillin resistant Staphylococcus aureus (MRSA) is a gram positive coccus known for its pathogenicity and antibiotic resistance. MRSA is mainly acquired nosocomially, but can also be acquired outside the hospital in the community. MRSA can colonize the nares and any part of the body and although rare, can colonize the prostate and cause bacterial prostatitis, which can lead to sepsis if not treated properly. Those who are more likely to contract MRSA prostatitis are immunocompromised patients, diabetics or those with long term indwelling catheters. Vancomycin is the drug of choice for treating MRSA infections.

In this case, a 51-year old male presented to the Emergency Department (ED) with fever, chills and dysuria. The patient was seemingly healthy with no risk factors. The only history is that the patient went horseback riding two weeks prior in New Mexico. The patient was prescribed Levaquin after the initial acute prostatitis diagnosis however the antibiotic had no effect on the symptoms. Due to the Levaquin failure, the patient was admitted to the hospital and treated with IV Rocephin and Ampicillin. Urine and blood cultures where collected which were reported as positive for MRSA, concluding the infection went septic. Due to the confirmatory MRSA results, the antibiotic regimen was changed to IV Daptomycin. In addition, a CT scan revealed a large prostate abscess which required a transurethreal resection of the prostate (TURP) to drain the abscess. The prostate culture also tested positive for MRSA. Eight days after the appropriate antimicrobial treatment was administered, the WBC count dropped significantly however, the patient developed several complications as a result of the infection. A pleural effusion was identified on x-ray at the base of the right lung which required the insertion of a chest tube to drain the fluid. Unfortunately, this procedure proved unsuccessful. In order to remove the thick fluid tissue plasminogen activator (TPA) was administered over the course of seven days which ultimately was successful. Thirty days after admission the patient was discharged with oral Coumadin and continued on antibiotic therapy. The patient fully recovered and resumed a normal lifestyle one year after the initial infection.
Unique Chromosome Aberrations Distinguish Diffuse Large B-cell Lymphoma and Burkitt Lymphoma: An Analysis of Cytogenetics and Predictor Model Classifiers

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Background: Under current classification of lymphoid neoplasms, majority of lymphomas can be reliably classified; however, overlapping features between diffuse large B-cell lymphoma (DLBCL) and Burkitt lymphoma (BL) with or without MYC gene rearrangement are problematic to diagnose.

Purpose: The aim of this study was to identify recurrent chromosome abnormalities to distinguish these entities and to test for their specificities in a set of predictor models.

Dataset and Methods: The study involved the analysis of publicly available information and institutional cases. Two distinct datasets were used to build (n = 338) and test (n=177) a set of predictor models, including a logistic regression model - LR. A Fisher Exact test was used to assess the differences in the number of aberrations between groups, as well as to determine correlations between RCAs and the two entities. A p-value less than .05 was considered significant. Discrimination analysis was determined by the receiver operating curve - ROC. All analyses were performed using the R package, while SAS was used to develop the LR model. Subsequent supervised models were constructed (n = 515) and a review of the literature of array CGH was conducted for external validity.

Results: RCAs that were diagnostic of DLBCL included: 1p36L, +2, -2, +3, -8, 15qL, +16, 17pL, +18 and 19pL. Specificity of the different models ranged from 85-100%. In terms of the area under the curve - AUC of the ROC curve, predictor classifiers were classified as excellent models (0.9 - 0.93). Only the LR was below 0.9. When the datasets were combined, additional RCAs were identified (6pG, +5, +11, -10/-15, -10/-14, 1qG and 13qL). Subsequent analysis by an artificial neural network - ANN model revealed a specificity of 95-100%. In terms of validity, findings from an extended array CGH review showed a number of RCAs correlated with copy number aberrations.

Conclusion: Our findings revealed unique RCAs that suggest distinct biological activities between DLBCL and BL, these RCAs may be used to augment diagnostic accuracy and help clinicians better manage these patients. In terms of predictor classifiers, ANN out-performed all classifiers.
Key words: DLBCL, BL, RCAs, Predictor models
Small Cell Carcinoma of the Lung Metastatic to the Liver

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Background: Small cell carcinoma of the lung is an extremely aggressive malignancy which can be found in pure form or in combination with another type of carcinoma. Pure form small cell carcinoma is divided into two types: oat cell carcinoma and intermediate carcinoma. Both types are derived from basal bronchial epithelial cells which undergo neuroendocrine differentiation. Small cell carcinoma is accountable for 15% of newly diagnosed lung cancers in people 60-80 years old in the US and is commonly associated with smoking.

Prognosis for small cell carcinoma is characteristically poor. Due to the aggressive nature of the disease 60-70% of patients diagnosed with small cell carcinoma have widespread disease by the time symptoms present.

Case Study: A 73-year-old male presented to the emergency department of a New Jersey hospital with lymphadenopathy, multiple liver masses, and a history of elevated PSA of 11ng/ml. A fine needle aspiration (FNA) was performed on two liver masses as well as the subcarinal lymph node. FNA resulted in: 2 smears, one ThinPrep® slide, and one cell block for liver mass #1; 2 smears and one ThinPrep® slide for liver mass #2; and 4 smears, one ThinPrep® slide, and one cell block for the subcarinal lymph node. The smears and cell blocks of each site were stained using hematoxylin and eosin stains and the ThinPrep® slides were stained using Papanicolaou stain. The samples were found to be positive for small cell carcinoma of the lung based on findings of cytologic review in conjunction with special immunohistochemical staining.

Conclusion: Positive staining reactions with CD56, Synaptophysin, Cytokeratin AE 1/3, TTF-1. And a KI-67 proliferation index of >80% all confirmed the diagnosis made by cytology that findings were consistent with malignant cells associated with small cell carcinoma of the lung.
Case Study: Non-Specific Tick-Borne Illness

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Introduction: Tick-borne diseases are a major concern to human health. Most tick-borne illnesses have similar non-specific, flu-like symptoms, which presents a challenge in diagnosis. One tick-borne disease, Human Granulocytic Anaplasmosis (HGA), is an acute febrile infection caused by Anaplasma phagocytophilum. It presents clinical symptoms ranging from mild to life threatening.

Objective: The purpose of this case is to illustrate HGA and promote awareness of the dangers of tick bites, and their potential threat in transmitting infectious agents.

Case: A 45-year-old male presented in the ED with fever, chills, aches, rigors, headache, malaise, but no respiratory symptoms. Patient history revealed past splenectomy several years ago, recently vacation in Virginia, resides in upstate New York, occupation - taxidermist. Patient noted increase number ticks on deer specimens.

Methods: Patient history suggested a possible tick-borne illness such as Lyme Disease, Babesiosis, or Anaplasmosis. Several diagnostic laboratory tests were performed including: complete blood count and smear, chemistry panel, liver enzymes, and tests for several tick-borne diseases.

Results: Laboratory test results of significance revealed elevated liver enzymes, leukopenia, and bacterial inclusions (morulae) within the patient’s neutrophils. The morulae are highly suggestive of Anaplasmosis. Serology and PCR were positive for Anaplasma, confirming a diagnosis of HGA. The patient responded well to treatment with doxycycline, the drug of choice for this illness.

Conclusion: Although this patient was diagnosed with HGA, often patients go undiagnosed, because of the non-specific clinical symptoms. The symptoms are similar to those of other tick-borne illnesses, such as Lyme disease. This case demonstrates the importance of diagnostic testing for HGA. Existing techniques are limited, and early detection of infection is difficult due to non-specific symptoms. Developing new rapid methods to identify Anaplasma phagocytophilum early in the infection, good patient history and clinician awareness is needed to improve diagnosis and patient outcomes.
Adult T-cell leukemia/lymphoma (ATLL) is a rare T-cell malignancy induced by the RNA retrovirus Human T-lymphotropic Virus type 1 (HTLV-1). HTLV-1 associated ATLL is characterized by the uncontrolled proliferation of T-lymphocytes and can involve the bone marrow, lymph nodes, spleen, peripheral blood, skin, liver, gastrointestinal tract, and nervous system. HTLV-1 is known to be endemic in Papua New Guinea, South Africa, Japan, the Caribbean, and the Middle East. Viral transmittance most commonly occurs via breastfeeding, sexual intercourse, and/or blood transfusions with infected T-lymphocytes. The number of HTLV-1 infected individuals ranges between 5 and 20 million, with 3-5% of carriers progressing to ATLL. Annually, 60 out of 100,000 individuals infected with HTLV-1 become affected by ATLL which targets mainly individuals age 50 years and older. HTLV-1 induced ATLL has been classified into four main subtypes: acute, chronic, lymphomatous, and smoldering. The subtypes are defined according to the condition’s varied clinical course and prognosis. ATLL symptoms include skin lesions, organomegaly, lymphadenopathy, fever, and opportunistic infections. Key laboratory findings include HTLV-1 antibodies, hypercalcemia, leukocytosis with the presence of “flower-like” cells in the peripheral blood, increased LDH levels, and lymphocytosis. Standard treatment for ATLL includes multi-drug chemotherapy for first line treatment, interferon with or without chemotherapy, and hematopoietic stem cell transplant.

A 33-year-old male of Jamaican decent presented to a medical facility with lower right abdominal pain and fatigue. On physical examination, he appeared well and no family history of malignant disease was noted. His travel history included visits to Cuba (2004-2005), Iraq (2008-2009), Jamaica (2008-2010), and initial laboratory findings revealed thrombocytopenia and elevated LDH levels. The peripheral blood smear analysis showed 10.4% atypical lymphocytes with petal-shaped nuclei known as “flower cells”. Immunophenotypic analysis by flow cytometry revealed abnormal T-cell populations expressing CD3, CD4, CD5, CD38, and CD34 markers, which served to confirm the diagnosis of HTLV-1 associated ATLL. The patient was treated with six cycles of chemotherapy, and while a good response was initially seen, he relapsed within a few months of treatment. Additional complications such as renal insufficiency, leptomeningeal disease, tachycardia, neurological, and psychiatric symptoms contributed to the patient’s adverse clinical course.
A 53 year old male from Burkina Faso, Africa, who last visited 4 months ago, was admitted with a chief complaint of fever, chills, headache, and general malaise. The patient had experienced nausea, vomiting, and diarrhea for the past few days. With the recent outbreak of Ebola in Africa, these non-specific symptoms and travel history may cause physicians to suspect an esoteric disease such as Ebola. The importance of appropriate testing, accurate diagnosis, and subsequent treatment within a timely manner cannot be understated.

Initial laboratory testing revealed erythropenia, thrombocytopenia, and hypokalemia. Hemoglobin and hematocrit were decreased, while lactate dehydrogenase and total bilirubin were increased. Based on the travel history and clinical findings, the physician included Ebola and malaria in the differential diagnosis. A rapid malaria test kit in conjunction with visualization of the parasite on a peripheral blood smear confirmed the diagnosis of P. falciparum parasitemia.

The life cycle of the Plasmodium parasite with its corresponding pathophysiology is divided into two stages within the host: exo-erythrocytic and erythrocytic. In the exo-erythrocytic stage, sporozoites from the mosquito are injected during a blood meal and travel to the liver, where they develop into merozoites. Once mature, the parasites enter the erythrocytic stage by bursting from hepatocytes and infecting red blood cells (RBCs) in the bloodstream. Parasites feed on the hemoglobin of the RBCs and destroy the cells after maturation, exacerbating the infection.

Treatment is dependent upon the stage of the disease and the species causing infection. The prognosis of uncomplicated malaria is favorable and easily treated with oral antimalarial drugs. High risk populations, such as children or immunodeficient patients, are more prone to developing severe infection and experiencing an unfavorable outcome. Delays in diagnosis or treatment can lead to complications, such as cerebral involvement or respiratory failure. At this stage, intravenous antimalarial medications are needed to prevent further morbidity.

Current preventative measures include minimizing skin exposure, using mosquito nets, or taking oral prophylaxis prior to travel. Research using RTS,S with a blood stage or transmission blocking vaccine shows promising preventative efficacy to combat malaria in the near future.
Background: Pheochromocytoma arises from the adrenal gland. It is an adrenaline-producing tumor from the central portion of the adrenal medulla. It is a rare tumor; approximately 1,000 new cases are diagnosed each year in the United States (i.e. 2 to 8 cases per 1 million persons per year), 25% to 30% of all cases of pheochromocytoma are genetic in nature. Most people with a pheochromocytoma are between the ages of 20 and 50, but the tumor can develop at any age.

Case Study: This is the case of a 69 year-old black female who presented with a mass in the left adrenal. Fine Needle Aspiration was performed in her left adrenal under ultrasound guidance. The aspirated solution was submitted for cytologic examination. Aspirate consists of cells with abundant cytoplasm and variable sized nuclei. Additional Immunochemical stain tests were also performed to confirm the diagnosis. Chromogranin, synaptophysin, and CD56 were positive. Stains for calretinin, inhibin, NSE and MART-1 were negative.

Result: A diagnosis of pheochromocytoma of the left adrenal mass was rendered based on cytological findings, and confirmed by immunocytochemical tests. Cytologically, pheochromocytoma is characterized by single or dyshesive groups of cells with abundant and ill defined cytoplasm as well as eccentric nucleus giving a plasmacytoid appearance. Nuclear pleomorphism, binucleation and multinucleation, naked nuclei and intranuclear pseudoinclusions are common findings. Neuroendocrine markers (chromogranin, synaptophysin, and CD56) performed on the needle aspirate showed positive results.

Discussion: Studies have shown that 25% to 30% of all cases of pheochromocytoma are genetic in nature. Von Hippel-Lindau Syndrome (VHL), Multiple Endocrine Neoplasia Syndrome type 2A and 2B (MEN2A and 2B), Neurofibromatosis type 1 (NF1), and Familial Paraganglioma Syndrome are four main syndromes associated with pheochromocytoma. Surgery is the only treatment option for the Pheochromocytoma.
Achlorhydra Induced by Excessive Use of Diet Pills and Persistent Vomiting Leading to Pernicious Anemia

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Pernicious anemia (PA) is a complex autoimmune disorder distinguished by malabsorption of vitamin B12 (cobalamin). This type of anemia is predominant in females of European and African descent. Symptoms include tiredness, paleness, dizziness, increased heart rate, glossitis, and neurological damage. The severity of PA is not always clinically suspected due to its gradual presentation from a moderate chronic stomach inflammation to a more severe stage. Individuals may become accustomed to their symptoms, further delaying an accurate diagnosis.

Several laboratory findings of PA are decreased hemoglobin, low Vitamin B12, high Mean Cell Volume, oval macrocytic red cells, and hypersegmented neutrophils. The presence of Intrinsic Factor (IF) or gastric parietal cell antibodies inhibits the formation of the IF-B12 complex in the stomach obstructing its transport and absorption in the ileum. Intramuscular injection of Vitamin B12 is the method of long-term treatment for PA. Early diagnosis may lead to a better prognosis so treatment can be expedited.

In this case study, a forty-two year old female presented to the emergency department following three months of continuous vomiting while taking diet pills, which caused achlorhydra leading to decreased absorption of iron and vitamin B12. The initial peripheral blood smear revealed the presence of hypersegmented neutrophils, hypochromic microcytic red cells, oval macrocytes, teardrop cells, nucleated red blood cells and spherocytes. She presented with intrinsic factor antibodies but lacked intestinal antibodies thereby, ruling out other malabsorption conditions such as Crohn’s or Celiac disease. Increased levels of homocysteine and methylmalonic acid were also present due to the lack of vitamin B12 to act as cofactor in enzymatic reactions. The patient presented with iron deficiency anemia, as evidenced by the presence of zinc protoporphyrin, and increased thyroid stimulating hormone coupled with decreased free T4, leading to a diagnosis of hypothyroidism. Her diagnosis was pernicious anemia in conjunction with other disorders. Although the method of treatment for this patient is unknown, vitamin B12 injections to restore hematopoietic function is the most common form of treatment. Additionally, reversing the decreased acid production in the stomach would help restore the balance and environment needed for proper vitamin B12 absorption.
Between 10 and 20 million people in the United States suffer from COPD. The prevalence of COPD in individuals with serious mental illness is nearly five times that of the general population. Exposure to noxious fumes, especially cigarette smoke, is the cause of most cases of COPD. Patients with serious mental illness are twice as likely to be cigarette smokers as the general population. Due to the nature of mental illness, many patients are at risk of being underdiagnosed and under treated.

Methods:
Research was done using Google Scholar and using the book Respiratory Disease: A Case Study Approach to Patient Care. Research was selected from the articles on patients with mental illness and respiratory diseases. Information was obtained from the National Alliance of Mental Illness. A patient case study was also done.

Case Summary:
A 59 year old male was admitted to his local hospital due to developing shortness of breath while in his group home. He had a change in mental status and became increasingly agitated in the ED. The patient was sedated and intubated due to the agitation and respiratory distress. His ABG showed respiratory acidosis and his EKG was abnormal making it difficult to treat his agitation. During the course of his treatment a history was obtained from prior records and revealed the history of schizophrenia in this patient. He was hard to treat and medicate due to the comorbidities he displayed.

Conclusion:
The severely mentally ill present a difficult population to treat from a medical standpoint. Due to the increased medical risks, coordinated and active attention to medical risks is very important. The high risk for substance abuse, including cigarettes, can make treatments for mental illnesses less effective, in turn decreasing the likelihood of following treatment plans, and can even make symptoms worse. Cognitive and social handicaps should be taken into account when diagnosing and treating patients with mental illness. Patients with severe mental illnesses need support from social services, medical professionals, and their family and communities to live healthy lives.
Introduction: Melanoma is a type of skin cancer, and while it accounts for only a small percentage of all skin cancer occurrences (less than 2%), it is responsible for the majority of skin cancer related deaths. Incidence rates are higher for those 60 years and older, but it is not uncommon before the age of 30; fair skin, freckles, and light hair seem to increase risk of developing melanoma.

Case Report: The patient is a 77-year old Caucasian female who presented with two lesions, each measuring approximately 7mm, in her right breast. She had a previous history of Stage 1A cutaneous melanoma in the right side of her face in January of 2012. In 2013, a nodule measuring 17mm was detected in the lower lobe of the right lung, which was excised and diagnosed as metastatic melanoma. The lesions in her breast were detected during the subsequent surveillance PET CT scan. An FNA biopsy of the right breast presented with malignant cells consistent with metastatic melanoma. A needle core biopsy was performed at 10 o’clock and 4 o’clock following the FNA biopsy, and microscopic examination revealed malignant cells that were morphologically identical to those from the FNA biopsy, as well as those from the lung nodule, confirming the diagnosis of metastatic melanoma.

Discussion: Melanoma is a malignancy that arises in the melanocytes that make melanin. Melanotic melanomas are usually brown or black; amelanotic melanomas can appear pink, tan, or even white. While some inherited genetic mutations have been discovered, most melanoma is thought to arise from unrepaired damage to the DNA caused by UV radiations. Metastatic melanoma occurs in most parts of the body, including the tissue under the skin, lymph nodes, brain, bone, breast, and various organs such as the lungs, liver, and kidney.

Conclusion: The patient’s previous history of primary cutaneous melanoma and the cytologic findings described above supports the final diagnosis of metastatic melanoma.
Merkel Cell Carcinoma is a rare primary neuroendocrine carcinoma of the skin. This uncommon neoplasm is highly malignant because of rapid vascular invasion and metastases. Merkel cells occur near the basal layer of the skin and mucosa derived from the ectoderm. These cells serve as touch receptors, and it is thought that they are derived from a common stem cell that can differentiate into either a keratinocyte or a Merkel cell. This malignancy commonly presents in the skin of the head and neck area or the extremities of elderly patients usually older than 65. Risk factors include people with fair skin, history of extensive sun exposure, and chronic immune suppression. Recently, Merkel cell polyomavirus has also been implicated in the pathogenesis of this disease. There are immunohistochemical stains that can distinguish Merkel Cell Carcinoma from other similar tumors. Similar-appearing tumors include small cell carcinoma of the lung, lymphoma, peripheral neuroectodermal tumor, metastatic carcinoid tumor, and small cell melanoma. A positive staining reaction with immunocytochemical stains CK20 and Neurofilament distinguishes Merkel Cell Carcinoma from the other similar appearing tumors. There are four major treatments for Merkel Cell Carcinoma including surgical excision of the primary lesion, lymph node surgery, radiation, and chemotherapy. Most deaths from Merkel Cell Carcinoma occur within the first three years of diagnosis. However, patients without lymph node involvement or distant metastasis have an excellent prognosis.

This is a case of a seventy-seven year old male who presented with a left perisubmandibular mass at a New Jersey hospital on December 17, 2014. The lesion measured 5.61 cm x 3.13 cm x 5.08 cm. An ultrasound guided fine needle aspiration on the left perisubmandibular region of the face was implemented. A cell block was obtained, and the diagnosis was a neuroendocrine carcinoma consistent with Merkel Cell Carcinoma. Immunocytochemical stains and Flow Cytometry confirmed this diagnosis.
Production of Anti-D in RH positive women with RHD variants

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The Rh D antigen is the most immunogenic antigen in the Rhesus (Rh) blood group. Anti-D can be formed in Rh D positive mothers with D variant phenotypes. Studies have indicated that an average of 2.2% of the American population expresses an Rh D Variant. D variants can be divided into three categories; weak D, partial D and Del. These categories usually differ from the wild type D antigen either quantitatively or qualitatively. The production of Anti-D in pregnant women is a major cause of Hemolytic Disease of The Fetus and Newborn (HDFN). In severe cases of HDFN, kernicterus and Hydrops Fetalis can develop, which may lead to fetal death. This clinical case is an example of a patient with an Rh D variant. The patient is a 32 year old African American female in her 3rd pregnancy with a positive antibody screen. She was typed Rh D positive and the antibody screen revealed the presence of anti-D. Due to this discrepancy, a serological investigation was performed with various FDA licensed and unlicensed Anti-D reagents. The fact that some of these reagents did not react with the patient’s blood suggests the expression of an Rh D variant. To determine the type of D variant that the patient expresses, a molecular analysis was performed to genotype the RHD gene. RHD BeadChip Prototype analysis indicated patient amino acid changes in 201 Arginine and 223 Valine. Therefore, the patient was found to have RHD weak partial 4.0. Since this patient was typed as Rh D positive, Rh immune globulin (RhIg) prophylaxis was not administered and the patient did make anti-D. Cases like this could be avoided by using molecular techniques that can distinguish between the Rh D variants that can produce anti-D and those that cannot.
Improvements in treatment for Posttraumatic Stress Disorder symptoms: Do clients and counselors agree?

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Little is known about the utility of self-report measures to assess changes in symptom severity of PTSD as a result of receiving treatment. Structured clinical interview methods, such as Clinician Administered PTSD Scale (CAPS; Blake et al., 1990), are considered as the gold standard assessments among a variety of assessments. When the administration of clinician interviews, such as CAPS at different time points is difficult to do in the real world due to the lack of time and resources, brief self-report measures such as PTSD checklist (PCL; Weathers et al., 1993) are recommended to be used to document the effects of PTSD interventions across treatment in clinical practice. This study assessed the association between client ratings of improvements in treatment for posttraumatic stress disorder (PTSD) symptoms and clinician ratings of improvement of PTSD symptoms over the course of one randomized clinical trial of clients with severe PTSD and other comorbid mental illness.

Method, results, and discussion: Data was drawn from the NIMH CBT treatment for PTSD in Serious Mental Illness Study (N= 200) comparing Cognitive Behavioral treatment (CBT) and brief treatment of PTSD. PTSD was assessed in two ways: Clinician Administered PTSD Scale (CAPS; Blake et al., 1990) was used to assess current clinician-rated PTSD symptom severity at the beginning of and after the CBT treatment; while PTSD checklist (PCL; Weathers et al., 1993) was used to measure self-reported PTSD symptom severity every three weeks in the course of a 16-week treatment using Cognitive Behavioral Treatment. On the PCL, participants rated the degree to which they are bothered by each of the symptoms of PTSD from the DSM–IV–TR on a Likert-type scale (1 = not at all, 5 = extremely), and items were summed to create a total PCL score ranging from 17 to 85. The study will examine that for every 1-point change in total PCL, a corresponding point change in the same direction in total CAPS scores. The implication of findings in the context of the validity of using PCL as a measure of symptomatic change following treatment for persons with serious mental illness will be discussed.
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Dietetic Internship Alumni Outcomes Survey on Professional Attributes and Accomplishments:

Career Status, Compensation, Job Satisfaction and the Use of Informatics, Technology and Mobile Devices in Practice

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Objective: To assess the job status, compensation, career satisfaction and use of informatics, social media and mobile devices in program alumni.

Background: The Dietetic Internship is an accredited, post-baccalaureate supervised practice program in nutrition and dietetics. Evaluation measures include monitoring of graduate performance.

Methods: A convenience sample was conducted with graduates from 2009-2013 (n=83). An internet based survey was sent via email. Fifty-six alumni participated in the study. Data analysis was conducted using IBM-SPSS v-22, and descriptive statistics were reported. The study was approved by the Rutgers Health Sciences Newark Institutional Review Board.

Results: Fifty-six of the 83 intended participants completed the survey, resulting in a 67.5% response rate. All class years were represented. One hundred percent were Registered Dietitian Nutritionists, 71% members of the Academy of Nutrition and Dietetics with 79% reporting working full time. Thirty-eight percent spend greater than 50% of their time in acute clinical care, followed by 20% in ambulatory care and 18% in the community setting. Forty-three percent of respondents earn $25.01-$30.00; 17% earn $30.01-$35.00 and 20% earn above $35.01. Eighty percent of the alumni are either very satisfied or satisfied with the profession. Eighty-nine percent feel confident to utilize nutrition informatics in practice. When using mobile devices, 54% use a smart phone, and 50% use a lap-top computer. However, 71.4% are not using social media tools at work. Fifty-nine percent feel very satisfied or satisfied with the level of respect they receive.

Conclusions: A majority of alumni are employed full time, earn a competitive salary and are satisfied with their career. The expansion of inter-professional activities within the Internship curriculum may foster earlier recognition of the role of the Registered Dietitian Nutritionist as a member of the health care team.
OBJECTIVE: To assess the educational preparation, professional accomplishments and leadership roles of Dietetic Internship alumni. BACKGROUND: The Dietetic Internship is an accredited post-baccalaureate program providing 1200 hours of supervised practice in nutrition and dietetics. To ensure program quality, ongoing program evaluation includes the monitoring of graduate achievements. METHODS: A convenience sample was conducted with graduates from 2009-2013 (n=83). An internet based survey was sent via email to the recruited sample. Fifty-six alumni participated in the study. Data analysis was conducted using IBM-SPSS v22, and descriptive statistics were reported. All participants remained anonymous and information was treated confidentially. The study was approved by the RBHS Newark IRB. RESULTS: Respondents represented each of the class years surveyed with fifty-six of the eighty-three intended participants completing the survey (67.5%). Seventy-one percent were members of the Academy of Nutrition and Dietetics. One hundred percent were Registered Dietitian Nutritionists. Eighty percent of the graduates are very satisfied or satisfied with the profession. Sixty-one percent of respondents are satisfied or very satisfied with career advancement opportunities. Ninety-Five percent of the graduates were very satisfied or satisfied with the education they received in the Dietetic Internship. Since graduating, nine have held a leadership position, four have received a professional award and twenty two graduates have enrolled or completed a graduate degree. The top five highest ranked professional attributes identified by 100% of the alumni were: knowledge seeking, communicating effectively, evidence driven, responsible, flexible, adaptable, and being approachable. Of the forty-nine alumni who were interested in obtaining specialist certifications, Diabetes had the most interest (49%), followed by Nutrition Support (33%), Pediatrics (31%) Sports Dietetics(18%), Oncology (16%), Renal (6%) and Geriatrics (6%). Thirty three of forty-nine respondents (67%) were also interested in completing a Certificate of Training in Weight Management. CONCLUSIONS: This study demonstrates that the majority of alumni were very satisfied with the education received in the Dietetic Internship, satisfied with the profession and with opportunities for advancement. Important professional attributes were identified for professional success. Future research could explore specialty credentialing and career laddering in practice.
SHRP FACULTY INTERPROFESSIONAL ABSTRACTS

Perceptions of Overall Health and Recency of Screenings

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People served by the public mental health system often live with comorbid medical conditions, exhibit risk factors for metabolic syndrome and experience high rates of early mortality for diseases such as cancer. Growing evidence shows that these disparities may be related to low socioeconomic status and lack of access to preventive services such as metabolic syndrome and cancer screenings. New Jersey serves a large number of persons with psychiatric disabilities in its mental health system. This study assessed the usage of cancer and non-cancer preventive services among New Jersey residents in publicly funded mental health programs as well as perceptions of their overall health.

Methods
Self-administered written surveys were completed by 148 adults utilizing community-based peer-operated self-help centers throughout New Jersey. The survey instrument collected information on the utilization of breast, cervical and colorectal cancer screening services as well as general health conditions such as blood pressure, obesity and diabetes. Participants also answered questions on barriers to receiving preventive services as well as perceptions of their overall health.

Results
Slightly more males (53%) than females participated in the study with equal participation among Whites and African Americans (39%). Schizophrenia spectrum disorders (29%), bipolar disorder (26%) and major depression (22%) were the most common self-reported primary mental disorders. Lower screening levels compared to the general population were evident for breast and colorectal cancers. A fairly high percentage of those survey reported not receiving blood pressure, cholesterol and blood sugar checks within the recommended time frame. In spite of the low rates of screenings, 45% of participants perceived their health as excellent. Physicians not advising patients to complete tests emerged as a main barrier to screening.

Conclusion
The results underscores the need to assess and educate those served by the public mental health system to regularly access screenings and self-monitor health measures.

Keywords: cancer screening, metabolic syndrome, mental disorders
Healthy Smiles Body and Mind Initiative

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The goal of the Initiative was to provide preventive dental services, nutrition awareness & mental health strategies to underserved senior citizens of Union County. Seminars were presented to provide information to affect changes in knowledge regarding food choices, mental wellness & dental health. A list of local pantries, with healthy food options at low cost, was issued to each participant. Healthy outlook seminars focused on strategies for developing a positive outlook during the aging process. Preventive dental education addressed the importance of oral health & its connection to overall health. Patient care services were provided to improve dental wellness. An integrated holistic approach utilizing an inter professional collaboration of SHRP's Allied Dental Education (ADE), Psychiatric Rehabilitation and Dietetics on the Scotch Plains campus will be implemented for all provided services. This inter-professional program is offered for the first time & will benefit seniors in multiple ways: preventive dental care will improve the lives of this population as the patients gain the ability to retain the natural dentition; an important component of proper oral function & the ability to taste food. Studies demonstrate that improving dental/periodontal health leads to improved cardiovascular and systemic health, enhancing the lives of the patients who will be treated. Nutritional counseling will teach participants how to select healthy food options in order to maintain a healthy weight and lifestyle. Mental health seminars will promote self awareness and methods to maintain mental health; leading to a happier and more holistic aging process.
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