Lion’s Den 2019

Megan Ranney
Sam McLean
Jeff Kline

Phil Levy
Lynne Richardson

Anna Marie Change & Kristin Rising
A traditional research proposal...

1. Specific Aims
2. Background (“Innovation and Significance”)
3. Methods (including analytic plan)
4. Biosketch and Institutional Resources
5. Budget
<table>
<thead>
<tr>
<th>Traditional Research Proposal</th>
<th>What You Are REALLY selling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Specific Aims</td>
<td>1. You are organized and focused</td>
</tr>
<tr>
<td>2. Background (“Innovation &amp; Significance”)</td>
<td>2. It Matters (novel and important)</td>
</tr>
<tr>
<td>3. Methods</td>
<td>3. You have a solution, know how to implement it, and can accurately measure whether it has worked.</td>
</tr>
<tr>
<td>4. Biosketch &amp; Institutional Resources</td>
<td>4. You are the right person to do it</td>
</tr>
<tr>
<td>5. Budget</td>
<td>5. It is cost-effective</td>
</tr>
<tr>
<td>Traditional Research Proposal</td>
<td>What You Are REALLY selling</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>1. Specific Aims</strong></td>
<td>1. You are organized and focused</td>
</tr>
<tr>
<td>1. You are organized and</td>
<td>2. It Matters (novel and</td>
</tr>
<tr>
<td>focused</td>
<td>important)</td>
</tr>
<tr>
<td></td>
<td>3. You have a solution, know</td>
</tr>
<tr>
<td></td>
<td>how to implement it, and can</td>
</tr>
<tr>
<td></td>
<td>accurately measure whether it</td>
</tr>
<tr>
<td></td>
<td>has worked.</td>
</tr>
<tr>
<td>2. Background (Significance)</td>
<td>4. You are the right person to</td>
</tr>
<tr>
<td></td>
<td>do it</td>
</tr>
<tr>
<td></td>
<td>5. It is cost-effective</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Methods</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Methods</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4. Biosketch &amp; Institutional Resources</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5. Budget</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“THIS PROJECT DOESN’T MATCH OUR PRIORITIES”
The outline:

1) There is an ‘unmet need’ that matters
2) Your solution is well-designed, organized, and will work
3) Your outcomes are valid, reliable, and achievable
4) You are capable of doing the study
5 minute presentation

8 minutes of discussion

critique and mentorship offers

Strict time limits!!!
Reminder:

The research proposals presented here are still under development. Please respect the presenters’ work on them, and don’t take their ideas 😊
This year’s presenters

• **Tejeshwar Singh Bawa BS**, Wayne State School of Medicine
• **Taylor McCormick MD MS**, Denver Health Medical Center
• **Stephanie Garbern MD MPH**, Brown University
• **Austin Kilaru MD**, University of Pennsylvania
• **Kimberly Van Ryzin MD**, Indiana University
Team

Danyoul Yamin
Co-Founder

Wayne State University School of Medicine Graduate Student. Holds a BS in Biology from Wayne State University

Sukhwindar Ajimal
Co-Founder

Wayne State University School of Medicine Graduate Student. Holds a BA in Economics from Wayne State University

Tejeshwar Bawa
Co-Founder

Wayne State University School of Medicine Medical Student. Holds a BS in Psychology from Wayne State University

Dr. Phillip Levy MD MPH
Clinical Research Advisor

Professor, Wayne State University School of Medicine. Assistant Vice President for Translational Science and Clinical Research Innovation, Wayne State University
Problem

- Heart disease is the **leading cause of death** for both men and women
- Poor diet accounts for **nearly half** of cardiac hospital readmissions and deaths

$1$ Billion readmissions  
$1.5$ Million Heart Attacks Annually  
$50\%$ Preventable lifestyle risk factors

- **Ineffective Nutritional Management**
  - Lack of understanding
  - Lack of access
  - Poor Clinical Emphasis

Source: Healthcare Cost and Utilization Project  
Medscape
Our Research

- Identifying the relationship between patient micronutrient profile and their cardiac outcome 30-days post-discharge
- **First study** aims to analyze micronutrient distribution in patients recovering from AMI
  - Pending EMF grant funding

Diagram:
- Micronutrient Profiles: B, A, K, E
  - B: Cardiac stability
  - A: Atherosclerotic events
  - E: Blood lipid profiles
  - K: Antioxidant properties
  - Cardiac Recovery Rate
Outcome

- **30-Day Readmissions and mortality** are an important quality metric used to assess treatment quality and recovery for AMI patients
  - National AMI Readmission Rate: 17.7%
    - Detroit: 19%

- **Our study** will determine AMI patient outcomes by documenting each cardiac-related 30-Day readmission post-discharge
  - We hypothesize that **specific micronutrient profiles** within patients will correlate to lower 30-Day Readmission and mortality
Future Plans

0-12 Months
- Complete EMF Clinical Trial

12-24 Months
- Research Interventional
- Protocol for Intervention Trial

> 24 Months
- Complete Interventional Trials
- Multicenter Intervention
- Begin partnering with clinics/clinicians to produce and provide intervention as supplemental care.
Our Ask

**Nutroit:** “We want networking opportunities in order to collaborate with others in developing nutritional expertise and fostering relationships alongside our journey to optimize cardiac recovery!”

**Why?** Our focus is aimed at paving the way to a personalized micronutrient intervention for AMI patients across the nation

- Extensive expertise/knowledge in cardiac disease and its research
  - Funded via MSSRF - “Impact of Nutrition on 30-day readmissions among patients presenting to the Emergency Department with Acute Heart Failure.”
- Detroit presents with a unique patient population to analyze
LIONS’ DEN
SAEM19

Pediatric Trauma Triage

Taylor McCormick, MD, MSc
Denver Health Medical Center
University of Colorado School of Medicine
Imagine your favorite kid…

2 yo F hops over a baby gate and falls head over heals down a flight of uncarpeted stairs. It’s not clear whether she’s seriously injured- she’s screaming and covered in blood from a scalp lac. 911 is called and the paramedics arrive. They load her into the ambulance and have to decide whether to drive an extra 20-30 minutes to the pediatric trauma center across town or take her to the closest ED 3 minutes away…
THE PROBLEM...

The ACS/CDC Field Triage Guidelines

- Widely adopted by EMS agencies nationally
- Expert opinion
- 2 modifications for children

65% sensitive for severe injury in children.
THE PROPOSAL...

• To conduct a **population-based**, observational study that combines prehospital, trauma registry, and ED records to estimate the sensitivity and specificity of the ACS/CDC Field Triage Guidelines…and evaluate the impact of adding **age-adjusted shock index** to the physiologic criteria of the guidelines.

• The primary outcome will be a consensus-based **criterion standard definition** of trauma center need published in 2014 to standardize research in this field; secondary outcomes will include ISS, emergency operative or procedural intervention, and multi-organ failure.
THE INVESTIGATOR...

Emergency Medicine Residency →

Pediatric Emergency Medicine Fellowship →

Masters in Health Service Research

DENVER HEALTH

est. 1860
THE ASK...

• Sage advice
• Time
• Funding
• Mentorship team
MHEALTH FOR SEPSIS PREDICTION IN RESOURCE-LIMITED SETTINGS

Stephanie C. Garbern, MD MPH DTMH
Alpert Medical School
Brown University
5 MILLION DEATHS/YEAR FROM SEPSIS WORLDWIDE

> 90% OF DEATHS IN LOW- AND MIDDLE-INCOME COUNTRIES (LMIC)
THE PROBLEM(S):

- OVERCROWDING
- LIMITED HUMAN RESOURCES
- INADEQUATE MONITORING
- LACK OF TIMELY RECOGNITION OF PATIENT DETERIORATION
- INABILITY TO APPROPRIATELY TRIAGE RESOURCES AND INTERVENE
- AVOIDABLE MORBIDITY AND DEATH
CAN WE USE MHEALTH TECHNOLOGY TO OVERCOME LIMITATIONS TO TREATING SEPSIS?
WEARABLE DEVICES AND MACHINE-LEARNING FOR SEPSIS PREDICTION

- Wireless wearable device validated for accuracy and feasibility in Rwandan ED patients
- Machine-learning techniques using continuous vital signs correlated with clinical status in Ebola Virus Disease patients in 2014-14 West African outbreak
THE STUDY (AND ASK):

- 100 patients with sepsis at University Teaching Hospital - Kigali
- Collect data from biosensor system and clinical data
- Create novel mHealth tool for sepsis prediction using machine-learning techniques
- Validate tool in new population
- Strengthen research interest and capacity among Rwandan ED residents
Home health as an alternative to inpatient admission: 
*a pilot randomized feasibility trial*

Austin Kilaru, MD  
Fellow, National Clinician Scholars Program  
Department of Emergency Medicine  
University of Pennsylvania
Ms. L
9:15 PM
Last Monday
Randomized pilot feasibility trial to test safety and efficacy of alternative home health discharge

Can we discharge patients home that would be admitted, with enhanced home health services?

Short stay hospital admissions are costly and strain hospital capacity
22 Patients Eligible 13 MD-approved Discharges 10 Patients Amenable

3 Patients Discharged

‘Enhanced’ home health services:
- Same or next day nursing visit
- Repeat labs
- IV medications
- Telemedicine check-ins
- Follow-up coordination
- Medical equipment
Lions – help!

- Mentorship
- Study design
- Apply for additional funding
  - 8K in remaining pilot funds
- Your honest opinion – is this crazy?
Isn’t this just hospital at home?

Yes, and no.

- A discharge, not an admission
- Owned by emergency medicine
- More appealing to payers
- May overcome policy barriers
Thanks!
<table>
<thead>
<tr>
<th>Next Day RN Visit</th>
<th>Same Day RN Visit</th>
</tr>
</thead>
</table>
| Follow Up Appointment  
PCP  
Specialist ________________ | Telemedicine Follow Up  
Telemedicine Consult |
| Oral Medications | Appointment Transportation |
| IV Medications  
Antibiotic ________________  
Diuretic ________________  
Fluids ________________  
Other | Repeat Labs (At-Home)  
CBC  
BMP  
Other |
| Medical Equipment / Supplies | Repeat Imaging / Other Testing |
| Home PT | Remote VS monitor |
| Home OT | Daily Text Message Check-In |
| Home SW | Food Assistance |
| Home Speech Therapy | Housing Assistance |
Patient evaluation and treatment in the ED

ED MD decision to admit and places bed request

Labs, imaging, consults, medications

CRC REVIEW
Is the patient eligible? PATCH Team Review (Record # screened)

ED MD approval
Preliminary assessment of patient needs

PMHH/PHIT Approval (Danielle, Marcia, PHIT)

ADMIT

Hold Doc-to-Doc

CRC presents options to patient for home health
Do patient and caregivers approve?

Y
N
N

Y

ADMIT

DISCHARGE HOME

PATCH Actions (Concurrent with Discharge)
• Record working contact information for patient and caregivers
• Confirm plan with ED physician
• Confirm plan with PMHH/PHIT
• CRC places referral to PMHH/PHIT
• Define plan for discharge meds, follow-up and equipment
• Orders placed for discharge labs and medications
• Follow-up appointments and transportation made
• Communication with PCP
• Document discharge plan
• Delivery of equipment, meds, supplies

PATCH Pilot Workflow

Eligibility:
Defined list of Conditions
Clinically Stable
Clear or presumed diagnosis
No procedures or surgeries
Housed
Team 1 (West Philadelphia)
Has PCP & Insurance
Stable Mental Health
No difficult IV access predicted
Doc to Doc not given

Disease conditions
CHF exacerbation / volume
Low risk chest pain
Palpitations
COPD exacerbation
Asthma exacerbation
Pneumonia
Influenza
Sub-segmental PE
DVT
Headache
Syncope
TIA (MRI negative)

Urinary tract infection
Pyelonephritis
Renal colic
Hyperglycemia
Dehydration
Nausea, vomiting
Mild-Moderate AKI
Diarrhea
Non-specific abdominal pain
Wound care
Podiatric wounds
Minor trauma

PATCH Services (As needed by patient and clinical condition)
• RN Next Day Visit
• IV medication delivery and infusion
• Lab draws (delivered to lab by PATCH team or courier)
• Daily phone contact
• Home MD visit prn
• Follow-up visit and transportation
• Follow-up testing (ie stress testing)
• Additional prn needs
Patient Criteria

- Clinically stable
- Clear or presumed diagnosis
- No anticipated procedures or surgeries
- Housed
- Resident of West / SW / CC Philadelphia
- Must have primary care physician
- Stable mental health or substance abuse
- If IV meds required; not difficult IV access
- Patient and family amenable to discharge
• CHF exacerbation / volume
• Low risk chest pain
• Palpitations

• COPD exacerbation
• Asthma exacerbation
• Pneumonia
• Influenza
• Sub-segmental PE
• DVT

• Headache
• Syncope
• TIA (MRI negative)

• Urinary tract infection
• Pyelonephritis
• Renal colic

• Hyperglycemia
• Dehydration
• Nausea, vomiting
• Mild-Moderate AKI
• Diarrhea
• Non-specific abdominal pain

• Wound care
• Podiatric wounds
• Minor trauma
PROBLEM
SOLUTION!
CANINE I (adult patients) completed
CANINE II (providers) completed
Join Our CANINE III Team!

Dr. Alan Beck:
Center for the Human-Animal Bond
A Special Thank You

Helping Las Vegas Heal

Sue Grundfest: sue@lovedogadventures.org or 917-301-4710