

**SEPTEMBER  
2021**

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## BIOLOGICAL TECHNOLOGY PROSPECTS

Developments in the realms of science and technology continue to produce advances that not only are exciting, but also potentially frightening. Promising and controversial biological technology has included cloning, embryonic stem cells, and in vitro fertilization. More recently is the addition of CRISPR (clustered regularly interspaced short palindromic repeats), a tool for editing humans.

From the standpoint of achieving widespread public visibility, part of the story begins with the first publication of the idea of CRISPR in June 27, 2012 online in the journal *Science* by **Jennifer Doudna** of UC Berkeley and **Emmanuelle Charpentier**, a researcher born in France who was a faculty member at Um a University in Sweden. They eventually were awarded the Nobel Prize in Chemistry in 2020. Shocking reactions occurred around the world in November 2018 when it was learned that two babies had been born in China with DNA edited while they were embryos, a development in genetics as dramatic as the 1996 cloning of Dolly the sheep. The two babies, nonidentical twin girls, were the first CRISPR'd individuals ever born as a result of experimentation by **He Jiankui** who claimed to have overseen the use of CRISPR to modify a gene in the human embryo called CCR5, a gene known to be important in allowing HIV to infect some human cells.

Readers with an interest in this topic may find it worthwhile to obtain a copy of a book that recently became available. It has the title, "CRISPR People: The Science and Ethics of Editing Humans" and it was written by **Henry T. Greely**, Professor of Law and Director of the Stanford Center for Law and the Biosciences at Stanford University. This author provides useful background information to the **He Jiankui** announcement and how CRISPR was used by that researcher.

Human germline genome editing and CRISPR are explained in this publication, along with a description of ethical discussions about and the legal status of such editing. Three chapters detail the revelation of Jiankui's experiment and the fallout from those revelations. Part III of the text deals with assessments, while Part IV asks more broadly about human germline genome editing. For example, Professor Greely does not pull any punches by judging the experiment involving the two babies as criminally reckless, grossly premature, and deeply unethical.

One editing possibility involves enhancement, i.e., not for enhanced protection against diseases, but for producing better than normal traits or abilities for athletics, education, music, personal beauty and other prized attributes. Focusing on that kind of intervention may not be the most beneficial way for CRISPR technology to proceed. Instead, somewhere between treating disease and enhancing traits would be to edit disease-prevention genetic variations into an individual's genome. Rather than editing out an unusual pathogenic variation in favor of a common variant, the procedure could be used to edit out a common, normal-risk variant and turn it into an uncommon (or even) rare variation that lowers the risk below the population average. The author also notes that the real problems with introducing disease-prevention variations to a genome are not with the process, but with the result.



## BUDGET RECONCILIATION ON A MASSIVE SCALE

A key approach to achieve legislative objectives would be to use budget reconciliation procedures to pass some tax and spending measures in areas, such as Affordable Care Act enhancement and pandemic relief. The process begins with a budget resolution. Next, reconciliation legislation is then considered using a fast-track process that can be passed by a simple majority without having to be filibustered in the Senate. Limitations exist since budget reconciliation cannot be used for any and all federal legislation. Instead, bills must contain provisions that affect revenue and spending, with no extraneous items allowed, according to a restriction known as the “Byrd Rule.” Named after its principal sponsor, Senator **Robert C. Byrd**, D-WV), the rule provides six definitions of what constitutes extraneous matter. The Byrd rule has been in effect during Senate consideration of 22 reconciliation measures from late 1985 through the present.

During the month of September this year, various committees of jurisdiction in the House of Representatives have been working to advance major components of a \$3.5 trillion reconciliation package. Examples include the following:

### Education and Labor Committee

This group has been focusing on its portion of the *Build Back Better* plan, tuition assistance for community college students, increased funding for the Pell Grant program, and significant new investments in historically black colleges and universities, and other minority serving institutions.

### Energy and Commerce Committee

Its members seek to address the “Medicaid coverage gap” and permanently extend the Children’s Health Insurance Program; allow the Medicare program to negotiate the prices of certain medications; invest in public health infrastructure and the health workforce; and fund pandemic preparedness efforts.

### Ways and Means Committee

Constituent of this legislative body are considering medical education and other workforce issues; extending the expanded Affordable Care Act Marketplace premium tax credits from this year’s COVID-19 legislation; addressing drug pricing; and expanding Medicare benefits for dental, vision, and hearing.

### Budget Committee

Participants involved in the activities of this entity ultimately will combine the health care measures with various education, housing, climate, and transportation provisions.

Apart from what occurs in the House, a Senate that lacks a majority by either of the two major political parties means that Democrats must be unified in their support. Although that party enjoys a majority in the House, the margin is slim. Thus, it will take only a small handful of Democrats to prevent the bill from being passed once it arrives on the House floor. If it does make its way to **President Biden** for his signature into law, it will be the most significant legislation of its kind since the New Deal in the 1930s.

## 2021-2022 ASSOCIATION CALENDAR OF EVENTS

**October 20-21, 2021**—ASAHP Conference (Cancelled and will be moving to a virtual format.)

**October 19-21, 2022**—ASAHP Annual Conference in Long Beach, CA

## HEALTH REFORM DEVELOPMENTS

The *Patient Protection and Affordable Care Act* became law in March 2010. Since then, it has been characterized by rulings issued from the offices of state attorneys general, appellate courts, and the U.S. Supreme Court, along with executive orders promulgated by the nation's presidents and additional guidance provided by the Department of Health and Human Services in Washington, DC. It is conceivable that efforts to stay abreast of this ever growing cascade of information would tax even the energies of the most highly gifted Talmudic scholars were they ever to shift their attention in that non-heavenly direction.

Fortunately or not, there is a veritable army of interest groups represented in the nation's capital to maintain a close watch on all imaginable health policy developments to ensure that every T is crossed and every I is dotted correctly. As an aside, it may not be hyperbolic to assert that every major piece of legislation in both the health and education realms just as easily could be subtitled the Attorneys, Accountants, and Lobbyists Relief Act of (fill in the appropriate year) since practitioners of those trades essentially are furnished with lifetime employment opportunities once enactment occurs.

One example of how muddles can bring matters to a halt can be traced to the mid-1970s. The services of physician assistants and advance nurse practitioners were unable to be reimbursed by Medicare unless a physician was present to observe and approve what they were doing. Unfortunately, rural areas of the U.S. are geographically vast in size and also characterized by physician workforce shortages. A bill was introduced in Congress to remedy the situation by indicating that a physician did not have to be physically present when services were being provided. All was proceeding swimmingly until a bill was produced with language that referred to these other personnel as physician extenders. Opposition was fierce because representatives of other professions viewed themselves as being independent qualified operators rather than mere extensions of physicians. It subsequently took more than an extra year to resolve that predicament in order to have the bill enacted. Welcome to the ways of Washington, DC.

### **Cost Effects Insurance Reforms Being Considered By Congress**

Plans are being formulated on Capitol Hill to make permanent the *American Rescue Plan Act's* temporary boost in subsidies for marketplace plans and to fill what is known as the Medicaid coverage gap. As part of the budget process for fiscal year 2022, which begins on October 1 this year, Congress is considering a package of two reforms to the Affordable Care Act (ACA). Under what is being developed, the enhanced premium subsidies included in the American Rescue Plan Act would become permanent. Also, the so-called Medicaid coverage gap would be filled by extending eligibility for marketplace subsidies to individuals earning below 100% of the federal poverty level in 12 states that have not yet expanded Medicaid.

Presently, there are about 5.8 million uninsured adults in those states that have incomes too high for that program, but not high enough to obtain marketplace subsidies. Together, these two health insurance reforms would sharply reduce the number of Americans under age 65 who lack coverage, according to a new analysis from the Urban Institute and the Commonwealth Fund. Not only would Black Americans see the biggest decline in the ranks of the uninsured, but uninsured numbers for white and Latinx/Hispanic adults also would fall significantly as well. Researchers project the changes would result in lower financial burdens for households struggling with health care costs.

### **Improving Health Care For The Nation's Older Veterans**

An announcement on September 9, 2021 from the Department of Veterans Affairs (VA) describes the launching of a nationwide movement to improve emergency department (ED) care for older veterans treated in VA Medical Centers and become the nation's largest integrated health network with specialized geriatric emergency care. The VA Geriatric Emergency Department Initiative is a public-private collaboration between the VA, the American College of Emergency Physicians (ACEP), The John A. Hartford Foundation, and the West Health Institute to establish 70 of the VA's EDs as accredited geriatric emergency departments (GEDs). These entities are better equipped to treat older adults with complex conditions while recent studies have found that GEDs can decrease hospital admissions and lower total healthcare costs.

## DEVELOPMENTS IN HIGHER EDUCATION

The U.S. Census Bureau announced on September 14, 2021 that median household income in 2020 decreased 2.9% between 2019 and 2020, and the official poverty rate increased 1.0 percentage point. Median household income was \$67,521 in 2020, a decrease from the 2019 median of \$69,560, making it the first statistically significant decline in median household income since 2011. Between 2019 and 2020, the real median earnings of all workers decreased by 1.2%, while the total number of individuals with earnings decreased by about 3.0 million and the number of full-time, year-round workers decreased by approximately 13.7 million. The official poverty rate in 2020 was 11.4%, up 1.0 percentage point from 2019, marking the first increase in poverty after five consecutive annual declines. In 2020, there were 37.2 million individuals in poverty, approximately 3.3 million more than in 2019.

This deteriorating income picture has enormous implications for students who wish to attend higher education institutions. During the 1950s and 1960s, for example, a great many students achieved a college education as commuters who lived at home and traveled to the campus each day by subway, bus, and carpool. Along with their books, they brought a lunch in a brown bag along with them. During the school year, they might have worked at supermarket checkout counters on the weekends and do the same or find other low paying employment in the summertime. The net result was that they could earn enough to cover tuition costs. Clearly, those days are gone forever and have been replaced by the accumulation of substantial amounts of student debt upon completion of community college and baccalaureate degrees. Unless conditions substantially are modified, the dream of attaining such degrees increasingly will be further out of reach for many individuals. This distressing prospect occurs at a time when the possession of a degree is associated more than ever with the likelihood of earning a decent salary.

### Runaway Spending In Higher Education Institutions

A new report from the American Council of Trustees and Alumni points out that an onerous debt burden currently has reached an average of \$39,351 for the 65% of students who borrow money to fund their college education. That face changes from grim to tragic for the 6% whose burden is greater than \$100,000. Rationalizations for this economic catastrophe are viewed as ringing hollow. College debt does not comport with the dismissive description, “good debt,” once so popular among higher education administrators. High levels of student loan debt have been shown to postpone major life events dramatically, with borrowers reporting delays in saving for retirement (62%), buying a home (55%), marriage (21%), and starting a family (28%).

The Council does not envision debt forgiveness as a meaningful solution because it merely is a way of shifting the burden to the American taxpayer. More importantly, debt cancellation is but a temporary remedy that treats the symptom and not the disease. How, exactly, did the cost to attend college in the United States rise so high? A parallel consideration is that investment in instructional staff, particularly tenured or tenure-track professors, has been overshadowed by increases in administrative staff, namely well-paid, professional employees. A proposition is advanced that even the most optimistic would be hard-pressed to argue that colleges today are providing nearly three times the educational value that they did 30 years ago, which would otherwise justify the 178% increase in sticker price at four-year public institutions since 1990. This argument crumbles in the face of studies that show that one-third of students leave college without any growth in critical thinking or analytical reasoning skills and that only 49% of employers think recent graduates are proficient in oral and written communication.

The report illustrates the implications for students, both financially and academically, of the steady growth in spending since the Great Recession. It is hoped that public awareness of this trend’s impact on student finances and student outcomes will encourage more prudent choices. A proper understanding of an institution’s spending habits can provide valuable insights for governing boards seeking to allocate scarce resources efficiently toward what most benefits students.



## QUICK STAT (SHORT, TIMELY, AND TOPICAL)

### **Top Global Causes Of Adolescent Mortality And Morbidity, 2019**

According to an Infographic that was published in the October 2021 issue of the *Journal of Adolescent Health*, the causes of mortality among adolescents are different than the causes of morbidity. Injuries such as road injury, drowning, and self-harm; communicable diseases including diarrheal diseases, tuberculosis, and lower respiratory infections; and maternal conditions are the main causes of mortality among adolescents. Road injury is the leading cause of mortality among adolescent boys. Mental disorders including childhood behavioral, anxiety, and depressive disorders are among the leading causes of morbidity among adolescents of both sexes and across age groups. Iron-deficiency anemia is an important cause of morbidity among younger adolescents of both sexes. Another paper in that issue discusses how adverse health-related outcomes such as greater substance use, mental health difficulties, and higher BMI appear to be more likely to cluster together in the more recent cohort, with public health implications.

### **Adult Day Services Center Participant Characteristics: U.S., 2018**

A *Data Brief* published on September 2, 2021 by the National Center for Health Statistics indicates that an estimated 251,100 participants were enrolled in adult day services centers (ADSCs) in the United States in 2018. Compared with users of other long-term care services, ADSC participants were younger and more racially and ethnically diverse. ADSC participants have a diverse set of needs, with many of them requiring assistance with activities of daily living (ADLs) and having chronic health conditions. About 57% of adult day services center (ADSC) participants were female, 45% were non-Hispanic white, and 39% were under age 65. Most ADSC participants were Medicaid beneficiaries (72%) while about 85% of participants under age 65 were Medicaid beneficiaries. About 64% of participants needed assistance with three or more activities of daily living. Most ADSC participants had two or three chronic conditions. Just over one-half of participants were diagnosed with high blood pressure.

## HEALTH TECHNOLOGY CORNER

### **Persistence Of COVID-19 After Mild Infection**

Uncertainty exists whether mild COVID-19 confers immunity to reinfection and questions also remain about the persistence of antibodies against SARS-CoV-2 after mild infection. A study published in the September/October 2021 issue of the journal *Microbiology Spectrum* reveals that approximately 90% of participants produced spike and nucleocapsid antibody responses, and all but one had persistent antibody levels at follow up. University of Michigan researchers analyzed nearly 129 subjects with PCR-confirmed COVID-19 illness between three and six months after initial infection. The prospective study's participants either were Michigan Medicine health care workers or patients with a high risk of exposure to COVID-19. The results show that individuals who have mild COVID-19 illnesses and produce antibodies are protected from reinfection for up to six months afterward. Reinfection was not observed among individuals with mild clinical COVID-19, while infections continued in a group without known prior infection.

### **Shared Movement Disorders Walking Patterns Among Different Species**

Neurodegenerative disorders including Parkinson's disease, Alzheimer's disease, and schizophrenia are conditions characterized by motor dysfunctions. Since the variables inherent to such diseases cannot be controlled directly in humans, behavioral dysfunctions and their neural underpinnings have been examined in model organisms. An article published on September 17, 2017 in *Nature Communications* describes how machine learning was used to obtain patterns from locomotion data created by worm, beetle, mouse, and human subjects that were independent of the species. Researchers at Osaka University trained a deep learning algorithm and used animal location tracking along with artificial intelligence to detect walking behaviors of movement disorders that are shared across species. By automatically removing species-specific features from walking data, the resulting information can be used to understand neurological disorders better, such as Parkinson's disease that affect movement.

## OBTAINABLE RESOURCES

### Population Health In Challenging Times

The year 2020 presented extraordinary challenges to organizations working to improve population health. As a means of understanding how various domains in the population health field are responding to and being changed by two major crises (racial injustice and the COVID-19 pandemic), the Roundtable on Population Health Improvement of the National Academies of Sciences, Engineering, and Medicine held a workshop from September 21-24, 2020, titled *Population Health in Challenging Times: Insights from Key Domains*. The workshop had sessions organized by themes, such as academic public health and population health; health care, and governmental public health. Each panel discussion highlighted difficulties and opportunities, both internal to the respective institutions and sectors, and at the interface with peers and partners, especially communities. A publication that summarizes the presentations and panel discussions from the workshop can be obtained at [Front Matter | Population Health in Challenging Times: Insights from Key Domains: Proceedings of a Workshop | The National Academies Press \(nap.edu\)](#).

### New Platforms Of Health Care

For the past century, health care measurement and delivery have been centered in hospitals and clinics. That arrangement is beginning to change as health measures and increasingly care delivery are migrating to homes and mobile devices. The COVID-19 pandemic has only accelerated this transition. While increasing access to care and improving convenience, this move toward platforms operated by for-profit firms raises concerns about privacy, equity, and duty that will have to be addressed. Also, this change in measuring health and delivering health care will create opportunities for educators to expand the settings for training, researchers to conduct studies at enormous scale, payors to embrace lower-cost clinical settings, and patients to make their voices heard. An article published on July 15, 2021 in *npj Digital Medicine* can be obtained at [The new platforms of health care \(nature.com\)](#).  
[The new platforms of health care \(nature.com\)](#).

### Geriatric Emergency Department Accreditation Program In The United States

Rapid growth in geriatric emergency departments (EDs) has been driven by Level 3 accreditation. Most geriatric EDs are in urban areas, indicating the potential need for expansion beyond those locations. Future research evaluating the impact of GEDA on health care utilization and patient-oriented outcomes is needed. The results of a recent study were published on August 10, 2021 in the journal *Annals of Emergency Medicine*. The objectives of this research were to describe the reach and adoption of Geriatric Emergency Department Accreditation (GEDA) program and care processes instituted at accredited geriatric emergency departments (EDs). Investigators analyzed a cross-section of a cohort of 225 EDs in the U.S. that received GEDA from May 2018 to March 2021. Only nine geriatric EDs were in rural regions. Significant heterogeneity existed in protocols enacted at geriatric EDs; minimizing urinary catheter use and fall prevention were the most common. The article can be obtained at [Reach and Adoption of a Geriatric Emergency Department Accreditation Program in the United States - Annals of Emergency Medicine \(annemergmed.com\)](#).

### Financial Impact of COVID-19 On Older Adults

A survey conducted by the Commonwealth Fund between March and June 2021 reveals that nearly one in five older Americans, particularly older Black and Latino/Hispanic Americans, indicate that they used up their savings or lost their main source of income because of the COVID-19 pandemic, a rate several times higher than in other high-income countries. The results of the study can be obtained at [Impact of COVID-19 on Older Adults: 2021 International Survey | Commonwealth Fund](#).

## FACETS OF HEALTH AND PERSONALIZED PROFILES FOR DISEASE RISK

Providing the best possible care for an individual means possessing a better understanding of the risks of developing disease. The goal is to have personalized answers when individuals need to know whether, for instance, preventive surgery makes sense, a given medicine is likely to be risky, or a certain diet should be recommended. According to an article in the September 9, 2021 issue of the journal *Nature*, information on genetic risk represents one promising approach to providing these answers. Genomic data, gathered across millions of individuals, have revealed thousands of DNA sequence variants associated with common diseases such as diabetes, heart disease, schizophrenia, and cancer. These clues to disease risk can be combined to generate ‘polygenic scores’ that provide a measure of the degree to which an individual genetically is predisposed to developing each such disease. A growing chorus of scientists and clinicians emphasize the value of such genetic profiling as an integral part of a personal medical record.

Alternatively, others argue that the clinical benefits have been massively overstated. This debate often fails to recognize that the challenge is not merely to improve understanding of genetic risk, but to capture more about the interwoven, multifaceted factors that play into disease risk. Perhaps a more pertinent argument would be that clinical medicine must learn to develop more-holistic measures of individual risk, both genetic and non-genetic, and to combine these with clinical data over time to deliver better care. Although current polygenic scores hold clinical promise, they come with several limitations. They leave out many sources of relevant data, and work best for the predominantly white, wealthy populations in which most genetic studies have been performed. The emphasis on genetic risk diverts attention away from non-genetic factors that might be equally important for disease risk and progression. Risk estimation on the basis of polygenic scores alone also fails to incorporate real-time measurements of clinical state that are especially important in diseases linked to aging. As a way of moving forward, researchers, funders and industry need to embrace greater diversity in the design and implementation of studies, focusing not only on gender and ethnicity, but also on social, cultural, and economic factors that influence disease risk and access to health care.

## HOW JUDGMENTAL OR OFFENSIVE WORDS IN OUTPATIENT NOTES MATTER

Health systems increasingly are offering patients ready electronic access to clinician notes and patients strongly support such practice, citing many potentially important clinical benefits. Allowing patients a window into how clinicians view them and their conditions, however, such notes also may cause patients to feel judged or offended, and thereby reduce trust. A study described in the September 2021 issue of the *Journal of General Internal Medicine* involved data collected from 22,959 patient respondents in three health systems: Beth Israel Deaconess Medical Center in the Boston area, University of Washington Medicine in Seattle, and Geisinger, a rural integrated health system in Pennsylvania to determine what patients may find judgmental or offensive in their notes.

A thematic analysis had a focus on the following domains: **Errors and Surprises**, involving descriptions of finding inaccuracies in the record and instances when the note negatively surprised the patient. For example, patients reported feeling judged/offended due to documentation of physical examinations or discussions that the patient believed had not occurred. **Labeling**, which entailed patients reported feeling judgment/offense when they felt they were *labeled* by clinicians. Descriptions of obesity were a frequent cause of feeling negatively labeled, as were other personal descriptors such as “elderly,” “anxious,” “well-groomed,” or descriptions of patients’ emotional demeanor. **Disrespect**, with some patients feeling disrespected when they perceived their perspective was not recorded, misunderstood, represented incorrectly, or not valued. Among the patient respondents who had read at least one note and answered two questions, 2,411 (10.5%) reported feeling judged and/or offended by something they had read. Individuals who reported poor health, unemployment, or inability to work were more likely to feel judged or offended. Among those patients, 2,137 (84.5%) wrote about what prompted their feelings. Conclusions reached in the study are that content and tone may be particularly important to patients in poor health. Enhanced clinician awareness of the patient perspective may promote an improved health care lexicon, reduce the transmission of bias to other clinicians, and reinforce healing.