

A Summary of the 2022 Wall Street Journal Health Forum



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On March 22, 2022, *The Wall Street Journal* hosted its Health Forum, a virtual all-day event. This WSJ Health Forum was attended by experts across the healthcare space and healthcare technology companies. The broad spectrum of attendees included physicians, payers, academics, consultants etc. from various organizations and the panel included experts from Google, Apple, Mayo Clinic, etc. Meeting sessions were generally headlined by CEOs or other senior leadership team members from various healthcare entities. The meeting itself included fourteen separate time slots with sessions generally running between 25 and 35 minutes each. In addition, there were breakout sessions in the middle of the day where simultaneous sessions were offered. The sessions were informative, and fast-paced, with each one providing a quick hit of relevant and cutting-edge information around healthcare.

Society of Actuaries members attended this WSJ Health Forum, including Achilles Natsis from the SOA Research Institute staff and Sudha Shenoy from the SOA Research Institute's Health Care Cost Trends Strategic Research Program committee.

Included below is a summary of the different sessions offered, with a focus on those relevant for actuaries. With each summary, the Institute has provided insights on actuarial implications on this information. Key sessions from the WSJ Health Forum included:

- Innovating for Positive Change: Helping Patients Get Back to What Matters Most
- Biopharma's Potential to Advance Health Equity
- The Business of Covid Testing
- Expanding Global Access to COVID-19 Vaccines
- Spotlight on Mental Health
- Sounding the Alarm: Climate and Health
- Scientific Collaboration in the Wake of COVID-19
- The Promise and Peril of Algorithms and AI in Healthcare
- Burnout: It's Real and Costly
- Lessons from COVID-19 Drug Development
- The Next Evolution of Retail Pharmacy
- The Changing Face of Hospitals
- Expanding the Pool of Diverse Doctors
- Taking Psychedelics Mainstream
- The Future of Wearables in Health

Finally, we will look to offer an actuarial perspective on these topics as they pertain to short term and long-term impacts on healthcare delivery and costs.

Session 1: Innovating for Positive Change: Helping Patients Get Back to What Matters Most

The first session featured the CEO of Intuitive discussing his company's products and how technology is transforming acute care. The pandemic greatly accelerated the need for agility, collaboration, data sharing and real-world evidence to make healthcare decisions across the healthcare industry. Some of their products have greatly increased the speed and accuracy with which diagnosis and treatment can be made while using minimally invasive interventions. This trend was driven to a larger extent over the last two years by the need to ration care during the pandemic. These innovations also help to achieve the quadruple aim of medicine - better patient outcomes, better patient experiences, better care team experience and a lower total cost of care.

These products focus on the very early use of artificial intelligence in diagnosis, development of drugs and use of big data for predictive outcomes. Use of technologies like molecular diagnostics/imaging systems and new innovations impacting practice of healthcare leading to a more 'patient centric' process.

ACTUARIAL IMPLICATIONS

This increased and more targeted use of technology will likely result in some form of higher healthcare costs in the short run as these types of individually designed care plans tend to be costlier. However, if successful, they will lead to better outcomes and potentially lower costs related to unsuccessful treatments in the longer run as well as lower acute care services.

Session 2: Biopharma's Potential to Advance Health Equity

This session featured the VP and Chief Diversity and Inclusion Office of Bristol Myers Squibb.

COVID laid bare many disparities and inequities in healthcare. This brief session focused on health equity and diversity in clinical trials. The goal of greater diversity in clinical trials makes for safer therapies, greater use of medicines in disadvantaged communities, and stronger efficacy of prevention and treatment options in medicine.

Distrust of clinical trials, lack of education, and lack of geographic access can negatively impact the diversity of clinical trials. Ultimately, tackling health equity requires collaboration across industries as well as private and public sectors to help address unmet needs of many communities and to ultimately generate a framework for better results including safety and efficacy of medicines.

ACTUARIAL IMPLICATIONS

More equitable clinical trials should lead to better outcomes when pharmaceuticals are ultimately approved. This should also help drive greater visibility of those treatment options in disadvantaged communities and the providers that serve them. The likely cost impact is higher initial costs related to treatments, but better long-term outcomes with lower costs. In addition, this would cause services to shift from Emergency Room (ER) and Inpatient Hospital to pharmaceutical costs.

Session 3: The Business of COVID Testing

This session featured the CEOs of Cue Health and Roche Diagnostics.

COVID testing saw booms during periods of high outbreaks and especially when demand exceeded supply – in particular, during the Omicron phase. Different tests have different profiles and optimal uses. Polymerase Chain Reaction (PCR) tests were the most sensitive, resulting in more positive diagnoses, but at slower speeds. Rapid

antigen tests were a quicker and cheaper way to get diagnoses. While these rapid tests had higher rates of false negatives, they also helped to identify more contagious individuals with higher viral loads. They also provided a quicker turnaround for contact tracing and other interventions.

Home testing emerged during the Omicron phase as well but has been met with some challenges. Some countries did not initially allow home testing but then changed their minds when labs were overwhelmed. Ideally, lab testing would be the main source of testing, with home testing picking up the slack during periods of high COVID volumes. This would also work best by stocking up on at home testing prior to the next COVID wave.

Home testing is also now able to integrate through available apps to be included in report data in order to supplement locations of where cases are surging in real time.

Finally, the large increase in demand for COVID testing has also impacted non-COVID testing, resulting in diminished diagnostic testing for non-COVID diseases leading to lower early diagnosis and ultimately more severe disease and death. The use of home testing will allow for more non-COVID testing capacity. In addition, with its more recent acceptance, home based testing has an opportunity to enhance detection and early treatment of non-COVID diseases.

ACTUARIAL IMPLICATIONS

COVID-19 testing has had an uneven impact on overall healthcare costs. While much of the testing occurred outside of the insurance system and were covered by federal relief funds, there are many tests done at provider locations that result in direct reimbursement from payers to providers. Overall, insurer costs are a function of the proportion of tests administered in a provider setting as well as the total number of cases. Cost impacts will be higher during outbreaks, especially when free testing at other locations is strained due to limited availability and slow response times.

Session 4: Expanding Global Access to Covid-19 Vaccine

This session featured the CEO of Partners in Health and a Professor of Bioinformatics and Director, Centre for Epidemic Response and Innovation in South Africa

During the COVID-19 pandemic, there has been a significant disparity in vaccination rates in different countries and continents. Places like North America, Europe, and South America had vaccines readily available to for most of their populations. Less developed areas – in particular, Africa – have seen a more uneven record with much lower vaccine distributions in certain areas. Africa had only distributed roughly 700 million vaccines at the time of this meeting with a lack of investment in health systems being a key contributing factor. Overall, 14% of the eligible population has received vaccinations in Africa. Despite that overall number, there are some countries with much higher vaccination rates, such as Rwanda at 75%.

Some key challenges to vaccine distribution include lack of manufacturing and Intellectual Property restrictions in many underserved areas. Vaccine makers are trying to balance additional manufacturing in those areas. Places like Africa also have extensive experience with epidemics which can be leveraged to deal with COVID-19. Equity in treatments is another area of opportunity and supply of “lesser vaccines” can also help as some of them have shown greater efficacy with the omicron variant and may also outperform some of the mRNA vaccines as future variants emerge. Finally, building stronger medical infrastructure can improve distribution systems to help deal with future pandemics in many disadvantaged countries.

ACTUARIAL IMPLICATIONS

Similar to COVID-19 tests, vaccines are often administered free of charge to individuals seeking them out. This is especially true outside of the U.S. with socialized medicine, but also true in the U.S. To the extent that vaccines are available for free in the U.S., insurance costs will be limited. Higher impacts of vaccination costs in the U.S. would result from the following:

- Greater proportions of vaccines administered in doctors' offices
- Limited availability of free vaccines at various locations.
- Introduction of new vaccines targeted at newer variants
- Continued COVID surges, especially with more severe variants
- Cessation of federal relief dollars for free vaccinations.

Session 5: Spotlight on Mental Health

This session featured a social psychologist discussing the impacts of COVID-19 on employee mental health and burnout.

The pandemic had a significant detrimental impact on the mental health of the population at large and for employees in general. Depression rates spiked from 8.5% pre-COVID to 33% afterwards. The speaker indicated that what was commonly referred to as "burnout" would be more accurately described as "pandemic flux syndrome". This was characterized by an initial surge of productivity and positive outlook during the initial phases of the pandemic as the public was largely operating on adrenaline. As this situation wore off, and the pandemic mindset continued, individuals ran out of steam and had a more difficult time coping. In addition, as individuals "returned to normal" they experienced a letdown as their actual feelings of returning to normalcy didn't match up with their expectations. As a result, behavior health related symptoms and feelings of employee dissatisfaction have been on the rise.

These symptoms were not necessarily dispersed evenly among employers. In fact, managers have been more prone to these issues as they are often presented with difficult situations from their staff in addition to their own. The speaker emphasized the need to de-stigmatize behavioral health issues and many individuals are dealing with this. In addition, the speaker recommended giving employees more autonomy to help give them a greater sense of control to help compensate for the COVID-related events which they were not able to control.

ACTUARIAL IMPLICATIONS

Increases in mental health diagnoses and burnout among providers will likely drive lower access and higher costs. The access issues are most likely to impact more rural and low-income areas where alternatives are less readily available. In addition, clinicians leaving their practices can result in a disequilibrium between supply and demand for services resulting in higher physician costs due to more bargaining power for those that remain. Lastly, higher behavioral health costs for those providers will also drive overall healthcare costs.

Session 6: Sounding the Alarm Climate & Health

This session featured a panel of an Environmental Director and Tribal Historic Preservation Officer, a Director from the Department of Environment, Climate Change and Health at the World Health Organization and the Executive Director of the Global Climate and Health Alliance talking about climate related impacts on health.

The panelists projected that the climate target of 1.5 degrees Celsius is in jeopardy. Climate change impacts health with some key concerns due to climate change being as follows:

- Extreme storms causing displacement of individuals
- Air pollution leading to large numbers of deaths and increased disease
- Heat waves causing significant illness and death
- Increased extreme wildfires and related smoke leading to deaths and displacements
- Infectious diseases emerging in areas not seen before
- Disruption of food supplies, affecting indigenous and economically disadvantaged communities in particular
- Mental Health implications related to these associated events

One common goal is to seek a healthier and greener recovery from COVID-19. To that end, many countries have committed to net zero CO₂ emission goals to help combat climate change.

ACTUARIAL IMPLICATIONS

Increasing in climate related events, such as wildfires, hurricanes, and tornadoes will impact healthcare costs. In the short term, as individuals are displaced, there tends to be a drop-off in local healthcare costs. However, those costs are likely to appear in other locations. In addition, there are likely to be higher costs related to smoke from the fires and burns. In addition, vector-borne diseases are likely to increase in many areas as they spread to new locations. Finally, behavioral health costs are likely to rise when disruptions to living conditions occur.

Session 7A: Scientific Collaboration in the Wake of Covid-19

This session featured a professor of Human Geography and the Co-Founder of a Patient-Led Research Collaborative discussing concerns about Long COVID and advancing research and the search for therapies.

The emergence of Long COVID has created an opportunity to improve patient outcomes through different means. A more collaborative approach is needed to better understand and combat the effects of Long COVID. Some suggested approaches to tackle Long COVID include:

- Greater standardization of the use and integration of Electronic Health Records can lead to more effective studies
- Patients can improve the study of Long COVID by sharing data
- Entities doing studies are seeking a better balance between patient privacy and data availability

The panelists discussed a long COVID study that was put together. The study which included symptom data over 7 months included 4,000 people with clustering of over 205 symptoms. 3 clusters of long COVID symptoms included:

- Acute COVID symptoms in the beginning with high prevalence
- Abdominal pain, muscle aches, and nausea presenting from 2 weeks to 2 months after the initial diagnosis
- New symptoms not prevalent during the acute phase starting 2-9 weeks after the COVID diagnosis and ramping up
 - These include new allergies, joint pain, brain fog
 - Many have not been resolved

The largest challenges for Long COVID patients include:

- Going back to work

- Approval for disability caused by testing shortages early on and during the Omicron phase
- Long wait times for Long COVID clinic treatment

The largest challenges for the researchers include:

- Comparing individuals with and without long COVID
- PCR test results don't significantly impact Long COVID
- Lack of guarantee of PCR Accuracy

ACTUARIAL IMPLICATIONS

Long COVID costs are already impacting healthcare costs, and these are likely to continue as more information on this emerges. While not all of these conditions end up being reported in the healthcare system and treated, those that are will certainly be noted. In addition, Long Term effects of COVID will likely increase risk scores along with newly emerging chronic conditions and increase severity of existing conditions. These increases also need to be adjusted for the impact of diminished medical services, particularly during the initial phase of COVID-19.

Session 7B: The Promise & Peril of Algorithms and Artificial Intelligence (AI) in Healthcare

This session featured a Director of Global Healthcare Solutions for Google Cloud and a Professor of Radiology and Biomedical Informatics who is the Director of the Center for Artificial Intelligence in Medicine and Imaging at the Stanford University School of Medicine talking about the increasing role of algorithms in disease prediction, diagnosis, and care management.

AI is based on 'math not magic', uses rigorous computer programming with data but AI will not be able to solve all problems. It is unlikely to replace humans but the two together can produce better results and improved outcomes. We use this type of an approach today in the use of new drugs for patients where we consider rule-based implementation in addition to physician medication prescriptions. Human oversight will be needed but AI can support good decision making and reduce intensive use of healthcare resources.

AI models will need cloud-based applications with a lock box and a key, deidentified data across many organizations, and a focus on innovation. AI applications will need to be supported by a suitable vendor, good infrastructure and lack of any inherent bias in the data.

The session also covered use of Google AI models. Google has a three-fold aim for AI – first is to have a North Star for every project to be able to benchmark. Google launched this in 2018 and it includes seven principles for AI which are widely shared with the public. The principles include an evaluation on whether the project is beneficial and good for society, tested for safety, accountable to people. etc.

The second is transparency and 'explainability' with the use of a model card which would be similar to a nutritional label for an AI model. The model card would explain the data used, the architecture, intended audience etc. This provides a framework for understanding the AI model.

Lastly, we need to emphasize transparency, whether models are explainable, accurate, fair & useful

We would also need to establish trust amongst members and produce empirical evidence that AI processes work rather than just provide 'explainability'. For example, we trust the use of Tylenol and we know it works but may not be able to explain how it works. We use AI currently in many of our healthcare applications like understanding drug to drug interactions etc. and hence liability is not a big concern for providers.

ACTUARIAL IMPLICATIONS

Key takeaways are that patient privacy is being respected but increased data sharing, more collaborative research will lead to better outcomes. Use of AI can lead to improved processes, efficient use of healthcare resources in diagnosis, treatment & care management models.

Session 8: Burnout: It's Real and Costly

This session featured the Chief Wellness Officers at Brown University's and Stanford University's Medical Schools. This session addressed the issue of burnout among doctors and nurses during the COVID-19 pandemic along with what can be done to address these issues.

Burnout has been a prevalent theme during the COVID-19 pandemic. It has hit doctors and nurses especially hard due to the conditions that they are working with as well as COVID-19 related policies.

The panelists estimated that burnout has caused \$1B in excess spending this past year. The result of burnout is often less provider time for clinical care, ~~worse~~ declining clinical outcomes and lower quality service in general.

Causes of burnout can vary, but one significant one is moral injury. This can be a factor in cases when providers are forced to make choices that are suboptimal to the patient due to other considerations. Care deferral, rationing of care, suboptimal business systems and workflow processes can also lead to burnout among clinicians.

The speakers discussed different ways to combat burnout. Effective policies include:

- Logical workflow adjustments
- Pre-visit virtual preparation
- Peer support
- Work / Life Integration assistance
- Maintain the meaning behind the work

Approaches that had less success in fighting burnout include:

- Zero sum game attitudes
- Addressing symptoms but not root causes
- Perks that don't address work/life integration
- Solutions that don't address moral injury

Overall, addressing burnout is critical to maintaining high provider standards, especially considering the care disruptions caused by the COVID-19 pandemic.

ACTUARIAL IMPLICATIONS

The effects of burnout on Actuarial Costs are very similar to those related to increased clinician mental health diagnoses. In addition, there are likely to be more medical errors leading to worse patient outcomes and higher preventable costs. Finally, there may be higher unit costs as providers seek to optimize reimbursements through patient scheduling and potential upcoding.

Session 9: Lessons from Covid-19 Drug Development

This session featured the CEO of Regeneron talking about the swift development and introduction of COVID-19 treatments and lessons learned from their successes and failures from the perspective of monoclonal antibodies.

The CEO of Regeneron indicated that his company was able to get his product to clinical trials in 6 months due to investments in technology as well as the well-known biological effects of COVID-19. They chose to develop antibodies because their early studies indicated that antibodies were key to fighting COVID in its patients. Regeneron orchestrated a multi-faceted attack on the virus with the goal of offsetting viral mutations.

Per the CEO, Monoclonal antibody uptake was very low early on due to skepticism and politicization of the product resulting in missed opportunities early on during the pandemic. Access to monoclonals was limited during the COVID surges of 2021. In addition, the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention CDC were reluctant to put forth monoclonals as standard practice. This may have been due to a desire for more data, challenges in the infusion process, or desire not to discourage vaccination. Also, there was a general lack of education among the public that also suppressed use of these treatments. Despite those obstacles, studies indicated that early use of monoclonal antibodies reduced the risk of hospitalization by 80%. This was based mainly on the Alpha and Delta variants.

Later as Omicron emerged, the Regeneron treatment was less effective against that variant. However, other drug companies were able to find treatments that were better suited to the Omicron strain. Regeneron has found some effectiveness for their antibodies against the BA.2 strain, but they are now developing the next generation of antibodies to better deal with those variants.

Looking back, both, government and health agencies missed an opportunity for pandemic readiness, as they were not prepared in advance to seek solutions soon after COVID-19 hit. Some solutions for better pandemic preparedness include the following:

- Increased capacity for drug manufacturing and fixing the supply chain
- Continue to invest in technology that allows the quick development of solutions
- Better regulatory interactions in anticipation of future pandemics

Lastly, on the pricing of drugs, the speaker brought to light the cost of research driven by unsuccessful drug development efforts as well as the pricing inequities between the US and other countries as some of the main drivers of high drug costs.

ACTUARIAL IMPLICATIONS

The development of additional COVID-19 therapies and treatments will likely result in higher costs. This could be offset by better use of repurposed drugs as well as older therapies shifting from brand to generic or from injectables to orally administered. The impact of the new costs is driven by utilization and will be a function of the severity of future COVID-19 outbreaks. With greater effectiveness of those treatments, there will be cost shifting from outpatient and inpatient hospitalization to pharmaceutical costs. Overall, this should help drive down healthcare costs of future outbreaks as well as potentially preserving the continuity of elective surgeries and other non-COVID related medical treatments.

Session 10: The Next Evolution of Retail Pharmacy

This session featured an Executive Vice President of Health and Wellness from Walmart discussing the emerging roles of retail pharmacies within the Healthcare space with specific examples from Walmart.

Walmart has a large footprint in the US. Over 4,000 of Walmart's locations exist in rural and medically underserved areas with access to primary care and health systems. This allows them to fill in some of the healthcare gaps that exist in those areas. Their goal in those and many cases is to supplement the needs of their population where traditional care is missing. This includes clinics, pharmacies, dental, vision and hearing services. Walmart also acquired a telehealth platform to further supplement their services for individuals who lack readily available access to care. Their goal is to provide care in medically underserved areas where local community options are limited. This mainly consists of adding services to their current stores but also building separate structures. Another way of expanding access is to offer appointment times outside of standard work hours. Finally, Walmart has flexibility to assist pharmacy users through creative financing arrangements to help make drugs more affordable to their customers.

The keys to integrating care at Walmart and other non-traditional providers is good Electronic Medical Records (EMR). This allows providers to speak better to each other including internal and external providers.

Walmart offers pharmacy services which can supplement medical care through advice given. The extent to which pharmacists can help offer treatment advice varies by State. Walmart has consistently offered immunizations across all areas. More currently, 80% of Walmart's COVID-19 immunizations have been in medically underserved areas. In conjunction with vaccinations, Walmart has expanded their "Test and Treat" options related to COVID-19.

ACTUARIAL IMPLICATIONS

The use of non-traditional retail pharmacies and other types of spaces will help to ease pressures related to access to care. There are several potential implications of this they include:

- Challenges in integrating these facilities with insurance plans may cause more out-of-pocket costs
- Successful integration could drive up short run costs, particularly in preventive healthcare while shifting away from acute care costs and reducing long term costs.
- Unsuccessful integration of EMR could result in some duplicative services
- Potential reduction of uncompensated care for other nearby facilities
- More favorable pharmacy discounts to patients in some cases despite being outside of the health plans

Session 11: The Changing Face of Hospitals

This session featured the CEO of UPMC and the CEO of Mayo Clinic discussing how the pandemic has permanently changed how they operate including the greater integration of technology and the challenges of physician burnout and staffing shortages.

Some of the key challenges associated with the COVID pandemic are as follows:

- The discontinuation of federal funding is detrimental to hospitals who have already suffered financial losses due to COVID-19
- Physician burnout and staffing shortages
- Prior financial challenges predated and exacerbated by COVID
- Decreased mask use and mandates potentially leading to increases in COVID cases

The speakers identified some special considerations and upcoming changes to address some of the COVID-19 related and pre-COVID-19 related issues. These include the following:

- How will federal government address the next pandemic?
- Anticipating future hospital bed needs with an aging population and under pandemic scenarios

- Healthcare needs to be transformed to address COVID related and other pre-COVID issues
- Need to deal with physician pipeline to properly address burnout
- Increased use of telehealth at different stages of care to help lower ER visits and for
- Patient options improved through greater OP capacity
- Hospital at home can help free up bed space and is also viewed favorably by patients
- Agency nursing is being used to more efficiently allocate resources
- Workers need to reduce workload by introducing AI tools to enable greater efficiency and focus on critical issues
- Healthcare system security has become stronger, but more flexibility is needed for ease of data use
- Segmentation of systems can bridge the gap between flexibility and security
- Blockchain can be used as well as a tool, but is generally not a foundational element

ACTUARIAL IMPLICATIONS

The impact of these anticipated changes is ultimately a more efficient use of healthcare resources. The result of this is likely to be higher quality and greater patient satisfaction. Hospital at home can drive down healthcare costs, similar to reductions that take place for individuals remaining at home vs. living in a long-term care facility. More efficient use of resources can also help to ease provider financial strain and help facilities to better focus on areas of greater need. This can help drive higher utilization in higher quality and more efficient service classes, while reducing less efficient services. Greater hospital flexibility can lead to lower burdens on provider employees and reduce additional costs related to staffing shortages and burnout.

Session 12: Expanding the Pool of Diverse Doctors

This session featured the President-Elect of the American Medical Association, the CEO of a Morehouse College Medical School and a Chief Diversity Inclusion and Equity Officer discussing the lack of diversity among practitioners, the consequences of that situation and some strategies for fostering more provider diversity and inclusive care.

The COVID-19 pandemic caused or brought to light a lot of inequities in the healthcare system. Better data collection due to the pandemic has helped to better identify health disparities. As the data have shown, inequities in outcomes have presented themselves in many different medical conditions as well as spheres of Medicine.

The question becomes how to transform healthcare to deal with these issues. Addressing these issues requires the following steps to be taken.

- Understanding and identifying where the gaps in care exist
- Figuring out how to provide care to patients with care gaps
- Working with schools and medical providers to get more supply of clinicians in underserved areas
- African American residents in graduate medical education have a 20% greater chance of probation or dismissal vs. non-African American candidates
- Financial obstacles for many of these communities also need to be addressed to ensure that less affluent candidates can remain in school, finish their degrees, and ultimately practice
- Cultural awareness and consciousness are key tools to better integrating physician candidates from underserved communities
- Failure to properly deal with culturally based issues can impede proper treatment of patients leading to suboptimal outcomes

The issue of supply of diverse doctors is evident in the statistic that African Americans are 13% of the population, but only 5% of physicians. Similarly, underrepresented individuals make up 30% of the population, but only 12% of

overall physicians. One approach taken is to recruit from underserved communities to allow engagement more with healthcare communities. At Morehouse College Medical School, candidates from underserved communities are being recruited to spend their first two years of Medical School at the university and the last two years in the communities that they came from. This approach has seen success because new doctors most often go back and practice in the areas where they were trained.

Diversity in medical professional is very important to patients for the following key reasons:

- Patients can relate better to people that look or sound like them leading to better patient morale, trust, and cooperation
- Better trust helps you better understand and cooperate with preventive services
- Similarity between patients includes race, ethnicity, sexuality, and disability status
- Cultural awareness also leads to better patient outcomes through better communication and understanding
- Awareness of Social Determinants of Health can lead to a better understanding of potential underlying root causes for medical conditions as well as better success in diagnosing medical conditions.

ACTUARIAL IMPLICATIONS

The potential actuarial implications of expanding the pool of diverse doctors are as follows:

- Greater provider access in underserved communities leading to better preventive care and lower costs per service
- Higher short term preventive costs and lower overall acute care costs in the long and short terms.
- Improved comfort levels and communications with patients lead to better applications of treatment protocols and fewer medical errors leading to lower costs
- Development of home-grown clinicians can lead to lower financial incentives to try to get clinicians to practice in underserved locations.

Session 13: Taking Psychedelics Mainstream

This session featured a professor of Psychedelics and Consciousness Research and a Chief Scientific Officer at a biotechnology company focused on next generation psychedelic medicines discussing some promising advances in the area of psychedelic medicines.

Psychedelic medications are those that can profoundly impact one's perception of reality. These drug classes are being explored as novel therapies for mental health. In preliminary studies, they have shown dramatic results in treating addiction, depression, and anxiety. The model for these drugs is very different. They are administered in a tightly controlled setting with very limited doses. These drugs cause a broad-based change in the way areas of the brain communicate and network with each other.

Further research in this area seeks to better understand the mechanism for their functionality as well as to reduce hallucinogenic side effects. It's not to create the next selective serotonin reuptake inhibitor (SSRI). There is some research in developing a patch for absorption as well. Other potential applications for this type of drugs are social anxiety disorder and Post Traumatic Stress Disorder (PTSD). Current use of this medications is in an inpatient setting. The goal is to develop similar medications for outpatient therapy in order to increase accessibility. Psychedelics are currently classified as a "breakthrough" therapy by the FDA.

Drugs such as psilocybin for depression and MDMA (known as Ecstasy) for PTSD are currently under clinical trials and could be approved by the Food and Drug Administration (FDA) within 3-4 years. Psychedelics for use in treating

dementia, Alzheimer's disease, Parkinson's disease and strokes are also being considered and are currently in earlier phases of clinical trials.

Placebo controlled studies are more difficult to do with these drugs because their effects are very pronounced, and the participant blindness is more difficult to maintain. Use of non-placebos such as treatments whose effects are already known is another alternative approach. Large pharmaceuticals are also starting to use smaller firms who are experienced with developing new medicines to help generate new opportunities and then applying their expertise to take these drugs through clinical trials and the FDA process to market.

Overall, the emergence of Psychedelics shows some areas of promise in diseases that deal with brain function and chemistry.

Actuaries should keep up with this topic as some treatment options for complicated conditions of depression, addiction, anxiety and dementia may emerge.

ACTUARIAL IMPLICATIONS

The potential actuarial impact of mainstream psychedelics includes the following:

- Higher short term pharmaceutical costs of replacing cheaper medications with more expensive ones
- If curative therapies emerge, this can lead to lower long-term costs of maintenance drugs such as SSRIs
- Shifting away from intermittent acute inpatient behavioral health services for more severe conditions

Session 14: The Future of Wearables in Health

This session featured a VP of Health from Apple and The Dean of Faculty from the Harvard School of Public Health discussing the use of wearable technology in medical research.

One area where wearables was studied was in the tracking of women's health. Many of the guidelines related to this issue are outdated. This wearable study was able to amass large amounts of data which also incorporated environmental, behavioral and social determinant information. The study allows for repeated measures from a large population that improves the quality of the study. Many preliminary analyses have been done to help discover new trends and check on persistency of old ones. In addition, menstrual issues were explored with focus on the following:

- Length of cycles
- Symptoms associated with menstruation
- Impact on other reproductive health outcomes and characteristics
- Other associated medical conditions such as polycystic ovarian syndrome (PCOS)
- Peri and Post-Menopausal situations are also being explored

Some conclusions that came about from this study included:

- Higher rates of cardiac arrhythmia among populations with PCOS
- 23% of PCOS diagnoses have a family history

The individuals doing these studies are trying to help users better understand the implications of using this technology to try to empower themselves through better engagement with their health and well-being. In addition, the use of wearables can be used to better identify fertility peaks within the cycles for their members.

Data privacy is a key consideration. The use of data within the study needed to be encrypted to prevent identification, while also capturing useful data that could help identify trends and disseminating results in aggregate. Participants were given the option of what data to share at any given time.

Doctors are also looking at ways to incorporate wearable data into their information gathering diagnosis and care. The use of this data does not have a lot of uptake yet as the empirical research has not yet shown enough connections between wearable data and health status. However, there is some capability for physicians to access this database for specific data and they can draw their own conclusions.

ACTUARIAL IMPLICATIONS

The potential actuarial impact of the use of wearables lies mainly in the integration of their data into healthcare systems. Data trends from wearables accessed by attending physicians – primarily PCPs – can help to better manage chronic conditions and reveal other conditions in early stages. The consequences of this could be increases in costs due to early treatments but also better maintenance of chronic conditions and reductions in costs related to acute care.

Closing Summary

Overall, these sessions from the WSJ Health Forum provided actuaries with many insights into emerging healthcare topics and some key related actuarial considerations. They include the following:

- Changes in delivery of care such as greater use of technology can drive more efficient care but can also drive costs up in the short term. Examples of this include Telehealth and Hospital at Home.
- New entries into the provider market including retail pharmacies, and increased provider diversity can help ease access issues in underserved areas.
- COVID-19 related costs are likely to increase as more treatments are developed and government funding for testing and vaccination dries up.
- Provider burnout and mental health issues can lead to worse patient outcomes and higher costs if not addressed properly.
- Future climate disruptions can cause geographical shifts in healthcare costs including increases in vector borne diseases and other diseases driven by environmental changes.

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Representing the thousands of actuaries who help conduct critical research, the SOA Research Institute provides clarity and solutions on risks and societal challenges. The Institute connects actuaries, academics, employers, the insurance industry, regulators, research partners, foundations and research institutions, sponsors and non-governmental organizations, building an effective network which provides support, knowledge and expertise regarding the management of risk to benefit the industry and the public.

Managed by experienced actuaries and research experts from a broad range of industries, the SOA Research Institute creates, funds, develops and distributes research to elevate actuaries as leaders in measuring and managing risk. These efforts include studies, essay collections, webcasts, research papers, survey reports, and original research on topics impacting society.

Harnessing its peer-reviewed research, leading-edge technologies, new data tools and innovative practices, the Institute seeks to understand the underlying causes of risk and the possible outcomes. The Institute develops objective research spanning a variety of topics with its [strategic research programs](#): aging and retirement; actuarial innovation and technology; mortality and longevity; diversity, equity and inclusion; healthcare cost trends; and catastrophe and climate risk. The Institute has a large volume of [topical research available](#), including an expanding collection of international and market-specific research, experience studies, models and timely research.

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