Designing an Effective Poster Using PowerPoint

Contact:
Biomedical Communications

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• If your research was done at Children’s National you must use their templates when preparing your poster.
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Don’t Wait Until the Last Minute!
Plan Before You Begin

- Size
- Color
- Font
- Content
- Graphs, charts, photographs
Check the Conference Guidelines
• Open PowerPoint 2010
• Go to File
• New
• Double Click Blank Presentation
• Go to Design
• Page Set-up
• Custom
• Make poster 100% of final size if it is 36x48 or less
• Make poster ½ of final size if larger than 36x48
• Visually pleasing
  • Subjective
• Avoid red or green
• Create contrast
• What you see on your monitor does not always print the same color
• Blue tends to print purple
• GW colors are based on a Pantone color palette
<table>
<thead>
<tr>
<th>Color</th>
<th>Red</th>
<th>Green</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Buff</td>
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<tr>
<td>Accent Blue</td>
<td>0</td>
<td>150</td>
<td>214</td>
</tr>
</tbody>
</table>
To Adjust Colors

• Right Click on Background
• Format Background
• Color Drop Down Menu
• More Colors
• Custom
Font

- Choose a standard font, such as Arial
  - Select something that is easy to read
- Use Title Case For Your Title
- Title font should be approximately 96 pt.
- Author’s text $\frac{1}{2}$ the size of title text
- Section headers can be same size as authors
- Body text approximately $\frac{2}{3}$ the size of text of section headers
- It should look proportional on your screen
Professional Poster Presentations (96 pt.)
Barbara N. McGowan
Biomedical Communications
The George Washington University School of Medicine and Health Sciences, Washington DC. (48 pt.)

Abstract 48 pt

Conclusions 48 pt
Content

- Title
- Introduction
- Abstract
- Materials and Methods
- Results
- Discussion
- Acknowledgments
• Communicate your research
• Generate conversation
• Abstract and conclusions draw people in
• Avoid too much text, too little text
• Proof
• Pictures are still worth 1000 words
• Images should be 300 dpi TIF’s or JPEG’s
• Don’t take images from the web!
Logos

• Use the proper GW logo and make sure it is properly displayed.

• Download logos from the GW Creative Services web site: http://creativeservices.gwu.edu/institutional-logos

• Select the EPS file

• Be sure to use the University logos, not old Medical Center logos

• Use the proper name for this institution:
  The George Washington University
Proper Use of Logos

Improper Use of Logos
Sizing Logos

• Hold down control key
• Grab logo from corner
Improper Sizing of Logos
Let’s look at some examples. What do you think?
Parental Management of Type 1 Diabetes in Very Young Children

Lakisha Peterson, BA
Dee Kniesa, BA
Lauren Mednick, MPH
Celia Henderson, RN, CDE
Fran Cogen MD, CDE
Randi Streissand, PhD, CDE

Background
- Type 1 diabetes is the most common metabolic disorder in children, affecting 1 in 500 children in the US.
- Most children are diagnosed with type 1 diabetes between the ages of 10-14 yet the incidence of diabetes in young children has increased significantly over the last several years.
- Diabetes management requires adherence to complex medical regimen, and early age onset may increase risk for long-term diabetes related complications.

Management of Type 1 Diabetes
- American Diabetes Association Recommended Management Guidelines
  - Blood glucose testing at least 3-4 times a day
  - Snacks, which vary widely from child to child
  - A well balanced diet with awareness of carbohydrates intake
- Measuring Metabolic Control: Hemoglobin A1C
  - The A1C recommends that children should have this test performed every 3-6 months.

Management Difficulties in Young Children
- Several aspects of the preschool age period increase the challenge for parental management of diabetes:
  - Difficulty recognizing and/or expressing symptoms of hyperglycemia
  - Undesirable eating patterns
  - Variability in duration and intensity of physical activity
  - Determining whether erratic behavior is the result of blood glucose or appropriate for age
  - Limited cognitive ability to understand the necessity of continuous treatment, especially when non-symptomatic

Bivariate Analyses
- Better metabolic control was correlated with higher eating frequency (number of meals and snacks per day) and ethnicity (Caucasian).
- Higher eating frequency was correlated with higher income, marital status (married), and ethnicity (Caucasian).

Who performs Blood Glucose Checks?
- 60% of checks are performed by mom.
- 14% of checks are performed by dad.
- 11% of checks are performed by another adult.
- 6% of checks are performed by the child.

Future Directions
- A better understanding of parental diabetes management behaviors can provide a foundation for the development of programs and services focused on assisting parents in effectively managing their child’s diabetes while also managing their own emotional functioning.
- Future research on this unique population is needed to understand additional factors (i.e. psychosocial/behavioral functions, coping mechanisms, etc.) that may have an impact on child health outcomes and parent management behaviors.

Conclusions
- Management of diabetes in young children has unique challenges and requires much attention.
- Although 64 percent of the mothers are employed outside of the home, they still perform about 75 percent of the diabetes management behaviors.
- Several demographic variables were associated with management behaviors and health outcomes (ethnicity, income, education and marital status) suggesting that certain populations may require more resources and consideration.

Methods
- Participant demographics are in Table 1.
- Participants were recruited via diabetes clinic appointment and the children’s primary care provider.
- The diabetes and the child’s behavior were measured using a structured interview and the Children’s Diabetes Behavioral Questionnaire.
- In addition to self-report measures for the large study, the I-CANDI behaviors were measured with a paper and pencil technique, which was administered by the research assistant to the parents.
Medical Student Exchange Program in Khon Kaen, Thailand
Kathleen Bren, B.S.; Faculty Advisor: Charles Macri, MD, FACOG, FACMG, FACS
The George Washington University School of Medicine and Health Sciences

Summary
As part of the Global Health Track program, I traveled to Khon Kaen City in Thailand to participate in an eight-week medical student exchange program at Khon Kaen University. The hospital affiliated with KKU is government funded, and the largest in the region, serving millions of patients annually. KKU Medical School is establishing itself as a national education powerhouse, and recently took a spot on the top 50 Medical Schools in Asia list. I participated in two 4-week long clinical rotations, one in Orthopedic Surgery and one in Obstetrics and Gynecology. I was able to shadow students, residents and attending physicians on different days to gain a comprehensive view of healthcare and medical education in a country completely different from my own. Khon Kaen City is located in North East Thailand, and is the capital of Khon Kaen Province. Few people speak conversational English, street signs are sparse and the average temperature during my stay was 95° F. I lived in student housing near the 2,000-acre university with a fellow student from GW. In addition to exploring the local province on a weekly basis, I was able to experience the diverse Thai culture by travelling to Chiang Mai, Bangkok and several southern islands.

Clinical Rotations
My first clinical rotation was in the Orthopedic Department where the majority of my time was spent observing surgeries. The occasional hip and knee replacements were far outnumbered by the number of motor vehicle accidents causing fractures that required surgical repair. My second rotation was in the OB/Gyn department where I found stark differences between American and Thai medical practices. In the labor and delivery unit at KKU hospital, women remain in a communal room until fully dilated, male family members are generally not present for the birthing process and pain medication is rarely used. Routine gynecological care is not encouraged in traditional Thai culture and as a result women commonly present for care with advanced ovarian, uterine or cervical cancer. The experience illustrated the importance of primary care and routine screening to decrease the global burden of preventable diseases.

Objectives
1) Establish affiliate site for GW students at KKU
2) Participate in clinical rotations in the departments of Orthopedic Surgery and OB/Gyn
3) Gain cultural awareness and skills that will help me care for patients in the U.S
4) In conjunction with my POM scholarly project, establish a “crash course” in technical skills, basic pharmacology and cultural sensitivity for first year students travelling abroad

Thai Culture
Thai people pride themselves on welcoming others to their culture and made great efforts to make me feel at home. They are kind, modest and family-oriented. Gathering for meals is at the heart of the culture, and the Thai people take tremendous pride in their extremely diverse and delicious selection on food. Exploring the street food and markets was an integral part of my experience and has given me great appreciation for the value of fresh ingredients and non-processed foods. Most Thai people are Buddhist and attend temple on a regular basis. Buddhism embodies becoming at peace with oneself and always contributing to society in a positive way. My experience gave me a great respect for the spirituality and moral standards of Buddhism and Thai culture.

Patient Perspective
During a snorkeling trip in Phuket, I fell on a sea urchin, lodging 30+ spines into my left hand. Two weeks later, I had a delayed hypersensitivity reaction leading to extreme swelling and loss of function in three of my fingers. Such a situation would have been met by immediate attention in the US. In Thailand, it took two days before plastic surgeons removed the spines. No sedatives were offered, no consent forms signed, and no explanations given. Despite how terrified I was, I look back with a much greater appreciation for what it feels like to be a patient, and how important it is for physicians to communicate effectively.
Abstract
Background: Previously, we have reported that certain bile acids stimulate glucagon receptor (GR) downregulation. The aim of the present study was to investigate the mechanism of GR internalization. Methods: Rat GR cDNA was fused to GFP and internalization was monitored by confocal microscopy in transfected HEK293 cells and by 125I-glucagon binding. Results: Glucagon (100 nM) and PMA (200 nM) induced a time-dependent GR internalization to a maximum of 40-50% as early as 20 minutes, at least partially, through a β-arrestin-independent, but clathrin-mediated mechanism. This was paralleled by colocalization of the GR with early endosomes detectable as early as 10 minutes after stimulation. The PMA-induced GR internalization was significantly suppressed by both PKC inhibitors Gö6976 and calphostin C. Under these conditions, 10 μM of either forskolin or H89 had no modulatory role on GR internalization. Conclusion: PKC, but not PKA stimulates GR internalization, at least in part, through β-arrestin-independent, but clathrin-mediated endocytosis. Therefore, PKC-mediated internalization could play a major role in bile acid-induced GR downregulation.

Introduction
Increased secretion of glucagon contributes significantly to hyperglycemia in diabetes. Glucagon signaling is mediated by the GR, a member of the G protein-coupled receptor family. GRs are desensitized and internalized upon glucagon binding, but the mechanisms of these processes are largely unknown. Second messenger-activated protein kinases PKC and PKA mediate desensitization of numerous GPCRs, including receptors within the GR family. The GR carboxyl-terminal region and the second intracellular loop contain several PKA and PKC consensus sites.

Hypothesis: GR internalization can be induced or enhanced by PKA and/or PKC. In this study, we monitored GR internalization in response to glucagon, PKC and PKA using confocal microscopy and binding assays in transfected HEK293 cells.

Methods
GR cDNA fused to GFP was transfected into HEK293 cells using Lipofectamine 2000. Confocal microscopy was used to observe colocalization of GR with early endosomes. A HEK293-GR stable cell line was used in binding experiments with 125I-glucagon. To verify the involvement of PKC and PKA in GR internalization, the cells were pretreated with either PKC inhibitors Gö6976 (10 μM), calphostin C (50 nM) and bisindolylmaleimide I (4 μM), the PKA inhibitor H89 (10 μM) or with PKC agonists PMA (200 nM) or PDBu (1 μM), and PKA activator forskolin (10 μM) for 30 minutes, followed by incubation with 125I-glucagon for 2 hours. Surface-bound glucagon was removed by treatment with glycine buffer (pH 3). The extent of GR internalization was calculated as the ratio between radioactivity measured in the intracellular and in the extracellular fraction. Cells were pretreated with inhibitors of clathrin-mediated endocytosis to verify whether GR internalization is clathrin-dependent. To examine the requirement for β-arrestin1 in GR internalization, β-arrestin1 was either overexpressed or inhibited with the dominant negative form V53D.

Results
Fig. 2 GR internalization. HEK293 cells were transfected with the GR-GFP plasmid (green) and incubated in plain medium (A), 100 nM glucagon (B), 10 μM forskolin (C) or 200 nM PMA (D) for 30 minutes. The cells were then fixed, permeabilized, labeled with anti-early endosomal antigen antibody (red) and observed with a laser-scanning confocal microscope (60x).

Fig. 3 Clathrin-dependent GR internalization. HEK293-GR cells were incubated in acidic medium (pH 5), hypertonic medium (0.45 M sucrose) or pretreated with phenylarsine oxide (PAO) for 30 minutes in the absence (A) or presence (B) of PMA. GR internalization was measured by 125I-glucagon binding assay.

Fig. 4. GR internalization is enhanced by PKC activation. (A) HEK293-GR cells were incubated with or without the PKC inhibitors, followed by treatment with PMA for 15’. (B) HEK293-GR were pretreated with bisindolylmaleimide I (Bis I) for 30 minutes followed by incubation with PMA, PDBu or 4α-phorbol for 15 minutes.

Fig. 5 GR internalization is PKA-independent. HEK293-GR cells were pretreated with or without H89 and incubated in the absence (control) or presence of glucagon (1 μM) and PMA (1μM) for 30 minutes.

Fig. 6 Dependence on β-arrestin1. HEK293-GR cells were transfected with β-arrestin1 wild-type or dominant negative form V53D and treated with glucagon for 30 minutes.

Conclusion
PKC, but not PKA induces a clathrin-mediated GR internalization and accumulation of the GR in early endosomes.

PKC, but not PKA stimulates clathrin-mediated glucagon receptor (GR) internalization

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Department of Biochemistry and Molecular Biology, The George Washington University, Washington, DC
Computational Fluid Dynamics (CFD)

- Powerful technique originally developed for simulating air and water flow associated with aircrafts and ships which is now finding extensive use in the biomedical arena.
- Technique allows for simulation of fluid (blood, air, water etc) flow in the human body and complements in-vivo and in-vitro studies.
- CFD has applications in:
  - Cardiology
  - Otolaryngology
  - Phonation
  - Respiration
  - Ocular Hydrodynamics
  - Urology
  - Cerebrospinal Fluid Flow
  - Biomechanics
  - Biomedical Devices & Instruments
  - Surgery Planning and Prediction

Biophysics of Phonation

Simulation of Airflow in the Vocal Tract

Simulation of Laryngeal Airflow

CT Scan

3D Model of Laryngeal Airway

Unilateral Vocal Fold Medialization

Biomechanics: Simulation of Water Flow Past a swimmer

Thyroplasty Procedure

Proposed Simulation Based Surgery Planning Tool for Thyroplasty

- Resulting voice quality highly sensitive to implant location, size and shape
- Up to 24% revision rate for this surgery

The Problem

- Severe mitral valve regurgitation can weaken the heart and lead to heart failure.
- Fraction of blood volume regurgitated is used as an indicator for surgical intervention.
- Difficult to estimate the regurgitated blood flow volume based on current imaging modalities (Echo Cardiography, MRI etc).

The Solution

- Develop a patient specific 3D computer model of the left atrium, left ventricle and mitral valve.
- Incorporate into the model, observed mitral valve deflection & motion.
- Simulate blood flow through computer model using CFD and compute the fraction of blood volume regurgitated.

Cardiology: Mitral Valve Regurgitation

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Acknowledgements

Alfred Lumbroso, Ph.D candidate (MAE)
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Supercomputer used for flow simulations

The George Washington University
Institute for Biomedical Engineering

Computational Fluid Dynamics

Rajat Mittal, Ph.D.¹, Steve Bielamowicz M.D.²
¹ Department of Mechanical and Aerospace Engineering, School of Engineering and Applied Science
² Division of Otolaryngology
HIV-1 Viral Core Package Potential Infection Modulators from the Virus-Producing Cells

Steven1, Yuri2, Sergey3, Michael4, and Sergey5

1The George Washington University School of Medicine and Health Sciences, Washington, DC, USA.
2Howard University College of Medicine, Washington DC, USA.

Background

Results

Conclusions
Early Drop Out from HIV Care at a Tertiary HIV Referral Center in Chennai, India

Erik1, Suniti2, AK3, Santhanam2, Easter4, AK5, Sunil2,3

1George Washington University School of Medicine and Health Sciences, Washington DC, USA; 2YVR Centre for AIDS Research and Education, Chennai, India; 3Johns Hopkins University School of Medicine, Baltimore, USA

ABSTRACT

Background: Failure of early ART has been linked to HIV care in chronic disease requiring long-term management and treatment in India. 2.3 million HIV-1 infected persons and 500,000 children are accessible to the public and private sectors. While ART outcomes are often seen due, factors generally not reported are factors contributing to ARVs switch and early mortality. The present study was designed to evaluate patients dropping out from ART interrupted in the private sector. There is limited data on ART dropouts from HIV care and associated factors in India.

Methods: We conducted a case control analysis among a cohort of patients registered at YVRCC, a multi-disciplinary governmental organization providing ART, and HIV treatment services. Chronic Care Outcome defined patients registered with YVRCC for at least 6 months and that had visits between 03/2015 and 12/2017. Control subjects were patients registered at the same period, but had a visit in 2018. Patients were defined as those who were enrolled in the clinic, treated or non-completed for a clinical trial and were assigned a registration status (Eligible for or excluding active enrollment). ART rates per 100 person years (p) were calculated and logistic regression was used to identify factors associated with DO.

Results: 327,008 patients, 65% men and male sex was seen as an average follow up of 24.0 years, 5757 [1- 94] patients with a visit in 2018 resulting in a total of 256,876, 6 out of 100, 66% of whom were men. 96% of 60 and 36% of those older than 50 years respectively. The rates were 5.4% (95% CI 2.4-8.8) documented deaths. As a consequence, in 2018 results are a total of 28,636, 5 out of 100, 16% of whom were men. 89% of 15 and 60% of those older than 50 years respectively. The rates were 5.4% (95% CI 4.7-6.1). In the study, we found that DO was a significant factor with 1.37 (95% CI 0.77-2.43) as being associated or influencing factors associated with DO.

Conclusions: We observed an extremely high rate of DO in this center with the majority of DO within the first month of care, highlighting the importance of engaging patients in early care. While involved in governmental ART clinics might partially explain this finding, we have not found studies that evaluate the effectiveness of ART adherence and impact on survival. Improvement in ART adherence and understanding of factors associated with DO are needed.

OBJECTIVES:

- To estimate the dropout rate from ART care at a non-governmental tertiary care center in Chennai, South India
- To identify factors associated with DO at this center

INTRODUCTION:

- ART has revolutionized HIV disease management turning it into a chronic disease requiring lifelong follow-up
- Dropout (DO) from ART care can undergo HIV treatment outcomes
- India has 2.3 million people living with HIV
- 800,000 have been dormant on first-line ART in India of which 20% receive ART in the private sector (out of pocket payments)
- No data exists on DO from ART care in India

METHODS:

Definition of outcome:

Dropout (cases): patients with no documented visit to YVRCC in 2010
Non-dropout (controls): patients with ≥ 1 documented visit to YVRCC in 2010

Time to DO: Measured from the time of registration to last appointment

Special Acknowledgements:

Special thanks to the patients and staff at YVRCC and especially Susannah and Ezeh, Dr. Robert C. Morris, Glenn Stanley (YVRCC), and Andreas Kriefl for their research support without whom none of this would have been possible.

RESULTS:

- Overall dropout rate: 38.1 per 100 person-years
- There were 364 (5.9%) documented deaths

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
<th>Non-Deaths</th>
<th>Dropout</th>
<th>Non-Dropout</th>
<th>Dropout Rate</th>
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</thead>
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<tr>
<td>2010</td>
<td>364</td>
<td>5,425,654</td>
<td>246</td>
<td>5,425,390</td>
<td>5.8%</td>
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TABLE 1. Study Population Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>Drop-out</th>
<th>Non-Drop-out</th>
<th>Drop-out Rate (p/100PY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Median</td>
<td>30.6</td>
<td>30.7</td>
<td>30.6</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>57.6%</td>
<td>57.6%</td>
<td>57.6%</td>
</tr>
<tr>
<td>Mortality (all cause)</td>
<td>29.1%</td>
<td>29.1%</td>
<td>29.1%</td>
<td>29.1%</td>
</tr>
<tr>
<td>Mortality (HIV related)</td>
<td>6.9%</td>
<td>6.9%</td>
<td>6.9%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Study group</td>
<td>New patients</td>
<td>66.7%</td>
<td>66.7%</td>
<td>66.7%</td>
</tr>
<tr>
<td></td>
<td>Follow-up</td>
<td>33.3%</td>
<td>33.3%</td>
<td>33.3%</td>
</tr>
</tbody>
</table>

TABLE 2. Factors Associated with DO from clinical care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unadjusted p (OR) (95% CI)</th>
<th>p-value</th>
<th>Adjusted p (OR) (95% CI)</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>0.88 (0.86-0.90)</td>
<td>0.001</td>
<td>0.88 (0.86-0.90)</td>
<td>0.001</td>
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<tr>
<td>Gender</td>
<td>Male</td>
<td>1</td>
<td>0.72</td>
<td>0.58</td>
</tr>
<tr>
<td>Mortality (all cause)</td>
<td>0.87 (0.85-0.89)</td>
<td>0.001</td>
<td>0.87 (0.85-0.89)</td>
<td>0.001</td>
</tr>
<tr>
<td>Mortality (HIV related)</td>
<td>0.88 (0.86-0.90)</td>
<td>0.001</td>
<td>0.88 (0.86-0.90)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

CONCLUSIONS:

- A high mix of DO from clinical care was observed in this cohort of patients
- The greater percentage of patient drop out occurred early in care (within 1 week)
- Patients on ART, enrolled in projects, with higher CD4+ counts and of younger age were less likely to drop out from clinical care relative to their counterparts
- Role of incentives and care managers need to be assessed to improve follow-up
- Role of providing free ART (or) visit the private sector by establishing public/private partnerships also needs to be examined.

FIGURE 1. Study Population Selection Criteria

FIGURE 2. Dropout from ART care

FIGURE 3. Kaplan-Meier curves of dropout from clinical care by (A) Overall, (B) Time of Registration, (C) Enrollment, and (D) ART status.
Experimental Study of Surface Dynamics of a Liquid Jet

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Introduction

An interface between a liquid and a gas can exhibit various intricate shapes such as:

This has very important consequences on:
- Spray/Atomization
  - Fuel injection
  - Water jet breakup
- Aeration/Gas entrainment
  - Oxygen for aquatic life
  - Atmospheric CO2 absorption by oceans
- Heat and mass transfer
  - Heat exchanger
  - Mixing process

An experimental approach is necessary to investigate such complex flows.

Experiment and Instrumentation

This research focuses on instabilities arising when the flow exits a wall. A 0.8” thick water jet flows from a contoured nozzle onto a transparent channel at velocities of 0 to 33 ft/s. A pulsed laser illuminates a cross section of the flow and two high speed cameras are simultaneously imaging the surface profile and the flow beneath it.

Results - Instability Growth Mechanism

2D spanwise disturbances are visible on the surface of the jet. These are very small: \textit{L} (scale 1:1), thus high magnification optics are required.

The shear layer rolls up and forms a series of vortexes which deforms the surface.
- The first part is characterized by a quick growth (waves B and C).
- The second part is defined by a constant growth rate (waves D and E). The waves and the vortexes are then coupled. This can sustain the waves for a long period.

Results - Air Entrainment Mechanisms

For higher velocities, the waves collide. A counter-rotating vortex pair is injected in the flow from the closing troughs:

The bubbles are convected by the vortex pairs:

Results - Air Entrainment Mechanisms

The bubbles are convected by the vortex pairs:

Conclusion

Surface dynamics from initial disturbances to large amplitude deformations have been studied and characterized. Injection of vortex pairs has been observed for the first time. A new air entrainment mechanism in the trough of waves is also reported. The experiment offers the possibility to investigate primary breakup and other turbulent air entrainment mechanisms. Measurements of interphase gas transfer will be implemented in the near future. These results will help developing empirical correlations and validate high fidelity multiphase flow numerical simulations.

Work In Progress

- 3D measurements:
- Primary breakup at higher velocity (10m/s):
- Direct mass transfer measurements: Dissolved oxygen is visible in dark by using a O2-sensitive fluorescent dye:
Disaster Preparedness – Formalizing a Comparative Advantage for the Department of Defense (DoD) in U.S. Global Health and Foreign Policy

Derek, Department of Global Health
The George Washington University, School of Public Health and Health Services

Global Health in Foreign Policy

- Dates back 29 centuries to physician–priests of the Nile river valley
- Provided medical services to the population while acting as ambassadors of the state
- Extended to the 1951 International Sanitary Conference
- Includes current U.S. efforts such as PEPFAR and Global Health initiative
- Perceptions of improved security, trade and development through the use of global health is moving foreign policy away from national interests towards global humanity

The Role of the DoD in Global Health

- Direct investments focus on maintaining health of forces
  - Medical force protection through research (e.g. vaccine development, prophylactic drugs) and disease surveillance
  - Humanitarian assistance and disaster response
  - Medical stability operations (e.g. Afghanistan)
- Indirect investments include
  - Collective security which supports social order
  - Peacekeeping forces facilitate transition from conflict to peace

DoD in Disaster Response

- DoD supports a whole of government approach with the USAID Office of Foreign Disaster Assistance serving as lead federal agency
- Authorized and funded through the DoD Foreign Disaster Relief (FDR) program
- FDR is a foreign policy tool with health components to rapidly support international emergencies
  - Meets the basic humanitarian needs of affected population
  - Ensures international standards for civilian-military cooperation
  - Meets core principles of humanity, neutrality, impartiality in accordance with the United Nations Oslo Guidelines

DoD in Disaster Preparedness

- DoD supports 15 of the U.S. National Response Framework tasks related to domestic disaster response
  - Currently shares knowledge and experience in ad hoc manner with international military and civilian partners to increase their capacity and capability
- Consideration should be given to the UN Hyogo Framework for Action which urges countries to reduce their disaster risk by 2015
  - Endorsed by 168 UN member states (including U.S.)
  - Missing role for national and regional military organizations (e.g. NATO)
  - Most national militaries play a vital role in the 5 priorities for action
- Shortfall presents an opportunity for the DoD
  - Could shape disaster risk reduction program to support U.S. foreign policy and international community’s efforts

Problem Statement

- U.S. lacking a whole of government approach to international disaster preparedness
- DoD disaster preparedness capabilities are robust, but are not being leveraged
  - Only 19% of all humanitarian assistance projects (includes disaster preparedness) from 2006-2008 focused on “disaster response infrastructure” and 8% on “disaster response training”
- Overemphasis by U.S. government for disaster response versus preparedness at an extremely high cost to U.S. taxpayers with unknown impact
  - If 25% of the DoD 2011 humanitarian assistance budget request was for disaster preparedness, it would equate to just 3.8% of what DoD spent in response to the natural disasters in Haiti and Pakistan alone

UN Hyogo Framework

Policy Recommendations

- The U.S. government must capitalize on DoD’s comparative advantage in disaster preparedness to inform a whole-of-government approach
- DoD’s robust connections to foreign militaries will facilitate a more comprehensive U.S. government disaster risk reduction strategy
- Using the Hyogo Framework will ensure a more coherent effort in lines with international community and in pursuit of shared foreign policy goals
  - Maximizes ability to deliver capacity in the health sector and beyond
- Further study of the DoDs role in foreign disaster preparedness activities is warranted
  - Must establish a DoD Directive setting forth program policy, implementation, and evaluation instruction

Bibliography

Utilization of Physical Therapy Services in Hospice and Palliative Care Settings

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School of Medicine & Health Sciences, Program in Physical Therapy
The George Washington University, Washington, D.C.

BACKGROUND and PURPOSE

Interprofessional care teams are advocated for patients who are receiving palliative or hospice care. Physical therapists are uniquely qualified to provide consultative services and interventions that encourage a better quality of life for patients in these settings. Physical therapists can provide pain management and relief, positioning to prevent pressure sores, endurance training and gait training to improve functional mobility and safety, home modifications and equipment recommendations, in addition to family and patient education (Ries, 2007; Johffe & Ruts, 2002).

Despite this holistic view of patient care, evidence to suggest the benefits of physical therapy and expressed need, the literature is unclear if physical therapists are routinely providing services in these settings.

Therefore, the purpose of this study is to describe via a national survey, the utilization of physical therapy services for patients who are receiving palliative or hospice care, and to identify barriers, if any, to provision of these services.

RESULTS

• The majority of respondents were hospice programs or combined hospice and palliative care programs. Approximately half were located in a mixed urban setting, providing service in multiple venues, were Medicare certified and independently owned.

• Almost all (97.8%) programs provided PT services to their clients with 73.6% providing PT services for more than 10 years.

• 35% of programs employed their own PTs, while 68% use contract services.

• Only half of the programs reported more than 10 patients received PT services in the 2011 calendar year. See Table 2 for detailed demographic information regarding survey respondents.

• One hundred and sixteen agencies responded to the survey (5.8% return rate).

• Descriptive statistics were used to analyze program and patient demographics.

• The median is reported for daily census and length of stay since standard deviations were large and could potentially skew the results.

• Additional comments were analyzed using qualitative methods.

• This is the first national survey describing utilization of PT services in hospice and palliative care settings. Although generalizability is limited due to the low response rate, it appears that agencies have the ability to provide PT services, however the number of clients receiving PT still remains low.

• Reasons may include reimbursement issues related to flat rate fees for bundled care and lack of knowledge regarding the benefits of PT services by other health care providers, late referrals in the care process, and limited human resources to provide PT services.

Table 1. Hospice and Palliative Care Program Respondent Characteristics

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>% of Respondents (total number of responses per question)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Length of Stay</td>
<td>30.9 days (29.3)</td>
</tr>
<tr>
<td>Setting Care Provided</td>
<td>Hospice Unit 53.9%</td>
</tr>
<tr>
<td></td>
<td>Hospital Inpatient Facility 35.9%</td>
</tr>
<tr>
<td></td>
<td>Nursing Facility 16.9%</td>
</tr>
<tr>
<td></td>
<td>Home or Private Residence 46.9%</td>
</tr>
<tr>
<td></td>
<td>Hospice &amp; Palliative Care</td>
</tr>
</tbody>
</table>

Table 2. Hospice and Palliative Care Program Respondent Characteristics

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>% of Respondents (total number of responses per question)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age of Clients Served</td>
<td>&lt;18 years 5.6%</td>
</tr>
<tr>
<td></td>
<td>18-64 years 59.5%</td>
</tr>
<tr>
<td></td>
<td>&gt; 65 years 34.5%</td>
</tr>
<tr>
<td>Primary Diagnosis</td>
<td>Cancer 43.7%</td>
</tr>
<tr>
<td></td>
<td>Heart Disease 32.7%</td>
</tr>
<tr>
<td></td>
<td>Diabetes 33.0%</td>
</tr>
<tr>
<td></td>
<td>Depression 15.4%</td>
</tr>
<tr>
<td></td>
<td>Lung Disease 8.4%</td>
</tr>
<tr>
<td></td>
<td>Stroke/CVA 6.3%</td>
</tr>
<tr>
<td></td>
<td>Kidney Disease 5.1%</td>
</tr>
<tr>
<td>Number of Referrals Received</td>
<td>&gt;50 19.4%</td>
</tr>
<tr>
<td></td>
<td>30-49 34.4%</td>
</tr>
<tr>
<td></td>
<td>10-29 23.1%</td>
</tr>
<tr>
<td></td>
<td>&lt;10 13.5%</td>
</tr>
<tr>
<td>Patient Care</td>
<td>Home or Private Residence 46.9%</td>
</tr>
<tr>
<td></td>
<td>Hospice Unit 35.9%</td>
</tr>
<tr>
<td></td>
<td>Hospital Inpatient Facility 16.9%</td>
</tr>
<tr>
<td></td>
<td>Nursing Facility 3.1%</td>
</tr>
</tbody>
</table>

RECOMMENDATIONS

Additional studies are required in order to generalize the findings. Exploration of the attitudes and knowledge of other health care professionals regarding the role of the physical therapist in hospice and palliative care settings may clarify the low utilization rate of PT services.
On Again, Off Again: Noninvasive Positive Pressure Ventilation In Advanced Lung And Heart Disease

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Objectives

- Identify person- and family-centered goals of care for a critically ill ICU patient with advanced lung and heart disease, anxiety, and post-traumatic stress disorder (PTSD)
- Outline potential benefits and harms of noninvasive positive pressure ventilation (NPPV)
- Describe guided practices as a modality to address anxiety and PTSD symptoms related to dysspea and use of NPPV
- Discuss a process to match goals of care with effective use of NPPV and other palliative treatments in advanced illness

Background

- NPPV is commonly offered in hospitals for respiratory failure due to advanced lung and heart disease, even when palliation is goal
- The potential benefits and harms of NPPV may not be well understood by health care providers, patients, and families.
- This case illustrates the importance of matching person-centered goals with effective high and low tech treatments in respiratory failure.

Case

A 78 year old man was admitted to ICU with respiratory distress due to end-stage COPD and CHF. His past medical history included chronic obstructive pulmonary disease (COPD), ischemic heart disease and systolic failure (EF of 25%), pulmonary hypertension, pulmonary emboli, and anxiety.

Hospital Course: He was treated with NPPV. He became anxious and agitated, broke multiple masks, and was physically and chemically restrained. Palliative care team was consulted. He reported feeling “tired of being in hospital” but still “wanting to fight.” Assessment revealed a history of untreated PTSD which was triggered by the mask, and added a layer of complexity in effectively managing this patient. Patient-centered preferences were elicited. He wanted to continue NPPV with fewer sedating medications.

Intervention: He listened to a recorded guided practice while on NPPV. This first practice targeted body relaxation and visualization to his favorite vacation spot. He tolerated NPPV for 3 hours before re-experiencing anxiety. His second guided practice included Buddhist loving kindness meditation. He accepted NPPV for another 8 hours, and both he and family were pleased to have “some peaceful time together.”

He chose to stop NPPV after 3 days, stating that “the time has come.” We provided comfort-oriented care, including opiates and oxygen, and he died peacefully in a non-ICU setting with his family present.

Use of NPPV for do-not-resuscitate and comfort measures only patients at end of life.

Guided Practices: Why this Patient?

- NPPV exacerbates PTSD with hyper-arousal, anxiety, and claustrophobia
- Patient and family preferred non-pharmacological approaches to enhance his ability to tolerate the mask and avoid sedating medications

Person-Centered Care

- We prioritized dialogue about complex decisions and adjusted treatments as both preferences and disease process changed
- We used complimentary modalities which decreased distress of patient and family
- The patient and family were satisfied and shared peaceful time together

Considerations for use of NPPV in end-stage disease

- Identify the goals for treatment and discuss the potential for both benefit and discomfort
- Prepare patient, family, and interdisciplinary team for a dynamic course where patient preferences change
- Consider time-limited trials with predetermined endpoints

Overview of Evidence for NPPV

<table>
<thead>
<tr>
<th>Approach</th>
<th>Life Support</th>
<th>Life Support With Limits (DNI)</th>
<th>Comfort Measures Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Exacerbation of COPD</td>
<td>RCTs and Meta-Analyses</td>
<td>Observational</td>
<td>No data supporting use</td>
</tr>
<tr>
<td>Acute Respiratory Failure With Cardiogenic Pulmonary Edema</td>
<td>RCTs and Meta-Analyses</td>
<td>Observational</td>
<td>No data supporting use</td>
</tr>
</tbody>
</table>

Three Categories of Goals for NPPV

<table>
<thead>
<tr>
<th>Goal of NPPV</th>
<th>Endpoint for NPPV</th>
<th>Response to failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>To restore health</td>
<td>Adequately breathing without NPPV</td>
<td>Intubation</td>
</tr>
<tr>
<td>To restore health</td>
<td>Adequately breathing without NPPV</td>
<td>Change to comfort measures only and palliate symptoms without NPPV</td>
</tr>
<tr>
<td>To maximize comfort</td>
<td>Intubation</td>
<td>Palliate symptoms without NPPV</td>
</tr>
</tbody>
</table>

Guided Practices

Program of directed thoughts and suggestions that guide one toward relaxation or more focused states

Relaxes the connection of the mind and body and activates the “relaxation response”

A safe practice for decreasing stress, blood pressure, pain, anxiety and in anticipation for stressful events

Adverse effects

Anxiety and discomfort

Inability to communicate with mask

Risk of aspiration and uncontrolled secretions

Discussion

Email from the wife of our patient

“Last night was tough, but I’m happy to report that my husband had eight hours of ease with the new guided practice you gave him. It’s so meaningful to have some time where we can be together, quiet, and at ease like we usually are. I am grateful for that. I don’t know what the days have in store for us, but I appreciate what you and your team are doing to take care of him, and of us.”

Conclusions

- Using NPPV in end-stage disease requires patients well-informed preferences, shared understanding of goals of treatment, and a plan for success and failure.
- Person-centered care responds to dynamic preferences and leads to an increase in patient and family satisfaction.

References

2. Curtis et al. Noninvasive positive pressure ventilation in critical and palliative care settings: understanding the goals and values of patients, families, and health care providers. Ann Intern Med. 2008; 149:367–374
Neuroimaging of Tumefactive Multiple Sclerosis with Atypical Features

Andres, MD*; Peter, MD*; Ilia, MD*; Robert, MD#; Lucien, MD, PhD*; Departments of Radiology* and Pathology#, The George Washington University, Washington, DC

Objective:
- To review the MR imaging findings in an adult patient with tumefactive multiple sclerosis (TMS) and unusual cystic features.
- Unlike multiple sclerosis which typically presents with multiple focal periventricular white matter lesions, TMS often presents as a large enhancing lesion which can mimic neoplasm, abscess, or stroke.
- Symptoms associated with TMS are generally atypical of MS and usually relate to the presence of a focal mass lesion: focal neurological deficit, seizure, or aphasia.

Methods:
- We report the case of a 45-year-old Caucasian male who presented with seizures and altered mental status.
- Conventional brain MRI was performed including diffusion tensor imaging (DTI). Imaging was examined for lesion extent, location, invasion, destruction or displacement of brain parenchyma, and white matter tracts.
- Neuroimaging was compared to other cases of TMS (N=5) for the presence of atypical features.

Results:
- MR imaging revealed multiple bilateral intraxial enhancing lesions with surrounding edema.
- The largest lesion in the temporal lobe had a large fluid component corresponding to an enlarged trapped left temporal horn; a feature not present on other comparison cases of TMS.
- DTI maps demonstrated destruction, displacement, and invasion of adjacent cerebral parenchyma, white matter tracts, and juxtacortical U-fibers; imaging features suggestive of a demyelinating process.
- Histopathology showed features of primary demyelination with foamy macrophages and gliosis.

Conclusions:
- We reviewed the imaging findings of a biopsy-proven case of TMS with atypical features.
- A trapped and enlarged temporal horn is unusual and likely due to ependymal adhesions.
- Although multiple enhancing lesions suggestive of neoplasm, infection, or ischemia were demonstrated on neuroimaging, there was evidence of periventricular white matter disease.
- TMS should be considered in the presence of periventricular lesions, despite their configuration or the presence of atypical features as in this case.
Diagnostic Criteria for Autism Reflected in Graphic Features of Artwork

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*Art Therapy; *Biochemistry & Molecular Medicine; *Educational Leadership
The George Washington University, Washington, DC

Abstract
A team of investigators at GW has been collaborating on a study sponsored by the Medical Faculty Associates, to determine medication responsiveness of people with Autism Spectrum Disorders (ASDs). Results derived from parent and clinician surveys distributed in this study are inconclusive, as the range of medications prescribed to the participants with ASD (n=170) is proving to be vast and varied. However, a sub-group of the study participants (n=57) also completed an art therapy measure, the Face Stimulus Assessment (FSA; Betts, 2003).

Use of the FSA is supported by the idea that by gaining a deeper understanding of artwork in the context of diagnostic evaluation, clinicians can better identify problems that may not be identifiable through other evaluative methods. The standardized format of the FSA and its corresponding objective scoring system enables examination of the graphic features identified in participant drawings, which may correspond to diagnostic criteria for ASDs.

The graphic features of 57 participant FSA drawings were scored by three raters on the following nine scales: Prominence of Color, Color Fit, Implied Energy, Logic, Realism, Developmental Level, Details of Objects and Environment, Line Quality, and Perseveration. Preliminary results suggest possible relationships between particular scales and diagnostic criteria for ASDs (Table 1), but further research is needed. Significant inter-rater reliability results further validate the scales.

Methods
Participants were recruited from the IAN (Interactive Autism Network), and were selected non-randomly, using a convenience method. There were no limits on age, gender or ethnicity. Materials (crayons and the two drawing templates) were mailed to participants, along with instructions which included the directive: "use the crayons with the two pieces of paper."

The second FSA drawings were scored using the nine graphic features scales in the FSA rating Manual, and inter-rater reliability was computed.

Table 1 shows how the FSA rating scales line up with diagnostic criteria for Autism Disorders. However, more research is needed to determine whether or to what extent the FSA scales might actually correlate with specific autism criteria. Such research would involve confirmation of an individual’s diagnostic criteria through a valid and reliable source, such as the Autism Diagnostic Observation Schedule (ADOS; Lord et al., 1999), and the Autism Diagnostic Interview-revised (ADI-R; Rutter et al., 2003).

Table 1: Graphical Equivalents of DSM Diagnostic Criteria for Autistic Disorder

<table>
<thead>
<tr>
<th>DSM-IV TR Diagnostic Categories for 299.90 Autistic Disorder</th>
<th>Observations in the Art Therapy Literature (Marins, 2005)</th>
<th>FSA Rating Scales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment in social interactions</td>
<td>a. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate interactions</td>
<td>Appraisal</td>
</tr>
<tr>
<td>b. failure to develop peer relationships appropriate to developmental level</td>
<td></td>
<td>K1 Realism</td>
</tr>
<tr>
<td>c. lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)</td>
<td></td>
<td>K6 Developmental Level</td>
</tr>
<tr>
<td>d. lack of social or emotional reciprocity</td>
<td></td>
<td>K7 Details of Objects and Environment</td>
</tr>
<tr>
<td>Impairment in communication</td>
<td>a. delay, or out of track of, development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)</td>
<td>Appraisal</td>
</tr>
<tr>
<td>b. individual with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others</td>
<td></td>
<td>K5 Realism</td>
</tr>
<tr>
<td>c. stereotyped and repetitive use of language or communication</td>
<td></td>
<td>K6 Developmental Level</td>
</tr>
<tr>
<td>d. inability to make-believe or social imaginary play appropriate to developmental level</td>
<td></td>
<td>K7 Details of Objects and Environment</td>
</tr>
<tr>
<td>Restricted repetitive and stereotyped patterns of behavior, interests, and activities</td>
<td>a. conceiving preoccupation with one or more narrow, restricted, and repetitive patterns of interest that is abnormal either in intensity or focus</td>
<td>Color sequencing</td>
</tr>
<tr>
<td>b. apparent inflexible adherence to specific, nonfunctional routines or rituals</td>
<td></td>
<td>K3 Implied Energy</td>
</tr>
<tr>
<td>c. stereotyped and repetitive motor mannerisms (e.g., hand flapping or finger tapping, or complex whole-body movements)</td>
<td></td>
<td>K4 Logic</td>
</tr>
<tr>
<td>d. persistent preoccupation with parts of objects</td>
<td></td>
<td>K5 Realism</td>
</tr>
<tr>
<td>Mental Retardation</td>
<td>Profound: IQ below 20</td>
<td>Appraisal</td>
</tr>
<tr>
<td>Severe: 20-34</td>
<td></td>
<td>K5 Realism</td>
</tr>
<tr>
<td>Moderate: 35-49</td>
<td></td>
<td>K6 Developmental Level</td>
</tr>
<tr>
<td>Mild: 50-70</td>
<td></td>
<td>K7 Details of Objects and Environment</td>
</tr>
<tr>
<td>Kline Quality</td>
<td></td>
<td>K8 Line Quality</td>
</tr>
<tr>
<td>perseveration</td>
<td></td>
<td>K9 Perseveration</td>
</tr>
</tbody>
</table>

Hypotheses
- The FSA is a valid measure of ASD diagnostic criteria.
- The graphic features scores on the FSA drawings will correspond to diagnostic criteria for ASDs.

Results: Inter-Rater Reliability
Based on the aggregated responses with three correlational measures (Pearson’s r, Ordinal-Tau, Ordinal-Rho), the overall inter-rater reliabilities are high (> .7), and all significant at alpha level .01.

28-year-old Caucasian man with Autism. Symptoms suggested in drawings: anxiety; ADHD, expressed by lack of investment in drawing (low scores on Scales 1 (Prominence of Color), 3 (Energy), 7 (Details)).

9-year-old Caucasian boy in 3rd grade, Childhood Disintegrating Disorder, changed to PDD-NOS at age 4.5. Risperidone and Tenex for aggression; Depakote for “focus.” Symptoms suggested in drawings: high score on Scale 3, Energy, and low score on Scale 6, Dev’t Level, reflects preference for stereotyped and restricted patterns; use of patterns over facial features may reflect lack of social or emotional reciprocity (low score on Scale 5, Realism).
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