

1) Analysis

a) Identify Existing Strengths

Rutgers' Strengths in Research

This year the Center for Collaborative Genomics Research on Mental Disorders received the largest MH-related grant at Rutgers in the amount of \$8,998,435 (part of a 5 year, \$44.5 million award). The PI is geneticist, Jay Tischfield, director of Rutgers University Cell and DNA Repository. The Center provides resources enabling researchers throughout the country to pinpoint the genetic causes of mental disorders. Understanding the genetics of mental disorders will likely result in new diagnostic and therapeutic approaches.¹³

Several other RBHS subdivisions have also received significant MH research funding. For example, the Institute for Health, Health Care Policy, and Aging Research's (IHHCPAR) annual grant awards currently total over \$12 million; of which approximately 40% (\$4,854,256) focuses on MH research. The Agency for Healthcare Research and Quality (AHRQ) awarded IHHCPAR funding to operate a Center for Education and Research Therapeutics (CERT). This CERT, with a \$22.6 million award over 5 years, supports a Secure Remote Access Facility, home of a multi-state Medicaid repository, and multiple years of federal administrative data sets. The School of Social Work (SSW) receives ~\$12 million in annual research awards, and though not reflected above, many of the projects relate to MH. The Robert Wood Johnson Medical School Department of Psychiatry's (RWJMS-DP) total research funding this year is \$2.3 million. The School of Health Related Professions' Department of Psychiatric Rehabilitation and Counseling Professions (SHRP-PRCP) received \$1.4 million in research awards, including one to evaluate career development intervention for people with SMI. The Department of Psychology within the School of Arts and Sciences (SAS) has active research laboratories addressing neuronal, hormonal, behavioral and cognitive mechanisms related to the understanding, treatment and prevention of MI. These laboratories train undergraduate and graduate students, many of whom then establish research laboratories of their own, to further study related MI issues.

In addition, the Center of Alcohol Studies has active NIH-funded research laboratories developing and investigating translational mechanisms of change, in the context of treatment development and randomized controlled trials of evidence-based treatments with substance abuse use and co-morbid mental illnesses such as depression, anxiety and post-traumatic stress disorder.

In summary, research within the proposed signature area of MH at Rutgers runs the gamut from genetics and human pluripotent stem cell studies to brain imaging, clinical trials and data analysis of large MH data bases (e.g. Medicaid, Medicare). It also includes studies of psychotherapy, psychopharmacology, psychoeducation and psychiatric rehabilitation for the prevention and treatment of various mental disorders throughout the lifespan both with and without comorbid addictive and medical conditions. These research efforts have focused on the full array of MH conditions, including, but not limited to: autism, eating disorders, anxiety disorders, suicide, schizophrenia, mood disorders, comorbid substance abuse and/or medical conditions, and medically unexplained (somatoform) symptoms. Our researchers are actively exploring new ways of assessing and treating these often debilitating, life-shortening illnesses, as well as seeking underlying causes that can inform prevention and treatment efforts. In addition, this work has utilized a broad range of methods including quantitative, qualitative, mixed method, epidemiological, survey, econometrics, and demographic analysis. Our Workgroup has been able to identify over 1,200 professional mental health related journal articles written in the past 5 years by Rutgers faculty.

Other notable individual researchers and current annual amounts in MH research include: 1) Nancy Wolff as part of the IHHCPAR Center for Mental Health and Criminal Justice Research (\$2 million in federal funds); 2) Steven Crystal (\$1.7 million) with IHHCPAR; 3) Steve Silverstein of University Behavioral Health Care (UBHC) and RWJMS-DP at \$1.1 million with an anticipated award of \$3 million over 5 years from a New

Jersey Division of Mental Health and Addiction Services (NJDMHAS); and 4) Melissa Roberts and Ken Gill of SHRP co-investigators (\$1.8 million from NJDMHS).

Our researchers collaborate with major national research institutions, legislators and executives within the State and Federal government, health and MH policy leaders, and the Center for Medicaid and Medicare Services. Several research scientists within RBHS have also developed collaborations with investigators in the social and/or medical sciences within Rutgers and at other renowned research institutions such as Columbia and New York Universities (NYU), Washington University in St. Louis, and the University of Southern California (USC). For example, Michael Gara collaborated with investigators at six sites across the nation, including Rutgers, University of Cincinnati, UCLA, Howard University, University of Texas at San Antonio and University of Michigan, in an NIMH funded study of race disparities in the diagnosis of schizophrenia.¹⁴ One recent collaboration of note, featured this past year in the publication *Rutgers Today*, is the work of Steve Silverstein, and Thomas Papatomas, professor in the Department of Biomedical Engineering, Director of the Laboratory for Visual Research and Dean of the Busch Campus.¹⁵ They are testing an innovative strategy to assess the severity of psychosis and to predict recovery and relapse – using a measure involving visual illusions where psychosis causes people to see stimuli more accurately than healthy people. This measure is also helping to shed light on the mechanisms involved in psychosis, which is increasingly being viewed as the result of a functional disconnection between stored knowledge of the world and incoming sensory input.

Strength in Education

RBHS has two Departments of Psychiatry within its two medical schools, each training 650 medical students. They offer accredited general and child and adolescent psychiatry residency programs and psychology internships. RWJMS-DP also recently added a forensic psychiatry program. UBHC, an independent entity at Rutgers, provides a significant proportion of funded training, clinical services and training sites for RWJMS-DP.

SHRP-DPRCP enrolls more than 200 students annually. The department is unique in the Nation with its focus on the rehabilitation of serious mental illness. It offers doctoral, masters, bachelors and associate degrees in psychiatric rehabilitation, an MS in rehabilitation counseling, several post-secondary certificates, and an AS degree in occupational therapy. RBHS recently merged its two schools of nursing and this school has a Psychiatric Nurse Practitioner training program within one of its Doctorate in Nursing Practice tracks.

Many other departments within Rutgers also educate MH professionals. Rutgers SSW, one of the largest of such schools in the country, trains the largest component of the professional MH workforce with 1,500 masters level social work students annually. The school also has two doctoral level programs and a very large undergraduate program. The school's Institute for Families (FF), one of the largest continuing education programs in the country, offers over 350 continuing education workshops a year and has 12 different certificate programs.

The Graduate School of Applied and Professional Psychology (GSAPP) has a student body of approximately 100 students, graduating 36 doctors of psychology (Psy.D.) per year as clinical and school psychologists, most of whom pursue careers in the MH field. Rutgers' Department of Psychology, within its SAS, supports courses enrolling 11,000 students per semester and offers numerous courses, undergraduate and graduate level on the etiology and treatment of MH.

UBHC, NJMS, GSAPP and SHRP hold a total of ten (10) conferences annually in the area of MH, serving as a forum to bring together clinicians, academicians and researchers. These include conferences on evidenced-based practices, recent findings in schizophrenia research, and addictions, among other topics. These are in addition to monthly Grand Rounds held by RWJMS-DP and NJMS-DP. Leveraging these current activities provides for a translational “sweet spot” to integrate research findings into practice.

Strength in Clinical Care and Community Service

UBHC has 48 inpatient beds with annually ~1,290 inpatient admissions, 82,507 outpatient visits (~300 daily), an average daily partial hospitalization census of 255, and 3,101 annual psychiatric emergency room visits. It is one of the largest academic providers of behavioral health care services in the country. UBHC revenues have grown almost 5 fold to \$241 million over the past 19 years. Despite its small operating margin it has also developed a successful research and training institute. It also offers specialized schools and school-based services. UBHC has also established successful peer-to-peer and suicide prevention call centers.

In 2010, UBHC established the Yaffa-Rose Integrated Care Center in collaboration with the Department of Family Medicine at the NJMS in Newark and another clinic in New Brunswick affiliated with RWJMS. These integrated care centers include board certified family medicine physicians. UBHC is one of just a few facilities in the country that provides integrated physical and MH care to improve health trajectories of its patients.¹⁶

UBHC has state-funded projects to provide comprehensive medical and psychiatric care to all of the New Jersey State Prisons. Specifically, UBHC provides physical health, dental, MH and sex offender specific services. UBHC assisted the NJ Department of Corrections by resolving a long standing settlement agreement related to accessing MH treatment; significantly lowering the State's health care costs while improving clinical outcomes including a reduction in suicide rates.¹⁷ UBHC's work in the state prison system has led to reductions in the mortality rates of inmates with SMI from 702 to 363 per 100,000 in the past 5 years. The improvements made in the clinical care of the prison population may inform performance improvements aimed at decreasing mortality rates for individuals with SMI in the general population. RWJMS-DP also provides care through the RWJ University Medical Group in New Brunswick and Piscataway, NJ where there are approximately \$2 million in charges and 8,000 visits per year.

Within GSAPP, its Center for Applied Psychology (CAP) includes the Psychology Clinic serving approximately 200 clients annually. Operating a total of 16 projects, CAP serves both the needs of its academic programs and its patients with a budget of \$4.2 million from contracts, grants and service revenue.

The Rutgers Cooperative Extension (RCE) 4-H Youth Development Program and the School of Environmental and Biological Sciences (SEBS) engage in research and services which promote MH with a focus on prevention through experiential learning and life skill development in all 21 New Jersey counties.¹⁸ Funding is provided through Rutgers, and county, state, federal and non-profit grants.

b) Identify Critical Gaps

Lack of Federal Funds: MH research and treatment has not been well funded throughout the United States compared to other diseases, despite its producing a greater level of disability than nearly all other conditions. Per the National Alliance on Mental Illness (NAMI), for every research dollar spent by the National Institutes of Health, less than one cent goes to SMI. In contrast, they estimate the total cost of schizophrenia to society per research dollar spent, is \$161.26, compared to only \$65.65 for heart disease, \$9.96 for cancer, and \$6.86 for AIDS.¹⁹

Within the field of MH research, as in science as a whole, it is also becoming clear that the limited research dollars will increasingly be allocated to teams of researchers who can implement translational research programs. We believe that Rutgers is in a strong position to take advantage of this emerging trend.

Challenges: This Workgroup has identified a number of obstacles to the further development of MH related research efforts at Rutgers. Each of these obstacles can be ameliorated including:

- **Faculty attrition:** Many faculty have left the RWJMS-DP and NJMS-DP over the past five years for positions at other institutions due to decreasing institutional support. These significant difficulties include delays in Institutional Review Board (IRB) and grant contract approvals, delays in the Legal and Contracts Office approvals, difficulty accessing patients with our clinical partner UBHC, the inability to fund protected time for faculty to conduct research, and lack of salary increases.
- **Problematic handling of indirect costs:** The current practice of handling facilities and administrative cost recovery within Rutgers is inconsistent and has been viewed as not serving to re-invest in the research effort. This is a barrier to promoting more interdisciplinary research. This

workgroup identified an article that describes this institutional barrier at many universities and makes recommendations to address it.²⁰

- **Lack of access to research subjects within UBHC:** Although UBHC has a large patient population with SMI, Rutgers researchers have had challenges recruiting research subjects. These challenges include: inaccessibility of the large population of partial hospital patients during daytime program hours, essentially limiting patient access for research to ~8-10 hours a week (i.e., late afternoon on weekdays); complex university requirements for setting up and managing petty cash accounts to pay research subjects; UBHCs' requirements to report all research appointments to the finance office; and a perceived lack of cooperation between program staff/administrators and the research efforts of faculty. UBHC's non-acceptance of commercial insurance for outpatient services has also limited the scope of research (e.g., an NIH-funded project on the post-hospitalization treatment of first episode psychosis had to be terminated because all eligible patients had commercial insurance, and alternative methods of appointment payment for the project (e.g., use of indirect costs) were not considered acceptable).

c) Opportunities for Collaboration

As previously described, many departments receive significant funding for MH research. Some interdisciplinary collaborations exist at Rutgers (i.e., the aforementioned collaboration between Silverstein and Papathomas). However, many more collaborations are possible if such efforts are prioritized, incentivized and actively fostered. Potential collaborations could involve the emerging interdisciplinary fields of imaging genetics, pharmacogenomics, and cognitive epidemiology, among many other possibilities. Two potential opportunities consistent with the emphases noted above (i.e., prevention and reducing morbidity and early mortality) for clinical trial research are outlined below.

1. Rutgers' faculty members are currently engaged in work on prevention of SMI. This research focuses on treatment and public policy related to children with MH problems and known risk factors for the development of SMI. Major and innovative initiatives could be implemented through RIMH by doing the following:
 - Using a combination of developmental, genetics, imaging, cognitive data and big data to reliably identify children likely to develop SMI
 - Developing non-stigmatizing school-based and Rutgers-based, interventions to address the earliest changes that are associated with the development of SMI including: academic performance decline; poor social skills and other interpersonal difficulties; and emergence of psychiatric symptoms or behavior changes, in order to alter the developmental trajectory of high risk children towards more positive outcomes

These efforts could include parent, teacher, and doctor training for early identification; provision of non-stigmatizing interventions for cognitive and social skills enhancements and supported education; and neuroscience-based data collection to allow for refined prediction and preventive efforts.

2. In recent years, UBHC has focused on the physical health and wellness of its seriously mentally ill consumers, including the provision of co-located primary care clinics, wellness clinics and exercise programs at several sites.¹⁶ The purpose of this integrated approach is to improve the physical health status of people with SMI who have, or are at risk for, co-occurring physical health problems, by providing both physical and behavioral health, person-centered care. Collaborations among UBHC, primary care sites, exercise science, nutritional sciences, and physical education, along the lines of developing safe and accessible exercise regimens and nutritional programming, could generate new areas for clinical research as well as improve the quality of services. Related to the same topic, SHRP has engaged the allied health disciplines in the promotion of physical health and wellness of persons with co-morbid medical and psychiatric disorders. Finally, several faculty in the Department of Psychiatry have developed paradigms for implementing time-limited MH interventions in medical clinics, such as family medicine, cardiology, and neurology.²¹ Expanding this initiative meets a key NIMH funding priority.²²

We see the work that could be done at Rutgers as paradigm-shifting in concert with current system transformations. Traditionally, outcome studies have looked at evaluating the impact of a specific treatment

of a specific diagnosis, excluding patients with co-morbid conditions and with histories of poor treatment compliance. As a result, the findings of many of these studies do not generalize well to the populations of patients seen at real-world community clinics – many of whom have co-morbid substance abuse, other psychiatric and medical conditions, unfavorable life circumstances, and poor adherence to treatment. This widely discussed problem does provide opportunities, however, for more realistic effectiveness studies conducted by multi-departmental teams at Rutgers, given the UBHC patient population, which comprises urban and suburban low SES populations with high comorbidity that are often excluded from research studies.

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- ¹⁸Rutgers University is the land grant University of New Jersey, and as such, fulfills its outreach mission through Rutgers Cooperative Extension (RCE). RCE employs faculty in the following three department areas: Agricultural and Resource Management, Family and Community Health Sciences, and 4-H Youth

Development. These faculty work on teaching, research and extension practice in RCE offices located in all 21 counties of the state. Promotion of MH is a prime focus of their work, through a wide variety of community based health and wellness programs (e.g. conflict resolution, bullying prevention, nutrition, fitness, and creative arts). A number of academic departments and institutes in School of Environmental and Biological Sciences' faculty (SEBS also engage in work which promotes MH. (e.g., Public Health, Landscape Architecture, Nutritional Sciences, Human Ecology, Institute for Food, Nutrition and Health). Topics of research have included, for example, cultural competence in MH research, influence of Japanese gardens on well-being of older adults with dementia, and the health of African Americans.

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²⁴This could take place within a highly secure compartmentalized computer structure operated within IHHCPAR. Linkages between different State datasets could be done by one group and the datasets could then be de-identified before researchers and analysts use them for specific analytic projects. Thus (with appropriate Data Use Agreement) matches could be developed including linkage of health care administrative data to Medicare for dual-eligible individuals; nursing home Minimum Data Set; birth and death data; the Cancer Registry; child welfare data; and other linkages would provide a far more powerful way of understanding the use and outcomes of health care services to gain greater value from our health care expenditures. It would also create a powerful platform for all kinds of clinical research.