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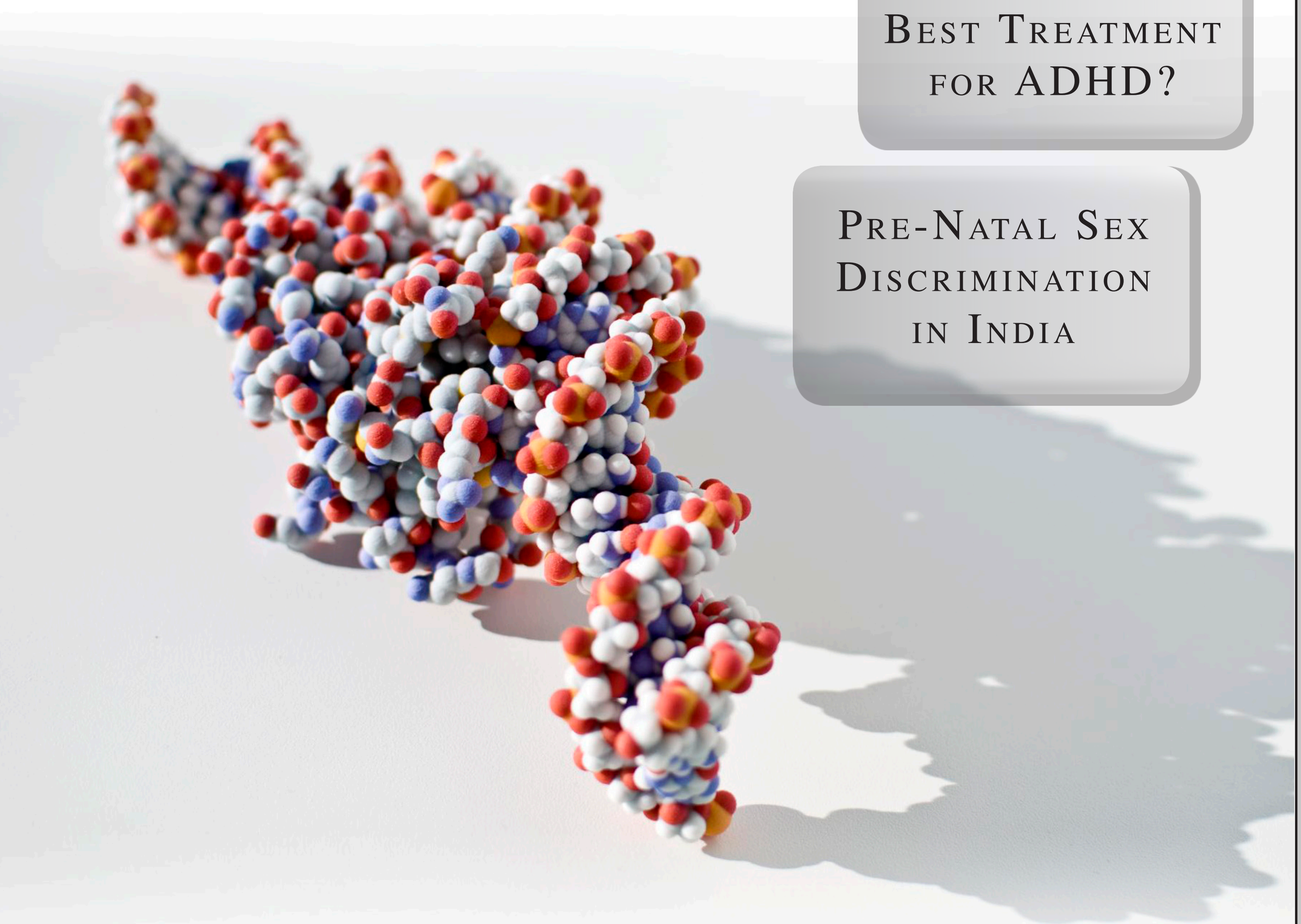

IS RITALIN THE BEST TREATMENT FOR ADHD?

PRE-NATAL SEX DISCRIMINATION IN INDIA

INTERVIEW WITH PRESIDENT ANTHONY MONACO

A PUBLICATION OF TUFTSCOPE, THE STUDENT BIOETHICS ORGANIZATION OF TUFTS UNIVERSITY

TUFTSCOPE

The Interdisciplinary Journal of
Health, Ethics, and Policy

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Since 2001 *TuftScope: The Interdisciplinary Journal of Health, Ethics, & Policy*, has provided an academic forum for discussion of pertinent healthcare and biosocial issues in today's world. The journal addresses different aspects of healthcare, bioethics, public health, policy, and active citizenship. It is operated and edited by undergraduate students of Tufts University and is advised by an Editorial Board composed of Tufts undergraduates and faculty. Today the journal is one of the few peer reviewed undergraduate published journals in the country.

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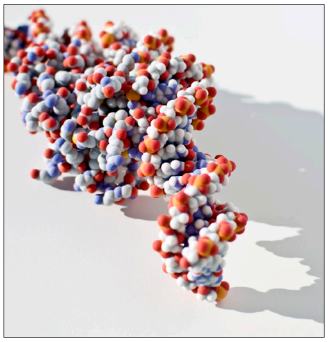

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Cover Image: In this issue, *TuftScope* explores the field of Biomedical Engineering and complex genetic disorders such as autism.

LETTER FROM THE EDITOR

TuftScope: Continuing a Legacy

Dear Reader,

In the past four years TuftScope has grown immensely both in terms of its dedication to promoting discourse about bioethics and health policy issues and its ability to reach an audience of active citizens. This truly has been a transition period for the journal. The implementation of the TuftScope website, the journal's health news weblog, our presence on Twitter and Facebook, and an overhaul of the style of the printed issue all mark changes that signify the journal's commitment to improving the quality of our service.

We have taken steps to continue the legacy left by our innovative predecessors by focusing on the sustainability of both the printed and online journal without compromising the content of either. Some of these behind-the-scenes changes include the recruitment of a new generation of underclassman staff members, a rewiring of the online submissions process and journal presence with the help of Online Editor Griselle Ong, and the reinvigorated participation of our invaluable faculty advisors.

As a fitting feature to cap this period of transitions, Managing Editor Brian Wolf spoke with recently inaugurated President of Tufts University Anthony Monaco, who comes to the university as a leader in the field of behavioral neurobiology. Discussing his own transition from the world of academic research at Oxford University to the administration of Tufts University highlights the unique perspectives of our new president.

On a global health scale, "TuftScope Abroad" makes a return with Marie J Murphy delving into the attempts of the government of India to curb the escalating trend of selective abortion due to pre-natal sex discrimination. In a world where there is a strong preference for a child's sex, the government is facing its own challenges in sparking a transition away from growing gender inequality.

Also in this edition we examine developments in the ongoing discussion about the obesity epidemic in the United States with Ariel Lefland's look at the Million Hearts Initiative, a program bringing together governmental, nonprofit, private sector, and healthcare organizations for the goal of decreasing heart disease in Americans, as well as Shayna Schor's analysis of taxation on fatty foods as a way to address the obesity epidemic in the US.

It has been a pleasure to pick up what the past generations of editors have laid down as this revitalized journal and to keep striving to make it even more focused and accessible. We thank the entire staff of writers, reviewers, editors, and layout editors, without whom there would certainly not be a journal of this caliber. We also thank our faculty advisers for their continued guidance and advice.

We hope you enjoy the issue!

Sincerely,

David Gennert & Eriene-Heidi Sidhom

FEATURE ARTICLE

Catching the Zebra

Michael Essman

What is your first guess when thundering hoofs approach? Horse? Bison? From now on, mine is zebra. "Catching the zebra" means exhausting virtually all possible alternatives, and then finding one more. This oddly clad horse is neglected not because it is unworthy, but simply because it is uncommon. There's no need to worry about it because it just doesn't happen.

On August 18, I caught a zebra. Upon first examination, it apparently had the classical symptoms of a bothersome, albeit ultimately benign case of strep throat. My father a surgeon, my mother a nurse, we were composed about my condition and utterly secure in the prognosis. We perused WebMD ("just in case"), and sure enough, our suspicions were confirmed: "A sudden, severe sore throat," "pain when you swallow," "fever over 101°F (38.3°C)," "swollen tonsils and lymph nodes"; all of which I displayed. That was a relief; after a brief bout of antibiotics and decadent ice cream therapy, my truant health would return.

Not so fast. These swollen tonsils seemed exceptionally… well, swollen! I couldn't eat; I couldn't even sip some water. Something was wrong. I went to the doctor (you know, "just in case"), and sure enough, it wasn't strep; it was that terrible sleeping giant that lurks in every college students' subconscious: mono. Despite being guilty of its colloquial name, I knew the kissing disease couldn't keep me down. How could it? I was the healthiest person I knew. I spent the majority of my summer days either exercising or consuming healthy food (with only the occasional toxin). They say mononucleosis drains your energy; good thing I had a perpetual surplus.

Okay, so I would need a few more days of recovery than I expected. Still, no big deal. I was resilient and would bounce back just in time to begin fall semester. I returned to WebMD just to confirm my diagnosis. The verdict: classic mono.

After a week of some good old-fashioned suffering thanks to vicious fevers and the concomitant sense of helplessness, my symptoms again failed to meet my expectations. "It says right there, seven to ten days. It's been ten days." Then again, everyone is different, so maybe my course would be different. For the first time, my suspicions were proven right.

A suspiciously intense pain hit my left abdomen, leaving me with a sudden loss of comfort that Jessica Biel could not have restored. I could no longer sit comfortably, my breaths reduced to pathetic wisps. I had to do something. I sat in the hospital waiting room, suffering through the longest half hour of my life.

The next few hours were a blur, resulting in a bedside conference with the doctors' first assessment: "This guy is really, really sick." Fortunately, I had six outstanding specialists, and my chief doctor—reminiscent of Dr. House—was extremely thorough in the tests she ordered and even more shrewd in her correct conclusions. She recognized a unique Gram-negative *Fusobacterium necrophorum* that had invaded my bloodstream and established an internal jugular thrombus. The combination of her quick assessment and the radiologist's recollection of this unusual disease revealed the final verdict: I had Lemierre's Syndrome.

Lemierre's Syndrome is quite rare; it occurs in approximately one in every million people in the general population. However, a recent review of the literature suggests that citations have been on the rise since 1990.[1] This review also mentions all of the symptoms I had experienced as the same ones that André Lemierre observed when he first discovered the disease in 1936:

> The patients in this group were young, previously healthy, adolescents or young adults presenting with initial pharyngotonsillitis or peritonsillar abscess, often followed by swelling and tenderness along the sternomastoid muscle due to septic thrombophlebitis of the internal jugular vein. High fevers and rig ors developed within a week and subsequently meta static abscesses commonly to lung, bone, joints, and skin and soft tissues.[1]

Of everything I endured from the inflamed tonsils, high fevers, rigors, pleurisy, and myriad other difficulties, my most salient memory of this whole experience is the profound sense of helplessness that I felt while lying in my bed facing my doctor. She looked at me with the soft eyes of a mother, but the determination of a warrior. This illness was palpably destroying my body—as shown in my chest X-Ray—and we both knew it. Until I got sick, I had done everything right, and yet everything had gone horribly wrong. Despite these ominous signs, I knew that I would be okay. I felt an immense trust in her: the kind reserved for the loving members of one's immediate family. The words "doctor-patient relationship" fail to capture the depth of this connection, and this experience drives my resolution that if I do aspire to become a doctor, I'll remember how a brilliant doctor once joked, "This is when it's good to be a nerd."

Lemierre's Syndrome is extremely serious and potentially life threatening. The most misleading aspect of this disease is that the initial stages are ostensibly common—such as the typical onset of a sore throat and high fevers—but failure to act quickly can put the patient's life in jeopardy. Early diagnosis is key to treatment, and any abnormal signs such as the rigors or others from the constellation of symptoms necessitate greater investigation.

So how do you get to Z without skipping the more plausible M (mono) or S (strep)? By remembering that zebras are still out there, and knowing when you've spotted one.

References for this editorial can be found at TuftScopeJournal.org

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NEWS BRIEFS

Selections From Our News Analysis Weblog

Contraceptive Used in Africa May Double Risk of H.I.V.

Parsa Shahbodaghi

The use of a popular hormonal contraceptive was found to have increased the rate of HIV infection in African populations. According to a recent study by Lancet, the intravenous use of a hormone over a three month period was found to double the risk of women contracting HIV. Similarly, when HIV positive women used this method their male partners were twice as likely to contract the virus. Though there is uncertainty with any scientific endeavor, this study looked at 3,800 heterosexual couples where one member was already infected with the disease. Researchers were therefore able to monitor viral transmission and provide evidence for a causal link between contraceptive use and infection. The implications of this work are enormous. Injectable contraceptives are popular in Africa, because a woman is able to control the timing of birth without having to travel or see a doctor. The contraceptives have also helped hundreds of thousands of women avoid the infections, injuries, and death associated with childbirth. On the other hand, increasing HIV incidence is an enormous price to pay. The WHO will be re-evaluating to see whether the costs of using this method of conception outweigh the benefits.

Glowing Cats Shed Light on AIDS

Alexander Sakers

Fluorescent cats are lending a (glowing) paw in the fight against AIDS. These cats have been genetically engineered to express two genes, one for green fluorescent protein (GFP) - that causes them to glow, and an antiviral gene from a rhesus monkey. The antiviral gene is the one of interest - the GFP gene was included to allow researchers to visually determine if cats had successfully received both genes as they were transferred together. The monkey antiviral gene codes for a protein called a restriction factor that is particularly good at fighting the feline aids virus called FIV which is analogous to HIV in humans. Native restriction factors in both felines and humans are useless against FIV and HIV respectively making the monkey version particularly useful in fighting the infection in infected individuals. So far, cultured cells from the glowing cats have been shown to be resistant to FIV. The team now plans to expose cats to the FIV virus to see if they are protected by the monkey restriction factor, hoping that this may someday aid in fighting HIV.

Remark on HPV Could Ripple for Years

Marie J Murphy

During the September 12 debate for republican presidential candidate, Michelle Bachmann was quoted questioning the safety of the recently produced vaccine that protects against cervical cancer. The vaccine safeguards against the acquisition of HPV, the cancer-inducing sexually transmitted infection. Bachmann announced that the vaccine is dangerous, although semi-recanting after being attacked by opposing medical experts. Dr. Wharton, a deputy director at the CDC, exclaimed that the rates of immunization are not meeting goals, especially with the high levels of transmission, and that Bachmann's statement will do little to help the cause.

In the case of the HPV vaccine, there is already a low uptake of the regimen because of social stigma and its identification as "the sex" vaccine. Since it is administered around the ages of early puberty, many parents will not approve it for their children for fear that it encourages sexual acts. Misconceptions about the vaccine continue to drive its lack of application in the general population. Despite its effectiveness, misunderstanding of the purpose of the vaccine hinders the widespread application. According to Dr. Deborah Saslow, the director for breast and gynecological cancer at the American Cancer Society, the vaccines are "93 to 100 percent effective at preventing infection with HPV Type 16 and Type 18" (Grady). As of this year, more than 35 million doses of the two cervical cancer vaccines have been disseminated in the United States, with projections likely to drop because of continued political involvement in the debate, which can not be afforded.

More Than One in Ten Americans Take an Antidepressent

Shayna Schor

In the past two decades, the use of antidepressant drugs has increased by a dramatic near 400% in the United States. In a report covering almost 13,000 participants in NHANES surveys, it was estimated that over 11% of Americans age 12 and older take antidepressants. Of this statistic, less than 33% have consulted a mental health professional in the past twelve months; 3 out of 4 prescriptions come from skilled professionals other than psychiatrists, and upwards of 6% of those using antidepressants have no medical illness diagnosis whatsoever. In stark contrast, 2 out of 3 individuals who do exhibit highly depressive symptoms are not currently taking antidepressants. Although income level seems not to be a factor in rates of antidepressant use, women and whites seem more likely to take these drugs than their male and non-white counterparts: only 1 in 5 men with severe depressive symptoms are reportedly taking these drugs, whereas 23% of women aged 40 to 59 use antidepressants. It is advised that individuals seeking antidepressants visit psychiatrists or other mental-health professionals before doing so, and that patients begin with a single prescription rather than a combination of antidepressant drugs to treat their symptoms.

Vaccine Provides Partial Protection Against Malaria, study shows

Prachi Sharma

Researchers recently announced a breakthrough in preventative medicine with the development of the first malaria vaccine. Malaria, a mosquito-borne disease primarily prevalent in Africa, Southeast Asia and Brazil, infects approximately 225 million people each year and of those, kills 781 thousand people. Once infected, parasites enter the bloodstream and infect red blood cells, causing anemia, among other serious side effects. The vaccine, funded by the Bill & Melinda Gates Foundation and developed from a combined effort by scientists from PATH and GlaxoSmithKline, vastly reduced the risk of severe cases of malaria in 5 to 17-month olds by 47 percent, in a series of trials conducted in countries across northern Africa. The trials also revealed that the vaccine reduced risk of less serious cases by 56 percent. The vaccine, however, is still in its preliminary stages and scientists stress that much more research must be conducted to determine the vaccine's long-term effectiveness. Thus, the vaccine will not be widely distributed and available prior to 2015.

Few Doctors, Nurses Report Asking Patients About What They Expect in Their Care

Enshu Chawla

A study conducted by BMJ Quality & Safety has shown that medical professionals-- specifically nurses and physicians-- tend not to ask patients for their expectations regarding their care. This has shown to be a problem because patients benefit more from medical care if they can trust and communicate with their doctors. While nurses are more likely to talk to patients about their expectations, physicians, too, realize the importance of this communication. However, they do not have the proper training in order to discover what the patients may expect from their care. This trend is prevalent throughout the world. Doctors surveyed at Brigham and Women's Hospital in Boston, along with physicians in Denmark, Israel, and the United Kingdom agree that they lack the training to ask patients about their expectations. Only about 20 percent of those surveyed believe otherwise. So while medical professionals understand that patient expectations should be taken into account, the majority of them do not ask the patients for this information. One way of improving this problem has been the rise of the use of patient satisfaction surveys. David W. Bates and Ronen Rozenblum, who are associated with Brigham and Women's Hospital, are working on the PatientSatisfactive Model. This model is supposed to help medical professionals gain insight on the expectations of their patients through asking the right questions. Although the lack of physicians and nurses who ask their patients what their expectations are has been widespread, steps are being taken towards improving on this problem.

Drugs to Treat A.D.H.D. Reach the Preschool Set

Hallie Abelman

As of last week, the American Academy of Pediatrics revised its guidelines for the treatment of Attention Deficit Hyperactivity Disorder, providing doctors with the opportunity to prescribe A.D.H.D. medication to preschool children if behavioral efforts fail. Parents of children as young as three years old are now allowed to medicate their children whereas they used to be advised towards alternative approaches to treatment such as occupational therapy, diet changes, exercise, and behavior modification until their children reached age six. Although some children might respond positively to the drug therapy, it is difficult to ensure the accuracy of such a strong diagnosis at such a young age. Critics believe that Americans should be more skeptical of medication, especially since the number of children taking A.D.H.D. medication has increased steadily in recent years (as of 2008, 5.1% of children take ADHD medication). One long-term study has been done of young children taking the drug, conducted by the National Institute of Mental Health, in which 303 preschoolers and their parents participated in ten weeks of behavioral training and therapy before getting the option to take medication. This study led one third of the families to refrain from giving their children medication because the child's behavior had improved so much already. In addition, the trial revealed that older children benefit more from the medication and that younger children were more susceptible to adverse side effects such as weight loss and anxious habits. The changing of guidelines is a controversial issue that will force parents to assess their child-rearing strategies when dealing with young children who are hyperactive. Difficulties emerge in distinguishing a healthy-active child who has a hard time focusing in kindergarten class from a child that deserves mind-altering medication. While the guidelines do not encourage doctors to prescribe drugs to three year olds, it provides a new option that has the potential to change the way our society treats children, suffering and disease.

References for News Briefs may be found online at

Tuftscope.Blogspot.com

OPPOSING VIEWPOINTS

Is pharmacotherapy the best treatment for ADHD?

***Brian Wolf** argues that pharmacotherapy is the best treatment for ADHD but **Eriene-Heidi Sidhom** believes behavior therapies and other individualized treatments are necessary to move treatment forward.*

Image courtesy of http://mindcon.files.wordpress.com

YES

There is a growing number of children who have been diagnosed as being unmindful, hyperactive, and impetuous and then labeled ADHD. Consequently, when properly diagnosed, effective treatment for attention-deficit hyperactivity disorder (ADHD) is needed to control these symptoms. Diagnosed in the 20th century as the first psychiatric disorder to be treated in children, studies of stimulant treatment have been conducted since the 1930s and regulatory approval of stimulant treatment for children began the 1960s. ADHD, a complex disorder, is due to a combination of genetic, environmental, or biological risk factors that can exacerbate the vulnerability of a child to this disorder.[1] Currently, in the 21st century, the use of stimulant drugs for ADHD has come under scrutiny due to potential side effects that result from the medication. Through comprehensive medical, developmental, educational, and psychosocial evaluations, a doctor can properly diagnose a child for ADHD and then provide either a closely monitored medication treatment or a program that combines medication with intensive behavioral interventions.

For over 40 years, the main treatments for ADHD have been the stimulant drugs, methylphenidate and amphetamine (Ritalin and Adderall), which are believed to increase the neurotransmission of dopamine and norepinephrine. Over the past decade, there has been concern about the duration of the drug treatment. In a double blind, placebo-controlled study conducted in 2002, the objective of the study was to compare the efficacy, safety, and tolerability of a once-daily administration of modified-release methylphenidate with placebo in children with ADHD.[2] The results of this study suggested that a once daily modified-release methylphenidate, given in the morning, is effective and safe in controlling ADHD symptoms during a school day. However, in this study, there was significant evidence that anorexia occurred at higher rate in the drug treatment group than in the placebo group. It is also important to note that this study was

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Brian Wolf is the Managing Editor of TuftScope and a junior at Tufts.

NO

According to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), attention deficit hyperactivity disorder (ADHD) is defined as “persistent pattern of inattention and/or hyperactivity – impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development”.[1] For over 50 years methylphenidate (Ritalin) has been used as the gold standard to treat ADHD. However, in 2009 in the UK, the National Institute for Health and Clinical Excellence (NICE) changed its guidelines for diagnosing and treating ADHD in children stating that behavioral therapies, rather than medications, should be used as the first line of treatment. Furthermore, it stated that methylphenidate should be used only in extreme cases.[2] This change in treatment follows increasing concerns of the overprescribing of methylphenidate to young children. The main questions of both professionals and the general public concern the diagnostic criteria, the adverse effects of both the syndrome as well as medication and what is the optimal treatment for ADHD.[3] Despite methylphenidate being the standard for treatment, its use is not always merited in the treatment of ADHD, due to its potential for adverse effects, the possibility of other effective treatments, and the expanding definition of the disorder.

There are those who believe that methylphenidate has proven to be an effective treatment and therefore should continue to be used as the first line of treatment. Being the standard for treatment, there have more than 170 studies involving more than 6,000 school-aged children using a stimulant medication for ADHD treatment. For all stimulant drugs, the average response is about 70%, and 90% of children will respond to at least one medication without major adverse effects.[3] Furthermore, magnetic resonance imaging studies of ADHD patients have shown abnormalities, suggesting that ADHD is a neuropsychiatric condition.[3] Therefore, methylphenidate addresses the neurological abnormalities by increasing dopamine levels in the brain. Additionally, the motivation to change the NICE guidelines to a more behavior-therapy focus can be seen as purely financial, as the usage of methylphenidate and other stimulants cost the NHS £13 million in 2004.[2] These extensive studies, supporting the effectiveness of methylphenidate

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Eriene-Heidi Sidhom is the Co-Editor-in-Chief of TuftScope and a junior at Tufts.

conducted over a three-week period and the long-term effects of this medication were not being investigated. Doctors need to properly diagnose their patients' progress and ensure that the drug treatment is working effectively. If the drug treatment is not effective, the doctor needs to make changes to this treatment. Through close monitoring of the progress of the ADHD drug treatment, the child's safety and health will be of the utmost importance.

"...drugs should first be considered for treating this disorder."

In combination with the drug therapy, behavioral treatment has been proven effective in treating children with ADHD. The practice of behavioral modification, which uses reward and response cost to change behavior, has shown positive results. In a long-term study that compared various practices to control ADHD symptoms, combined treatment and drug management groups showed greater efficacy than behavioral treatment and community-care groups.[3] These analyses suggest that, for children with ADHD, drugs should first be considered for treating this disorder. However, it should also be noted that only relying on behavioral treatment could also be valuable for some patients. Other findings suggest that, after drug treatment is under control, assessments of residual disabilities should guide subsequent decisions regarding behavioral therapy. By merging drug treatment and behavioral therapy, the health and safety of children with ADHD will be better managed and possibly reduce the possibility of side effects, such as anorexia.

Despite decades of clinical use, stimulant drugs are considered to be controversial due to potential side effects that have proven to be false. For example, early reports that showed stimulants caused an increased risk for tics in patients with a personal or family history of tic disorders have been challenged over the past decade. In a study published in *Neurology* in 2002, the results concluded that prior recommendations to prevent usage of methylphenidate in children who had tics because of apprehensions of worsening tics are not supported by this trial.[4] Additionally, because stimulant drugs are controlled substances with addictive potential, there have been concerns that children with ADHD are prone to abuse and addiction of these drugs when used for many years. Studies on this issue have shown that stimulant drug therapy in childhood is actually related with a reduction in the risk for subsequent substance use disorders.[5] While side effects of increased risk for tics and substance abuse

and other stimulants in treating ADHD, has led many to remain confident that it is the best treatment for this syndrome.

While there is a breadth of scientific evidence for the effects of methylphenidate and other stimulants on children with ADHD, the absence of studies for adolescents and older age groups has raised concerns about the long term effects of these medications. Pharmacotherapy has also not been shown to have any long-term effects on any of the symptoms of ADHD, including classroom behavior, impulsivity, etc.[3] The reliance on stimulant therapy for ADHD is cause for worry because ADHD has been shown to be correlated to earlier onset of Psychoactive Substance Use Disorder (PSUD); one study of 388 participants, PSUD showed an onset on average of three years earlier in adults with ADHD.[4] Another study of 200 participants with a history of PSUD, showed that those with ADHD had a duration time of PSUD that was 37.2 months longer.[5] Therefore, the lack of information on the long-term effects of the stimulant medication, combined with the increased risk that those with ADHD have towards PSUD raises the question of using an alternative treatment.

With the growing concerns of stimulant treatment for ADHD, other treatments, including behavioral therapy, are gaining recognition as potential alternatives to treatment, or to complement current treatment. It seems natural that behavioral therapy would be the main treatment for ADHD as the diagnosis is based on a list of behaviors.[2] This view is clearly reflected by professionals: 98% of child and adolescent psychiatrists, surveyed in the UK, stated that a combination of behavioral and pharmacological therapy is the most effective treatment for ADHD, but only 34% said they used this combination on all their patients. Therefore, the issue is not recognition of the necessity of behavioral therapy, but some other barrier; these same professionals listed parental concerns and limited resources as the barriers to implementing behavioral therapy.[6] Indeed, in a society where everyone is looking for a "quick fix" it is difficult to convince parents to change a treatment plan that appears to be working or to convince parents of newly-diagnosed children that deviating from the standard treatment will be as effective. The lack of resources is evidence to the amount of work necessary to make the transition from a stimulant-focused therapy to a behavior-focused therapy. In fact, the change in the UK of the NICE guidelines will probably cause a redirection, not a reduction, of funds and additional funding will probably be necessary during the transition period to supply education and to set up more behavior therapy services.[2] Shifting to behavior therapy as the focus of treatment for ADHD is not a financial strategy, but rather a logical strategy based on the currently defined diagnostic criteria for the syndrome.

"...everyone is looking for a 'quick fix.'"

The use of stimulants as a general treatment for ADHD implies that there is a single cause and a single manifestation of ADHD. However, the ever-changing and ever-expanding definition of the syndrome is evidence that the different manifestations are unique and therefore deserve a more personalized treatment, not provided by pharmacotherapy. When ADHD was first defined in DSM-III, it was divided into three behavioral dimensions (attention, impulsivity, and hyperactivity) with two subtypes (with and without hyperactivity). In the DSM-III-R it was modified to have one-dimensional criteria, but in the DSM-IV it was changed again to have two behavioral dimensions (inattention and hyperactivity/impulsivity) with three subtypes (predominantly in attention [ADHD-AD], predominantly hyperactivity [ADHD-HI] and combined [ADHD-CT]). The categories defined by the DSM-IV clearly exhibit the heterogeneity of the disorder, and it is further emphasized by the manifestation of the symptoms. In a

OPPOSING VIEWPOINTS *continued*

YES

are proven false, stimulant drug therapy for children with ADHD still needs to be closely monitored (e.g. correct dosages) to maintain a healthy lifestyle for these children.

Current research has been conducted on the risk of cardiovascular events (e.g. sudden cardiac death and stroke) due to stimulant medication for ADHD. In an article published this year in *The New England Journal of Medicine,* a large study (funded by the Agency for Healthcare Research and Quality and the Food and Drug Administration) indicated that there was no evidence that current use of an ADHD drug was connected with an increased risk of serious cardiovascular events.[6] More studies similar to this one need to be conducted to ensure that the safety of the children who take these drugs is maintained. For example, if there are significant side effects due to the drug treatment that cannot be controlled by changing dosage amounts, then the patient should be taken off a drug treatment and seek alternative treatments. Proceeding cautiously with drug treatments for ADHD remains the main objective for doctors to help alleviate the symptoms of ADHD.

The worldwide prevalence of ADHD has brought this disorder to the forefront of various clinical studies, which include the role of drugs and behavioral therapy for treatment. Only through current and future studies will we learn more about the long term, not just the short term, effects of drugs in treating this disorder. Yet, based on the studies that have been conducted and analyzed, drug treatment (along with behavioral therapy) has proven the most effective in helping children with ADHD.

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NO

study of 398 teachers, evaluating 8,258 children the difference between academic problems and behavior problems among the three groups showed strikingly different trends: among ADHD-AD children 78% had academic problems, while 40% had behavior problems; among ADHD-HI children 23% had academic problem, while 83% had behavior problems; among ADHD-CT children 92% had behavior problems, while 73% had academic problems.[7] Therefore, while there are those who justify the increased usage of stimulants on the expanding definition of ADHD, this expanding definition also reveals the diversity of those affected and therefore calls for a more personalized therapy, rather than a homogeneous and standardized therapy.

While it may be tempting to see methylphenidate as a "quick fix" for ADHD, according to the diagnostic criteria and the heterogeneity that it implies, a more personalized behavior therapy is perhaps better suited as the focus of treatment. The long history of methylphenidate as a treatment for ADHD has resulted in a large number of studies focusing on its short-term effect in children. While the results of these studies are very promising, the lack of long-term studies into adolescence and adulthood is concerning, considering the persistence of the disorder in many of those who are affected. Furthermore, the propensity of those with ADHD to suffer from PSUD should cause greater caution in using stimulant therapy. Therefore, the more logical approach to a behavior-based diagnosis is behavior therapy. The majority of professionals agree that behavioral therapy is necessary, but there are significant barriers to its implementation. However, if it were to be implemented it would allow for greater personalization in ADHD therapy, which is necessary due to the wide range of symptoms and severity in individuals. Although the adjustments to the NICE protocol may have angered those reluctant to change, it is perhaps a necessary step in moving ADHD treatment forward.

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PHOTO OF ANTHONY MONACO, M.D./PH.D.

A Discussion with Anthony Monaco, President of Tufts University

Brian Wolf

Dr. Anthony Monaco, M.D./Ph.D. is the President of Tufts University and is a distinguished neuroscientist that focused his research on the genetic basis of neurological and psychiatric disorders such as autism, specific language impairments and dyslexia. His research group at Oxford's Wellcome Trust Centre for Human Genetics first identified a gene specifically involved in human speech and language. As the thirteenth President of Tufts University, Dr. Monaco brings his experience as a biomedical researcher to contribute to Tufts' excellence in education, research and greater engagement with society.

During your tenure at Oxford, your research appears to be primarily focused on identifying and characterizing genes involved in complex genetic disorders, such as autism and dyslexia. Can you please elaborate on your research?

Autism and dyslexia are called neurodevelopmental disorders, in which children have problems with the development of social communication (i.e. autism), language or reading. My research group wanted to take an unbiased approach using genetics to study these conditions because we knew that these disorders have strong genetic factors involved in their susceptibility. However, their etiology was a bit of a black box. We wanted to use an unbiased genome-wide approach, which scans the whole genome for variants in genes that increase risk. For example, in the autism field, with the benefit of an international effort, a large number of genes have been identified that encode proteins involved in synaptic connections. Our findings indicate that autistic children may have a deficiency in the connections between neurons, called synapses, which are important in neural processing. Regarding dyslexia, four candidate genes have been identified and my research group focused on one particular gene. Yet, all four genes seem to have a role in the process of neuronal migration. After neurons are born, they migrate to the right level of the cortex. We believe that the genes that we have identified are involved in this process. If you interfere with this process in animal models, neurons go to the wrong level of the cortex and this might interfere with cortical processing. In humans, if neuronal migration is even subtly altered, it may disrupt the development of reading. With respect to language impairment, we did identify one major gene, which is a transcription factor called FOXP2. This has a specific role in severe speech and language disorders. Looking at this gene evolutionarily, it seems to have a role in communication in other species, such as song learning in birds and ultrasonic vocalizations in mice.

How did you come to choose complex genetic disorders as your main research focus?

Starting with my graduate work, I focused on muscular dystrophy and identifying genes related to single gene disorders, for which there is usually one gene and one disease or phenotype. I then worked on the Human Genome Project and helped generate maps and resources for researchers to obtain the entire sequence of the human genome. It then became possible to use new technology, analytical tools and our knowledge of the genome to start to tackle more complex and common disorders in which we thought more than one gene was involved. As a result, a whole new institute, The Wellcome Trust Centre for Human Genetics at the University of Oxford, was initiated in 1995 to house core facilities, investigators with specific clinical cohorts, and genome resources to tackle some of these issues. Returning to my roots of neuroscience, I began to think about which common neurological disorders would be amenable to these genetic approaches. Ultimately, I focused on childhood neurodevelopmental disorders.

Genetic disorders affect individuals across the world and research on this subject is obviously conducted globally. What led you to do your research in England and how did your place of study affect the way in which your research was conducted?

That's an interesting question because I originally went over to England for a two-year fellowship to work with a particular individual, Hans Lehrach, who had just established his laboratory in London. He was proposing a particular strategy that I thought would be a winning approach to map the human genome. After my fellowship ended, I received an offer to start my own laboratory at Oxford, which I accepted. In 1995, I began to use the tools of the human genome to understand common disorders such as

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dyslexia, language impairment, and autism. When I started these studies, it was relatively straightforward to recruit large numbers of families to participate because they were being assessed through the NHS (National Health Service) [Great Britain's publicly funded healthcare system]. Due to the NHS network, we could interest many clinicians in the studies to help us organize the cohorts, which overall consisted of thousands of patients and their families. Using these clinical cohorts and their careful phenotypic assessment, we were able to dissect the genetic susceptibilities. These studies made it difficult for me to leave the UK, because, in order to be successful, I needed these resources and the long-standing collaborations.

In addition, scientific studies have estimated that 90 percent of autism risk is attributable to genetic factors and only 10 percent to non-genetic environmental factors. Do you agree and how has this information affected your research, if at all?

This is the traditional view and we always used this statistic, which is based on twin studies. This type of study examines the rate of autism between identical and non identical twins. However, recently, it has come under scrutiny. I think that it is interesting to look at new data with a fresh eye. The most important thing we have learned about autism so far, from both the twin studies and our identification of susceptibility genes, is that the behavioral outcome is not predetermined. If you have two identical twins with the same genetic makeup and one of them has autism in a severe form, it is not always the case that the second co-twin has severe autism. A significant percentage of the time, they will have a less severe form of autism and, sometimes, they are clinically normal. We conclude that while genes have a large influence on the outcome, there are other factors, which are developmental or environmental, that influence the final phenotypic outcome. The other thing we have learned from the identification of genes involved in autism is that they can have a role in other neurodevelopmental disorders, such as epilepsy, learning disability or schizophrenia. Genes do not encode for clinical diagnoses, but they encode for proteins, which help build the brain correctly. If something goes wrong in neurodevelopment starting from a genetic change, the final behavioral outcome is not always the same due to many other factors. The final result can be variable, whether it is autism, schizophrenia or learning disability. This was a big surprise to us and is not something we would have predicted from the start.

Have there been any practical applications for this research (i.e. early detection of autism)?

Yes, you can screen genes using DNA arrays to search for large deletions or duplications of genetic material in children with autism. This helps us to understand which genes harbor etiologic mutations that may give rise to autism. It can be helpful in a diagnostic situation for younger children in the family, who may or may not have symptoms of autism, and genetic findings can provide some guidance for risk. However, there are ethical issues with this approach because, as I said, these mutations do not always result in autism. For example, there is a concern that you may detect the same genetic change in a younger sibling of an older child in the family who has autism. Therefore, the question arises whether it is ethical to label that younger sibling to be at risk for potential problems if you do not know that the outcome is genetically predetermined. The detection of major DNA changes can be discovered prenatally, but we do not know enough yet about all the genetic factors in autism to offer accurate prenatal tests. It is not a single-gene disorder like cystic fibrosis or muscular dystrophy where you can perform a sensitive and specific prenatal test and provide genetic counseling to the parents. In the case of autism, all you would be able to provide is a risk factor. As we gather more information on susceptibility genes and other factors influencing outcome in autism, this information may be more useful in the diagnostic arena.

Are there distinct similarities or differences in the way medical research is conducted in America and in Great Britain?

One significant difference is that there are many well-developed and structured MD/PhD programs in the US. In terms of getting medical doctors interested in biomedical research as an academic career, the NIH funds these programs very well. In the UK, I believe that Cambridge has one of the only programs that offer a structured MD/PhD degree. For the other medical schools in the UK, most of the doctors obtain their medical degree first and then they have to apply for separate funding to obtain a PhD. It is a more tortuous route to get involved in biomedical research. Other than this discrepancy, I think basic biomedical research in the UK is as strong and productive as it is in the US. This is due to funding from the Medical Research Council, which is government supported. In addition, there are very good biomedical charities, such as the Wellcome Trust, British Heart Foundation and Cancer Research UK, which support research at the same level as government funded research.

As the new president of Tufts University, which includes the School of Medicine and the Friedman school of Nutrition Science and Policy, how do you view Tufts' role in the global health community now and in the foreseeable future?

Tufts has an interesting mix of graduate and professional schools situated in one university. It is rare for a medical school to be aligned with very strong nutrition and veterinary schools and we should take advantage of the opportunities that poses. One of the roles that I am trying to play is to help stimulate and catalyze thinking across the schools in certain thematic areas. For example, we can integrate our activities better for life and health science fields such as neuroscience, cancer, obesity, infectious disease and global health. This is not to say that there are not already many fruitful collaborations between the schools, but I would like to put the activity on a better structural basis. I also would like to focus on the graduate and undergraduate programs that underpin the research conducted in these thematic areas. I hope that graduate and undergraduate students would be able to move across the schools to different investigators and projects in a more flexible, cross-disciplinary way.

As a scientist and an administrator, is it difficult to find a balance between the two? If so, how do you bridge this gap?

During my time as Pro-Vice-Chancellor at Oxford, I did continue to supervise my laboratory, but at Tufts I am not going to set up a new laboratory. It would interfere with my leadership role as president. Yet, by bringing my knowledge and scientific perspective to the position, I understand the importance of collaboration, openness, and transparency to solve complex problems, rather than trying to do it in a single, solitary laboratory. I think that this approach is relevant to the way in which a university works to solve complex, global problems. We cannot accomplish goals easily if we are separated in each individual discipline. Every discipline has its own limitations in how much progress can be made. By working together other disciplines complement the actions of one another. Only then we can come up with better and more innovative solutions.

Based on your strong Internet presence for Tufts, do you see social media as a vital source of communication in the medical and research field (i.e. the ability to create dialogue between researchers around the world)?

I originally got involved with Twitter because my colleagues in my research field were using it, particularly in the fields of neurodevelopmental disorders, genetics and psychology. Many of my colleagues had started to produce posts on blogs and tweets to broadcast the most recent work in their respective fields. I found it to be an interesting and personal way to keep up with what was going on in my field. In addition to looking through journals to find what is interesting, they were telling me directly what they thought was interesting. I realized quickly that not only could I communicate with people in my own area of expertise but also across different disciplines. Now, as president, I try to communicate with all sectors of the Tufts community, including students, teachers and faculty, using a variety of media as effectively as I can.

What advice would you like to impart to students who wish to embark on a career in the medical research field?

I think medicine is an interesting field because it opens a lot of doors. Not everyone who goes to medical school will then proceed to clinical practice as a life-long career. Individuals will consider roles in research. Others will study for further degrees and some will use their medical degree to work on global health policy or health care delivery or get involved in the biotechnology and pharmaceutical industries. I do think that, like other professions, it expands your opportunities, rather than restricts them to one particular area. Most important, there are many different avenues to take to follow your passion in the field of medicine.

ORIGINAL ARTICLE

MRSA in Boston Area Hospitals

Kristen Davenport & Emily Cox

MRSA (methicillin-resistant staphylococcus aureus) is an antibiotic-resistant bacterium that is a leading cause of hospital-acquired infection. Staphylococcus aureus usually lives symbiotically on the skin and does not cause infection until it manages to pass the body's protective barriers. Its presence in hospitals is due in part to the widespread use of antibiotics and the common surgical methods that permit the introduction of the skin flora into the body.

Though many hospitals have developed protocol to prevent MRSA infection, the specific practices vary widely. This paper addresses four spheres of influence on Boston-area hospitals by presenting case studies of Brigham and Women's Hospital, St. Elizabeth's Medical Center, Children's Hospital Boston, New England Baptist Medical Center and Tufts Medical Center. The four spheres of influence are state legislation, national organizations, media attention and societal pressure and the demographics of the specific hospital. Though the five hospitals have employed varied protocols, their decision-making process clearly reflects the aforementioned spheres of influence. The authors were able to hypothesize why each hospital was influenced the way it was, leading to the implementation of their MRSA prevention program.

INTRODUCTION

Today, medical and public health professionals are our greatest protection against epidemics; however, the tactics they use to fight epidemics are influenced by factors greater than the medical community itself. Hospitals in the Boston area, and throughout the world, are faced with an ongoing epidemic of methicillin-resistant *Staphylococcus aureus* (MRSA), an antibiotic-resistant bacterium. In an effort to stop the transmission of MRSA, many hospitals have implemented precise protocols that share certain common factors but are tailored to the specific needs of each institution.

In the 20th century one of the most powerful tools utilized by medical professionals was the antibiotic. One of the biggest challenges facing the 21st century medical community has been the emergence of organisms resistant to our greatest weapon. Chief among these pathogenic organisms is *Staphylococcus aureus,* which lives symbiotically on the skin of more than 20% of the population, but can cause infection if it manages to pass our protective barrier.[1] The structure of *Staphylococcus aureus* made it a prime target for antibiotics, specifically penicillin. Due to random mutations and the selective pressure from widespread penicillin use, *Staphylococcus aureus* evolved to be significantly resistant to penicillin by the 1940s.[2] In 1959, researchers invented methicillin, an antibiotic designed to target the penicillin resistant strains of *Staphylococcus aureus*.[3] The same sequence of events that took place in the 1940s has created methicillin resistant *Staphylococcus aureus* (MRSA) and the medical profession is, once again, looking for a way to combat an epidemic of antibiotic resistant bacterial infections.

> **"One of the biggest challenges of the 21st century medical community is the emergence of organisms resistant to our greatest weapon."**

Since antibiotic use was common, hospitals were the perfect setting for the evolution from *Staphylococcus aureus* to MRSA. MRSA is now a small, albeit precarious, part of ordinary hospital life. We focused our research on the techniques developed by different hospitals in the Boston area for tackling the menace of hospital acquired MRSA (HA-MRSA). We found that the measures taken to fight HA-MRSA epidemic are varied among hospitals, but are all shaped by four concentric spheres of influence.

MEDIA ATTENTION AND SOCIETAL PRESSURE

The broadest sphere of influence encompasses society and the media. Not only does the media provide limited information about MRSA to the public, but also serves as a voice for society's concerns. Though HA-MRSA was general knowledge for people working in hospitals, the emergence of community acquired MRSA and the subsequent media attention brought antibiotic-resistant bacteria to the forefront of society's collective consciousness. When the media supplies incomplete information to the often scientifically uninformed public, as was the case with MRSA, confusion results. A common misconception generated by increased media attention is that there is no difference between the manageable HA-MRSA and the more virulent CA-MRSA. An overabundance of sensationalized stories about MRSA and this misconception have created an indiscriminant fear of MRSA, which is apparent in the increase in investigative media attention. More news outlets are responding to the public's interest in MRSA and formulate stories that inspect situations in local hospitals. These intrusions have increased pressure, on the medical community, from society (expressed,

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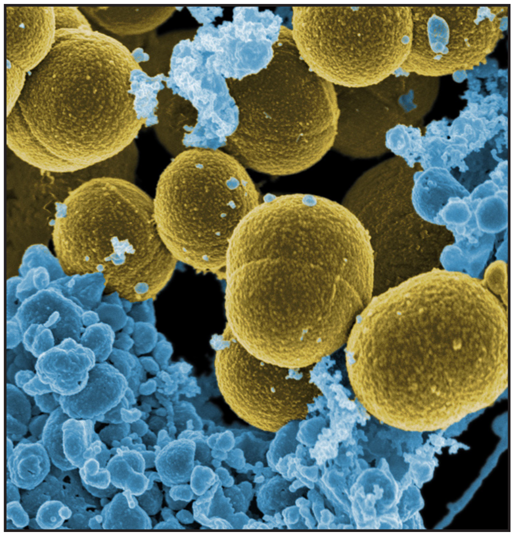
in this case, through the media). Boston is no exception as The Boston Globe's front-page article revealing the rates of hospital-acquired infections in local hospitals evidences.[4] The press attention given to specific MRSA rates is an example of the media's ability to bring society's concerns to the attention of those in the medical community as well as a dispenser of information.

NATIONAL ORGANIZATIONS

The next level of influence affecting Boston area hospitals is comprised of organizations that operate at a national level such as the Centers for Disease Control and Prevention (CDC), a federal agency dedicated to protecting the health of people and communities.[5] The CDC publishes guidelines and recommends practices health care facilities may use to treat and prevent a plethora of organisms and diseases. The recommendations most applicable to the control of MRSA feature a collection of isolation techniques called "contact precautions".[6] Though CDC recommendations are not mandatory, many hospitals use them as guidelines in developing their specific infection-control (and MRSA control) protocols. It is due to the influence of the CDC and other national players that there are many similarities among the protocols in hospitals throughout the country.



S. aureus bacteria escaping destruction by human white blood cells. Image courtesy of http://www.flickr.com/photos/microbeworld/5957846000/.

Another of the aforementioned national players is the Joint Commission, a national non-profit organization that grants accreditations and certifications to hospitals and other health care facilities based on a variety of factors designed to indicate a certain quality of care.[7] Among these factors is the effectiveness of their infection control protocols. Hospitals strive to obtain and maintain accreditation for the enhancement it affords their reputations. American society generally has confidence in the CDC and is often swayed by terms such as "Joint Commission Accreditations," because of the implication of legitimacy. An institution is more likely to be perceived positively when it can explain that its protocols are based on standards set by nationally recognized organizations.

Finally, Medicare has added a new dimension to federal influence by no longer reimbursing institutions for certain hospital-acquired infections such as knee, hip and central intravenous line infections (all of which can be caused by MRSA.) This financial pressure from "third party payers" has prompted a more intense effort by hospitals to prevent these infections.[8]

STATE LEGISLATION

In 2005, Illinois passed legislation requiring hospitals to screen all patients for MRSA upon admission.[9] This example of government intervention is more extreme than the measures taken in Massachusetts. Massachusetts state law requires that only infections and not colonizations of MRSA be reported to the state.[10] Though Massachusetts does not currently require extensive testing, some in the health care community fear that legislators in the Commonwealth will soon follow Illinois's example. There is a constant struggle over the distribution of a hospital's limited resources and health professionals are hesitant to fund a comprehensive, active screening program for a hazard that they consider to be under control.[11] Another consequence of mandatory testing is an increase in the amount of information available to the already apprehensive public and the ever-eager media watchdog.

BOSTON AREA HOSPITALS

The CDC's inability to enforce, the state's lack of specificity, and society's lack of clout have allowed hospitals to develop unique systems for dealing with MRSA. Case studies of five Boston area hospitals highlighted these differences.

TUFTS MEDICAL CENTER

Tufts Medical Center is a 450-bed research hospital for adults and children in downtown Boston. Dr. Shira Doron, an Infectious Disease Attending Physician and the hospital's Antibiotic Steward, described the hospital's protocol as follows: Contact precautions are employed when a patient who is known to have MRSA is admitted. TMC has no universal screening program for inpatients but they do screen patients admitted to the open Neonatal Intensive Care Unit (NICU). They screen these infants upon admission and then weekly thereafter. Dr. Doron attributed TMC's low MRSA rates to a successful hand hygiene campaign, a visible commitment from top administrators, the use of marketing company, and the direct involvement of department chiefs in the enforcement process.[2]

The contact precautions were drawn from CDC recommendations, but the nature of TMC's NICU required the implementation of additional safeguards to protect the infected patient and the other infants in the unit.

ST. ELIZABETH'S MEDICAL CENTER

This 300-bed Tufts Medical School-affiliated teaching hospital, located in Brighton, offers a full range of medical specialties, but has been recognized for its cardiovascular prowess. Dr. Vito Iacoviello, Chief of Infectious Disease, explained that patients known to be infected or colonized with MRSA are placed in a private room on contact precautions when admitted to the hospital. Iacoviello also emphasized general infection prevention through washing hands with soap and water or using an alcohol based hand sanitizer before and after each patient interaction. Currently, St. Elizabeth's only employs "passive" screening, but in the event that a specific unit shows more MRSA than expected, the protocol calls for "active" screening and isolation of all patients until a negative test rules MRSA out.[8]

This reactive protocol was chosen because St. Elizabeth has a low incidence of MRSA and the contact precautions were taken from CDC recommendations.

NEW ENGLAND BAPTIST MEDICAL CENTER

This 150-bed leader in orthopedic surgery is located in the Mission Hill neighborhood of Boston. Maureen Spencer, the Manager of Infection Control, described New England Baptist Medical Center's (NEBMC) MRSA control protocol as "intense." She explained that all people scheduled for inpatient surgery are screened for MRSA and *Staphylococcus aureus*, via nasal swab, two weeks prior to their anticipated date of admission. If a patient is colonized with MRSA, they are placed on a "decolonization" regimen, which includes anti-bacterial shower product and nasal spray, which are both used at home. Just before surgery, the patient is screened again; a positive test prompts contact precautions and a specifically tailored prophylactic (vancomycin); a negative test still provokes the use of vancomycin. Patients admitted from the emergency room are tested with a nasal swab and those with a positive test result are placed on contact precautions. NEBMC has also taken advantage of innovative technologies including anti-bacterial sutures, equipment that provides rapid MRSA test results, and washcloths impregnated with an anti-bacterial product. Finally, NEBMC has also implemented a comprehensive hand hygiene campaign that includes bi-monthly "themed" programs to continually remind staff of the importance of hand hygiene.[12]

> **"*Staphylococcus aureus* is the number one cause of surgical site infections..."**

Staphylococcus aureus is the number one cause of surgical site infections and NEBMC's preeminence as a center for orthopedic surgery makes MRSA prevention particularly important. A rash of blood stream infections that appeared to be caused by MRSA in Fall 2005 prompted the administration to support the infection control department as they increased their efforts to control MRSA. This new financial support for MRSA control facilitated the establishment of decolonization procedures and the introduction of innovative technologies.

CHILDREN'S HOSPITAL BOSTON

This 400-bed hospital in the Longwood Medical Area is one of the largest children's hospitals in the country and a forerunner in pediatric centered research. Gail Potter-Bynoe RN, of the infection control department explained that only children admitted to one of the hospitals intensive care units are screened upon admission. The patient is then screened weekly and put on contact precautions until they have been cleared by three negative tests in the area of initial infection.[11]

Once again, Children's Hospital follows CDC recommendations for contact precautions. However, they have targeted their program specifically at ICUs (home to the most compromised patients) because more healthy children are not as likely as adults to be colonized or infected with HA-MRSA.

BRIGHAM AND WOMEN'S HOSPITAL

Also located in the Longwood Medical Area, this 777-bed hospital is one of the nation's preeminent transplant centers as well as a leader in women's health, hematology, and cancer care. Margaret Bikowski, an infection control practitioner, described BWH's "admission surveillance system." A patient is tested via nasal swab upon admission to an ICU or the Hematology/Oncology service and weekly thereafter. A computer program sends notification of a positive test result from BWH's laboratory to the unit where the patient is housed. The patient is then placed in a private room on contact precautions. If there are more than three positive cultures (from 3 different patients) within a single unit, the entire unit is placed on "glove precautions" for two weeks. BWH also pays particular attention to hand hygiene, surface cleaning and environmental sanitation.[9]

Like many other Boston area hospitals, BWH follows CDC recommendations for contact precautions. The size of BWH necessitated the design of a computerized system that not only tracks general trends, but trends within specific units as well, in order to target problem areas with more stringent preventive measures.

CONCLUSIONS

The four spheres of influence acting on Boston area health professionals molded the protocols selected in each specific scenario. The media serves a dual purpose by providing information to the public about MRSA and serving as gauge of the public's concern. An increase in coverage is an indicator to hospitals that public concern has shifted to MRSA. Hospitals are affected further when this public concern manifests itself in patients' reactions to MRSA diagnoses.[2]

Though the CDC, Joint Commission, and Medicare have no avenue for enforcement, the effects of their actions are clearly visible in hospital protocols. The trust placed by the public in the CDC and the Joint Commission lends their recommendations credence, which makes them more valuable to hospitals. Similarly, the financial pressure from Medicare acts as a driving force behind expanded MRSA control practices. Though none of these actors have the ability to force hospitals to action, their influence is unquestionable.

The threat of mandatory testing from state legislation encourages hospitals to keep rates low and below the public radar, and consequently, keep infection control reform off legislators' platforms.

The specific characteristics, including size and clinical expertise, of Boston area hospitals are the most influential factors in shaping hospital protocols. A larger hospital like BWH requires a thorough surveillance system in order to find and target the locus of infection within the larger hospital. Smaller hospitals require less technologically advanced surveillance systems because there are simply not as many patients to track. The protocols of both New England Baptist Medical Center and Children's Hospital Boston reflect their clinical expertise.

Children present a particular challenge to MRSA control systems because it is difficult to restrict their mobility and their inability to control their excretions makes their confinement all the more important.[11] Though children are less prone to serious MRSA infections, the staff in the ICUs of Children's Hospital Boston chose to actively screen admissions without request from the infection control department, though many adult hospitals don't require such testing. This may be due to the extra scrutiny society places on the care of our children.

The fact that patients seek out NEBMC for orthopedic surgery makes the post- surgery infection rate particularly relevant. While NEBMC's preeminence as an orthopedic center makes MRSA control important, its success with MRSA control makes it an even better option. This reciprocal relationship has led to exceptionally low rates and dedication from all levels of hospital leadership at NEMBC.

As community acquired MRSA gains traction in the Boston area, medical professionals are likely to continue being swayed by the same four spheres of influence that have shaped the response to hospital acquired MRSA. Hospitals have developed effective ways of dealing with HA-MRSA, but the evolution of bacteria will continue to challenge even medicine's most innovative protections.

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SCIENCE REPORT

The Best Career of 2011?

Bassel Ghaddar

US News and World Politics recently ranked biomedical engineering as one of the 50 best careers in 2011, and ranked it as the top technology job of the year. With an improving economy and greater demand for biomedical research and advancement, biomedical engineers have found a plethora of opportunity to pursue their work. This increased availability comes with increased funding and a virtually unlimited scope of possibility, which is reflected in biomedical engineering's high placement in the rankings. US News and World Politics' ranking methodology considers factors such as job growth projections, salary data, job satisfaction, turnover, impending retirements, and employment prospects when compiling their list.[1] According to the Labor Department, "No single occupation is expected to have more job growth over the next decade or so. Employment of biomedical engineers is expected to grow by a whopping 72 percent—adding nearly 12,000 jobs—between 2008 and 2018."[2] But aside from all the economic advantages and available resources, what is it that really makes biomedical engineering an outstanding career? Venturing briefly into the work of biomedical engineers and some of the advancements they made in 2011 alone would certainly reveal why biomedical engineering is truly a field characterized by increased growth, importance, necessity, and limitless bounds.

WHAT IS BIOMEDICAL ENGINEERING?

Biomedical engineering is the bridge that unites the once orthogonal fields of medicine and engineering. It seeks to utilize engineering principles and design concepts to model or solve medical and biological problems, thereby improving healthcare diagnosis, monitoring, and therapy.[2] Just as the healthcare field is subdivided into numerous specialties, the interdisciplinary field of biomedical engineering is broken up into various subdivisions. Biomedical engineers research and work on an array of clinical and engineering applications, including the design of medical instrumentation and regenerative tissue growth, and the development of biocompatible prostheses and pharmaceutical drugs. These are just some of many of the tasks biomedical engineers face. The increased attention and funding that biomedical engineering in recent years has led to fruition, as each passing year leaves a myriad of publications and breakthroughs, many of which hold immense implications on the future of healthcare. A couple examples are described below.

SYNTHETIC WINDPIPE TRANSPLANT

Back in 2008 surgeons in Spain successfully performed the world's first tissue engineered whole-organ transplant on a 30-year-old woman. The only problem is that the surgery required a donor trachea. With 50,000 to 60,000 people diagnosed with cancer of the larynx in Europe each year, half of whom doctors say are suitable for a whole organ tissue transplant, donor organs are hard to come by.[3] In fact, in 2010 a total of 6,521 patients died in the United States while waiting for organ transplants, which means an average of 18 people die every day because of a shortage of donor organs, while every 11 minutes a new person is added to the organ transplant waiting list.[4]

Last July in Sweden, however, surgeons were able to carry out the first ever synthetic whole organ transplant, eliminating the need for a donor organ. The patient was a 36-year-old geology student studying for a PhD whose windpipe, despite aggressive chemotherapy and radiotherapy, was impeded by a golf ball sized tumor that was blocking his breathing and would soon cause his death. Fortunately, building off research on clinical transplantations of tissue engineered airways by a team lead by Dr. Macchiarini, the lead surgeon of this operation,[5] biomedical engineers, scientists, and other experts in London were able to use 3D scans of the patient to construct a seamless copy of his trachea out of glass, which was then soaked in a solution of stem cells taken from the patient's bone marrow. This allowed the synthetic porous windpipe to be seeded with the patient's own tissue, eliminating the problem of rejection.[6]

After two days, the tailored trachea was ready for transplant, and was surgically implanted into the patient. Bone marrow cells and lining cells taken from the patient's nose were also inserted, which successfully divided and grew into the synthetic windpipe scaffold, turning the synthetic trachea into an organ indistinguishable from an original, healthy organ. The surgery was successful, and after several months, the patient is still fine. As Professor Macchiarini, the lead surgeon of the groundbreaking operation, said, "Thanks to nanotechnology, this new branch of regenerative medicine, we are now able to produce a custom-made windpipe within two days or one week…The beauty of this is you can have it immediately. There is no delay. This technique does not rely on a human donation."[7] The biomedical engineers, scientists, and surgeons that masterminded this process have opened a door for all future surgeries, and have created hope for the thousands of patients waiting on new organs.[8]

MAPPING A HEART'S ELECTRICAL ACTIVITY IN ONE HEARTBEAT

Engineers and researchers at Washington University in St. Louis made a breakthrough in a completely different subfield of biomedical engineering. Just this last August, they were able to develop a new technique called Electrocardiographic Imaging (ECGI), which uses a special algorithm to produce movies of the distinctive ventricular tachycardia excitation waves by analyzing just one heartbeat. These excitation waves are those produced during an abnormally fast heart rhythm

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in the ventricles. Ventricular tachycardia (VT) is a fast and abnormal heart rate, which can lead to ventricular fibrillation, a condition that causes about 400,000 sudden deaths in the United States each year.

ECGI is especially promising because it uses noninvasive methods to gather a plethora of information in a short amount time. The technique combines computerized tomography (CT) with 250 electrocardiograms recorded by electrodes placed on a vest across the patient's torso to chart the location and type of ventricular tachycardia. It was tested on 25 VT patients, and was able to correctly identify the type and origin of each patient's VT.

ECGI greatly facilitates the diagnosis of VT. Existing noninvasive diagnosis of VT relies on the conventional ECG, which can only provide general information about the heart's electrical activity. Locating the source of a patient's VT requires hours of invasive mapping using a probe that is inserted into the heart and moved about to detect electrical aberrations. In contrast, ECGI can locate the source of an arrhythmia to an accuracy of about 6 millimeters, and thus can potentially save hours of mapping and an invasive operation. The hope is that ECGI will someday become a routine procedure to test for and identify patients at risk of developing VT, as well as a follow up tool for VT patients.[9]

COMPUTATIONAL MODELING TO UNDERSTAND GENOMES

A team of biomedical engineers from the University of Virginia, Wageningen University in the Netherlands, and Helmholtz Center for Infection Research in Germany recently developed a computational model that clearly identifies substantial modulations between different genomes, DNA and RNA. The team modeled the genome of the pathogen Pseudomonas aeruginosa, a bacterium responsible for 10% of hospital acquired infections. Their research is a novel approach to combatting the bacteria and improving treatment, especially for burn victims and those with cystic fibrosis or compromised immune systems, to which the bacterium can be particularly injurious.

This team of researchers is at the cross works of computer science and biology. They have been mapping the genomes of multiple organisms for several years, and can now detect the activity of specific genes under varying circumstances, and have integrated this information to create models to predict which genes activate which cell functions. This information is crucial to understanding how cells will respond to medicine or how they will react to different environments or stimulants.

As with any computational model, there are limitations to this science. As researchers collect more information and perfect their modeling techniques and algorithms, the models should improve, and hopefully one day there will be a model that accurately describes the functioning of the bacterium.[10]

CONCLUSION

Clearly aside from the US News and World Politics criterion, biomedical engineering is an exciting career because of the implications its research and results have on improving healthcare. The above examples are just a few from a vast sea of promising research that culminated this year. Doctors from the Texas Heart Institute are creating and testing a pulseless artificial heart, a team from Northwestern University is testing the ability of diamonds to accurately deliver and retain drugs at tumor sites, engineers at Johns Hopkins University are creating new materials to restore damaged soft tissue and aid in facial reconstruction, and the list goes on.[11]

As history has shown, technological process increases at an exponential rate, so the attention and efforts being put into biomedical engineering now have immense implications for the future of healthcare. There may one day be "organ factories" that manufacture and sell custom made organs to patients in need. Engineers may develop highly advanced imaging technologies that can noninvasively detect virtually any medical problem. Scientists may develop materials almost identical to those found in our own body, and integrate them into patients' bodies during surgeries. And ultimately, there may be a model that accurately characterizes and predicts human body function. With such high goals, the horizon is distant for biomedical engineering.

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One in a Million

Ariel Lefland

One in three deaths in the United States is due to heart disease. Each day, 2,200 Americans die from heart disease; 800,000 die each year. Of these deaths, 150,000 occur in individuals under 65 years old. It kills about the same number of Americans each year as cancer, lower respiratory disease (including pneumonia) and accidents combined. One in three adults, or eighty million people, are affected by heart disease; two million heart attacks and strokes occur in the United States per year. The risk factors for heart disease and strokes including hypertension, high cholesterol, smoking and obesity are in most individuals preventable and controllable, yet more than 100 million people, half of American adults, smoke, have uncontrolled hypertension or cholesterol, or are prone to a combination of multiple risk factors. Although African Americans, elderly individuals and women are at higher risks than others for heart disease, people of all ages, genders, races and ethnicities are affected; we are all at risk, and too many of us have been affected, either directly or indirectly, already. It is time to take the next big step in the fight against cardiovascular disease to limit the number of people with these risk factors and prevent the onset of the disease in those who already have them. The Million Hearts initiative aims to do just that.

> **"Million Hearts is a national initiative with the goal of preventing one million heart attacks and strokes over the next five years."**

Million Hearts is a national initiative with a goal of preventing one million heart attacks and strokes over the next five years. By bringing together communities, health systems, nonprofit organizations and partners from the private-sector across the country, the program is putting into place a number of different campaigns and programs to fight heart disease. The Centers for Disease Control and Prevention, Centers for Medicare and Medicaid Services, the National Institutes of Health, Agency for Healthcare Research and Quality, the Food and Drug Administration, the American Heart Association (AHA) and YMCA are among the program's many partners. The AHA will help monitor Million Hearts' progress and provide patients and consumers with heart health management tools such as risk calculators.[1] Walgreens, another private sector partner, will provide blood pressure testing at no charge. The American Pharmacists' Association and the American Pharmacists' Association Foundation will encourage its members, which total over 62,000, to become part of the campaign and raise awareness with their patients and communities. Participation by both public and private groups is expected to grow in the next several months. Million Hearts aims to improve access to effective care, improve quality of care, focus more clinical attention on heart attack and stroke prevention, increase public awareness of how to lead a heart-healthy lifestyle, and increase consistent use of high blood pressure and cholesterol medications.[1] The program was launched in September 2011 by the Department of Health and Human Services and will last five years; however, if it is successful, its impact will be profound and will last far longer than that.

Implementing effective and cost-effective interventions can help limit the number of people who suffer from the disease each year. Current statistics show that less than half of people with ischemic heart disease take baby aspirins daily or another blood thinning agent. Statistics further show that less than fifty percent of individuals with hypertension have adequately controlled the condition and that only a third of people with hyperlipidemia have adequate treatment. Finally, less than a quarter of smokers who try to quit the habit get counseling or medication. The initiative will increase control and standardization of the "ABCS," or aspirin administration, blood pressure and cholesterol control and smoking cessation, by reducing or eliminating copayments for medications, implementing once-a-day dosing, utilizing team-based care approaches and stepwise care management, and increasing standardization of care.[1] Standardizing ABCS will allow medical practices to disseminate the best practices and improve the quality of care.

The first part of the program is aimed primarily at healthcare providers. Dr. Donald Berwick, chief of Medicare and Medicaid, and Dr. Frieden, director of the Centers for Disease Control and Prevention, noted that getting doctors to push their patients to quit smoking doubles the likelihood

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that a smoker will successfully abandon the addiction. Doctors can also help smokers' attempts to quit by prescribing one of seven approved smoking cessation drugs.[3] Additionally, the program wants doctors to increase the number of patients who use aspirin. The first step in standardizing care has already begun with the transition to electronic medical records in many offices and practices across the nation. The program may even ultimately be connected to approaches in which providers are paid more for better preventative care measures. Physician Quality Reporting System provides bonus payments and in the future will provide payment reductions based on reporting of quality information by professionals. The second part of the program is aimed at creating an overall heart healthy society. Million Hearts is working with the Food and Drug Administration (FDA) to limit the amount of salts in foods. The problem, officials note, is not the saltshaker on our tables. Instead it is the amount of salt in our food before it gets to our plates. Reducing sodium intake is a key step in reducing the risk for hypertension and, thus, cardiovascular disease. Processed store bought foods and restaurant dishes are being targeted most. Menu-labeling will be required in chain restaurants to allow people to make informed choices about their food consumption and nutrition. Additionally, the program will work to educate the public on the importance of reducing sodium intake. Artificial trans fats are also a significant factor in raising low-density lipoprotein (LDL) cholesterol levels and lowering high-density lipoprotein (HDL) cholesterol levels. The FDA has begun to require listing of trans fat content on food labels. There has already been a reduction in trans fat consumption. This community-based prevention will work alongside First Lady Michelle Obama's "Let's Move" initiative to decrease childhood obesity. Obesity and physical activity are undeniably linked to the prevalence of heart disease. Her program along with Million Hearts will advocate increased physical activity and better nutrition and habits in children and adults alike.[2]

The program is empowering Americans to make healthy choices.[3] By the numbers, artificial trans fat consumption will hopefully be reduced by fifty percent by 2017 and sodium intake on average must see a 20 percent reduction. Federal officials want to expand the number of Americans with their blood cholesterol under control by 20 million people. Aspirin use for people at high risk and blood pressure control must both go from under fifty-percent to sixty-five percent in 2017. The program goals also include four million smokers quitting by 2016.

The statistics are sobering, yet Million Hearts has the ability to prevent the many deaths that cardiovascular disease causes. Decreasing the consumption of trans fats will save 50,000 deaths per year, and controlling cholesterol and blood pressure could save more than 100,000 people a year. Ten million more Americans will have their hypertension controlled. Twenty million will have their high cholesterol under control. In the words of those who suffer from cardiovascular disease, the initiative is "going to my daughter's graduation," "playing with my dogs," "spending time with my grandkids;" the initiative is allowing people to beat heart disease by creating a healthier environment for children to grow up in, enforcing better preventative care measures and ensuring quality care improvement. The initiative will hopefully be a successful stepping-stone in cardiac care.

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EDITORIAL

A Protection of Choice on Both Spectrums: Federal Birth Control Funding

Joseph St. Pierre

Privacy. We all need it. ‘You mind your business and I’ll mind mine.’ For individuals, it is a blissful contract which creates an opportunity to relax and exercise a little creativity or expression, even ‘bending’ the rules as we see fit. No doubt, there are many private affairs we all harbor that should remain private. But does the defense of privacy necessitate federal funding? After all, if it is a private matter in which two consenting parties partake in an act, should are they not consenting to the consequences of such an act? With the cost of living constantly increasing, the need for contraceptives like condoms and the “morning after pill” are used to prevent unwanted pregnancies, which could throw a couple into fiscal chaos. However, as said before, a consenting choice to have sex does have consequences and, more importantly, is a private affair.

> **“The question is not whether the government should fund birth control, but rather whether or not it should stop.”**

In the 1965 landmark Griswold v. Connecticut case, privacy was cited as the principle reason for married couples to purchase contraceptives[1]. Thus, the right to purchase contraceptives for married couples was ruled a violation of the fourth amendment, which protected the privacy of marriage and the home. Such a decision was later extended to unmarried couples through the Eisenstadt v. Baird[1]. Justice William Brennan accurately voiced the court’s opinion, saying ““if the right of privacy means anything, it is the right of the individual, married or single, to be free from unwarranted governmental intrusion into matters so fundamentally affecting a person as the decision whether to bear or beget a child.”[1] Later, President Johnson would apportion federal funds to the organization Planned Parenthood under Title X of the Public Health Service Act under the premise that “no American woman should be denied access to family planning assistance because of her economic condition.”[2] Such funding covered preventative services like cancer screenings and HIV testing, as well as pregnancy counseling and testing. In addition, funding was also apportioned to fund to contraceptives provided. Coverage for contraceptives was later extended to Medicaid and government employee health plans[2].

Alas, in this current time and day, the question is not whether the government should fund birth control, but rather whether or not it should stop. As aforementioned, current government funding for birth control today comes from two sources: Title X funding for the organization Planned Parenthood, and the insurance policy Medicaid, all traced back by the right to privacy. It should be remembered that privacy frees a party from federal or private regulation. However, it is one thing to allow one perform a controversial act. It is a completely different situation when such an act demands federal funding. By funding birth control, government goes beyond the private sector and makes what was initially a private act into a federal undertaking.

Examining Planned Parenthood, it should be noted that it is a private organization. It extends services regarding charitable interests and receives private funding to achieve such ends, receiving 363 million federal funding in 2009 alone[4].

Regardless of the morality of using such contraceptives, the fact remains that Planned Parenthood, is a private organization. Many organizations struggle everyday to further their message, be it for civil rights, institutional change, or aiding the disadvantaged. However, the government is not one of these organizations. As much as we want it to be, the government will not and cannot be a charity. By using tax payer dollars to fund birth control, not only are citizens subject to paying for services they might be against, but they also proceed to pull their country further into debt. In the same way a choice to perform a private act is respected and protected in this country, so too must the choice to choose how and when to perform an openly beneficent act. Taxation to charity destroys that choice to be independently benevolent (or immoral, as some would argue), bring us to the point of charity. If charity is mandated, is it still charity?

Morality aside, there are also many unresolved legal issues that, until they are definitively addressed, continue to make government fund birth control a shady undertaking. Birth control is defined as the “control of number of children born by lessening the occurrence of conception” [3]. However, many popular forms of birth control like the “morning after pill” take affect following fertilization[2]. Consequently, they often labeled by some conservative opponents as “abortificants”[2]. To date, there is no specific distinction between abortion and contraception. Thus, if one cannot implicate the difference then the procedure should not be funded, as it would violate federal law.

Understand that organizations like Planned Parenthood should not be dismantled. They are private organizations that offer services that are completely legal. However,

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as with other charitable organizations, they should receive government tax breaks, not actual federal funding.

Ultimately, use of contraceptives is a private choice that stands on a variety of moral issues. If government funds it, it takes a stance; ushering in a slippery slope in which future policies enforce that stance, infringing upon the beliefs of its citizens simply for the sake of a whimsical few. Privacy and freedom of choice is a sacred attribute we all take pride in. However, choices have consequences, and a private choice warrants a private consequence. If I choose to buy a piece of pizza, I am agreeing to pay for it. In that same, if a couple agrees to have sex, so too should they pay for any addition materials, contraceptive or not.

But what of the instance of rape? In such an engagement, one party is forced to engage in sexual activity due to a maleficent outsider. Many proponents of government funded birth control cite this reason for continued funding. However, such proponents make the mistake as classifying a situation with two consenting parties and one that involves a perpetrator and a victim as the same situation. Once again choices have consequences. If there are financial costs to the victim, they should be supplied by the perpetrator via a mandatory fine in addition to legal costs. If the perpetrator is unable to pay the required fine, then, and only then should the government provide money to the victim. From there, the government is not openly funding birth control, as the victim now has the resources to make the choice herself. Once again, the choice is a private affair.

In a world of full of freedom and opportunity, we sometimes forget that criminal choices are not the only actions that warrant consequences. Like it or not, freedom is responsibility.

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AT A GLANCE: BIRTH CONTROL PILLS

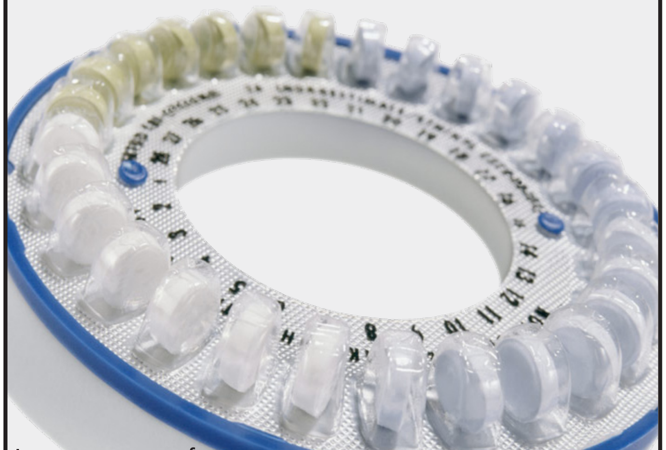
- COMPOSED OF SYNTHEIC HORMONES TO REGULATE THE MENSTRUAL CYCLE

- HOLDS ONE OF THE HIGHEST EFFECTIVE RATES AMONG CONTRACEPTIVES: 95%- 99% PREVENTION RATES

- ADVANTAGES: REDUCED RISK OF DEVELOPING OVARIAN AND ENDOMETRIAL CANCER, REDUCED MENSTRUAL FLOW

- DISADVANTAGES: INCREASED RISK OF HEART ATTACKS, MOOD SWINGS AND DEPRESSION, MUST BE TAKEN ON A STRINGENT SCHEDULE, DOES NOT PREVENT STD'S

Information courtesy of www.familyplanning.org



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www.news.discovery.com

BIRTH CONTROL: A RECURRING THEME

For more information about the government's role in family planning, check out the Winter 2011 edition of TuftScope. Read Emily Chapman's report on the opposing reactions to the "Program of Action" drafted at the 1994 International Conference on Population and Development.

The Impact of the Private Care Sector on Female Feticide in Haryana, Northern India

Marie J Murphy

For decades, intentional abortions of female fetuses in India has had a negative impact on the sex ratio, and ultimately on gender equality in India. It has been estimated that between 4.2 and 12.1 million selective abortions of girls have occurred between 1980 and 2010.[1] Although it is difficult to confirm a specific number within these statistics, the trend of female selective abortion is evident in the unbalanced sex ratio of females to males. In the northern Indian state of Haryana, which is currently considered one of the most affected areas, there are approximately 774 girls for every 1,000 boys, compared to the national average of 914 girls per 1,000 boys.[2]

The Pre-natal Diagnostics Act of 1994 sought to regulate the use of "pre-natal diagnostic techniques for the purpose of detecting genetic or metabolic disorders or chromosomal abnormalities or certain congenital malformations or sex linked disorders and for the prevention of the misuse of such techniques for the purpose of pre-natal sex determination leading to female feticide".[3] It cemented the illegality of choosing to abort fetuses based on culturally engrained gender preferences. In the larger overall agenda of gender equity, it was a necessary, but rudimentary step. Unfortunately, the viability of policies like these can be limited by virtue of their dependency on the degree of community involvement and social acceptance for adaptation. In populations where there is a high preference for sons, there may be a lack of incentive to comply with these policy changes, especially if there are no visible consequences for infractions of the law.

Nand Lal Sharma Memorial Hospital Facility Awareness Poster

Therefore, although the law was enacted in 1994 and implemented in 1996, the effectiveness is debatable, eminently in the Northern State of Haryana where the sex ratio is so unequal. In an effort to cope with the situation, the government has opened several orphanages aimed at providing an alternative to feticide for parents with unwanted infant girls. Swami Agnivesh, head priest of a religious body that actively campaigns in protest of female feticide, remarked that opening these havens is a "good short-term measure; [however] the longer-term, bigger problem is lack of law enforcement".[4] There has reportedly been only one case of a conviction resulting from a doctor illegally aborting female fetuses in all of India. The market for sex determination has been estimated to be worth upwards of $100 million per year, which indicates that not only is there incentive for physicians to undertake the risk of breaking the law, but the opportunity to do so is available because the market is thriving and flourishing. Many privatized hospitals are offered much more liberty due to lack of monitoring and amenable regulation compared to the public sector, which is riddled with loopholes.[5]

Nevertheless, the policy has had some degree of effect on this public health issue. Although India has suffered a 170% rate of increase in selective abortions of girls between the years of 2001 and 2011, it is slower than the 260% rate of increase that occurred between 1991 and 2001.[6] According to the 2011 census, the sex ratios of children up to age six had increased somewhat in the states of Haryana and Punjab, two of the most affected regions.[6]

At the Nand Lal Sharma Memorial Hospital in Sector 8-Faridabad, Haryana, obstetric related visits are systematically handled. It is made clear to the public that sex determination is not performed on its site. Although there is a licensed in-house obstetrical gynecologist, a second doctor must be brought in to perform ultrasounds and to confirm all check up appointments in order to verify all records. Stringent records are kept due to pressure from the local government. Before the fifth working day of each month, a detailed record of all pregnant patients that are being cared for by the hospital must be submitted to the municipal corporation in Faridabad. This form requires numerous pieces of information ranging from number of previous children, including the sex of those children, and indications of the ultrasound to the contact number of the

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father. It must be notarized and signed by the qualified person before submission to the appropriate district authority. According to the records of this particular hospital, they care for approximately six or seven pregnancy cases on a regular basis per month. Considering the size of the community in the sector and the number of other options for obstetrical care offered by other hospitals in the zone, it is a suitable number for the size of the practice.

Pubic Awareness of Illegality of Pre-Natal Sex Determination

However, as a private practice, this is unrepresentative of the number of obstetricians and gynecologists that work in the community health clinics with patients who are of a lower socioeconomic class. These patients are typically more at risk of aborting female fetuses because of the perceived future financial burden that female children pose and also the lack of access that these families have to family planning and pregnancy prevention services. According to the Ministry of Health and Family Welfare in Haryana, there are eight obstetricians and gynecologists working in community health centers, 78 providers short of the required 86 for this district alone.[7] It ultimately has harsher long-term consequences on social movements for women's empowerment, education and health in India. It reflects a greater countrywide shortage of physicians working for the public health care sector.

The Nand Lal Sharma Memorial Hospital provides health workers with a good model of how to regulate the private sector; however it fails to expose the holes in the health system. The state of Haryana has one of the highest total GDPs in India because of its emergence as a base for information technology industries. This indicates to policy makers that the majority of selective abortions occur through channels within the private sector. The rhetoric of policy often delays issue-solving by conflating responsible placement for blame. In respect to female feticide in India, cultural factors may have a heavy influence on the motivation to commit this crime, but ultimately it is the accessibility to these services and the lack of consequences that allow this practice to persist.

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ORIGINAL ARTICLE

AGENT ORANGE: A Dilemma in Standards of Proof and the Objectivity of Science

Lindor Qunaj

From 1962 to 1971, the United States government sprayed over 19 million gallons of herbicides in Vietnam, a defoliation program termed Operation Ranch Hand. Among these chemicals was Agent Orange, a lethal combination of chlorophenoxyacetic acids that is often classified as one of the most toxic substance created by man.[1] Since then, studies have shown that dioxin, a contaminant commonly found in these mixtures, has caused a staggering number of cancers, birth defects, and other ailments in both Ranch Hands (the Air Force pilots who were responsible for the spraying missions) and their children. In the face of uncertainty among scientists, the government's initial response to concerns over the chemical's safety was marked by indecision. Without a conclusive explanation from the supposedly objective field of science and conflicting views from other arenas, policymakers were hesitant to make a causal connection between Agent Orange and negative health outcomes. The debates and controversy that ensued—and still continue to this day—serve as an interesting case study in the different standards of proof used in science, politics, and the courts, as well as the use of scientific objectivity to motivate public policy.

The commonly-held belief that science provides us with undeniable facts not marred by any sort of bias dates back at least hundreds of years. Prominent physicist and philosopher Galileo stated that "the conclusions of natural science are true and necessary and the judgment of man has nothing to do with them".[2] This objectivity has often made scientific data the golden standard of evidence in political, legal, and general public discourse; in the case of Agent Orange, it is particularly relevant to understand the ongoing use of the supposed objectivity of science to determine—and later, justify—policy decisions related to veteran health. Because the reliance of health policy on science is accepted to the point of being considered necessary, it is not generally seen as especially problematic. However, when scientists are unable to provide strong, conclusive evidence about a politically relevant topic, standard methods of truth verification break down. More specifically, when policymakers were not able to confirm with any degree of certainty the causal relationship between Agent Orange and the wide range of diseases being presented by Vietnam veterans, Congress and the Veterans Administration (VA) were effectively stranded. The burden of determining what course of action to take was passed back and forth between the three institutions we generally look to in defining illness and disease causality: the courts, the government, and biomedical researchers.

George Pratt, a Federal District judge overseeing a suit against Dow and the other chemical companies that had produced Agent Orange, released a decision in July 1979 concluding that in cases of "allegedly serious environmental hazards," the Environmental Protection Agency—and not the courts—should have "primary jurisdiction".[3] Government agencies, however, simply shifted responsibility back onto the researchers, using the assumption of scientific objectivity to justify their inaction. In his opening statement at a February 1980 hearing before the Committee on Veterans' Affairs, Chairman David Satterfield reiterated that "the question of cause and effect really is not one for this committee to determine;" he went on to add that such a determination "requires scientific and medical expertise which this committee does not possess".[4] Researchers, however, were not necessarily willing to bear this largely policy-oriented responsibility. During a heated conversation later in the same 1980 congressional hearing, Joan Bernstein, a researcher at the Department of Health, Education, and Welfare, tried to explain that it may not be possible to definitively support or reject the connection between Agent Orange and disease. When asked by a representative about what, given this uncertainty, would be an appropriate course of action, Bernstein gave a brief but articulate response that addressed many of the central questions in toxic tort litigation (cases involving personal injury caused by a chemical): "There are solutions other than scientific solutions. There are legislative solutions. There are administrative or policy-type solutions in which one simply makes the judgment that there is enough association".[4] In other words, someone within the governmental or judicial systems—and not from the scientific community—needed to recognize the impossibility of technical certainty and take the initiative to make a well-informed decision with the available information.

SAME DATA, DIFFERENT CONCLUSIONS

Regardless of which group was best qualified to make the determination of causality, this back-and-forth resulted in bureaucratic and ideological confusion over whose responsibility it was to ultimately establish whether the veterans presenting with Agent Orange-related illnesses deserved some sort of compensation. Unfortunately, allowing scientific evidence to be evaluated by all three groups is likely to be troublesome since the training people in each of these professions receive on how to reach sound conclusions is in many ways fundamentally contradictory. In standard research, scientists generally attempt to either confirm or reject the null hypothesis as a way to make legitimate analyses. Because studies are structured around the notion that the negative claim has a greater probability of being correct, proving (or more

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accurately, making a case for) the opposite theory is inherently difficult. Courts, on the other hand, have a far more subjective method of determining the truth that lowers the standard of proof: the body of evidence presented is split up into statements that support the defendant's claim and statements that support the plaintiff; whichever side comes up even slightly on top is the winner. According to Wilbur Scott, a sociologist who has written extensively on the politics of Agent Orange, this method is supposed to ensure that a wrong decision is "as likely to favor an undeserving plaintiff as an undeserving defendant".[5]

Inconsistencies in the standards of proof may lead to varying conclusions based on the same evidence. While the chemical companies, government agencies, and the veteran organizations were looking at effectively the same time type of results, disagreements over whether dioxin exposure had negative consequences still existed. Referring to the Veteran Administration's practice of denying treatment for the vast majority of veterans claiming damage from Agent Orange, Senator Tom Daschle admitted, "I would wager that in a court of law, out of 10,000 cases, that there would be better than two wins".[4] If science is in fact as objective as the media tends to assume and people tend to believe, this sort of discrepancy between rulings of the court and scientific conclusions would not be possible.

In a case as politically-charged as this one, it is also important to consider how an understanding of a certain conclusion's sociopolitical ramifications could affect a scientist's methodologies and data analyses. For instance, if scientists agreed that Agent Orange was not a threat, veterans would be denied additional treatment and compensation, people who continued to worry about other substances would be considered misinformed, and trust in the military, the chemical companies, and the government's regulatory legislature would rise. On the other hand, if scientists presented strong evidence that Agent Orange was a health hazard, the list of potential repercussions would be equally long: Vietnam veterans would be entitled to more respect, the idea of the environment being a source of disease would be further cemented, and suspicions of the Department of Defense's defoliation policy, along with pressure on both the industry to change and on the government to issue tighter regulations would grow.[2] In a letter to a colleague in Canada, Dow's toxicology director stated that if it became known that Agent Orange caused chloracne, a condition of the skin, the entire industry would be "hard hit" and "restrictive legislation, either barring the material or putting very rigid controls upon it" would be likely. At the end of the letter, he added an obvious warning that suggests an intentional cover-up: "I trust you will be very judicious in your use of this information".[6] Since most people at the time—including scientists—would have likely had their sympathies leaning to one side of the controversial debate or the other, it is easy to imagine these value biases influencing their research.

While an individual scientist's preferred result may subconsciously (or even consciously) shape their study, scientists working within the government, were subject to tighter regulations as politicians' agendas transformed their methodologies. At first, it appeared that the government looked to scientists to guide their policy simply by convention and not because of any ulterior motives. However, as evidence of the dioxin's harmful effects on humans continued to surface, the White House undoubtedly became fearful that they would be responsible for the incredibly expensive compensation of Vietnam veterans who had been exposed to Agent Orange.[7] It is at this point that the VA, the Centers for Disease Control, and other governmental agencies implemented an intricate operation designed to use the guise of scientific objectivity to conceal the increasingly likely association between Agent Orange and a myriad of diseases. In June 1980, the VA began soliciting applications for a scientist who could write up a thorough proposal for their officially mandated study on the effects of dioxin. They claimed to be looking for someone with "political sensitivity…who is able to be objective in the face of political pressure" but ultimately chose Dr. Gary Spivey, a professor of public health from California whose track record did not fit those criteria.[7] Having testified against a bill intended to provide outreach to Vietnam veterans with illnesses potentially brought on by exposure to Agent Orange, Spivey had made it public that he thought the herbicide was harmless. Immediately, veteran organizations were suspicious of Spivey and questioned the credibility of a study carried out by a man whose expectations of the research were so one-sided.[7] Whether or not this appointment was deliberate on the part of the VA, it foreshadowed an increasingly blurry relationship between science and policy that developed around the government's notably biased investigations of Agent Orange until the early nineties.

WHEN POLICY INFLUENCES SCIENCE AND SCIENCE INFLUENCES POLICY

In some cases, the government simply censored scientific reports. Major General John Murray reviewed the ongoing work of a CDC-funded study and wrote to the White House explaining that since the project would probably not yield significantly conclusive evidence, the government should use the money set aside to complete the study on veteran compensation. His letter was never made public.[7] Later, doctors working for the VA were told to avoid including statements that referenced a connection to Agent Orange in their medical reports.[4] And finally, the administration's growing concern over Agent Orange became even more obvious in a series of memos sent from the White House's Office of Management and Budget to various high-ranking officials throughout the eighties. One such memo sent to the CDC on July 18, 1986 stated that "it is important that testimony and other public comments not associate the measurement of dioxin in blood with causation".[7]

The Air Force's Ranch Hand Study provides yet another clear example of both the way in which preconceived notions of the truth can alter the methodology used in a study and the government's ability to shape research in a way that affects the conclusions reached. Initially designed in response to growing public attention to the possible negative health effects of dioxin exposure, the goal of the study was to compare and analyze the differences in morbidity rates of Ranch Hands and other pilots who served in Vietnam but did not spray the chemical. The study had multiple issues, but the fact that there were only 1,200 subjects was of primary concern. If, as in the case of many cancers and other diseases associated with exposure to the herbicides, the illness had an incidence of less than one in 1,200, it may have not been detected at all. Additionally, since dioxin can be harmful in minute concentrations, perhaps even the veterans who had only flown in Vietnam were sufficiently exposed. The Air Force, however, did not see any problems in the study's design, approving the first draft.[7] The null hypothesis used by its researchers was that Agent Orange does not lead to higher rates of disease. So, as discussed previously, proving the opposite theory—that Agent Orange is harmful to human health—would be far more difficult than simply supporting the null hypothesis.

In science, there are two types of error: type I, which is rejection of a true hypothesis and type II, which is failure to reject a false hypothesis. In general, it is seen as less problematic (and thus more desirable and prudent) to commit a type II error. In the case of the Ranch Hand Study, for instance, if questionable and potentially flawed data revealed that Agent Orange was toxic, it would be the more likely that a scientist would reject the data and stick with the originally assigned null hypothesis until more conclusive evidence was reached. And that is exactly what happened. Although the preliminary report did not find death rates to vary significantly between the two groups, a second progress report in 1985 said that statistically significant increases in skin cancer, liver ailments, and leg circulation problems had been recorded. The report, however, attributed these observations to factors other than dioxin exposure, saying the jump in skin cancer, for instance, was due to sun exposure. Regardless, the White House's Agent Orange Working Group removed a sentence in the text that said the herbicide could neither be dismissed nor supported as a causative agent, replacing it with a statement that the study's findings should be seen as "reassuring".[7]

In an effort to avoid compensating veterans, the VA moved farther and farther away from the legal standards of proof instituted by the 1955 Bradley Commission Report (officially, the Commission on Veterans' Pension), which stated that in cases where an injury could not be service-connected with complete certainty, veterans must be given the benefit of the doubt and compensated for medical care. Instead, the VA maintained an unreasonably high burden of proof, hiding behind "a façade of scientific prudence" and benefiting from the fact that different fields have different methods of truth verification.[8] By January 30, 1980, 1,624 claims had been made for Agent Orange-related injuries but only 21 had been approved by the VA—and even these were not officially connected to the herbicide, only to combat duty in general.[4] The House of Representatives Subcommittee on Medical Facilities and Benefits continued to give the impression that they were waiting until scientists could offer indisputable facts and make the job of policy-making more clear-cut, a development that would have never unfolded. "We want to get at [the truth] as soon as is reasonably possible on an objective, thoroughly scientific basis. Nothing less will satisfy this committee".[4]

All of these examples of censorship and government interference made Vernon Houk's subtle statement at a Congress hearing on Agent Orange seem quite ironic. In response to an inquiry about one of his staff members who questioned the efficacy of their study, the high-ranking CDC official said, "They are scientists and can state their own opinions freely".[7] Perhaps things would've turned out differently if that were indeed the case.

According to philosopher Neven Sesardi , hiding or obscuring scientific findings for any reason (whether that be political, personal, or something else), is detrimental: "There is something deeply wrong with the whole idea of making the decision to disclose scientific information dependent on its expected impact on society".[9] He continues to argue that the availability of all circulating ideas is critical not only to the function of science but also to society. Additionally, although scientists should not absolve themselves of all social responsibility, Sesardi posits that it is "simply incoherent" for scientists to be working towards the truth and at the same time, being required to constantly examine the potential consequences of publicizing their findings.[9] These considerations are entirely unrelated to the actual determination of truth and should not be considered in research, a reality that was not possible for scientists who were being overseen by government agencies with specific intentions in the Agent Orange controversy.

In Sesardic's opinion, the politicization of science, which was certainly an issue in the post-Vietnam years, commonly results in an ideological dilemma. By allowing scientists to play such a central role in the process of policy-making, a government forces itself to make a tough decision: if it agrees with the scientists, it is effectively giving this group of citizens "special authority" in politics; if, however, it chooses to ignore or go against the scientific conclusions, it is giving itself and society the right determine which theories can and can't be accepted.[9] Aside from the incredible precedent such a decision would set for the interaction between government and science, it allows for two groups (the researchers and the policymakers, in this case) to arrive at two separate conclusions based on the same set of data. This discrepancy, as was apparent in earlier Agent Orange discussions, leads to further controversy and unproductive debate.

LEGAL INTERVENTION AND CONCLUSIONS

Given all of the foot-dragging and cover-ups that occurred during the late seventies and eighties, passage of the Agent Orange Act in 1991 was a welcomed departure from the norm. In a 48-page decision issued on July 3, 1989, Judge Thelton Henderson of the California Northern District Court ruled that the standards of proof required by the VA to establish a service connection for Agent Orange-related illnesses were "impermissibly demanding" and thus set the tone for the subsequent act.[7] He invalidated the VA's insistence on scientific evidence and instead suggested a return to the more legal form of truth verification: balancing claims in favor and against the service connection and choosing the side with more evidence; if the two sides of the argument could be equally supported, Henderson said veterans should be given the benefit of the doubt, as stipulated in earlier legislature. The Agent Orange Act made the compensation requirements more reasonable by asking that only association—and not causality—be demonstrated.[10] It also gathered a group of independent scientists who had never worked on Agent Orange-related cases and asked them to design a new study to test the effects of dioxin. Although not a perfect method, this provision ensured that the scientists, overall, came in with less of their own bias. Effectively, the Act implied that it was appropriate to make decisions on a lower scientific standard in toxic tort cases, signaling an important shift in standards of proof. It also stressed the impossibility of achieving certainty in science, a fact that pushed the policy-making burden back onto the government. Daschle praised the bill, saying "intelligent policy need not wait for perfect science".[10]

Since 1991, the VA has done a marginally better job of medical compensation for Agent Orange-related conditions, creating a list of "presumptive illnesses" that make veterans eligible for care. However, they have not made substantial efforts to educate ex-Ranch Hands on their increased health risks; additionally, bureaucratic inefficiencies routinely result in two-year delays in claims processing.[11,12] Although the VA no longer denies a connection between Agent Orange and human health, they are very slow in attaching new diseases to the list of those eligible for compensation. The VA's perpetual tendency to justify inaction under the pretense of scientific objectivity has led many veterans to believe that the agency is simply waiting for them to die.[12] Whether or not that is the case, it serves as a reminder that different arenas have varying methods of truth verification that often to lead to different conclusions, something that "claims makers" can use to their advantage.[7] Furthermore, it highlights the inseparable connection that continues to exist between policy and supposedly undeniable scientific facts.

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ORIGINAL ARTICLE

Transgender Health: Current Social Movements, the Ethics of Fighting on their Behalf and Analysis for Further Change

Ryan Rifkin

Transgender people face health disparities far exceeding those of most other demographics and minority populations in the United States of America. Hate crimes have only been recorded since October 2009 when the Matthew Shepard Act to expand the definition of hate crimes was ratified, rendering highly underestimated statistics. Grassroots organizations seek to help the community directly while others aim to create institutional change. By examining these "bottom-up" and "top-down" approaches, respectively, a course of action will be recommended for the social movements fighting for equitable transgender care. Many questions must be considered throughout this process in order to understand how to achieve a cohesive and successful movement for this particular minority population. First, the barriers preventing transgender people from accessing care in social, legal and physical contexts and the differences between necessary health care for transgender people versus their cisgender– when one person's sex and gender match one another and are acceptable in the context of that society- counterparts must be understood. Many health care workers are indeed sympathetic to gender issues, so why these workers are unsuccessful in their attempts and the consequences of not providing equitable care must be considered before reaching concluding suggestions. Finally, this article will look at current transgender health social movements and compare them to principles of social movements, concluding with my thoughts on what the community should do to remove the barriers I establish. The goal of this article is to reveal the barriers transgender people face, many of which relate to issues their cisgender counterparts take for granted. By unearthing and demystifying transgender people and their health issues, I aim to increase passion about providing equitable care.

INTRODUCTION: IDENTIFYING THE ISSUE

Transgender people face extreme difficulties attaining quality healthcare, despite high-risk health status. These difficulties permeate all areas of well-being. Between 50% and 88% of transgender identifying teens attempt suicide, revealing deficient mental health services and lack of access.[2] In one study, 12% of trans-people studied self-identified as HIV-positive, though after testing 28% of them tested positive.[3] This shows not only misinformation within the trans-population regarding HIV prevalence, but also a lack of public health measures to provide outlets for testing and to train doctors in necessary precautions and measures. Furthermore, studies indicate that trans-people are paid up to 1/3 less during and post transition,[4] revealing social gradients that inevitably affect health outcomes.

Many transgender people are knowledgeable about their health and do seek care, often in desperation and without success. The story of Robert Eads has been popularized in the film "Southern Comfort," but he is unfortunately not the only person in his predicament. Eads, a post-operation transgender man (born a woman), developed cervical cancer. Over the course of a year he visited over twenty doctors, but all refused to treat his condition. He eventually died in 1999 as a result of doctors refusing to treat the condition earlier,[5] demonstrating that even within the medical community there is a strong aversion to dealing with transgender issues.

This disparity cannot be attributed solely to a lack of training for doctors and community awareness. Many discriminatory laws and practices prevent transgender people from attaining quality care. Transgender people are legally protected from employment termination based on gender representation in only 12 states. Transgender people endure a 30% unemployment rate, and 59% earn less than $15,900 a year.[6] Limited opportunity for employment and unfair pay greatly reduce access to healthcare, both by providing less health insurance coverage and reducing the ability to financially support the care, and yet these two forms of discrimination do not even account for other biases within the workplace.

Experiences in doctor's offices and medical facilities also directly impact transgender healthcare. In one survey conducted by the Pennsylvania Department of Public Health in Philadelphia, nearly 20% of transgender people reported verbal or physical harassment in a mental or behavioral health facility.[7] Bear in mind, this is in Philadelphia, an urban environment in the northeastern United States – generally considered a relatively "accepting" environment in the United States, and yet even there the statistics are staggeringly high. Evidently, discrimination is institutionally as well as culturally present.

Kevin Irwin, professor of Community Health at Tufts University, breaks social movements down into three "buckets:" the Fundamental bucket, the Realization bucket and the Scale bucket.[8] The Fundamental bucket posits the need for a clear vision and framing, authentic base in the constituency and a commitment to work for years. The Realization bucket encompasses economic viability, a shared vision of governance, research supporting the cause and in a sense, a pragmatism or a belief that their cause can indeed be "won." Finally, Scale must be considered, and the organization must have a plan for growth and increasing visibility as well as have a willingness to network with other movements. This framework provides

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us with a clear way to analyze and compare social movements and will be used towards the end of this article.

I have further consolidated the transgender community's issues by classifying three "impasses" the transgender social movement faces. The first impasse describes how transgender people are suppressed and blamed in dominant political, legal and medical discourses, which not only leads to misinformation, but also causes transgender people to internalize transphobia. The second impasse is the transgender community's small population size. This draws attention away from their staggeringly weak health outcomes. The first impasse further diminishes the size of active transgender people fighting for better care and rights openly. The third impasse is the lack of cohesion between the transgender rights movements due to ideological and political differences, making it very difficult to have a unified voice and therefore more difficult to be an ally.

RATIONALE

People generally feel connected with specific social movements due to personal investment. Whether they have a certain medical condition or are advocating for a family member or demographic, it is normal and more common to feel passionate about an issue that in some way affects you. Though I do not identify as transgender, I have noticed that different groups have very different perceptions of the involvement of the "T." It is becoming increasingly easy to marginalize transgender people in an effort to further the lesbian and gay agendas. The balance between sexual orientation and gender variance is at play here, and though they have historically been associated, the two causes are becoming increasingly juxtaposed due to various legal and social technicalities.

> "Thus, transgender people effectively have no allies."

Thus, transgender people effectively have no allies. They are not classified with women due to gender identification issues, nor with lesbians and gays because trans-issues relate to gender and not sexuality. They are also rejected from many groups due to religious affiliations. Furthermore, many politically active gays and lesbians have come to believe they can act more effectively on the political front, helping to pass antidiscrimination laws more easily, if those laws exclude protection of trans-people, leading many in the gay political community to disavow associations with trans-issues.

Adding to this difficulty, transgender people represent only 0.04% to 0.2% of the population,[9] so they have little political clout of their own compared, for example, with women who compose about half of our population or with African-Americans who represent approximately 12.8%,[10] and so these groups and others had more political representation in their struggles than transgender people do now. So in the end, who is left to defend this group? Who is willing to take a stand and say hurting anyone for any biological reason is a hate crime, and preventing anyone from accessible healthcare, employment and fair wages is unethical? Transgender people cannot fight alone. Trans-people need more voices, and through measures to promote awareness of transgender issues we can increase their system of support and their ability to speak up. By not speaking we are condoning both institutionalized discrimination and physical violence.

CAVEAT AND LIMITATIONS

Issues faced by transgender people are particularly salient now, amidst recent successes and failures in the fight for Lesbian and Gay equality and the Matthew Shepard Act, which passed in October of 2009, protecting all LGBT people, regardless of location in the United States, from hate crimes– just as laws protect African Americans, the disabled, and many other minorities. It is interesting to note that the Matthew Shepard Act also requires the FBI to track crimes committed against transgender people.[11] Though this will provide statistical information of discrimination against transgender people in the future, the number of crimes already committed is forever unknown. It must be understood before reading this analysis that all statistical information is based on *reported* cases and incidences. It is therefore likely that the rates of such crimes are far higher than recorded.

BACKGROUND

Prominent analyses explore the role of male hegemony and its suppression of transpeople through notions of sex-role oppression. This notion examines the stereotyped views of male and female roles in society. The analysis posits that transpeople assimilate patriarchal beliefs that certain behaviors and feelings are *reserved for specific bodies* into their self-schemas, thereby causing gender dysphoria.[12] This suppression of transgenderism lends itself as a reason for the diminished presence of transgender people fighting for rights in political discourse, as it blames the individual as the cause of his or her own "condition." Thus, our notions of gender and sexual attraction not only cause "gender dysphoria," but also prevent transgender people from engaging in the political discourse. This is what I have referred to as the first impasse to creating a movement to support transgender health.

The relatively small population of transgender people, as compared to other minority groups such as African Americans or lesbians and gays, also reduces the attention this group receives. Compounding this problem, the transgender minority further reduces its perceived size by seeking to mask itself in ways other populations such as African Americans, women, and the disabled cannot. Transgender people seek to "pass" as the so-called "opposite" gender (internalizing transphobic gender binaries), and once they can pass, the community potentially loses another passionate voice. In Social Movement Theory, and political and feminist discourses, when a population is fundamentally (in terms of identity and ideology) at odds with itself, fluidity increases between different facets of an individual's identity.[13] The small size of this minority and its self-debasing efforts, which further reduces the size of the active and collective group, may be considered the second impasse to creating a movement to support transgender health by bifurcating their population into distinct, weaker factions.

An additional arena in which transgender people have been suppressed is in medical discourse and the medicalization of the condition through pathologization. Transgender identity could alternatively be treated or respected as a function of bio-diversity. Science sees the need to find the etiology of this "deviance," buying into traditional hegemony. Recent studies have shown that regions of the brain controlling sexual function, which are typically smaller in women than in men, in fact mirror the gender rather than the sex[14] of transgender people,[15] revealing a potential biological basis. Many transgender people want their "condition" to be further medicalized hoping it would better standardize treatment and potentially be covered by insurance. Others in the transgender community, however, don't want to be perceived as psychologically debilitated and fight both the medicalization and notion of "gender dysphoria." Many movements find this a hard rift to mend, forcing these movements to "pick sides" in a small community where standing together is so important to attain a political voice. This presents the third impasse of supporting the transgender community.

FINDINGS: MOVEMENTS AND THEIR RESPECTIVE CAUSES

Transbucket.com is a movement based in Boston, Massachusetts. As this is an Internet-based grassroots movement, transgender people across the nation are able to reap the benefits of Transbucket's work. The movement was founded in the summer of 2009 as a unifying effort; while there had previously been separate online resources for FTMs (Female to Male), MTFs (Male to Female) and genderqueers (someone who identifies with efforts to subvert oppressive power dynamics by undermining traditional gender roles),[16] never before had an online community existed to consolidate the transgender community's needs and resources.

Transbucket.com is "dedicated to the collection of images and information on trans-related surgeries and heath care".[17] Among other benefits, users log on to the website and write reviews on doctors and therapists around the nation. Transbucket is the first of its kind of be founded and run by members of their community, which is a boon to the movement as the people who operate the site understand the community's needs. For example, on other websites doctors could actually log in themselves to write their reviews, or post photos of only their successful surgeries to cast themselves in a particularly positive light.

This website is also an effort to reduce the number of unfortunate cases like Robert Eads. If he had known of doctors willing to treat him in other locations, he would have had a far greater chance of survival.

In a personal interview with Kit, the web master of Transbucket.com, he informed me that his movement has been extremely successful. Though it was just started this year, there are already more than 5,100 active members from all over the world. Additionally, thousands of others who log on as "guests" use the resources but do not contribute their own photographs and experiences.[18] This extends their reach well beyond their 5,100 active members. As this site was created on Kit's own home computer as a personal project, he does not have the resources to advertise the site. Therefore, word of mouth has been the primary mode for communicating this resource, and considering their thousands of users in just a few months of existence, the demand for this type of service is widespread.

While transbucket.com works with transgender people to access better care, the World Professional Association for Transgender Health (WPATH) works with medical institutions to "promote evidence based care, education, research, advocacy, public policy and respect in transgender health." They seek to accomplish this through "expanding [their] worldwide authority by promoting, education, advocacy, training, research, quality health care and best practice standards for service providers and policy makers regarding gender variant individuals."

"More than a mere website, it is a social movement seeking to empower individuals with knowledge."

WPATH is one of the strongest resources for doctors seeking to open their practices to the needs of transgender individuals. Their Board of Directors and Executive Committee consists of 12 doctors around the world. They have published guidelines for doctors seeking to treat those with "gender dysphoria". Their ultimate goal is to guide the medical discourse to become cognizant of transgender needs.

DISCUSSION AND ANALYSIS

The first group I discussed, transbucket.com, may be viewed as a "bottom up" movement. More than a mere website, it is a social movement seeking to empower individuals with knowledge that otherwise would not be afforded to them. Often, these types of movements have better outcomes as they are rooted and founded within their community.

The ways in which this organization seeks to empower individuals are similar to notions of lay expertise as explored by Steven Epstein in his article "Construction of Lay-Expertise".[19] In his work, Epstein discusses how a community is empowered when its members are knowledgeable about their own health needs. Though transbucket.com does not inform individuals about their health needs, it does equip transgender people with the knowledge and resources to find equitable care.

The transbucket.com movement is growing and successful because it avoids the three major impasses created by the nature of transgender suppression and discrimination I have previously discussed: (1) It is public and offers a political forum thereby facilitating political discourse, (2) it is engaging and empowering to its community and therefore does not encourage "passing" or otherwise artificially reducing the size of the movement, and (3) it cohesively addresses the medical and psychological needs of its community in a way that does not further segregate the community.

The movement is somewhat successful at filling the three "buckets" described by Professor Irwin. First, since transgender individuals within the community manage the website, the leaders of this online community better understand the needs of the transgender community at large. They have a clear vision for their work, are based within the community and do not see the need to close anytime soon – thereby filling the Fundamental bucket. Second, in order to mobilize an entire community, the community has to agree about the cause they are fighting for. This site avoids the politics over the causes of transgenderism and is focused just on accessing care. Users of transbucket.com are seeking quality care for themselves and giving advice to others in the community, bypassing the need to have the entire community agree about politics of the movement and touching upon if not fulfilling the demand of the Rationalization bucket. Third, the movement is completely inclusive and virtual, large and growing larger, perhaps someday meeting the demands of the Scale bucket.

Though the movement is very successful in helping transgender people to access care, they focus on "downstream" issues. Transbucket.com only seeks to help users get care and not to reform medical institutions. Thus we must define here what constitutes "success" in social movements. In terms of its mission and the first "bucket," transbucket.com is extremely successful, in that it has improved accessibility to qualified doctors. Their model is not sustainable though, as they do not seek to create any institutional change. Kit has accomplished inspiring work in supporting his community, and though he may not have the capabilities to expand and create institutional change, I feel the network he has created may be only serving the individuals searching on the website, and is therefore limited in how well it can meet the demands of the Scale bucket.

> "This environment is therefore conducive to creating strong social movements."

WPATH, on the other hand, seeks to reform the medical institution and prepare doctors for transgender needs. They have conducted research to determine the best courses of action for doctors to take and have advised both psychologists and doctors on proper conduct with transgender individuals. WPATH partially fulfills the demands of the metaphorical buckets. They have a clear, sustainable mission, but are not based within the community and have difficulty assessing the community's needs. They are economically sustainable and have supportive research, meeting the demands of the second bucket. Unfortunately, as they follow a top-down model, they are as a result incompatible with many of the other transgender health access movements, and thus do not meet the requirements of the third bucket.

This model benefits the transgender community because individuals should not have to bare the burden of finding equitable care and knowledgeable physicians when they may not in fact know their own medical needs. After all, we pay our doctors with the understanding that they have medical expertise exceeding our own. Though WPATH's mission is beneficial for the transgender community at large and will create more sustainable change than transbucket.com, they run into several impasses.

WPATH, by nature of their service in working with the providers, seeks to better the health of transgender individuals. As they serve this purpose regardless of the size of the transgender community, they inherently overcome the first impasse of the small size of this community and representation. Unfortunately, in working with the healthcare providers, they are forced to take a stance on the medicalization of the transgender identity. In fact, as the organization is run solely by doctors, the organization lends itself to this medicalization.

PRACTICAL IMPLICATIONS AND RECOMMENDATIONS

Considering discussed analyses, experiences, social movements and statistical information, this portion of the article recommends courses of action for the aforementioned organizations as well as explains what these social movements must do to improve health outcomes for transgender individuals and overcome the impasses.

The largest issue transbucket.com faces is their lack of sustainability. They do not seek to create sustainable change, but rather to empower individuals in their decision-making. Transbucket.com should consider the third bucket by recognizing the need for scaling up and the potential power they can harness through their sheer numbers. They could perhaps create a section of their website to educate the general public or work with another organization to educate Americans about the needs and the horrors the online community alone has endured. In effect, transbucket.com does not actually reform institutions, but manipulates the ways in which transgender people navigate it. Though it requires "outing" many of the individuals who use the service, much could be accomplished by putting thousands more faces behind the cause of supporting transgender health. This online network could be used in the future to mobilize constituents for rallies, voting, fundraising to support lobbying and countless other political demands. Power lies in numbers, and as this community is a small one, they should muster all of the face-power they have.

WPATH faces a very different set of issues. Their vision is clear: to create institutional change. WPATH has significant research supporting their claims and has a growth strategy, unlike transbucket.com. Unfortunately, they are not based within the constituency, so it is hard to gain momentum for their efforts. In my interview, Kit, the webmaster of transbucket.com, explained to me that "there is a fine line between 'lending social power' and the 'I am here to save you' mentality".[18] Not only is WPATH based outside of the transgender constituency, but it is made up of members who could be construed as "enemies" since they are working with one of the most contentious issues in the transgender community: the etiology of gender dysphoria. This organization could thus be perceived as following the savior mentality rather than benevolently seeking to lend their social power. In lacking these three crucial components of successful movements, I must question the viability of WPATH and whether they are advocating for the greatest needs of this community.

The Social Deprivation Theory, as explained by Joel Blau in his book "The Dynamics of Social Welfare Policy," states that people feel deprived not by their own personal lack but in comparison to those surrounding them.[20] The transgender community, as small as it is, cannot help but feel deprived when considering their accessibility to fair, considerate treatment and health outcomes. This environment is therefore conducive to creating strong social movements. With organizations ranging from grassroots to international medical institutions supporting transgender people, what can we do to make trans-movements less fractured? What can we do to help the general population better understand trans issues?

As previously discussed, transgender movements must decide where they stand on the etiology of their circumstances. Other steps may be taken to create greater cohesiveness. Many causes use a well-respected spokesperson to create greater visibility, leverage and solidarity. Adopting a unifying and informative spokesperson employs the notion of "cultural authority," which brings solidarity to a population to form a cohesive community.[21] A prime example of a cultural authority increasing recognition is the movement that follows Amyotrophic Lateral Sclerosis, now better known as Lou Gherig's Disease. Prior to Lou Gherig, this condition was not nearly as well known or researched. Since he has passed away from this disease, far more recognition has been devoted to this cause due to his cultural authority as an immensely respected athlete. More recently, consider the effects of Rock Hudson's public announcements on general awareness and attitudes toward AIDS. Currently, there is no single highly visible person advocating for transgender rights. Hillary Swank, though she is involved in transgender cinema in her Oscar winning film "Boys Don't Cry," has not made herself as visible as other celebrities have for their causes. In finding a respected, visible spokesperson, more attention will be brought to transgender health needs. This spokesperson must inevitably frame transgender health in a certain light as he or she is communicating this condition to the masses. Detailed attention must be paid to how this issue is presented as this will be the most individual's first exposure, or at least positive exposure, to transgender issues.

"Existing groups must mobilize their resources in order to create a greater impact."

Currently, many see transgenderism as a condition for social and sexual deviants without a cure but a "quick fix." This issue should be framed as a human and civil rights as well as ethical issue, such as "We cannot permit people like Robert Eads to die when preventative measures were not exhausted, as they would have been for anybody else with cervical cancer. Anyone else with a cervix would have had access to the necessary treatment." Mobilizing community resources to bring attention to this issue is not enough; we must also consider the ways we want this issue to be understood. By increasing sensitivity to transgender issues, transgender people will hopefully feel more comfortable vocalizing their needs. Bringing more attention to this issue will not only increase empathy but also lessen the fear of coming out, thus removing a barrier of entry into the movement.

CONCLUSION

While there are many groups advocating for transgender rights, there is very little cohesion. This lack of cohesion exists for several reasons, but particularly because of barriers to entry, the relatively small size of the community, lack of public awareness and the need for a unifying spokesperson to deliver this message to the American populace. Fortunately, transgender people have a pre-existing community that may be tapped into as a resource. Transbucket.com benefits individuals seeking care, but could use their website as a platform to mobilize users who would otherwise be alone. They are a social movement of transgender individuals, but could use their power to benefit the entire community rather than individuals looking for a particular health care provider.

WPATH, though they seek to create institutional change in a more enduring way than transbucket.com, are disconnected from the transgender community. They are not based within their constituency. Other groups advocate for transgender rights as well, though they all take different slants in their stances, the level at which they want to create change and their target populations. I do not, however, find the ideologies of most of these groups to be mutually exclusive. In fact, each of these groups could work well with other activist organizations. For example, WPATH could inform users of transbucket.com when they are holding a conference with physicians and invite them in the effort to further include people affected by the policies made at the conference. Essentially, marrying the concepts of these "bottom-up" and "top-down" approaches will benefit all organizations seeking to diminish transgender health disparities.

Existing groups must mobilize their resources more efficiently in order to create greater impact. Future groups must mind the three buckets. By minding these buckets, increasing community visibility and locating a prominent and positively viewed spokesperson, social movements for transgender issues have a fighting chance.

References for this article can be found at

TuftScopeJournal.org

ORIGINAL ARTICLE

Does social capital help or hinder the integration of Asian immigrants into the U.S. and Canada?

Lisa Tse

This paper investigates the effects of immigration upon the mental health of Asian immigrants and the role that social capital plays in mitigating or exacerbating these effects. The number of immigrants from Asia to both United States and Canada has grown exponentially within the last few decades, but little research to date has been done to understand the prevalence of depression among this population and the efficacy and cultural appropriateness of health services available to them. A literature review finds a high rate of depression among the Asian immigrant population, with differential rates based upon age of immigration and gender. Most individuals relied upon sources of social capital to cope with their conditions rather than seeking out clinical treatment. Social capital was found to both mitigate and worsen the effects of immigration upon mental health. Bridging and weak bonding ties were beneficial while strong bonding ties were generally more detrimental. Implications for useful and effective mental health services for this community are discussed.

INTRODUCTION

Asians constitute a growing percentage of the populations living in both the United States and Canada according to the U.S. Department of Commerce.[1] The number of Asian Americans rose from less than 1 million in 1960 to more than 8.5 million within three decades, the majority which are first generational.[2] Immigration is often conceptualized as a "traumatic" experience in which displacement (uprooting), the loss of a familiar environment, physical severance of ties with established sources of social capital, and exposure to racism serve as stressors.[3] Because of this, immigrants are presumed to be at great risk of developing mental disorders. Paradoxically, "they are the least likely to utilize such services because they are not well acculturated and do not yet share the values of Western mental health providers".[1,2] From this observation springs a growing concern for the lack of culturally appropriate services available. Little remains known about the mental health status of Asian immigrants.

This paper seeks to analyze the effects of immigration upon one's mental health and the ways in which social capital can help to mitigate or aggravate the stressors and challenges associated with immigration by asking the following questions: How have the social capital of immigrants shaped their experiences in America? What are some of the potential positive and negative outcomes that social capital can incur in the context of immigration? Does social capital facilitate or hinder immigrants' abilities to integrate into American society? How does this in turn affect the mental health of immigrants? Pre-existing literature and research findings on this subject matter will be reviewed with the goal of better understanding the linkages between social capital, social integration, immigration and mental health.

METHODS

To answer the previously mentioned inquires, a review of both primary and secondary literature was performed. Relevant journal articles were found with use of academic search engines such as JStor, GoogleScholar, Web of Science, Anthropology Plus, PsycINFO and Academic OneFile utilizing various combinations of the following search terms: immigration, social capital, resilience, mental health, social cohesion, Asian immigrants, and effects of immigration on mental health.

RESULTS & DISCUSSION

The studies summarized in this paper consist of data gathered from individuals of different Asian countries of origin, therefore looking at Asian Americans as a collective group. One must note that findings presented represent general trends and should be mindful that variances may be found between ethnic groups. Ethnic enclaves exist outside the realm of specifically identified communities; therefore this paper looks at studies which include subjects from neighborhoods outside of Chinatowns and other such areas. Studies focused on the recruitment of subjects from outside clinical settings (because of differences in mental health services seeking behaviors amongst Asians). Questionnaires, interviews and surveys were used to collect responses to generate information about mental health statuses instead of guidelines from the Diagnostic and Statistical Manual of mental disorders.[4] This was done in consideration of the fact that "Asians are less inclined to dichotomize body and mind and therefore tend to report distress accordingly – focusing more on physical discomfort and less on emotional symptoms".[1,2,5] Mental disorders among this group run the risk of being misdiagnosed or undiagnosed under conventional Western measures of mental health.

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One factor to be considered when measuring the impact which immigration has upon mental health is resilience or hardiness. Defined as "the capacity to rebound from crises due to the collective attributes (internal and external) of an individual which protect him/her from the negative effects of adverse events and experiences",[6] an individual's resilience significantly influences the impact that immigration may have upon one's health.[3] Therefore it is important to note that the effects of uprooting are variable amongst individuals.

Social capital is an "umbrella term embracing social cohesion, social support, social integration and/or participation, among several other social determinants of health".[7] Social capital can contribute to one's resilience and also contribute greatly to how they are able to cope with the stresses of immigration to preserve sound mental health. The connection between mental health and social capital in the context of immigration are explored by the following studies.

A study by Ying in 1990 of 40 recently immigrated Chinese-American women who attended a public health clinic in San Francisco's Chinatown, explored how major depression was conceptualized by this population and analyzed their help-seeking behavior in regards to this disease.[1] Participants were asked to read a case study of a woman presenting the classic symptoms of major depression as listed by the DSM-III diagnostic criteria, then asked about their abilities to relate to the story and provide suggestions for how the woman could improve her situation. It was found that despite differences in western and eastern conceptualizations of mental illness, the majority of study participants were able to identify that the individual in the hypothetical case study was in a state of great distress and mental disease. The terminology used by participants was often different from that of "depression" since such a term is differently weighted in Asian cultures. Additionally a majority of the women said they could identify with the woman presented in the case and suggested that she rely upon family members, friends, and herself rather than seeking professional or medical services to get better. Such responses demonstrated that high rates of depression were found upon women of this study group and that most tapped into their sources of social capital to cope with the detrimental effects of immigration rather than seeking clinical or medical treatment.

A 2007 analysis of data gathered from the first national study of Asian Americans, the National Latino and Asian American study (NLAAS) by Takeuchi et al. revealed a different story. Studying the lifetime and 12-month rates of reported depressive disorders in the national sample, Takeuchi et al. found that immigration affected mental health in different ways amongst different groups. They concluded that "Chinese immigrants who immigrated after 20 years of age are nearly 1.5 to 3 times more likely to experience major depression than are those who immigrate before age 20." Additionally, the ability to speak English proficiently was a key feature in the social integration and acculturation process. Those who spoke it proficiently were found to have comparably lower rate of mental disorders than those who did not (though this trend was only applicable to men; for women there was no association found). Also, reason for migration yield different effects of moving upon mental health: "Asian refugees are more likely to report depressive symptoms than are Asian immigrants who voluntarily come to the US." This study reveals that immigration does not affect the mental health of all age groups and both genders indiscriminately. Perhaps such gender differentials are reflective of the fact that females are more likely to report cases of depression in general or that they are more susceptible to mental illnesses because they tend to internalize the problems of others more so then men and thus a mastery of the English language is less significant in the overall scheme of things.[8] This may also be due to the fact that "Asian women are culturally more conservative than men. As immigrants, women are likely to acculturate more slowly, especially if they are primarily at home caring for their children".[1] In this situation, it would be expected that Asian women would have more difficulty developing forms of social capital after migrating which would affect their abilities to deal with the challenges associated with immigration. Along the same line of logic, it is expected that differences in rates of depression would be found amongst groups of different immigration statuses. An increased number of years in U.S./Canada and proficiency of language may serve as "markers of immigrants' ability to move outside of immediate social circles and expand their social capital".[9] This study demonstrates the profound role that social capital plays in determining mental health outcomes following immigration.

Uslaner and Conley's analysis of a Los Angeles Times survey of ethnic Chinese in Southern California in 1997 revealed that social capital did not always mitigate the effects of immigration upon mental health, while Kuo and Tsai's survey of 301 Chinese, Japanese, Filipino and Korean immigrants residing in Seattle in 1982 provided evidence to argue that social capital does indeed have a positive effect. Uslaner and Conley found that "those who felt closer to their own ethnic community or even to China were more likely to either stick to Chinese civic associations only or withdraw from participation entirely." Additionally, those who lived within the confines of a close Chinese community were more socially isolated and slower to become acculturated to the larger society. Such strong bonding ties perpetuated feelings of exclusion and lead to particularized trust which inhibited the individuals from extending their social circles and creating ties with more diverse groups. Kuo and Tsai's survey found that the establishment of strong ties does not always aggravate the negative impacts of immigration upon mental health. It was found that "those who began locating possible social ties that can be quickly mobilized prior to immigration (such as connecting with friend and family members that immigrants were joining) were better able to absorb the initial shock of migration." Such strong ties were also seen as useful in helping shield one from exposure to racism. As demonstrated by these two studies, social capital can either mitigate or worsen the effects of immigration upon mental health.

CONCLUSION

The effects of immigration upon mental health are variable among different individuals and different groups as is evident in Ying and Takeuchi et al.'s studies. Likewise, social capital can positively or negatively impact this relationship. It is evident that the type and strength of social ties really matter. The strong ties that hold some together also serve to exclude others.[10,11] These studies reveal that the types of social ties that have been found to help individuals cope with stressors associated with immigration are bridging and weak bonding ties. Bridging ties which exist between groups to increase the number of resources available to a given community and bonding ties which serve to increase cohesiveness within a given group have enabled immigrants to develop new support networks and have facilitated integration into their new neighborhoods.[7] Strong bonding ties on the other hand have proven to exacerbate the challenges posed by immigration. Such ties can limit one's sense of personal freedom, create more stress by forcing conformity and posing expectations, and hinder assimilation and integration into society. The strength of bonding ties can cause Asian immigrants to isolate themselves from neighbors of other ethnicities, contributing to a sense of distrust and perpetuating ethnic divides leading to feelings of racism and insecurity.[12] Despite these potential harms, the benefits of social ties are seen to exceed the negative consequences in helping Asian immigrants cope with the stresses of migration to maintain sound mental health.

The conclusions drawn from these studies lead to optimism among healthcare providers and immigrants alike. Although Asian immigrants are found to under-utilize current mental health services and medical treatments for mental health related issues,[1] they seek care in other ways. Asian immigrants are found to resort to their social capital as means of coping with stressors associated with immigration. Essentially, "Asian traditions in general regard the family as the basic unit of society. A family member's illness is consider a threat to the homeostasis of the family and thus often leads to mobilization of the family resources".[2] The majority of those suffering from ill mental health can tap into existent resources and seek aid from those whom they are closest to.

These findings yield a number of policy recommendations. Healthcare providers seeking to provide more and better utilized mental health resources to Asian immigrant populations should focus on strengthening social ties or educating community members about mental health issues and methods of dealing with them. Additionally, they should appeal to the community as a whole instead of individuals to ensure sound mental health amongst members of this population.[1] There is a great demonstrated need for health interventions which are culturally appropriate. Treatment options and services created with the typical American in mind may not be suitable for a newly transplanted individual. Lastly, to ensure provision of better mental health services for one of America and Canada's fastest growing sub-groups, more research must be done to understand the mental health statuses of different ethnic groups. The majority of existent studies fail to stratify data according to country of origin. With such diversity found among these ethnic groups, it is inadequate to simply assume that similar challenges and types of social capital are found among these different populations.

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FILM REVIEW

Contagion

Dir. by Steven Soderbergh ; Reviewed by David Gennert

Science is one of the few subjects that Hollywood still has difficulty faking. All too often, science is portrayed as a fix-all tool for instantly matching a criminal's DNA, or explaining the causes behind impending natural disasters, or any one of the numerous plot devices designed so as to not be questioned by the audience. Contagion, however, not only portrays science as the complicated process it actually is, but also makes it exciting.

The film centers around many individuals affected by the sudden outbreak of a novel viral infection– a high-ranking CDC official, the husband of the first person to die from the disease, a WHO investigator, and an alternative medicine blogger, among others. Interestingly, there is no unifying struggle. Each character is merely struggling to survive by whatever means they can, be it finding a cure in a laboratory or barricading himself in his house.

Rarely is science made to be an exciting process, but the film takes the viewer through the step scientists take– the real-life protocol, mind you– in order to deal with a threatening outbreak with all their promising successes and frustrating setbacks. The CDC officials piece together the first handful of confirmed cases and WHO investigators set out to track down the exact moment when the first victim contracts the virus and spreads it to the next round of victims in a display of detective work that would make the Law & Order investigators jealous.

Even though the process of scientific investigation is shown in this new light, the audience still needs to be spoon-fed some concepts about epidemiology. Some scenes' dialogue seems unbelievable just because the people on the receiving end of a stream of information would obviously know it already in their position.

The concept of experiencing setbacks in scientific research typically never gets substantial airtime in shows or films. The most we see nowadays is a 20-second montage of a group of scientists scratching out solutions at their desks until one comes up with the perfect plan or explanation. Contagion goes beyond this to paint the frustrating delays in scientific research as the source of much of the film's suspense and drive. Even the challenge of finding the correct host cell strain to even begin study the virus in a lab setting is given a large portion of the film's attention. Even armed a functioning host cell system, the scientists are then stuck spinning their wheels trying to develop a vaccine for much of the rest of the film. The constant disappointment of this whole procedure does not detract from the thrilling pace of the plot, but rather, it makes the few successful discoveries that much more satisfying– much like the real-life emotions of scientific research.

One of the more fascinating side stories in the film is that revolving around the freelance journalist proponent of alternative medicine. Throughout the film, while the researchers are still stuck trying to simply study the virus in a dish, this journalist is spreading information online about supposed over-the-counter cures and government mishandling of the situation. Although it is clear everything he proposes is pure fiction, there are certainly those in reality who not only spout potentially dangerous ideas but also those who listen and take unscientifically backed claims to heart– look into any number of our previously published articles on the vaccination/autism controversy. There is a blurry line between freedom of speech and the spreading of dangerous ideas brought to light by this character, for whom the audience finds itself switching between empathy and disgust rather frequently.

Another talking point that raises some unsettling feelings while watching is the government's procedure for distributing vaccines against the deadly virus. They implement a random lottery system to determine who receives the limited amounts of vaccine as they become available. Any situation where one body is responsible for determining the value of a person makes anyone uneasy. A random system can be argued to eliminate as many of these concerns as possible by effectively removing any choice from the government, but there are other nonrandom methods of distribution to ensure the more deserving receive priority. It can hardly be argued against children receiving immunizations first, as they are the most susceptible to infection and generally have a longer lifetime ahead of them. This paves the way for a slippery slope, though, with the responsibility of determining who subsequently receives the vaccine falling to the few in government in charge of distribution.

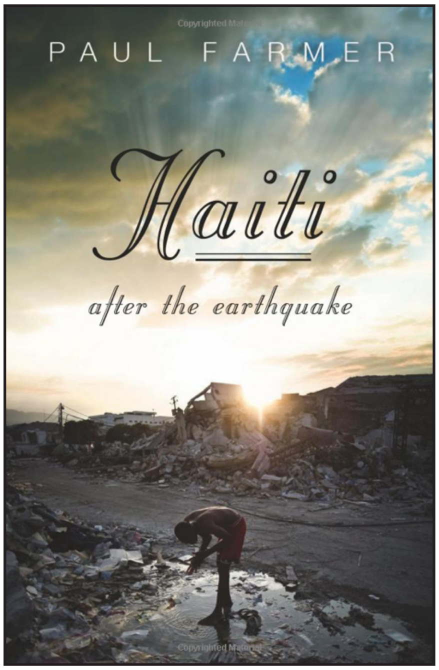
With its truth to the scientific process and its believably motivated characters, Contagion is one of the scariest films made in recent times. Realizing that the very events portrayed in the film are not outside the realm of likelihood– even the film mentions the influenza pandemic of 1912 in which 27% of the world's population was infected and 3% died– is enough to commend the filmmakers for such an insightful look into societal and governmental reactions to a major health crisis. If the fact that I now disinfect my hands whenever I see a dispenser is any indication, this was a very compelling film that thrills the audience with the gritty side of scientific discovery.

BOOK REVIEW

Haiti After the Earthquake

Book by Paul Farmer ; Reviewed by Eriene-Heidi Sidhom

On January 12, 2010 an earthquake of magnitude 7.0 hit the Haitian capital of Port-au-Prince, leveling much of the city and killing hundreds of thousands of people. Among the damage were nearly all federal infrastructures, the nursing school and the General Hospital. In the days that followed, patients were treated in tent clinics with minimal resources. In the months that followed, progress seemed to be minimal despite billions of dollars promised by the international community. In October, a cholera epidemic claimed thousands of more lives.



Dr. Paul Farmer, co-founder of Partners in Health and UN Deputy Special Envoy to Haiti, has worked in Haiti for nearly thirty years. Although Partners in Health started in Cange, in the central plateau of Haiti, the earthquake brought many of the workers into Port-au-Prince to aid the injured. Farmer recounts the days, weeks and months following the earthquake: the challenges, the grief, but also the resilience of the Haitian people. Although he begins by describing the immediate damage of the earthquake and the devastation of the first few days, he then takes a step back. He asks the reader to view the earthquake and aftermath as not merely an isolated event, but as a result of hundreds of years of political and economic instability and therefore describes the earthquake as an "acute-on-chronic" event. From this viewpoint, the slow progress and particularly devastating effects can be understood as a result of decades of political instability, a poor economy due to a depletion of natural resources and deforestation, and a particular vulnerability due to the 2008 hurricane season which had recently devastated Haiti.

Farmer not only recounts the story of Haiti in the months following the earthquake, but also its tragic history from being the world's leading exporter of coffee and sugar and the first nation in the Western hemisphere to end slavery, to being labeled "the poorest country in the Western hemisphere." This is an engaging and educational book both for those knowledgeable of Farmer's work as well as those who are looking for a first book on the topic. By carefully explaining the historical context of the earthquake, Farmer's book is simultaneously insightful, thorough, and accessible to any reader. However, the book is not overwhelmed by history; his recollection of the ruin, chaos and death reveals his personal experiences in Haiti and vividly recreates those devastating days and weeks for the reader. Additionally, Farmer uses his experiences in Rwanda and Rwanda's success story as a possible example for how Haiti can "build back better." He ends the book describing Haiti as being at a crossroads: there is the potential for progress, but also potential for stagnation and a continuation of the instability that has plagued Haiti for decades. While much can be gained and learned from an initial read, there is much to learn from Farmer that multiple reads of this book would continue to be useful.

Reviewed Book Information
Haiti After the Earthquake, Paul Farmer, Persus Books Group

To learn more about Haiti, check out these titles by Paul Farmer:

The Uses of Haiti

Paul Farmer, Noam Chomsky and Jonathan Kozol

AIDS and Accusation: Haiti and the Geography of Blame, Updated with a New Preface

Paul Farmer

Getting Haiti Right This Time: The U.S. and the Coup

Noam Chomsky, Paul Farmer and Amy Goodman

EDITORIAL

In Curbing Obesity, Fat Taxes Not the Way to Go

Shayna Schor

Over the past thirty years, obesity rates for adults in the US have more than doubled, while those for American children have increased more than three-fold. Individuals are considered obese once their body mass index (BMI) reaches or exceeds 30. According to the 2011 Obesity at a Glance report published by the Centers for Disease Control and Prevention, more than one in three American adults and 17% of children living in the US today are obese. Whereas in 2000 no state in the US had obesity prevalence rates above 30%, today twelve states exceed that statistic, and trends suggest the rate is growing. Obese individuals have a comparably higher rate of cardiovascular diseases, hypertension, diabetes, asthma, and certain types of cancer compared to individuals at a healthy weight. Racial disparities in obesity levels suggest that race is a strong social determinant of obesity as well. According to statistics from 2003-2004 NHANES, 44.9% of African American adults and 36.9% of Hispanic adults were obese, compared to 29.7% of white adults. Nationally, obesity related medical costs exceed $147 billion annually. The obesity epidemic is a problematic and costly one.

In Obesity at a Glance, the CDC cited five target areas for preventing and reducing obesity in this country: eating more fruits and vegetables; more physical activity; placing a greater emphasis on breastfeeding; drinking fewer sugar drinks; and eating less high-energy dense foods. While these goals focus on individual behaviors, the CDC largely attributes this obesity epidemic to the environmental factors of a contemporary American culture that promotes inactivity and unhealthy food consumption. Before citizens can change their actions, these environmental factors must be addressed.

One policy proposal that is rapidly gaining momentum in both national politics and on the global scale is that of a "fat tax". Since BMI levels generally correlate to amount of body fat, it seems logical that policy solutions taxing those fatty foods linked to obesity would provide a successful solution. While public health officials can and should use price control as a tool for targeting behavior change, research calculations of implementing an *ad valorem* "fat tax" show nominal effects. Instead, targeting high calorie beverages is the more realistic, healthy and effective way of beginning to combat the growing issue of obesity that faces the US today.

In 2007, the Forum for Health Economics and Policy published a study conducted by Chouinard, et al. to determine the projected efficacy that a direct tax on fat content would have on health in the US. Because dairy products constitute 16% of fat consumption in the US, the study synthesized grocery store scanner data and demographic information for dairy products to project broader effects. Their findings concluded that a 10% fat tax on dairy products would reduce daily fat consumption by only 0.86%. In order to lose 1 pound in 1 month through curbing fat consumption, an individual would need to reduce fat intake by 100 calories a day; reductions resulting from this study correlate to roughly 6 calories per day. In addition to the minimal effects such a tax program would have on the overweight, a "fat tax" bears important unintended consequences. While proponents suggest that the revenue raised from such a tax could be directed toward government health promotion, calculations provide that national welfare loss from a fat tax would likely reach $4.48 billion, compared to government revenue of $4.45 billion. The fat tax is a regressive one: it takes away proportionally more from those at lower income levels, and so financially burdens a lower earning household much more than a more financially advantaged one. Research by Baum and Ruhm indicates the determinant interplay between financial advantage and obesity, citing the inverse relationship between weight and economic status: obesity prevalence increases as education and income levels decrease. Furthermore, in 2008, an obese person in the United States had average medical costs that were $1429 higher than a healthy American. This cycle is evidently very hard to break. A fat tax could heighten pressures on individuals and households who are already more susceptible to obesity. Rather than help curb their unhealthy consumption levels, a fat tax can contribute to increasing their risk for being overweight.

Instead, a tax on sugar-sweetened beverages can generate the health effects and economic resources necessary to get the ball rolling on an effective change to the obesity epidemic. A Health Policy Report published by the New England Journal of Medicine revealed that, due to properties in a fluid form, sugar consumed from sugar-sweetened liquids correlate to extreme weight gain. One study found a sixty percent increase in likelihood of obesity per serving of sugar-sweetened drinks per day. Brownell, et al. found that excise taxes of a single cent for each ounce of a drink containing caloric sugar-sweeteners would be more effective than an *ad valorem* tax, such as the fat tax proposed above, for several reasons. Unlike high fat-content dairy products, sugar-sweetened drinks contain minimal nutritional value, and they have a cheap or free, healthier alternative: water. A tax on sugared drinks could benefit lower income individuals both monetarily and nutritionally by replacing their consumption of sodas and sugared drinks with water. National and statewide tax revenues from the suggested one cent per ounce excise tax could generate nearly $15 billion nationwide, while individual states, such as California, New York and Texas could garner revenues upwards of $1 billion without having the same adverse welfare effects that taxing dairy products and other fatty foods would have. A tax on sugar-sweetened beverages should be enacted if we want to see any real change to the jarring numbers of obese individuals in this country.

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References for this article can be found at TuftScopeJournal.org

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