## 2019-20 Teaching Academy

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<td>Building Financial Resilience Beyond the COVID Pandemic</td>
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NIH Inquiries: International Partnerships and Foreign Influences

Research Compliance and Sponsored Program Administration

June 2019
Background

- In the past year, the National Institutes of Health (“NIH”) has partnered with the Federal Bureau of Investigation (“FBI”) to investigate possible foreign interference with the integrity of federally-funded biomedical research.
  - NIH Director’s Advisory Committee has reviewed the situation and made recommendations to NIH.
  - Committee’s report includes actionable suggestions for institutions.
  - NIH has sent letters to specific institutional grant recipients inquiring into possible failures to disclose investigators’ foreign affiliations, foreign research support, and foreign components.
  - All NIH inquiries to date have, to our knowledge, focused on support from Chinese governmental, academic, and foundation entities, and have not yet expanded to possible failures to disclose funding originating from other foreign countries.
NIH Letter: Foreign Influence Letter to Grantees

Concurrent with these efforts, we are using this opportunity to reach out to you for your help. We recently reminded the community that applicants and awardees must disclose all forms of other support and financial interests, including support coming from foreign governments or other foreign entities. We therefore expect you to work with your faculty and with your administrative staff to make sure that, in accordance with the NIH Grants Policy Statement, all applications and progress reports include all sources of research support, financial interests, and relevant affiliations.

In addition, in the weeks and months ahead you may be hearing from our Office of Extramural Research (OER) regarding grant administration or oversight questions or requests about specific applications, progress reports, policies, or personnel from, or affecting, your institution. We also expect and encourage your institution to notify us immediately upon identifying new information that affects your institution’s applications or awards. Lastly, we encourage you to reach out to an FBI field office to schedule a briefing on this matter. We greatly appreciate your willingness to work closely with OER to address these ongoing concerns.

We thank you in advance for working with us on this serious matter. Should you have questions, please send them to grantsinfo@od.nih.gov.

Sincerely yours,

Francis S. Collins, M.D., Ph.D.
Director, NIH

August 20, 2018
Dear Colleagues:

For many decades, the National Institutes of Health (NIH) and institutions like yours have participated in productive partnerships that greatly advance biomedical science. Scientists at universities and academic medical centers, supported by NIH, have made seminal biomedical discoveries that have led to dramatic improvements in human health. The scientific work NIH is proud to help support comes from all over this country and the world, bringing rich, diverse perspectives and backgrounds to the biomedical research enterprise.

The NIH-funded biomedical enterprise depends on a competitive system, which, to be successful, must be fair, transparent, and trustworthy.

Unfortunately, threats to the integrity of U.S. biomedical research exist. NIH is aware that some foreign entities have mounted systematic programs to influence NIH researchers and peer reviewers and to take advantage of the long tradition of trust, fairness, and excellence of NIH-supported research activities. This kind of inappropriate influence is not limited to biomedical research; it has been a significant issue for defense and energy research for some time. Three areas of concern have emerged:

1. Diversion of intellectual property (IP) in grant applications or proposed by NIH-supported biomedical research to other entities, including other countries;
2. Sharing of confidential information on grant applications by NIH peer reviewers with others, including foreign entities, or otherwise attempting to influence funding decisions; and
3. Failure by some researchers working at NIH-funded institutions in the U.S. to disclose substantial resources from other organizations, including foreign governments, which threaten to distort decisions about the appropriate use of NIH funds.

NIH is working with other government agencies and the broader biomedical research community, including NIH-funded institutions and U.S. university professional organizations, to identify steps that can help mitigate these unacceptable breaches of trust and confidentiality that undermine the integrity of U.S. biomedical research.

These efforts will be supported by a working group of the Advisory Committee to the (NIH) Director that will tap experts in academic research and security to develop robust methods to:

1. Improve accuracy reporting of all sources of research support, financial interests, and relevant affiliations;

Inappropriate influence by foreign entities

Taking advantage of NIH’s long tradition of trust and fairness

Work with faculty to include all sources of support, financial interests and relevant affiliations
Important Reminder from Dr. Collins

• “disclose all forms of other support and financial interests, including support coming from foreign governments or other foreign entities...in accordance with the NIH Grants Policy Statement, [on] all applications and progress reports”

• NIH will be providing additional info in the future
Working Group Charge:

• Identify approaches for NIH and applicant/grantee organizations to partner to ensure that research support, affiliations and financial interests are reported accurately.

• Propose approaches to facilitate collaborations across the globe, while safeguarding IP developed with support of U.S. funds/government.

• Propose steps to protect integrity of peer review process.

• Emphasize the value of foreign nationals in the American scientific enterprise.
Advisory Committee Identifies:

- China’s Talents Program, for which there have been tens of thousands of recruits, many of whom also receive U.S. federal funding.

- Also mentions that while the current focus of concern is on China, the issue is not unique to China.
NIH considers restrictions to counter foreign influence in research

An agency working group advises stronger security measures, but raises concerns about stigmatizing foreign researchers in the United States.

Classified information provided to the agency by the FBI about such breaches “forced all of us who wanted not to believe this to have to take it seriously”, says Collins.

He adds that the NIH is currently investigating more than ten institutions that have failed to comply with disclosure rules. Collins hopes that the working group’s recommendations will help to prevent mistakes, although he acknowledges that the proposed measures won’t deter a determined government or criminal from stealing intellectual property.
What enforcement mechanisms are available to NIH to protect NIH-funded intellectual property and punish foreign agents for violating NIH policies and rules? Does NIH require additional authorities to effectively punish and deter wrongdoers? If so, what are they?

...Depending on the severity and duration of the noncompliance, NIH may decide to take one or more actions, which are also described in the NIH GPS, Section 8.5, Specific Award Conditions and Remedies for Noncompliance, including imposing specific award conditions, disallowing costs, withholding future awards for the project or program, suspending the award activities, making a referral for suspension or debarment, terminating the award, or revoking or taking title to the inventions made with the Federal support and pursuing patent protection or licensing the invention itself. . .
In other cases, scientists who received grants from the N.I.H. had shadow laboratories in China, which also received funds from the Chinese government. The foreign funding and affiliations were, in some cases, unknown to the National Institutes of Health and even to the American universities where the scientists worked.
Not Just an NIH Concern:

Purpose:
1. To support protection of IP and information about critical technologies relevant to national security and
2. To limit undue influence, including through foreign talent programs

Requirements:
1. List of all current projects and future support (regardless of source)
2. Title and objective of the other projects
3. Percentage per year to be devoted to other projects
4. Total amount of support if other proposals are awarded
5. Name and address of agencies associated with other support
6. Period of performance for other projects
NIH Grants Policy Statement - Foreign Component

• "The performance of any significant scientific element or segment of a project outside of the United States, either by the recipient or by a researcher employed by a foreign organization, whether or not grant funds are expended."

https://grants.nih.gov/grants/glossary.htm#ForeignComponent
Examples of Foreign Component

- Involvement of humans or vertebrate animals at a foreign site
- Extensive foreign travel by recipient project staff for the purpose of data collection, surveying, sampling, and similar activities
- Any activity of the recipient that may have an impact on U.S. foreign policy through involvement in the affairs or environment of a foreign country
Possible Examples of Foreign Component

• Collaborations with investigators at a foreign site that may result in co-authorship

• Use of facilities or instrumentation at a foreign site

• Receiving financial support or resources from a non-U.S. foreign entity
• If you have checked “Yes” to Question 6, you must include a Foreign Justification attachment in Field 12, Other Attachments D
  – Describe special resources or characteristics of the research project (e.g., human subjects, animals, disease, equipment, and techniques)
  – In the body of the text, begin the section with a heading indicating “Foreign Justification” and name the file “Foreign Justification”
**NIH Grants Policy Statement - Application**

**SF424 Biographical Sketch**

**B. Positions and Honors**

<table>
<thead>
<tr>
<th>Positions and Employment</th>
<th>1998-2000</th>
<th>Fellow, Division of Intramural Research, National Institute of Drug Abuse, Bethesda, MD</th>
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<tbody>
<tr>
<td></td>
<td>2000-2002</td>
<td>Lecturer, Department of Psychology, Middlebury College, Middlebury, VT</td>
</tr>
<tr>
<td></td>
<td>2001-</td>
<td>Consultant, Coastal Psychological Services, San Francisco, CA</td>
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<tr>
<td></td>
<td>2002-2005</td>
<td>Assistant Professor, Department of Psychology, Washington University, St. Louis, MO</td>
</tr>
<tr>
<td></td>
<td>2007-</td>
<td>Associate Professor, Department of Psychology, Washington University, St. Louis, MO</td>
</tr>
</tbody>
</table>

**Other Experience and Professional Memberships**

| Other Experience and Professional Memberships | 1995-     | Member, American Psychological Association                                             |
|                                             | 1998-     | Member, Gerontological Society of America                                              |
|                                             | 1998-     | Member, American Geriatrics Society                                                   |
|                                             | 2000-     | Associate Editor, Psychology and Aging                                                |
|                                             | 2003-     | Board of Advisors, Senior Services of Eastern Missouri                                |
|                                             | 2003-05   | NIH Peer Review Committee: Psychobiology of Aging, ad hoc reviewer                    |
|                                             | 2007-11   | NIH Risk, Adult Addictions Study Section, members                                     |

**Honors**

<table>
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<tr>
<th>Honors</th>
<th>2003</th>
<th>Outstanding Young Faculty Award, Washington University, St. Louis, MO</th>
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<tr>
<td></td>
<td>2004</td>
<td>Excellence in Teaching, Washington University, St. Louis, MO</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>Award for Best in Interdisciplinary Ethnography, International Ethnographic Society</td>
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</table>

Be sure to include any foreign affiliation appointments.
Other Support includes all financial resource, whether Federal, non-Federal, commercial or institutional, available in direct support of an individual’s research endeavors, including but not limited to…

<table>
<thead>
<tr>
<th>NAME OF INDIVIDUAL</th>
<th>ACTIVE/PENDING</th>
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<tbody>
<tr>
<td>Project Number (Principal Investigator)</td>
<td>Dates of Approved/Proposed Project</td>
</tr>
<tr>
<td>Source</td>
<td>Annual Direct Costs</td>
</tr>
<tr>
<td>Title of Project (or Subproject)</td>
<td></td>
</tr>
</tbody>
</table>

The major goals of this project are…

OVERLAP (summarized for each individual)

Samples

17. By signing this application, I certify (1) to the statements contained in the list of certifications* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances * and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)


*The list of certifications and assurances, or an internet site where you may obtain this, is contained in the endorsement or agency specific instructions.
Potential Scenarios

• Faculty member receives funding from the Foreign government via a grant to another (e.g., foreign) institution

• Faculty member receives funding from Foreign government via a grant to the home (U.S.) institution

• Faculty member receives funding from Foreign company via a grant to the home (U.S.) institution

• Faculty member receives funding from Foreign institution (government/company) for visiting scholar or other scholarly/academic activity
If your proposed research relies on resources that exist outside the U.S., whether they are research subjects, facilities and equipment, or collaborators, then your research has a foreign component.
Community-Associated Methicillin-Resistant Staphylococcus aureus Colonization Burden in HIV-Infected Patients

Kyle J. Popovich,1,2 Bala Hota,1,2 Alla Aroutcheva,1,2 Lisa Kurien,1 Janki Patel,1 Rosie Lyles-Banks,2 Amanda E. Grasso,2 Andrej Spec,1 Kathleen G. Beavis,2,3 Mary K. Hayden,1 and Robert A. Weinstein1,2

1Rush, University Medical Center
2Stroger Hospital of Cook County
3University of Illinois at Chicago Medical Center, Chicago, Illinois

Acknowledgments. We thank John Lough of Rush University Medical Center for his help with this study.

Financial support. This work was supported by the National Institute of Allergy and Infectious Diseases (grant number K23AI085029 to K. J. P.); and the Centers for Disease Control and Prevention (cooperative agreement number 1U54CK000161 to R. A. W.).
NIH Grants Policy Statement – Requesting Prior Approval

• Adding a foreign component under a grant to a domestic or foreign organization requires NIH **prior** approval
  – Prepare a letter to the NIH GMS
    • Attach foreign justification file describing special resources or characteristics of the research project, including the reasons why the facilities or other aspects of the proposed project are more appropriate than a domestic setting

FCOI and Foreign Influence

Financial Conflict of Interest

The NIH is committed to preserving the public's trust that the research supported by us is conducted without bias and with the highest scientific and ethical standards. We believe that strengthening the existing regulations on managing financial conflicts of interest is key to assuring the public that NIH and the institutions we support are taking a rigorous approach to managing the essential relationships between the government, federally-funded research institutions, and the private sector.

"The public trust in what we do is just essential, and we cannot afford to take any chances with the integrity of the research process."

— Dr. Francis Collins, Director, NIH

2011 Revised Regulations:

FAQs to 2011 Revised Regulation

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Clarification:
Disclose all financial interests received from a foreign institution of higher education or the government of another country.
NIH Required Financial Disclosures

• Disclose all remunerations/financial interests that appear to be related to your institutional responsibilities within 30 days of acquiring the interest

• Travel* paid for or reimbursed by an outside entity

* applicable only to PHS funded investigators
Financial Disclosures - Travel

• Sponsored or reimbursed travel* from an entity in the previous 12 months, such as:
  – Travel for which the individual is reimbursed for by an outside entity
  – Travel paid for on the individual’s behalf by an outside entity
  – Includes any registration fees, accommodations, meals, transportation costs, etc.

*applicable only to PHS funded investigators only
Financial Disclosures - Travel

• Dollar amount is not required for disclosure
• Excludes travel paid for by:
  – Rush (regardless of whether Rush is reimbursed for the travel by a third party),
  – U.S. federal, state, or local government agencies,
  – Other U.S. institutions of higher education, academic teaching hospitals, medical centers, or research institutes affiliated with an institution of higher education
COI Survey- New for FY19

Foreign Financial Interest and Foreign Component

Question:

1. Have you received any compensation from a foreign Institution of higher education or the government of another country (which includes local, provincial or equivalent government of another country)? This includes, but is not limited to stipends, grants, living expenses, paid in cash or otherwise received by you.

If Yes-

– Name of country
– Name of foreign institution
– Type of compensation
– Activity associated with compensation
– Scope and purpose associated with the activities
Financial Disclosure Scenarios

- Remuneration includes honorariums, wages, stipends and living allowances
  - e.g. compensation/living allowance for “consulting” to be PI on a grant for a foreign entity

- For disclosure, a foreign entity includes foreign companies, foreign universities/institutions of higher learning, foreign non-profit organization/association, or any level of foreign government
  - Rules are different for U.S. entities

- Includes personal activities during time-off/away from Rush
Visiting Scholar Agreement/MOU

• When individuals are visiting Rush and involved in research projects; not receiving compensation from Rush
  – Especially important if they will be collaborating on a project funded by a government grant or industry – to ensure adherence to funding agency’s requirements

• Contact Legal
Visiting Scholar, cont.

- Establishes requirements to adhere to Rush policies and protections for:
  - *Intellectual Property* – Visitor subject to policy
  - *Confidential Information* – not transmitted by Visitor to any third party included Visitor’s home institution unless agreed upon
  - *Research Materials* – what materials visitor brings to Rush and permission to use in Rush research
  - *Export Controls* – Compliance with US export laws and regulations and screening requirements
  - *Publications and Scholarly Work* – assigns copyrightable material related to Rush research
Summary of Concerns:

NIH Concerns are broader than disclosure failures:

- Diversion of intellectual property to foreign entities
  - Operating undisclosed “shadow labs” in foreign countries
- Disclosing confidential grant application information by NIH Peer Reviewer to third parties
  - Resulting in theft of biomedical IP
- Failure of researchers to disclose research resources and support provided by other organizations, including foreign governments

Institutional Obligations: Rush responsible for obligations under federal funding requirements and continued funding is at risk
Next Steps

• PIs should review all pending proposals and active awards to ensure that all foreign components have been disclosed.
  – If a PI identifies an omission or error in a previously submitted proposal or progress report, the PI should contact Sponsored Programs Administration (SPA) at ORA_Grants@rush.edu

• We expect NIH and other Federal Agencies to issue additional guidance soon

• SPA and ORC will continue to monitor the issue
Cybersecurity @ Rush

Teaching Excellence Lecture Series
August 20, 2019
What are the biggest risks for privacy and security?
Learning Objectives

- Describe security challenges facing healthcare organizations today.
- Recognize potential areas of risk in and outside of the hospital environment.
- Determine appropriate actions to take when presented with a potential risk.
cy·ber·crime
ˈsībərˌkrīm/
criminal activity (such as fraud or theft) committed using a computer especially to gain illegally access, transmit, or manipulate data
13M patient records exposed in 2018
365 healthcare breaches in 2018
2X the number of attacks as other industries.
Average cost for ONE electronic health record on the black market?

A. $1
B. $25
C. $50
$355 average cost of a data breach PER RECORD

- Federal Fines - $100 - $50,000 per violation
- Federal Penalties - $1.5 million - $5.5 million
- Federal Trade Commission fines - $16,000
- State penalties, criminal penalties, class action lawsuits, lost revenue
How do incidents happen?
Cyber criminals often find it easier to attack users than attack software.

- Phishing and spear phishing attacks
- Password attacks
- Risky security behaviors
- Human error
RECOGNIZING POTENTIAL AREAS OF RISK
Case Studies
• Review the sender name
• Check for spelling mistakes and bad grammar
• Analyze the salutation – is your name missing?
• Look for urgency
SAFE PRACTICES
5 steps to keep Rush data secure

• Protect your password
• Access email securely
• Lock your computer
• Be an email skeptic
• Consider the potential risks
Questions

Andy Reeder
AVP HIPAA Privacy and Security
Andrew_Reeder@rush.edu

Carrie Ryan
Cybersecurity Education
Carrie_I_ryan@rush.edu
Big Data in Healthcare

The Rush Journey
Provide business insights using BI and advanced analytics platforms to *all* partners leading to better, faster, and more relevant decisions.
What works and what doesn’t?

Self-service
- Good BI framework for Descriptive reporting
  - Traditional Analytics

Silos
- (Near) Real-time
  - Advanced Analytics
Big Data Analytics

- Is this weird?
  - Anomaly detection algorithms
  - ![Dog and Cat](image)

- Is this A or B?
  - Classification algorithms
  - ![Balance Scale](image)
  - A vs. B

- How much? How many?
  - Regression algorithms
  - ![Temperature Chart](image)
  - Monday: 72°
  - Tuesday: ?

- How is this organized?
  - Clustering Algorithms
  - ![Cluster Diagram](image)

- Free the data!
  - External integrated source of truth
  - Standardize platform
  - NLP
  - Data Science / Machine Learning

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Big Data - Everywhere

Value potential of Big Data affects virtually every part of the economy

1. Determined by industry average of transaction intensity, amount of data per firm, variability in performance, customer & supplier intensity, and turbulence

SOURCE: McKinsey Global Institute
Big Data Revenue

2015 - $122 billion

2019 – $187 billion

40% or growth is attributed to Healthcare

Olavsrud, T (2016) - ”Big Data and Analytics spending”
Big Data Contributors

• Business and Regulatory requirements – macro (nation/state) and micro (individual organization/department)
• EHR
• Consumer Healthcare
• Technology enablers
• Value based care drives data driven analytics
• Wellness, patient engagement, and education
• Predicting and avoiding care gaps – outside hospital walls
• Disease surveillance and management
• Precision medicine
• Clinical Trial Management
• Medication adherence
• Financial forecasting and planning
Classic Big Data Definition

- Volume
- Velocity
- Varity
- Value
- Veracity
Governance

Executive Steering Committee

Data Curation Workgroup

Platform
Curation
Metrics
Access

Integrated Development Environment
Business Objects
Tableau

Superusers

Use Case CRM
Use Case Institutes (Cancer Center)
Use Case Financial Reporting
Use Case Executive Dashboard

Data & Analytics Governance
Why Hadoop?

ONE

SINGLE SOURCE OF

TRUTH
Why Hadoop?

Unstructured Data

Structured Data

The 3 V's of Unstructured Data

VOLUME
The huge amount and growth of unstructured data can overtake traditional storage solutions.

VARIETY
Traditional data management can't handle with the changeable nature of big data.

VELOCITY
Data is generated at an ongoing flow, making it harder to manage.
What is Hadoop?
Rush - Hadoop
Data Science - Team

Big Data Engineering
- Acquire Data
- Prepare Data

Computational Big Data Science
- Analyze Data
- Act on Data

Business Intelligence
- RDBMS
- Operational reporting

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Use Case - ADR
Use Cost – High Cost Clusters

Encounters: 6612
AVG. LOS: 14.47
30 day Readmission: 12.01%
AVG. Cost per Encounter: 55.42K
Cost-Reimbursement: $13.3M
Cluster 1: Patients with neurological and psychological diagnoses and a long inpatient stay

Cluster 2/3: Patients with complicated spinal surgeries and complicated major joint replacement surgeries, particularly those with underlying medical comorbidities such as COPD and poorly controlled diabetes

Cluster 4: Patients with complicated neurosurgical procedures

Cluster 5: Medical patients with cardiovascular disease and/or chronic kidney disease;

Cluster 6: Patients with specific hematologic malignancies;

Cluster 7: NICU patients, particularly neonates of extreme pre-maturity
Use case – High Cost Clustering
Use Case - LWBS

LWBS Prediction Model

Model Quality Metric

- AUC: 83%
- Accuracy: 75%
- Sensitivity: 75%
- Specificity: 75%

Patient View

checkedInTime

<table>
<thead>
<tr>
<th>encounter</th>
<th>birthTime</th>
<th>TIME_ED_ARRIVED</th>
<th>ARRIVAL_TO_TRIAGE</th>
<th>ACUITY</th>
<th>chiefComplaint</th>
<th>Wait time (mins)</th>
<th>LWBS Risk</th>
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<tbody>
<tr>
<td>5.97</td>
<td>3</td>
<td>DIZZINESS</td>
<td>37</td>
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<td>2.65</td>
<td>3</td>
<td>LEG SWELLING</td>
<td>16</td>
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<td>6.13</td>
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<td>DEEP VEIN THROMBOSIS</td>
<td>72</td>
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<td>14.45</td>
<td>4</td>
<td>ARM PAIN</td>
<td>83</td>
<td>74.5%</td>
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<td>8.07</td>
<td>4</td>
<td>DENTAL PAIN</td>
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<td>5.88</td>
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<td>OTHER</td>
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<td>7.60</td>
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<td>100.23</td>
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<td>1.03</td>
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<td>COUGH</td>
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<td>41.9%</td>
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<td>5.22</td>
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</tr>
<tr>
<td>1.73</td>
<td>3</td>
<td>HEADACHE</td>
<td>37</td>
<td>69.2%</td>
<td></td>
<td></td>
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<tr>
<td>0.60</td>
<td>3</td>
<td>HEADACHE</td>
<td>69</td>
<td>36.0%</td>
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<tr>
<td>4.65</td>
<td>3</td>
<td>DIZZINESS</td>
<td>55</td>
<td>13.8%</td>
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<tr>
<td>7.96</td>
<td>3</td>
<td>FLANK PAIN</td>
<td>64</td>
<td>42.1%</td>
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<tr>
<td>4.60</td>
<td>3</td>
<td>PSYCHIATRIC PROBLEM</td>
<td>40</td>
<td>17.7%</td>
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<tr>
<td>4.28</td>
<td>3</td>
<td>MEDICATION REFILL</td>
<td>61</td>
<td>53.3%</td>
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<tr>
<td>6.15</td>
<td>3</td>
<td>ABDOMINAL PAIN</td>
<td>67</td>
<td>58.3%</td>
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<tr>
<td>10.22</td>
<td>3</td>
<td>BACK PAIN</td>
<td>53</td>
<td>67.5%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>1.67</td>
<td>3</td>
<td>OTHER</td>
<td>31</td>
<td>78.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Back to Top
Data Acquisition

- Privacy and Lifetime
- Curation and quality
- Sources of Truth
- Interoperability and regulation
- Emphasize foundational capabilities of EMR

Data Governance

- Social media
- Mobile apps
- External Sets
- Cost Data

Machine Data

- Sensor data from machines
- Data from fitness devices
- Data from medical devices

Attribute Data

- Patient Records
- Self reported novel people data
- Genomic data

People Data

Data (Sources of Truth)

Data Analysis (Aggregates, Reports, NLP, Prediction, Machine Learning, AI)

Data Presentation (Apps first, Real time, Mobile, Self Service)
Future State - Genomics

New England Journal of Medicine

- Disease with genetic component
  - Map
  - Clone gene
    - Diagnostics
    - Preventive medicine
      - Pharmacogenomics
    - Gene therapy
    - Drug therapy

Accelerated by Human Genome Project
Future State - Strategy

Timeline – 1 year to 3 years

**Genomic + Clinical + Cost + Unstructured Data = Precision Medicine & Prescriptive Decisions**

- **People Data**
  - Genomic Data
  - Clinical Data (caboodle)
  - Patient Unstructured Data (NLP)

- **Attribute Data**
  - Provider Directory
  - Cost Data
  - ERP
  - Nomenclatures/Ontology
  - Risk Models
  - Scheduling
  - Geography
  - Environmental

- **Machine Data**
  - Medical Device
  - Health Device
  - Sensor (IOT)

**Streamlining for real-time capability**

**Machine Learning + AI**

**Predictive + Prescriptive Analytics**

**Azure + Hadoop/Cloudera**

- Align with Epic Cognitive Computing Roadmap
- Real time data streaming to analytics platform
- Rules Engine with Bidirectional Flow of Data to EMR
- AI Layer applied to streaming data
- API Based App development leveraging FHIR/EMR and Streaming Data/HDFS

Back to Top
Thank you!
Agenda

1. Style Types
2. Style Impact
3. Style Barriers
4. Style Flexing
5. Communication Excellence Strategies
Disclaimer

The program content and structure for this presentation were conceived and designed by the presentation facilitator. Your facilitator has disclosed that there is no actual or potential conflict of interest in regard to this program. The planners, editors, faculty and reviewers of this activity have no relevant financial relationships to disclose. This program was created without any commercial support.
Learning Objectives

1. Increase awareness regarding non-verbal and verbal communication elements.
2. Identify potential impact of personal communication style.
3. Understand importance of style flexing for leadership effectiveness.
Communication Realities

- Linguistic style is culturally influenced in terms of learned signals, meaning and focus
- Linguistic style impacts perceptions of competence, confidence, who gets heard, who gets credit and what gets done
- Linguistic style includes: directness, indirectness, pacing, pausing and choice of words
Main Communication Styles

- Passive
- Aggressive
- Passive-Aggressive
- Assertive
Essential Communication Qualities

- Clarity
- Credibility
- Authority
- Authenticity
Verbal Communication

- Voice Tone
- Voice Speed
- Voice Volume
- Vocabulary
- Grammar
Non-Verbal Communication

• 70 - 80 %
• Facial Expressions
• Body Language
• Physical Distance
• Use of space
• Easily misinterpreted
• Culturally specific
• Physiological Changes
Potential Communication Barriers

- Opposing Styles
- Timing
- Differing Agendas
- False Assumptions
- Stress and Fear
- Internal Focus
- External Distractions
- Cultural Expectations
Communication Style Flexing

- What is it?
- Why do I need it?
- How do I do it?
Communication Excellence Strategies

- Know yourself
- Know your audience
- Know what you want to say
- Know why you want to say it
- Organize your thoughts
- Be direct, specific and clear
- Monitor non-verbal feedback
- Be positive and respectful
Questions?
Viewing Patients as People; Treating the Whole Person & Cultural Elements

Adam Waytz
Adam Waytz

The Power of Human
How our shared humanity can help us create a better world
Dehumanization, a definition

Dehumanization represents the failure to consider others as having minds capable of thinking and feeling. “Seeing human,” or the idea of humanization, represents the opposite: considering others as having minds capable of thinking and feeling.
A Dehumanizing Shift

Konrath, O’Brien, & Hsing, 2011
Figure 1. Percent getting together with their friends almost every day, U.S. 8th, 10th, and 12th graders, 1976–2017.

Figure 3. Hours a week socializing with friends and partying, entering college students reporting on their last year in high school, 1987–2016.

Figure 5. Mean loneliness, 6-item scale, U.S. 8th, 10th, and 12th graders, 1977–2017.

Twenge, Spitzberg, & Campbell
Fig. 1. Overall change in individualist practices (left) and values (right) over time. Each plotted point represents the score from a single country in the year indicated. The lines represent the slopes from the multilevel models, and the gray bands represent the 95% confidence intervals.
Four Pillars of Dehumanization

- Automation
- Stratification
- Polarization
- Marketization
Subtle dehumanization in medicine?

• Sinsky et al. (2016): 57 U.S. physicians in family medicine, internal medicine, cardiology, and orthopedics were observed & kept diaries

• **Measurements:** Time spent on: direct clinical face time, electronic health record [EHR] and desk work, administrative tasks, and self-reported after-hours work.

• **Results:**
  – During office day: 27.0% of time spent on direct clinical face time with patients, 49.2% of time on EHR/desk work
  – While in the exam room with patients: 52.9% of time spent on direct clinical face time, 37.0% on EHR/desk work.
Dehumanization in Medicine

With: Omar S. Haque, MD (2012, *PoPS*):

- Deindividuating practices (e.g., uniforms)
- Impaired patient agency
- Dissimilarity (illness, labels, power)
- Mechanization (treating people as systems/symptoms)
- Empathy reduction (regulating empathy for pain)
- Moral disengagement (need to inflict pain)
Responses and Solutions

- Individuating practices
- Reemphasizing patients’ agency
- Promoting physician/patient similarity
- Personification – knowing patients’ story, name, etc.
- Empathic balance (knowing when to regulate)
- Moral engagement
Mere reminders of humanity

- Andersson et al. (2013): Critical care – photos of patients improve engagement/treatment
- Photos of unconscious patients placed bedside in a Swedish ICU
- Nurses and anesthetists surveyed – reported that photos helped them see patients as human—“more an individual rather than a parcel.”

- Neto et al. (2006) Critical care nurses at two Toronto ICUs reported patient photographs aid nursing goals/care
- “I feel that having pictures of patients with their children and/or extended family makes us realize that they are ‘human’.”
Empathy training

- WORK IN PROGRESS
- Reflection, question-asking, listening

**THE BATHE TECHNIQUE**

The BATHE technique can help physicians discover emotional issues in a time-sensitive manner.¹

<table>
<thead>
<tr>
<th></th>
<th>Example Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Background “What’s going on in your life?”</td>
</tr>
<tr>
<td>A</td>
<td>Affect “How do you feel about that?”</td>
</tr>
<tr>
<td>T</td>
<td>Troubles “What troubles you most about this?”</td>
</tr>
<tr>
<td>H</td>
<td>Handling “How are you handling this?”</td>
</tr>
<tr>
<td>E</td>
<td>Empathy “That must be difficult for you.”</td>
</tr>
</tbody>
</table>

Riess et al. 2012: 3/60-min modules

1. scientific foundation for the neurobiology and physiology of empathy training
2. increase awareness of the physiology of emotions
3. Decode subtle facial expressions of emotion
4. teach empathic responses with self-regulation

**Patients perceived more care/empathy (blind to condition)**
Words from my brother…

- Lots of “training” opportunities during residency
- “Would rather detach from work”
Temporary Tattoos

- Latham et al. 2012

- Undergrad students wore temp tattoos for 24 hours simulating psoriasis.

- Prior to wearing the tattoo, students rated the physical and mental impact of psoriasis and eczema to be far lower than other diseases.

- After wearing the tattoo, these medical students rated the impact of psoriasis and eczema to be much greater, on par with arthritis, diabetes, and heart disease.

Corr et al. (2017) – similar results with melanoma tattoos.
Keeping human beneficiaries top of mind

- People often do things on behalf of others that they would not do for their own benefit
How to increase hand-washing

Personal vs. Patient Consequences

Hand hygiene prevents you from catching diseases.

Hand hygiene prevents patients from catching diseases.
How to increase hand-washing
(Grant & Hoffman, 2011)
“Our first responsibility is to our patients; second, to people who work for us; and then to our lenders and investors.”
Conclusions

• Subtle dehumanization – a societal issue
• Certain aspects of medical environment may exacerbate tendencies for dehumanization
• Solutions are very preliminary
• Some traction for:
  – Mere reminders of humans
  – Empathy training
  – Highlighting beneficiaries
• Much room for collaboration between medical and behavior sciences
THANK YOU
a-waytz@kellogg.northwestern.edu
Team Science: New Horizons

Dr. Alan L. Landay
Professor  Department of Internal Medicine
Professor  Department of Microbial Pathogens and Immunity
Assistant Provost Team Science
Team Science Advisory Group – to support the mission, goals, and objectives of Team Science overall, the Research Strategic Plans, and the Assistant Provost for Team Science; meets quarterly.

Joshua Jacobs – Chair
Sherine E. Gabriel
Susan Freeman
Diane McKeever

**Communication and Knowledge will be all achieved virtually.**
Revisiting the Mission & Vision for Team Science

Mission

1. To provide organizational, subject-matter, and incentive-based direction toward the development of large, multi-disciplinary, program-project-type team science sponsored award opportunities.

2. To partner with external entities, including industry, where shared interests and complimentary characteristics blend into research initiatives that benefit both parties.

3. Expected outcomes of the office include the receipt of extramural funding for large grants and external partnerships.

Vision

1. Coordinate Rush University efforts that facilitate translational and team-based research.

2. Establish new sources of research funding through collaboration and partnerships with other academic medical centers, diagnostic and pharmaceutical industry partners.
### Current Projects & Project Teams

<table>
<thead>
<tr>
<th>Current Projects &amp; Teams:</th>
<th>Today’s Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P50. Udall Grant</strong></td>
<td></td>
</tr>
<tr>
<td>Parkinson Studies</td>
<td></td>
</tr>
<tr>
<td>Jeff Kordower/Ali Keshavarzian MPI</td>
<td></td>
</tr>
<tr>
<td>Will Submit Jan 2020</td>
<td></td>
</tr>
<tr>
<td><strong>P50 NIAMS – Anne Marie Malfait, PhD</strong></td>
<td>Waiting for RFA to be issued Team being formed</td>
</tr>
<tr>
<td>Pain Research</td>
<td></td>
</tr>
<tr>
<td><strong>U19 NIA – Alan Landay, PhD</strong></td>
<td>Developing Collaborative Team with JAX Laboratories. Grant Submitted – Jan 25 2019 Review in June./July 2019 Resubmission May 2020</td>
</tr>
<tr>
<td>Aging and Microbiome</td>
<td></td>
</tr>
<tr>
<td><strong>R21/R33 NIA – Sandra Swantek, MD</strong></td>
<td>Planning a Spring 2020 submission</td>
</tr>
<tr>
<td>Studies with Caregivers and Patients with Neurocognitive Decline</td>
<td></td>
</tr>
<tr>
<td><strong>NIH HEAL Initiative UM1 – John Burns, PhD; Asokumar Buvanendran, MD, Josh Jacobs MD</strong></td>
<td>Submitted Oct 24,2018; Reviewed Scored and Funded</td>
</tr>
<tr>
<td><strong>NIAID U01 Emerging Infectious Disease Research Centers- Collaboration University West Indies and SUNY</strong></td>
<td>Submitted June 2019</td>
</tr>
<tr>
<td><strong>US4 NCATS Rare Disease Network – Liz Berry-Kravis and Deborah Hall Fragile X and FXTAS</strong></td>
<td>Submitted Oct 8,2018 Reviewed and Scored</td>
</tr>
<tr>
<td><strong>NIDDK High Impact Interdisciplinary Science RC2- Collaboration Wake Forest and P40 Vervet Colony</strong></td>
<td>Planning 2020 Submission</td>
</tr>
<tr>
<td><strong>Collaboration Studies of Aging in ITM</strong></td>
<td>Proposed Submission of U19 NIA</td>
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<tr>
<td><strong>Laboratory Center ACTG UM1 -NIAID</strong></td>
<td>Submitted August 2019</td>
</tr>
<tr>
<td><strong>Advanced Stage Development and Utilization of Research Infrastructure for Interdisciplinary Aging Studies (R33) Collaboration CFAR, Pepper Centers, Shock Centers</strong></td>
<td>Submitted June 2019</td>
</tr>
</tbody>
</table>
BUILDING TEAM GRANTS

EXAMPLE OF U19
Network topology of metabolism, microbiota and immune system in association with neurocognitive and physical manifestations of aging
Project 2
Metabolic effects on immune senescence: Unutmaz (Lead PI, JAX), Landay (Rush), Immune reprogramming CRISPR editing: Unutmaz (JAX), Mitochondrial metabolism: Birsoy (Rockefeller).

Project 3
Epigenetics and transcriptomics during immune aging and computational analysis: Ucar (Lead PI, JAX), Li (JAX) Epigenetic reprogramming of immune cells: Unutmaz (JAX), Xu (UConn)

Project 1
Cohorts, clinical phenotype: Kuchel (Lead, UConn), Laurienti, Krueckers, Divers (Wake), Manning, Steffens, Bartley (UConn) Immune profiling: Unutmaz (JAX) Metabolite assays: Landay (Rush) Microbiome: Oh (JAX) Computational modeling: Robinson (JAX), Miller (Wake)

Project 4
Microbiome culturomics: Oh (Lead PI, JAX), Immune, senescence & organoid assays: Unutmaz (JAX), Landay (Rush), Xu (UConn), Keshavarzian (Rush) Metabolite identification and engineering: Yao (UConn), Oh (JAX)

Project 5
In vivo mouse models for metabolic impact of immune senescence: Xu (Lead PI, UConn) 3D bioprinted of gut/immune tissue models: Ozbolat (Penn State), Keshavarzian (Rush)

Biological sample/Data Core:
Human subject sample processing, repository: Unutmaz (Lead PIs, JAX), Bartley (UConn), Oh (JAX) Mouse tissue samples: Xu (UConn), Biostatistics/data: Divers (Wake)
<table>
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<tr>
<th>Current Collaborations</th>
<th>Today’s Status</th>
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</thead>
<tbody>
<tr>
<td>Merck-Contact is Aubrey Stoch, MD Director of Experimental Medicine</td>
<td>Meeting on Nov 8, 2018 with focus on Neuroscience, Inflammation and Cardio/Metabolic studies. CDA signed and in place for discussion, in follow-up collaboration discussion Visit planned early 2020</td>
</tr>
<tr>
<td>SERES-Contact is Matthew Henn, PhD Senior VP Head of Drug Discovery</td>
<td>Setting up Meeting for 2020 with focus on Inflammation (UC, IBS) Infection (C-diff, Antibiotic Resistance, HIV) Immunoncology and Metabolic disease (NASH, NAFLD, PSC)</td>
</tr>
<tr>
<td>Abbott Labs – Diagnostic Collaboration John Hackett, PhD Gavin Cloherty, PhD</td>
<td>In-Person Meeting at Rush July 17, 2018 Developing Collaboration with Graduate College for Graduate Student Training and Research Collaboration</td>
</tr>
<tr>
<td>Gilead Richard Haubrich- Vice President Medical Affairs</td>
<td>Setting up opportunity to discuss clinical informatics at Rush</td>
</tr>
<tr>
<td>RTI</td>
<td>University collaborations and possible fellowships in areas of Digital-health; Pain, Newborn Screening and Non-Communicable Diseases</td>
</tr>
<tr>
<td>Genentech/IMD</td>
<td>Opportunities in Healthcare Disparities; Coleman Foundation– 4 Year Program (Cancer)</td>
</tr>
</tbody>
</table>
BUILDING ACADEMIC INDUSTRY PARTNERSHIPS

RUSH UNIVERSITY

RUSH MEDICAL COLLEGE • COLLEGE OF NURSING • COLLEGE OF HEALTH SCIENCES • THE GRADUATE COLLEGE

SCIENTIFIC DISCOVERY WITH MERCK

EXPERIMENTAL MEDICINE

• Neuroscience
• Immunology
Building Collaborations between Rush University and RTI International

RUSH UNIVERSITY

RUSH MEDICAL COLLEGE • COLLEGE OF NURSING • COLLEGE OF HEALTH SCIENCES • THE GRADUATE COLLEGE
RTI International is an independent, nonprofit research institute dedicated to improving the human condition. We combine scientific rigor and technical expertise in social and laboratory sciences, engineering, and international development to deliver solutions to the critical needs of clients worldwide.
RTI at a Glance

Worldwide Presence and Financial Strength

$957 M
FY2018 Revenue

3,830 Projects
(fiscal year 2018)

1,226 Clients
(fiscal year 2018)

12 U.S. Offices

12 International Offices

Research Triangle Park, NC
Ann Arbor, MI
Atlanta, GA
Berkeley, CA
Chicago, IL
Fort Collins, CO
Portland, OR
Rockville, MD
San Francisco, CA
Seattle, WA
Waltham, MA
Washington, DC

Abu Dhabi, United Arab Emirates
Barcelona, Spain
Beijing, China
Belfast, Northern Ireland
Jakarta, Indonesia
Kuala Lumpur, Malaysia
Ljungskile, Sweden
Manchester, United Kingdom
Nairobi, Kenya
New Delhi, India
San Salvador, El Salvador
Toronto, Canada

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The R3 Initiative: A Rush-RTI Research Collaborative

COMING SOON!!!

• A jointly funded research pilot program to promote cross-organizational collaboration
• Open call but with 3 target areas of mutual interest
  – Innovations in Care Delivery
    • Social Determinants of Health; health quality measurement
  – Advancements in Health Education and Learning
    • Supporting increasingly diverse workforces; innovations in communication and empathy in clinical care
  – Inventions with Technology and Data
    • Using data to improve care coordination; AI solutions to improve patient-specific decision-making
• Target release for late spring 2020
### Team Science – Current and Long-Term Opportunities

#### Current Opportunities:

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Rush Assistance/Support</th>
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<tbody>
<tr>
<td>1.</td>
<td>Projects &amp; Project Teams</td>
<td>Key Recruitment</td>
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<tr>
<td>2.</td>
<td>Industry Collaborations</td>
<td>Institutional Support</td>
</tr>
<tr>
<td>3.</td>
<td>Recruitment Links</td>
<td>Engaging Faculty</td>
</tr>
<tr>
<td>4.</td>
<td>Moving Team Science Forward</td>
<td>Share Success with Rush Leadership</td>
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<tr>
<td></td>
<td></td>
<td>External Partnership</td>
</tr>
<tr>
<td>5.</td>
<td>Facilitate Support For ITM – Driven Priorities</td>
<td>Basic Science Connections; Cores &amp; Infrastructure on Grants</td>
</tr>
</tbody>
</table>

#### Longer-Term Opportunities:

- Research America Links
- Innovation with Hiten Patel
- Recognition for Team Science Innovation
- Deeper Links/Synergy with Rush Strategic Plans – System Wide
Training Opportunities

- Graduate Students
- Post-Doctoral Fellows
- Clinical Fellows
I. Focusing on the Next Generation
   • Team Science Fellows
     a) Cohn Fellows
     b) Industry Fellows – RTI Scholars, Abbott Scholars
     c) Pilot – Supported T.S. Scholars
     d) ITM – Team Science Scholars

(Open Submission and Leveraging Funds)

II. Expanding Footprint
    • For Team Science
      a) “Collaboratory” Space
      b) “Blue Sky” Approach and Infrastructure
      c) Grant – Funding Resources
      d) Team Science Special Services
      e) Knowledge Share

All intended to bridge-build between University, Research and Rush Systems

Leveraging FY’20 as A Year of Action
BECOMING A PHYSICIAN

Toward a Culture of Scientific Inquiry — The Role of Medical Teaching Services

Katrina Armstrong, M.D., Rajesh Ranganathan, Ph.D., and Mark Fishman, M.D.
Pathways Consult Service

• Connecting biology to the bedside
• Identify potential unifying mechanism from unexplained patients
• Patients unexplained presentations referred to Pathways Consult
• Meet with patient care team, preform literature review, engage clinical and scientific experts
• Interdisciplinary conference with physician scientists and research scientists
• Proof of concept trial with experimental therapeutic
TRANSLATIONAL RESEARCH AND
TEAM SCIENCE
THE CLINICAL RESEARCH AND EDUCATION LINKS
Food Allergy Clinic

• Integrated allergy, immunology, and GI service for adult and pediatric patients
• College of Health Science Nutrition
• College of Nursing
• Graduate College PhD student thesis projects
Revisiting Blue Sky Discussion

• What we learn v. what we share
• Health Literacy
• Trauma and cognitive health
• Fall risk
• Physical function
• Resilience
• Health behaviors
• Chronologic v. biologic v. reproductive again
• Health service research
• Palliative care
• Telehealth v. face to face
• Falls prevention
• Program development
• Health promotion programming
• Going to where people are
• Self-management
• How do we bring learning back to Rush?
• Bone health and aging

• Barriers to health
• Social determinants of health
• Biomakers (integrated in aging)
• Dementia
• Bio-repositories
• Prevention strategies
• Minority populations
• Evidence-based programs (English and Spanish)
• Translation
• Frailty
• Workforce development, continuing studies
• Train next generation of professionals
• Caregiver models (taking care of caregiver)
• Care management
• Impact of community
• Integration in Rush system
• Center for Health and Social Care Integration
### Current Recruitment(s):

<table>
<thead>
<tr>
<th>Current Recruitment(s)</th>
<th>Today’s Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion with Recruitment Office</td>
<td>Dr. Landay will present on Team Science during faculty orientations.</td>
</tr>
<tr>
<td>Ongoing Interaction of Faculty in Nursing and Health Sciences</td>
<td>Recruitment of Research Faculty and Integration in University</td>
</tr>
</tbody>
</table>
Research Administration Shared Services

Pre and Post Award Services

Director
Kristin Moody

Pre Award Grant Specialist 2
James Kelly

Post Award Grant Specialist 1
Monica Mascitti

Post Award Grant Specialist 2
Marie Zielinski

Pre Award Services
- Assist with proposal development
- Assist with Proposal budgets
- Interface with Rush Research Portal and Proposal Submission
- Execute sub award agreements
- Experience with complex grants submissions (P01, UM1, U19, & T32)

Post Award Services
- Overall Post Award administration of grants and department budgets
- Liaison to Fund Accounting & LINK
- Award monitoring – pace and allowability
- Assist with Progress Report submission
- Annual budgeting
- Trend Analysis
- Financial reporting and closeouts
- Effort reporting & salary distributions
Research Administration Shared Services

Lab and Regulatory Services

Director
Kristin Moody

Laboratory Services Coordinator
Parisa Ramsi

Laboratory Services Coordinator
Aleksandra Danilovic

Research Regulatory Coordinator
Nsude Okeke Ewo

Laboratory Services
- Space inquiries and access requests
- Equipment inventory & control
- Conduit to Rush service groups such as MCE and EVS

Regulatory Services
- Single IRB support
- Inspections & Compliance in collaboration with Occupational Safety Office
- Conduit to Research Compliance office

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Objectives
1. Understand key characteristics & behaviors of successful teams
2. Be able to identify individual work styles & differences relevant to building effective teams
3. Learn & practice skills for successful team building & achievement

Why Team?
- Goal
- Benefit

Characteristics & Behaviors of Successful Teams
- Clear expectations
- Adaptable/flexible leadership
- Safety
- Rules of engagement
- Respect

Characteristics & Behaviors of Effective Teams: It’s about the People
- Diversity (demographics vs perspectives) (+) better results, more creative (-) disagreements

Group Participation Styles

<table>
<thead>
<tr>
<th>Tasks/Issues</th>
<th>Analytic (response to rules &amp; regs)</th>
<th>Dominant (how approach problems &amp; deal with challenges)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserved/Introverted</td>
<td>ORGANIZATION</td>
<td>ACTING</td>
</tr>
<tr>
<td>Proactive/Extroverted</td>
<td>CONNECTION</td>
<td>INTERACTING</td>
</tr>
</tbody>
</table>

People/Relationships

Adapted from Thomas Erikson’s Surrounding by Idiots
<table>
<thead>
<tr>
<th>Group Participation Style: RED</th>
<th>Group Participation Style: BLUE</th>
<th>Group Participation Style: GREEN</th>
<th>Group Participation Style: YELLOW</th>
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</thead>
<tbody>
<tr>
<td><strong>Self Described</strong></td>
<td><strong>Self Described</strong></td>
<td><strong>Self Described</strong></td>
<td><strong>Self Described</strong></td>
</tr>
<tr>
<td>Dominant</td>
<td>Analytical</td>
<td>Agreeable</td>
<td>Optimistic</td>
</tr>
<tr>
<td>Ambitious</td>
<td>Perfectionist</td>
<td>Balanced</td>
<td>Cheerful</td>
</tr>
<tr>
<td>Passionate</td>
<td>Realist</td>
<td>Tolerant</td>
<td>Persuasive</td>
</tr>
<tr>
<td>Determined</td>
<td>Detail-oriented</td>
<td>Loyal</td>
<td>Charming</td>
</tr>
<tr>
<td>Decisive</td>
<td>Silence = Virtue</td>
<td>Listener</td>
<td>Inspiring</td>
</tr>
<tr>
<td><strong>Perceived As</strong></td>
<td><strong>Perceived As</strong></td>
<td><strong>Perceived As</strong></td>
<td><strong>Perceived As</strong></td>
</tr>
<tr>
<td>Rude</td>
<td>Uncaring</td>
<td>Conflict Averse</td>
<td>Impulsive</td>
</tr>
<tr>
<td>Impatient</td>
<td>Micromanaging</td>
<td>Rigid</td>
<td>Careless</td>
</tr>
<tr>
<td>Aggressive</td>
<td>Pessimist</td>
<td>Unconcerned</td>
<td>Poor listener</td>
</tr>
<tr>
<td>Confrontational</td>
<td>Cold-hearted</td>
<td>Resistant to change</td>
<td>Overtalkative</td>
</tr>
<tr>
<td>Arrogant</td>
<td>Aloof</td>
<td>Passive</td>
<td>Superficial</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>People Make the Team: Booster</th>
<th>People Make the Team: Booster</th>
<th>People Make the Team: Booster</th>
<th>People Make the Team: Booster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggravators</td>
<td>Aggravators</td>
<td>Aggravators</td>
<td>Aggravators</td>
</tr>
<tr>
<td>Give mundane tasks.</td>
<td>No authority.</td>
<td>Sit around &amp; do nothing.</td>
<td>Being ignored/isolated, negative attitudes.</td>
</tr>
<tr>
<td>Effective Feedback</td>
<td>Concrete examples.</td>
<td>Very direct &amp; stand strong.</td>
<td>Forced strict routines.</td>
</tr>
<tr>
<td>Speak up &amp; Get to the point.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the exact details &amp; facts correct.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Adapted from Thomas Erikson’s *Surrounded by Idiots*.
CREATING EFFECTIVE TEAMS: (Adapted from Thomas Erikson, 2019)

Leveraging Group Participation Styles

<table>
<thead>
<tr>
<th>Blue</th>
<th>Red</th>
<th>Project: gas pedal with breaks, task completion, not “fun”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Yellow</td>
<td>Happy, cohesiveness of team, slow to get project done</td>
</tr>
<tr>
<td>Blue</td>
<td>Green</td>
<td>Trouble with decisiveness, but well thought out</td>
</tr>
<tr>
<td>Red</td>
<td>Yellow</td>
<td>Lots of talking, less listening</td>
</tr>
<tr>
<td>Red</td>
<td>Green</td>
<td>Tough unless 1 is a leader &amp; other is a follower</td>
</tr>
<tr>
<td>Yellow</td>
<td>Blue</td>
<td>Unhappy, impasse. Absolute NOT</td>
</tr>
</tbody>
</table>

Establish Method to Generate (The Best) Ideas

1. Brainstorming: (-) social/informational influence
2. Better: Nominal Group Technique (NGT) (by Andre Delbecq & Andrew H. Van de Ven, 1971)
3. Best: NGT then Brainstorming those ideas

Provide Opportunities for “Other” Opinions

1. Normalizing dissent → Conflicts (Content vs. Interpersonal)
2. Assign Devil’s Advocate
3. Options for nonverbal input
4. Future input opportunities with due date → Create iterative process to continue to make it better after time to think & process

TEAM DEVELOPMENT:

Clear Purpose

1. Expectations clear & understood
2. Determine team charter
3. What is the reason for the team?
4. What happens with the products of the team?

Tuckman’s Stages of Group Development (by Bruce Tuckman, 1965)

1. Forming
2. Storming – vulnerable stage
3. Norming
4. Performing
5. Adjourning (maybe)

Role of the Individual

1. Understand clear priorities
2. Speak up
3. Encourage each person to contribute
Rush Teaching Academy: Integrating the 4Ms of an Age-Friendly Health System in University Curriculum

Erin Emery-Tiburcio, PhD
Laurin Mack, PhD
Linda Olson, PhD, OTR/L
Mary Zonsius, PhD, RN

May 19, 2020
Disclosure

• The presenters do not have any potential or actual conflicts of interest in regards to this presentation.
Learning Objectives

• Describe the 4Ms of an Age-Friendly Health System, including during COVID-19

• Identify strategies to integrate the 4Ms into existing curriculum

• Recognize readily available resources to integrate the 4M framework into existing curriculum
Demographic Imperative

• By 2030, the number of people 65 years and older is expected to be more than 70 million—or almost double the nearly 37 million older adults in 2005

• Older adults represent at least half of most clinic and inpatient units

• COVID-19 is having a disproportionate impact on older adults
What is an Age-Friendly Health System?

An Age-Friendly Health System is one in which every older adult’s care is:

• Guided by an essential set of evidence-based practices (4Ms: What Matters, Medication, Mentation (Mind), Mobility);

• Causes no harms; and

• Is consistent with What Matters to the older adult and their family.

In an Age-Friendly Health System, value is optimized for all — patients, families, caregivers, health care providers, and the overall system.
## The 4Ms

<table>
<thead>
<tr>
<th>The 4Ms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What Matters</strong></td>
<td>Know and align care with each older adult’s specific health outcome goals and care preferences including, but not limited to end-of-life, and across settings of care</td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
<td>Ensure that older adult move safely every day to maintain function and do What Matters</td>
</tr>
<tr>
<td><strong>Medication</strong></td>
<td>If medications are necessary, use Age-Friendly medications that do not interfere with What Matters to the older adult, Mobility, or Mentation across settings of care</td>
</tr>
<tr>
<td><strong>Mentation</strong></td>
<td>Identify, treat, and manage dementia, depression, and delirium across care settings of care</td>
</tr>
</tbody>
</table>
# The 4Ms

<table>
<thead>
<tr>
<th>The “4Ms”</th>
<th>IMPACT</th>
</tr>
</thead>
</table>
| **What Matters**| • Improves patient satisfaction  
• Lowers inpatient utilization  
• Increases hospice use  
• Increases treatment adherence |
| **Medication**  | • Decreases adverse events  
• Decreases falls (in younger adults too)  
• Improves ADLs and quality of life |
| **Mentation**   | • Decreases health care costs (depression increases it)  
• Improves treatment adherence |
| **Mobility**    | • Decreases falls  
• Decreases health care costs |
Diffusion of Innovation: AFHS Network Mapping

Center for Excellence in Aging
Family Medicine
Geriatric Medicine
Internal Medicine
Neurology
Nursing
Physiatry
Pop Health Pharmacy
Psychiatry
Psychology
Public Health
Social Work
Using the 4Ms: Framework for Learning

- Provides a “roadmap” for teaching and learning
- Assures content is being delivered
- Identifies gap in curriculum
- Offers structure to assess competence in faculty and students
- Conveys competence of graduates/practitioners to community
- Aligns with accreditation requirements
Using the 4Ms: Framework for Learning

• Provides a shared understanding between professions

• Serves as a resource for teaching and learning

• Can be graded for novice learners to advanced practitioners
Using the 4Ms: Framework for Learning

- Framework for shared language across the university
- Easy to incorporate into existing curriculum
- Identify and address gaps in curriculum
- Remember the 4Ms are inter-related
College of Nursing

<table>
<thead>
<tr>
<th>Term 1</th>
<th>Term 2</th>
<th>Term 3</th>
<th>Term 4</th>
<th>Term 5</th>
<th>Term 6</th>
</tr>
</thead>
</table>

- What Matters
- Mobility
- Mentation
- Medication

4Ms
# 4M Interventions

<table>
<thead>
<tr>
<th></th>
<th>High-level Interventions</th>
<th>Implementation Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What Matters</strong></td>
<td>Know what matters: health outcome goals and care preferences for current and future care, including end of life</td>
<td>Developed with the health systems teams.</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Teams can select from our ideas or identify their own ideas for reliable implementation.</td>
</tr>
<tr>
<td>2</td>
<td>Act on what matters for current and future care, including end of life</td>
<td>We will learn from one another and share generously.</td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
<td>Implement an individualized mobility plan</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Create an environment that enables mobility</td>
<td></td>
</tr>
<tr>
<td><strong>Medications</strong></td>
<td>Implement standard process for age-friendly medication reconciliation</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>De-prescribe and adjust doses to be age-friendly</td>
<td></td>
</tr>
<tr>
<td><strong>Mentation</strong></td>
<td>Ensure adequate nutrition &amp; hydration, sleep and comfort</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Engage and orient to maximize independence and dignity</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Identify, treat, and manage dementia, delirium, and depression</td>
<td></td>
</tr>
</tbody>
</table>
Interprofessional Education

4Ms

What Matters

Mobility

Medication

Mentation
Interprofessional Education

Geriatric Interdisciplinary Team Training (GITT)

Part 3 & 4: Mrs. Kemp’s Behavior and Hospitalization

• What should Mr. and Mrs. Kemp decide to do in this situation?
• How should providers manage this situation?
• What role does “What Matters” play in her care, specifically regarding her new behaviors?

IPE 502: Interprofessional Patient Centered Care

Now we are retired, and we all of a sudden are devoid of the pleasures or the gratifications or the mirroring that our work allowed us.
College of Health Sciences

4Ms

- What Matters
- Mobility
- Mentation
- Medication
Tips

• Appearance Matters
  • Dress
  • Language/Body Language
• Share Credentials and Experience
• Avoid Pre-judgments Based on Generation
## Old Age

<table>
<thead>
<tr>
<th>Western Views</th>
<th>Other Views</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decline in Social Status</td>
<td>Revered</td>
</tr>
<tr>
<td>Intolerance</td>
<td>Honored</td>
</tr>
<tr>
<td>Burdensome</td>
<td>Offers Value through history</td>
</tr>
<tr>
<td>Drain of Resources</td>
<td>Family responsibility to care for</td>
</tr>
<tr>
<td>Unproductive</td>
<td>Resource</td>
</tr>
<tr>
<td>Successful aging= retaining cognitive skills, economic self-sufficiency, optimism</td>
<td>Successful Aging= Accumulating wisdom and a deeper understanding of human experience</td>
</tr>
<tr>
<td>Medicalization of Aging</td>
<td>View age related illness as a natural process</td>
</tr>
</tbody>
</table>
Figure 9: Percentage of persons 65+ with a disability, 2014

- Independent living difficulty: 15%
- Self-care difficulty: 8%
- Ambulatory difficulty: 23%
- Cognitive difficulty: 9%
- Vision difficulty: 7%
- Hearing difficulty: 15%
- Any disability: 36%

Source: U.S. Census Bureau, American Community Survey
Medical College

4Ms

What Matters

Mobility

Medication

Mentation
Communicating with Older Adults

Narrating the Visit

Watch the video, then use the forward arrow to continue.
Discussion

• How would this framework be helpful in your teaching?

• How would you envision using it?
Discussion

• What challenges do you imagine with building this framework into existing curriculum?
Discussion

• Think about the syllabus for the course you’re teaching next – where can you incorporate additional materials about older adults using the 4M framework?
Next Steps

Call to action – when you are ready:

• Include logo in existing course slide decks (introduce to 4Ms)
• Use 4Ms to enhance curriculum and address gaps
  • CATCH-ON team can provide materials to fill gaps including 4M modules, PowerPoints, and more
  • Please visit www.catch-on.org (under education for healthcare clinicians) to learn more
Rush Teaching Academy
Building Financial Resilience Beyond the Pandemic
Program Recap

Now more than ever we all have questions and CAP STRAT can help you navigate through this time of uncertainty. Whether you make decisions on your own or with an advisor, we are happy to offer our perspective on this critical aspect of your life. Please don’t hesitate to reach out to us at 630-320-5100 or email Neil Davies at ndavies@capstratig.com.

Since the pandemic, we have had significant negative and positive market swings given the uncertainty of the impacts and timing of the recovery from the economic shut down.

Some key things to consider as you manage your personal financial situation now and into the future:

**DIVERSIFICATION**

Diversification is the driving factor to long-term investment success: Research shows over 91% of an investment portfolio’s return is solely based on asset allocation. Ensure your aggregate household’s investments are appropriately diversified, not just each individual account. This way you may avoid assuming more risk than you intended and jeopardizing your success.

**HAVE A PLAN**

Create a financial plan to align your finances with your life goals. Your plan will help you determine if you are on track financially to achieve your life and legacy goals and if not, can help you identify adjustments to make to do so.

A financial plan will create a recommended asset allocation based on your financial resources, time horizon, and risk tolerance. Be sure it factors in all your financial assets, including your practice and other assets. And as your financial circumstances evolve you may look to shift your targeted allocation. Also, as the markets fluctuate so will your investment holdings, so be sure to rebalance them toward your targeted allocation – at least annually.

**SAVINGS**

Take advantage of tax-advantaged saving and investment opportunities. Maximize deferrals (and employer contributions) into your qualified and non-qualified retirement plans. If you participate in a high deductible health plan, contribute to a Health Savings Account.

Your personal investments. Ask your investment or tax advisor about the various Roth IRA strategies that you may be able to deploy. Consider 529 Plans for your children’s eligible private or college education.
CHARITABLE GIVING

Consider using appreciated securities versus cash when making donations; and depending on your level of giving, establishing a donor advised fund is just one strategy to maximize tax benefits of charitable contributions.

ESTATE PLANNING

Create or update your estate plan: To protect yourself, loved ones and your legacy. The basic documents control decision making so that your wealth is transitioned and to ensure your intentions are fulfilled if you become incapacitated; and include: powers of attorney (for both property and healthcare), a will, and in many cases a revocable trust.

FEES

It is essential to know what you pay for your investments. Excessive fees can significantly erode the growth of your wealth and curtail you achieving your long-term personal and legacy goals. Know the dollar amount, not just the percentages, of the fees you are paying for investment advisory and asset management – and assess the value of the services you are receiving for these fees.

To learn more about how we can help you, reach out to us at 630-320-5100 or email Neil Davies at ndavies@capstratig.com.

To get our current market thoughts, please tune in to our YouTube channel here: CAP STRAT YouTube
Who We Are

CAP STRAT is an independent, employee-owned, fee-only firm. We are the standard-bearer of absolute independence, combining a no-confict business strategy with exceptional client service and adaptability.

**Our Value Proposition to You**

Our firm is unique within the asset management and wealth advisory industry, where we compete against traditional consulting firms, small practices within larger advisory firms, and teams affiliated with broker/dealers. In contrast, we have structured our firm to fully align our interests with our clients’:

- **Registered Investment Advisor only.** We are a Registered Investment Advisor only, with no broker/dealer affiliations. As a result, we are legally prohibited from receiving any form of compensation, other than compensation from our clients.

- **No affiliations.** Neither our firm nor any of our associates have any affiliation to any other organization – bank, broker/dealer, investment manager, etc.

- **Employee owned.** We are 100% owned by our employees. In addition to ensuring that our business interests are fully aligned with our clients’ interests, our ownership structure allows us total control over our resources, including people and technology, which supports our innovation and development of new tools and resources for our clients. These characteristics allow us to deliver true independence, act as a strategic partner, and bring a fiduciary approach to all aspects of our relationship.
Service We Offer You

The success of your future depends on successfully managing your wealth. To help you, we offer asset management services to grow investments and wealth advisory services to manage risk, preserve your wealth, and optimize all financial decisions. What’s unique about our approach is that we tailor our approach to meet your specific needs, goals, and risk preferences. There is no “cookie cutter” here.

Growth and capital preservation over the long-term are a central tenet to our investment philosophy as you worked hard to build you wealth, so let’s make sure you don’t lose it. We focus on what matters: diversification, tax efficiency, fees, and simplicity.

Rather than trying to integrate advice and products from a series of professionals, you benefit from our holistic approach in which we coordinate all the services needed to manage your money and plan for your own and your family’s current and future needs. Things we advise on: estate planning, tax planning, sale of business, risk management, charitable giving, executive benefits, concentrated stock, family dynamics, investment opportunity analysis.

What does it cost to be you? We help you answer that question and build a plan to manage your everyday finances to achieve your goals. This includes budgeting, cash flow planning, debt management strategies, and saving for college and retirement. Our planning helps you build sustainable income that will provide for the lifestyle you intend to lead in your post-career phase of life.
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