**FINAL**

**11/14/17, 1:29pm**

**New York Academy of Medicine Award Ceremony**

**Duncan Clark Lecture**

**Tuesday, November 14, 2017**

**Main Section #1**

Duncan Clark was a leader in American Public Health and Preventive Medicine. He played a major advocacy role to add fluoride to the New York City’s water supply to prevent tooth decay. He pointed out investigative studies showed a decline in cavities of 60-70% without increased rates of cancer, heart disease or other harmful effects. He focused on other public health threats; e.g. hand-washing.

He was Dean at the Long Island College of Medicine before joining Downstate in 1951. He was also President of NYAM from 1983-1984.

Dr. Clark was a distinguished, elegant, articulate man and a strong voice for the best in medicine and public health. I am honored to be able to serve as one of the Clark Lecturers for the NYAM.

Mental health care, research and policy, is a huge topic. I am going to comment about my entrance into psychiatry, trace developments in clinical research and policy areas over the last several decades, focus on several psychiatric disorders, schizophrenia, mood disorders and anxiety disorders, and comment on innovations now and in the future to transform work on psychiatric illness and the sciences that underline them.

For me awareness started in a dramatic way. In a college sophomore psychology class, I visited a psychiatric state hospital for the first time and viewed an empty room with a transparent wall and only two things inside: a naked man and feces smeared around the walls.

That experience plus work in Catskill hotel dining rooms exposed me to vast variations in behavior. Serving hotel guests I watched one man who despite having a perfectly clean setting would take out his cloth and clean every piece of silver, glass and dish at his setting. A couple whose weight was about 2 to 1 in favor of the woman ate in a consistent pattern. The woman after finishing her plate would start to work on her husband’s plate without his making any comments. One man asked that for an 8 day stay, I serve his mother 5 prunes per meal, 3 times a day. I was dazzled at the fact that during her stay, I served her 120 prunes.

Idiosyncrasies were everywhere. In medical school I recognized many people visited multiple clinics – e.g., medicine, neurology, arthritis, et al, who had at the base of their omnipresent complaints a psychiatric problem. All this and more propelled me into a wide-flung career in psychiatry.

Psychiatry’s pervasive nature plus extraordinary volume of care needed by people around the globe increased my interest.

Until the second half of the 20th Century, psychiatric care was focused in state hospitals which in the late 50’s housed almost 600,000 people in the U.S.A and private offices, many of which provided shock therapy or psychotherapy. This changed as new medicines became available including lithium, antipsychotics and antidepressants as we entered the early 60’s.

The Kennedy Administration launched the National Community Mental Health program in the early ‘60s. The program projected to each of 1,500 centers 200,000 people for mental health service accounting for the estimated national population of 300 million.

These centers brought psychiatric services closer to the country’s population. Mental health and psychiatry became better known. People seeking care within cities and municipalities were able to secure help in nearby facilities.

Community mental health centers were expected to serve patients leaving state hospitals. Critics both of psychiatry and subsequently of community mental health centers asserted that providers avoided the sickest patients. So the anticipated benefit for these ex-hospital patients was not consistently realized.

In the sixties, as useful medications became widely utilized, their impact was complemented by other developments. Concern about patient’s rights and elimination of inappropriate hospitalizations increased the reduction of patients in State Hospitals. In a famous situation in Washington, D.C., a patient exercised her rights refusing hospitalization though seriously psychiatrically ill. She remained outside the hospital during an evening storm. The patient was found dead the next morning having resisted admission to a protected environment. This example illustrates a dilemma for mental health policy: patient’s rights vs. care for those unable to care for themselves.

At the same time, State Budget Directors pushed to reduce patient numbers in State institutions – precipitating the deinstitutionalization movement which had adverse outcomes. To illustrate in the ‘60’s, Kings County Hospital (KCH) a municipal hospital in Brooklyn, New York had an acute psychiatric division housing 300 inpatient beds, admitting 7,000 a year. Brooklyn State Hospital was immediately adjacent to KCH. Many patients came to KCH, had a short stay, were transferred to the state hospital next door and discharged relatively rapidly. This was frequently followed by readmission to the acute hospital and a circular unproductive course for psychiatric patients.

Critics claimed many state hospital patients were not receiving good treatment. This further increased the perceived need for out-patient mental health care.

The community mental health movement continued through the early 70’s. President Nixon thought the movement so successful he concluded curiously it no longer needed federal support. This struck many as strange logic.

Nixon attempted to impound federal funds for mental health. This was reversed and Daniel X. Freedman, a giant in psychiatry, played a lead role in freeing up the funds. Mental health services had been primarily under state authority. The national community mental health center program afforded the federal government a role and expanded services.

The Carter Administration arrived in Washington, DC in 1977. This led to a unique national focus on mental health. Mrs. Carter had learned from work in Georgia of the problems of psychiatric patients. The Carters created the Carter Commission which worked for several years and produced the Mental Health Systems Act.

This act provided services for 5 underserved populations: elderly, minorities, children, psychiatric patients in non-psychiatric medical care settings and the chronic mentally ill. It took a long time to introduce this legislation to the congress. Mrs. Carter, an eloquent leader, mentioned the delay to her husband. She commented with a delicate smile at a White House meeting with many constituents she was impressed by how rapidly things moved once she spoke to Jimmy.

The commission did more than The Mental Health Systems Act. It encouraged the National Institute of Mental Health (NIMH) to increase attention to treatment, prevention, epidemiology, etc. The Mental Health Systems Act, the centerpiece of the commission’s efforts, was endorsed by Congress followed by a great celebration in Northern Virginia in October 1980. That was followed, however, by the Reagan victory in the election of 1980. We worried about the Reagan Administration’s attitude toward the federal role in mental health.

When administrations change, a transition team is established. That team debriefs agency heads running government programs. As NIMH Director, I met with the transition group. We were pleasantly surprised when the transition team asked how much money and staff we needed to carry out the Mental Health Systems Act.

We were, however, abruptly awakened by the Office of Management and Budget’s (OMB) reaction to our annual NIMH budget request. On Friday, February 13, 1981 at 4:00pm, the so-called pass back; i.e. the response from the new OMB leadership under David Stockman was provided to us and stated the following:

1. The Community Mental Health Program would be converted into a block program to States. There would be no further discussion of this change in the Administration.
2. There would be a reduction over time of clinical training of mental health professionals.
3. Research and research training grants of the institute would be suspended for 18 months and then restarted.
4. The Intramural Program would stay intact.

The change in direction brought about by the Reagan Administration after the extensive work by the Carter Administration, shows those frustrated by Washington’s sluggishness an example of the obstacles.

OMB’s decisions constituted a broad assault on almost all NIMH functions. I joked we were given considerable time to appeal because we did not have to provide a defense until the next working day. The news came to my office 4:00pm the afternoon of Friday, February 13. We recalled all Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) staff, some of whom had already started enjoying the 3-day holiday.

With help from government staff in and out of ADAMHA, we modified much of what OMB set forth. But, we were told the conversion to a block grant program was not negotiable. This reflected the new administration’s intent to return authority to the States and reduce the federal government role. I suggested to OMB we evaluate the effect of the block grants, I was turned down and told we no longer had a role in mental health services.

We restored most research and research training programs, and also much of the clinical training. We still had to respond to OMB’s concern regarding research. Their concern involved what they called “social research.” The OMB told us they would be happy to define “social research.” We decided to formulate the definition ourselves. We would eliminate social program grants not targeted to mental health, we would continue programs in which mental health was the major focus. This resulted in a $9 million reduction in the research budget, far less than what had been threatened.

Congressman Henry Waxman put his stamp on the block grant program. While OMB attached no requirements to the block grant budget, Congressman Waxman insisted, since this was mental health and substance abuse money, the states should only spend it on mental health and substance abuse services. Had he not done that, States theoretically could have used the block grant money for any purpose. One half jest was it could be used for ice skating rinks.

Meanwhile, recognition of the importance of brain science increased. At the institute, we were excited when the Nobel Prize was awarded to our grantee, Roger Sperry for demonstrating the differential functions of the left and right brain hemispheres.

Shortly after, Lou Sokoloff an NIMH Scientist, won the Lasker Award for discovering two deoxyglucose as a substance used in PET scanning. With these two triumphs, we communicated with government budget staff and helped turn around the view of mental health. We learned the administration was supportive of biological science.

There were heroes. An opportunity arose as the Senate considered the budget. One day it was decided by the Congressional Appropriation Sub-Committee no more money be given any agency.

The NIMH and other institutes each have an advisory council. On our NIMH advisory council was Jennifer Jones, the famous movie actress interested in mental health owing to her daughter’s suicide. She convened a dinner with the overall head of the Senate Appropriations Committee, Mark Hatfield an outstanding moderate republican. Mark, his wife, Jennifer and I had dinner at the Four Seasons Hotel in Washington, DC. After a wonderful, wide ranging conversation, he asked if we needed help. I told him of $20 million for NIMH pending in a bill being considered at the Senate Appropriations Sub-Committee. Senator Hatfield next morning went to the committee hearing with Jennifer Jones joining as an observer. The head of the subcommittee from New Mexico, Senator Harrison Schmitt announced he was putting $20 million more into the NIMH. Senator Warren Rudman from New Hampshire said plaintively, we decided not to put more money in anything, Senator Hatfield answered, I asked Senator Schmitt to reconsider.

From then on, NIMH was treated in research budgets in a fashion comparable to that of other NIH Institutes.

But, the Community Mental Health Center program was interrupted. State hospitals continued to shrink. There was wider use of antidepressants, antipsychotics and lithium. However, attempts to secure better reimbursement for psychotherapy met strong resistance from the Senate Finance Committee Chaired by Senator Russell Long. His administrative aide vigorously disagreed. At one point, he told me “the horse is out of the barn and the door is closed.” They would do nothing about psychotherapy reimbursement. They were not convinced of its effectiveness.

At another point, three Institutes – Neurology, Mental Health and Aging were commissioned by Secretary Heckler to work on Alzheimer’s disease. We informed congress total federal spending on Alzheimer’s disease was $25 million. We began a push to increase funding for this terrible disease. We were concluding a report with recommendations for parity in care between psychiatric and non-psychiatric care for patients with Alzheimer’s. The head of the Health Care Financing Administration (HCFA) arrived at our final meeting and overrode our recommendations.

Still neuroscience was taking off. A small group of scientists who met annually evolved to a national meeting today of tens of thousands of scientists from all over the world. It emphasizes interest in brain, neurological conditions, and psychiatric conditions.

Another important development beginning in the early 80’s was the launch of the National Alliance of the Mentally Ill (NAMI). A meeting was arranged in Madison, Wisconsin. I was invited as NIMH Director. Some 40 parents of schizophrenic youth asked, should we launch a national citizen advocacy organization. I vigorously encouraged it. From my beginning in D.C., I saw citizen groups advocating for illnesses, e.g. diabetes, heart disease and cancer. Yet the Mental Health Association was the lone substantial size national citizen association working on mental health and psychiatric illness. NAMI became the dominant national citizen mental health advocacy organization rapidly growing in numbers to 200,000 with nationwide branches. NAMI supports clinical and research programs and policies for the mentally ill.

An important figure working with NAMI was Fuller Torrey, a sharp critic of mental health policy and psychiatry, but a strong advocate for patients. The illness had struck his family. He continues today as an important voice arguing for maintenance of psychiatric hospital capacity and for the value of court mandated psychopharmacological treatment for psychiatric patients on an out-patient basis.

NAMI combined with the Kentucky Schizophrenia Foundation to launch the National Alliance for Research on Schizophrenia and Depression (NARSAD) now called Brain and Behavior Research Foundation (BBRF) in the early 80’s. It was led first by Gwill Newman, a superb leader who tragically lost a son to psychiatric illness. Following her time as NARSAD’s Chair, Constance and Stephen Lieber assumed leadership.

I met the Liebers first at a conference we held in New York at Columbia University. The intention of our conference was to ensure research was described to the general public in understandable language. The first such conference was held in the mid-80s. On a cold, wet Saturday morning we worried about the size audience we would have. We were pleased when 700 people came to this first of what became an excellent series of symposia for citizens, families, mental health professionals, et al.

The NARSAD story is marvelous. In the first year of NARSAD’s functioning, they raised $50,000. A board debate ensued as to whether to provide $50,000 in grants because of uncertainty another $50,000 would be raised in subsequent years. Through the efforts of NARSAD (BBRF) and the Liebers, as passionate leaders, close to $400 million over 30 years has been provided throughout the world for disciplines conducting excellent research on psychiatric conditions.

Another important development more apparent over years was recognition that many psychiatric illnesses started at earlier ages, sometimes childhood. Young people could suffer serious psychiatric conditions, even attempting and committing suicide.

Psychiatric disorders in children and youth has gained increased attention. People recognize psychiatric illnesses may begin in young children and become more manifest in later life.

The increased awareness of child psychiatric disorders meant we needed much more in the way of mental health professional trained in child psychiatric disorders. Unfortunately, the numbers have not kept up with the demand. Child mental health people are scarce. The awareness of the early beginnings of major mental illnesses and the increasing frequency of child psychiatric illnesses which may even be short lived has left countless of victims who should be in treatment unable to secure it.

This problem is not exclusive to youngsters with psychiatric disorders, but also as the demography of the country changes and people live longer, geriatric psychiatrists are similarly in scarce supply. The reduction in support for training of mental health clinicians which originated with the Reagan Administration changes has left the country bereft of adequate numbers of mental health clinicians.

Large sections of the population, children, older people and middle-aged adults are not securing mental health services. This simply means their problems grow and increasingly compromise their lives.

From the ‘80s forward, psychiatric research has expanded. In the early ‘80s few academic medical centers had much psychiatric science. That changed, today most AHCs have substantial research programs. Today we find excitement in the research community. Whether genetics, molecular biology, optogenetics, imaging, stem cells, neural circuits or search for markers, much research is being conducted.

The original hope genetics would find genes that alone might be specific for a given psychiatric illness as is the case in Huntington’s disease was not realized. Genetics is an important contributory cause in psychiatric illness, but not simple as we might have liked.

An earlier scientific leader was Seymour Kety. An extraordinary human being and scientist, he produced some of the earliest evidence genetics was a contributory factor, finding, e.g., an increased incidence of schizophrenia in siblings of schizophrenics.

Another area of great interest involves connections between psychology and neuroscience. An outstanding leader in brain science, the Nobel Laureate Eric Kandel studies the behavior of snails to help understand the more complex functions of the human brain. Aside from outstanding work on animals he also emphasizes linkages between the psychological and biological. In a brilliant paper entitled “Psychotherapy of the Single Synapse” he pointed out when people learn, the learning affects elements in their brain system. As Eric stated “the ultimate level of resolution for understanding how psychotherapeutic intervention works is identical with the level at which we are currently seeking to understand how psychopharmacologic intervention works – the level of individual nerve cells and their synaptic connections.” This involves; e.g. enhanced synapse formation. Eric, a psychiatrist and neuroscientist is probably the most distinguished leader illuminating linkages between psychological and biological issues.

Another important technology that evolved in the 70’s and flourished increasingly is imaging. The CAT scan became available in the 1970’s. The PET scan became more prominent in the 80’s. As imaging scans gained greater precision and sophistication, they revealed a reduction of brain matter in patients. This evidence supported the importance of biology in the development of schizophrenia.

This surge in neuroscience had wide ranging impact. My belief is the excitement of neuroscience helped reverse the steady decline in the number of medical students going into psychiatry. Those numbers had peaked at 10% of senior medical students at the end of the 60’s, but declined to 3% by the late 70’s. Then with the surge in neurobiology, which Dr. Lewis Thomas called the most exciting field in biomedicine, the numbers climbed back up.

There is a vast human element in most psychiatric research. One of the most touching scenes occurred after Mogens Schou, the Danish psychiatrist, who established lithium as a treatment and prophylactic was given the Lasker Award. This was celebrated at the Rockefeller University campus. After he spoke, the actress Patty Duke, famous for the film the “Bad Seed” complimented him for his lithium work. She thanked him for changing her life. She said she would do everything she could to support him.

In a poignant moment after Patty Duke made that statement, Schou went back to the podium and tearfully revealed he had gone into research because a relative had psychiatric illness. Many people in medical fields and particularly psychiatry have been influenced by personal experience.

Over the last several decades new imaging technology, wide care use of medications, recognition of biological factors, and particularly genetics being acknowledged as an important contributor all strengthened research on psychiatric illness. Kandel’s own research earned him a Lasker Award and a Nobel Prize. His work showed brain tissue was plastic: nothing is set in stone, the brain is not a static hard wired computer. Learning can not only modify the strength of existing synapses, but also spur generation even in adults of new nerve cells and synaptic functions we call neurogenesis and synapse genesis. Kandel stated “ultimately all psychology disturbances reflect specific alterations in neurons and synaptic function. What we conceive of in our mind is an expression of the functioning of our brain.”

The increasing evidence of psychiatric illness as biologically based was not without controversy. Thomas Szasz argued that psychiatric illness was a myth. Others such as Loren Mosher the Schizophrenia Center Director at NIMH in the late 70’s believed biological factors were of no consequence and promoted the Soteria House movement based on the approach of allowing schizophrenic patients to “outgrow” their illness.

Controversy has been rampant in psychiatry’s history. Controversy centered around criteria for diagnosis as the early editions of the Diagnostic and Statistical Manual DSM (I and II) were produced.

Robert Spitzer was selected Chairman of a taskforce to address the problem. The taskforce produced the DSM III, published in 1980 to achieve greater reliability of diagnosis. The results were greater rigor and in subsequent additions of the DSM, a focus on more solidly based criteria.

Efforts were undertaken to make diagnostic criteria consistent from country to country. A US-UK diagnostic study had shown differences in numbers of schizophrenics as opposed to mood disorders between the United States and England. Diagnoses of schizophrenia were more frequent in the US. The DSM is an effort to organize thinking about diagnosis in a systematic fashion. While far from perfect, it fosters mutually improved communication throughout the field.

Another important development involved new epidemiological work epitomized by the NIMH Epidemiologic Catchment Area (ECA) Program generated by Myrna Weissman, Gerald Klerman, Darrel Regier and others. This established more precise data concerning incidence and prevalence of psychiatric illness. It superseded the Midtown Manhattan study from the 50’s which had found the number of Americans with mental illness was very high.

As an interesting anecdote, I was in China lecturing in the 80’s after the new epidemiology data emerged. When I told the Chinese audience there was a prevalence of 19% of mental illness in Americans, my translator mistakenly said 95%. The Chinese audience erupted in roaring laughter. I felt perhaps to them it finally proved their views of Americans.

Five additions have been produced of DSM. There is constant tension and disagreement. Still there is important value in the DSM because it enables management and discussion of psychiatric diagnosis in a more consistent way.

Given that psychiatry and psychiatric care are the subject of many points of view and the organization of diagnoses still an issue which draws controversy, I thought it appropriate to comment briefly on several major conditions to illustrate where researchers are in their approach, and follow that by talking about new directions and ideas being utilized in the approach to psychiatric conditions.

**Section #2 on Schizophrenia**

Certain psychiatric illnesses have attracted particular attention. Schizophrenia which affects 1% of the population is by its nature intriguing. Often manifest in adolescence and early adulthood, it can produce great dysfunction. Behavioral manifestations can seem strange, eccentric and bizarre. A sufferer may show considerable confusion in thinking and social skills, be threatening and even violent to family and non-family.

For centuries efforts to understand the illness have been undertaken. We have come far from when family factors were held responsible for producing schizophrenic progeny. Scientists recognize this is a highly complex disorder. Still, new technologies are illuminating better identification of microscopic and molecular alterations in brain regions and improving our understanding of these abnormalities. MRI technologies help detect relevant brain, network and risk gene areas. Postmortem studies unmask discreet alterations in the wiring of complex microcircuits.

Daniel Weinberger, one of the leading researchers on schizophrenia notes that in 1992 as we developed the ability to look at brains more closely, we confirmed that the brain is involved with schizophrenia. Imaging technologies have facilitated the identification of structural and functional variations in brain associated with schizophrenia. There is no singular genetic cause of schizophrenia. But gene discoveries are obviously important and related to the risk of schizophrenia. We have discovered multiple genes using new technologies to identify microscopic and molecular alterations in the brain regions and improve our understanding of these abnormalities.

There is a broad consensus that brain changes reflect events in brain development originating earlier in life.

The MRI technologies help detect relevant brain, network and risk gene areas. There are probably thousands of genes involved and some which have a strong impact on the probability that people will become ill. Those particular genes are important to study since they may lead us to mechanisms which are at the very basic cellular level.

No master gene has been discovered as yet, but there are many genes and genetic clues. The challenge is to translate those genes into a story to explain the mechanisms of the illness.

Various systems have been found to have a possible role. The dopamine system clearly has been implicated. Also, the glutamate system. GABA is yet another substance implicated. The number of these substances is great. This creates the challenge for investigators to integrate all these findings.

By focusing on high risk individuals it is intended to find avenues that can lead to prevention.

Because the data from genetic and molecular studies is vast, the data explosion has led to a new species of scientists called “bioinformaticians.”

Weinberger who has worked in this field for decades celebrates the fact that today many new young scientists are now moving into schizophrenia research and that schizophrenia research is as he says “in the mainstream of neuroscience.”

There are too many other laboratories for us to discuss today, but there are those who are focusing on prenatal brain development, others focusing on postmortem studies which facilitate the identification of molecular mechanisms associated with these genes.

One distinguished scientist told students, you are lucky you are working on schizophrenia because there is so much left to do.

Collectively, there is a marvelous richness of investigation, increasing good techniques for examining schizophrenia, increased collaboration and in its basic contributors a feeling of excitement and encouragement about the likelihood of substantial advances in our understanding. Researchers are urging work to identify psychosis before the onset and intervene early. Important is the search for biomarkers which predict early psychotic symptoms and allow intervention in an earlier and more timely way.

**Section #3 on Depressive Disorders**

Depression occupies the minds and lives of people of all backgrounds. Mood disorder can cause profound depression, diverse physical symptoms and suicidal attempts and actions. It affects 7% of the population, making it one of the most frequent causes of disability worldwide according to World Health Organization (WHO).

Dr. William Bunney from the University of California Irvine discussing mood disorders which includes manic-depressive illness and major depressive disorders states that much research is focused on identifying risk genes. 15 have been identified, but they only account for a small percentage of the risk.

Another arena for study is environmental factors associated with vulnerability for depression and the onset of depressive illness.

Abusive childhood has been associated with depression and suicide. Dr. Eric Nessler noted in a recent Journal of Science that early life stress led to lifelong stress susceptibility to the later onset of stress precipitated depression like behavior in mice. They went on to link this to the Ventral Tegmental Area (VTA) of the brain.

Before the early ‘60s, electroconvulsive therapy and psychotherapy were the most frequent treatments for depression. The introduction of antidepressants provided alternative treatments. One of the problems with these conventional antidepressant medications is the length of time – 2 to 8 weeks to see clinical improvement.

Recently, another substance Ketamine at low dosage has been shown to work far more rapidly. But, it is not without its problems given that it can produce a mild psychotomimetic effect in some patients and the duration of the treatment response is short – a week. People are trying to find ketamine-like substances which may give the same benefit without the same side effects.

A serious outcome from depression is unfortunately suicide. There are 800,000 suicides each year worldwide. One every 40 seconds. In the U.S. the incidence is 42,000 per year. Some suggest that as much as 90% of suicides occur in patients suffering from depression.

It is noteworthy that many patients who commit suicide see a healthcare professional within a month of suicide. The challenge the scientists are dealing with now is to find reliable biomarkers to predict suicide risk and therefore interrupt behavior which might otherwise go on to suicide.

Dr. Bunney is working on a scale to measure psychological pain with early information suggesting if the pain is sufficiently intense, this may be one contribution to a more comprehensive risk assessment which would potentially save lives.

The fact there is a genetic component which contributes to major depressive disorders suggests that new technology that can perform gene editing such as CRISPER-CAS9 can produce efficient and relatively inexpensive editing of genes and may be used to alter risk genes.

Dr. Bunney emphasizes the likely focus on personalized medicine which is being made more probable by newer technologies. An important development in this regard is that sequencing the human genome has become far less expensive. Helen Mayberg another outstanding investigator in this area notes the increasingly focused information leading from larger components of brain to circuits, to PET scan findings producing precision she could have never imagined earlier in her career.

Dr. Mayberg talks about the probability of precision medicine approaches to the treatment of depression. She too highlights work on the development of biomarkers which will match individual patients to the treatment that is optimal for them.

As Dr. Mayberg explains, whether it’s psychotherapy, medication, brain stimulation, etc., understanding the complexity of brain circuits and the influence of genes, developmental insults and ongoing life stress and experience will be necessary for fundamental progress in understanding depression risk, pathogenesis and treatment mechanisms. This is all intended for clinically valuable impact for patients and their families, by further preventing relapse and facilitating resilience.

In untangling the many complex factors and potential contributors to psychiatric illness, there are diverse hypotheses and formulations. There are efforts to bring hypotheses together to unify them.

Generalizing in the broadest terms investigating these two major disorders – current research on schizophrenia and mood disorders illustrates that scientists feel strengthened through state of the art techniques and devices. They are careful when examining how far we have to go at this time. Of interest is the fact that research is often spilling over from one illness to others since despite differences in manifest clinic findings, there are mechanisms shared in common.

There is a generally upbeat feeling about the attractive and stimulating nature of the many ideas. The ideas are more penetrating and revealing. While being careful about prognosticating in detail, the current outlook is more positive than it has been for some time. Perhaps the excitement of considerable innovation and development of tools, techniques and hypotheses create this more positive feeling.

**Section #4 on Anxiety Disorders**

While I am only touching on some psychiatric diagnoses. I want to say a few words about anxiety disorders. Unfortunately, they have been given short shrift in attention for years. I can recall even as Director of NIMH that anxiety disorders were not dealt with as serious problems.

Today they constitute one of the most frequent psychiatric disorders. Roughly 8% of teens age 13-18 have an anxiety disorder. Symptoms commonly emerge as early as age 6. Only a small fraction receive mental healthcare. Youth and young adults are particularly vulnerable to anxiety as they transition into adulthood.

Teenagers and young adults have experienced this in many different subtypes. There are youth living in deprived or abusive environments at home. Others have expectation levels so high generated by themselves or their parents that they develop acute anxiety attacks because of inability to reach these excessively high standards. College and high school counselors have alerted the public to the overwhelming demand for help from students in high schools and colleges.

Dr. Anne Marie Albano states anxiety disorders often “do not abate without treatment. They build steam, they become more complex.” Tragically, the young person with anxiety disorder today can develop extensive difficulties including decline in school work, loss of relationships, family difficulty, and possible destructive behaviors including drugs, undisciplined sexuality, suicidal thoughts and even suicide. Critical are the efforts to intervene early, not only for this disorder, but for all psychiatric disorders.

The Youth Anxiety Center (YAC) recently established at NewYork-Presbyterian Hospital provides a wide variety of treatments for such young people. These treatments range from cognitive behavioral therapy, exposure treatment, medications, family therapy, group therapy, etc.

The YAC has clinicians and researchers both providing treatment to thousands of young people, and research to understand why adolescents and young adults particularly are at risk. There is speculation being researched that there are changes in the brain in adolescence which may explain their vulnerability.

There are increasingly new techniques for approaching both the investigation and clinical aspects of anxiety disorders. This includes imaging, genetics studies, clinical evaluation studies, and virtual technology techniques designed to create an environment in which young people suffering can have their symptoms gradually reduced and are helped to find better ways of coping.

**Last Section #5**

While scientists wrestle with underlying causes and mechanisms of psychiatric illness, there have been important new developments which provide promise for treatment and clinical care for psychiatric disorders.

1) Tele-psychiatry - Enthusiasm has accompanied telemedicine in psychiatry. By using telemedicine which had its beginning over 70 years ago and taking advantage of broad band internet and technological innovations, a method of making access to treatment easier is apparent. Standard of care of those treatments is consistent with face-to-face visits according to the APA. It means treatment can be provided to rural and remote areas and long term facilities such as nursing homes. It is proving invaluable help too in emergency departments.

This is a growing phenomenon. The experiences thus far reveal great patient satisfaction. There are a variety of bureaucratic, regulatory and reimbursement challenges to telepsychiatry, but there is a constant increase in numbers of people being served.

At NewYork-Presbyterian, tele-psychiatry has exploded. The scarcity of adequate psychiatric consultants when needed in a timely way led to increased use of tele-psychiatry. One attraction is it reduces gaps in care. Where timely psychiatry consults are unavailable, tele-psychiatry is a valuable alternative. There are a variety of jurisdictional challenges in the states handled in diverse ways by different states. There are challenges with regard to reimbursement. But, there is momentum and wider use of telepsychiatry. Certainly telepsychiatry provides features attractive to people with regard to travel, time, and timely availability.

**INTEGRATED CARE**

Also of increasing utility is integration of mental health care into primary care. There are a variety of models. Collaborative care meets the triple aim – high quality, cost reduction and access. But, the fact that patients with mental health and other disorders, e.g., substance abuse disorders have a cost 2 to 3 times higher in total healthcare cost, and also the inadequate numbers of mental health treatment providers has made collaborative care more appealing.

In a report commissioned by the APA, it is estimated there will be a 5% to 10% reduction of healthcare expenditures from collaborative care and a potential annual savings of $26 to $48 billion. By this method, the given psychiatrist may provide input on 10 to 20 patients in one half day as opposed to 3 to 4 patients and yet have regular weekly meetings with the behavioral health provider/care manager. The model has been promulgated widely. There has been leadership in the state of Washington where Drs. Jurgen Unutzer and Wayne Katon organized a blended mental health/primary care health model around the state. It is suggested that by so doing earlier, detection and intervention becomes a reality.

The coexistence of psychiatric disorders with a variety of other health conditions makes life more formidable and complicated for patients and doctors. For example, a patient with a myocardial infarction (coronary) and also depression has a poorer prognosis. In addition, comorbidity, i.e., the simultaneous occurrence of a psychiatric and non-psychiatric disorder adds cost, causing psychiatrists and health economists to place a greater focus on such patients in order to reduce healthcare costs both for the individual and collectively for the entire population.

As a result, the greater use of various other mental health and primary care practitioners working under the direction of or in collaboration with psychiatrists appears to have many advantages.

The American Psychiatric Association (APA) cited some 79 randomized controlled trials with over 24,000 patients and compared integrated care to usual care. It suggests results are consistent across populations which include various stages of life, different cultural and minority backgrounds, and different type depressions. Satisfaction is reported both by patients and providers. Primary care practitioners have shorter and more productive primary care visits. Mental health consultants have lower no-show rates. The results in these studies reported reduced absentees in work and reduction in homelessness and arrest rates.

**TECHNOLOGY**

Innovative approaches through technology are being researched, increasingly tested and implemented. The combination of technology and new business models is also helping psychiatric care reach a broader audience. A broad group of apps are offering programs such as cognitive behavioral therapy and other talk therapy. Some use human therapists while others are beginning to use artificial intelligence – powered chatbots to interact with users. Other apps can help anticipate the onset of manic episodes or addiction relapses by monitoring patterns of behavior on smart phones – potentially enabling clinicians to intervene sooner. Finally some service companies are using technology, both telehealth connectivity and coordination software to deliver psychiatric devices in support of primary care.

Virtual reality experiences in which healthcare professionals recreate situations threatening to patients is being used. Further, technological approaches are being explored to facilitate earliest possible detection of a developing psychiatric disorder in younger people.

Technology is being used by institutions like NewYork-Presbyterian in the following ways:

* To reduce ER utilization and readmission
* Decrease the total cost of care for patient
* Maintain patient satisfaction at scores of 95%
* Improve access to care anywhere
* Scale up to hundreds of thousands of visits by increasing and wider use of these methods.

As examples, NYP OnDemand 2.0 is using technology to facilitate:

* Urgent Care
* Express Care
* Early discharge and transferring care from the ED to the home
* Follow up visits
* Peer-to-peer consultations
* Second opinions

In emergency centers patients can have video visits in a closed setting room with the doctor on the video. Close to 400 doctors have been assembled at NYP to supply this responsiveness. The intention is to put telemedicine in ambulances and enable paramedics to talk with ER physicians. Obviously, this also involves engaging patients to play a larger role in their care.

This is augmented further by the ability to monitor patients in the ED or at a distance for temperature monitoring, monitoring of other physiological functions like respirations, and all vital signs to address problems as early in their development as possible.

Being tested too is evaluation of diverse physiological activity of the individuals to help inform both patient and therapist of changes that may be occurring subtly while not apparent either in patients’ awareness or the awareness of the observer.

**SUMMARY**

Psychiatric research field is particularly active and vigorous. The deep complexity remains a challenge. But investigators are using new investigative techniques, new models of service delivery, diverse kinds of interactions between therapists and patients, increased varieties of mental health and primary care personnel providing treatment, and treatments such as interpersonal psychotherapy of considerable value particularly in some of the most underdeveloped countries around the globe.

The extraordinary demand and volume for mental health care is in part propelling this array of innovations. The Brain and Behavior Research Foundation (BBRF) has become an important private addition to NIMH and other foundations serving as a sources of support and an opportunity for clinicians and scientists globally to try new alternatives, reach for “out of the box” solutions, and collaborate in data aggregation, high quality focus on psychiatric research and potential clinical application. These more exploratory efforts are often launched despite the fact scientists are not always sure where one is going to arrive. The many explorations are driven by intent to find better approaches. Outstanding researchers, techniques and instruments to expand our understanding of the brain and its relationship to psychiatric illness is not enough.

A central theme in psychiatry is the person. That person may be a patient or family member, but from the provider what is necessary in addition to use of the various treatments at our disposal is a critical set of interpersonal skills that enable one individual to personally help another.

The term that powerfully captures this is empathy. It means understanding the person whom we are helping. It means we step into the shoes of the other person. It means we provide help that is optimally fine-tuned in communicating, listening and understanding.

This will be a challenge given increasing attention to new technology. But, we will not ever fully respond and serve patients with psychiatric disorders without this critical component.

We are in the midst of dramatic changes in healthcare and healthcare delivery. Payment for value is superseding fee-for-service. Efforts are being made in every way to contract overall cost. Yet mental healthcare is being sought by increasing numbers of people.

Much is needed, but let me stress 2 points. One is keep the patient at the center. Patients’ needs, concerns, fears and thoughts are critical. The mental health professions must always have this as the uppermost principle.

Second, while doing everything we can to modify and reduce the cost of healthcare, we must simultaneously assert advocacy for medical research in general and particularly for brain research and other psychiatric research.

We have tools and insights we never had before. This is an opportunity to make a real advance in our treatment of patients with psychiatric disorders. It is exciting! My hope is broad public opinion will reinforce the fact that the time is now.

Those who choose psychiatric work, choose one of the most complex and challenging fields. It relates to countless scientific and humanistic disciplines. Its central focus is to provide help to others.

In a most elegant and eloquent way, Dr. Robert Belmarker quoting Dr. Martin Roth states “psychiatry will remain the most human of the sciences and the most scientific of the humanities.” As we think about it, that phrase intimately tied to genuine caring for others may explain why many people come to this field, and why there is so much determination by all involved to support it and find the very best answers for the millions of people suffering mental illness around the world.