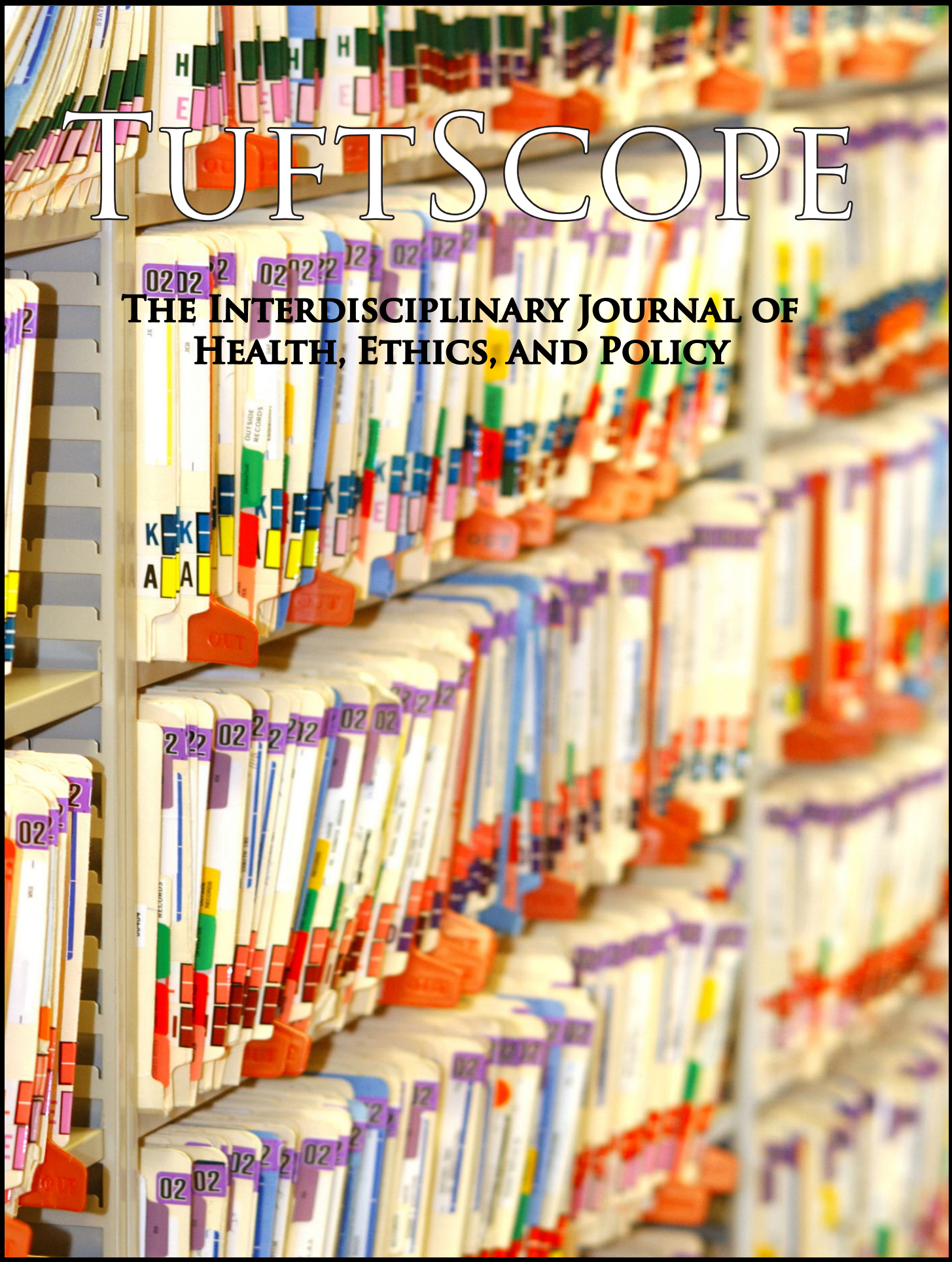
Fall 2010 Volume 10, Issue I



TuftScope

The Interdisciplinary Journal of Health, Ethics, and Policy

A Publication of TuftScope, the Student Bioethics Organization of Tufts University

JOURNAL HISTORY

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.

PUBLISHER AND PRINTER

TuftScope is published by the *TuftScope Journal* organization at Tufts University. The journal is printed and edited by Puritan Press, NH (http://www.puritanpress.com).

COPYRIGHT TUFTSCOPE 2010

TuftScope is an open-access journal distributed under the terms of the Creative Commons Attribution License, which permits use, distribution, and reproduction in any medium, provided the original author and source are credited. The statements of authors within this journal do not reflect the views or opinions of *TuftScope Journal* or Tufts University.

SUBMISSIONS INFORMATION

Submissions on health, ethics, and policy topics from students, faculty, and individuals are welcomed. For more information please visit the "Submissions" page on the TuftScope Website at www.tuftscopejournal.org.

SUBSCRIPTIONS TO TUFTSCOPE

Subscriptions to the print edition of *TuftScope* may be obtained by mailing in the *Subscriptions Form* on the *TuftScope* website.

COVER IMAGE

The cover image is licensed to *TuftScope* from Dreamstime Photos under a Royalty Free non-profit license.

FUNDING

TuftScope is funded by grants from the Tufts Community Union Senate.

CONTACT US

Email: TuftScope@gmail.com
Website: www.tuftscopejournal.org
Address: Available on back cover.

ISSN: 1534-7397

EDITORIAL STAFF

Editor-in-Chief
Lauren-Elizabeth Palmer

Managing Editor
Mark Leiserson

Senior Financial Officer
Eriene-Heidi Sidhom

Faculty Advisors
Harry Bernheim, PhD
Edith Balbach, PhD
Ross Feldberg, PhD
Frances Sze-Ling Chew, PhD
Kevin Irwin, PhD
Andreea Balan Cohen, PhD

Manuscript and Layout Editor
Eliza Heath

Acquisitions Editors
David Gennert & Jeremy Nowak

Internet Editor
Mark Leiserson

Research Highlights Editor
Caroline Melhado

Copy Editor
Emily Clark

Staff
Jessica Seaver
Lori Fingerhut
Kevin Hoang
Priya Larson
Hoai Le
Satori Schimizu
Namratha Rao
Alexander Sakers
Virginia Saurman
Parsa Shahbodaghi
Kanupriya Tewari
Brian Wolf
Nikita Saxena
MingQuin Li

INSIDE THIS ISSUE

TuftScope | Fall 2010 • Volume 10, Issue I

LETTER FROM THE EDITOR

TuftScope's 10th Anniversary.....6
Lauren-Elizabeth Palmer

BOOK REVIEWS

Disconnect.....7
By Devra Davis; Reviewed by Jessica Seaver

Bad Science.....43
By Ben Goldacre; Reviewed by Brian Wolf

EDITORIALS

New York City's Organ Vehicle.....9
Mark Leiserson

The Vaccination Scare.....16
Lori Fingerhut

Michelle Obama's "Let's Move" Campaign:
Revolution or Impractical?.....20
Eriene-Heidi Sidhom

The Implications of Synthetic Life.....26
Parsa Shahbodaghi

TUFTSCOPE ABROAD

Sickness and Health in Madagascar.....14
Emily Clark

FEATURE INTERVIEW

An Interview with Mayor Joseph A. Curtatone.....12
Mark Leiserson

OPPOSING VIEWPOINTS

Sharing Health Records with Uncle Sam.....27
Lauren-Elizabeth Palmer and Kathryn Delaney

ORIGINAL ARTICLES

Medical-Legal Partnership:
A New Model To Reduce Health Disparities.....10
Lisa Zingman

A Challenge to e-Health:
The Need for Ethical Guidelines in Developing Countries.....12
Inayat Memon, M.D.

Anonymity and Secrecy in Gamete Donation.....17
Tuua Ruutianen

Developing a Nursing Registration System
in the Republic of Georiga.....32
Constantine Saclarides

Prioritizing Improved Access to Public Health Resources
Over Technology.....40
Irene Swanenburg

SCIENCE REPORT
When Freezing To Death May Save Your Life.....18
David Gennert

Recent Developments in
Alzheimers Disease Research and Treatment.....34
Eliza Heath

Cover Image: In this issue *TuftScope* explores the intricacies of health record systems, their applications, and their implications.

Visit TuftScope Online at
www.tuftscopejournal.org
for more articles, express release papers, and news and views from our editors and contributors.

LETTER FROM THE EDITOR

Title of Letter from the Editor

Dear Reader,

The Fall 2010 issue represents the 10th volume of *TuftScope*. Begun in 2001, *TuftScope* has spent the last 10 years ensuring that thought-provoking journalism concerning issues of health,ethics and policy has been made available to the Tufts community and beyond. Over the years, we have prided ourselves on our accessibility. In an effort to continue this tradition of accessibility, *TuftScope* is proud to announce yet another innovation. In early 2011 we will unveil our Winter edition in celebration of *TuftScope*'s 10 year anniversary. The Winter edition, in conjunction with our Fall and Spring editions, will make *TuftScope* a tri-annual publication.

This decision was based upon a number of factors, including an influx of original content submissions and an increase in interest among our readers. *TuftScopeJournal.org* now accepts submissions year round which means that we have often had to choose not to publish quality work in our print edition for the sake of space. You, our reader, have shown continued interest in the content produced by *TuftScope* and we wish to provide you with more, quality information on issues you care about.

In addition to the Winter Edition, I am proud to introduce a new section of *TuftScope*: "*TuftScope* Abroad". Each piece will feature a Tufts student who has done work in a health or policy making setting in a foreign country. This edition of "*TuftScope* Abroad" follows Emily Clark as she treats underserved children in Madagascar. Our renewed focus on theTufts community,the community which shows us so much support, influenced our interview. In this edition, you will find Mark Leiserson's interview with Somerville Mayor Joseph Curtatone. Mayor Curtatone has partnered with Tufts to enact *Shape Up Somerville* in an effort to curb childhood obesity. Also on this topic, you will find Eriene-Heidi Sidhom's commentary on First Lady Michelle Obama's program *Lets Move*, also meant to curb childhood obesity.

The Fall 2010 edition continues the conversation on the use of technology in health, first begun in the Fall 2010 edition. Dr. Inayat Memon surveys concerns raised by electronic medicine in his original article, "A Challenge to e-Health: The Need for Ethical Guidelines in Developing Countries". The conversation is further continued in the Opposing Viewpoints in which TuftScope asks, "Should it be easy to exit the NHIN?" in reference to consent procedures concerning the proposed Nationwide Health Information Network, a federal database meant to one day house our electronic health records.

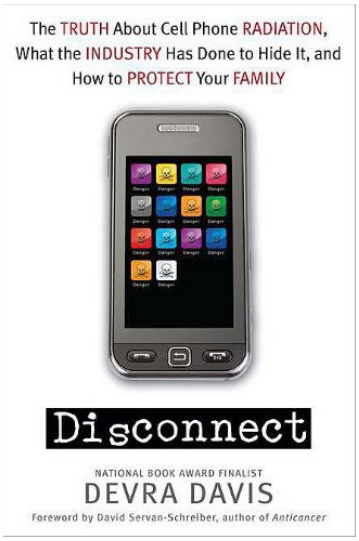
It has been a joy serving *TuftScope* and for that I would like to thank the entire *TuftScope* staff. This issue would not have been possible without the efforts of the Editorial Board. Special thanks goes to Professor Harry Bernheim for his invaluable advice and applause, Mark Leiserson for his support and flexibility, Eliza Heath for her tireless layout and design work ,and Eriene-Heidi Sidhom and the TCU Senate for financial guidance and support.

Sincerely,

Lauren-Elizabeth Palmer

BOOK REVIEW

Disconnect: The Truth About Cell Phone Radiation



Book by Dr. Devra Davis

Reviewed by Jessica Seaver

Dr. Devra Davis never seems to writeout of mere interest but rather out of conviction; she has a personal stake in the issues she covers. In *Smoke Ran Like Water*, she crusaded against pollution, an issue that devastated her home town of Donora, PA. Now, in *Disconnect*, Devra Davis brings to our attention a topic which affects us all: cell phone radiation. Of course, Dr. Davis uses a cell phone, but, more important to her, so did her pregnant daughter-in-law. Expecting her first grandchild, Dr. Davis first began asking the question: what can cell-phone radiation do to your brain? In *Disconnect*, she gives us some answers.

We all use cell-phones and generally view them as benign and extremely convenient if not essential items. Dr. Davis points out the fallacies of this mindset. She explores three basic aspects of the issue: 1) the nature of cell-phone radiation 2) what science knows and 3) what industry does.

Cell-phones emit pulsed radio signals of a similar frequency to those emitted by microwave ovens, though at a much lower concentration. Microwaves generally emit at 100 MHz, while the signals emitted by cell-phones are generally less than 1 MHz. We know that radiation at certain locations and in certain quantities can be dangerous, of course, but as Dr. Davis points out, cell phone radiation does not increase the temperature of its surrounding. If it doesn't heat thingsf up, how can it be dangerous? This has always been the mentality and is, as we now know, flawed. Radiation does not need to cause an increase in temperature to be effective or to cause problems.

As an epidemiologist, Dr. Davis knows the right questions and the right people to ask. She gives a broad survey of the myriad experiments done on this subject, including surveillance studies performed by the Israeli Dental Association. These studies found a significant increase in parotid gland tumors (tumors of the cheek) in people under the age of 20. In fact, one in five parotid gland tumors occurred in people under the age of 20 in the past five years. Were these tumors caused by the use of cell phones? The Israeli Dental Association was convinced enough to issue a national warning about cell phones held to the head. France seems to agree and will soon require that all cell phones be sold with a headset, roughly stating that, while they are not certain of the risks, they think it prudent to take precaution. Why, Dr. Davis wonders, does the U.S. not also think it prudent to take precaution?

The U.S. cell phone industry does follow a set of guidelines, almost 20 years old, put forth by the government. These guidelines, however, are not applicable to most of us. The upper-limits for acceptable doses of cell phone radiation were set using SAM, the specific anthropomorphic mannequin, which is over 6 feet tall, weighs over 200 pounds and has an 11 pound head. The size of his head is so critical as it corresponds with the thickness of his skull and the amount of fluid in his brain. SAM would have a thicker skull and more fluid than most people and thus would transmit radio waves less successfully. Dr. Davis points out that most cell phone users, especially those under the age of 20, are not 6 feet tall and do not have the type of skull thickness which the guidelines assume. A 12 year old may be thickheaded, but not enough to protect them from cell phone radiation.

While the guidelines are flawed, even cell phone companies admit that use of their product may lead one to exceed the recommended doses. The iPhone 4, for example, comes with a very fine print warning, buried deep within the packaging, which recommends against carrying the phone in your pocket as this might cause one to exceed the limit of acceptable cell-phone radiation. The iPhone is not alone. Many new phones have warnings, buried deep within the manuals, advising users not to keep the shiny new smart phones in their pockets. If it's not safe to keep my phone next to my body, why is it safe to keep it next to my brain?

The obvious question is: why don't I know about these dangers? Dr. Davis attempts to answer this question, citing some major disconnects between what science and industry know and what the public knows. She follows the careers of a few previously distinguished scientists who were accused of fraud, later proven to be false, for findings contrary to the preferences of the cell phone industry. Dr. Davis also unearths some important studies citing the effects of this radiation that have been buried in the continuous request for more research issued by the cell-phone industry.

For an engaging and informative read, pick up *Disconnect* and make the connections for yourself.

Jessica Seaver is a staff writer for TuftScope.

Disconnect
Dr. Devra Davis. Dutton Adult. 2010.
$26.95 (hardcover) 271 pages
$14.99 (audio)

EDITORIAL

Medical-Legal Partnership: A New Model to Reduce Health Disparities

Lisa Zingman

Across the country, millions of Americans are dealing with social and economic hardships that prevent them from achieving good health. Take, for example, the case of a teenager with asthma named Jane*, who was being treated at the Boston Medical Center. Jane lives in a low-income neighborhood with substandard housing conditions and a mold infestation that exacerbates her asthmatic condition. Jane's doctor at the hospital could prescribe her medication to take home, but her asthma would keep recurring if her living environment did not improve.

But, Jane's physician did more than prescribe medicine – he asked her questions that led to recognition of the underlying cause of her asthma. He then referred her to the Medical-Legal Partnership (MLP) office on-site, which assigned a lawyer who worked with Jane and her family to have renovations done, including mold removal from her apartment building. Following the MLP intervention, Jane's health was restored and her asthma came under better control.

Jane is one of an increasing number of people benefiting from a new model of care that closely links healthcare providers with legal advocates. As David Williams et. al. explains in his article "Moving Upstream: How Interventions That Address the Social Determinants of Health Can Improve Health and Reduce Disparities," Medical-Legal Partnerships bring together healthcare providers and lawyers to collaboratively devise legal remedies to previously unaddressed issues impairing the health and well-being of vulnerable individuals. In an MLP, healthcare providers are trained to recognize adverse social conditions that have legal remedies. MLP lawyers provide legal assistance that the person would be otherwise unable to access. MLP lawyers also become an integral part of the healthcare team, advising staff on the wide variety of resources that may be available to their patients.

"Vulnerable populations often have trouble getting the care they need because of social, linguistic, and economic barriers."

Jane was lucky enough to have access to the resources of health and legal professionals because of the MLP program. Similar programs have been developing across the country, part of a broader movement to address health disparities among vulnerable, low-income, largely minority populations with high rates of disease, disability and premature death. According to the Office of Minority Health, these disparities typically exist because of inadequate access to healthcare and other resources, as well as a substandard quality of care.

Vulnerable populations often have trouble getting the care they need because of social, linguistic and economic barriers. For example, many people have trouble understanding the complex rules regarding eligibility for public benefits and are unaware of the availability of professionals who can help them. They need support in confronting those who may improperly deny them resources, entitlements, and equal rights.

Social determinants of health play a major, though largely unaddressed, role in health disparities. According to the World Health Organization, social determinants of health are the circumstances in which people are born, live, and work, including the health system. The distribution of power, money and resources globally, nationally, and locally influence these conditions and are influenced by policy choices. Those with less means have a harder time accessing the resources they need and therefore have worse health outcomes than those with more resources. By enlisting the help of healthcare and legal professionals, disadvantaged populations can improve their situation, even if it is just by attaining food stamps to feed their families.

Founded upon this idea, MLPs help individuals and families get and stay healthy by addressing social conditions in their lives. The goal of MLP is to ensure that individuals' and families' basic needs, such as food, housing, education and healthcare, are met. MLPs seek to reduce health disparities through three core activities: health systems improvement, direct assistance to patient-clients, and systemic advocacy.

MLPs improve health systems by training healthcare providers, helping case management staff to become more effective, and helping to prevent otherwise unnecessary visits and hospitalization. Direct legal advice and assistance is provided to patient-clients regardless of their ability to pay. As a result, they may have improved access to income support and food stamps, insurance and medication coverage, appropriate living conditions, and educational opportunities. On a broader level, the MLP model is also effective as a systemic advocate for reduction of health disparities. When healthcare and legal professionals join together, they are a powerful voice in the setting of policy. They are better able to push for legislation, policy changes, and improved benefits. The result of MLP activities is healthier lives.

This summer, I worked at the National Center for Medical-Legal Partnership, which supports the expansion, advancement and integration of the MLP model across the country according to their website. There are now MLPs in more than

Author Contact: L.Z. Tufts University, 2010. Address correspondence to L.Z. at lisa.zingman@tufts.edu

225 hospitals and health centers in 38 states. Through the training I received and the research projects that I completed, I gained an in-depth appreciation of the MLP model.

As a Community Health major I can tell you that the Tufts Community Health Program shares many of the same values and goals of MLP. Both are part of a movement in healthcare towards preventive and more comprehensive care. The Community Health Program teaches students from their first class about the importance of addressing social determinants of health. MLP educates medical and law school students, along with residents, attending physicians, and support staff about the relationship between basic legal needs and health.

While many papers have been written about the benefits of MLP, the full extent of the model and its cost-effectiveness have not been rigorously studied. There are presently bills pending in the House and Senate to fund a nationwide demonstration project for MLPs and more fully evaluate its effectiveness.

Medical and legal communities, including the American Medical Association and the American Bar Association, have already stepped up to support MLPs. There remains a great opportunity for the public health community to also get involved. Public health professionals could help to further evaluate the benefits and effectiveness of MLPs, promote the model more widely if further study is supportive, and partner with MLPs to reduce health disparities and improve the health of vulnerable populations.

**Name changed to protect privacy.*

References

1. Williams, David R., et al. "Moving Upstream: How Interventions That Address the Social Determinants of Health Can Improve Health and Reduce Disparities." Journal of Public Health Management and Practice, 2008; 14(Supplement 6), S8-S17.
2. Office of Minority Health. "Health Disparities." 2/24/2010; Retrieved from http://minorityhealth.hhs.gov
3. World Health Organization. "Social Determinants of Health." 2010; Retrieved from http://www.who.int/social_determinants/en/.
4. "National Center." 2010; Retrieved from http://www.medical-legalpartnership.org/national-center.

RESEARCH HIGHLIGHT

Infant Mortality Strongly Linked to Years of Women's Education

Caroline Melhado

A decrease in infant mortality is strongly correlated to an increase in women's education. A review of census and national surveys conducted over the past forty years, funded by the Bill and Melinda Gates Foundation, found that infant mortality rates declined 7-9% with every additional year of education women obtained in a country.

Secondary reports from 175 countries were reviewed to find the mean years of education in women and infant mortality during the years 1953 to 2008. Confounding variables such as HIV seroprevalence and income were taken into account in calculating the correlation of education to infant mortality. Researchers found that education during this time period has greatly increased, while the infant mortality has decreased. However 46 countries still have a mean of less than 6 years of education for women in 2008. Not surprisingly, these countries also have high rates of infant mortality. The pattern remained true across the spectrum, for countries with the highest rates of education for women had the lowest rates of infant mortality.

This strong correlation between women's education and infant mortality should spur education advocates and Millennium Development Goal supporters. While many herald the economic impact of education for a developing nation, education can also strongly affect the health of a population as well

Reference: Lancet2010;376:959-74

Caroline Melhado is the Research Highlights Editor of TuftScope.

ORIGINAL ARTICLE

A Challenge to e-Health: The Need for Ethical Guidelines in Developing Countries

Inayat Memon, M.D.

INTRODUCTION

Telemedicine/e-Health that includes communication through telephone, fax, email, internet, and videoconferencing between the users and providers, is a highly valuable tool in medical, therapeutic and diagnostic services (transmission of digital images, vital signs, e.g. cardiac sounds, ECGs, etc.), disease monitoring from distant places, preventive medicine, biomedical research, health education, business of medical products, medical insurance and other related fields. Regarding provision of clinical services, in contrast to traditional face-to-face patient- physician contact at one geographical location (i.e. in a consultation room), in the telemedicine services the two partners are at a distant location from one another, and may be in different cities of one state, two states of same country, different countries on continent or even on two different continents thousands of kilometers apart.

This provides many advantages over the traditional medical practice and research model, for example quickness and cost effectiveness. It also enhances patients' health education, but generates some ethical issues as well.[1,2] These originate due to built-in demerits of the basic technology, communication problems arising from linguistic and cultural differences, an altered physician patient relationship, or involvement of vulnerable consumers such as people of limited mental capability or with borderline mental disorders. Other causes leading to ethical issues are attractive and alluring advertisements about healthcare services on the internet, which are sometimes misleading, failure to protect the privacy and confidentiality of patients' personal data and health information, record keeping of patients' details, jurisdictional and licensure issues,[3] process of acquisition of informed consent from the patient and the conflict of interest which arises from some e-health services being sponsored by commercial organizations and some of those enterprises being solely or partly owned by physicians. In the following paragraphs a discussion and analysis will be made of these issues from an ethical perspective. Some of the issues are legal but their ramifications overlap with ethical issues, thus these will also be discussed here. The aforementioned issues are jointly encountered by both the developed and the developing countries, but the developed world has to some extent addressed these issues or is in the process of resolving the remaining in an ethical manner.

On the other hand, in less developed parts of our globe most of the relevant problems either have not been addressed or have not been properly identified altogether. In addition, the developing countries have their own issues due to non-acquisition of equivalent technology, less expertise of healthcare professionals and service providers and less familiarity of consumers with this service. These issues create a dilemma as to what extent is it ethical to introduce and employ these sophisticated technologies in the areas where basic human necessities are still unavailable and diseases like tuberculosis and malnutrition are still rampant, such things that can be eradicated with judicious use of smaller budgets than are required for the establishment of e-Health services. Moreover, the already existing imbalance of authority between physician and patient will be aggravated by the establishment of e-health in those areas where technology providers or physicians have the required knowledge and expertise while patients or consumers in general are ignorant of this technology.

Even more troublesome in developing countries is the frequent power breakdown and not uncommon telecommunication faults that might lead to sudden interruption in e-Health processes such as telemedicine consultation. Moreover it is feared that the introduction of e-health services would increase the continuing migration of physicians and other health-care providers from regions of low physician-patient ratio to affluent regions within the same country or other countries hosting the telecommunication and e-health bases, and this will subsequently increase existing inequities in the availabilities of proven and more familiar traditional health services.[4] Even some authors object upon the excessive use of telemedicine and tele-assistance (with exception of emergency and medical isolation) and term it dangerous and against the medical ethics.[3,5] In any way, if one initiates to provide services like telemedicine or e-Health in developing countries he ought to follow certain ethical guidelines commensurate with local conditions and demands for the greater good of the people. In the following paragraphs I would like to highlight important ethical issues that may be encountered in e-health practice and discuss some problems specific to developing countries.

PHYSICIAN PATIENT RELATIONSHIP

The physician-patient relationship is a fiduciary one where a bond of mutual trust and respect is built between the two. The direct and close interaction in traditional face-to-face or in-person therapeutic encounters between physician and patient helps in the development of this trust and further interaction between them cements that bondage. In traditional practice, a physician's credibility and goodwill plays a part in solidifying a patient's confidence in the physician. This factor is altogether missing if both are sitting at different places, unfamiliar with each other and more importantly if they have different cultural and linguistic backgrounds. While practicing

Author Contact: I.M. Cheif Pathologist, Peoples Medical College Hospital. Address correspondence to I.M. at memon.inayat@gmail.com

e-Health it is necessary that physicians be non-judgmental, give respect to professional confidentiality and that both physician and patient reliably identify each other.[6] In contrast to telephonic and email communication, the video-conferencing builds a better relationship between patient and physician but does not break the cultural and linguistic barriers,[7] which can further worsen the quality of interaction. In view of the above factors it is to be decided whether the e-Health services should be confined to those between a physician and patient who are already familiar with each other such as for follow up meetings about already known disorders or for preliminary contact between patient and physician. In this regard the guidelines of the World Medical Assembly[8] emphasize face-to-face consultation between patient and physician and stress that services of telemedicine / e-Health should be restricted to emergency situations, when the physician can't be physically available within a reasonable timeframe and in cases where the physician and patient have an existing relationship.

Studies have revealed that the traditional in-person consultation is patient centered because the patient has verbal dominancy,[9-11] while in the telemedicine consultation (including videoconferencing) physicians talk about 20% more than the patients and thus it is deemed physician centered. Moreover, in-person consultations often involve a discussion of psychosocial and lifestyle issues in addition to medical ones. Plus, a hands-on patient examination is possible and this results in more patient satisfaction than telemedicine consultation.

"Privacy and confidentiality are globally recognized ethical values, but their value-strength is more important in affluent societies..."

In the telemedicine consultation, with the patient being more passive and having little or no knowledge of the employed technology, together with having a perception of physician detachment and concerns about privacy and confidentiality ultimately results in a diminished resolution of their problems[11], this all resulting in a doubtful therapeutic outcome. Positive impact created by non-verbal communication during an in-patient clinical consultation is lessened in distant consultation9 and this adversely affects the outcome and expected needs of the patient. Use of internet or other electronic services as the only source of health guidance is not without demerits and thus it is discouraged.[3]

E-Health services have the potential to be involved in ethically doubtful or unethical activities such as abortion, physician assisted suicide or organ trade, because often the consumers are willing to pay generously for these services. The issue of organ trade is most relevant to developing countries as most of the supply comes from poor countries while demand is fueled by the more developed ones, and as a result this creates long term health problems for poor countries.

CONFIDENTIALITY AND PERSONAL PRIVACY

It is an ethical demand that patients' personal information, their health and treatment data, and information about their psychological condition is not disclosed without authorization. Moreover it should not be accessed by or released to a third party without the patient's consent. Failure to protect these factors disrespects the fundamental principles of bioethics[12] especially autonomy of the patient and her privacy and confidentiality. It is mandatory that technical persons involved in the transmission of the information from patient to physician and vice versa are trustworthy and maintain the secrecy of this information. In e-Health services some patients and consumers have apprehension about un-permitted disclosure of their information,[2] but the onus of this responsibility lies on the shoulders of physicians and technical personnel involved in the process. In e-Health besides consultations, digital images from radiology and pathology are transmitted from one to another site. The E-Health code of ethics recommended by the World Health Organization[13] demands that there should be reasonable measures to prevent unauthorized access or use of personal data of the patients and relevant digital images should be transmitted by such means as 'encrypting' the acquired information. Also to facilitate the users it is required that there should be a mechanism whereby patients can easily review and update their data. To regulate the system and prevent unauthorized access, there should be mechanism to trace how and when the data was used and physicians should have knowledge as to how the site stores the data and for how long. Providers should ensure the safety of consumers so that when the personal data is 'de-identified' it is not linked back to the user.

INFORMED CONSENT

The already problematic issue of informed consent is more complicated in e-Health. When a person accesses a health care site on the Internet or participates in a videoconference, should it be considered that by doing so he has expressed his implied consent, similar to the visit of a patient to a consultant for face-to-face medical advice? If so, should it be inferred that this is equivalent to informed consent obtained in traditional medical practice? One can pose strong arguments against these assumptions. It could be justifiably presumed that an average patient has limited knowledge about modern communication technology and this is even more true when the patient is from a less developed country. If the mere act of accessing the website of a medical service does not amount to acquisition of informed consent then how could a valid informed consent be obtained for e-Health services? A complete explanation to the patient about the process of consent presented by the attending physician, the patient's full mental competency (also physical maturity) and his comprehension of the details are the requirements of informed consent.[12] To accomplish these requirements with the new technology, incomplete technical understanding on the part of the patients, language differences and inadequate mental capability of the patient all pose problems. Therefore, it is imperative

to formulate some ethical guidelines in fulfilling one of the important requirements in patient management and which also has important legal ramifications.

RECORD KEEPING

Who is responsible for keeping the record of the patient? The physician, the patient, or a third party such as the website provider? These are the questions which need to be dealt with seriously so as to meet ethical requirements. It is advised by the Finnish Medical Association that the physicians practicing telemedicine have responsibility for keeping all patients' relevant records along with their identification. It is considered essential that non-medical personnel who are involved in collecting and transmitting the data should maintain confidentiality of the patients' record.[4]

ISSUES OF JURISDICTION

The license of traditional face-to-face medical practice is limited to particular geographical areas. If one's license is valid for one state, the physician is legally prohibited from practicing in another state unless she has a valid license in that state as well. Though e-Health practice breaks the geographical barriers of the communication, the barrier of licensure jurisdiction still exists. Can and should a competent physician practice telemedicine beyond his area of jurisdiction? If for the time being, the reply is affirmative, which locality will decide the issues of litigation or malpractice, the physician's or patient's area of residence? There could be differences of opinion in this respect but quite plausible is the argument offered by Briggs[14] that "a wrong is done where its effects are felt", consequently the patient's jurisdiction will take action in cases of omission or acts of malpractice. However there should be consensus of opinion among different regions of a country and amongst various countries internationally. Moreover, medical organizations should act proactively to resolve this important issue faced by e-Health practitioners. As suggested by the Finnish Medical Association,[6] the doctors practicing telemedicine are only allowed to do so in the country where they are residing and authorized to practice usual medicine. If the patient is a resident of another country then they should have license to practice medicine in that country or through an internationally accredited license.[4]

ETHICAL ISSUES IN DEVELOPING COUNTRIES

In developing countries, which are already resource strained, have meager and proportionally less funds to allocate to health services than do developing countries, initiation of e-Health services will not be without ethical concerns, especially in remote or rural areas, where face-to-face traditional health services are lacking. It is a fact that the outcome of this modern technology in the health care services domain is still unproven and employment of these controversial services to populations having no existing alternate mode of health service will be riddled with ethical issues.[15] Moreover, if these services are provided in financially poor countries where many of the people have no computers and other required devices needed to utilize these services, people would need to use the computers of friends, relatives, schools and public libraries, and this will result in a necessary breach of confidentiality and privacy of information.[15] Specifically in developing countries, there are ramifications of the above mentioned issues and some additional issues as well.

There is an imminent danger that e-Health service providers might disrespect these ethical issues by offering to health services-poor areas in developing countries and there is a possibility that profit-oriented organizations might succeed in alluring those populations. Privacy and confidentiality are globally recognized ethical values, but their value-strength is more important in affluent societies and developed countries. Populations where basic human needs such as potable water, shelter for living and food for eating are not adequately available will be less careful and less sensitive to issues of confidentiality and privacy and it is feared that they might be lured to sacrifice and barter these values for the availability of health services in the form of e-Health. Would it not look strange to provide tele-medical services through the investment of millions of dollars to areas which are still plagued by tuberculosis and malaria, diseases that could easily be diagnosed and treated by such simple means as examination of X-ray films or microscopic sputum or blood samples, things that require much lesser expense?

There is already an extreme shortage of medical doctors and specialists in most of the developing countries and a huge disparity between available physicians in these countries and developed ones. Most of the sub-Saharan African countries have less than 10 doctors per 100,000 people, while Italy has 606, the U.S. 509 and Australia 249.16 Quite a significant number of physicians prefer to migrate to Western countries due to higher salaries and good living standards. With the development of tele-medicine and the availability of this service in the developing countries in remote and rural areas, physicians would not be obliged to physically travel there to provide medical services. This will create an inequity of the usual face-to-face medical services (which have a proven success record) between these areas and more developed areas. The results will consequently be a mushrooming of e-Health services in rural areas whose success is yet to be evaluated and whose outcome is yet to be assessed.

Additionally, how much of the population of developing countries has a clear understanding and knowledge of the pros and cons of e-Health services? Some of the developed countries have devised guidelines regarding tele-medicine such as the U.K., U.S.A. and Finland, and many others are in the process of formulating them.[17-20] But to the best of the author's knowledge none of the developing countries have formulated their guidelines for this rapidly growing tool in the field of medicine. Thus there is a dire need for the formulation of guidelines in these countries.

CONCLUSION AND SUGGESTIONS

Regarding the above issues, guidelines have been formulated by many of the developed countries and minimum required standards have been set by leading organizations of such as the American Psychiatric Association, American Medical Informatics, the American College of Radiology, the American Telemedicine Association, the Canadian National

Initiative for Telehealth, and the Internet Health Coalition. But much less has been discussed about this new technology in developing countries with exception of India and South Africa[16] and to some extent Pakistan.

To initiate this service in developing countries there is need to make all of the stakeholders aware of this tool and to familiarize them with its pros and cons. Initial steps might be the identification of ethical issues relevant to e-Health by service providers including physicians, medical researchers, health educators, and national medical organizations of each respective country. The various groups might then take responsibility to become proactively involved in resolving these issues[21] according to their problems and needs. It can comfortably be suggested that the major role of e-Health services appears in the event when one physician seeks an opinion from another physician about the patient under her supervision. E-health might be highly valuable and even a life saving tool in emergencies and disasters when face-to-face medical services are not available within a reasonable timeframe or the level of required expertise is not available. Moreover, this service may complement established in-person medical services, for example in follow up cases when both physician and patient are already familiar with each other and the nature of the disease is identified. In this regard the process of setting minimum standards and guidelines is primarily a governmental responsibility with the participation of leading medical organizations.

References

1 Niebroj L. "Telemedicine as a moral endeavor." Ukrainian Journal of Telemedicine. 2006; 4:1, 49-52.

2 "Final Working Group Report – WG 3, Ethical issues related to telehealth, Medical Imaging Technology Roadmap." http://www.strategis.gc.ca/epic/site/mitr-crtim.nsf/print-en/hm00271e.html.

3 Rodrigues R.J. "Ethical and legal issues in interactive health communication: A call for international cooperation." J Med internet Res. 2000; 2:1 e8.

4 Dickens B.M. and Cook R.J., "Legal and ethical issues in telemedicine and robotics." International Journal of Gynecology and Obstetrics. 2006; 94,, 73-78 .

5 Allaert F.A. and Dusserre L.. "Legal requirements for tele-assistance and tele-medicine." Medifo. 1995; 8:2, 1593-1595 .

RESEARCH HIGHLIGHTS

WHO Greatly Underestimates Malarial Fatalities

Caroline Melhado

A new study published in the *Lancet* found that World Health Organization estimates for malarial deaths in India are inaccurate. WHO reports only 15,000 cases of deaths due to malaria (10,000 adult and 5,000 children) per year, while researchers found that India probably has closer to 200,000 deaths from malaria a year.

The vast majority of deaths in India, especially rural India, take place at home without any medical intervention. These deaths often go largely unnoted in data collection when studying infectious diseases that cause about 1-3 million deaths in India per year. Researchers used interviews that where then coded by two independent physicians to ascertain whether death with a fever was due to malaria. Of the 122,291 deaths that were available for analysis from the Million Death Study, 3657 deaths were inevitably accepted by both coders (in the case that they did not agree the coders could converse to try and persuade the other), and 2122 deaths were identified by both coders immediately as malaria. The study used the latter number in drawing estimates of nationwide malaria death rates. Of these deaths 90% were in rural areas and 86% were not in health care facilities.

The district rates, calculated from the prevalence of malaria death from the interviews, were then used to find a nationwide figure of death from malaria. Researchers found that about 200,000 people under the age of 70 die from malaria each year in India, nearly 20 times the amount estimated by WHO. These new statistics elucidate certain problems of rural healthcare in accounting for and preventing infectious diseases both in India and worldwide.

Reference: Lancet2010; doi:10.1016/S0140-6736(10)60831-8

Caroline Melhado is the Research Highlights Editor of TuftScope.

Sickness and Health in Madagascar

Emily Clark

Picture yourself as a young, scrawny child, perhaps seven years old You have grown up in a country that most people associate merely with a movie of the same alias. Concocted visions of chanting lemurs and escaped zoo animals populate their minds, and a thicket of green flora replaces the veritable rust of the island. Madagascar is indeed a beautiful and wild place, but to say that the animated movie bore any resemblance to the imagery of the country is to betray the real Malagasy people. In fact, it is a sovereign country in the Indian Ocean off the coast of southern Africa, and comprises a landmass approximately twenty-one times the size of Massachusetts. I was fortunate enough to visit some of the northern parts of Madagascar in the summer of 2010, while trying to volunteer my rudimentary medical skills. Aware beforehand that Madagascar has consistently been ranked among the ten poorest countries in the world, I knew that things would be different, but could never have foreseen the broad nexus of learning that takes place when one is thrown into a culture that is literally and figuratively at the farthest possible reaches from New England.

Remember, you are just seven years old, and the combination of incessant sunbeams and ubiquitous rust-colored mud have left a semi-permanent crust all over your skin. Being dirty is just part of every happy childhood, but in Madagascar it is taken to new heights. After all, there is no such thing as "indoors" in this ultra-rural setting. Taking a sponge bath in the nearby stream would be futile at best and contaminating to your drinking water at worst. Playing outside is what you do best, given that there is no teacher to occupy you in school aside from the sporadic white volunteers who come and hold class in the otherwise empty schoolhouse. Relative to other Malagasy children you're not really at such a disadvantage. Even in the larger towns, school is hardly run for more than a few hours a day. The government just can't afford to pay the teachers any more than that. Regardless of how much you have studied, by age ten or eleven you will start working in the local economy as a farmer, miner, or perhaps start a small business along the roadside selling things from town or commodities such as cell phone recharges.

Above: Map of Madagascar

Home for the past few years for this child has been the village of Maventibao (mah-ven-tee-boh), where I spent some of my time as a volunteer. It is situated near the northern tip of Madagascar in high grassy hills, roaming with the hump-backed Zebu cows that you help to herd and will someday eat. These hills also tend to conceal rich sapphire deposits; when you were little you used to enjoy sitting in the dirt and trying to pick out the little bluish gray stones. A three-hour hike is required to reach this particular hill, since no roads or electricity have yet extended into these parts. The cluster of 12 grass huts comprises the entire community of roughly fifty inhabitants, most of whom are sapphire miners, and consequently the population tends to swell or diminish according to where the latest minerals were found. What makes this community special is that Mada Clinics, a British-supported charity organization, has set up a health clinic for the surrounding area that is based in this tiny town.

Above: Malagasy child receives treatment

The double boon of living in a sapphire-rich area with a proximate interface to healthcare has put you leaps ahead of many youngsters in Madagascar. Even in this region, most have to hike the better part of a day to reach the clinic, or wait for the date when clinic staff will hike over the grassy hills to spend the day seeing patients in a different village. Luckily, you have never had to experience severe malnutrition either, since mining provides your family with a meager but steady income to buy rice, and the clinic volunteers hand you a "bonbon" twice a month (really a vitamin, but you only care about how sweet it tastes). A

Emily Clark is the Copy Editor for TuftScope

Above: Malagasy children in schoolhouse

year ago, however, your family was particularly glad to live only steps away from the clinic when you became ill with a fever and chills. Your mother took you straight away to see the nurse and his foreign assistant, who dispensed a little box of malaria pills for you to swallow after having pricked your finger and stealing a little blood. Two days later, you were only feeling sicker and your words were making little sense. Now your mother was directed to bring you to a hospital, so after being carried to the road to hail down a bush taxi, you rode for five bumpy hours to stay with some relatives in the capital city of the north, Antsiranana.

A Malagasy hospital is a locus of culture in many ways. Family and class structure, life, and death are intermingled unreservedly. While you share a bed with your mother during your stay in the inpatient unit of the pediatric service, others rest under the bed, behind the door, and in the hallways, all of which are connected in the open-air compound. Women sit on grass mats concocting food for the patient and extended family, and healthier little ones wander in and out. Upon being admitted to the unit, the physician had scrawled out a lengthy prescription on a leaf of tissue-thin paper, and one of your aunts made the trip to the pharmacy to purchase all the required goods. Alongside antibiotics and other drugs, this list asked for cotton, bandages, IV fluids, syringes, and even a small vial of pure rum for the nurses to use as antiseptic. Needless to say, your family does not have health insurance, and this process has already come to a meaningful sum. The hospital is evidently not stocked in the same way that an American hospital would be. The materials actually owned by the hospital can fit all together on a small cart: scissors, a stethoscope, a thin notebook of handwritten patient notes, a suction machine and one cylinder of oxygen. While it is surprising at first to witness how slim the provided materials and services are, families are tirelessly devoted to the tasks of changing sheets, mixing medications and generally tending to the patient as would a nurse, as this is what is expected of them.

Luckily this small child only spent a few days in the hospital surrounded by aunts and uncles, before he was healthy and on his way back to Maventibao village. In general some families appear in bigger numbers than others, but particularly when a patient is expected to die, hordes of family members will reside in the hallways and surround the patient's bedside. After one has gotten used to the suffocating attention constantly lavished on the patient by family members, it comes as a shock to see their collective response to death. Superstition coexists with monotheistic religion in Madagascar, and it is the tendency toward superstition that dictates contact with death as being the highest taboo. Therefore when someone passes away in a hospital, the room is at once hysterically evacuated by family members who scoop up every possession in a matter of seconds and fly the premises. While it's not a lucky thing to witness, the shared attitudes toward health, disease, life, and death, that one can see every day in the hospital provide a fascinating glimpse into some of the more fundamental aspects of a foreign culture.

When I reflect on this trip, I am amazed at how much I learned. From gaining skills normally reserved for medical students to sharing meals in the homes of Malagasy families to being allocated full responsibility to treat patients in the field, the scope of new experiences was edifying, sometimes to the point of exhaustion. Yet I am infinitely glad for having chosen to pursue this volunteer stint, and I would press each and every reader to consider volunteer travel as a frugal, more constructive and more stimulating alternative to a normal itinerary. After all, it was only through developing trusting friendships with Malagasy villagers and townspeople that I was able to know more of the country than the azure coast and the forests filled with hidden lemurs.

EDITORIAL

The Vaccination Scare

Lori Fingerhut

Pediatricians recommend for almost every child a series of routine vaccinations which are meant to prevent the contraction of disease. The United States, however, has seen a growing trend in parents ignoring this prescription. As parents opt out of vaccinations, pediatricians are starting to react.

By the time children are one month old they begin receiving hepatitis vaccinations, followed soon after by diptheria, tetanus, and pertussis, pneumococcal, poliovirus, measles, mumps, and rubella, varicella, and plenty more.[1] Once, an annual trip to the doctor's office undoubtedly meant another prick in the arm for young children. For many children today, however, "the shot" has gone unseen, as more parents opt to wait to have their children vaccinated or refuse to have them vaccinated at all. While this decision may be a dream come true for five year olds everywhere, it is a disaster waiting to happen for pediatricians.

The United States has seen a recent trend of parents refusing to have their children vaccinated because of a fear of how the live virus will interact with the infant's developing mind and body. The large number of vaccinations given to infants can put a heavy load on young immune systems.[2] The most common new fear associated with vaccinations, however, is that they will trigger the development of autism.

Before 2001, many vaccines had a mercury-containing component to them called thimerosal. Since 2007, about 5,000 families have made legal claims that this preservative triggered autism in their children.[3] Though no definitive research has proven this element to be associated with autism, thimerosal was removed from vaccinations in 2001. Although vaccinations no longer contain thimerosal, and the Department of Health and Human Services has stated that there is no known association between vaccinations and autism, a growing number of parents remain unconvinced.[4]

Doctors provide waivers for parents of children who either can't receive immunizations because of contraindications or for those who would rather not take a chance that the risks of vaccines may outweigh the benefits. According to Saad Omar, a scientist at the Johns Hopkins Bloomberg School of Public Health, the number of children whose parents have taken doctors up on this offer has risen since 1990 from 1% to 2.54%.[5] According to another study published in the Archives of Pediatric & Adolescent Medicine, 85% of 302 pediatricians surveyed said that they had experienced refusal of some vaccines, and 54% had received refusal of all the recommended vaccines.[6] Just because doctors are offering this waiver, however, doesn't mean they are happy about it. As the number of children unvaccinated for non-medical reasons continues to rise, many doctors are refusing to treat unvaccinated children at all. According to the survey of 302 pediatricians, 39% would deny care to families of fully unvaccinated children. Children who are not inoculated could pose a threat to other unvaccinated children, children who are too young to be vaccinated (for certain diseases), and even those who have already been inoculated.

The fear of increased spreading of disease has in fact become a reality. Within the past few years, for exampe, the number of children contracting measles has increased. This disease that can be guarded against by the MMR vaccine, which covers measles, mumps, and rubella. In 2008, a total of 11 unvaccinated children came down with measles after a 7-year-old unvaccinated boy brought the disease back from a family trip abroad. Hundreds of others were exposed.[7] In a similar case, a 17-year-old unvaccinated girl in Indiana brought measles back with her to the US after traveling abroad. She infected only 3 out of 465 vaccinated people at a picnic, but 31 out of 35 unvaccinated children at the same picnic.[8] Measles is not the only disease that has sprung up amongst unvaccinated children. There have also been outbreaks of pertussis, mumps, varicella, and the bacteria that causes meningitis, just to name a few.[9]

Doctors, therefore, continue to advocate for the vaccination of children in order to prevent possibly fatal diseases. Dr. William Schaffner of Vanderbilt University, for example, explained that so far no link has been found between vaccinations and autism, as evidenced by the millions of children who receive vaccinations with no problems. This evidence, however, does not rule out the possibility of a connection either in the population as a whole, or in an isolated group of children with a certain genetic susceptibility. On the other hand, it is also possible that children with a genetic vulnerability who developed autism after being vaccinated would have developed autism anyway after a bout of serious illness.[10] Most doctors, including Dr. Schaffner, admit that much more research is needed to determine if a link of some kind may exist. At this time, however, vaccines are considered completely safe and extremely important in preventing children from falling ill with potentially life-threatening diseases, and in preventing these germs from spreading to other vulnerable bodies.

References

1. "Vaccines: Home Page for Vaccines and Immunizations Site." Centers for Disease Control and Prevention. Web. 9 Oct. 2010. http://www.cdc.gov/vaccines/.
2. Park, Alice. "How Safe Are Vaccines? - TIME." Time Magazine. 21 May 2008. Web. 9 Oct. 2010. http://www.time.com/time/health/article/0,8599,1808438,00.html.
3. McNeil, Donald J. "Court Says Vaccine Not to Blame for Autism." The New York Times. 12 Feb. 2009. Web. http://www.nytimes.com/2009/02/13/health/13vaccine.html.
4. Childs, Dan. "Debate Rages Anew on Vaccine-Autism Link - ABC News." ABC News. 7 Mar. 2008. Web. 9 Oct. 2010. http://abcnews.go.com/Health/MindMoodNews/story?id=4402930&page.
5. Steinhauer, Jennifer. "Public Health Risk Seen as Parents Reject Vaccines." The New York Times. 21 Mar. 2008. Web. 11 Oct. 2010. http://www.nytimes.com/2008/03/21/us/21vaccine.html.

Lori Fingerhut is a staff writer for TuftScope

EDITORIAL

The Implications of Synthetic Life

Parsa Shahbodahi

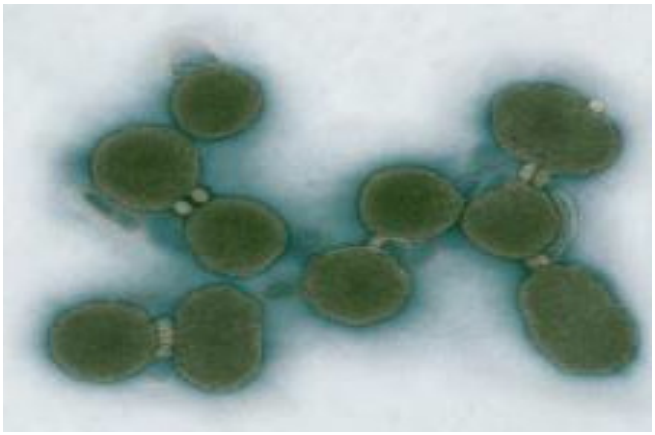
Craig Venter and his lab have created an organism with entirely synthetic DNA. The lab, in 2010, created a cell with a synthetic genome. As exciting as this breakthrough is, it has many concerned about the implications of this experiment.[1] How will this scientific breakthrough affect the way we live tomorrow?

Venter suggests that this technology will usher in a new industrial revolution where man-made organisms can produce flu vaccines or become effective tools in treating disease.[2] He is hopeful that he and his fellow scientists can modify the genetic code of algae to "…vary the 50 to 60 different parameters for algae growth to make superproductive organisms [in the production of biofuels]."[2] However, critics of this approach are concerned that new bio-weapons could be created from synthetic organisms and that they could be particularly devastating in the hands of terrorists.

That said, it's important for people not to overreact to the either the potential benefits or dangers of this research. For one thing, reaping the benefits of synthetic life is going to be difficult. For example, scientists would like to create an organism that can absorb carbon dioxide. They are going to have to overcome immense challenges to perform this task. First, they would have to find a gene or a series of genes that absorbs carbon dioxide in plants, algae, or some other organism. They would then have to understand many of the biochemical aspects of carbon-fixation in order to produce an organism that could perform the given function (CO_2 absorption) more efficiently than its natural counterpart. Needless to say, it's an extremely complicated and costly process .

That's actually why it is highly unlikely that you will see synthetic organisms being used in a potential terrorist attack. It takes a tremendous amount of resources to create an organism that might or might not kill people as effectively as something that isn't already out there (it cost the J. Craig Ventor Institute $40 million to finance the creation of the first synthetic cell)[1]. It is much easier to fill a few envelopes with anthrax than to hire a bunch of mad scientists to create a deadly synthetic organism.

There is another concern with this line of research, however. The ecological impact of unknowingly introducing synthetic organisms into the environment could be potentially devastating. Humans have introduced the Asian carp in the United States and it became highly detrimental to the environment and later became known as an invasive species.[3] People also bred two different sub-species of bee in an effort to create a bee that could produce more honey, an effort that gave rise to the killer bee[5], an organism that is far more aggressive than its bee cousins[6]. We don't know the ecological impact of creating organisms through artificial selection, so how on earth would we know the impact of introducing man-made organisms into the environment? How will we simulate the conditions organisms will live under in order to understand the impact they will have once they have been released into a natural habitat? It's a question that currently seems beyond the scope of science, and therefore all possible preventative measures must be taken to ensure synthetic organisms do not escape from a controlled environment.



Above: Negatively stained electron micrographs of aggregated M. Mycoides, provided by the J. Craig Venter Institute

With quandaries like this, it's unlikely that humanity will see the benefits (or dangers) of synthetic life for some time. However, we shouldn't focus on the fact that we might not see any potential benefits. The marvel of this experiment is that it provides essentially indisputable evidence for the underlying principle of all biology: that an organism's DNA determines its form and function. Dr. Venter and his fellow scientists removed all the DNA from the cell of one bacterial species and inserted synthetically made DNA of a different bacterial species.[7] After the synthetic DNA was inserted, the cell began to proliferate and exhibited none of the qualities of the host cell. In fact, it behaved like any other organism with natural DNA.[7] All of these experimental observations allow us to understand that the only thing that truly determines what every living thing will become is its genes and the manner in which its genes are expressed.

References

1. Katsnelson, Alia. "Researchers Start up Cell with Synthetic Genome." www.nature.com. Nature, 20 May 2010. Web. 7 Oct. 2010. <http://www.nature.com/news/2010/100519/full/news.2010.253.html>.
2. Wade, Nicholas. "Researchers Say They Have Created A 'Synthetic Cell'" The New York Times. The New York Times, 21 May 2010. Web. 9 Oct. 2010. <http://www.nytimes.com/2010/05/21/science/21cell.html?_r=1&ref=j_craig_venter>.
3. Gill, Victoria. "'Artificial Life' Breakthrough Announced by Scientists." BBC - Homepage. British Broadcasting Corporation, 20 May 2010. Web. 11 Oct. 2010. <http://www.bbc.co.uk/news/10132762>.
4. USGS. "Carassius Carassius (Linnaeus 1758)." Nas.er.usgs.gov. United States Geological Survey, 8 Apr. 2005. Web. 10 Oct. 2010. <http://nas.er.usgs.gov/queries/FactSheet.aspx?speciesID=509>.

Parsa Shahbodahi is a staff writer for TuftScope

SCIENCE REPORT

When Freezing to Death May Save Your Life

David Gennert

Recent studies on induced hypothermia as treatment for victims of traumatic injury, including a recently approved human trial at Massachusetts General Hospital, are culminating in the development of effective methods for arresting brain damage during periods of oxygen deprivation by causing a state of suspended animation in the patient.

Lower a human's body temperature by 1°C, and pain will be felt in the extremities. Lower the temperature another ten degrees, and the person is at severe risk of death.[1] Despite this, recent research is pointing to hypothermia as a means of saving the lives of those suffering from traumatic injury to their bodies. Induced hypothermia has been known to be an effective treatment for a number of medical conditions for millennia. The ancient Greek physician Hippocrates wrote about treating wounded soldiers with snow and ice, and recent research has pointed to hypothermia as a successful treatment to prevent neurological damage in times of stress for the brain.[2]

When a person's core body temperature drops from 37°C to 33°, brain function begins to be affected, and the person often experiences amnesia. When it drops to 30°, the person will lose consciousness. At 28°, the heart stops beating. Although a human will seem to be on the brink of death at this point, the brain mysteriously retains its viability while remaining in a state of major arrest.[1] It is well known that a brain will lose significant functionality if deprived of oxygen for a few minutes. However, hypothermia reduces the brain's demand for oxygen and impedes several deleterious biomechanical pathways that lead to free-radical release in the brain, thus preventing significant cell death.[3] This protection during anoxia is the key to new treatments being developed, as well as the explanation for some puzzling and unbelievable stories of survival that fuel the curiosity that drives this field of research.

Dr. Anna Bagenholm was on a skiing trip with friends in northern Norway above the Arctic Circle eleven years ago. Her skis went through a patch of ice during a run down the mountain, plunging her into the frigid water below. It took her friends 40 minutes to pull her out of the water, and by the time the rescue helicopter transported Dr. Bagenholm to the nearest emergency room, she had been without heartbeat for over two hours, her core body temperature had dropped to 13.7°C, and no neuronal activity could be detected.

With the help of the hospital's medical staff, she seemed to achieve the impossible, though, and survived the ordeal, waking up from her coma three weeks later and making a full recovery. Earlier this year, she sat down with Dr. Kevin Fong, a consultant anesthesiologist from the University College London Hospital, for his documentary "Back From the Dead" aired in September 2010, in order to talk about her experience and the phenomenon of extreme hypothermia that actually saved her life.[1]

Dr. Bagenholm's story exemplifies the power of this phenomenon, which researchers like Professor Marianne Thoresen, of St. Michael's Hospital, Bristol, England, and Dr. John Elefteriades, at the Yale New Haven Hospital, are harnessing into powerful therapeutic tools. Professor Thoresen works in the neonatal ward, and she has been a leader in research on hypoxic brain injury in infants. One of the effective treatments she has seen develop is the use of induced hypothermia on afflicted infants to quell the threat posed to premature newborns by hypoxia.[1]

Dr. Elefteriades, a surgeon at Yale Hospital, is one of the leading figures in the advancement of hypothermic techniques during surgery, having performed numerous operations whose successes relied heavily on the new method, called Deep Hypothermic Circulatory Arrest. He has developed a system to cool a patient's body to 18°C, where the body's metabolic requirements drop to around 12.5% of normal levels. Dr. Elefteriades says this is low enough to give a surgical team a 45-60 minute window, during which blood flow can be completely shut off, while ensuring that the patient will regain full brain functionality after the procedure.[1,4]

As one example of the results seen by Dr. Elefteriades, Dr. Fong followed one of his patients during and after this procedure in order to repair a potentially deadly aneurism on his aorta. In order to access and repair this major blood vessel, the patient's body was cooled, his heartbeat stopped, and his brain was put into a state of suspension animation in order to survive the event. The patient later regained full functionality and returned home with his family with no observable complications.[1]

Such a powerful tool must certainly have applications outside the standard surgical suite, so researchers began investigating how this procedure could be used to treat those whose hearts stop before the brain is put into a state of suspended animation. They began to investigate the applications in the field of trauma medicine to see if emergency medical teams can gain the edge in very time-critical situations.

Since 2002, when the New England Journal of Medicine published several articles detailing the use of induced hypothermia in cardiac arrest cases, many new findings and innovations have been made to help put this technique into regular use.3 In January 2009, New York City began Project Hypothermia to analyze the effects induced hypothermia had on cardiac arrest victims. During Phase I of the project, patients arriving at one of the city's hospitals would receive hypothermia treatment. Since the study began, the survival rate of cardiac arrest victims in the city rose 20%, and hospital discharges increased 30%. In Phase II, underway now, paramedics administer the hypothermic treatment prior to arriving at the hospital if other resuscitation methods are not successful in restarting the heart.[2]

David Gennert is the Acquisitions Editor for TuftScope

Another research study currently underway is taking place at Massachusetts General Hospital in Boston, where Dr. Hasan Alam is spearheading the study of using the hypothermic treatment on victims of traumatic injury. After seeing great successes in trials using animals, Dr. Alam received permission in September 2010, to conduct human trials of the techniques, which he wishes to administer to victims of gunshots, stabbings, and automobile accidents. He plans to drop the patient's temperature to 10-15°C, giving his team a window of 60-120 minutes during which time the patient's heart can be stopped without damaging the brain. He has developed a very effective method of cooling the patient's body, which replaces warm blood with cold saline injected rapidly into the body directly, mostly at the head. This can lower the body's temperature by 2°C per minute. Dr. Alam is confident that this fast cooling will result in a 90% or greater survival rate for patients whose situations are routinely considered fatal.[1,4]

Although induced hypothermia is emerging as a very effective and versatile treatment for patients in serious condition, the reasons it works are not fully understood. Prof. Lance Becker, of the University of Pennsylvania, has been studying the effects of anoxia at the cellular level at the Center for Resuscitation Science in Philadelphia in order to try to reveal how cold temperatures put the body's cells into a state of suspended animation that can withstand a lack of oxygen. He has found that oxygen deprivation itself does not kill a human's cells; a brief lack of oxygen merely puts them in an arrested state. He then saw that it was only after oxygen was reintroduced to the cells that the cells began to undergoing apoptosis–cell suicide. Up until the reintroduction of oxygen, Prof. Becker describes the cells as "unhappy," but still alive.

He is now trying to figure out what gets altered in anoxic cells to trigger apoptosis upon the reintroduction of oxygen. He also observed that cooling the cells, just like in the induced hypothermic patients, results in a greater chance that the cell will survive, but that is not the entire answer. Prof. Becker stated that they are beginning to understand these mechanisms, and they are moving toward the solution, but the processes remain a mystery.[1]

As more research comes out regarding the use of induced hypothermia in the treatment of victims of traumatic injury, the definition of death itself may have to be reconsidered. As clearly seen in the case of Dr. Bagenholm, a lack of pulse, brain activity, and normal body temperature are no longer clear indicators of death. Dr. Fong described a "no man's land between life and death that we might be able to manipulate."1 The work currently going on to illuminate this phenomenon, and the work that has already given us a glimpse of its potential, is furthering our understanding of this middle-ground, giving the medical community tools capable of reaching out to pluck those on the brink of death and bring them back to life.

References

1. "Back From the Dead." Horizons. BBC HD. London. 27 Sept 2010. Dir. Sophie Robinson. Television.
2. Scharr, Jillian. "Cold Cure: Inducing Hypothermia to Save Lives." NBC New York. 3 August 2010. 5 October 2010. <http://www.nbcnewyork.com/news/local-beat/Cold-Cure-Inducing-Hypothermia-to-Save-Lives.html>
3. Safar, Peter J and Patrick M Kochanek. "Therapeutic Hypothermia after Cardiac Arrest." New England Journal of Medicine. (21 February 2002). 346:612-613.
4. Gray, Richard. "Patients to be frozen into state of suspended animation for surgery." Telegraph Online. 26 September 2010. 30 September 2010. <http://www. telegraph.co.uk/health/healthnews/8024991/Patients-to-be-frozen-into-state-of-suspended-animation-for-surgery.html>

RESEARCH HIGHLIGHT

Asthma Incidence Reduced after Public Ban on Smoking in Scotland

Caroline Melhado

A study funded by the NHS Health Scotland found that following legislation to ban smoking in public places and work places the number of hospital admission due to asthma decreased significantly among children. While the rate of hospitalization for both pre-school age children and school-age children had been increasing by 4.4% per year before legislation, however after legislation there was a reduction of 15.1% relative to the rate before legislation. There is a strong correlation between environmental smoke and the incidence of asthma.

Asthma has been a growing problem for many countries around the world. However health officials and politicians have been weary of implementing public and work smoking bans because many believe this will push smokers to smoke more at home where children reside. In Scotland 40% of children live with smokers in their home. The data was consistent across groups of different gender, geography and socioeconomic standing. The study in Scotland proved that legislation banning smoking would decrease the incidence of asthma in a population, and not cause an increase in home smoking. While the consortium study could find no way to directly prove the correlation, they find it hard to credit the lowered incidence to any other change.mation demonstrates that public support and donation is having a positive effect.

Reference: Grady, Denise. (2010, April 13). Maternal Deaths Decline Sharply Across the Globe. *The New York Times.*

Caroline Melhado is the Research Highlights Editor of TuftScope.

OPPOSING VIEWPOINTS

Should it be Easy to Exit the NHIN?

***Kathryn Delaney** argues that allowing individuals to opt out of NIHN will undermine the whole process. **Lauren-Elizabeth Palmer** counters, suggesting that the system can work without forcing consent.*

YES

While the NHIN will prove to be an invaluable asset, we cannot allow convenience and standardization to eliminate patient privacy and undermine the doctor-patient relationship.

The proposed Natiowide Health Information Network as a housing system for electronic health records system is an exciting prospect for everyone in the health care and public heath sectors. It would mean an increase in both volume and accuracy of information available to providers, patients, and researchers. This proposed system also promises better health care, as it will increase physician efficiency and patient safety, and an increase of new public health data. The advent of this kind of electronic health records system (EHR) has been highly anticipated and—many say—long overdue. Few would argue that a system such as the NHIN, or the wealth of information it would provide, would be a bad thing. But there are still many questions about how such a system would (or should) operate on a national level; and while the NHIN would open up a world of information and access, it also opens up a can of worms concerning patient privacy issues.

The privacy worry takes a number of different forms. Some are worried about unauthorized access to and distribution of their private medical information. Others accept the concept of electronic health records, but worry about who would house such a database. This worry is further compounded by the

Kathryn Delaney is the Off The Hill Visiting Writer from Brown University

NO

The proposed Nationwide Health Information Network is meant to standardized Electronic Health Records, increase efficiency and decrease mistakes in patient care, and provide nationwide public health data. If the system is set up so that it is easier to exit the NHIN than remain in the NHIN, these efforts will be undermined and tax-payers dollars will be wasted.

Lets begin by evaluating the need for EHR and the NHIN.Take for example, Steph. Steph is from California, but she attends school in Boston. What happens when Steph breaks her wrist or gets an infection while in Boston? Currently, she is expected to remember all allergies, previous illnesses and preexisting health conditions. This is assuming, of course, that she is coherent when brought into the Emergency Room. Steph has no complex medical history and is well-educted as to the working of the healthcare system.Confound this situation by imaging Steph is 65 years old, diabetic and has given birth to three children, defeated breast cancer in her 40s, and had her appendix removed. This is no longer an easy medical record to cite from memory, even for patient. Steph's case c ould be further complicated if she did not speak English, did not understand omplex medical terms or was suffering from memory loss.or for someone with little or no understanding of English or even for someone with only a very basic understanding of their own health? The current alternative, a paper

It is obvious that the current system is far from perfect. Not to

Lauren-Elizabeth Palmer is the Editor-in-Chief of TuftScope

NHIN, if the federal government is to house this information, what will that mean for patient security and doctor-patient privilege. The truth is that we just don't have enough experience with a system like this to guarantee patients complete privacy in either of these areas. Because of the novelty of and inexperience with the NHIN, patients should need to expressly consent to the NHIN.

If patients are automatically enrolled in the NHIN, there is the worry that they will not know to or how to opt-out of the network or be aware of their options. How can we ensure that patients will be able to form an educated opinion of the NHIN without first explaining the aspects of the system. Who would we expect to explain these aspects? It would be against a physician's interest to do so as the explanation would take time and paper records would take money. How then could we ensure that people were well-versed on the issue?

Many patients are frightened by the prospect of the federal government housing their information, as would be the case in the proposed NHIN. It's not hard to imagine why this would make some people nervous—a medical record could contain some potentially compromising information, including drug use, mental health problems, or legal status. There is some consolation in the fact that social security numbers would be left off of EHRs, which would have a unique health identification number instead. But these health IDs would have to be matched with names, birth dates, and social security numbers somewhere along the line, and one can't help but wonder how secure the system would actually be, if the government is both housing the records and assigning the health ID numbers.

This may seem like a misguided worry, rooted in some nebulous conspiracy theory, but health care providers must take it seriously. Those who might ordinarily share their medical history with a doctor might think twice if they suspect that their narcotic use or mental health problem could end up in the hands of the federal government. Illegal aliens might refrain from seeking care, knowing that government servers would house their medical history and health information. Doctor-patient privacy is a central tenet if the U.S. healthcare system and one that would definitely suffer if people could not easily eject themselves from the NHIN. Until we can ensure the privacy of these patients' EHRs with absolute certainty, they must be able to control their level of participation in a system like the NHIN, and preserve their right to personal

worry, work is being done. Many hospitals around the country, which already have electronic medical records (a record of a patients interaction with a specific institution), are engaging in HIEs (Health Information Exchanges). An HIE allows hospitals to share data (electronic health records or records of a specific patient regardless of institution) with one another. An EHR increases efficiency and decreases error. There remains one important question, who will house these EHRs? The current proposition is that the records be maintained by the Nationwide Health Information Network (NHIN).

This would ensure standardization, keep our health data out of the marketplace (something which a private company could not provide) and lead to greater compliancy. The standardization of such a program will also eliminate unnecessary, redundant testing. This increase in efficiency promises to save us millions of dollars in healthcare spending a year. One aspect, not to be ignored, of the NHIN is that while it should save us money in the long run, it will cost us a great deal of money now.

With so much time and money invested in this project, can we really allow people to opt out of the system? The NHIN does not pose the sort of security invasion that some suggest and the value would be undermined by allowing a complete opt out option.

The system would use a specific, health record ID that is not linked with a social security number. Using a social security number would lead to an unnecessary sharing of information and, importantly would not be pragmatic as many people do not have social security numbers. The system could also be kept separate and inaccessible to police forces. If, by misconduct, the police forces were to gain access to these records, any information could be inaccessible in court. We are able to run state hospital without worry of security of information, why should we not be able to use this system under the same mentality?

If people could easily opt out of this system, how would it be valuable? How would doctors treat those patients and how would we garner the public health data ,which we so desperately need? Why would we spend taxpayers' dollars on something we will not use?

I am not arguing for a stringent, under no circumstances opt-out system. Patient privacy is of

OPPOSING VIEWPOINTS *continued*

YES

privacy.

All of these worries could indicate a dismal future for the NHIN. Some might argue that it is pointless to develop such a costly system only to let people opt out of it for privacy or safety concerns. But research shows that, when asked by their doctors, 90% of patients choose to opt in to some sort of EHR.5 NHIN, and EHRs generally, will have the patient backing to be worth investing in, both for better medical care and richer public health data.

Public health date is important, absolutely, but would we be obtaining accurate data if patients were scared of telling their doctors all of their healthcare information for fear that it would be transferred to government? If patients feel forced into the NHIN, we will not be obtaining accurate public health date, and more importantly, physicians will not be able to treat their patients to the best oftheir abilities. By making opting-out of the NHIN too difficult, we would be undermining our own efforts. In healthcare, data and convenience should take a backseat to education and consent.

NO

utmost concern. It seems that the best system would be opt-out and would weigh the decision in favor of staying in. We should automatically enroll patients in the NHIN and only pull them out after they expressly request we do so. We should also allow them to opt-out in part, perhaps keeping their illegal drug use or immigration status inaccessible, while freeing up the remaining information for use within NHIN. If a patient refuses NHIN, perhaps they could be charged higher insurance premiums as, once the majority of patients are using this system, a paper record kept within a hospital will become an added burden and expense of treatment. Patient privacy is not to be ignored; however, neither can we ignore the importance of NHIN. If we make it easier to opt-out of the NHIN rather than remain in the NHIN, patients will chose to remain out of the NHIN out of convenience rather than conviction.

References for Opposing Viewpoints can be found online at TuftScopeJournal.org

Continue the debate at TuftScopeJournal.org

FEATURE INTERVIEW

A Discussion with Joseph A. Curtatone, Mayor of Somerville, MA

Mark Leiserson

Above: Mayor Joseph Curtatone
Image: www.somervillema.gov

Joseph Curtatone is currently serving his fourth-term as mayor of Somerville, MA. During his tenure, Somerville has become nationally-renowned for its *Shape Up Somerville* program, an initiative aimed at reducing the prevalence of obesity within the city. In addition, Mayor Curtatone's leadership in Somerville earned him the (now former) presidency of the Massachusetts Mayor's Association, and has won praise from the Boston Globe Magazine which claimed Somerville to be "the best-run city in Massachusetts."

Could you briefly explain what *Shape Up Somerville* is?

In a nutshell, it's a community-based environmental program in partnership with the [Tufts University] Friedman School of Nutrition to reverse the trend of childhood obesity in Somerville's public schools which was later expanded across the city.

When did the program begin and what were major dates of its expansion?

I came into office in 2004. In 2002, there was a mapping program to evaluate the trend of childhood obesity in Somerville's public schools. In 2004, Dr. Christine Economos [from the Friedman School] met with me and informed me that 46% of our 1st-3rd graders were obese or at risk for becoming obese. From there, we really launched the program: a myriad of initiatives to really affect how children ate, how they acted, how they played. I would say parallel to that, we immediately started to apply the tenets of *Shape Up Somerville*–eating smart and playing hard–to all our decision-making processes throughout the city.

You mentioned how *Shape Up Somerville* is closely linked to the environment. When I was researching the program, I was really struck by how a lot of the initiatives are similar to those seen in energy demand-side management programs. Do you think that the campaign to reduce obesity and the campaign to reduce energy consumption are linked?

I do. When I speak around the country, one of my opening questions to the crowd is "how many people think childhood obesity is the problem?" And some raise their hands. But it's not the problem, it's a consequence. Failure on transportation planning, land-use planning, school food policy, health policy; they all collide, and have consequences for our health and social well-being. Childhood obesity is a consequence of failed policy, as is this community's elevated levels of respiratory illness and heart disease. I preach that connectivity, and I think it's important to realize that [many policy decisions are influence one another].

Why has *Shape Up Somerville* been so effective in Somerville, and why has it garnered so much national attention?

It's been very effective in Somerville because we've seen [childhood obesity] for what it is. It is not a technical problem. By that I mean, no single change in health regulations, such as banning trans fats, and no single proclamation by the mayor will fix the problem. This is an adaptive challenge, and therefore we have a community-based approach. You need the community to be engaged to reverse the trend of childhood obesity. There are so many policy failures that have resulted in the current situation that one technical fix will not suffice. You need to engage people's hearts and minds, elevate their social consciousness on this issue, and give the work to the community. I've really stepped back and let them run with it. I've tried to be their cheerleader at times and support the work by the broad-based coalition of stakeholders across the city.

So it's as much an attitude change as it is policy change?

Well that's huge. We need to see [childhood obesity] for what it is. We're not putting people on a diet here; we're asking people to really think about how they live, and to align their values with the goals of healthy living.

You've had a chance to speak with many other municipal executives as the former President of the Massachusetts Mayors' Association. Do you believe it's possible for other similar-sized municipalities to adopt the same programs and achieve similar results?

Absolutely. Whether you're Somerville, New York City, or a small town like Groton, there's no limit to what we can accomplish. We just have to recognize that [childhood obesity] is a consequence and an adaptive challenge. It's not just a technical

---

Mark Leiserson is the Managing Editor of TuftScope.

problem, like you need to lose five pounds. It's much more complicated than that, so it will take the will, and the work, of an entire community to resolve it.

Looking at the broader role of government in health policy, it seems that the federal government is under significant pressure to pass large and broad legislation addressing health issues. However, it seems that *Shape Up Somerville* has taken a gradual approach, adding new programs as it has progressed. So, I was wondering if you could comment on what you think government's responsibility is in helping individuals make healthy choices or adopt a healthy lifestyle?

That's a good question. What we are not trying to do here as a government institution is tell you how to act, how to live, or to tell you that you need to go on a diet. We believe that it is our responsibility to enact good policy that helps you make good choices, and the healthy choice should always be the easy choice. We've seen past government policies make the healthy choice very difficult, and we've seen the consequences both on our health and our social well-being. So my job as mayor is to make sure we guide good policymaking that improves your quality of life. At the same time, I submit that there are no authoritative solutions to the challenge of reversing the trends of childhood obesity. The government should play a role in terms of ramping up the energy and putting the onus on the community to take on the challenge. But, again, it cannot be just one piece of legislation. In a community-based approach, we are really aligning and energizing people's values to what needs to be done to reverse the trend of childhood obesity. Government plays the role of supporting that, and the work is much more meaningful and more sustainable over time [as a result].

What do you believe the role of federal government is in terms of health care policy? Is it restricted to providing financial backing and national campaigns to help states and localities?

The federal government has different roles. They have a legislative role to play, where they should guide us and stop conduct in particular industries that adds to the prevalence of childhood obesity. Also, the federal government should give states and municipalities the support we need to do the work. The support can be from the rhetorical power of the White House, or the monetary strength of the federal government; both are really important.

Do you believe that the federal government overextended its jurisdiction with the passage of the health care overhaul?

No, I don't think it's a question of overextending its reach. I think we need to understand the history of [health care policy in the U.S.]. Health care is still a maturing issue, and we've seen incremental change over time, from Medicare to prescription drug assistance. Over time, there were incremental changes because the issue had to mature in the mindset of the federal government before they could take it on. I think the [federal government] has found its place over time.

On a personal level, does the issue of healthy living have a particular resonance for you?

Yes it does, on a few fronts. I've tried to live my life by those tenets of eating smart, playing hard, living well. I take them to heart, and try to lead by example with my wife and our children. We try to keep them active, to provide everything in moderation and in balance, and give them the opportunities to make good choices. Also, I grew up in the city, next to a highway, and I've seen firsthand how a lack of good policy had a consequence on my life. We talked about respiratory illness earlier; I'm in that category, I suffer from one due to the gradual accumulation of particulates in the air near where I grew up. That's provided personal motivation on my part, and I always thought that people in the urban core, especially in this community, were sold short by our elected officials, starting midcentury and up until the last 20-25 years.

Was the issue of healthy living then part of your motivation to run for public office in 2004?

My decision was not motivated in particular by childhood obesity. However, I have always thought that when you're in this position you have the opportunity to repaint the canvas of the community, and unwind policy decisions of the past. I feel that my job is not to pass a balanced budget, or have a good bond rating, but to contribute to and support a community so you would want to live and raise your family here. And such a community is one that is very healthy, with a high quality of life.

***Shape Up Somerville* began by targeting 1st-3rd graders, but you've expanded it. Could you explain some of the different challenges of targeting obesity on a community-level compared to targeting it in a specific age group in public schools?**

We [enacted the] two programs simultaneously when we learned of the need to do so across the community. With the 1st-3rd graders, you have a much more controlled environment for a finite period of time, so you know you're going to be able to affect the majority of a certain population. You're able to get them actively engaged by doing things such as selecting the Vegetable of the Month, selecting menus, or working with teachers and parents. [With the 1st-3rd graders], we had a set population, and we knew where they were going to be nine months out of the year. Now, it's a much greater community-based process affecting a diverse and dynamic city in this urban landscape we call Somerville, where there are 52 different languages in our neighborhoods and schools, so it's a much broader challenge.

How do you measure success in combatting obesity on a community-level?

Jaime Corliss, Director of Shape Up Somerville:

What you see here is an evaluation by the Institute of Community Health on physical activity levels, and if you flip through it, you'll see who we are impacting. As the mayor said, we've been trying to broaden [*Shape Up Somerville*]to a community-wide approach. We are working to target our lower income and immigrant populations as well. What you'll see is a trend is significant increases in both moderate physical

activity for both children (middle school and high school) and adults. In the adult category, we're on par with state averages, which is unusual considering our demographics compared to the state, and also in the adult category we are meeting Healthy People 2010 benchmarks, which again is very impressive. And, for the children, we are making increases over time, which is, as the mayor mentioned, a long-term effort.

Is sustaining the progress you've achieved so far a major concern of yours?

It's a focus, and I believe it will be sustained because we recognize [obesity] for what it is: an adaptive challenge. We want to have a continuum of engagement with our community to keep making progress on this challenge. In that way, we will have sustainability, so no matter who the mayor is down the road, there will be a particular expectation and value-base in the community so the challenge will continue to be met.

You've mentioned a few times that there is no technical solution, or single policy, that will reverse the rise of obesity. Could you comment on what you believe the role of technical solutions, such as banning trans fats in restaurants, is in combatting obesity?

I believe all those reforms are important, but no one of those reforms will solve the problem. An adaptive challenge is one where the solution is not known, and you will really need to motivate people's hearts and minds to take that on. A technical problem is one where there is a technical solution, so implementing the solution would just be the end of the story. The battle against tobacco certainly wasn't a technical problem, and neither is the battle to reverse the trend of childhood obesity. But I would submit that in order to take on these adaptive challenges, there are a number of important technical reforms we need to implement. In order to make progress, you have to illustrate to your constituency how past policies, failed policies, do not meet the values [of the community]. That's the way it was with tobacco, and that's what it is with childhood obesity.

We ran an article in the Fall 2010issue of TuftScope about the benefits and costs of implementing a soda tax. Do you support a tax on soda? Do you believe it would have a disproportionate affect on lower income individuals?

I support [a tax on soda], though it will not solve all the problems of childhood obesity. I believe the funds obtained through the tax should be used to support the fight against childhood obesity, and support communities who want to take on these challenges. I think it's important. We've taken proceeds from taxes on cigarettes and tobacco settlements to support health initiatives in the past. And no, I don't think it will affect lower income individuals inequitably. If it does change their behavior so they drink less soda, I think that's a good thing. Certainly the food and beverage industry is targeting those populations. When you can buy a 24-ounce bottle of soda and you can't buy a bottle of water of the same size, and when a bottle of water costs more than a bottle of soda, I think that's unfairly targeting those populations. What they're doing is they're using social economic disparity to make the unhealthy choice the easy choice, and we have to reverse that. So [a soda tax] would help balance the field in my opinion, though I still think the proceeds should be used to address other health issues.

What initiatives does *Shape Up Somerville* have in the works? What isn't in the works?

The sky is the limit. We really pride ourselves on letting the data show us where we need to go with our program, and help us determine what we can do to adapt. We are looking to put extra emphasis on the racial and ethnic minority populations in our community and the transient populations in our schools and how we can impact their decision-making in a positive way. There's also a host of other programs that we're already expanding upon.

Jaime Corliss:

That's right, so a couple of other projects coming up are winter farmer's market. There's been a lot of buzz around that in the media and in the community, so folks are really excited. Boston isn't launching there's for another two years, so we're really the only game in town starting this year. [Also], a mobile produce cart, which is one of the ways people are increasing access, particularly to lower income populations. In our Mystic housing development, there's an area that the city has identified as a food desert, and one of our solutions is to [use the mobile produce cart] to bring food into the community. The mayor is also looking at healthy vending for city buildings, which is another common strategy to make the healthy choice the easy choice.

Could you comment on how Tufts students could get involved in the program and help make a difference?

Well, first of all, we wouldn't be where we are today without Tufts University. President Larry Bacow, the best college president in the country, and Dr. Christine Economos from the Friedman School of Nutrition are the ones who got *Shape Up Somerville* going. To that end, there are limitless opportunities and a need to get the Tufts students involved. We would love that. It can be anywhere from working and volunteering in our recreation programs to helping us in our outreach to the ethnic minority population in our city and our schools. Just talking and writing about *Shape Up Somerville*, doing any type of policy analysis, or challenging us to broaden our range in *Shape Up Somerville*. There's a wealth of knowledge in the students at Tufts, and we pride ourselves on our partnership with academia. We want the great base of knowledge and activism that the university has, and [we know] that if we don't leverage this knowledge, we won't succeed. So come on down and get involved!

Do you think that there's a need for a *Shape Up Somerville* type program at Tufts itself?

Well, the President does have the President's Marathon Challenge, which I'm going to run again. I've run it twice to support *Shape Up Somerville* and the Friedman School of Nutrition, but yes, I do think that maybe we should launch an on-campus challenge.

ORIGINAL ARTICLE

Anonymity and Secrect in Gamete Donation: Reconciling Family Values and Individual Rights

Tuua Ruutiainen

Supporting Professors: David Smith, Ph.D, Carol Pollard, and others at the Yale Interdisciplinary Center for Bioethics

At present, the large majority of parents in the United States who use gamete do not tell their children that they were conceived through gamete donation. Competing interests and different views of what is in the child's best interest complicate the situation. While parents attempt to protect family cohesiveness, they risk psychologically harming their child, depriving her of important medical information, and infringing on her right to know her genetic origins. In this paper, I explore the arguments for and against disclosing information about the gamete donation to the child. I then conclude that parents have an obligation to tell the child about the gamete donation; however, they do not have an obligation to reveal identifying information about the donor. It may be suitable to institute a law allowing donor gamete children to gain access to non-identifying information about the gamete donor when they turn 18.

HISTORICAL INTRODUCTION

In 1884, physicians at a Philadelphia medical college impregnated an unconscious woman by placing sperm in her reproductive tract. The woman was led to believe that the sperm belonged to her husband when in fact it belonged to the "best-looking" student in the medical school class.[1] This covert procedure was the first example of gamete donation, which later became a known and sought after practice that offered hope to infertile couples while raising a host of new ethical considerations concerning secrecy.

Although couples were soon jointly making the decision to use donor insemination, they were still reluctant to tell others about their children's "unorthodox" method of conception using donor sperm. Motivated by their desire to conform to the traditional family model and to avoid the stigma attached to male infertility, couples raised the gamete donor children as their own, never disclosing to them that they were not genetically related to their social fathers.

With the rise of oocyte donation in the 1980's and the popularization of embryo donation this past decade, third party reproduction became an option for more couples. At the same time, a new emphasis on children's rights and new studies of adopted children led physicians and parents to reconsider their decision to conceal the genetic origins of these children. Many countries enacted new laws allowing adopted children to access information about their birth parents. In 1985, Sweden became the first country to extend similar considerations to donor gamete children by adopting a law granting these children the right to access identifying information about their donors upon turning 18.

Although other countries now have analogous statutes, gamete donation in the United States remains largely secret and anonymous. According to a retrospective study of parents who used donor insemination in the United States, 86.5% had not told their children how they had been conceived and 40% had told no one about their use of donor gametes.[2] The few non-anonymous programs that exist remain unpopular and even those parents that opt to participate may later decide not to tell their children about the donor.Nursing on a global level.

INTERESTS AT STAKE

Fear of Straining Family Relationships

The argument for secrecy and anonymity is well summarized in the words of Ecclesiastes: "he that increaseth knowledge increaseth sorrow." Parents who use donated gametes fear that if they tell their children how they were conceived, their relationships with their children will be jeopardized. A parent who has already been forced to accept that he cannot be genetically related to his child is usually reluctant to see his child's perception of him change. Gamete donor children who are told about their genetic origins may even emotionally reject their non-biological parents.

Nondisclosure also helps protect the family's privacy. The child might tell others outside the family whose negative perceptions of gamete donation could harm the family as a whole. Even other family members may react negatively. Parents often worry that grandparents would turn against the child if they realized that they did not share a biological bond. In a culture where infertility and parenting of non-biological children continue to be stigmatized, secrecy creates a façade that allows the couple to blend in with the traditional family model.

Differentiating between values for public and private spheres

Parents may be justified in withholding information about gamete donors from their children in the interest of family cohesion and privacy because a family does not need complete openness in order to be healthy. Thomas Murray points out that truth and openness are crucial in the public sphere where it helps preserve justice; however, within families, values such as love, loyalty, trust, and care are more crucial than justice.[3] Since the values in the family sphere are different than in the public sphere, an alternative ethical approach is certainly reasonable, one that emphasizes the well being of the family unit rather than solely the rights of the individual. If disclosure leads to conflict within a family, it may be best not to tell a

Author Contact: T.R. University of Pennsylvania, 2010. Address correspondence to T.R. at tuua.ruutiainen@gmail.com

child about her conception through gamete donation.

Risk of psychological harm to the child

Parents are often concerned that their child may face psychological harm if she learns about her donor. If a child discovers that she was conceived through gamete donation, she may feel "obliged" to seek out information about her biological parent. She may feel disappointed if she is unable to uncover the identity of the donor or if the donor does not wish to be contacted. Even if the child successfully contacts the donor, the relationship that she forms with him has the potential to significantly impact her relationship with her immediate family. Her family may feel wary about her relationship with a possible competing parental figure.

Children may also develop expectations about their encounters with their donors, which, if left unfulfilled, could leave them disappointed. In Schieb's 2005 study of 29 adolescents conceived using open-identity sperm donors, the majority wished to contact the donor upon reaching adulthood. Of those, 80% wished to find out more about the donor in order to gain a better understanding of themselves and 7% wished to develop a father-child relationship.[4] Some children, particularly those who hope to develop a strong parent-child relationship, may be frustrated if their donors do not wish to invest in their relationships to the same degree that they had hoped.

A different set of problems arises when the identity of the donor is unknown. Most programs and sperm banks make anonymous information about the donor's characteristics and medical history available; however, parents who want identifying information must choose programs and sperm banks where donors have agreed to be identified immediately or in the future. Therefore, in the case of anonymous donations, knowledge about the origin of the gametes may be considered unnecessarily stressful for the offspring who cannot trace the identity of the donor.

More importantly, data seem to indicate that donor gamete children enjoy reasonably happy lives regardless of whether or not they know about the donor. According to a study by Golombok, 12-year-old donor insemination children were as well adjusted as their peers who were naturally conceived.[5] Even though some of the children in the study experienced discomfort when they later learned that their parents did not disclose their genetic background, they did not necessarily experience any lasting traumatic impact from this discovery.

Transient importance of the donor

Even if they feel grateful towards the donor, parents may see no need to discuss a figure who was only of transient importance in their lives in the context of their fertility treatment.[3] The birth of a donor gamete child in many ways resembles that of any other infant: the couple deliberately chooses to conceive the child and the mother carries the pregnancy. The mother then bonds with the child after birth through breastfeeding and daily maternal interaction. Unlike adopted children who are separated from their biological parents after birth, donor gamete children are never cared for by the gamete donors. The child's social parents exclusively fill the parental role. Consequently, many parents do not perceive the donors as important figures in their children's lives.

Questioning the Value of Genetic Information

Couples may be particularly reluctant to strain family ties and forfeit their reproductive privacy when they perceive biological ties as relatively unimportant. Many believe that American society has come to overemphasize genetic relationships – a trend that has been encouraged by new reproductive technologies and a culture traditionally obsessed with paternity tests as a measure of legitimacy. Katherine O'Donovan, for example, fears that a system of donor identification will further overemphasize the concept of identity sanctioned by social and legal structures, while devaluing committed social parenting.[6] It is crucial therefore to consider whether or not genealogical awareness has intrinsic value or if society is overstressing its importance.

"... donor gamete children enjoy reasonably happy lives regardless of whether or not they know abut the donor."

DONER'S DESIRE TO REMAIN ANONYMOUS

The impact of disclosure on donors must also be considered. Many donors opt to remain anonymous because they do not wish to be contacted by the recipient parents or offspring. Some donors may even be unwilling to donate their gametes if they are required to reveal their identity. According to a 1996 survey of men who donated sperm in the United States, 79.4% wished to donate anonymously, 6.3% were willing to register their identity, and 14.2% found both options acceptable (n=63).[7] Consequently, a policy mandating the disclosure of identifying information could lead to a shortage of gametes.

In Sweden, there was a temporary decrease in the number of donors when the mandated disclosure policy was first instituted in 1985. However, the supply of gametes was soon replenished because older men who already had children of their own began donating in greater numbers.[viii] There is no evidence that these results can be extrapolated to the U.S. where the motives for "donation" may be different. In Sweden, donors receive no compensation for their gametes, whereas in the U.S. there is a rampant unregulated market for gametes in which donors are less likely to be motivated purely by altruism. Nonetheless, the net loss in sperm donors caused by mandated disclosure might be justified if the psychological benefits of disclosure are deemed to outweigh the benefits of anonymous donation.

ARGUMENTS FOR DISCLOSURE

Value of truthfulness

Proponents of disclosure emphasize the importance of truthfulness within families and the right of a child to know her origin. According to Katherine O'Donnovan, lies lead to a loss of control and autonomy by distorting information, perceptions, and choices.[6] Even when parents do not explicitly lie to their children they are committing a deliberate falsehood through omission. Non-disclosure by the parents can be construed as deception because children assume by default that they are being raised by their biological parents.

Philosopher Sissela Bok argues that, save for exceptional circumstances (e.g. lying to a child to convince her to jump out of a burning building) children should not be lied to, even if the intention is to protect the child. She argues that in most cases "benevolent lies" are wrong because they are not entirely motivated by altruism, but rather by self-protection the parents to maintain power and avoid confrontation.[9] Parents do in fact benefit when they lie to their children about their nature of conception. By not discussing gamete donation with the child, a parent maintains power by concealing a potentially competing parental figure. Furthermore, the lie protects the parent from confronting his infertility and the child's possible interest in the donor. Therefore, according to this argument, the lie is more in the interest of the parent than in the interest of the child it is supposed to protect.

Lack of Informed Consent

Lies are also problematic because the children who are being deceived could not have given their consent in advance. Such consent is simply impossible to obtain because it would defeat the purpose of deception. Furthermore, the child's implied consent cannot be assumed unless it can be judged that she would want to be duped or would give her retroactive consent to the deceit when asked. If it could be assumed that any reasonable person would want to be lied to then the lie would be justifiable.[9] This is not the case when lying to children about their origins because many people are naturally interested in their genetic background.

Jeopardizing Family Cohesion

From a consequentialist perspective, children are wronged when their family members hide information about their origin because lies jeopardize the close relationships that nurture moral and emotional development within families. Since family relationships require trust over a long period of time, parents face a highly detrimental loss of credibility if their lie is discovered.[9] Evidence shows that children who discover that they were conceived through gamete donation late in life feel betrayed by their parents. Lies can also have more subtle consequences: avoidance of this topic in conversation can impair communication and have a negative impact on the child who has a natural curiosity about her origins. Finally, parents can feel burdened by their own lies: they may fear discovery or be troubled by the need to tell multiple lies to conceal the truth.[10]

Children's interest in their genetic origins

Children also have an interest in knowing the truth about their origins because the information is of value to them socially and medically. According to Lisa Cahill:

Genetic connections are important as part of our interest in perceiving the connections between our lives and the lives of others, connections which add depth and richness to the continuing story in which we participate, and which can therefore be referred to as narrative connections. Such connections give cohesiveness and quality to our lives and make us feel both situated and recognized as individuals.[11]

Although biological ties should not be idolized to such an extreme that they threaten to supplant social relationships, it should be recognized that such ties can help an individual develop a solid sense of identity.

Information about the donor is also valuable in addressing a child's medical needs. A child who is not told about the donor may be unaware of certain medical conditions for which she is at risk. Although fertility centers may screen gametes for certain diseases, this information is nevertheless inherently incomplete. Genetic markers are not always diagnoses; they may indicate risk categories, which must then be integrated with other information that is known about the individual, such as family history. The ability to test for genetic risk markers changes and advances with time: conditions may appear later in the biological parent's life which are important for the medical safety of a child and for which genetic markers are not yet available. A donor gamete child who is led to believe that both of her parents are genetically related to her may also be kept in undue fear of conditions to which she is not predisposed. For example, a child whose mother develops breast cancer may fear that she is at risk for the disease, not knowing that she was conceived with a donated oocyte.

Furthermore, a child who is unaware of the identity of her genetic parents risks having sexual relations with another member of her family. Consanguineous sexual relations are a genuine hazard since the distribution of gametes with the population is rarely regulated. Officially, the American Society for Reproductive Medicine guidelines limit the number of children to one donor to 25 live births per population area of 850,000. However the guidelines are neither monitored nor enforced, but rather left up to the discretion of the fertility clinics.[12]

Establishing Children's Rights

Some argue that children have both an interest and a right to information about their genetic origin. According to Neil McCormick's definition, rights are "normative orders that can afford to individuals security in the enjoyment of what are normally goods for individuals."[xiii] Information about one's genetic origins fits into the category of normal goods for individuals since other members of society are granted at least some minimum amount of information about their biological parents. In fact, almost all states grant adopted children access to non-identifying information about their birth parents upon turning 18. Therefore, similar consideration should be granted to donor gamete children. If it can be established that children have the right to information about their origins, the government has a positive duty to provide them with this information.

RECONCILING CONFLICTING INTERESTS

Although parents who withhold information about their child's origins believe that they are acting in the best interests of their family and their child, they nevertheless have a duty to disclose the truth. The parents' silence harms the child psychologically, deprives her of important medical information, and infringes upon her right to know her genetic origins. Exceptions should only be made in cases where disclosure threatens to overwhelm the psychological well being of the family.

Moreover, empirical evidence indicates that the fears that parents have concerning family cohesion are unsubstantiated. Studies show that disclosure may have a positive effect on parent-child relationships. A study of 46 families with children between four and eight who were conceived through gamete donation found that parent-child relationships were more positive in families where children were told about their origins than in non-disclosing families.[14] Despite this data, non-disclosing parents continue to believe that disclosure will have a negative impact on their families. Society reinforces their misperceptions by continuing to stigmatize infertility and non-traditional families, thereby motivating parents to act in a way that is ethically questionable.

However, competing interests must be taken into account when attempting to create a public policy that is morally justifiable. Bringing the government into family life can be dangerous. Thomas Murray writes: "Understanding the moral intricacies of family relationships through a concept such as rights is like opening a beautifully carved door with an ax. It is undeniably effective; it is justified only by an emergency such as a fire."[3] Therefore, an effective policy should recognize the importance of the child's right to her origins, while protecting the welfare of the family unit in which both children and adults develop morally and emotionally.

One suitable option might be creating laws that allow donor gamete children to gain access to non-identifying information about their gamete donor upon turning 18. Although the family unit should be entitled to flourish in privacy, by the time the child becomes an adult her individual rights should begin to override any paternalism on the part of the family. Since there are clearly dangers to any mandatory policy, efforts need to be made to educate parents and improve access to counseling before such a policy is instated. If parents are informed about the harms of nondisclosure, they might be more receptive to talking about gamete donation with their children. Also, since children feel more resentment when they find out about the donor as adults, parents should be told about the risks of waiting to tell the truth.

Psychological support to the child and families is crucial because the current cultural climate does not support donor gamete families. In the long-term, society may grow more receptive to families with non-biological children and the need for fertility treatments. However, since these stigmas currently exist, families need strong psychological guidance to help them grapple with the social consequences of gamete donation.

References

1. Daniels, Ken, and Erica Haimes. "The Semen Providers." Donor Insemination International Social Science Perspectives. Ed. Ken Daniels. New York: Cambridge UP, 1998.
2. Klock, S., and D. Maier. "Psychological factors related to donor insemination." Fertil. Steril. 62 (1994): 489-495.
3. Murray, Thomas. "New Reproductive Technologies and the Family." New ways of making babies the case of egg donation. Bloomington: Indiana UP, 1996. 51-69.
4. Scheib, J. E., M. Riordan, and S. Rubin. "Adolescents with open-identity sperm donors: reports from 12–17 year olds." Human Reproduction 20.1 (2005): 239-52.
5. Golombok, Susan, Fiona MacCallum, Emma Goodman, and Michael Rutter. "Families with Children Conceived by Gamete Donation: A Follow-Up at Age Twelve." Child Development 73.3 (2002): 952-68.

that

NEWS BRIEFS

"First Trial of Embryonic Stem Cells in Humans" reports BBC News

Virginia Saurman

About 12,000 people in the US sustain spinal cord injuries each year, usually from car accidents, gun violence, falls, or sport injuries. The biotech company Geron has been granted FDA approval to start clinical trials treating patients with spinal injuries using human embryonic stem cells. The cells, which are "coaxed" into becoming nerve cells, are injected into the spinal cord. The trials are being conducted in an Atlanta hospital on patients who sustained spinal cord injuries about 14 days before the start of the trial to determine whether the treatment is safe, let alone successful. Research has shown that mice with spinal cord injuries regained some movement after being treated with the cells.

According to its president, Dr. Thomas Okarma, Geron has "[been working with] human embryonic stem cells since 1999" and spent approximately $170 million on developing the treatment. The stem cell treatment still has years of trials and approvals ahead of it before it can be put on the market. According to Ben Sykes, executive director of the UK National Stem Cell Network, "This is indeed a significant milestone in our journey towards the promise of stem cell-based medicines."

Meanwhile in the UK, at the University College of London, Professor Chris Mason, an expert in regenerative medicine hopes to begin trials next year with a stem cell treatment for macular degeneration.

Judge Rules Health Law Is Constitutional

Recent health reforms mandate most Americans to obtain health insurance, a commercial good might fall to the Supreme Court hearing. Meanwhile however, a federal judge in Michigan dismissed one of the 15 challenges to the recent health laws, becoming the first judge to state that the law is constitutional. Foregoing insurance would increase the cost of insurance in addition to affecting 'interstate commerce.'

Virginia Saurman is a staff writer for TuftScope.

SCIENCE REPORT

Recent Developments In Alzheimers Disease Research and Treatment

Eliza Heath

Alzheimer's disease is a degenerative brain disease that is growing increasingly common among the elderly. According to the National Alzheimer's Association, Alzheimer's disease currently afflicts an estimated 5.3 million people over the age of 65 in the United States alone, and is expected to afflict 11 million or more by 2050. Currently, there is no cure for Alzheimer's. Alzheimer's disease is difficult to detect efficiently; many existing tests are inaccurate, expensive, invasive, or difficult to administer. Detection is also complicated by Alzheimer's disease's symptoms being similar to many other cognitive problems, particularly in its early phases. In fact, the only existing method of certain diagnosis is an examination of the brain tissue of the deceased.[1]

As Alzheimer's disease becomes more prevalent, it has become increasingly obvious how essential early detection and treatment are to combating the disease. In a recent article in *Time*, Alice Park stressed the importance of the medical community focusing its efforts on Alzheimer's disease research and treatment.[8] In a recent poll, 81% of respondents reported to see "great progress" being made toward curing heart disease. 71% felt the same way about curing cancer. Only 48%, however, shared that belief regarding Alzheimer's.[9] Much of this perception, and the reality behind it, stems from a lack of spending on Alzheimer's disease research. A meager $500 million is spent a year on studying Alzheimer's disease, compared to $1 billion a year on cancer research and $5.6 billion on heart disease. Though heart disease and cancer may be more frightening, "what is going to get most of us in the next few years is Alzheimer's," explained Dr. Ronald Petersen, director of the Mayo Clinic Alzheimer's Disease Research Center. His concern is valid: health experts currently estimate that a 65 year-old American has a 10% risk of developing Alzheimer's disease.[8]

Despite a lack of funding compared to other major health threats, many are attempting to develop better methods of detection and treatment. Within the past year, and particularly within the last few months, substantial progress has been made in the areas of Alzheimer's disease research, detection, diagnosis, and treatment.

One of the first obstacles to progress is a lack of communication of research between different groups working toward common goals. Because of differences in diagnostic methods and research standards, time and effort are wasted in redundant research and translating the research of others into familiar terms. This issue may soon be resolved, thanks to a collaboration aimed specifically at combating the most problematic inconsistencies found in this area; this September, the Canadian Institutes of Health and Research has partnered with research centers in the United Kingdom and Germany with the goal of creating universal standards for animal models, brain imaging, and biomarkers used when researching Alzheimer's disease and other neurodegenerative diseases. The £3 million, three-year initiative aims to eradicate the obstacle of miscommunication and inconsistencies within this research in order to maximize efficiency and progress.

Despite this barrier to progress, a number of research groups and pharmaceutical companies have accomplished substantial advancements toward Alzheimer's disease detection, diagnosis, and treatment. The most promising of these breakthroughs has led to a method of detection that could revolutionize the accessibility and accuracy of Alzheimer's disease diagnosis. Researchers at UT Southwestern Medical Center participating in a statewide study have identified a set of proteins in blood serum that may prove to be an accurate and accessible method of diagnosing Alzheimer's disease.i

Based on this set of proteins, the research team has developed an affordable and relatively noninvasive test. The test allows for the examining of over 100 blood proteins and, through a mathematical analysis developed at UT Southwestern Medical Center, the measuring of a person's risk of having Alzheimer's disease. When combined with a clinical exam, this measurement proved to be 94 percent accurate in identifying suspected Alzheimer's disease in patients, and 84 percent accurate in ruling out Alzheimer's disease.

According to Dr. Diaz-Arrstia, one of the researchers and authors of the paper on these findings, this test would be equivalent to testing blood cholesterol to detect cardiovascular disease. i, The research team hopes that this test will be easy to administer at hospitals and clinics, and will provide a more affordable, approachable method of screening. By making detection more accessible and frequent, the team also hopes to allow for earlier treatment for those who do have Alzheimer's disease, which would in turn open the door for more efficient early management of Alzheimer's disease.

Another promising development in the field of detection came earlier this month, with the announcement that a 30-second Alzheimer's disease screening may be available in as few as two years. The test, which users a computer program to study a patient's reaction time, would be completely noninvasive and could be performed in GP's surgeries.[7] The test is aimed at being used to detect Alzheimer's disease in patients as young as 40. Early detection, when combined with new drugs and preventive lifestyle changes, such as a healthier diet and increased exercise, may mean that some people who show signs of Alzheimer's disease never actually develop symptoms.

In the field of treatment, progress has not come as easily, though several big-name pharmaceutical companies, including Pfizer, Lilly & Co., and Johnson & Johnson, are working to develop treatments.[6] Both Pfizer and Lilly recently suffered

Eliza Heath is the Manuscript and Layout Editor of TuftScope.

setbacks with their respective treatments that were in development. In March, Pfizer and Medivation announced that Dimebon, a promising and potent treatment that Pfizer bought licensing rights to in 2008, failed in a large late-stage trial. Lilly announced in August that it was halting development of one of their drugs, semagacestat, after patients experienced worsening conditions and an increased risk for skin cancer.[1,5] Lilly has had greater success with solanezumab, their second experimental drug aimed at targeting what is believed to be onr of the central causes of Alzheimer's disease. Though both semagacestat and solanezumab attack amyloid plaque in the brain, they used different methods; semagacestat is a pill that blocks an enzyme which aids the formation of amyloid, while solanezumab is an intravenously delivered antibody that "essentially vacuums up amyloid" that is present in the brain before it forms plaque. According to Jan Lundbery, head of Lilly's research unit, "So far, the safety profile of solanezumab appears to be very good."[6]

At the moment, our lack of understanding the disease itself acts as a significant speed bump in the road of developing both diagnostic methods and treatments. As research methods become more efficient and detection more accessible, those studying Alzheimer's disease will have greater resources as their disposal. Additionally, there is strong incentive for better research and treatment, especially for pharmaceutical companies; industry analysts predict that a new drug able to modify the progression of Alzheimer's disease would be exceptionally profitable, tapping into a multi-billion dollar market.[6] Though we're a long way from curing this increasingly threatening disease, progress is being made at a near-constant rate, and significant advances are on the horizon.

References

1. McKenzie, Aline . UT Southwestern Medical Center. 12 Oct. 2010. 12 Oct. 2010 <http://www.utsouthwestern.edu/utsw/cda/dept353744/files/611496.html>
2. Glauser, Wendy. CMAJ. 14 Sep. 2010. 11 Oct. 2010 <http://www.cmaj.ca/cgi/rapidpdf/cmaj.109-3669v1?maxtoshow=&hits=10&resultformat=&fulltext=alzheimer's+&searchid=1&firstindex=0&sortspec=date&resourcetype=hwcit>.
3. O'Bryant, Sid E., PhD., et al. Archives of Neurology. 13 Sep. 2010. 12 Oct. 2010 <http://archneur.ama-assn.org/cgi/content/full/67/9/1077?maxtoshow=&hits=25&resultformat=&fulltext=alzheimer's+&searchid=1&firstindex=0&sortspec=date&resourcetype=hwcit#sec4>.
4. Wang, Shirley S. The Wall Street Journal. 3 Mar. 2010. 11 Oct. 2010 <http://blogs.wsj.com/health/2010/03/03/pfizer-backed-experiment-drug-for-alzheimers-fails-in-trial/>.
5. Loftus, Peter , and Jonathan D. Rockoff. The Wall Street Journal. 18 Aug. 2010. 11 Oct. 2010 <http://online.wsj.com/article/sb10001424052748704554104575435310857309800.html>.

NEWS BRIEFS

JAMA: A National Health Agenda for Asian Americans and Pacific Islanders

Virginia Saurman

As a demographic, Asian American and Pacific Islanders are a group about whose health very little is known. Current research on Asian Americans and Pacific Islanders conducted by the Department of Health and Human Services (HHS) is too infrequent and does not adhere to one standard for the data to be statistically relevant. While Asian American and Pacific Islanders have been described as a "model minority" for their low incidences of diseases that affect other segments of the American population, recent research has shown that they have higher rates of hepatitis B, liver cancer, tuberculosis, lung cancer and thalassemia. In the Journal of the American Medical Association, Chandak Ghosh, MD, MPH argues that there needs to be a national Asian American and Pacific Islander health agenda. Within the past ten years, various attempts to improve Asian American and Pacific Islander health have been conducted by New York University's medical school, the National Cancer Institute, the University of California Davis Cancer Center, Temple University, and the United States Department of Health and Human Services. Their research and other efforts have shown that there are health disparities between the rest of the population and the various subgroups that exist under "Asian American and Pacific Islander". A national health agenda for this demographic is necessary because current methods of gathering data are not efficient; the various subgroups are too spread out in too few numbers to be analyzed statistically accurately for larger clinical studies. Dr. Ghosh lists several goals for the national Asian American and Pacific Islander agenda. One organization must head the whole agenda, while at the same using the numerous resources available from other contributing groups. The agenda must also work to improve local organizations so they can reach out better to members of the Asian American and Pacific Islander communities. An annual health report should be published, and hospitals and research institutions should be involved. The media should also be involved. The more people are aware of the issues facing Asian American and Pacific Islanders the better they will be helped. The results of this health agenda would be better research with statistically accurate data, better community outreach, and finally better care.

Virginia Saurman is a staff writer for TuftScope.

ORIGINAL ARTICLE

Developing a Nursing Registration System in the Republic of Georgia

Constantine P. Saclarides

There is a global shortage of health care professionals, especially nurses, and low staffing levels directly correlates to poor quality of patient care. The Republic of Georgia, a former Soviet state, is a politically, economically, and socially developing country with a transitioning and reforming health care system that has been hindered by low nurse staffing levels. This overview describes the development of a national, electronic and web-based nursing registration database system that will analyze the specific need for nurses by determining the number, education, and specialty of nurses now practicing in the country, and the settings in which they work. The results of this database will facilitate the development of education courses to meet specific clinical needs, help to fully utilize nursing resources, and ultimately increase the quality of clinical practice, health care delivery, and national health status in Georgia.

INTRODUCTION

6,322 miles from Atlanta is another Georgia, a country smaller than South Carolina, with half the population of the greater Chicago area, and has only 1.6 times the funding of Tufts University.[1,2] Despite its seemingly insignificant size and influence, Georgia has played a central role in regional politics for centuries as one of the only Christian, democratic countries (actually, the first) in the region, surrounded by Muslim, totalitarian nations. A former Soviet state located in the Caucus Mountains, Georgia is a developing country whose health care system is currently in a state of transition and reform. It is shown that low nurse staffing levels hinder the development of the health care system.

Nursing on a global level

The world has entered a critical period of human resources for health, and the scarcity of qualified nurses is amongst the most challenging obstacles to improving health care.[3] As indicated by Buchan and Aiken et al. in Solving nursing shortages: a common priority[3], low nurse staffing levels are linked to multiple negative health outcomes, including: increased mortality rates[4], adverse events after surgery[5], increased incidence of violence against staff[6], increased accident rates and patient injuries[7], increased cross infection rates[8], and frequent job burnout.[9]

THE GEORGIAN HEALTH CARE SYSTEM

During the communist era in Georgia (1921-1991), the Soviet health care system, referred to as the Semashko model, was adopted. Characterized by universal, free health care, hierarchical facilities, and publicly funded institutions, the Semashko Health Care System was a highly centralized and efficient system that temporarily elevated the quality of health and health care in Georgia. Nevertheless, Georgia was not able to sustain the resource intensive system following the fall of the Soviet Union, especially considering its basis on hospital, in-patient medical care and lack of focus on primary care and preventive medicine. Public funding fell from $149 per capita to $.45 per capita in 1990. The 51-54.5% of the Georgian population living below the poverty line struggles financially, in part due to this expensive, corrupt payment system.[10] The results of a 2000 Tbilisi household survey conducted by the Curatio International Foundation indicate that the poorest households spend almost a quarter of their income on out of pocket health care expenses compared to only 15% by wealthier.[11] Moreover, the struggling state of the Georgian health care system is reflected in the country's poor national health status: life expectancy is low (73.1 years in Georgia compared to 78.5 in the E. U.), maternal mortality rates are high (40.3 per 100,000 in Georgia compared to 11 per 100,000 in the U. S.), and infectious diseases, especially tuberculosis, are still significant public health problems.[10]

The health care system has undergone a series of reformations since independence from the Soviet Union. 1995 marked the introduction of a social health insurance program that made payroll taxes mandatory for the development of a state health fund (SHF); however, it was abolished in 2004. Thereafter, the Governmental Commission for Health and Social Reforms, the State Minister of Public Reforms, and the Ministry of Health, Labor, and Social Affairs (MoHLSA) developed "Main Directions in Health 2007-2009", which outlines a three year health sector transformation. It focused on ensuring affordability, quality, accessibility, and efficiency of health services. It also introduced market-based principles to health care management; nearly 80% of hospitals were sold to the private sector in 2007 as a result. Despite these continued attempts at reformation, Georgia is hindered by lack of political will to prioritize health for national development and fund the health sector accordingly.[10]

Nursing practice and nursing education in georgia

Nursing in countries in transition from a totalitarian government to a democracy, such as Georgia, is especially important to the quality of health care delivery.[10] Despite this crucial role of nurses, the quality of nursing practice was negatively impacted by recent events in Georgia, including: the socioeconomic crises, civil war, increased unemployment, and intensive migration observed since the 1990's.[10] The quality of nursing practice was exacerbated by the relocation of 270,000 internally displaced persons (IDPs) following the recent civil wars in Abkhazia and South Ossetia; many hospitals were

Author Contact: C.S. Vanderbilt University, 2011. Address correspondence to C.S. at constantine.p.saclarides@vanderbilt.edu

overtaken by IDPs following the conflicts.[13]Furthermore, nursing departments are severely understaffed; the ratio of nurses to physicians in Georgia 0.9, which is significantly lower than that of more developed countries with more effective health care systems.[10]

The health care system is controlled by the MoHLSA, and the current state of nursing education and its regulation does not demonstrate promise for improving the quality of clinical nursing practice. Relative to western standards, the quality of nursing education is very low, and little has changed in the structure of nursing education since the fall of the Soviet Union. Nurses are only educated in 'nursing colleges' that offer technical medical education; currently, no university level baccalaureate programs are offered in nursing. Nurses have the option to begin education after ninth grade, followed by three years of training, or after eleventh grade, followed by two years of training. Many nurses are simply medical students who begin working part time during medical school. There is no national competency examination or standard licensure for nurses; hence, determining the quality and legitimacy of resource limited nursing institutions and private nursing schools proves to be difficult. This absence of a systematic, federal regulation of the nursing profession explains the lack of public respect for nurses. Only recently was nursing recognized by Parliament as a separate profession, and the first national nursing organization, the Georgian Nursing Association (GNA), was created.[13] This lack of education regulation also correlates to lower quality of health care delivery and poorer patient health outcomes; it is shown that patient outcomes suffer if nurses are not educated and prepared to meet the modern challenges in healthcare.[13]

Research on the relationship between patient outcomes and nurses' level of education shows that in hospitals with higher proportions of nurses educated at the higher level, patients experience lower mortality rates.[14] Therefore, improving the quality of nursing in Georgia would correspond to decreased severity of health discrepancies, improved health care delivery, and improved health status.

REGISTRATION SYSTEM AS PREFACE FOR IMPROVING CLINICAL COMPETENCY OF NURSES

Partners for International Development (PfID), a nongovernmental organization funded by the United States Agency for International Development (USAID), and the Georgian Nursing Association (GNA) are collaborating in the execution of a multidimensional health care reform initiative, which includes improving the quality of nursing in the Republic of Georgia. The development of a national nursing database registration system is one component of this program, and it will strengthen the nursing profession in several ways. Firstly, the nursing database will create national avenues of communication between nurses, health administrators, and governmental officials. Currently, the paper-based reporting structure for nurses is unreliable and results in discrepancies between different national data sources, as well as highly variable records of trends in nursing education.[10,15] Lack of reliable nursing workforce information also seriously impairs the development of effective workforce policy and the appropriate allocation of resources.[15] Hence, the conversion to an electronic, web-based system will provide accurate and easily accessible workforce data capable of influencing health policy in the MoHLSA.[16] Secondly, the national registration system will accurately determine the number of nurses in the country, (which is currently unknown), as well as document their personal demographic information, educational history, and work experience. Knowing the level of training nurses have received will facilitate the development of education courses to meet specific needs and therefore help to fully utilize nursing resources. Developing such opportunities for higher nursing education will correlate to improved national health. Thirdly, the database system will help Georgian nursing to achieve its full potential; workforce data is a necessary prerequisite for the effective deployment of staff because it enables nursing managers to review patterns of activity and education.[16] PfID partners will consult with MoLHSA regarding development of a countrywide database for nursing including employment institution and positions of practicing nurses.

Conclusion

Developing a nursing database system in Georgia will facilitate the development of educational programs to address inadequacies in the training of nurses, which will strengthen the competency of nurses in a clinical setting and ultimately improve the quality of health care nationwide. Education programs for nurses have been developed through the Emory University Atlanta-Tbilisi Partnership, whose aim is "to build a lasting bridge between…academic communities, and to make a long-term impact on the quality of education, science and health in the Republic of Georgia".[18] Through this partnership, courses in Nursing Triage, Infection Control, Pain Management, Intravenous Therapy, Physical Assessment, and other disciplines have been developed at several partner hospitals in Tbilisi, including: Iashvili Central Children's Hospital, Gudushauri National Medical Center, National Center of TB and Lung Diseases, and the Central Clinical Hospital. These programs are proven to be effective; nursing students in 2006 demonstrated an increase in scores by 27.5% between mean initial and final test scores. The complete nursing workforce assessment and database development, and conversion of the paper-based reporting structure to an electronic, web-based model will require an estimated three years, $29,765.20 budget, and 25 person reporting structure to execute. Upon completion, the database system should focus the efforts and funding of USAID and PfID in targeting the deficiencies in clinical training of nurses to improve clinical efficiency and competency.

References

1. Ministry of Finance of Georgia. "A Citizen's Guide to the 2010 State Budget of Georgia." January 2010. http://www.mof.gov.ge/en/4070.
2. Tufts University. "Annual Financial Report of Tufts University." 2009.
3. Buchan, James, and Aiken, L. "Solving nursing shortages: a common priority." Journal of Clinical Nursing. 2008; 17:3262-3268.
4. Aiken L.H., et al. "Hospital nursing staffing and patient mortality, nurse burnout, and job dissatisfaction." Journal of American Medical Association. 2002: 288:1987-1993.
5. Kovner C., and Gergen J. "Nurse staffing levels and adverse events following surgery in US hospitals." Journal of Nursing Scholarship. 1998; 30:315–321.

EDITORIAL

Michelle Obama's "Let's Move" Campaign: Revolutionary or Impractical?

Eriene-Heidi Sidhom

On Tuesday, February 9, 2010 First Lady Michelle Obama announced her campaign, *Let's Move* ,in an effort to combat the growing problem of childhood obesity.[1] The campaign's goal is ambitious, to say the least: eliminate childhood obesity in a single generation so that today's kids grow up to be adults of a healthy weight.[2]

The Problem At Hand

Childhood obesity must be addressed both because it negatively impacts our children and because we know that obese teens are more likely to be obese adults. There is a definite need for action considering the statistics concerning childhood obesity rates in the United States: the rate of childhood obesity has tripled in the last thirty years so that today one-third of children in the United States are overweight or obese. Think about what that number means: one in every three children suffers from the effects of an elevated BMI. Additionally, the effects of childhood obesity have long-term health consequences including heart disease, high blood pressure, diabetes, cancer and asthma.[1] These chronic illnesses cost the economy $147 billion per year[1] , linking the issue of childhood obesity to the ongoing debate of health care reform.[3]

Previous Endeavors

The First Lady's announcement in February does not represent the first time the Obama family has expressed an interest in fighting childhood obesity. In March 2009, along with fifth graders from the D.C.'s Bancroft Elementary, the President began an organic garden on the White House's South Lawn, the first vegetable garden since Eleanor Roosevelt's Victory Garden during World War II.[3] In looking for a solution to this problem, the First Lady surely looked at the efforts of those around her. There have been smaller movements throughout the country which have been successful and could offer a template for "Lets Move". Take for example, *Shape Up Somerville*, a program promoted by the Mayor Joseph A. Curtatone of Somerville, MA. The program aims to make small changes that all policymakers can support , such as repainting crosswalks with reflective paint to make it safer for children to walk to school [2] . By making it safer for children to walk to school the program hopes that it will encourage walking and a healthier lifestyle. The program also pays close attention to the foods which are available in and around schools, working with Tufts University to make small, but significant changes to lunch menus and cafeteria practices. Through these small changes the program has been able to slow the rate of childhood obesity. In keeping with this philosophy of small changes, the First Lady has said her "Let's Move" program is "about balance and really small changes that can add up, like walking to school when you can, replacing soda with water or skim milk, trimming portions just a little".[1]

Changing a Nutritional Environment

The "Let's Move" Campaign is based on four pillars:

1.providing access to more nutritional information
2.increasing children's physical activity
3. providing easier access to healthy foods
4. issueing a call for personal responsibility.

President Obama has recognized the fact that in order for a program against obesity to be effective, proposed changes need to be manageable and respect families' schedules, budgets, needs and tastes. Therefore, a primary goal of the campaign is to give parents and children the tools they need to make healthy decisions. For example, the President's Council on Physical Fitness & Sports will shift its focus from athleticism to a focus on health and well-being.[3] Additionally, the website "LetsMove.gov" provides tips on eating well and staying fit which can be easily integrated into any lifestyle.[2] *Lets Move* also plans to use celebrities to target the younger demographic. The program is enlisting the help of professional athletes who will promote "60 minutes of Play a Day" public service announcements, as well as spokespeople like Mo'Nique and Nelly Furtado.[3,1]

While these increases in information are essential, the campaign also admits that ,regardless of the amount of information available, a child's "nutritional environment" must be changed in order to achieve tangible results. These changes would include easier access to fresh fruits and vegetables in local cafeterias and supermarkets. *Lets Move* also hopes to see cooperation from beverage makers with the creatation of consumer-friendly labeling on cans, bottles, and vending machines within two years.[3,1] In order to encourage physical activity, the campaign will also promote community projects such as new bike paths and playgrounds.[3] The promotion of bike paths and playgrounds was an important aspects of the *Shape Up Somerville* campaign as these improvements increased family-friendly physical activities available in local communities.

In order to fulfill the goals of increasing information and changing nutritional environments, the First Lady has gathered the support of many individuals. At the time of the announcement, both a Republican and Democratic mayor were present in order to show bipartisan support of the campaign.[3] Additionally, Dr. David Ludwig, Director of the Optimal Weight for Life Program at Children's Hospital in Boston, has applauded First Lady Michelle Obama's efforts, saying that "never before has the childhood obesity epidemic become a high priority of both the President and the First Lady."[1]

In order to implement the four pillars of the program, various organizations have been recruited. Sodexo, Chartwells

Eriene-Heidi Sidhom is the Senior Financial Officer for TuftScope

Schools Dining Services and Aramack, suppliers of school lunches, have all pledged to reduce fat, sugar and salt in their meals over the next five years. Additionally, the American Academy of Pediatrics has agreed to encourage physicians to measure body mass index as an indicator of obesity.[1] At the government level, the First Lady has received Presidential support in a variety of forms, including $1 billion per year for the next ten years, a Childhood Obesity Task Force, a *Let's Move* website, the reauthorization of the Child Nutrition Act, and $400 million over the next year for the Health Food Financing Initiative in order to build healthy food outlets in urban and rural communities.[3,4]

Too Much, Too Little or Just Right?

However, for every supporter there is a critic. The criticisms of this campaign include its funding, the feasibility of its implementation, and comparisons to failed past attempts at curbing childhood obesity. One of the key goals of the campaign is to provide healthier lunches in schools. However, healthier usually means more expensive ;therefore ,the healthier lunch choices may be met with resistance from school boards worried about cost.[1] Additionally, despite $1 billion allocated to the campaign to bring healthier lunches to schools, this is a mere ten percent of the $9.3 billion[4] that is currently spent nationally on public school lunches.[5] The task force which has been assembled to help carry out the campaign is also under scrutiny. Although this task force is composed of individuals from many different departments, all of these departments have many other projects and responsibilities. Because the Task Force's role is strictly advisory, the actual influence they could have is debatable.[5] Many people also want the First Lady to take an even more drastic stance against childhood obesity. The Center for Science in the Public Interest wants President Obama to remove all junk food from schools as well as advertisements for junk food in children's programming. Others want the government to address the farm subsidies, which currently allow for the artificially low price of chips and other snack foods.[3] These changes are met with resistance as they will have large scale economic impacts as well.

Despite the hype that *Lets Move* may be a revolutionary change , there are also doubts that this campaign will be enough. Previous administrations have tried to address this issue to no avail. For example, the second Bush administration set up the Task Force on Media and Childhood Obesity, which was headed by the Federal Communications Commission [6] in order to reduce childhood exposure to unhealthy eating habits. However, it saw little success possibly because of the members' close ties to companies such as Coca-Cola (TM) and McDonald's (TM). Additionally, the FDA's Obesity Working Group, which attempted to tackle obesity in both adults and children, only managed to affirm that "calories count."

The current Interagency Working Group on Food Marketed to Children, which consists of four agencies set up to determine which foods can be marketed to children, has yet to make any significant changes.[5] The *Let's Move* website bears signs of committing the same mistakes as these early programs. For example, the two programs listed to help promote healthier schools ,the Healthier US School Challenge and the Team Nutrition Program are both under the US Department of Agriculture, whose main goal is to promote industrial agriculture, which has inherently opposing goals to those of the *Let's Move* campaign.[5] Therefore, despite the revolutionary changes that this campaign hopes to make, the high hopes are dulled by a less-than-successful history as well as the current campaign's dependence on the old organizations.

Finally, despite the First Lady's assertion that "there is nothing Democratic or Republican, there is nothing liberal or conservative about wanting our kids to lead active, healthy lives," any program that is sponsored by the First Lady has inherently political underpinnings.[4] With Republicans already accusing President Obama advocating big government, the First Lady has been cautious to ensure that she doesn't "ruffle [the] feathers of the food industry."[1] The First Lady has repeatedly assured us that the campaign does not tread on constitutional issues but rather advocates individual responsibility. When speaking at the annual winter conference of the National Governor's Association, she maintained that the campaign was not treading on states' rights. Despite her insistence, parallels are being drawn between her view of "moderation and perspective" concerning a healthy lifestyle and the President's message of personal responsibility when speaking to Wall Street bankers and the CEO's of health insurance companies.[4] Additionally, she introduces a pre-existing debate on conventional production versus organic sustainable production. Her lack of criticism of the billions of dollars spent on advertising junk food to parents and children has people questioning the political influences on the First Lady and the Campaign.[5]

First Lady Michelle Obama's campaign against childhood obesity has definitely spurred debate on this widespread and worsening epidemic. The goals of the campaign are ambitious; however, the success of *Lets Move* would be a great thing for our youth. Whether the skeptics are correct in doubting the effectiveness of the structure of the campaign or if this campaign will ultimately succeed despite past failures to address obesity, remains to be seen. We may not agree on the methods and *Lets Move* may or may not prove to be adequate; however, the one issue that no one is arguing is the weight of the problem and the absolute need for change.

References

1 Stolberg, Sheryl G. "Childhood Obesity Battle is Taken Up by First Lady." The New York Times 2010, February 10. Web. October 11, 2010 http://www.nytimes.com/2010/02/10/health/nutrition/10obesity.html?_r=1.

2 "Michelle on a Mission." Newsweek 2010, March 14. Web. October 11, 2010 http://www.newsweek.com/2010/03/13/michelle-on-a-mission.html.

3 Givhan, Robin. "First Lady Michelle Obama: 'Let's Move' and Work on Childhood Obesity." BlueCross BlueShield Association 2010, February 10. Web. October 11, 2010 http://www.bcbs.com/news/wellness/first-lady-michelle-obama-let-s-move-and-work-on-childhood-obesity-problem.html.

4 Kohan, Eddie G. "First Lady Michelle Obama Asks America's Governors to Join the Let's Move Campaign." Civil Eats 2010, February 23. Web. October 11, 2010 http://civileats.com/2010/02/23/first-lady-michelle-obama-asks-americas-governors-to-join-the-lets-move-campaign-video/.

5 Simon, Michele. "Michelle Obama's Let's Move - Will it Move Industry?" Alternet 2010, March 14. Web. October 11, 2010 http://blogs.alternet.org/appetiteforprofit/2010/03/14/michelle-obamas-lets-move-will-it-move-industry/.

EDITORIAL

New York City's Organ Vehicle

Mark Leiserson

It is no secret that organ donations in the U.S. do not meet the needs of the public; there are generally 100,000 people waiting for donor organs at any given time.[1] This remains true despite both the efforts to make registering as an organ donor easier and the widespread publicity of the multiple lives a single organ donor can save. By all accounts, the main way this shortage can be alleviated, and the thousands of people in the U.S. who are waiting for life-saving transplants can be provided for, is through a dramatic increase in organ donors. For example, Spain and Norway, international leaders in the proportion of organ donors in the population, have seen their waiting lists remain consistent or even shrink.[2] Spain's high rate of organ donors is in large part due to their "opt out" program, where individuals are organ donors unless they specifically request not to be, and there are bills to adopt just such a policy in states in the U.S. (note that the National Organ Transplant Act of 1984 gives states the prerogative to determine their own organ donor policies[3]).

However, even with a dramatic increase in organ donors, there would remain another key challenge: 95 percent of deaths happen outside of a hospital,[4] and there is only a 20-30 minute window after death in which organs can be saved.[5] Consequently, current policy is that only those who die in hospitals are eligible to be organ donors. Thus even if organ donor rates rose prodigiously, a large share of life-saving organs would not be preserved in time.

But New York City has proposed a unique plan to address this challenge: an "organ preservation vehicle." The sole responsibility of the vehicle would be to monitor police and ambulance radio frequencies to identify individuals who are declared dead but have no chance of reaching a hospital in time for their organs to be preserved. Then, when such an individual is found, the vehicle would rush him or her to the hospital. In this manner, a greater proportion of donor organs could be saved, at least in situations where an ambulance or police officer arrived shortly after an individual died. This would provide a much-needed increase in efficiency for life-saving transplants.

Just as it seems every organ donation policy has, the organ preservation vehicle has created controversy. First and perhaps most alarming is the myth that individuals will be prematurely declared dead on scene in order for the organ preservation team to take that person's organs. This is just a variation of the myth[6] that permeates all organ donation: that doctors do not work as hard to save the lives of organ donors. Nevertheless the organizers of the organ preservation vehicle project have addressed the issue by requiring the preservation team to remain out of sight of the paramedics and police until an individual has been declared dead. Consequently, those on the scene would not be certain that the organ preservation vehicle would arrive even if they were to declare an individual dead. The second major challenge to the organ preservation vehicle is that it could impede effective investigations by the police. When the cause of death is unclear and unusual, the police are required to turn the body over to a medical examiner to investigate the cause of death. At that point, only the medical examiner can release the body and allow its organs to be preserved. However, with such a short window of time, critics of the organ preservation vehicle are concerned that police officers will have to make the decisions usually under the jurisdiction of the medical examiner.

Despite these concerns, the police and medical examiner's

Mark Leiserson is the Managing Editor for TuftScope

According to organdonor.gov, 77 people receive organ transplants each day. However, 19 people also die each day, waiting to receive a donated organ. To learn more about how to become an organ and tissue donor, visit: http://organdonor.gov/donor/index.htm.

offices in New York City have agreed to a pilot program of 4-6 months to evaluate and tweak the organ preservation vehicle program if necessary. Given that no new issues arise, the program is expected to expand and perhaps be adopted by other regions. While progress on an opt-out organ donor policy remains piecemeal and roughshod, progress is being made on the second major challenge of organ donation, which is to conserve the organs of the 95 percent of donors who die outside hospitals.

References

1. Brody, Jane E. "Out of Grief Sprouts a Life-Saving Legacy." The New York Times. The New York Times Company, 17 Aug. 2010. Web. 17 Aug. 2010.
2. Camero, S., and J. Forsythe. "How Can We Improve Organ Donation Rates? Research into the Identification of Factors Which May Influence the Variation." Nefrología 21.5 (2001): 68-77. Web.
3. Drexel, Kafi. "NYPD Signs Off On Organ Transport Pilot Program." NY1. NY1 News, 13 Aug. 2010. Web. 9 Oct. 2010.
4. Hartocollis, Anemona. "A Plan to Recover More Organs for Transplant Runs Into Difficulty." The New York Times. The New York Times Company, 02 Aug. 2010. Web. 02 Aug. 2010.
5. H.R. 4080, 98th Cong., U.S. G.P.O. (1984) (enacted). Print.
6. Mayo Clinic. "Organ Donation: Don't Let These Myths Confuse You." Cleveland: Mayo Clinic, 2010. 03 Apr. 2010.

NEWS AND VIEWS

Donate Your Organs... From Your iPhone?

A little known app developer named Raymond Cheung developed an Apple application which allows people to sign up to become organ, tissue and eye donors in just 5 minutes. The application, DonateLives, can be downloaded free of charge. You then choose your state of residence (states have differing laws concerning organ donation). Once you chose your state, you enter a bit of personal information and then click submit. DonateLives allows you to choose to donate organs, tissue and eyes and even has an option to donate for research purposes. These are options not available at most state Departments of Motor Vehicles and thus such specifics are often not found on a driver's license. preferences and generosity

RESEARCH HIGHLIGHT

Varied Rate of Transfusion During Bypass Surgery Found in US Hospitals

Caroline Melhado

A study published in the Journal of the American Medical Association, found a wide variability in the frequency of blood transfusions during Coronary Artery Bypass Graft Surgery (CABG) Surgery in hospitals. Researchers used previously collected data from the Society of Thoracic Surgeons Adult Cardiac Surgery Database to analyze the number of patients who received plasma, platelet or allogeneic red blood cells through transfusion. The study found wide discrepancies among hospitals in the US, that remain largely unexplained.

Hospitals that had one CABG surgery per month were included in the trial. Of these 798 sites 102,470 patient reports were examined over 2008. A smaller database, only including hospitals that performed more than 100 surgeries a year found that transfusion rates for plasma differed between hospitals by 0 to 97%, red blood cells 7.8 to 92.8% and 0.4 to 90.4% for platelets.

After controlling for case variability researchers found a significant differences in rates that varied by hospital characteristic. Teaching hospitals and hospitals with a fewer cases of CABG surgery were more likely to have higher rates of transfusion. Rates also differed by geographic region. However multiple modeled analysis concluded that these three factors only factor for 11.1 % difference between rates, while case mix accounted for 20.1%

While the STS has put out numerous regulations on methods of transfusion this study demonstrates that a large range of variability in following these protocols still exists. Further research might shine light on the still unexplained variability that exists between these hospitals.

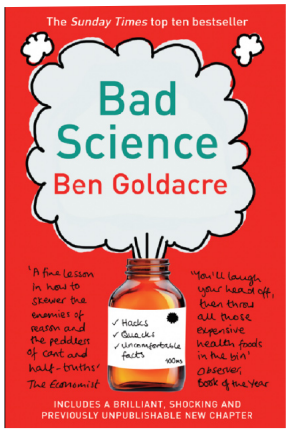
Reference: *JAMA*. 2010;304(14):1568-1575. doi:10.1001/jama.2010.1406

Caroline Melhado is the Research Highlights Editor of TuftScope.

BOOK REVIEW

Bad Science

Book by Ben Goldacre
Reviewed by Brian Wolf



As a basis for *Bad Science*, Ben Goldacre, utilizes shocking statements and media stories to create a novel that depicts and dissects the relationships between science, media, and consumers. Since 2003, Ben Goldacre, a doctor for England's public healthcare system (NHS), has been writing a column for the *The Guardian*, on the abundance of careless science reporting in the media. His articles mainly focus on the bad science that exists in the world. It appears as though he is waging a one-man battle against a band of imposters that promote bad science. By combining his knowledge of epidemiology and public health, research skills, legal assistance, and, most importantly, his steadfast commitment, Goldacre aims "to teach good science by examining the bad." Right now, the public needs more Ben Goldacres, who act in the best interest of the consumer, not the producer.

With topics that range from homeopathic remedies to health epidemics, Goldacre's book begins with a chapter entitled "Matter" that describes a detox footbath that uses various techniques to "adjust the bio-energetic field" of water. By sticking your feet into this bath, a murky fluid forms, which is said to be toxins released from your body. Based on the toxins released, a so-called professional can read the toxins to determine the condition of your body. However, the toxins (or, rather, rust) are produced whether or not your feet are in the bath. These fake results from the "theatre of goo" exemplify the increasing need for control experiments to test hypotheses. What is most surprising about this example is that it involves the prevalence of deception that exists in various fields of medicine, ranging from herbalists to pharmaceutical corporations.

The main audience for Bad Science is the mainstream public who should be aware of the facts that affect their lives. Everybody can learn something from this book. The chapter on "Why Clever People Believe Stupid Things" discusses how individuals want to see patterns and causal relationships where there are none. Confirmatory information can support hypotheses and individuals are less inclined to challenge these hypotheses if they appear to be wrong. According to Goldacre, "It's not safe to let our intuitions and prejudices run unchecked and unexamined."

While Goldacre writes about how the system as a whole is at fault, he focuses numerous chapters on specific individuals, ranging from nutritionists to lab researchers. The individuals under scrutiny by Goldacre have many fake qualifications and make fortunes using science jargon and formulas to sell ineffective treatments for complex problems. With each chapter, Goldacre damages the credibility of these "psuedoscienists" while drawing the reader's attention to what the media inappropriately sells.

As an example, during the MRSA (a bacterial infection) crisis in England, *The Evening Standard* received letters from microbiologists that expressed doubts about the tests that the newspaper reported. The newspaper received their information and results from a single lab, which was later discovered to be a garden shed. The microbiologists asked this "lab" for their samples; the results showed a rare strain of the bacteria that is usually only found in Australia. Since the lab had done work for the Australian press, a high probability of cross contamination existed. In response to the letters from the microbiologists, *The Evening Standard* responded, "We believe the test media used… were sufficient to detect the presence of pathogenic type MRSA." It takes chutzpah for a newspaper with limited knowledge about microbiology to cavalierly tell a group of well-respected microbiologists that their information is wrong.

Despite Goldacre's best intentions to protect the public, he is constantly threatened with libel action from the individuals that he criticizes. In 2008, Goldacre beat off the legal threats of Matthias Rath, a doctor who denounces the need for antiretrovirals for HIV in order to promote his nutritional supplements as a better treatment. Although his ideas seem ludicrous, Rath made millions from his treatments and false claims. When Rath decided to drop his case and pay for Goldacre's legal fees, Goldacre released a new version of Bad Science that stresses Rath's wrongdoings and the need to prevent Rath's ideas from spreading.

The "dumbing down" of science articles is the greater concern to Goldacre. Without a strong foundation in scientific studies, journalists, according to Goldacre, have difficulty understanding the studies conducted and write articles that lack "any scientific meat." Goldacre stresses the need for the media for journalists who write articles on science to be able to evaluate the findings and present the correct information to the public. With good science, there is also bad science. Ben Goldacre has exposed to the public that anyone with a good set of research skills can distinguish between good and bad science.

Brian Wolf is a staff writer for TuftScope.

Bad Science
Ben Goldacre. Harper Perennial.
New York, NY, USA. 2009
$32.93 (hardcover) 304 pages
$14.00 (softcover) 288 pages

ORIGINAL ARTICLE

Prioritizing Improved Access to Public Health Resources Over Technology: The Pros and Cons of Teaching an Old Dog Tricks

Irene Swanenberg

The lack of "global justice" in the distribution of the world's enormous economic and public health resources has led bioethicists to examine the ethics of the relationship between resource-rich and resource-poor countries. Although virtually all of the world's poorest countries are indeed benefiting from globalization on an absolute scale, the unfairness lies in the relative distribution of this immense wealth of resources. Taking into consideration the tradeoffs presented by four basic ethical perspectives and the role of social determinants of health on the ethics of resource allocation, the author argues that public health resources should be allocated primarily to improving existing health care systems while limiting funding for basic science research. A case study analysis of malaria treatment campaigns illustrates the benefits of focusing on improving access to existing technologies instead of investing in future public health-related technologies.

INTRODUCTION

Bioethics addresses fundamental ethical controversies involved in challenging public health decisions. Public health workers often struggle to make ethical decisions because of the power they exercise over the poor, sick and those otherwise marginalized in society. Of particular concern to bioethicists is the lack of "global justice" in the distribution of the enormous economic and public health resources generated by globalization. Although virtually all of the world's poorest countries are indeed benefiting from globalization, the unfairness lies in the relative distribution of this immense wealth of resources.[1] That is to say, developing countries are not benefiting as much from globalization as developed countries. As an illustration, Daar refers to the well-established "10/90 gap" in which scientific advance- ments are almost entirely produced by rich countries for their own diseases at the expense of poorer countries' public health problems. [2] While the 10/90 gap shows the importance of changing research priorities in particular to ensure better public health on a global scale, the greater question is how to make the decision between focusing limited public health resources towards either the fidelity—the improvement of existing health care systems—or the efficacy—new basic science research developments—of public health strategies.

In support of longer-term technology solutions to resolve these fundamental public health resource inequalities, Juma recommend that developed countries invest more money in basic science research that could—once available—provide "improved diagnostic methods," "safer vaccines" developed from genetic engineering, and "injection-free and controlled-release delivery systems" that would directly benefit developing countries. [3] At first blush some may conclude that science research should certainly be public health's primary focus, because newly-developed technologies have shown great potential in the past (e.g. smallpox and polio vaccines) and will likely continue to improve global health in the future. But, certain tradeoffs need to be considered in order to come to this conclusion. Specifically, scientific research plans involving drug planning and animal/human trial stages can take decades to complete and might fail or not be as successful as promised, whereas improving existing successful public health strategies entails many fewer risks. Also, improving the efficacy of existing technologies and strategies tailored directly to developing countries ensures that these resources will be spent on public health problems relevant to the developing world as opposed to those of the richest 10% of the world.

Thus, given that public health resources allocated to basic science research cannot be used to treat those suffering today and vice versa, the essential question becomes: What should the balance be between long-term and short-term public health strategies from a bioethical perspective? And, by extension, are lives saved today (e.g. by improving the existing distribution of insecticide-treated bednets) "worth" more than lives saved in the future (e.g. by developing a malaria vaccine)?

Taking into consideration the tradeoffs presented by four basic ethical perspectives and the role of social determinants of health on the ethics of resource allocation, public health resources should be allocated primarily to improving existing health care systems while limiting funding for basic science research. By expanding efforts to better distribute medical supplies, to train new health care workers and to integrate existing scientific knowledge with public health practices to ensure local applicability of public health strategies, improving the use of today's public health resources is more ethical than investing in riskier, future science developments.

First, we will examine the fundamental philosophical views underlying bioethical decisions in order to assess the pros and cons of these two approaches to public health. Then, analysis of a case-study on technology's role in global malaria treatment will support the position presented in favor of improving access and use of existing resources.

Author Contact: I.S. Northwestern University. Address correspondence to I.S. at iswanenberg@northwestern.edu

PHILOSOPHICAL PERSPECTIVES: PROS AND CONS

Public health is not as grounded in a universal ethical framework as medicine, but four philosophical views are often consulted by public health practitioners as they attempt to reach a resolution to an ethical dilemma. First, utilitarianism strives to improve a population's "overall health" without regard to the means required by employing Jeremy Bentham's "hedonic calculus." [4] In this sense, a mathematical model that maximizes lives saved (by either improving fidelity or efficacy of public health resources) would be able to resolve the debate at hand from a utilitarian perspective. A theoretical model of this sort was in fact developed and analyzed by Woolf, who concluded that in developing countries "large and unrealistic increases in efficacy must be achieved to surpass the potential gains from improving fidelity."[5] That is to say, Woolf argues that resources should be focused on improving access to current public health access and not on developing new technologies.

However, utilitarianism (including Woolf 's model) has a few significant flaws in its assumptions. First, developed nations—who are in control of the vast majority of the world's public health resources—already have very high access to drugs and therefore might choose to emphasize development of new drugs instead of improving other populations' access to existing drugs. Second, the developing world emphasizes drug development for diseases that are more relevant to their own populations over drugs for diseases that cause the greatest health problems globally. As Cohen argues, certain diseases—including hookworm, schistosomiasis, and leprosy—are neglected by many developed countries' research initiatives despite their significance in developing regions of the world.[6] Third, although conclusions drawn from this model might be in the best interest of the world's global health, they cannot be directly translated into policy since this decision on the allocation of resources is determined by many different governments, NGOs and private groups and not by a single decision-maker. Despite these complicating factors, the principle of utilitarianism supports the decision to allocate resources to improve access to resources since it ensures better "overall" health of the world.

In contrast to utilitarianism, egalitarian (positive-rights) liberalism declares individual rights "paramount" and argues that people ought to be ends in themselves and not means to another's end. In this sense, it could be argued that by allocating resources away from increasing access to existing care towards research for future developments, people today are being used as means towards the ends of people in the future. The question thus remains: Is a life saved today worth as much as a life saved in the future? Utilitarianism offers a strict calculus to circumvent this concern by assigning each equal worth. But, since liberalism is based on rights instead of on results, it has to consider whether lives today are as highly valued as future lives.

Liberalism's concept of "justice as fairness" will be constructive in addressing this question. It guarantees each citizen a certain "minimum quality and quantity of life" by emphasizing a redistribution of resources to minimize the extension of life of the elderly and to maximize care for younger individuals who have more to gain from these resources. [4] In other words, care for a sick 30-year-old who has not yet "had the chance to develop and implement [his or her] life plan" would be considered more worthwhile than care for a 75-year-old who, arguably, has had this chance.[4] Using this same logic then, liberalists would argue from a global perspective that instead of devoting limited resources to the developed world's science research to lengthen the lifespan or minutely improve the lives of average healthy individuals in the developed world, these resources should instead work towards "averting premature death and disability" for those in developing countries. Thus, public health resources should be distributed globally to provide the maximum benefit for individuals who are "worst-off from a lifetime perspective," i.e. those in the developing world who have the greatest potential for lost or disabled life years. Therefore, guaranteeing liberalism's minimum health care standard to those throughout the world would be more feasible by limiting resource spending on research and by maximizing efforts to increase efficient access to current public health resources.

However, by ignoring the cultural and familial ties within in a society, liberalism and utilitarianism are limited in their ability to fully integrate into different societies that are not focused on the individual. Posing a solution to this problem, communitarianism emphasizes the cultural and community aspects of public health by arguing that there are inherent inequalities between individuals and that each individual has a unique duty to the community. The goal of universalist communitarianism is to reach "a superior form of social organization" that justifies certain behaviors and patterns not directly because of their public health consequences but instead inherently because of the improvement of society itself.[4] Although universalist communitarianism could be considered a noble ethical perspective, in practice it would be virtually impossible for all nations to universally decide upon equal distributions of resources for research and existing medical care. But, on the other hand, relativist communitarianism takes into account differences between societies by considering "morality as inherently contextual," that is to say that it morality is defined differently in different countries. 4 Thus, relativist communitarians would likely conclude that the debate at hand over the distribution of resources between science research and increasing access to existing resources should be decided based on the needs of each country. Assuming an international source of public health resources, developing countries would likely emphasize improving access to existing resources while developed countries would likely emphasize basic science research to develop new drugs to use and market. However, there is no neutral source of public health resources for the world because developed countries hold nearly all of these resources, and so the question about which distribution of resources is most ethical is still unanswered on a global scale. The feminist perspective of "ethics of care" grapples with this concern.

Ethics of care concerns itself with a fundamental "responsibility to particular others" that directly applies to this question at hand, since it bridges the divide between the haves and the have-nots. [7] In other words, those who have traditionally

been marginalized and deemed "other"—whether by a particular society or by certain regions of the world—would be provided equal if not better care under "ethics of care" than would be possible under "efficiency-oriented utilitarianism or rights-based liberalism."[4] Ethics of care changes the dynamic of public health resource allocation on a global scale by calling on those least in need (i.e. developed countries) to use their resources for the benefit of those most in need who "have little or no influence over the global politics of public health." [8]

Developed nations, who are now spending the vast majority of their resources on research for drugs that will strengthen the "alliance between the biomedical sciences and corporate power," are not supporting developing nations adequately from an ethics of care perspective because they are squandering public health resources away from immediate care.[8] From an ethics of care perspective, these developed countries have a moral responsibility to the developing world to allocate more resources towards improving the health of those alive today.[4] Therefore, ethics of care would not support developing new technologies because, assuming limited resources, this would cause more suffering today and would be considered a breach of this moral responsibility developed nations have to developing nations.

"From an ethics of care perspective, these developed nations have a moral responsibility to the developing world..."

So despite some of these conflicts within and between these philosophical views, utilitarianism, liberalism and ethics of care all support redistributing resources to maximize access to existing public health care at the expense of developing new technologies. (Communitarianism does not offer a practical resolution to this debate, as described above.) Health inequalities throughout the world have been explained by social determinants of health such as lower education rates, unemployment, lack of social support and lack of availability to food and clean water but also more fundamentally by dif- ferences in individual abilities to cope with the stress induced by hierarchical societies. [9,10] Technological advancements will not contribute as much towards disrupting the correlation between lower social and health statuses as improvements in access to current resources would. From a global perspective, public health resources need to be distributed in such a way as to utilize existing scientific knowledge for the benefit of developing nations because, as Evans argues, "the health of a population depends on the equality of income distribution, rather than the average income."[10] Finally, by analyzing the pros and cons presented in this debate in a case-study of malaria control and prevention, I will determine whether improving access to existing public health care is, in fact, more ethical than concentrating resources on science research.

CASE STUDY: MALARIA VACCINES VS. TREATED BEDNETS?

Malaria is a poverty-related disease that is "respon-sible for an estimated million clinical cases and thousands of deaths each day" and therefore demands the attention of public health workers to determine the most effective and ethical malaria public health strategy.[11] The long-term science research-oriented approach to malaria control has been the development of a vaccine, but so far a vaccine has failed to come into fruition despite support from numerous philanthropists, NGOs and governments over the course of many decades. The future of malaria vaccine development is arguably less bleak than its history would suggest, according to Moorthy, but even assuming that a malaria vaccine is developed in the next decade, many researchers virtually ignore consideration for which public health approaches would lose funding as a result of the drain vaccine development would take on international public health resources.[12,13] Specifically, in light of drug resistance complications from some antimalarial drugs and the exorbitant price of prophylactic drug treatments, certain short-term strategies (including household spraying and insecticide-treated bednets) for controlling malaria have proven very effective at curtailing malaria infections, especially in pregnant women and children who have lower natural acquired immunities than others. [14]

Insecticide-treated bednets (ITNs) are an example of one of these proven strategies against malaria that would be negatively affected by increasing vaccine development fund- ing. Although ITNs have been shown to significantly reduce transmission of malaria, especially when targeted to pregnant women and children as mentioned, many individuals in malaria-endemic regions simply do not have access to them, whether financially or logistically. By increasing investment into the distribution of ITNs even to a much lesser degree than that called for by malaria vaccine research, many fewer people would be infected by malaria. These individuals would then be able to contribute more to their local and national economies and would in turn drain fewer public health resources from their countries' healthcare in the future.

Although it could be argued that these same benefits—and perhaps even more—could come from greater investment into malaria vaccine development, insecticide- treated bednets have already been implemented and found to be effective in malaria-endemic regions today, while vaccine development has many barriers. For example, vaccine development is encumbered by the life cycle of the malaria-carrying parasite Plasmodium falciparum itself, because generally- speaking "immunity to one stage of the parasite is restricted to that part of the life cycle."[12] Also, clinical trials need to be first carried out in adults before they can be tested in children and pregnant women because of complicating factors that they present in vaccine usage, but this prioritizes men and non-pregnant women who are least vulnerable.[12] In addition to scientific obstacles, regulatory delays for approval of clinical trials, for example, also slow vaccine development progress.

This is not to say that these regulations should not be in place, but that they should be considered when weighing the costs and benefits of investing in future technologies. Because all of these negative aspects of developing new technologies outweigh those of investing more into improving current use of ITNs, malaria control and prevention would be best brought about by relying on proven shorter-term strategies such as ITNs, as opposed to investing untold amounts of money and time into vaccine developments that will take at least a decade to complete even in the best case scenario.

CONCLUSION

By analyzing various perspectives to come to an ethical resolution of this conflict between research funding and improving existing resource access, the improvement of the fidelity of existing, proven public health tools should be paramount to technology development. However, it is too simplistic to say that these two public health strategies are independent of each other. For example, scientific improvements in the delivery of existing drugs such as with biodegradable polymers to avoid multiple doses or skin diffusion patches would make the improvement of public health resource access much easier.[3] With that said, however, to ensure that research developments will focus on more immediate and locally-applicable technologies, there need to be better links between (mainly) developed world research institutions and communities in the developing worlds. Even better yet would be increasing international funding to the developing world to organize and lead a much greater proportion of relevant research in their own countries, and in this way address problems like the "developed-world flavor" of the Gates Foundation's Grand Chal- lenges initiative that has only three of its 43 selected research labs in developing countries.[6] Also, community involvement is often underutilized in disseminating critical public health information and improving access to care in order to "achieve sustained improvements in population health."[15] Lastly, there needs to be an emphasis not only on researching new technologies in the lab but also on local "operational" research into the most efficient use of these resources.[16] By reversing current global trends to maximize international spending on drug development at the expense of distribution of proven resources, global public health efforts will be more ethical because they will be most beneficial to those most in need.

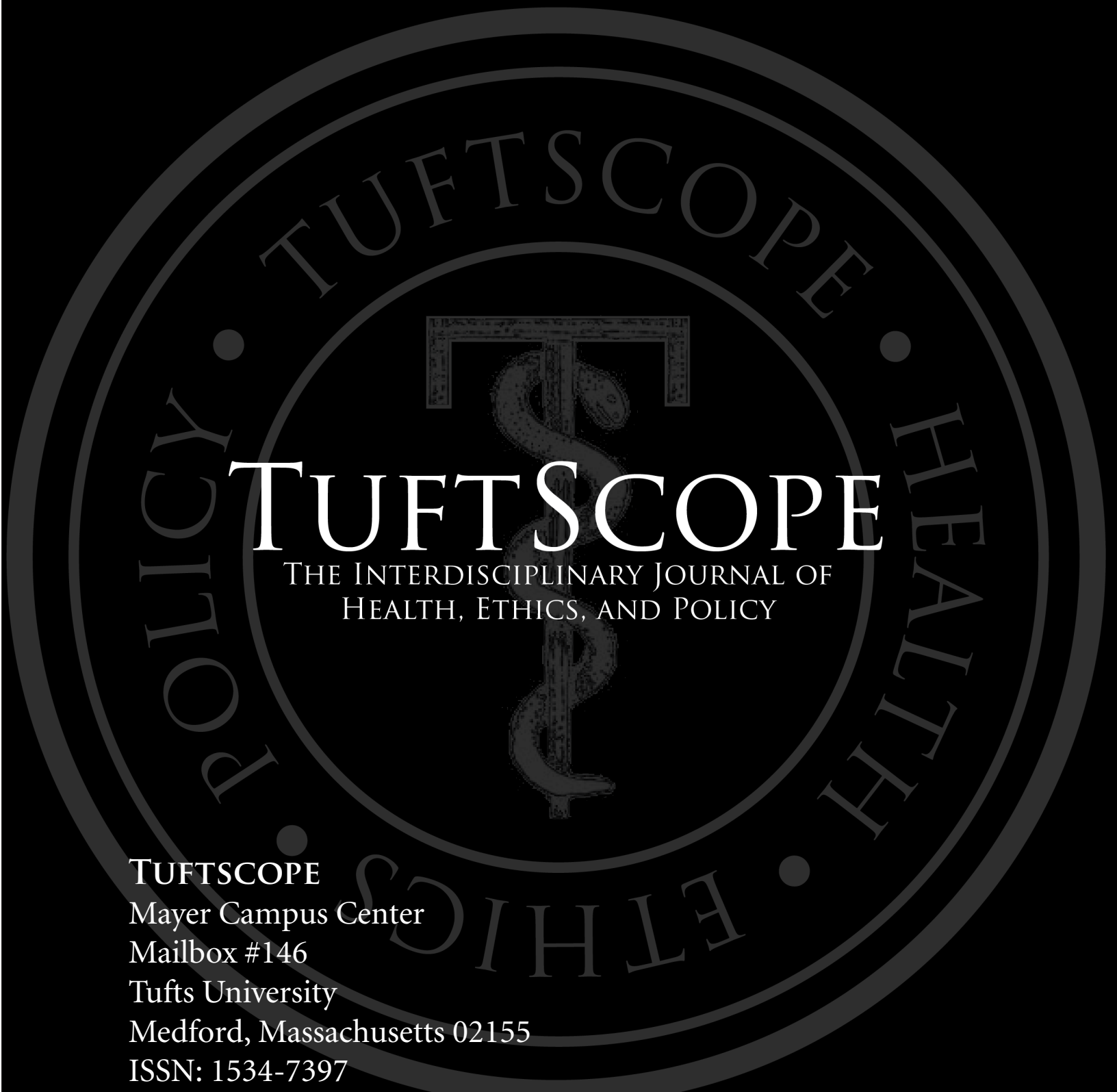
References

1. Sen, Amartya. "How to Judge Globalism." The American Prospect 13.1 (2002): A2-A6.
2. Daar Abdallah, et. al. "Top ten biotechnologies for improving health in developing countries." Nature Genetics 32 (2002): 229-232.
3. Juma, Calestous and Lee Yee-Cheong. "Reinventing global health: the role of science, technology and innovation." Lancet 365 (2005): 1105-7.
4. Roberts, Marc and Michael Reich. "Ethical analysis in public health." Lancet 359 (2002): 1055-9.
5. Woolf, Steven and Robert Johnson. "The Break-Even Point: When Medical Advances Are Less Important Than Improving the Fidelity With Which They Are Delivered." Annals of Family Medicine 3.6 (2005): 545-552.

Give us your two cents:

Submit to TuftScope at TuftScopeJournal.org

To become a contributing writer or blogger for TuftScope, contact us at TuftScope@gmail.com



TuftScope

The Interdisciplinary Journal of Health, Ethics, and Policy

Tuftscope
Mayer Campus Center
Mailbox #146
Tufts University
Medford, Massachusetts 02155
ISSN: 1534-7397
Website: www.tuftscopejournal.org
Email: TuftScope@gmail.com