California Telehealth Policy Coalition
Attendee Pre-Read Materials
November 2, 2021

Speaker Biosketches

Leticia Alejandrez, Director of Telehealth and Human Services, California Emerging Technology Fund

Leticia Alejandrez serves as the Director of Telehealth and Human Services for the California Emergency Technology Fund (CETF), a non-profit established by the California Public Utilities Commission as a public benefit from corporate consolidations, but corporations have no involvement in the governance of CETF. CETF's mission is to close the Digital Divide in unserved and under-served communities. Ms. Alejandrez focuses on advancing Telehealth for medically under-served and un-served Californians, while also working in service to Digital Equity and Digital Inclusion for unconnected and under-connected residents so they can fully participate in society – which is a 21st Century Civil Right. Ms. Alejandrez's career expands over 25 years – in philanthropy, strategic communications, public policy, community engagement and capacity building, and non-profit executive management – in service to economic, social and racial justice.

Gabriella Barbosa JD, Managing Director of Policy, The Children's Partnership

Gabriella Barbosa is the Managing Director of Policy at The Children's Partnership, where she leads the development, implementation and supervision of an advocacy agenda and team focused on advancing systemic changes that support the health and well-being of children through public policy, research, partnerships and community engagement. Gabriella has over a decade of experience using various advocacy strategies to achieve a more just society for children through public policies that improve the conditions in which children live, learn, develop, and play. She previously served as the Public Policy Director for a local elected official and a non-profit advocacy organization, where she developed and utilized a community-centered policy-making approach that shifts power to community members as the drivers of systemic change for themselves, their families and their communities. Gabriella began her legal career as an Equal Justice Works Fellow in the Children's Rights Project at Public Counsel, where she designed and implemented an advocacy project that improved the academic outcomes of immigrant students and students from immigrant families using direct legal representation, impact litigation, policy advocacy and community education. She was also previously a public school teacher in South Los Angeles. Gabriella is a proud daughter of immigrants. She received a B.A. in Political Science and Human Rights from Columbia University and a law degree from Columbia Law School.

Sarah Bridge, Legislative Advocate, Association of California Healthcare Districts

Sarah Bridge is the Legislative Advocate for the Association of California Healthcare Districts (ACHD), working with State departments, the Legislature, the Administration, and stakeholders on policies impacting healthcare districts. Her policy issue areas include access to care and Medi-Cal, HIE, community health, emergency and disaster preparedness, skilled nursing facilities, and workforce. She leads ACHD's Telehealth Working Group and currently serves on the Department of Healthcare Services Medi-Cal Telehealth Advisory Group.

Prior to joining ACHD in 2018, Sarah worked for the California Special Districts Association (CSDA). Sarah holds a degree in Political Science with minors in both International Relations and Ethics, Justice & Policy from California State University, Chico.

Senator Anna M. Caballero, JD, California Senate District 12

Anna M. Caballero, was elected in November 2018 to the California State Senate to represent the 12th Senate District, which includes the Salinas Valley, San Benito County, Merced County and portions of Stanislaus, Madera and Fresno Counties.

Anna has a 30 year legacy of public service in her community. She received her undergraduate degree from UC San Diego, and her law degree from UCLA. After graduating law school, she moved to Salinas to provide affordable legal services to farmworkers. Anna then ran for the Salinas City Council where she served for seven years; focusing on affordable housing, strengthening the business and commercial opportunities for growth, the redevelopment of downtown, and providing more parks and recreational space for families. Anna later became the first female Mayor of Salinas in 1998, where she raised private funds for city libraries, along with putting a measure on the ballot to raise money for essential services during a state budget crisis.

Anna was later elected to the State Assembly in 2006, where she continued to focus on meeting the needs of local residents. She made it easier for farmers to utilize their land to build farmworker housing, while also facilitating funds to make sure her community had clean drinking water. Anna was able to access much needed gang intervention funds to help reduce gang violence in the region, creating a partnership with the Highway Patrol and the Department of Justice. As an advocate for education, Anna also voted to extend state student aid to undocumented students applying for citizenship.

From 2010 to 2016, Anna joined Governor Edmund G. Brown's cabinet as Secretary of the Business, Consumer Services and Housing Agency. Under Anna's leadership, 65 million dollars were allocated to build housing and provide services for homeless veterans and rural communities, while providing struggling families access to home refinancing assistance. During her time working with Governor Brown, Anna was the highest-ranking Latina in state government.

Anna's leadership has inspired generations of young leaders to work hard, and help build a strong community for the future. She has been a tireless advocate for families, farmers, veterans, workers, the disabled, seniors, and teachers. She is honored to serve as your state Senator and has already made a huge impact in her district.

Diana Camacho, MPH, Senior Program Officer, California Health Care Foundation

Diana Camacho is a senior program officer for CHCF's Improving Access team, which works to improve access to coverage and care for Californians with low incomes. Diana leads our body of work on telehealth.

Diana was previously at Kaiser Permanente, where she led Medicaid care delivery collaborations and national community benefit strategy and grantmaking within the health care safety net. While at Kaiser Permanente, Diana led the development of a national telehealth initiative aimed at enhancing telehealth practice at Federally Qualified Health Centers and health care providers for people experiencing homelessness. Prior to Kaiser Permanente, Diana was director of community health at John Muir Health where, in addition to her community grantmaking, she led cultural competency, language access, and community needs assessments. Diana started her public health career supporting the needs of people living with HIV/AIDS as a social worker, health educator, and program coordinator.

Diana earned a bachelor's degree in psychology from the University of California, Santa Barbara, and a master's degree in public health from the University of California, Berkeley.

Nghia Do, Founder, YouthMindsAlliance and High School Student

After struggling with depression, Nghia Do became passionate about youth mental health. He advocates for improved mental health systems for youth by running a youth-led organization, YouthMindsAlliance, which raises awareness about the importance of mental health and provides resources, education, and support to young adults. Nghia is a member of the Youth Advocacy Board, a partnership of California Children's Trust and the California Coalition for Youth, and a CHMACY board member. He is working to transform the California mental health system by working on Assembly Bill 1378 to implement peer-to-peer programs within high schools.

Amy Durbin, MPP, Policy Advisor, Center for Connected Health Policy

Amy Durbin joined CCHP as Policy Advisor in December 2020. In this role, Ms. Durbin will act as Project Manager for the California Telehealth Policy Coalition and advise on a variety of telehealth policy and legislative issues for CCHP.

Prior to joining CCHP, Ms. Durbin was a legislative advocate for the California Medical Association, focusing on a number of health care issues, including health information technology and telehealth access. Prior to her tenure at CMA, Ms. Durbin worked in the California State Legislature. Ms. Durbin graduated from Chico State University with her bachelor's degree in Political Science, and Sacramento State University with her Masters in Public Policy and Administration.

David Ford, VP, Health Information Technology, California Medical Association

David Ford is the Vice President of Health Information Technology for the California Medical Association (CMA). He develops CMA's thought leadership in all aspects of health IT – EHRs, health information exchange, and telehealth. David is a recognized expert on the transition to electronic health records and health information exchange. Prior to joining CMA, David was the Executive Director of CalHIPSO, the largest federally designated Regional Extension Center (REC) for Health Information Technology in the nation. In that role, David oversaw CalHIPSO's work to assist thousands of safety net providers implement and use health information technology to improve their care and participate in payment reform.

David started his career as an employee of the California State Legislature. He served most recently as the Chief of Staff to then-Assemblymember Ted Lieu (D-Los Angeles), now a member of Congress.

David holds a BA in Political Science from The American University in Washington, DC.

Joe Garbanzos, State President (volunteer); AARP-CA

Joe Garbanzos is the State President (volunteer) at AARP-California, he is part of a volunteer-leadership team that works with policy makers, volunteers and staff in achieving AARP's strategic priorities in CA.

His body of work includes CEO/Executive Director at Samahan Health Centers, a FQHC in San Diego; consulting in healthcare, outreach and education on coordinated Medicare/Medicaid program to hard-to-reach and culturally diverse communities. He also is a Lecturer at CA School of Management & Leadership, Alliant International University, San Diego campus.

Joe has an MBA at Peter F. Drucker Business School. He has a post-graduate degree in Public Health from the School of Community and Global Health at Claremont Graduate University in Claremont, CA. He completed the UCLA Anderson Business School/Johnson & Johnson Healthcare Executive Program in 2019.

Paul Glassman, DDS, MA, MBA, Associate Dean for Research and Community Engagement, College of Dental Medicine, California Northstate University

Dr. Paul Glassman is the Associate Dean for Research and Community Engagement at the College of Dental Medicine at California Northstate University in Elk Grove, CA and Professor Emeritus at the University of the Pacific, Arthur A. Dugoni, School of Dentistry in San Francisco, CA. He has served on many national panels including the Institute of Medicine's (IOM) Committee on Oral Health Access to Services which produced the IOM report on Improving Access to Oral Health Care for Vulnerable and Underserved Populations.

Dr. Glassman has had many years of dental practice experience treating patients with complex conditions and has published and lectured extensively in the areas of Hospital Dentistry, Dentistry for Patients with Special Needs, Dentistry for Individuals with Medical Disabilities, Dentistry for Patients with Dental Fear, Geriatric Dentistry, and Oral Health Systems reform. He has a long career working with special populations in a variety of practice and community settings. Dr. Glassman has been PI or Co-PI on over $30 million in grants and contracts over the last 30 years devoted to community-service demonstration and research programs designed to improve oral health for people with disabilities and other underserved populations.

Dr. Glassman is a pioneer and has led the national movement to improve oral health using telehealth-connected teams and Virtual Dental Homes.

Finally, Dr. Glassman has been prominent in advocacy efforts on a state and national level for health system reform to improve oral health systems for a wide variety of underserved groups.

Katie Heidorn, MPA, Executive Director, ITUP

Katie Heidorn is Executive Director of Insure the Uninsured Project (ITUP). Prior to leading ITUP, Katie spent the past two years from 2018 - 2020 as a Government Affairs Advocate for Health Net and was Development Director and policy lead at the nonprofit California Coverage and Health Initiatives from 2017 - 2018. From 2012 - 2016, Katie served for five years in the Brown Administration at the California Health and Human Services Agency as an Assistant Secretary of Program and Fiscal Affairs and Health Reform and as a Governor’s appointee in a Senate-confirmed position, Deputy Secretary of Special Programs. Prior to her service in the Brown Administration, Katie was an Associate and Principal Consultant for health policy in the California State Senate Appropriations Committee from 2008 - 2011. She is also an alumna of the California Senate Fellows Program, serving in the office of then-Senator Tom Torlakson. Katie received her masters degree in Public Administration from the University of Southern California and her bachelor of arts and sciences degree in Biochemistry and Molecular Biology and Comparative Literature from the University of California, Davis.

Misty Humphries, MD, Associate Professor, Vascular and Endovascular Surgery, UC Davis

Dr. Humphries is a vascular surgeon that specializes in open vascular and advanced endovascular treatment for arterial disease. Her primary clinic interests are in outreach and management of patients with peripheral artery disease who are at risk for limb loss. She is a leader in health outcomes research and her NIH funded research focuses on prevention of lower extremity amputations for patients in rural clinics with peripheral artery disease and the use of telemedicine to bring multidisciplinary wound care to rural communities.

Linnea Koopmans, MSW, Chief Executive Officer, Local Health Plans of CA

Linnea Koopmans is the Chief Executive Officer for the Local Health Plans of California (LHPC), the statewide trade association representing all 16 of California’s not-for-profit and community-based health plans that collectively cover 70% of the state’s Medi-Cal managed care population. As CEO, Linnea leads the Association’s legislative and policy advocacy on behalf of the local plans. She previously served as the Association’s Director of Government Affairs. Before coming to LHPC in 2018, Linnea worked for the County Behavioral Health Directors Association and prior to that for the Los Angeles County Department of Mental Health. She started her career working in housing and homelessness. Linnea received a Master of Social Welfare from UCLA and a BA in Sociology from Westmont College.

Michael Kurliand, MS, BSN, RN-BC, Director of Telehealth & Process Improvement

Michael has been working in healthcare for over 25 years and has served as a clinician, administrator, strategist, consultant, program and departmental leader. Specializing in health information technology and change management, Michael has worked at organizations such as the University of Pennsylvania, Children's Hospital of Philadelphia, and Nemours duPont Hospital for Children. Michael is now the Director of Telehealth and Process Improvement at West Health, a non-profit dedicated to lowering healthcare costs to enable seniors to have access to high-quality, affordable health care. In this role, Michael serves as a subject matter expert in developing and scaling models of care that use technology such as telehealth to enhance care for the elderly and aging population. Michael is also responsible for advocating telehealth policy that supports seniors and serves on the CA Telehealth Coalition's Education Committee. Michael received his ADN and BSN at Drexel University School of Nursing. Michael went on to receive his Master's Degree from Johns Hopkins University in Organizational Dynamics and Strategic Human Resources. As a Registered Nurse, Michael worked in the ambulatory and acute care settings, specializing in Oncology and Psychiatry. He's a proud husband and father of two boys and although now living in California for over four years, still cannot stand up on a surfboard but can tell you where the best tacos are.

Mei Kwong, JD

Mei Wa Kwong, JD has over two decades of experience in state and federal policy work. She is the Executive Director for the Center for Connected Health Policy (CCHP), the federally designated National Telehealth Policy Resource Center. Ms. Kwong has written numerous policy briefs, crafted state legislation, and led several coalition efforts on a variety of issues. She has published articles on telehealth policy, is recognized as an expert in her field, and has been consulted by state and federal lawmakers on telehealth legislation and policy. Ms. Kwong is a graduate of the George Washington University Law School.

Anthony Magit, MD, MPH, Chief Physician Integration Officer, Rady Children's Hospital of San Diego

Anthony Magit, MD, MPH, is a pediatric otolaryngologist at Rady Children's Hospital – San Diego, and a clinical professor of otolaryngology at UC San Diego School of Medicine. He serves as the Medical Director for the UCSD Human Research Protections Program. Dr. Magit was recently named as the Chief of Physician Integration at Rady Children's Hospital with responsibilities including physician development and serving as the liaison between Rady Children's Hospital physicians and community pediatric healthcare providers. Currently, he is the Chair of the Physician Well Being Committee and the Telemedicine Physician Champion.

Dr. Magit is Board President of the Children's Specialty Care Coalition, an organization representing 19 member medical groups, and over 2,500 pediatric subspecialists. He is also a long-time member of the California Medical Association (CMA) and serves on its legislative committee and is a member of the San Diego County Medical Society Board. He has been named among San Diego Magazine's "Top Doctors" for more than 10 years and one of the "Best Doctors in America." Dr. Magit graduated from Stanford University and the UC San Diego School of Medicine. He also earned a master's degree in public health from Johns Hopkins University.

Beth Malinowski, MPH, Director of Government Affairs, California Primary Care Association

Beth Malinowski, Director of Government Affairs, joined the California Primary Care Association (CPCA) in 2013. Beth advances CPCA's policy priorities and legislative interests through CaliforniaHealth+ Advocates, CPCA's advocacy affiliate. In this role, Beth led CPCA's recent state budget advocacy to maintain critical safety-net funding and strengthen telehealth and past efforts to defend the 340B Program and secure $100 million for primary care workforce. Since 2015, Beth has overseen over a dozen sponsored bill initiatives to advance health center interests, including AB 1494 (Aguiar-Curry, 2019) which has proven critical to the use of virtual care as part of the COVID-19 response. Beth received her MPH from the UC Berkeley School of Public Health where she focused on health and social behavior. While at Berkeley, she held positions at the Center for Health Leadership, Labor Occupational Health Program, and California Department of Health Care Services. Prior to graduate study, she worked with SEIU healthcare locals, primarily in Illinois and California, where she organized healthcare workers and consumers to promote quality care and quality jobs in homecare and hospital systems.

ON A LIGHTER NOTE: Raised in New York by her neurotic Jewish mother, spending more time at the pediatrician's office than the local playground, she has been thinking about transforming the health care delivery system since her first sneeze.

Lisa Matsubara, JD, General Counsel and VP of Policy, Planned Parenthood of CA

Lisa Matsubara is the General Counsel and Vice President of Policy at Planned Parenthood Affiliates of California where she works on statewide public policy as well as legislative and regulatory advocacy focusing on sexual and reproductive health care. Prior to PPAC, Lisa worked on a wide range of health care issues as legal counsel for the California Medical Association including the defense of the ACA's contraceptive coverage mandate, the Reproductive FACT Act, Title X, and legislation to expand access to abortion services and lactation accommodations in the workplace. She is on the board of the California Society for Healthcare Attorneys and has been a member of the American Society of Medical Association Counsel and American Health Lawyers Association. Lisa is a graduate of the William Richardson School of Law at the University of Hawaiʻi and Dartmouth College.

Lisa Moore, MPH, Executive Director, Virtual Care Collaborative, UC Health

Lisa Moore is University of California Health's Executive Director for the Virtual Care Collaborative (VCC). As the Executive Director, Lisa is responsible for developing a UC-wide telehealth program leveraging individual campus expertise and best practices to allow for cross campus sharing of telehealth services. The VCC will be kicking off a pilot to provide Tele Mental Health services to UC students on campus.

Before becoming the Virtual Care Collaborative Executive Director, Lisa was UC San Diego Health's Telehealth Director for the past 5 years. Throughout her time at UC San Diego Health, Lisa has implemented MyChart Video Visits to Primary Care and Specialty departments, inpatient telehealth services, eConsults, on-line second opinion consults program, as well played a pivotal role in achieving Telemedicine Accreditation from Utilization Review Accreditation Commission (URAC). Lisa also published the following article with her fellow UCSD colleagues: Medical Undistancing Through Telemedicine - A Model Enabling Rapid Telemedicine Deployment in an Academic Health Center During the COVID-19 Pandemic, Telemed J E Health, Oct 2020
Lisa's prior experience includes overseeing the Portfolio Management Office and Telehealth Program at Rady Children's Hospital San Diego. Lisa has over 15 years' experience implementing IT and Electronic Health Records systems, as well as expertise in change management and process improvement.

Lisa holds a Master of Public Health in Health Care Management from University of California Los Angeles and a Lean Six Sigma Black Belt.

Lisa Murawski, MA, Chief, Benefits Division, Dept. of Health Care Services

Lisa Murawski currently serves as Chief of the Benefits Division at the Department of Health Care Services. Under her leadership, Benefits Division is responsible for policy formulation for benefits covered by the Medi-Cal program. The Division is currently leading telehealth stakeholder engagement and the development and coordination of the Department's telehealth policy.

Prior to this, Ms. Murawski worked for the State Legislature analyzing and making recommendations on health policy and budget issues across Medi-Cal, public health, and other health-related programs and health regulatory agencies. Most recently, she worked as Principal Consultant to the California State Assembly, Appropriations Committee where she served for over 10 years. Ms. Murawski also served as a Fiscal and Policy Analyst with the Legislative Analyst's Office. Ms. Murawski earned a Bachelor's Degree in Industrial Engineering from the State University of New York at Buffalo, and a Master's Degree in Geography from the University of California, Santa Barbara.

Nancy Netherland, Founder, Kids and Caregivers

Nancy Netherland is a mother of, and advocate for, two former foster children living with rare, chronic medical complexities. She founded Kids and Caregivers to ensure that caregivers of children living with medical complexities have access to wellness, information and advocacy resources. Nancy serves on the State of California's Medicaid Children's Health Advisory Panel, the Cal-AIMS Workgroup for Foster Youth and Families, California's Telehealth Policy Workgroup, the Family Advisory Council at UCSF Benioff Children's Hospital, and as a Patient Centered Outcomes Research Institute (PCORI) ambassador and research reviewer. Nancy is passionate about connecting caregivers with their peers, emerging health information, and wellness resources and to ensure that caregivers and providers are at the policy tables that impact the health and well-being of children living with chronic conditions.

Claudia Page, Director, Safety Net and Innovation, California Children's Trust

Claudia Page's work at the California Children's Trust (CCT) focuses on the roles of managed care and technology in addressing outcomes and disparities in youth mental health. CCT is reimagining children's mental health through the lens of it's Framework for Solutions, which is built on the belief that children are not broken or pathological, and the building blocks of healing are in the wisdom and intelligence of marginalized communities. She was a founder at Alluma, a national nonprofit health and social safety net IT solutions provider. Prior to this she was a senior program officer at the California Health Care Foundation.

Rajiv Pramanik, MA, Chief Health Informatics Officer, Contra Costa Health Services

Rajiv Pramanik is the CHIO and Chair of the Office of Informatics & Technology for Contra Costa Health Services (CCHS). CCHS is a Health Department that has multiple divisions including

- Contra Costa Health Plan – MediCal Managed Care Plan
- Contra Costa Regional Medical Center – Safety Net Hospital and Health Centers
- Behavioral Health
- Emergency Medical Services
- Hazardous Waste
- Homeless, Housing & Health (H3) Division
- Public Health Division

Jennifer Raymond, MD, MCR, Chief of Endicrinology, Chair of the Virtual Care Committee, Children's Hospital of Los Angeles

Dr. Jennifer Raymond (pronouns – she/hers) is an Associate Professor at the University of Southern California. She is the Division Chief for the Center for Endocrinology, Diabetes, and Metabolism and Chair of the Virtual Care Committee at Children's Hospital Los Angeles (CHLA). She received her medical degree and completed her residency in Pediatrics at the University of Kansas. She completed her fellowship in Pediatric Endocrinology and Master of Clinical Research at Oregon Health and Science University. She is also a mom to a pretty great kid, a wife, an always-learning social justice advocate, and a runner.

Dr. Raymond's main research and clinical interest is improving patient outcomes through novel clinical approaches and behavioral interventions, specifically in marginalized adolescents and young adults. She also has a particular interest and expertise in utilizing telehealth to increase the reach of clinical and behavioral interventions. Dr. Raymond is interested in sustainable and efficient clinical care models that can be replicated in multiple care settings, including racially, ethically, and socioeconomically diverse young people.

Sylvia Trujillo, JD, MPP, Director, Policy, OCHIN & California Telehealth Network

Sylvia Trujillo is the Policy Director for OCHIN and the California Telehealth Network (CTN). OCHIN is a national nonprofit health information technology and research network with over two decades of experience transforming health care delivery to advance health equity through technology, data insights, and expertise. CTN is a leading nonprofit provider of telecommunications infrastructure and telehealth services in California that promotes advanced information technologies and services to improve access to high-quality healthcare to clinics and hospitals in rural and medically underserved communities. Prior to OCHIN, Sylvia served as Senior Washington Counsel (Federal) for the American Medical Association (AMA) where she played a lead role in telehealth, connected health, and artificial intelligence regulatory and payment policy development and advocacy. In addition, she served as a litigation attorney for the Centers for Medicare & Medicaid Services Division in the Office of the General Counsel in the U.S. Department of Health & Human Services (HHS) and as an HHS Assistant Regional Counsel. Sylvia is a member of the California Bar Association and a graduate of the University of California (Berkeley) JD, Harvard University MPP, and Bryn Mawr College BA *cum laude*.

Carol Yarbourgh, MBA, CPC, CCA, OCS, CHC, Business Operations Manager, Telehealth, UCSF Health

Carol Yarbrough is a healthcare compliance and reimbursement specialist. Providing a unique background in legal, technology, revenue management, clinic management and knowledge of both federal and state regulations, she actively contributes to telehealth initiatives at UCSF Health. She works hands-on with professional fee and hospital-based fee professionals to implement billing strategies and provides real-time feedback to clinicians regarding documentation and staff with encounter guidance. She also trains CPT coding professionals at UCSF Medical Center in order to maximize reimbursement through correct CPT coding.

Broadband in California:

Understanding the Digital Divide

California Telehealth Policy Coalition

APRIL 2021

Telehealth is not possible if patients are unable to access high-speed internet. As the California Telehealth Policy Coalition supports access and adoption of quality telehealth for all patients, we understand the importance of ensuring broadband for all.

Understanding Broadband

Broadband is the transmission of wide bandwidth data over a high-speed internet connection. The Federal Communications Commission (FCC) defines broadband as internet with download speeds of 25 megabits per second (Mbps) and upload speeds of 3 Mbps. To illustrate, 15-25 Mbps download speeds would allow one person to stream high-definition video[1] while a 1-6 Mbps upload speed is required to transmit quality live video[2] (e.g., a live video telehealth visit). It is worth noting however, that these speeds only accommodate one person. If multiple family members are using the internet at the same time, they will likely need higher speeds to accommodate their usage.

In California, the broadband speed standards are lower than those set by the FCC. California's broadband subsidy program, the California Advanced Services Fund (CASF), classifies 6 Mbps upload speed and 1 Mbps download speed as high-speed internet and funds build-out of broadband infrastructure for speeds of 10/1 Mbps or higher.

Core Considerations for Broadband Adoption

Broadband is not only necessary for telehealth but is critical for other scenarios like work, education, and civic engagement. While many Californians have daily access to some form of internet, many others are unable to use broadband because of various structural reasons. This digital divide is caused by four main challenges:

- **Availability:** Is reliable, secure, high-speed internet offered in my area?
- **Affordability:** Can I afford to pay for the high-speed internet offered in my area?
- **Devices:** Do I have a device I can use to access the internet?
- **Digital Literacy:** Do I understand how to use the internet and internet-enabled devices?

State of Broadband in California

Studies estimate that around 98% (38.818 million) of Californians live in an area where broadband (25/3 Mbps) is available, meaning 2.3 million Californians live in areas that do not meet the FCC standard for home high speed internet service.[3] However, this number does not capture the many Californians who may live in an area serviced by high-speed internet but cannot afford it. Additional data suggests that 84% of Californians had high-speed internet at home in 2019, up from 74% in 2017, but still leaving out 16% of the state's residents.[4] Rates of high-speed connectivity at home are lower than average for Latino and African-American households, and for those in rural areas of the state.[5]

Price may be one factor affecting access: while 70% of California households are located in an area where wired "low-price plans" are available (<$60/month), for many people with lower incomes, these plans are still too expensive. Access to hardware may also be a barrier, as over 10% of Californians report that they lack a desktop, laptop or other computing device at home.[6] This digital divide does not impact all populations evenly: race, income, education, age and ability all impact an individual's likeliness to use and have access to broadband.

California Broadband Adoption Rates

Income >$100K a year	With a high school degree	English-speaking Latinos	People ages 18–29	Non-Disabled
97%	71%	86%	84%	83%
Income <$20K a year	Without a high school degree	Spanish-speaking Latinos	People 75 and older	Disabled
52%	53%	57%	62%	64%

Source: California Emerging Technology Fund, Poll conducted by the Institute for Governmental Studies – January 2019. Statistics are cited for adoption at home with a computer or tablet.

The California Telehealth Policy Coalition Broadband Committee

The Telehealth Policy Coalition Broadband Committee is committed to broadband for all and advancing state policy. We have developed the following principles to guide our approach to broadband policy:

- **Broadband should be treated as a utility:** policies should treat broadband as a utility necessary for Californians to access health care and other services and needs in the 21st century
- **Robust infrastructure should be in place to serve all Californians:** policies expand the physical infrastructure needed to bring internet access to underserved populations and geographies
- **Californians should have equitable access to broadband:** policies ensure increased access to broadband for underserved communities, both urban and rural
- **Broadband should be affordable:** policies should support making high-quality internet access affordable for all Californians, including the use of subsidies and/or price setting
- **Government should fund broadband projects that rely on best-in-class, high-speed standards:** policies ensure that infrastructure, accessibility and affordability reinforce the need for high-speed, best in class technologies

Where to Find More Information on Broadband in California

California Broadband Council State Action Plan: Created in response to Govern Newsom's executive order N-73-20, this action plan was created by the California Broadband Council with input from stakeholders and the public. It describes the current state of broadband in California, the challenges facing widespread broadband adoption, and the steps the council plans on taking to achieve broadband for all.

Litter Hoover Commission Issue Brief on California's Digital Divide: This report provides critical background information on broadband basics, infrastructure and the digital divide in California. In addition, it also provides case studies on different broadband infrastructure and ownership models in order to explore the best way to expand broadband accessibility.

California Emerging Technology Fund Annual Survey: The California Emerging Technology Fund (CETF) has been working since 2007 to close the digital divide. The CETF publishes various reports every year including their Annual Survey which tracks the progress of broadband deployment and adoption throughout California and has been conducted since 2008.

Endnotes

[1] Broadband Now, How much internet speed to I need? (2021), https://broadbandnow.com/guides/how-much-internet-speed-do-i-need.

[2] FCC, Broadband Speed Guide (2021), https://www.fcc.gov/consumers/guides/broadband-speed-guide.

[3] FCC, Broadband Deployment Report (2019), https://www.fcc.gov/reports-research/reports/broadband-progress-reports.

[4] Public Policy Institute of California, Fact Sheet: California's Digital Divide (2021), https://www.ppic.org/publication/californias-digital-divide/.

[5] Id.

[6] California Emerging Technology Fund, Statewide Survey 2019 (2019), https://www.cetfund.org/action-and-results/statewide-surveys/2019-statewide-surveys/.

Alternative Telehealth Modalities

E-Consult

MAY 2021

What is E-Consult?

An electronic consultation or "e-consult" involves a treating provider, usually a primary care provider, sending a request for consultation and information regarding a patient to a consultative provider, usually a specialist. There are various ways the consultant might respond to the e-consult including providing the requested feedback, asking for additional information, recommending specific tests or examinations or by scheduling a live appointment with the patient. These provider-to-provider communications occur through secure asynchronous electronic messaging and may be integrated into an EHR system.

E-consult formalizes "curbside consultations," informal, often audio-based consultations with colleagues. These are a well-accepted part of medical practice[1] but are not done regularly as they are uncompensated and rely on personal relationships between providers. Compared to the traditional curbside consultation, e-consult allows for integration, documentation, and care coordination because the treating provider is able to send the consultant notes and images, and the communications are captured in the electronic health record, enabling a reimbursable service.

The Benefits of E-Consult and the Importance of Reimbursement Policy

Studies consistently show that e-consults improve access to specialty care. Not only do e-consults have a one- to six-day response time[2,3,4] compared to the 25.5 days[5] it typically takes to see a specialist in-person, but e-consults also have been shown to reduce wait times for in-person appointments by 29 to 68%[6,7,8,9]. According to recent research patients can also expect significant savings in avoided copays, transportation costs, and missed work for every specialty visit averted.[10] Additionally, studies show that 78 to 96% of patients report being satisfied on dimensions such as care quality, timeliness, improved access, and safety.[11]

E-consult allows the primary care provider (PCP) to maintain the patient relationship and reinforce a patient's medical home while expanding the provider's medical knowledge.[12] E-consult has also been shown to improve provider satisfaction, with 70 to 100% of PCPs satisfied on dimensions such as timely specialist advice, improved patient care, and educational value.[13] Additionally, 50% to 95% of specialists report satisfaction with e-consults and that the use of e-consult encourages more comprehensive evaluations and fewer inappropriate clinical visits.[14] Providers also benefit from reduced no-show rates, quick turnaround and reduced specialty wait times.[15]

These benefits are particularly important for safety net providers where demand outpaces the ability to meet the needs of a growing patient population. E-consult is a proven way to address many of the challenges California's patients face in accessing specialty care.

E-Consult Reimbursement Policy

While e-consult provide significant benefits to patients and providers, their use often limited in California because Medi-Cal limits reimbursement to remote, consulting providers. The American Medical Association's Common Procedural Terminology (CPT) has adopted billing codes to recognize both the treating provider and consulting provider's time spent on e-consult. The provider's role (treating or requesting), the patient's coverage (Medicare or Medi-Cal) and the care setting (e.g., FQHC, inpatient or other) will determine which CPT code is billable. Below is a table explaining reimbursement:

CPT CODE(S)	MEDICARE PHYSICIAN FEE SCHEDULE*	MEDI-CAL FEE SCHEDULE**
99446-9: Reimburse consulting provider	Yes	No
99451: Reimburses consulting provider	Yes	Yes
99452: Reimburses treating provider	Yes	No

* Note that in Medicare, a patient co-pay is associated with an e-consult
** Note that FQHCs and RHCs cannot bill for 99451

Endnotes

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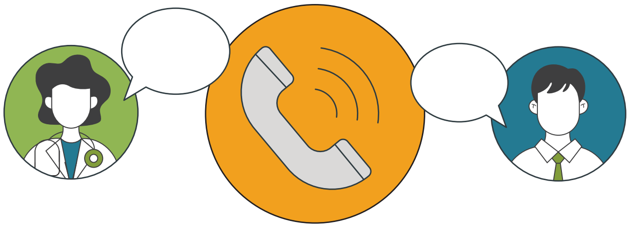
Alternative Telehealth Modalities

Audio-Only Telehealth

MAY 2021



Telehealth capabilities have enabled health care services to continue safely throughout the COVID-19 Public Health Emergency (PHE). Because many Californians lack access to the hardware and internet bandwidth necessary for video visits, policymakers and payers responded by ensuring audio-only services are reimbursed at parity with in-person services. As California emerges from the PHE, policymakers should consider continuing coverage and payment.

Why is audio only coverage important?

During the COVID-19 pandemic, the inequalities that already exist in our state have been laid bare. As many activities have gone virtual, communities who struggle with digital literacy, and those without access to the internet or the devices required to get online have been left behind. This digital divide disproportionately impacts communities of color, low-income communities, Spanish speaking individuals, disabled individuals and the elderly.[1] Groups impacted by this gap tend to also face significant health disparities. During the public health emergency, audio-only telehealth has been indispensable in ensuring healthcare access to vulnerable communities. CMS estimated that during the pandemic, 30% of all telehealth visits in the US have been audio-only. In comparison, around 94% of telehealth visits have been audio-only at Californian FQHCs,[2] facilities that serve mainly Medi-Cal beneficiaries and a disproportionate number of patients of color[3].

Evidence also demonstrates that audio-only telehealth will be an important tool to address healthcare disparities beyond the pandemic. Recent research shows that patients who have reported transportation needs were three times more likely to have an audio-only telehealth encounter.[4] Furthermore, reports from FQHCs indicate that coverage for telephone visits have helped to cut down no-show rates by half.[5] Additionally, CHBRP findings suggest that ensuring telehealth payment parity, including for audio-only, may lead reduced wait times and disparities in access to health care and health outcomes for low-income people and people of color.[6]

Standing alone, audio-only telehealth has proved to be effective in improving access to quality healthcare. Eliminating coverage for audio-only visits or disincentivizing them with lower rates would disproportionately affect communities that are already chronically underserved. Audio-only is a primary telehealth modality for many of these low-access communities and research suggests these groups are satisfied and even prefer telehealth to in person care.[7]

Audio-Only Payment Parity

Audio-only payment parity means that a provider can bill at the same rate for a service provided over the phone as they would if that same service was performed in person. Per the American Medical Association (AMA) Common Procedural Terminology (CPT) rules, billing for services varies depending on the services provided, the topics discussed, and the length of the visit. As with an in-person service, audio-only parity would require health care professionals to bill only for the services that they provide.

Under current provisional payment policies allowing for payment parity for audio-only, providers must document that the services provided meet the requirements of the corresponding CPT code attached to the claim. This would remain true if payment parity became permanent policy.

Some services cannot be provided by telephone because they do not meet the requirements of the CPT code. For example, if a CPT code requires the provider to visualize the patient, then the provider cannot bill using that CPT code if the provider renders the service through audio-only, as it would not meet the definition of the code.

Addressing concerns around audio-only telehealth

Quality of Care: Little evidence exists to examine quality differences between telephone and video telehealth, as telephone has never really been utilized and covered this broadly before. However, studies do confirm that generally telehealth care results in equal or improved clinical outcomes when compared to in-person care.[8] Additionally, studies have found consistent satisfaction with telehealth care with many patients preferring it to in person visits.[9, 10]

The California Health Benefits Review Program (CHBRP) has also found that a preponderance of evidence suggests that audio-only telehealth results in equal or better health outcomes than care delivered in person. A 2016 CHBRP report found telephone consultations result in equal or better health outcomes as in-person consultations.[11]

Health Care Fraud: Audio-only visits require the same documentation as all other telehealth and in-person visits, and can facilitate the same level of accountability, as call logs and recordings can be electronically captured. Research has found telehealth to be no more susceptible to billing fraud than in-person services.[12] The Office of Inspector General (OIG) also recently released a statement cautioning against comparing "telefraud" schemes to telehealth fraud, noting that investigations more often deal with providers who fraudulently bill for items and services, unrelated to how the visit was provided.[13]

Utilization and Cost: Audio-only telehealth removes barriers to preventative care and improves care coordination—making it a valuable tool for increasing access to care in under resourced communities. Instead of increasing healthcare costs, research suggests that increased telehealth access helps patients avoid longer, high-cost hospital stays.[14] In addition, CHBRP's 2019 analysis found that telehealth use in rural areas may be associated with an overall decrease in cost of care due to reduced rural patient travel and reductions in unnecessary office visits, emergency department visits, or hospitalizations.[15] Generally, they stated telehealth was associated with overall cost savings or was cost neutral.[16]

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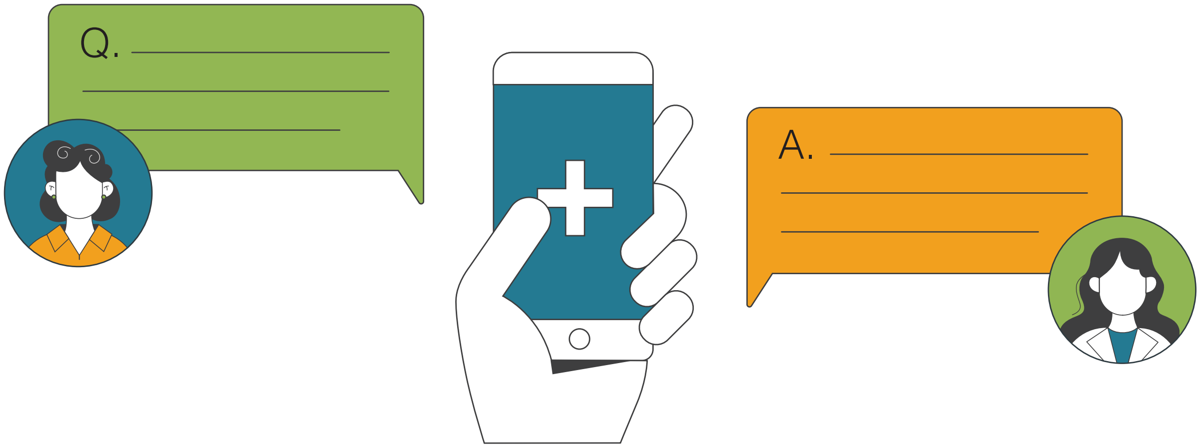
Alternative Telehealth Modalities

Text-Based Communications

MAY 2021



What are text-based communications?

Text-based communications are the transmission of text messages through the use cell phones, tablets, computers and PDAs to support health care delivery, public health practice and education.

Text-based communications include interactions between a patient and their provider, often, though not exclusively, through patient portals and SMS, and generally in advance or follow up to an office visit. Both patients and providers can initiate these communications.

How does this form of telehealth support patient care?

Text-based communications can support patient care in several ways. Systematic reviews of patient-to-provider text-based communications suggest these communications generally focus on chronic conditions like diabetes and respiratory conditions. Often, providers help facilitate behavioral changes.[1] Studies suggest an association with these types of communications and improved health outcomes for diabetes[2] and high blood pressure.[3] There is also evidence that two-way text messaging has led to an increase in knowledge regarding pregnancy for low-income prenatal patients.[4]

Even automated text message reminders have been associated with improved self-management and health outcomes for patients with chronic diseases[5] including patients with diabetes[6, 7] and HIV.[8] Text messages have also led to improvement in self-efficacy, knowledge and parenting skills for caregivers of adolescents with mental health issues.[9]

How are these services reimbursed?

Provider-to-patient text-based communications may be reimbursable, depending on the communications and service provided. Both Medicare and Medi-Cal cover asynchronous "virtual check-ins," which require the patient to send their provider a video and/or image, accompanied by subsequent communications between the patient and provider. Medicare additionally covers "e-visits," patient-initiated communications with a provider for up to seven days.

Reimbursable Provider-to-Patient Text-Based Communications

CODE	DESCRIPTION	COVERED BY MEDICARE?	COVERED BY MEDI-CAL?	COVERED BY COMMERCIAL PAYERS?
G2010	Remote evaluation of recorded video and/or images submitted by an established patient (e.g, store and forward), including interpretation with follow-up with the patient within 24 business hours, not originating from a related E/M service provided within the previous 7 days nor leading to an E/M service or procedure within the next 24 hours or soonest available appointment	✓	✓	Varies
99421-3	Online digital evaluation and management service, for an established patient, for up to 7 days, cumulative time during the 7 days; 10-minute increments	✓	No	Varies

Endnotes

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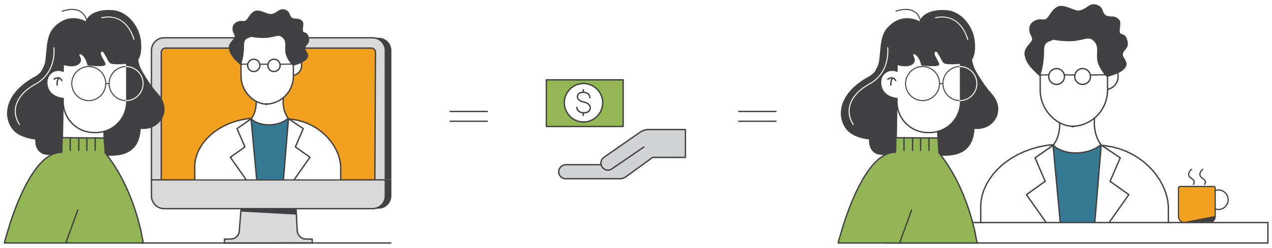
Telehealth Payment Parity

It's about the service, not the modality

California
Telehealth
Policy
Coalition

JUNE 2021



What is Telehealth Payment Parity?

Payment parity simply means paying the same amount of money for a service regardless of how it was delivered—whether in-person, or through telehealth. Parity is defined as and is specific to the *service* provided, not the *modality* used (see California's payment parity law[1]). For instance, payment parity does not mean paying for a phone call equal to an in-person visit or that all in-person visits can be conducted via a phone call. **Payment parity means paying for a service based upon length of the visit and complexity of health problems addressed, regardless of whether it was provided in-person, through live video, store-and-forward messaging, or potentially via audio-only technology.**

Payment parity recognizes that a provider's time, care, risks, and treatment for certain services does not change simply because of where or how they provide it. Parity means that services should be compensated based upon a negotiated rate that factors in the level of service provided and includes whether or not the service was appropriate.

CPT has specific parameters that must be met in order for the medical service provided to be reimbursed.

If the service provided via telehealth is not equal to a service provided in-person, it would not be paid equally, nor would payment parity legislation allow or require it to be - this is assured through billing code definitions in AMA's Common Procedural Terminology, or CPT codes. CPTs require detailed provider documentation for a visit with coverage denied by payors if it does not meet the definitions of that particular code.

California laws and standards of care do not change based upon mode of service delivery.

In addition to billing rules, specific sections of telehealth law already take into account the necessary considerations of clinical appropriateness and consumer protection (BPC 2290.5). As with all medical decisions, providers ultimately determine the clinical appropriateness of a telehealth visit, versus seeing the patient in-person. Not only is a provider at risk of not being reimbursed if the provision of care through telehealth is deemed not clinically appropriate, but they are at risk of malpractice and discipline through state licensing boards and other regulatory entities.

The potential for fraud does not change simply due to the modality of care delivery. In fact, the Office of Inspector General (OIG) recently released a statement cautioning against comparing "telefraud" schemes to telehealth fraud, noting that common investigations focus on providers fraudulently billing for items and services unrelated to how the visit was provided.[2]

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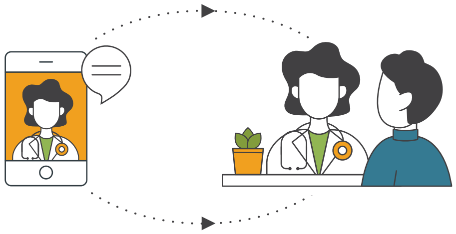
[1] AB 744, Aguiar-Curry, 2019; HSC (h) of Section 1367/INS 10123.137(HSC 1374.14 (a)(2))(Ins. Code 10123.855 (a)(2)).

[2] Press Release, US Dept't of Health and Human Services Office of the Inspector General, Principal Deputy Inspector General Grimm on Telehealth (February 26, 2021), available at https://oig.hhs.gov/coronavirus/letter-grimm-02262021.asp?utm_source=oig-web&utm_medium=oig-covid-policies&utm_campaign=oig-grimm-letter-02262021.

Examples

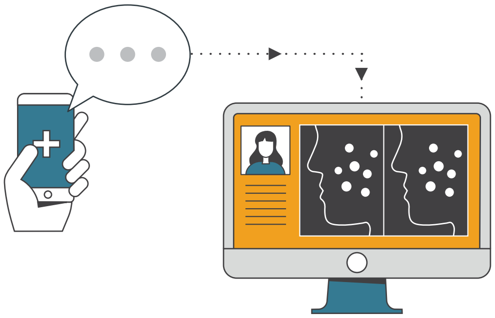
A provider has a phone call with a patient, only to determine the issue is not conducive to an audio-only visit and that the patient should schedule an in-person visit instead. If the law requires payment parity for telehealth, can the provider bill for this call on top of the full rate for the forthcoming in-person visit?



NO.

CPT rules state that if there is a related visit, only the full visit can be eligible for coverage; the initial phone call would be captured in the payment associated with the in-person encounter.

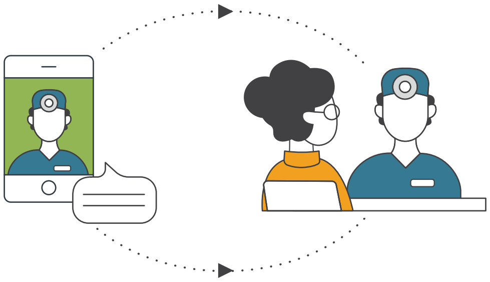
A patient texts their provider about a dermatologic issue, and the provider asks them to send an image of their issue. Can this text now be eligible for reimbursement?



NO.

Like the first scenario, there is no in-person equivalent to that text message, and CPT rules would bundle it with the store-and-forward exchange

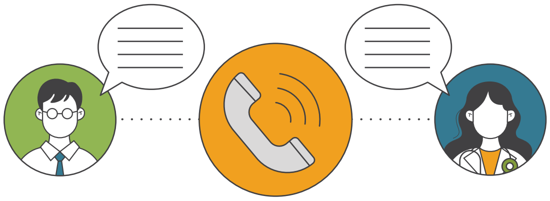
A provider performs a follow-up check-in call with a patient after a surgical procedure. Would payment parity requirements allow the phone call to be billed as an in-person visit?



NO.

CPT rules would bundle the call with the surgical visit and it would not be eligible for separate reimbursement, as it's part of the surgical encounter plus falls within time limitations.

A patient requests an appointment with their mental health provider but only has access to a phone. The provider schedules and renders a 50-minute counseling appointment where they discuss the patient's mental health status, have a counseling session and suggest a treatment plan. Is this phone call eligible for payment parity?



YES.

During the Public Health Emergency (PHE) currently in effect, it is reimbursable and included on the CMS List of Telehealth CPT Codes as well. To maintain treatment during the PHE and given that the exact same time and care with the equivalent level of complexity as in-person was provided telephonically, it is currently eligible for parity reimbursement; however, outside of the PHE and without parity requirements, this activity would not be a covered service.

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Center for Connected Health Policy
THE NATIONAL TELEHEALTH POLICY RESOURCE CENTER
FACT SHEET I July 2021

CALIFORNIA TELEHEALTH POLICY:

Post-PHE Updates

FACT SHEET I July 2021

BACKGROUND: California Telehealth Policy and Budget Updates

In early February, the Department of Health Care Services (DHCS) released their initial proposed post-pandemic telehealth policy recommendations for Medi-Cal. The proposal only made a few of the temporary COVID-19 telehealth policies permanent, while some pieces of the proposal appeared to narrow pre-pandemic policies related to store-and-forward reimbursement. Coverage of remote patient monitoring (RPM) was additionally proposed as a new benefit under the recommendations, but subject to an undetermined fee schedule. For additional details on the initial proposal, as well as pre-pandemic and temporary telehealth policies in California, please see the CCHP Fact Sheet.

On May 14th, the Administration published a revised budget draft including an updated telehealth proposal with several changes to the previously released version. The main adjustment was related to audio-only services. The previous proposal excluded federally qualified health centers (FQHCs) and rural health centers (RHCs) from using audio-only. In the May proposal, FQHCs and RHCs would be allowed to provide services via audio-only, but reimbursed through an alternative payment methodology. The previous proposal had left the audio-only rate for other providers unspecified, while the revised policy set reimbursement at 65% of the in-person/synchronous reimbursement rate for the service provided. The revision also required all providers furnishing services via synchronous and/or telephonic/audio-only modalities to offer those services in-person and reiterated a plan for DHCS to create utilization management protocols for all telehealth services prior to implementation of post-pandemic telehealth services.

These changes to the initial proposal still caused significant concern that California was poised to take their once progressive telehealth policies backwards. Stakeholders, including the California Telehealth Policy Coalition, continued to urge the Administration to align their proposal with AB 32 (Aguiar-Curry), in order to meet the health care demands for Medi-Cal beneficiaries and close disparities and access gaps. These recommendations included:

- Maintain payment parity across all telehealth modalities
- Uphold FQHC/RHC flexibilities and payment for audio-only modalities
- Equitably expand remote patient monitoring
- Continue remote enrollment in Medi-Cal

The Legislature echoed the Coalition’s position, rejecting the Administration’s revised proposal and affirming adoption of budget language consistent with AB 32. Over the next few weeks, an agreement was reached between the Administration and Legislature that would be included in AB 133, a budget trailer bill.

Health Budget Trailer Bill and Telehealth Agreement

The omnibus health trailer bill is necessary to implement various provisions of the Budget Act of 2021, affecting health-related departments and other state entities. It is a lengthy piece of legislation touching on a variety of health issues. For purposes of telehealth, the most significant piece and heart of the compromise related to Medi-Cal reimbursement is that it temporarily extends existing telehealth COVID-19 flexibilities until December 31, 2022, preserving payment parity for live-video, store-and-forward, and audio-only modalities, including those policies for FQHCs/RHCs. However, four other sections of AB 133 also touch on telehealth policies as well. The main points of these five sections within the budget bill and their telehealth components are summarized below:

1. *Extends Emergency Telehealth Expansions until December 31, 2022 – Creates an Advisory group to recommend long-term telehealth protocols (Section 380)*

This section of the bill contains the main telehealth policy provision in requiring the department to extend emergency flexibilities related to the delivery and reimbursement of services via telehealth modalities in the Medi-Cal program, subject to approval by the Department of Finance.

- Require the department to implement those extended waivers or flexibilities for which federal approval is obtained for a specified period of time ending December 31, 2022
    - o Extends payment parity for live-video, store-and-forward, and audio-only modalities, and for all providers including FQHCs/RHCs
- DHCS to convene an advisory group to inform the department in establishing and adopting billing and utilization management protocols
    - o Supposed to be completed in time to incorporate into 2022-23 budget
- Protects pre-COVID-19 policies, including store-and-forward
- Allows Department to authorize RPM with separate fee schedule

2. *Authorizes State Hospital Use of Video Telehealth – Ensuring more timely treatment transfers (Section 344)*

The purpose of this section is to establish a program for the Department of State Hospitals (DSH) to perform reevaluations through telehealth for felony incompetent to stand trial (IST) individuals in jail, who have been waiting for admission to the department 60 days or more from the date of commitment.

- Requires that the local jail provide the DSH clinician access and capability to conduct the evaluation through video telehealth to reduce IST waitlists
- Requires that DSH provide funding at a rate set by the department for reimbursement of information technology support and a portion of staff time used to facilitate telehealth interviews and evaluations of felony defendants

3. Creates the Children and Youth Behavioral Health Initiative – Incentivizes school-based Telehealth (Section 355)

This section of the bill would require DHCS to, among other things, procure and oversee a vendor to establish and maintain a behavioral health services and supports virtual platform. Additional requirements on DHCS and telehealth components include:

- Offering competitive grants to qualified entities to build partnerships, capacity, and infrastructure supporting ongoing school-linked behavioral health services for children and youth 25 years of age and younger
    - o Allowable activities for the grant funding include implementing telehealth equipment and virtual systems in and around schools
- Incentive payments to qualifying Medi-Cal managed care plans that meet certain metrics associated with increasing access to school-affiliated behavioral health providers
    - o One of the required metrics includes increasing telehealth in schools and ensuring students have access to technological equipment
- Develop and maintain a school-linked provider network and statewide fee schedule for behavioral health treatment provided to a student at a school-site

4. Health Information Exchange and Health Information Technology Advisory Group – Includes addressing privacy and security telehealth issues (Section 340)

On or before July 1, 2022, this provision establishes the California Health and Human Services Data Exchange Framework to include a single data sharing agreement and common set of policies and procedures to govern and require the exchange of health information among health care entities and government agencies in California. The language also calls for creation of advisory group to guide the process:

- California Health and Human Services Agency (CHHSA) to convene a stakeholder advisory group no later than September 1, 2021, to advise on the development and implementation of the framework
- No later than April 1, 2022, CHHSA to submit an update to the Legislature based on the input received from the stakeholder advisory group
- The advisory group would include hospitals, providers, and health information technology professionals
- Advise CHHSA on relevant issues, including how to "address the privacy, security, and equity risks of expanding care coordination, health information exchange, access, and telehealth in a dynamic technological, and entrepreneurial environment, where data and network security are under constant threat of attack"

5. Provider Telehealth Data – Informing health care workforce policy (Section 4)

This part of the bill establishes the California Health Workforce Research and Data Center to serve as the state's central source of health care workforce and education data and to inform state policy regarding health care workforce issues. The language also establishes uniform requirements for the reporting and collection of workforce data from health care-related licensing boards to the data center. The data currently requested covers provider hours spent in direct patient care, including telehealth hours.

Analysis and Next Steps

While the trailer bill doesn't make the emergency telehealth expansions permanent in Medi-Cal, it does preserve those policies until the end of next year and provide a pathway to permanency. We also now have clarity that it does not seem California will be undoing any pre-pandemic telehealth policies. In addition, it seems that the main focus of the advisory group will be on utilization management and other billing protocols. The timeline being proposed, however, does not offer much time for the advisory group and protocol creation process. Given the stated desire to include these additional components as part of the 2022-23 budget proposal, the advisory group will likely need to be convened within the next month for their feedback to be incorporated into the next proposed budget's release in January.

As far as additional advocacy avenues, not only does the advisory group formalize a process for more stakeholder input, but the state legislature has emerged as a significant and essential ally in telehealth access and advocacy moving forward as well. A broader and more extensive focus on the value of telehealth in California can also be seen in the inclusion of the other telehealth components in the trailer bill. It will be interesting to see how those additional allowances, incentives, and advisory groups, as well as more provider data, continue to shape long-term telehealth policy in the state. Governor Newsom signed AB 133 into effect on July 27th and the conversation is now poised to continue as part of the advisory group and budget process into next year.

For real-time state legislative updates, all telehealth legislation in California can be tracked through CCHP's Policy Finder Tool.

> **While the trailer bill doesn't make the emergency telehealth expansions permanent in Medi-Cal, it does preserve those policies until the end of next year and provide a pathway to permanency. We also now have clarity that it does not seem California will be undoing any pre-pandemic telehealth policies.**

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SB 156 Fact Sheet:

Meeting the Digital Divide

California
Telehealth
Policy
Coalition

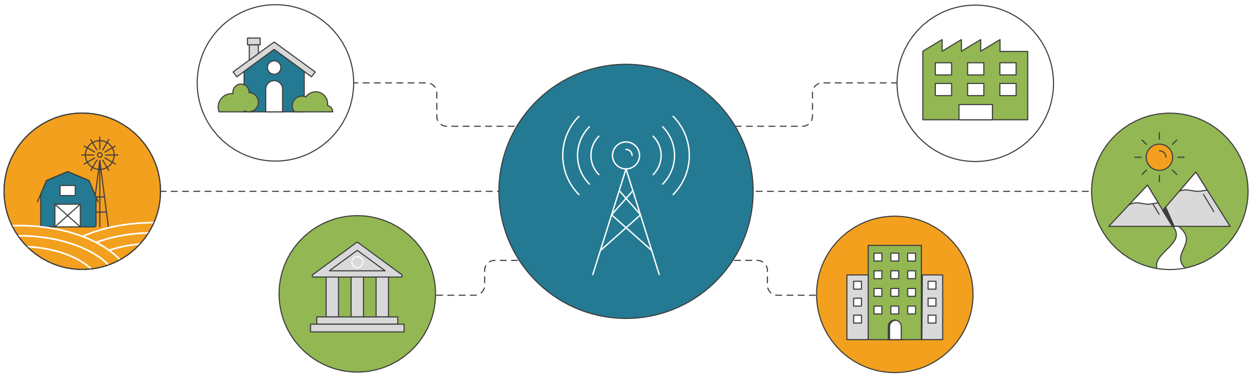
SEPTEMBER 2021

On July 20, 2021, Governor Newsom signed the Broadband Trailer Bill, SB 156, into law. The legislation provides policy detail to the Budget Act of 2021, which allocates $6 billion towards expanding broadband infrastructure and access in California. This historic bill is one of the largest state broadband investments ever in the United States, funding three primary broadband programs and updating various rules and standards around the deployment of broadband.

Middle Mile Broadband Infrastructure

This section provides $3.25 billion for the construction of a state owned open-access middle mile broadband network. It also includes details about who will oversee the project and how areas of the state will be prioritized. Middle mile infrastructure serves as the middle distance connection between localities. It connects the internet backbone to the "last mile" infrastructure that provides internet directly to homes or offices. The bill:

- Identifies three new entities, in addition to the Public Utilities Committee (PUC), to oversee the planning and build out of this middle mile broadband network:
  - **CDT Office of Broadband and Digital Literacy (OBDL):** This new office within the California Department of Technology (CDT) will oversee the acquisition and management of the network. The OBDL will be responsible for developing the statewide network once the planning process is complete and will have the authority to create standards and policies around the middle mile network.
  - **Third-Party Administrator:** OBDL will retain a non-profit third-party administrator to help manage the planning, development and maintenance of the middle-mile broadband project. The third-party administrator will work with the PUC to identify where the statewide network should be located.
  - **CDT Broadband Advisory Committee:** The CDT will create a Broadband Advisory Committee with representatives from various relevant state agencies. The advisory committee will provide policy advice to the OBDL and the third party administrator, oversee construction, and monitor the establishment of the network.
- Outlines how the PUC and third-party administrator should identify the priority locations for the middle mile network:
  - They *must* prioritize:
    - Locations that enable last-mile connections to residences unserved by 25 mbps downstream and 3 mbps upstream (25/3 mbps) and where there is no known middle-mile infrastructure that is open access, with sufficient capacity, and at affordable rates.



    - State highway rights of way that serve a geographically diverse group of projects in rural and urban areas of the state to achieve the greatest reductions in the amount of households unserved by broadband internet access service meeting federal and state standards.
  - They *may* prioritize:
    - Entities that lack sufficient high-bandwidth connections, including, elementary and secondary schools, community colleges and other institutions of higher education, government entities, healthcare institutions, libraries, public safety answering points and tribal lands.
- States that the draft priority locations developed by the PUC and third-party administrator will be published on the Commission website for 90 days and subject to public comment before being finalized.
- Outlines stipulations that will help improve the build out process and ensure project success and accountability. Exempts these projects from CEQA regulations, requires annual reports on progress, and specifies the authority of the OBDL to compel providers to participate in the lifeline broadband subsidy program.

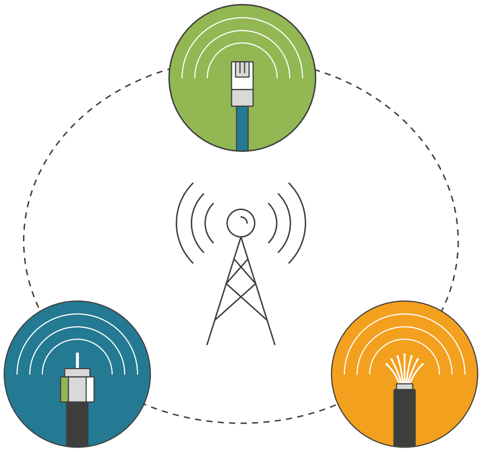
Analysis

Currently, middle-mile networks are largely owned by private internet service providers (ISP) that have to date not built out sufficient service to rural areas with low population density or to low income areas. More areas of California are likely to gain access to high-speed internet through this middle mile network, and the open-access structure may increase competition by allowing ISPs to lease space on the network and compete for subscribers. This may likely improve service and decrease prices for consumers. It is important for county leaders to understand the location selection process for this public middle mile network so they can begin to prepare the relevant data and advocate for their community.

Broadband Last Mile Support:

This section of the bill amends the rules for the Broadband Infrastructure Grant Account program within the California Advanced Services Fund (CASF) and allocates $2 billion to the account to fund last mile projects. Last mile infrastructure includes the piece of an internet network that physically reaches the end consumer, which most often in the U.S. is DSL, cable or fiber. This bill:

- Allocates $1 billion to rural counties and another $1 billion to urban counties to fund last mile broadband projects. A base of $5 million will be distributed to each county and the remaining funds will be issued based on the county's proportionate share of households lacking access to broadband internet service of at least 100 mbps download speed.
- Changes the definition of an "unserved area." Previously, an area was considered served if it offered broadband of at least 6/1 mbps speeds. Now, if an area does not offer broadband that is at least 25/3 mbps, it will be classified as unserved.
- Updates the minimum broadband speed that a project must provide to be funded by CASF. Formerly, the standard was 25/3 mbps. Now funding may only be granted if the project provides at least 100/20 mbps.
- Removes limitations on local governments to draw down CASF funds for public projects. Previously, local governments were only able to apply for CASF funding to build out public networks if no private company had applied for a project in that area.



Analysis

Changes to CASF speed standards are likely to make a significant impact on the internet speeds of Californians, as last-mile connections determine the broadband speeds available to residents. Previous definitions of "unserved area" use broadband speed standards so low that nearly all of the state was determined to have sufficient broadband access. Investment in last-mile infrastructure was also unprofitable for ISPs, meaning those connections in many parts of the state only have legacy DSL networks and have not been upgraded to fiber optic cable. Additionally, by updating the broadband speeds CASF projects will ensure that publicly funded broadband projects will provide useful service with real time video conferencing capabilities. And, by lifting restrictions and allowing publicly run last-mile broadband networks across the state, service prices may become more affordable from competition between public and private ISPs.

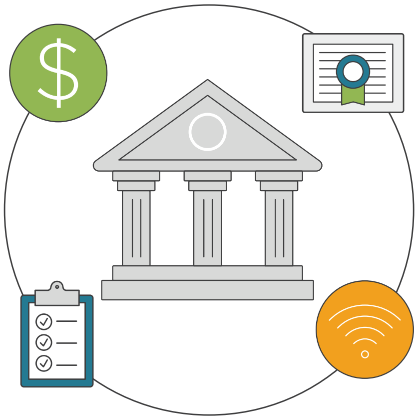
Loan-Loss Reserve

Provides $750 million over three years to create a continuously appropriated loan-loss reserve fund within the state treasury designed to help local governments and nonprofits access funding for broadband projects. A loan-loss reserve fund is considered to be a credit enhancement, meaning it will cover a certain portion of losses to encourage loans and relaxed requirements from financial institutions for such projects. This bill:

- Allows local governments to acquire, construct or operate broadband networks and provide internet services
- Provides credit enhancement and supports other costs related to the financing of broadband infrastructure projects by local government agencies or nonprofits
- Allows joint powers of authority to issue revenue bonds to public or nonprofit organizations for the purpose of deploying broadband which can be supported by the loan loss reserve
- Gives the PUC authority to determine eligibility requirements, financing terms and conditions, and allocation criteria, for projects that wish to receive financing support from loan loss reserve fund

Analysis

For local governments and nonprofits working to solve internet affordability and access issues, obtaining the needed capital has been a barrier to pursuing this work. Typically municipalities fund utility projects with loans from private banks or bonding measures passed by taxpayers. However, since public broadband is a relatively new concept, banks and taxpayers have been hesitant to fund these projects. By ensuring loans and allowing joint powers authorities to issue bonds, the loan loss reserve program will likely help municipalities and nonprofits overcome these financing barriers and start building out last-mile community broadband networks according to community needs.



The California Telehealth Policy Coalition

The coalition is the collaborative effort of over 100 statewide organizations and individuals who work collaboratively to advance California telehealth policy. The group was established in 2011 when AB 415 (The Telehealth Advancement Act) was introduced and continues as telehealth becomes integral in the delivery of health services in California. Convened by the Center for Connected Health Policy, the coalition aims to create a better landscape for health care access, care coordination, and reimbursement through and for telehealth.

Visit the coalition online at **www.cchpca.org/about/projects/california-telehealth-policy-coalition.**

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Adapting home telehealth group appointment model (CoYoT1 clinic) for a low SES, publicly insured, minority young adult population with type 1 diabetes

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ABSTRACT

As more individuals from diverse backgrounds are diagnosed with Type 1 Diabetes (T1D), the need to address resulting disparities in diabetes outcomes among these populations also escalates. Although young adulthood proves challenging for all patients with diabetes, young adults (YA) from racial/ethnic minorities and low socioeconomic backgrounds face even greater T1D management obstacles. The poorer outcomes in these populations drive an urgent need for alternative care models to improve YA's engagement in their T1D clinical care and address barriers to improved health outcomes. Previous telemedicine initiatives for T1D have yielded positive diabetes care results, especially in YA, offering one promising way to reach this high-risk population. To serve these patients better, an established and successful home telehealth group appointment model, "CoYoT1 Clinic" (Colorado Young Adults with T1D), was adapted to provide care to YA with T1D at a large urban children's hospital in Southern California. At this location, ~70% of patients have public/no insurance, and 85% are racial/ethnic minorities. In this paper, we report the process of adapting the CoYoT1 Clinic model and designing a randomized controlled trial (RCT) to evaluate its efficacy. The adapted model uses meticulous study-design methods that incorporate patient advisors, quantitative and qualitative data collection, collaboration with local stakeholders, intervention development, and patient randomization into a factorial design analyzing telemedicine versus in-person and patient-centered versus standard care. The new model addresses the needs of high-risk YA in Southern California, with the goal of increasing access to care, improving follow-up frequency, and strengthening patient and provider satisfaction.

The study is registered with ClinicalTrials.gov (Clinical Trials Number: NCT03793673).

1. Introduction

More than 13,000 children are diagnosed with type 1 diabetes (T1D) each year, yet only 17% of adolescents and 14% of young adults (YA) with T1D meet the recommended hemoglobin A1c (HbA1c) target of $< 7.5\%$ (58 mmol/mol) and $< 7.0\%$ (53 mmol/mol), respectively, set forth by the American Diabetes Association (ADA) [1]. Furthermore, recent data has shown worsening diabetes control in adolescents and YA with T1D during 2016–2018, as compared to 2010–2012 [2]. The transition from adolescence to young adulthood, which involves multiple changes (e.g. education, occupation, independence), portends greater risk and worse outcomes for T1D patients, including higher rates of complications [3,4]. Currently, few interventions have proven effective for this YA cohort. However, recent research has found patients in this transitional phase who completed ≥ 2 provider appointments annually visited the emergency department less often, suggesting that provider visit frequency may be one aspect of care to focus on with future YA interventions [5].

Individuals from underserved ethnic and racial backgrounds seeking treatment for T1D face disparities in T1D treatment and outcomes, including both higher hemoglobin A1c (HbA1c) levels and increased complication rates [6,7]. Patients with limited material and social

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resources have higher HbA1c levels than those with more resources, revealing a direct link between social determinants of health (SDH) and medical outcomes [8]. Individuals from disadvantaged socioeconomic backgrounds face barriers to care, such as higher costs, discordant or poor care coordination, and decreased access to health information [9–13]. Providing optimal care to YA is further complicated by poor clinical engagement and care access barriers (i.e., clinic schedules, staffing, and space issues). Cumulatively, these issues impede YA's from diverse backgrounds ability to meet the current ADA recommendations for quarterly diabetes visits [14].

Shared medical appointments (SMA, or group appointments) have proven effective at increasing engagement among adolescent and YA patients [15]. Recently, we evaluated “Team Clinic,” our group appointment model for 13-to-18-year-old patients with T1D [16,17], and found that both patients and providers reported high levels of satisfaction, and patients also experienced increased self-management behaviors, visit frequency, and social support. Building on this success, coupled with previous research demonstrating the potential for telemedicine to increase access to medical care [15,18–23], we designed CoYoT1 Clinic (Colorado Young Adults with Type 1 Diabetes; pronounced “coyote”) to provide routine diabetes care for YA with T1D using a telehealth group appointment model, delivering developmentally-appropriate clinical care to patients at home or another preferred location via web-based video conferencing [24].

In our previous prospective non-randomized trial, which enrolled T1D YA patients from a fairly homogeneous background (age 19.8 ± 1.6 years, 83% White, 86% Non-Hispanic, and 86% privately insured), enrollees who participated in CoYoT1 Clinic had improved clinic attendance compared to control group patients (71% of CoYoT1 patients attended four clinic visits over the study year, meeting ADA recommendations, versus 0% of control group patients), and trended towards completing HbA1c tests more frequently than control patients [24,25]. Patients in the CoYoT1 intervention also reported decreased diabetes distress, increased confidence in their abilities to manage their diabetes, and improved ability to communicate with others about their diabetes, compared to the control group. The CoYoT1 intervention positively impacted patient mental health compared to controls, with intervention participants reporting a trend towards decreased depression and anxiety symptoms over the study year. Additionally, CoYoT1 patients reported a lower level of psychosocial burden associated with diabetes care over the course of the study year, whereas patients receiving standard care reported higher levels. Cumulatively, CoYoT1 patients experienced both increased clinical engagement and psychosocial improvements, while also maintaining glycemic control [24,25].

Given this promising preliminary data, we adapted the CoYoT1 Clinic model to address the needs of a low socioeconomic status (SES), racially/ethnically diverse YA population with T1D. This manuscript outlines how 1) key data was collected and used to adapt the previous CoYoT1 Clinic model for a low SES, racially/ethnically diverse population; and, 2) an RCT was then designed to assess effects on access to care, follow-up frequency, psychosocial outcomes, and patient and provider satisfaction.

2. Methods/results

The work described in this study has been carried out in accordance with the ethical principles for medical research involving Human Subjects (Declaration of Helsinki). The study was approved by the Institutional Review Board of Children's Hospital Los Angeles (CHLA), informed consent was obtained from all participants, and the privacy rights of the Human Subjects were strictly maintained.

Recommendations by the International Committee of Medical Journal Editors (ICJME) for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals were duly followed in the preparation of this article. The study is registered with ClinicalTrials.gov (Clinical Trials Number: NCT03793673).

2.1. Intervention adaptation

We sought to adapt the CoYoT1 Clinic intervention for use in a clinical care environment and population that differed significantly from the original context where it was developed and tested. CoYoT1 Clinic demonstrated feasibility and acceptability among Colorado YA with T1D, but the patient population at CHLA is of lower SES and may be more significantly impacted by related SDH, such as chaotic home environments, inconsistent access to transportation, and limited use of diabetes technology, such as insulin pumps and continuous glucose monitors (CGM). Implementing CoYoT1 Clinic in this context thus required different strategies, including the following: training patients how to upload diabetes device data to the clinic, broadening the usability of telehealth technology for limited levels of Internet access, addressing privacy and confidentiality concerns in patients' home environments, and mitigating other care barriers that have not previously been addressed (Table 1). Further, the current study is being implemented in a hospital-based endocrinology clinic, which differs from the freestanding specialized diabetes center that provided care for Colorado CoYoT1 patients. Adapting the CoYoT1 model for a hospital-based clinic required addressing systemic obstacles, such as the complex appointment scheduling associated with deploying a combined home telehealth and group appointment model, especially within a larger health-care system that lacks extensive telehealth experience, and where care interactions may be less personal or flexible. Since most patients with T1D receive care in hospital-based clinics (versus freestanding centers), this adaptation will result in a more refined, generalizable, and easily scalable version of the CoYoT1 clinical care model. Prior to patient recruitment and intervention delivery, four key data sources were employed to optimize adaptation of the CoYoT1 Clinic model: 1) outcomes from the initial CoYoT1 Clinic pilot, 2) patient advisory board, 3) stakeholder focus groups, and 4) surveys conducted among the target population.

2.1.1. Feasibility outcomes from initial CoYoT1 Clinic pilot

In our pilot study [26], CoYoT1 Clinic proved feasible and acceptable for YA with T1D, resulting in high levels of satisfaction and completion of all components of the clinic (both the individual provider visits and group appointments). The majority of patients involved in the pilot successfully downloaded their diabetes device data (77%); and completed routine labs at a local lab, hospital, clinic, or other location of their choosing prior to their appointments (88%). As a result, providers were able to access the same information during the virtual CoYoT1 Clinic visit as a traditional, in-person clinic appointment.

Patients were readily assessed by the Diabetes Strengths and Resilience for Adolescents scale (DSTAR-Teen), the Self-Efficacy for Diabetes scale (SED), and the Self-Management of Type 1 Diabetes in Adolescence scale (SMOD-A) [27–29]. Additionally, patients reported on their psychosocial burden associated with diabetes care over the course of the study year using the Diabetes Distress Scale [24,25].

2.1.2. Patient advisory board

Following methods used in previous research [30], a patient advisory board was assembled from YA patients with T1D at CHLA. Patient advisory boards facilitate patient engagement throughout the research process, helping to ensure the relevance and impact of the research to its end-users and beneficiaries. To attain diverse and representative perspectives, we purposefully selected potential members based on gender, race, ethnicity, HbA1c, insurance status, and frequency of visits, and also considered input from the YA's primary diabetes providers. YA were then approached and invited to participate. A total of four YA agreed to participate on the advisory board, which meets on a quarterly basis and will continue to meet throughout the study period. The first meeting was held in-person, with subsequent meetings held online. Advisory board members receive $30 gift cards for participating in each meeting.

During the first meeting, advisory board members discussed their experiences, preferences, and priorities for receiving diabetes medical care via telemedicine and their interest in participating in group appointments. During the second meeting, the research team reviewed a preliminary plan for implementing the adapted CoYoT1 Clinic, which was informed by advisory board and stakeholder input, surveys, and CoYoT1 Clinic pilot data, and sought additional feedback regarding effective recruitment strategies and planned study procedures. During the third meeting, just prior to implementing the updated CoYoT1 intervention, the research team and advisory board held a "mock visit," in which advisory board members carried out the planned steps to complete a CoYoT1 telemedicine visit and group appointment, seeking to identify any remaining challenges to implementing the model as planned. In future meetings, the advisory board will provide input regarding study procedures, help address any challenges that arise with implementation, and assist with interpreting the study findings.

2.1.3. Stakeholder focus groups

Three distinct stakeholder focus groups – diabetes care providers; other diabetes care staff, such as diabetes nurse educators, dietitians, and social workers; and hospital administrators – were assembled. The totality of each stakeholder group in the clinic was approached, and those able to participate at a mutually selected meeting time were included. The focus groups reviewed the CoYoT1 Clinic model and provide recommendations regarding adaptation to the current setting, particularly addressing differences in the patient population and variations in the clinical setting.

2.1.4. Surveys conducted among the target population

Ninety-eight YA with T1D were recruited for quantitative data assessment as part of an ancillary study. YA received $10 gift cards for the completion of the questionnaires. Families of YA were compensated with parking validations. Patients and families completed informed consent and assent as applicable. The goal of the assessment was to review the feasibility of completion of home telehealth appointments in YA with T1D, including interest in the model, access to the Internet, and ability to find private space for completion of the telehealth visits.

2.1.5. Results used to adapt the CoYoT1 Clinic model

Those four data sources (initial CoYoT1 Clinic pilot outcomes, patient advisory board, stakeholder focus groups, and target population surveys) drove changes to the CoYoT1 Clinic model that focus on individual intervention components.

From the Colorado pilot studies, we learned logistical lessons to improve the model and its future implementation [26]. For example, the original device download process was challenging, because it lacked a single platform to integrate diabetes data across devices. To address this, the current study uses a single download platform for all devices. We also fine-tuned the appointment scheduling process for the intervention's group component, making it more YA-friendly and focused. YA select from specific days and times to find the group schedule that works best for them on a recurring basis. Finally, the group component was uncoupled from the provider visits, allowing YA to complete the group component separately from their provider visits. This change was implemented based on YA's interest in making the groups feel less "medical" and more YA-focused.

Patient advisory board feedback resulted in several changes to the CoYoT1 clinical care model. First, they recommended developing structured materials for use during intervention visits (e.g. shared decision-making forms and visit summary information). They also requested video summaries of the care plan from their clinic visits versus receiving written plans. Additionally, the patient advisory board directed topics for the group session and recommended family participation in appointments and some group sessions (at the level desired by the YA). Finally, patient advisory board members gave suggestions to enhance the usability of the telehealth platform and diabetes download process.

Stakeholder focus group feedback resulted in several additional intervention adaptations. First, providers and staff expressed a strong interest in providing collaborative, patient-centered care, but felt that they lacked the necessary tools and resources to deliver it effectively. Second, they sought clarification about how CoYoT1 patients would access any indicated allied health services (e.g., social workers, diabetes nurse educators, and dietitians) via telehealth. Third, they raised important issues related to their own comfort with delivering medical care via telehealth, such as learning a new care model and becoming comfortable with the technology. Fourth, hospital administrators had suggestions for improving scheduling and clinic processes, including specific training and onboarding processes for those involved in telehealth (both patients and staff). Finally, they suggested strategies to engage patients and families with limited English language proficiency, technology access, and health literacy more effectively.

Target population surveys were conducted with 98 YA; 61 (40%) were female, and 85 (56%) were male. Their average age was 19.0 years (SD = 1.7 years). Fifty-two (53.1%) identified as Hispanic, 39 (39.8%) identified as Non-Hispanic, and 7 (7.1%) were of unknown or "other" ethnicity. Twenty-seven (27.6%) identified as White, 3 (3.1%) as Black, 4 (4.1%) as Asian/Pacific Islander, 3 (3.1%) as unknown, and most patients (61; 62.2%) identified as "other" in terms of race. Only 27 (27.6%) YA reported having private insurance, meaning that 71 (72.5%) have either no insurance or public insurance. Fewer than half of YA patients (41; 41.8%) favored an online appointment model (versus in-person care), although all had access to the Internet, and 86.8% had access to a private space at home. Also, among these YA, only 38 (38.8%) favored having shared medical appointments with other patients in their age group.

Our cumulative review of the data highlights that CoYoT1 Clinic represents more than a simple telehealth intervention (e.g. connecting to a provider virtually), but rather a fundamentally patient-centered, collaborative approach to care. Further, while the CHLA patient population seems less interested in adopting a telehealth care delivery model, advisory board feedback indicated a high degree of interest in collaborative care. Thus, the two key components (Telehealth versus In-Person care and CoYoT1 Care (collaborative care) versus Standard Care) needed to be studied separately. Input from clinician stakeholders also suggests that the collaborative care approach should be formalized into a structured training program for CoYoT1 Care providers. Therefore changes to the intervention components included: 1) formalizing the group visit curriculum and resources; 2) formalizing the collaborative care tools, including shared decision-making and collaborative action planning; 3) providing formal training to CoYoT1 Care providers in autonomy-supportive communication strategies (including motivational interviewing training and routine review and feedback); 4) centralizing the collection of diabetes data using Tidepool (a HIPAA-compliant, diabetes data-sharing platform that integrates data from insulin pumps, continuous glucose monitors, and blood glucose meters in a single location); 5) generating after-visit summary plans for YAs as audio recordings (vs. written instructions); and 6) incorporating families into YA visits and group appointments (at the participation level chosen individually by the YA). Formalizing these elements (curriculum, resources, shared decision-making tools, and collaborative care approach) provides further structure to the previous model, which has been codified in a Manual of Procedures to support future replication.

2.2. Design of randomized controlled trial (RCT)

The 15-month intervention RCT employs a 2 × 2 factorial design, with randomization to one of four study arms (Table 2). The four study arms cross two interventions: Telehealth versus Standard (In-Person) appointments and CoYoT1 Care versus Standard Care.

Table 1
Summary of intervention adaptations.

Intervention Component/ Construct	Initial Model (CoYoT1 Pilot)	Adapted Model (Current Study)	Data Sources for Adaptation
Patient-centered care	● Implicit in the model; providers involved in the pilot had adopted patient-centered care	● Formalized training for providers in autonomy-supportive care ● Formalized tools for shared decision-making and action planning	● Key stakeholder interviews ● Patient Advisory Board
	● Generating after-visit summary plans for YA as written instructions	● Generating after-visit summary plans for YA as video recordings	● Patient Advisory Board
	● Families not incorporated into YA visits or group appointments	● Incorporating families into YA visits and group appointments (at the participation level chosen individually by the YA)	● Key stakeholder interviews ● Patient Advisory Board
Support groups	● Coupled with provider visits	● Uncoupled from provider visits ● Days and times for group session selected by YA	● Pilot study feedback ● Patient Advisory Board
	● Topics selected by the research team	● Topics selected by patients	● Pilot study feedback ● Patient Advisory Board
	● Facilitated by a member of the care team	● Facilitated by peer	● Pilot study patient feedback
	● Group curriculum designed by study team members	● Formalized group visit curriculum and resources	● Pilot study feedback ● Key stakeholder interviews ● Patient Advisory Board
Telehealth delivery	● Patients all used own devices	● Loaner cell phone option	● Key stakeholder interviews ● YA survey
	● Patients were seen separately from family and most were living independently	● Addressing privacy and confidentiality concerns in patients' home environments	● Key stakeholder interviews ● YA survey
Data collection	● Multiple diabetes data platforms	● Centralize diabetes data collection using unified platform	● Pilot study feedback

Table 2
Factorial design of randomized controlled trial.

2 × 2 Factorial Design	In-Person Appointments	Telehealth Appointments
Standard Care	Provider Group A YA (randomized): $n = 20$	Provider Group A YA (randomized): n = 20
CoYoT1 Care	Provider Group B YA (randomized): n = 20	Provider Group B YA (randomized): n = 20

2.2.1. *Participant recruitment*

CHLA serves nearly 2000 patients with T1D (including 568 patients ages 16–25); many often struggle to adhere to best care practices. Approximately 70% receive public insurance or have no insurance, and 85% have ethnic minority status documented in the electronic medical record. As with many healthcare facilities serving mainly publicly insured or uninsured patients, the time, space, and staffing needed to provide high-quality patient care are limited. Furthermore, patients must often manage multiple competing daily priorities, and experience access issues that lead to high cancellation and no-show rates, especially among YA. Within our clinic, YA with T1D have a 45% no show rate, compared to 20% in other patient groups. Patients for the study are being recruited from the current CHLA T1D YA population – those already receiving care or scheduled to receive care at CHLA.

Inclusion criteria: Any patient aged 16–25 years of age on their date of recruitment; who has had T1D for at least 6 months; is currently receiving or pending care at CHLA; has California Medicaid (MediCal), California Children's Services (CCS), self-pay, or private insurance allowing home telehealth appointments; and does not plan to transfer out of CHLA within the next year.

Exclusion criteria: Patients with severe behavioral or developmental disabilities; severe psychological diagnoses that would make group participation difficult; pregnancy; non-English speaking patients; or literacy or cognitive issues that preclude effective use of the Internet.

Eligible patients are recruited via five approaches: 1) A research coordinator approaches YA scheduled for clinic visits who meet inclusion criteria; 2) Care providers at CHLA recommend eligible patients to the study team, who then review the recommendations and assign a research coordinator to follow-up, as appropriate; 3) Research staff review medical records of eligible patients who have not been approached during a clinic visit and contact these potential participants by phone, text, email, and/or video-conference; 4) Coordinators send recruitment letters signed by the Principle Investigator; and 5) Flyers with study information are posted in clinic, given to potential participants, and mailed with the recruitment letter. Interested YA meeting eligibility requirements complete informed consent via phone, fax, text, email, U.S. mail, video-conference, a web-based application (electronic signature), or in-person.

2.2.2. *Patient randomization*

YA are randomized via two approaches: YA whose providers are not participating in the study will be randomized to one of four interventions arms (CoYoT1 Care via Telehealth; In-Person CoYoT1 Care; Standard Care via Telehealth; and In-Person Standard Care; see Table 2 for factorial design). For YA whose providers are participating in the study (i.e., delivering telehealth), they will have the option of being randomized as outlined above, or, if they would like to stay with their provider, will be randomized to Telehealth vs. In-Person Care only, and will maintain continuity of care with their current provider. Patients will be randomized after being successfully recruited. Their intervention assignments will be determined by a dynamic random number generator embedded in an Excel worksheet. With exception for those patients who opt to retain their current care provider, neither the patients nor the research team members recruiting them will have any foreknowledge of care method or provider assignment.

2.2.3. *Providers*

Providers (e.g. MD or DO) were recruited to participate in either the standard care or CoYoT1 Care intervention arms ($n = 3$ per group). Two additional providers declined participation prior to finalizing the group of six physicians. Providers were asked to participate in the intervention based on interest in telehealth, availability during the study period, and, for the CoYoT1 Care arm, degree of previous training or experience in patient-centered and autonomy-supportive care methods. Providers were not randomized due to previous training in patient-centered care methods for some of the participating physicians.

2.2.4. Intervention arms

Each participant is randomly assigned to a Care Delivery type – In-Person or Telehealth – and is also assigned to or selects a provider who follows one of two Care Methods – Standard Care or CoYoT1 Care – resulting in four intervention arms (see Table 2). Characteristics of delivery and care methods are described below.

2.2.4.1. In-Person appointments. For those YA in an In-Person study arm, they are scheduled for an in-person appointment every three months at the CHLA clinic.

2.2.4.2. Telehealth appointments. *YA curriculum:* YA in a Telehealth arm are scheduled for an online appointment every three months. YA need a device with an Internet connection, camera, and microphone (e.g. mobile phone, PC, laptop) for their appointments. YA who do not have such a device are loaned a mobile device for the duration of the study period. The visits are conducted with a HIPAA compatible telehealth platform. For each patient, their device type(s), Internet/cellular access mode, diabetes management regimen, and any additional charges (e.g., limited data fees) generated by participation in the intervention will be documented at appointments.

Prior to each telehealth appointment, YA upload their diabetes data into Tidepool, a HIPAA-compliant, diabetes data-sharing platform that integrates data from insulin pumps, continuous glucose monitors, and blood glucose meters in a single location. Tidepool is a 501(c)(3) nonprofit organization whose mission is to make diabetes data more accessible, meaningful, and actionable through the development and distribution of their free, open-source software. YA also visit a clinical laboratory convenient to them to complete HbA1c testing and any other relevant labs ordered by their provider before completing the online appointment.

Provider curriculum: Prior to their first study appointment, all providers are trained on the telehealth platform. They practice connecting, with assistance from the study team, to address any issues or concerns. They receive an orientation on the diabetes telehealth clinical note format and instructions on proper billing of telehealth appointments. Additionally, all clinical team members (e.g. nursing, social work, and dietary) are trained and available on an as-needed basis for the YA telehealth appointments.

2.2.4.3. Standard Care. *YA curriculum:* YA in a Standard Care arm complete appointments (both Telehealth and In-Person) following standard CHLA clinic procedures. Patients in a Standard Care group are informed of available community and CHLA-based events and resources.

Provider curriculum: Providers in Standard Care groups complete medical appointments (both Telehealth and In-Person) in their usual manner, without specific training or guidelines regarding how to deliver care.

2.2.4.4. CoYoT1 Care. *YA curriculum:* Every six weeks, CoYoT1 Care participants have access to 30–60-minute online group meetings (8 meetings in total). Participation in online group meetings is voluntary. The group meetings for CoYoT1 Care are peer-led, YA-driven, and focus on topics based on input from the patient advisory board that are pertinent to living as a YA with diabetes. The facilitator for the CoYoT1 Care group meetings is a YA with T1D who is trained by the study team to implement the CoYoT1 Care group curriculum. The facilitator has routine reviews with the study team to ensure group fidelity and identify any potential problems or concerns.

Following randomization to CoYoT1 Care, each participant is presented with the eight planned discussion topics and sent a questionnaire asking for additional input related to each topic to assist with designing group sessions based on their interests and needs to further tailor the group discussions. The CoYoT1 Care group session topics include: 1) diabetes distress and burnout; 2) managing diabetes at college; 3) social and intimate relationships with diabetes; 4) diabetes research and technology; 5) drinking and diabetes; 6) managing diabetes during busy or stressful times; 7) transitioning to adult care; and 8) family involvement in YA diabetes care. If interested and eligible, the YA's family is invited to participate only in the two group meetings related to transitioning to adult care and family involvement in diabetes care. At the end of each session, YA are sent resources applicable to the group discussion topic.

Provider curriculum: Providers selected for the CoYoT1 Care group are trained in the CoYoT1 Care protocol for completing both Telehealth and In-Person medical appointments. The CoYoT1 Care protocol has three key components:

1. Shared decision-making: Providers and YA mutually agree on priorities for each medical visit using a shared decision-making tool completed by both the provider and patient.
2. Autonomy-supportive care: Providers are trained in communication strategies, such as motivational interviewing [31], designed to support YA autonomy and intrinsic motivation. YA also select the extent of family involvement – they are asked prior to each appointment how they would like their family to participate (or not) in their care.
3. Goal setting and action planning: Providers are trained to coach YA in setting SMART (Specific, Measurable, Attainable, Relevant, Timely) goals [32], developing action plans, and establishing a plan for follow-up between visits, as appropriate.

2.3. Data collection measurements (Table 3)

2.3.1. Young adults

Baseline (before Visit 1) and end of study (after Visit 4) data include: age*; age of diagnosis*; sociodemographic variables (e.g., race*, ethnicity*, sex, education, living situation, school/work status, income); electronic health record-derived data (e.g. number of diabetes clinic visits over the past year, HbA1c results over the past year, weight, BMI); Consumer Assessment of Healthcare Providers and Systems (CAHPS) measures [33]; Center for Epidemiologic Studies Depression Scale (CES-D) [34]; Diabetes Distress Scale (DDS) [35]; Diabetes Empowerment Scale (DES) [36]; Health Care Climate questionnaire [37]; health-related quality of life measures [Short Form Health Survey (SF-12); and Euro-QoL survey with five levels of severity for five dimensions (EQ-5D-5L) [38]]. Items noted with an asterisk (*) were only collected at baseline.

On a monthly basis, YA are sent a short form to assess healthcare utilization (e.g., emergency department visits, urgent care visits, hospitalizations, etc.). After every diabetes clinic visit, YA answer a Telehealth or In-Person clinic satisfaction survey, and a survey investigating insulin and test strips cost and use (to assess barriers to obtaining medications/supplies). Additionally, electronic health record data is collected after every visit to assess HbA1c results and data from diabetes device (e.g. meter, pump, CGM) downloads [e.g. number of blood sugar checks per day (meter and insulin pump), average blood sugar (all devices), number of boluses per day (insulin pump), total daily insulin (insulin pump), % basal and % bolus insulin (insulin pump), % time in range, low, high (CGM)].

2.3.2. Providers

At baseline, providers share sociodemographic data and complete a questionnaire regarding their general technology satisfaction and experience. Providers also complete a visit satisfaction questionnaire at the end of each study clinic day. Finally, at both baseline and end of study, providers complete an adapted version of the Health Care Climate Questionnaire [37]. Additionally, during the study, we will be collecting data regarding their training process to facilitate the

Table 3
Summary of study measures.

Construct	Assessment	Description	Time Administered					
			Baseline/ Enrollment	V1	V2	V3	V4	Ongoing
N/A	Socio-demographic questionnaire	Age	X					
		Age of diagnosis	X					
		Race	X					
		Ethnicity	X					
		Sex	X				X	
		Education (patient and family)	X				X	
		Living situation	X				X	
		School/work status	X				X	
		Income	X				X	
Clinical variables	Medical chart review	HbA1c	X				X	
		Ethnicity	X					
		Race	X					
		Diabetes clinic visits in the past year	X				X	
		Age	X					
		Weight	X				X	
		BMI	X				X	
	Diabetes device data	Diabetes device data		X	X	X	X	
		Meter, pump, CGM	X	X	X	X	X	
		# blood sugar checks/day		X	X	X	X	
		# boluses/day		X	X	X	X	
		Avg. blood sugar		X	X	X	X	
		Total daily insulin		X	X	X	X	
		% basal, % bolus insulin		X	X	X	X	
		% time low, in target, and high (CGM)		X	X	X	X	
Patient satisfaction	Consumer Assessment of Healthcare Providers and Systems (CAHPS) [40]	38 items; assesses patient experience with their healthcare (i.e. providers, hospitals, health plans, etc.)	X				X	
	Health Care Climate Questionnaire [37]	6 items; assesses patients' perceived autonomy support	X				X	
Depressive symptoms	Center for Epidemiologic Studies Depression Scale (CES-D) [41]	20 items; assesses depressive symptoms (i.e. depressed mood, loss of appetite, feelings of guilt, etc.)	X				X	
	Diabetes Distress Scale (DDS) [42]	17 items, 4 subscales; assesses emotional burden, physician-related distress, regimen-related distress, diabetes-related interpersonal distress	X				X	
Health-related QoL	SF-12v2 Health Survey [43]	12 items, 8 subscales; assesses functional health and well-being of the patient	X				X	
	EQ-5D-5 L [44]	5 items; assesses health status (i.e. mobility, self-care, usual activities, pain/ discomfort, anxiety/ depression)	X				X	
	Adapted Social Determinants of Health questionnaire (SDH) [45]	11 item scale; assesses social determinants of health (i.e. food insecurity).	X				X	
	Diabetes Empowerment Scale (DES) [46]	8 item scale, 8 subscales; assess psychosocial self-efficacy of people with diabetes	X				X	
Access to needed supplies	Test Strips Cost Related to Underuse questionnaire	24 items; assesses diabetes supplies and reasons for inaccessibility	X	X	X	X	X	
Healthcare utilization	Questionnaire	ED visits, urgent care visits, hospitalizations						X
Cost	Clinic costs	Provider time; space; equipment usage		X	X	X	X	
	Telehealth costs (clinic and patient)	Software development; Internet access fees						X
	Device access	Phone accessibility and distribution	X					
	Patient costs	Time lost from work/school; travel		X	X	X	X	
	Team costs	Training time; material cost; care delivery time; group time						X
Providers	Socio-demographic data questionnaire	7 items; assesses sex, age, racial/ethnic group, medical technologies usage, professional/personal usage of technologies,	X					
	Technology satisfaction questionnaire		X					
	Visit satisfaction questionnaire	14 items; assesses provider telehealth satisfaction		X	X	X	X	
	Adapted Health Care Climate survey	6 items; assesses provider	X				X	
	Patient - Practitioner Orientation Scale (PPOS) [47]	18 items, 2 subscales; assesses provider beliefs on patient centeredness	X				X	
	Shared Decision Making	14 items; tool that assists providers in prioritizing discussion topics for their patient's diabetes visit		X	X	X	X	
	Agenda Setting and Plan	12 items; assists provider in setting goals, plans with the patient		X	X	X	X	
CoYoT1 Care groups	Satisfaction survey for facilitator and YA	19 items; assesses attendance, engagement, issues;18 items; assesses visit, technology, and group satisfaction		X	X	X	X	X
	Shared Decision Making	18 items; tool that assists patients in prioritizing discussion topics for their diabetes visit		X	X	X	X	
	CoYoT1 Care Pre-Group Discussion Feedback	8 items; assists research develop peer-led group discussions	X					
	YA resource use questionnaire	5 items; assesses post group session resource use						X
Standard Care groups	Community resource use questionnaire	12 items; assesses awareness of events, attendance, patient perception of the usefulness of events.						X

transition for providers concerned about adopting a new care model.

2.3.3. CoYoT1 Ccare groups and community resources

Following each CoYoT1 Care group, the facilitator and YA complete satisfaction surveys. At the end of each CoYoT1 Care group meeting (meetings 1–8), the facilitator also completes a form to assess what facilitated or inhibited the group discussion and which features of the group meeting can be improved. The input gathered through these questionnaires will inform the research team regarding how to modify the approach to better facilitate discussion during subsequent meetings.

Approximately 1–2 weeks after the CoYoT1 Care group meeting, YA are sent a questionnaire querying their use of the resources provided at the previous group meeting. YA in the Standard Care group are asked at the end of the study about their use of community resources.

2.3.4. Cost

Clinic costs are assessed by examining provider-specific costs (e.g. time for each provider, physical space use for each provider, equipment use for each provider); telehealth-specific costs (e.g. software development, testing, licensing, and maintenance; and hardware purchasing, subscriptions, maintenance, and useful life); and Internet-access cost.

Team costs are assessed by examining training time (e.g. time for teaching/educating patients about telehealth appointments, and time for teaching/training providers on telehealth appointments); cost for any materials required for teaching/training; care delivery time; and time required for groups (e.g. preparation and delivery).

Patient costs are assessed by examining telehealth costs (e.g. training, hardware, software, Internet access, and fixed costs); time lost from work or school; travel (e.g. time and mode of travel); intervention training; work or school role (to estimate time value); and health care utilization (e.g. emergency department visits, hospitalizations, and outpatient visits).

2.3.5. Discrete Choice Experiment

At study completion, a Discrete Choice Experiment will also be conducted. All participants will be invited to participate in the process. The goal of the experiment is to assign quantitative weights to patient preferences for various features of the telehealth intervention, group component, and provider behavior, in order to learn how important each feature is to participants.

There will be three steps to the Discrete Choice Experiment: First, patients will be invited to participate in a 2-hour online, audio-recorded focus group conducted by the study team. There will be approximately six participants per focus group, with the goal of having one focus group for each study arm. Second, following focus group completion, the qualitative data will be assimilated into an ordered list of intervention features, and appropriate performance levels assigned to each feature. Finally, study participants will be presented with a series of binary “A versus B" decision options, with each option varying the performance of the intervention features, some better on option “A,” others better on option “B.” Analyzing participants' responses will quantify the relative importance of various features of the intervention.

2.4. Analytic plan and power analysis

2.4.1. Power and sample size estimates

Due to the uncertainty of care method (CoYoT1 Care versus Standard Care) or delivery method (Telehealth versus In-Person) effects, the study is powered to detect a hypothetical 0.5 SD difference between any two treatment conditions over the study year. Assuming a Type I Error Rate $\alpha = 0.05$ and a Type II Error Rate $\beta = 0.2$ (or 80% Power), we require data from at least 31 patients per treatment condition (CoYoT1 Care versus Standard Care and Telehealth versus In-Person). Assuming a retention rate equal to our previous work (78%), we plan to enroll 20 patients in each study group (CoYoT1 Care via Telehealth; In-Person CoYoT1 Care; Standard Care via Telehealth; and In-Person Standard Care) equaling 80 patients in total, and yielding 40 patients per treatment condition (CoYoT1 Care versus Standard Care; and Telehealth versus In-Person). This calculation is based on a paired *t*-test evaluating the change in any one continuous variable over the study period. We previously observed a 0.5 SD difference between Telehealth and In-Person groups when examining changes in symptom management and self-efficacy (DSTAR-Teen, SED) over the intervention year [25].

2.4.2. Statistical analysis

Data will be used to examine the relative efficacy of both care method (CoYoT1 Care versus Standard Care) and delivery method (Telehealth versus In-Person), as well as any interactive effects that may emerge from utilizing both (e.g., better outcomes in the In-Person Standard Care group, poorer outcomes in the CoYoT1 Care via Telehealth group, or vice versa). We will consider changes in all aforementioned clinical, behavioral, and psychosocial variables among study groups seen over a 15-month period. We will tally appointment attendance and adherence to the treatment regimen and compare the relative performance of all treatment groups using Cochran's Q test, based on the Chi-Squared distribution. Due to the factorial design of this study, continuous outcome variables (e.g. HbA1c, time saved, questionnaire scores) will be analyzed using linear mixed models. Mixed models allow us to examine changes over the entire intervention year across both treatment groups while accounting for clinical and demographic variables that may explain some variability in these measures, such as socioeconomic status at the beginning of the study. Also, this method allows utilization of all participant responses, even if responses are incomplete and some data are missing at random.

We will conduct sub-analyses on primary outcome measures (changes in the visit or care technology use frequency; change in HbA1c; changes in psychosocial functioning) by comparing performance within the study group across the following variables:

- Socioeconomic Status (dichotomized based on Insurance type)
- Sex
- Race/Ethnicity
- Mental Health at Baseline (e.g. Depression)
- Care Satisfaction at Baseline
- History of Negative Care Experiences

We will conduct all analyses using Stata/SE 14.2 (StataCorp, LLC, College Station, TX).

3. Discussion

Several critical insights were gleaned from the mixed-methods study that adapted CoYoT1 to California. These helped refine the model from one suitable for a specialized diabetes center serving primarily privately insured, Non-Hispanic White patients, into one better equipped to address a hospital-based endocrinology clinic serving primarily low-SES, ethnically diverse YA with T1D.

Our initial study of the CoYoT1 Care model was a feasibility pilot of the various intervention components [24,26]. For the next phase, the mixed methods review suggested testing the care delivery method and the therapy model separately, resulting in a 2 × 2 factorial study design (Table 2). Also, based on feedback received during the initial CoYoT1 Clinic pilot, the group portion of the CoYoT1 Care visits was uncoupled from the provider visits; this was driven by YA wanting a less “medical” feeling peer group interaction.

In order to deploy new care methods using new technology, significant training will be needed for provider. Specifically, we recognized the need to create a structured training approach for patient-centered communication. In the previous study, the providers completing the CoYoT1 Care intervention (one NP and one MD) were already trained and involved in patient-centered care. To make the care model more replicable, a formalized approach to training providers and structuring clinic visits was required. Of note, providers delivering CoYoT1 Care already had interest and/or experience in patient-centered care, which may be important when considering future applicability and replicability. Future studies may need to enlist providers with varied interest in or experience with patient-centered care in order to measure replicability more rigorously, without concern for provider bias. Also, while recruiting providers for the intervention in California, we learned that providers may hesitate to learn new technologies to practice medicine (i.e., telehealth), which will be required for greater adoption of the CoYoT1 Care model.

During the adaption process, we were also surprised by YA's frequent concerns about switching providers within the California clinic. This hesitation may be driven by their having previously experienced little consistency or predictability in their care at this large endocrinology clinic, but it could also be related to patients valuing their established relationships with their current providers. This concern was addressed by changing the randomization protocol for patients entering the study. If their current provider is participating in the intervention, YA are now randomized to receive Telehealth or In-Person care while remaining with their current provider. If their current provider is providing CoYoT1 Care, they receive CoYoT1 Care. If their current provider is providing Standard Care, they receive Standard Care. The patients were still randomized in terms of care delivery method (Telehealth or In-Person). The training of allied health professionals was another new process in the adapted CoYoT1 Clinic model, since the pilot in Colorado did not include multidisciplinary team members. However, to meet ADA standards of care and provide equitable care to all Telehealth and In-Person care arms, ancillary staff are included in the adapted CoYoT1 Clinic model and will be providing routine diabetes care in a virtual format. Finally, no YA in Colorado required loaned cell phones to participate in the intervention, but the lower SES population served in California required adding a cell phone loaner option to the revised Telehealth intervention.

Completion of the adapted CoYoT1 Clinic study supports three critical goals. First, the intervention and analysis will generate more refined research questions, specifically relevant to a low SES, racially/ethnically-diverse YA population with diabetes. If successful, the intervention will enable future, larger RCTs testing optimal timing for initiation of telehealth appointments; the impact derived from each critical component of the intervention (e.g. group meetings, provider behavior); and which characteristics identify best candidates for Telehealth or CoYoT1 Care visits (both patients and providers).

The study's second achievement will be to generate data directing the design of similar interventions for other patients with diabetes and other providers caring for patients with diabetes. If the CoYoT1 Care intervention is successful in YA with diabetes, the telehealth and/or collaborative care model will be modified for patients and families in other age groups. For example, the Team Clinic model focuses on in-person, group appointments for middle and high school patients and families [16,39]. Adapting the Team Clinic model, which serves adolescents and their families, for telehealth would be an ideal next step for this line of research. Completing this study successfully will also set the groundwork for expanding, replicating, and modifying the intervention for other patient populations with diabetes. This study may help guide intervention timing in pediatric patients with diabetes and their families to prevent complications, decrease loss to follow up, and prevent disengagement from medical care – issues seen very commonly in adolescent and YA patients.

It is also critical to note that there is nothing specific to diabetes as a chronic health condition that makes it uniquely amenable to home telemedicine and/or collaborative care interventions. If successful, the third achievement of the proposed study would be the establishment of an effective model of chronic disease care for patients in need of improved medical collaboration and access. Patients with other chronic diseases (e.g., asthma, cystic fibrosis, history of childhood cancer, heart disease, celiac disease, etc.) and/or psychological concerns (e.g., depression, anxiety, eating disorders, etc.) could potentially also benefit from adopting the home telemedicine model during their adolescent and YA transition period – a period known to be high-risk for all patients, not just those with diabetes [3,4]. Finally, data indicates the CoYoT1 Clinic model successfully addresses psychological comorbidities often associated with chronic disease management (e.g. depression, distress). The group component of the CoYoT1 Clinic model may address the solitude and psychological burden experienced by patients living with a chronic disease, which could benefit other patient populations.

4. Conclusion

The original CoYoT1 Clinic model has been methodically adapted to serve a low SES, publicly insured, racial/ethnic minority YA population with T1D, using input from the original CoYoT1 Clinic intervention study, a YA patient advisory board including YA with T1D from California, focus groups with key stakeholders from the clinical and administrative teams in California, and survey data collected from YA in California. The current RCT was designed to study two key components of the adapted CoYoT1 Clinic – care delivery (Telehealth vs. In-Person) and care method (CoYoT1 Care (collaborative care) vs. Standard Care). The approach and intervention components were formalized to provide 1) curriculum and resources; 2) collaborative care tools, including shared decision-making and collaborative action planning; 3) training for CoYoT1 Care providers in autonomy-supportive communication strategies; 4) a HIPAA-compliant centralized diabetes data-sharing platform; 5) after-visit summary plans for YAs as audio recordings; and 6) the opportunity of families to be included in YA visits and group appointments at a level chosen by the YA. Next steps will include completing the ongoing RCT testing multiple health and process outcomes from the adapted model.

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Ethics approval and consent to participate

The study protocol has been reviewed and approved by the Children's Hospital Los Angeles Institutional Review Board (IRB). Participants (young adults and families) will be required to provide informed written consent prior to participating.

Authors' contributions

Drs. Raymond, Pyatak, Reid, Fox, and Krishnan designed the study protocol. Drs. Raymond, Fogel, Fox, Reid and Pyatak wrote and edited the first drafts of the manuscript. Drs. Pyatak and Reid conducted the focus groups. Drs. Pyatak and Raymond and Daniel Bisno developed the YA and family group content. Dr. Reid developed the analytic plan and will oversee the data analysis in collaboration with Drs. Raymond, Fox, and Pyatak. All authors reviewed data, discussed intervention design, and participated in protocol development. All authors read and approved the final manuscript.

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Cost-effectiveness of Shared Telemedicine Appointments in Young Adults With T1D: CoYoT1 Trial

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OBJECTIVE

Young adults with type 1 diabetes (T1D) often struggle to achieve glycemic control and maintain routine clinic visits. We aimed to evaluate the societal cost-effectiveness of the Colorado young adults with T1D (CoYoT1) Clinic, an innovative care model of shared medical appointments through home telehealth.

RESEARCH DESIGN AND METHODS

Patients self-selected into the CoYoT1 (N = 42) or usual care (N = 39) groups.

RESULTS

Within the trial, we found no significant differences in 9-month quality-adjusted life; however, the control group had a larger decline from baseline in utility than the CoYoT1 group, indicating a quality of life (QoL) benefit of the intervention (difference in difference mean ± SD: 0.04 ± 0.09; P = 0.03). There was no significant difference in total costs. The CoYoT1 group had more study-related visits but fewer nonstudy office visits and hospitalizations.

CONCLUSIONS

The CoYoT1 care model may help young adults with T1D maintain a higher QoL with no increase in costs.

The absolute numbers of young adults with type 1 diabetes (T1D) are on the rise (1). The transition period from pediatric to adult care is challenging and frequently accompanied by missed clinic visits and suboptimal glycemic control (2–6). An innovative care model—shared medical appointments delivered through home telehealth—was evaluated by the recent Colorado Young Adults with Type 1 Diabetes (CoYoT1) trial. The trial demonstrated that the care model improved patient attendance and diabetes care engagement (3,7). We aimed to evaluate the societal cost-effectiveness of the CoYoT1 model versus usual care (control).

RESEARCH DESIGN AND METHODS

In this prospective pragmatic trial, patients with T1D aged 18–25 years self-selected into either the CoYoT1 or control groups at the Barbara Davis Center for Diabetes. During the trial, we collected patients' quality of life (QoL) assessed by the EuroQol five-level five-dimension questionnaire, self-reported health care utilization, and clinical staff time related to group and/or individual visits at baseline, 3, 6, and 9 months. Main outcomes included health-related utility, quality-adjusted life years

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(QALYs), and total costs. Details on the intervention and the clinical findings have been previously published (3,7). We have provided an impact inventory table (8) and reporting checklist (9) in Supplementary Tables 1 and 2.

The 9-month total costs included *1*) all direct costs associated with trial staff time as part of the study, health care utilization that occurred outside of the study, device use (continuous glucose monitoring [CGM] and/or pump), and test strip use and *2*) all indirect costs associated with reduced work productivity and commute time for an in-person clinic visit, if employed. We calculated costs by multiplying the U.S. Bureau of Labor Statistics median hourly wages (or prices per service) by hours spent (or number of services used) in the 9-month time period. All cost assumptions are provided in Supplementary Table 3. All costs are expressed in 2015 U.S. dollars.

We applied the intent-to-treat principle to all analyses. The Wilcoxon test and the Fisher exact test were used for group comparison as appropriate. We used the ANCOVA method to compare QALYs, adjusting for baseline utility (10). We used linear mixed models to model repeated-measures outcomes and to test effects of treatment, time, and their interaction, respectively. To account for baseline imbalanced costs (11), we used the bootstrap method to calculate mean difference in difference and its 95% CI. We also conducted subgroup analyses per baseline HbA_{1c} level $>$8.0% and $<$8.0%.

RESULTS

Eighty-one patients participated in the study, 42 in the CoYoT1 group and 39 in the control group. The CoYoT1 group had a shorter duration of diabetes than the control group, but all other major baseline characteristics were balanced (Supplementary Table 6).

Compared with the control group, the CoYoT1 group had a smaller decline in

Table 1—Within-trial cost-effectiveness analysis results

	CoYoT1 (*n* = 42)		Control (*n* = 39)		*P*[a]
Utility and QALYs	Mean (SD)	Median (range)	Mean (SD)	Median (range)	
Utility at 9 months	0.87 (0.11)	0.90 (0.55, 1.0)	0.82 (0.17)	0.84 (0.39, 1.0)	**0.03**[b]
QALYs	0.70 (0.05)	0.70 (0.56, 0.75)	0.68 (0.08)	0.69 (0.46, 0.75)	0.86[c]
Diabetes distress scale at 9 months	1.78 (0.72)	1.65 (1.0, 3.65)	2.18 (0.69)	2.15 (1.12, 3.65)	**<0.01**[b]
Per-patient costs ($)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	
Total direct costs	4,024 (2,471)	3,930 (1,973, 5,545)	8,625 (18,442)	3,996 (1,072, 4,903)	0.68
Trial staff for intervention/control	198 (55)	220 (161, 238)	54 (69)	52 (0, 77)	**<0.01**
Other medical care	201 (394)	58 (0, 199)	3,488 (14,185)	241 (0, 498)	**0.02**
Strip test use	1,033 (958)	680 (472, 1,070)	975 (529)	816 (544, 1,361)	0.38
Pump use	1,365 (1,269)	1,063 (0, 2,127)	741 (1,264)	0 (0, 1,595)	**0.03**
CGM use	1,018 (1,391)	0 (0, 1,277)	1,111 (1,695)	0 (0, 3,830)	0.80
Total indirect costs	248 (419)	22 (10, 326)	694 (2,303)	19 (0, 325)	0.43
Missed work	119 (301)	0 (0, 0)	278 (767)	0 (0, 242)	0.58
Poor performance	91 (219)	0 (0, 121)	406 (1,559)	0 (0, 182)	0.30
Total commute time for in-person clinic visits	17 (11)	15 (9, 20)	11 (16)	5 (0, 15)	**0.01**
Total costs	4,257 (2,590)	4,228 (2,139, 6,061)	8,929 (18,348)	4,271 (2,035, 5,497)	0.79
Clinical variables at 9 months	Mean (SD)	Median (range)	Mean (SD)	Median (range)	
HbA_{1c}	8.40 (1.54)	8.10 (5.8, 11.4)	8.08 (0.95)	7.8 (6.9, 10.3)	0.63[b]
BMI	25.16 (4.54)	25.2 (18.4, 39.0)	25.37 (4.62)	23.7 (19.5, 33.6)	0.18[b]
Number of patients having severe hyperglycemia events (%)	0		3 (9)		0.11[d]
Number of patients having severe hypoglycemia events (%)	1 (3)		2 (6)		0.61[d]
Number of study visits	3.45 (1.04)	4 (1, 4)	0.64 (0.71)	1 (0, 2)	**<0.01**
Daily strip tests	5.11 (6.89)	3.65 (0.9, 32.7)	3.35 (1.81)	3.2 (0.9, 6.0)	0.61[b]
Pump use: yes (%)	14 (47)		4 (36)		0.73[d]
CGM use: yes (%)	11 (37)		3 (30)		1.00[d]
Subgroup analyses	Mean (SD)	Median (range)	Mean (SD)	Median (range)	
In the subgroup with high baseline HbA_{1c} ($\geq$8.0%) (*n* = 43)					
Utility at 9 months	0.88 (0.12)	0.90 (0.59, 1.0)	0.82 (0.15)	0.84 (0.45, 1.0)	**0.016**[b]
HbA_{1c} at 9 months	9.3 (1.41)	9.25 (7.4, 11.4)	8.5 (1.09)	8.25 (7.5, 10.3)	0.41[b]
Number of clinical visits	3.38 (1.10)	4 (1, 4)	0.53 (0.61)	0 (0, 2)	**<0.01**
Diabetes distress scale at 9 months	1.96 (0.83)	1.76 (1.06, 3.65)	2.07 (0.57)	1.94 (1.23, 3.18)	**0.046**[b]
In the subgroup with low baseline HbA_{1c} ($<$8.0%) (*n* = 34)					
Utility at 9 months	0.87 (0.12)	0.87 (0.55, 1.0)	0.81 (0.20)	0.86 (0.39, 1.0)	0.71[b]
HbA_{1c} at 9 months	7.41 (0.99)	7.6 (5.8, 9.0)	7.58 (0.44)	7.6 (6.9, 8.1)	0.37[b]
Number of clinical visits	4 (0)	4 (4, 4)	0.75 (0.79)	1 (0, 2)	**<0.01**
Diabetes distress scale at 9 months	1.47 (0.33)	1.47 (1.0, 2.0)	2.29 (0.81)	2.21 (1.12, 3.65)	**<0.01**[b]

Statistically significant *P* values appear in boldface type ($P < 0.05$). IQR, interquartile range. [a]The default statistical method was Wilcoxon test. [b]A linear mixed model was used to compare the groups, adjusting its baseline outcome. The *P* value is for group comparison across all visits. [c]An ANCOVA was used to test the treatment effect, adjusting its baseline utility. [d]A Fisher exact test was used to compare the groups.

utility from baseline (mean ± SD: -0.03 ± 0.06 vs. -0.07 ± 0.10; $P = 0.03$) and less diabetes-related distress ($P < 0.01$) (Table 1). Nine-month QALYs were similar: 0.70 ± 0.05 years (CoYoT1) vs. 0.68 ± 0.08 years (control) ($P = 0.86$).

The per-person 9-month mean total costs were \$4,257 ± 2,590 for the CoYoT1 group and \$8,929 ± 18,348 for the control group ($P < 0.79$) (Table 1). The difference in difference for total costs was −\$2,965 (95% CI −\$12,199, \$2,777) (Supplementary Tables 7 and 8) and not statistically significant. The CoYoT1 group had more study-related visits but fewer nonstudy office visits (means: 1.27 vs. 3.0; $P = 0.01$) and hospitalizations (mean frequencies: 0.0 vs. 0.23; two-sided $P = 0.15$) than the control group (Supplementary Table 9). For key clinical outcomes, including HbA_{1c}, BMI, and number of severe hyperglycemia (and hypoglycemia) events, we found no significant differences. No within-trial incremental cost-effectiveness ratio was calculated due to the lack of significant difference in 9-month total costs or QALYs.

In the subgroup analyses, among patients with high baseline HbA_{1c} (≥8.0%), the CoYoT1 group experienced a small reduction in utility from baseline and maintained diabetes distress scores over time, while control subjects had a greater reduction in utility ($P = 0.016$) and an increase in diabetes distress ($P = 0.046$). Among patients with low baseline HbA_{1c} (<8.0%), the CoYoT1 had a reduction in their diabetes distress score by 0.5, whereas control subjects had an increase in their distress score by 0.4 ($P < 0.01$). In both subgroup analyses, HbA_{1c} were not different for intervention and control ($P = 0.41$ and 0.37).

CONCLUSIONS

Young adults with T1D suffer from poor health outcomes, with only 14% of this population meeting the American Diabetes Association's HbA_{1c} goal of <7.0% (6). Efforts to improve health outcomes in this population have focused on developing new systems of care that may improve the transition between pediatric and adult medicine (5). Our study is the first to evaluate the societal cost-effectiveness of the CoYoT1 care model, a combination of telemedicine and shared medical appointments, compared with usual care in transition-age young adults with T1D.

During the trial, the CoYoT1 group maintained a higher QoL over time than the control group. In addition, the CoYoT1 group tended to have lower (nonsignificant) health care costs with fewer nonstudy office visits (i.e., urgent care visits) and hospitalizations (nonsignificant). To forecast the long-term implications of the QoL findings, we used the Sheffield model (12) to simulate the patient-level natural history of T1D over the projected lifetime of patients. We found that if the QoL benefits were to persist over a lifetime, there would be a gain of 0.95 QALYs. The lifetime base-case, subgroup, and sensitivity cost-effectiveness analyses were all consistent with each other (Supplementary Tables 11–14).

The clinical findings from our trial suggest that the combination of home telemedicine and shared medical appointments is a safe and efficient method for delivering care to young adults with T1D. The model improved clinic follow-up and patient appointment satisfaction, resulting in increased young adult engagement in care (3,7). These features of CoYoT1 likely reduced patients' diabetes-related distress and helped maintain higher QoL (13). While CoYoT1 enhanced patients' QoL and increased CGM use (7), we did not find significant improvements in glucose control. This is consistent with a recent meta-analysis and systematic review of telemedicine use among patients with T1D, which concluded that there was insufficient evidence to support telemedicine use for glucose control with a mild reduction in HbA_{1c} (0.18%) and found that studies with longer duration were associated with larger effects (14).

Our study has limitations. First, a sample selection bias might still exist because patients self-selected for participation in CoYoT1. However, the major demographic characteristics of the study groups were balanced. Second, our study may be underpowered because of missing data. We used the multiple imputation method to address the problem of missing data, and its results (Supplementary Table 10) were consistent with our main findings.

Based on this single-center trial, the CoYoT1 care model may help transition-age young adults with T1D maintain a higher QoL with no increase in costs, with an accompanying shift to more routine diabetes care while decreasing acute care visits (e.g., urgent care, emergency department, and hospitalizations). Additional trials with larger patient numbers, longer-term follow-up, and more structured training for shared telemedicine visits are needed.

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Author Contributions. W.W., A.G.N., M.R.S., P.Z., M.W.R., J.K.R., and E.S.H. contributed to study concept and design; were responsible for acquisition, analysis, or interpretation of data and critical revision of the manuscript for important intellectual content; and provided administrative, technical, or material support and study supervision. W.W. and M.R.S. were responsible for statistical analysis. W.W. and E.S.H. were responsible for drafting of the manuscript. J.K.R. and E.S.H. obtained funding. W.W., M.R.S., M.W.R., J.K.R., and E.S.H. are the guarantors of this work and, as such, had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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State of California—Health and Human Services Agency
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September 27, 2021

Highlights of Current and Planned Medi-Cal Telehealth Coverage:

The following Medi-Cal telehealth policies are approved in state law through December 31, 2022. The Department intends for these policies to be continued on a permanent basis after 2022 and expanded as specified below:

- **Baseline coverage of synchronous telehealth**: Synchronous video and audio-only telehealth is covered by Medi-Cal across multiple services and delivery systems, including physical health, dental, specialty mental health, and Drug Medi-Cal Organized Delivery System (DMC-ODS). In addition to continuing this policy after 2022, DHCS intends to add baseline coverage of synchronous telehealth coverage to State Plan Drug Medi-Cal, 1915(c) waivers, Targeted Case Management (TCM) Program and Local Education Agency Medi-Cal Billing Option Program (LEA-BOP).

- **Baseline coverage of asynchronous telehealth:** Asynchronous telehealth (e.g., store and forward and e-consults) is covered by Medi-Cal across many services and delivery systems, including physical health, dental, and DMC-ODS. In addition to continuing this policy after 2022, DHCS intends to expand baseline coverage of asynchronous telehealth to 1915(c) waivers, TCM and LEA-BOP.

- **Virtual communications**: Brief virtual communications are covered by Medi-Cal for physical health. In addition to continuing this policy after 2022, DHCS intends to expand coverage of virtual communications to 1915(c) waivers, TCM and LEA-BOP.

- **Payment parity**: Parity in reimbursement levels between in-person services and telehealth modalities (synchronous video, synchronous audio-only, or asynchronous store and forward, as applicable), so long as those services meet billing code requirements. In addition to continuing this policy after 2022, DHCS intends to continue the use of cost-based reimbursement for TCM and LEA BOP telehealth services. Payment parity excludes virtual communications.

- **Telehealth in Federally Qualified Health Centers (FQHC)/ Rural Health Clinics (RHCs)**: FQHCs/RHCs are reimbursed at the PPS rate for synchronous video, synchronous audio-only, and store and forward (excluding e-consults), and are not subject to site limitations for either beneficiary or provider. DHCS intends to continue these flexibilities after 2022.

Policies Already Implemented or In Process:

- **Remote patient monitoring**: Remote patient monitoring is covered by Medi-Cal for dates of service on or after July 1, 2021; request for federal approval is under development.

- **Telephonic enrollment for Minor Consent**: Telephonic enrollment for minor consent will continue after the PHE. This will be done through the Medi-Cal Eligibility Procedures Manual Updates as permanent policy and MEDIL I21-09 has been issued to reflect the policy.

Focus of Telehealth Stakeholder Advisory Workgroup and DHCS January 2022-23 Governor's Budget Recommendations:

The charge of the workgroup is to advise DHCS on how to refine the aforementioned telehealth policies to ensure the policies are designed optimally for a post-PHE world. This includes advising on the following:

- **Billing and coding protocols**: What codes and modifiers should be used to delineate when services are delivered by telehealth and whether services are video or audio-only.

- **Ongoing monitoring and evaluation:** How DHCS should measure and review telehealth utilization to facilitate consumer protection and Medi-Cal program stewardship.

- **Utilization management**: What standards and protections should be in place to ensure expanded telehealth coverage increases access, supports high-quality care, and reduces health disparities, among other goals.

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ORIGINAL ARTICLE

CoYoT1 Clinic: Home Telemedicine Increases Young Adult Engagement in Diabetes Care

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Abstract

Background: Young adults with type 1 diabetes (T1D) experience poor glycemic control, disengagement in care, and are often lost to the medical system well into their adult years. Diabetes providers need a new approach to working with the population. The goal of this study was to determine whether an innovative shared telemedicine appointment care model (CoYoT1 Clinic [pronounced as ''coyote''; Colorado Young Adults with T1D]) for young adults with T1D improves care engagement, satisfaction, and adherence to American Diabetes Association (ADA) guidelines regarding appointment frequency.
Subjects and Methods: CoYoT1 Clinic was designed to meet the diabetes care needs of young adults (18–25 years of age) with T1D through home telemedicine. Visits occurred every 3 months over the 1-year study (three times by home telemedicine and one time in-person). Outcomes were compared to patients receiving treatment as usual (control).
Results: Compared with controls, CoYoT1 patients attended significantly more clinic visits ($P < 0.0001$) and increased their number of clinic visits from the year before the intervention. Seventy-four percent of CoYoT1 patients were seen four times over the 12-month study period, meeting ADA guidelines, but none in the control group met the ADA recommendation. CoYoT1 patients used diabetes technologies more frequently and reported greater satisfaction with care compared with controls.
Conclusions: Delivering diabetes care by home telemedicine increases young adults' adherence to ADA guidelines and usage of diabetes technologies, and improves retention in care when compared to controls. Home telemedicine may keep young adults engaged in their diabetes care during this challenging transition period.

Keywords: Telehealth, Telemedicine, Young adults, Diabetes, Shared medical appointments, Group appointments.

Introduction

In the United States, ~18,000 children and young adults (<20 years of age) are diagnosed with type 1 diabetes (T1D) each year.[1–4] These patients often experience difficulty adhering to glycemic control standards set forth by the American Diabetes Association (ADA). On average, hemoglobin A1c (HbA1c) levels peak in T1D patients around 19 years of age at 9.2% (77 mmol/mol), with only 17% of adolescents meeting their HbA1c target of 7.5% (59 mmol/mol) and only 14% of young adults achieving their HbA1c target of <7.0% (53 mmol/mol), according to data from T1D exchange.[5]

Poor glycemic control in young adults may be exacerbated by psychosocial changes that occur during the transition from

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adolescence to adulthood. Academic pursuits, work commitments, social priorities, lack of adherence to strict routines, and reduction of diabetes-specific support pose serious threats to transitioning young adults' diabetes management. Young adults with diabetes struggle to address many self-care behaviors, including satisfying the ADA recommendation of completing ≥4 clinic visits annually and performing routine HbA1c tests.[6,7] In addition, as young adults, feelings of ''invincibility'' and fewer immediately life-threatening medical comorbidities often contribute to lower adherence to medication regimens, which may lead to higher risk of diabetic ketoacidosis, poor mental health, or multiple physiological complications in later adulthood (e.g., neuropathy, kidney disease, cardiovascular diseases, and eye disease).[8–11]

Existing T1D interventions do not address young adults with diabetes adequately, as they are often focused on the care needs of either pediatric or adult patients, or do not provide developmentally appropriate peer support or other means of engagement for young adults.[12] To improve health outcomes for young adult patients with T1D, interventions must focus on improving patient–provider communication and addressing young adult developmental needs.[13]

Recent advances in health technologies have allowed care providers to address communication issues by using telemedicine to engage patients; replacing routine, in-person medical appointments with online video conferencing. Patients in telemedicine studies often report improved satisfaction with care and demonstrate better medical outcomes.[12,14–19] In studies focused on T1D patients, those who utilized telemedicine maintained glycemic control more successfully and followed-up with care providers more efficiently than with routine in-person visits.[12,15,16,19]

Telemedicine has been used successfully with pediatric and adolescent patients with T1D, but often in conjunction with another intervention addressing the psychosocial needs of this age group.[1,20] For example, Telehealth Behavioral Therapy (TBT) for T1D patients ages 9–17 years addresses how parental discord may influence adherence to diabetes regimens.[18] Similarly, Behavioral Family Systems Therapy for Diabetes (BFST-D) has been delivered using videoconferencing and was equally effective in providing diabetes team contact, peer support, and disease management as the in-person intervention.[14,17]

In our previous work, we designed and evaluated a shared medical appointment (SMA) model called ''Team Clinic,'' which addresses the developmental and psychosocial needs of adolescent patients with T1D.[21] Team Clinic not only allowed providers to deliver care more efficiently and effectively but also increased patient satisfaction, comfort, and willingness to engage with care providers when compared to routine appointments. Pilot data from the Middle School Team Clinic cohort found high satisfaction in patients, families, and providers and a trend toward increased visit frequency and improved glycemic control when comparing patients in Team Clinic to controls (in press). Data from the High School Team Clinic pilot found increased satisfaction for patients, families, and staff while also meeting ADA recommendations for routine visits with all members of the diabetes team.[22] The Team Clinic model was also applied to young adults with diabetes. Although satisfaction and qualitative feedback was positive, regular attendance for in-person Team Clinic was poor in the young adult population (unpublished data).

Based on lessons learned from Team Clinic and the desire to find a way to connect with young adults, we developed an innovative care model called ''CoYoT1 Clinic'' (pronounced as ''coyote''; Colorado Young Adults with T1D), that delivers supportive SMA care using telemedicine.[23,24] In the current study, we evaluated the feasibility and acceptability of CoYoT1 Clinic, examining rates of care retention and follow-up, patient satisfaction, and adherence to ADA guidelines regarding appointment frequency, compared to patients in usual care.

Methods

CoYoT1 Clinic

The CoYoT1 Clinic structure, a virtual adaptation of the Team Clinic model, consisted of individual appointments with a diabetes-focused pediatric endocrinologist or nurse practitioner, and group appointments with a certified diabetes educator or peer leader.[23,24] Participants completed these telemedicine appointments from any location of their choosing, using any Internet-connected device equipped with a camera and speakers (e.g., tablets, smartphones, personal computers) and Vidyo™ web-conferencing software (Vidyo, Inc., Hackensack, NJ), a HIPAA-compliant encrypted platform provided by Children's Hospital Colorado and the Barbara Davis Center for Diabetes (BDC), which allowed healthcare professionals to discuss private health information with patients securely. Before appointments, patients uploaded data from diabetes management devices (e.g., insulin pump, blood glucose monitors, continuous glucose monitors [CGM]) to a secure website, and completed laboratory studies (including HbA1c) at any convenient local care provider or laboratory (e.g., student health clinic, general physician's office, free-standing laboratory) who sent laboratory results to our office. Visits were scheduled every 3 months in compliance with ADA recommendations for patients with T1D.

Group sessions, routinely consisting of four patients each, focused on topics relevant to young adults with T1D, including stress management, building social support, developing self-advocacy and efficacy in diabetes and symptom management, and using diabetes technology to improve quality of life. Group sessions were completed with Visits 1, 2, and 4. A certified diabetes educator led Visits 1 and 2, and a peer leader working in our diabetes center, who was trained by the study team, led Visit 4. No group session was conducted during the in-person appointment (Visit 3).

Visit 1 included an orientation to the clinic process, participants shared their diabetes story, and patients reviewed self-advocacy and self-efficacy at work, school, and other social scenarios. Visit 2 focused on diabetes stress and burnout, including barriers to care and potential methods to address barriers. Visit 4 focused on diabetes technology and research, including patients reviewing what had worked or not worked for them. In each group, patients were encouraged to ask questions of one another versus the facilitator driving discussion. The goal was for patient-driven, topic-focused discussion to meet their needs while also setting sufficient structure for topic review.

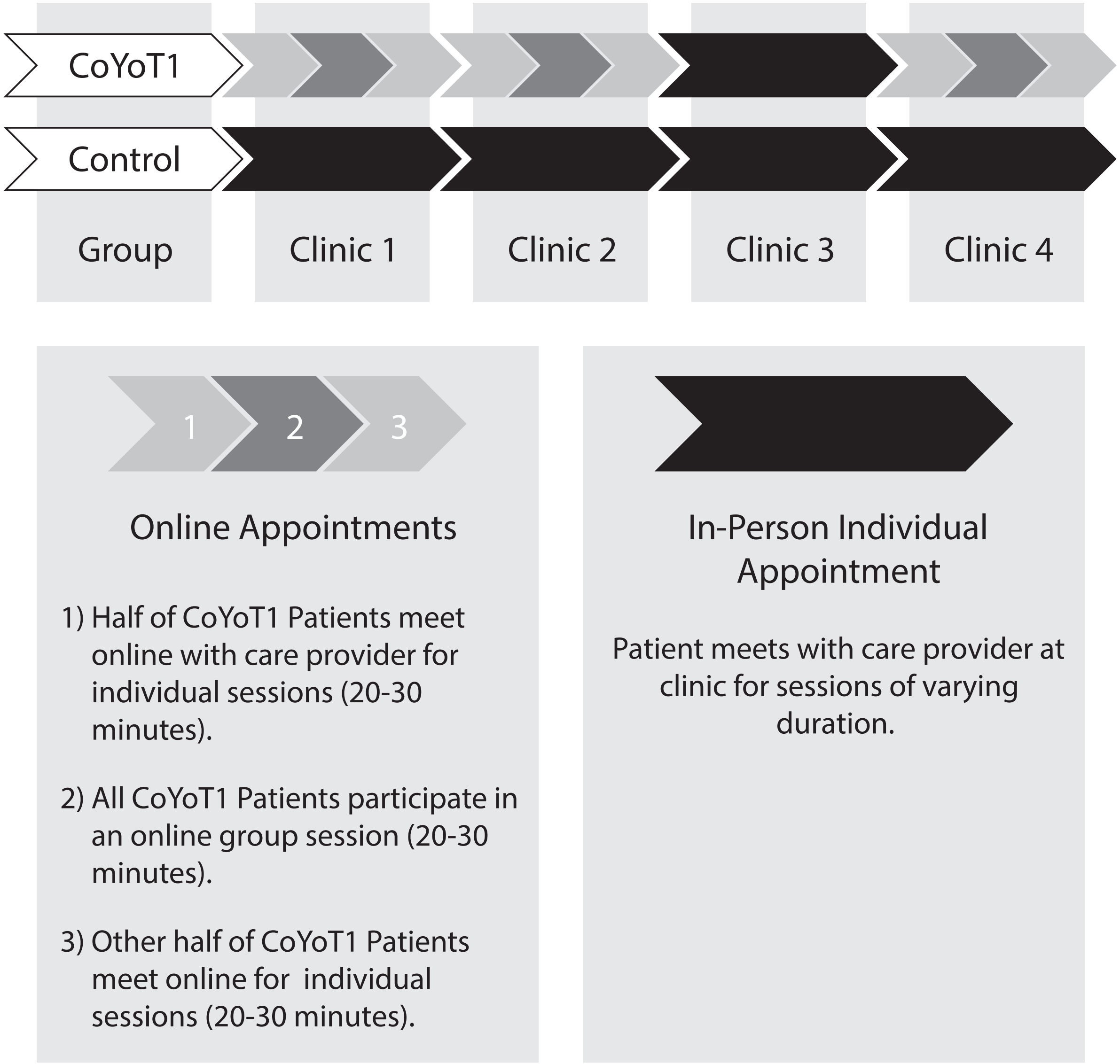
During the individual appointment within the telehealth visit, care providers reviewed laboratory results, discussed blood sugars and insulin doses, considered barriers to an individual's diabetes management, addressed the young adult's questions and concerns, and worked with the patient to develop a care plan. Diabetes team members were also available by phone or email before and after scheduled appointments to answer additional questions. Further details and description of the CoYoT1 Clinic can be found in our previously published work.[23,24]

Study participants and design

Patients with T1D at BDC between ages of 18 and 25 years were invited to participate in CoYoT1 Clinic. Patients were excluded from the study if they did not attend any clinics during the year before enrollment; if they did not have access to an Internet-connected device; if they were newly diagnosed patients, who had not yet completed the required diabetes education program; if they did not speak English; if they were not able to be within the State of Colorado at the time of their online appointments; or if they were diagnosed with severe behavioral or psychological disorders that would preclude effective group participation.

In this prospective cohort pilot study, patients self-selected into either the CoYoT1 Clinic arm, where patients could complete three telemedicine visits and one in-person appointment with their diabetes care provider; or to the control arm, where participants could continue routine in-person visits at BDC as per clinic standard. Details about study visits are shown in Figure 1. Recruitment occurred over ∼4 months, with lack of interest in the study and inability to be within the State of Colorado for appointments being cited as the main reasons for not participating. Patients in both groups received small monetary incentives for completion of questionnaires at baseline and study completion, but they did not receive compensation for visit completion.

Patients in both CoYoT1 Clinic and standard care received appointment reminder phone calls before their appointments. Both groups received reminders 1 week before the appointment, but patients in CoYoT1 received additional reminders (1 week and 3 days before their appointment) to complete laboratory testing and diabetes device downloads in preparation for online clinic appointments. Diabetes device



1) Half of CoYoT1 Patients meet online with care provider for individual sessions (20-30 minutes).
2) All CoYoT1 Patients participate in an online group session (20-30 minutes).
3) Other half of CoYoT1 Patients meet online for individual sessions (20-30 minutes).

Patient meets with care provider at clinic for sessions of varying duration.

FIG. 1. Study visits for CoYoT1 and control patients. CoYoT1, Colorado Young Adults with T1D.

downloads include glucometers, insulin pumps, and CGM downloads. For patients in CoYoT1, device downloads were done at home and sent to the clinic electronically. For control patients in standard care, device downloads were either completed at clinic (requiring patients to take the device to an appointment) or were completed during another medical appointment around the scheduled date of clinic visits.

Patients in CoYoT1 were compared with control patients at 3-month intervals (at baseline, 3, 6, and 9 months). This appointment attendance schedule is consistent with the ADA's recommendation for young adults with T1D to be seen quarterly.[7] Adherence to ADA guidelines for visit frequency was established as quarterly appointments (≥4 visits over the 12-month time period). Similarly, adequate HbA1c monitoring was defined as completion of tests on a quarterly basis (≥4 values over the 12-month time period), and adequate blood glucose monitoring was defined as checking blood glucose levels by finger stick ≥4 times per day.

To increase opportunity for participation in the control arm, patients receiving routine care were given an extended time window (∼15 months) to increase visit completion during the study period. These patients were also allowed to submit device data outside of their scheduled clinic visits. All procedures were reviewed and approved by the Institutional Review Board of the University of Colorado Denver. Before participation in the study, all patients provided informed consent.

Patient satisfaction

Patient satisfaction with the group and individual appointments (online or in-person) was assessed using a brief online survey, which asked patients to rate how much they agreed or disagreed with statements about the appointments on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Five statements asked participants about how well the appointments worked for their schedules, as well as feeling supported and comfortable asking the doctor questions (e.g., ''I was able to speak freely and express myself''). Some item wording varied between groups because of differences in appointment structure (e.g., ''[Online appointments are] easier than normal …'' vs. ''[In-person appointments are] easy for me …''). After one reverse-scored item was recoded (''Appointments … take a lot of time …''), all scores ranged from 1 to 5, where higher scores indicated greater satisfaction.

An average appointment satisfaction score was computed by summing the items and dividing by five, resulting in one score on the same scale as the original questions. Appointment satisfaction questions were completed by control participants once, ∼6 months after their baseline study appointments; CoYoT1 Clinic participants completed these questions every 3 months throughout the study. As the survey was administered to control participants only once and follow-up with these patients was poor, control participant appointment satisfaction data were compared to CoYoT1 participant data collected ∼6 months after study entry.

An additional five statements asked CoYoT1 Clinic participants about using online technology to receive care (e.g., ''I felt comfortable using technology for my online visit,'' ''I would recommend this technology to others''). CoYoT1 participants completed these questions every 3 months following their baseline study appointment, until the end of the study period. Average technology satisfaction scores were computed at each time point using the same procedure used for appointment items, and used to assess satisfaction with technology use among CoYoT1 participants over the course of the study.

Statistical analyses

Patient demographic and clinic attendance data in the year before study enrollment were obtained from the electronic health record. Age, T1D duration, appointment satisfaction, average number of appointments attended before and during the study period, and numbers of HbA1c and blood glucose checks completed were compared between groups using Student's *t* tests. Overall changes in HbA1c, as well as changes in the number of HbA1c and blood glucose checks over time, were compared using repeated measures analysis of variance (RMANOVA). Attendance and adherence to T1D care at each clinic session were compared between groups using chi-squared or Fisher's exact tests, wherever appropriate. Overall changes in attendance and care adherence percentages over time within each group were compared using Cochran's Q test, a nonparametric equivalent of RMANOVA for dichotomous outcomes. All analyses were conducted using Stata 14.2 (StataCorp, LLC, College Station, TX).

Results

Patient characteristics

Forty-two patients who enrolled in the CoYoT1 Clinic were compared to 39 patients who enrolled in the control arm and received treatment as usual. The mean age of CoYoT1 patients was 19.8 years, compared to 20.5 years in controls ($P = 0.10$).

Patients in the control group reported longer T1D duration on average (mean = 11.7, standard deviation [SD] = 5.5) compared with patients in CoYoT1 [mean = 8.2, SD = 4.7; $t(79) = 3.08$, $P = 0.003$], but there were no other significant differences at baseline. Both groups were distributed similarly in terms of sex (females: 55% CoYoT1, 51% controls), and most patients were white and non-Hispanic (79% CoYoT1, 74% controls). Additional demographic and clinical characteristics of 81 study participants are shown in Table 1.

Notably, the 11 patients who enrolled in the study, but attended no clinic sessions during the study period were all in the control group and were significantly older (mean = 21.4, SD = 1.4) than those patients who participated in at least one session [$n = 70$, mean = 20.0, SD = 1.8; $t(79) = 2.41$, $P = 0.02$]. These 11 patients also reported longer T1D duration than those who attended at least one appointment [mean = 13.6 vs. 9.3 years, SD = 5.2; $t(79) = 2.56$, $P = 0.01$] and exhibited marginally higher HbA1c levels at baseline [mean = 9.5 vs. 8.6, SD = 1.7; $t(75) = 1.70$, $P = 0.09$]. These patients were included in all comparisons of clinic attendance and care adherence.

Clinic attendance

In the year before the study, patients in the CoYoT1 group attended 2.6 clinic visits on average, compared to 2.3 clinic visits for patients in the control group ($P = 0.28$). During the study period, patients in CoYoT1 completed 3.5 visits on

Table 1. Patient Demographics and Clinical Characteristics

Demographics/ Clinical characteristics	*CoYoT1 intervention* (n = *42*)	*Control patients* (n = *39*)
Age, mean years (SD)	19.8 (1.7)	20.5 (1.9)
Sex, *N* (%)		
Female	23 (55)	20 (51)
Male	19 (45)	19 (49)
Ethnicity, *N* (%)		
Latino	3 (7)	5 (13)
Not Latino	36 (86)	31 (79)
Unknown	3 (7)	3 (8)
Race, *N* (%)		
Black or African American	1 (3)	2 (5)
White	35 (83)	35 (90)
More than one race	4 (10)	1 (3)
Unknown	2 (5)	1 (3)
Insurance, *N* (%)		
Private	36 (86)	33 (85)
Public (Medicaid)	4 (10)	5 (13)
Military (Tricare)	2 (5)	1 (3)
Duration of T1D, mean years (SD)[a]	8.2 (4.7)	11.7 (5.5)
HbA1c at baseline, mean (SD)	8.7 (1.7)	8.7 (1.8)

[a] Duration of T1D was significantly shorter in the CoYoT1 Group compared with the Control Group, $P = 0.003$. No other comparisons were significant.

CoYoT1, Colorado Young Adults with T1D; HbA1c, hemoglobin A1c; SD, standard deviation; T1D, type 1 diabetes.

average compared with 1.1 visits on average for the control group, $t(79) = 10.77$, $P < 0.0001$. While CoYoT1 patients increased visit adherence by, on average, nearly one visit compared to the previous year, control patients were seen for at least one visit fewer compared to the previous year. Furthermore, 74% of CoYoT1 patients were seen four times over 12 months, meeting ADA guidelines, but no patients in the control group met the ADA recommendation (Table 2). During the year preceding the study, only 21% of patients who participated in CoYoT1 were seen at least four times during the year, compared to 8% of control patients ($P = 0.51$), which resulted in 50% of CoYoT1 patients moving into compliance with ADA visit frequency recommendations during the intervention.

Care adherence

In addition to attending more clinics, patients in the CoYoT1 group demonstrated greater care adherence throughout the study period compared with patients in the control group (Fig. 2). Patients in CoYoT1 had significantly fewer completed HbA1c tests at baseline compared with controls (90% vs. 100%), less frequent insulin pump usage (45% vs. 51%), and nearly equal rates of downloading diabetes device data (82% vs. 79%). However, over the course of the study period, patients in CoYoT1 continued to adhere to care recommendations at approximately twice the rate of patients in the control group (Fig. 2).

Table 2. Clinic Attendance

Variable	*CoYoT1 intervention* (n = *42*)	*Control patients* (n = *39*)	P
No. of clinics attended, mean (SD)			
Year before study	2.6 (1.1)	2.3 (1.0)	0.28
During study	3.5 (1.0)	1.1 (0.9)	<0.001[a]
No. of clinics attended per year, *N* (%)			
Year before study			0.51
1	8 (19)	10 (25)	
2	12 (29)	11 (28)	
3	12 (29)	14 (36)	
4	9 (21)	3 (8)	
5	1 (2)	1 (3)	
During study			<0.001
0	0	11 (28)	
1	5 (12)	16 (41)	
2	2 (5)	9 (23)	
3	4 (9)	3 (8)	
4	31 (74)	0	

[a] Patients in the control condition were offered a fifth clinic at the end of the study year, attended by 19 patients (44%). This fifth clinic is included in the mean value and number of clinics attended percentage, reported above.

At the end of the study year, 21 patients in CoYoT1 (50%) met the goal of 4 or more HbA1c measures over the year, compared with 7 control patients who met the goal (18%, $P = 0.002$). Also, 44% of CoYoT1 patients provided blood glucose data at the last Clinic (compared to 23% of control patients, $P = 0.04$), although few patients in either group consistently tested blood glucose more than four times per day by the end of the study year (nine in CoYoT1, three in standard care). Furthermore, 33% of CoYoT1 patients still used insulin pumps at the end of the study year (compared to 10% of control patients, $P = 0.02$).

When considering changes in individual patient adherence over time, completion of HbA1c tests significantly decreased over the study year in both groups, but more drastically in the control group [Control Group Cochran's Q χ^2 (3) = 43.91, $P < 0.0001$; CoYoT1 Group Cochran's Q χ^2 (3) = 25.24, $P < 0.0001$]. Similarly, diabetes device downloads significantly decreased in both study groups, but the decrease in adherence in the control group was larger [Control Group Cochran's Q χ^2 (3) = 35.30, $P < 0.0001$; CoYoT1 Group Cochran's Q χ^2 (3) = 17.43, $P = 0.0006$]. On the contrary, insulin pump usage was nearly constant in the CoYoT1 group over the study year [Cochran's Q χ^2 (3) = 2.83, $P = 0.42$], but decreased significantly in the control group following the baseline assessment [Cochran's Q χ^2 (3) = 37.8, $P < 0.0001$].

Use of CGM was different at baseline, but this difference did not persist at the end of the study period. While 30% of participants in the control group and only 10% of those in CoYoT1 reported using CGM at baseline ($P = 0.04$), this significant difference was not present at any assessment conducted after baseline due to an increase in CGM use in patients in CoYoT1 Clinic (30% of control and 37% of CoYoT1 patients used CGM at the end of the study, $P = 1.00$). While CGM usage was nearly constant in the control group [Cochran's Q χ^2 (3) = 3.00, $P = 0.39$], it increased

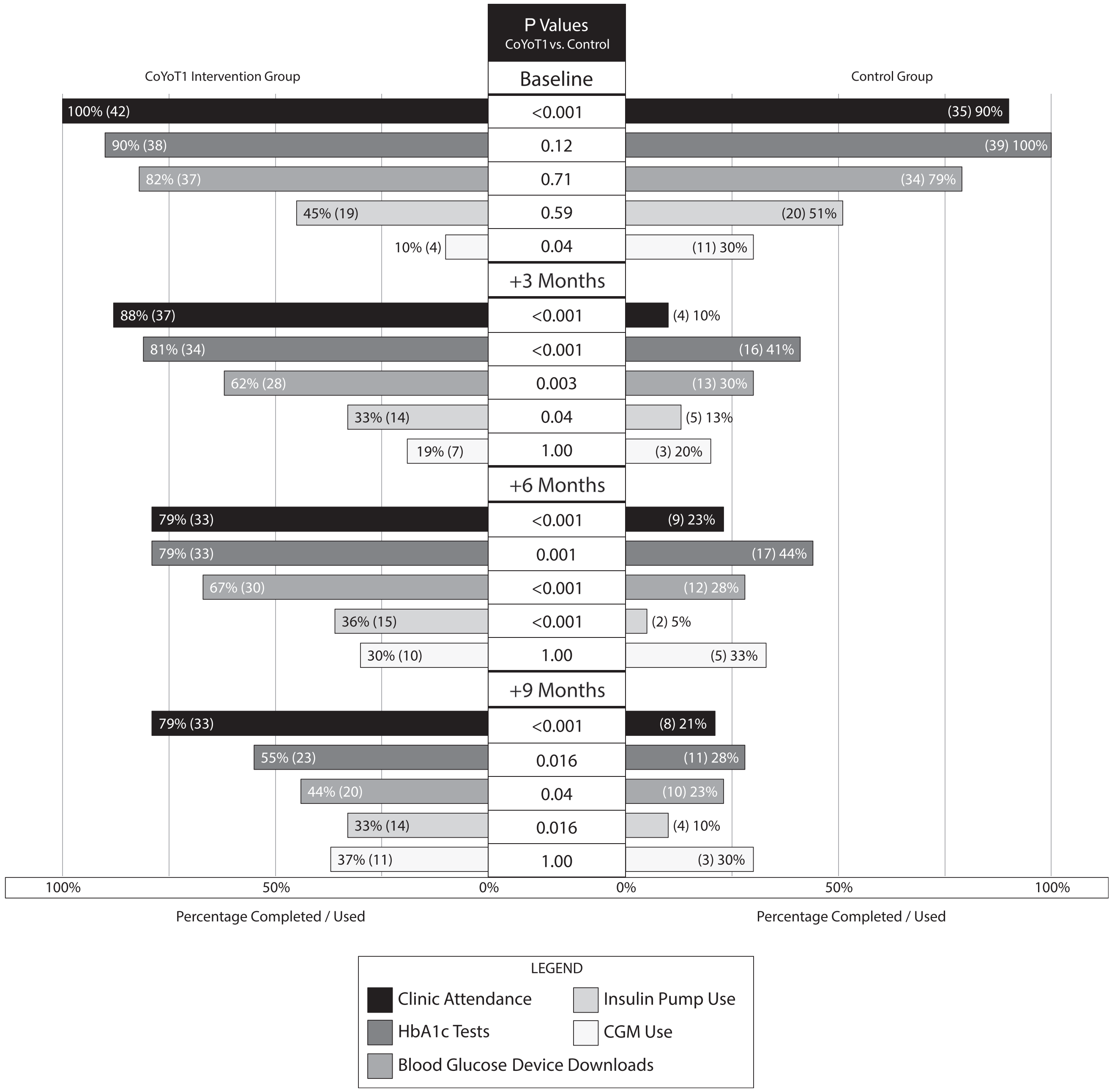


FIG. 2. T1D care adherence and technology use by study group. *P*- reported above compare the relative frequencies of diabetes care adherence and technology usage between the CoYoT1 Intervention and Control groups. Numbers at the end of each bar are the compared percentages, with raw *n* values for each group in parentheses representing the number of people who provided data about their care adherence or attended clinic at each study time point. Percentage scaling is noted on the horizontal axes. T1D, type 1 diabetes.

significantly in CoYoT1 patients [Cochran's Q χ^2 (3) = 8.68, $P = 0.03$].

Patient satisfaction

Compared with patients in the control group (mean = 3.85, SD = 0.70), patients in the CoYoT1 group (mean = 4.18, SD = 0.49) reported higher appointment satisfaction after ~6 months of participation in the study, $t(58) = 2.17$, $P = 0.03$. Although patients in both groups felt equally supported, comfortable, and able to speak freely during appointments, patients who participated in standard clinical care reported some difficulty with fitting appointments into their schedules.

Within the CoYoT1 Clinic group, satisfaction with the online technology used to conduct appointments stayed high over the course of the study year, starting at 4.44 (SD = 0.49) after 4 months of participation, and increasing slightly to 4.61 (SD = 0.55) after 12 months of participation, $t(63) = 1.33$, $P = 0.19$. Overall, patients in CoYoT1 would recommend the technology to others, felt they received the care they needed, and thought the format allowed them to express concerns comfortably and privately.

HbA1c and blood glucose checks

Although a separate visit to a commercial laboratory was required to obtain an HbA1c value before the CoYoT1 telehealth visit, participants in the CoYoT1 group completed slightly more HbA1c tests on average over the course of the study year than patients in the control group (CoYoT1 = 3.0, control = 2.6; Table 3). However, this difference was not statistically significant. Furthermore, HbA1c values did not significantly change over the course of the study year in either group (RMANOVA group × time interaction $P = 0.92$). Patients in the control group exhibited a 0.04 decrease in HbA1c (SD = 0.96) from baseline, while patients in CoYoT1 Clinic experienced a 0.14 decrease (SD = 1.18; $P = 0.76$).

Participants also did not significantly differ in terms of the number of blood glucose checks performed per day over the course of the study year (RMANOVA group × time interaction $P = 0.86$). Although participants in CoYoT1 checked blood glucose more frequently after 1 year (mean = 5.1, SD = 6.9) compared with patients in the control group (mean = 3.4, SD = 1.8), this comparison did not reach statistical significance ($P = 0.44$).

Subanalysis of clinic attendees

The poorer attendance of control participants (including 11 who attended no clinics) likely altered outcomes attributable to this group as a whole. To address this issue, the subset of patients who attended at least one session during the study (CoYoT1 or control) was examined in a separate subanalysis. The notable changes between the subanalysis results and the complete study results are in completion of Blood Glucose downloads and HbA1c tests, where the relative percentages of adherence in control patients who attended at least one clinic during the study year are greater relative to the adherence of the whole control group, shown in Figure 2. In all cases, highly significant differences remain significant, and marginal effects (e.g., reports of Insulin Pump use in Clinic 2; Blood Glucose test adherence reported at Clinic 4) emerge where differences between CoYoT1 and all control patients were less extreme.

Discussion

Young adults with T1D are routinely disengaged from their care and lost from the medical system until they are well into their adult years.[7,10,12,25] ''Meeting them where they are'' through telemedicine may present a useful means for maintaining engagement in young adult patients as they transition to adulthood by improving healthcare access and potentially reducing healthcare cost. The CoYoT1 Clinic model applied home telemedicine to routine young adult T1D care and retained nearly 80% of patients, who participated in diabetes care activities, including diabetes medical visits and HbA1c testing, more frequently than their peers in routine care. Thus, telemedicine may be a vital key to improving care access and engagement for young adults with diabetes. Of note, decreasing barriers to clinic attendance with telemedicine likely had a significant impact on the frequency of visits in CoYoT1 patients. Patients completed visits on campus between classes, from their break rooms at work, from the campus library, in their cars (not while driving) between various daily activities, from their dorm rooms or apartments, and from their family's home over breaks from school.

Although CoYoT1 patients and those in routine young adult T1D care attended clinic at nearly equal rates in the year before the intervention, patients in CoYoT1 attended clinic between 4 and 10 × more frequently during the study year. Furthermore, 74% of CoYoT1 patients saw their diabetes provider at least four times during the study year, adhering to the care recommendations outlined by the ADA. Of note, recent data have shown that increased visit frequency may be the one modifiable factor associated with decreased emergency department visits in young adults with T1D.[26] The increased engagement and visit frequency seen in CoYoT1 Clinic may result in healthcare cost-savings in addition to preventing the loss to follow-up routinely seen in young adults with T1D.

It is important to comment on the 11 patients who initially enrolled in the study, but completed no study visits. It is hypothesized that these patients transferred to other providers, moved out of the area, and/or became disengaged in their diabetes care. Unfortunately, the study team was unable to connect with these patients, so the actual reasons for lack of participation are unknown. The baseline differences between the patients who did not participate following enrollment and those who did were older age and longer T1D duration in those patients who attended no study visits. This could have resulted in the patients moving to a provider outside of the

Table 3. Hemoglobin A1c and Blood Glucose Checks

Variable	*CoYoT1 intervention* (n = *42)*	*Control patients* (n = *39)*	P[a]
No. of HbA1c tests completed within study year, mean (SD)	3.0 (1.2)	2.6 (1.1)	0.12
No. of blood glucose checks per day, mean (SD)			0.86
Clinic 1	3.0 (2.1)	3.5 (2.7)	0.39
Clinic 2	3.4 (2.8)	3.3 (1.5)	0.95
Clinic 3	3.6 (3.5)	4.1 (2.6)	0.68
Clinic 4	5.1 (6.9)	3.4 (1.8)	0.44

[a] We used Student's *t*-test for pairwise comparisons, and RMANOVA for examination of overall group × time interactions. All *P*-values reported above are from these tests.

RMANOVA, repeated measures analysis of variance.

BDC. However, BDC has neither age nor insurance requirements for transfer of care, and adult providers are available in the diabetes center, which makes the need to transfer care less likely.

Following an initial clinic visit at study enrollment, when participation in care activities was nearly equal, patients seen in CoYoT1 Clinics completed HbA1c and diabetes device downloads for medical review at almost twice the rate of patients in routine care. CoYoT1 patients also reported insulin pump use at three to six times the rate reported by control patients over the course of the study year. CoYoT1 patients used CGM less frequently than patients in usual care at the beginning of the study, but patients in both groups reported equal usage in subsequent clinic visits. Thus, telemedicine may promote patient usage of diabetes care technologies, and greater adherence to care recommendations overall. Group discussions in CoYoT1 could have also impacted patients' frequency of CGM use, as patients frequently related their experiences with CGM use during these sessions. Patients not using CGM before the intervention may have been impacted by their peers' positive reports during the group discussions, resulting in increased interest in adding the technology for their own diabetes management.

Telemedicine may even encourage patient engagement across all forms of care. Seventy-nine percent of CoYoT1 patients attended their single in-person appointment (Clinic Visit 3), compared with 23% of control patients who attended their third clinic visit, or 46% of control patients who completed their final annual assessment appointment (Clinic Visit 5). This two- to fourfold increase in their in-person clinic attendance in the CoYoT1 group may be attributable to the limited in-person requirement (i.e., patients are more likely to attend a single in-person visit if offset with online visits) or the overall higher level of engagement with their own diabetes care management, which is impressive.

Patients in the CoYoT1 group were more satisfied with their care experiences during the study year compared with control patients. In addition, they were highly satisfied with the technology throughout the intervention, indicating that telemedicine-enabled visits are not generally viewed as burdensome, despite some patient reports of technical issues. The main issue encountered with technology was the impact of Internet firewalls at work establishments, but patients were able to address this barrier by using different connections or leaving work for their appointment (e.g., using public wireless vs. their work wireless Internet connection). However, only a few CoYoT1 patients reported this issue. The chief complaint among the patients in routine care was the difficulty in fitting appointments into their schedules.

The flexibility of the CoYoT1 telemedicine model is a likely reason for increased attendance and patient adherence in that group, even with limited in-person requirements. As mentioned previously, patients only needed an Internet connection, microphone, and camera to allow for participation, which resulted in appointments being conducted at home, work, school, and multiple other locations without significantly impacting their daily schedule compared to the additional time required for travel to and from a physical appointment.

Despite greater adherence, attendance, and satisfaction, patients in the CoYoT1 group did not experience significant improvements in HbA1c levels over the course of the study year compared with control patients. This result is consistent with other studies examining the use of telemedicine for diabetes care management,[27] and is not unexpected during this feasibility pilot study. Potential reasons for this may be (1) the duration of follow-up was too short, (2) lack of randomization, and/or (3) high attrition rates in the control group despite providing extended time to complete their final visit and data collection process. In addition, we did not provide an extensive, focused curriculum on behavioral change in the young adults. Although the group component did include these topics, the purpose of this study was not to test a formal curriculum, but to examine the feasibility and acceptability of the CoYoT1 Clinic model. Further work is underway to design a robust curriculum with continued emphasis on interventions for behavior change and improved diabetes outcomes in the young adult population with diabetes.

Limitations

Our study has multiple accompanying limitations. First, the study was not a randomized controlled trial, which may limit its generalizability to more technology savvy young adults. CoYoT1 participants self-selected into the intervention, and may have been more motivated to change their care behaviors or attend medical care sessions generally. Second, patients participating in CoYoT1 were not billed for appointments, which could have biased their initial involvement in the study while also influencing their continued follow-up. Third, patients participating in CoYoT1 had more direct contact for scheduling appointments with personalized reminders versus the automated reminder systems used in the diabetes center for regular appointments. This could have impacted patient engagement and follow-up. Also of note, CoYoT1 participants had shorter duration of disease, which may explain some differences in care behavior (i.e., longer disease duration may be associated with more hopelessness about care and reduced participation).

Nevertheless, care behaviors in the year preceding the study were similar in both patient groups, suggesting that the CoYoT1 telemedicine model is useful for changing patient behavior positively—an important first step in patients regaining glycemic control. Finally, patients in CoYoT1 experienced both group visits and home telemedicine, which could have impacted their outcomes. Future studies need to delineate the impact of each of these interventions on patient outcomes.

Future directions

eHealth-based interventions have the potential to support the monitoring of physical and psychosocial well-being, facilitating peer contact and support, interaction between members of the healthcare team, and exchange of data between patients and healthcare professionals.[28] Successful implementation of web-based interventions is often complicated by factors such as the level of information technology availability, technical support, and the ease of use.[29] Despite these previously reported findings, we did not encounter similar barriers in CoYoT1 Clinic, and technology satisfaction and use were high among our participants. Attrition is also a commonly noted problem associated with eHealth interventions;[27,30,31] however, the retention rate in the CoYoT1 patients was quite high and those who participated attended medical visits with significantly greater frequency than their peers in the control group. Experts have recommended user-centered approaches (e.g., user-centered design and individualization within programs); increased emphasis on engagement (e.g., gamification or telepresence); improved collaboration in development, testing, and data sharing; and timely implementation of interventions as keys to improving outcomes in eHealth interventions.[32] These recommendations are being reviewed for future adaptations of CoYoT1 Clinic.

Future studies of the CoYoT1 Clinic model will examine psychosocial outcomes of patients participating with the goal of identifying potential targets for more structured intervention and curriculum, designing a randomized controlled trial of the revised CoYoT1 Clinic model, evaluation of cost effectiveness of the intervention, and eventual expansion to other systems and healthcare models.

Conclusion

In this pilot study, we found high engagement, retention, and satisfaction in young adult patients with T1D participating in CoYoT1 Clinic. The study met our goal of designing a feasible and acceptable care model for young adults with T1D—a historically challenging population. Keeping young adult patients engaged in their care while they transition to adulthood may produce several benefits, including decreased healthcare costs, improved quality of life, and better psychosocial and mental health outcomes. These patients may see decreased healthcare costs through avoidance of more expensive healthcare services (e.g., emergency department visits or hospital admissions), early detection of serious complications (due to completion of regular screenings), and identification of care barriers than can be addressed by the diabetes team. The improved peer support, positive relationships with their healthcare team, and true patient-centered care may directly impact their behavioral and mental health outcomes beyond improving the engagement in care.

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Author Disclosure Statement

The authors report no competing financial interests exist.

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Insure the Uninsured Project

›› *ITUP Fact Sheet*

Broadband for Health Basics

May 2021

The Digital Divide and its Impact on Health Care

- **Accessible, Affordable, and Equitable Health Care:** Broadband, and connectivity generally, is important for creating a health care system that is more accessible, affordable, and equitable. Many health care innovations, including telehealth, health information exchange, and virtual care and patient monitoring, rely on critical broadband infrastructure.
- **Serving the Underserved:** Broadband enables people in unserved and underserved regions, including rural and urban areas of the state, and those that have low-incomes, are served by Medi-Cal and/or the safety net, and are members of communities of color, to have greater access to care.
- **COVID-19 Recovery Context:** Throughout the COVID-19 pandemic, telehealth became paramount for maintaining access to preventative and ongoing health care. Telehealth during the pandemic also shined a spotlight on the gaps in access to broadband, personal technology devices, and digital literacy, highlighting the need for the health care community to join the cross-sectoral efforts to close the digital divide.

What Does the Digital Divide Mean for Consumers?

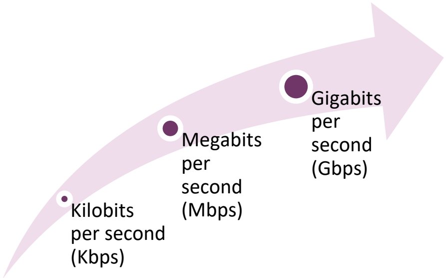
Broadband Access	Technological Devices	Digital Literacy
889,000 CA residents do not have internet providers where they live.[i]	More than 1 in 10 Californians don't have a computer.[iii]	Barriers include lack of basic computer skills, language access, and cultural competencies.[iv]
In 2019, 30% of Californians don't have access to low-cost broadband.[i] New 2021 emergency FCC broadband subsidies may mitigate some of the cost for low-income consumers.[ii]	Black and Latinx Californians have fewer devices in their homes.	ITUP 2020 Regional Workgroups and Telehealth Policy Forum noted that digital literacy is a major barrier to accessing telehealth for hard to reach populations.[iv]

Types of Wired Broadband Network Technology

- **Fiber-Optic Internet Networks (Fiber):** Considered the gold standard in broadband options, a network that uses glass strands to send information and have a useful life of decades. This is the most scalable technology to make sure future bandwidth needs are met. Fiber infrastructure can be 'lit' or active or can be 'dark' and inactive. Internet Service Providers (ISP, example: Comcast) often install more fiber than they need to lease to others or reserve for future use. In-use fiber is lit and dormant fiber is dark.[v]
- **Phone Lines:** Also referred to as Digital Subscriber Lines (DSL), internet connection through phone lines. This service uses frequencies that degrade over distances meaning that the consumer needs to be located within a mile of the central office supporting the DSL to have sufficient speeds.[v]
- **Cable Modem System:** Cable television services offer internet access via their cable system. This network is based on neighborhoods, where essentially the whole community shares on connection, thus resulting in slower, often insufficient speeds for consumers.[v]

Measures of Broadband Speed

More is Faster: Gbps > Mbps > Kbps



The Federal Communications Commission (FCC) sets sufficient broadband speeds at 25 Mbps download speeds and 3 Mbps upload speeds (commonly noted: 25/3 Mbps). As of December 2019, 96.5% of Californian households reach the 25/3 Mbps broadband access, however, only 73.8% of Californian households in rural regions of the state have access to this broadband availability.[vi]

Key Definitions

Anchor Institutions: Anchor institutions are flagship community institutions that are sometimes connected to fiber even when fiber services are not commercially available to the broader community. Because of this, they can act as a connection to the Internet backbone. Health care facilities, schools, and libraries are examples of anchor institutions.[v]

Bandwidth: The speed of transmitting information across a network. Generally, higher bandwidth is desirable, especially the more individuals and devices use the same source of broadband. The amount of bandwidth available to you can determine whether you download a photo in 2 seconds or 2 minutes. [v]

Broadband Speed: Typically, there are two different types of speeds the average consumer uses: download speed and upload speed. [v]

  - **Download Speed:** Also referred to as downstream internet connection, download speed refers to the rate at which the user's device can receive data from the internet. [v]

- **Upload Speeds:** Also referred to as upstream internet connection, upload speed refers to the rate at which the user's computer can send data to the Internet. Often times, DSL and cable internet only offer upload speeds at 1/10 of download speeds, which make them insufficient for modern day internet needs, like live video calls or virtual conference presentations. Fiber-optic internet networks more readily have robust connections for both upload and download needs. [v]

California Public Utilities Commission: The California regulatory agency that regulates privately-owned public utilities that includes telecommunications, or broadband.[vii]

Digital Equity: The state of all members of a community having equal access and sufficient digital literacy to use communication technologies. [iv]

Federal Communications Commission (FCC): The federal agency with the authority in promoting competition, innovation, and investment in broadband services. The FCC defines broadband and determines the metrics for determining whether a household or business has access to sufficient broadband internet. **The current metric was set in 2015 as 25 Mbps download speeds and 3 Mbps upload speeds**.[viii]

Fixed Wireless: A connectivity model that uses stationary wireless technology to bridge the "last mile" between the Internet backbone and the subscriber/consumer.[v] This can be contrasted with **Mobile Wireless** which is transmitted from a stationary source to a moving cellphone, tablet, or laptop (cellular data, for example).[ix]

Internet Service Providers (ISPs): An entity that provides broadband services to subscribers/consumers.[x]

Last Mile: The portion of the internet which connects ISPs' shared infrastructure to end users[i], such as homes or businesses. For example, in a cellular wireless network, the last mile is the wireless connection between a base station and an individual mobile device. Sometimes this is also called the "first mile."[xi]

Middle Mile: This is a term most often referring to the network connection between the region and/or local network to the core network, or, the greater internet. For instance, in a rural area, the middle mile would likely connect the town's network to a larger metropolitan area where it interconnects with major ISPs. [v]

Municipal Network: A broadband network owned by a local government, or "municipality". These networks take many forms, from modest networks serving a few businesses to networks that are available at every address across a community. Some are run by the municipality and others are managed by an ISP under contract. [v]

Unserved Household: The California Public Utilities Code defines an unserved household as a household for which no facility-based broadband service at speeds of at least 6Mbps downstream and 1Mbps upstream. [v]

Suggested Additional Resources

- **California Research Bureau:** https://www.library.ca.gov/Content/pdf/crb/reports/Broadband_in_California_May_%202021.pdf
- **Community Networks Fact Sheets and Other Resources:** https://muninetworks.org/content/resources
- **Community Networks Glossary:** https://muninetworks.org/glossary
- **Electronic Frontier Foundation Key Terms:** https://www.eff.org/wp/case-fiber-home-today-why-fiber-superior-medium-21st-century-broadband

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About ITUP

ITUP is an independent, nonprofit, health policy institute that has been a central voice in the California health care and health reform landscape for more than two decades. ITUP serves as a trusted expert, grounded in statewide and regional connections with a network of policymakers, health care leaders, and stakeholders. The mission of ITUP is to promote innovative and workable policy solutions that expand health care access and improve the health of all Californians.

ITUP is generously supported by the following funders:

- California Community Foundation
- California Health Care Foundation
- The California Endowment
- The California Wellness Foundation

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» Fact Sheet

Telehealth and COVID-19

December 2020

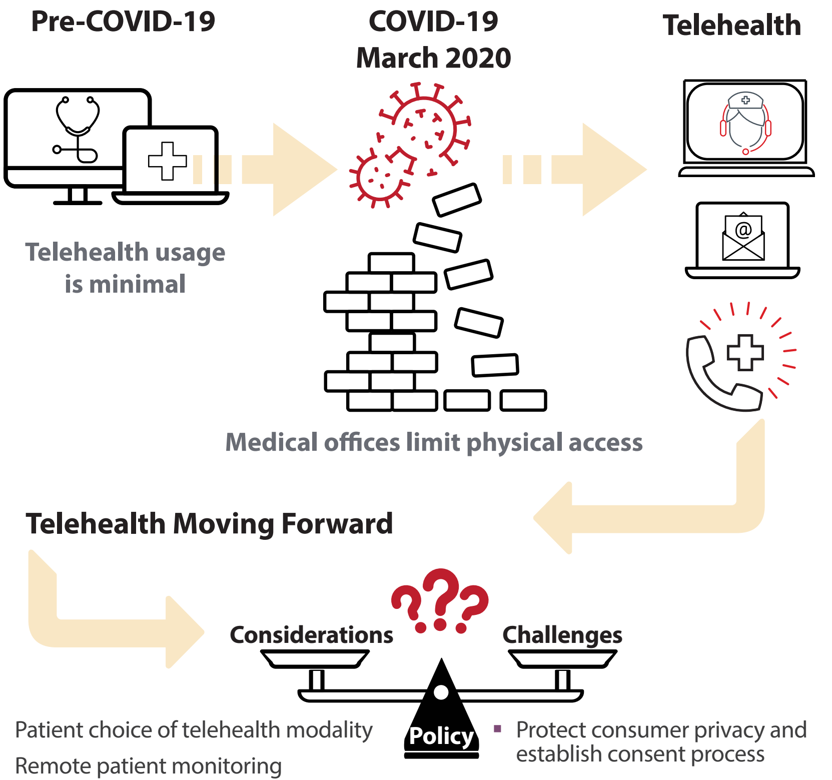
What is Telehealth/Telemedicine?

TELEHEALTH: A broad term referring to the use of electronic information and telecommunication technologies to support clinical health care, health education, public health, and health administration.[1] Under California law, telehealth is defined as a mode of delivering health care services and public health via information and communication technologies to facilitate the diagnosis, consultation, treatment, education, care management, and self-management of a patient's health care while the patient and the provider are in two different locations.[2]

Telehealth may also be referred by other terms including:

- **Telemedicine**
- **Virtual Care**
- **Digital Care**

Telehealth Before and After COVID-19



- Patient choice of telehealth modality
- Remote patient monitoring
- Transformative technology for at home, patient-centered care
- Payment for telehealth services
- Telehealth visits available to patients post-pandemic

- Protect consumer privacy and establish consent process
- Lack of personal phones or computers and clinical phone and video equipment
- Ensure quality of telehealth services
- Ensure language access availability and cultural appropriateness
- Lack of connectivity and broadband

Telehealth During COVID-19 Fast Facts

154% 2020

Increase telehealth visits nationwide compared to March 2019.[3]

62%

Californians

Reported having a telehealth visit during COVID-19.[4]

Of those who have received telehealth care, **65%** had incomes <200% FPL and **76%** were identified as people of color.

72%

Patients, including low-income and people of color, generally report satisfaction with telehealth services.[5]

71%

Low-income California patients would always like the option for telehealth visits.[6]

Telehealth, particularly for behavioral health services, dramatically reduced no-show rates for clinics in several regions across California.[7]

88%

Safety-net providers currently using telehealth during the pandemic, would continue, provided payment comparable to in-person visits.[8]

Telehealth Policies During COVID-19 Pandemic

One of the most effective ways to mitigate community spread during the COVID-19 pandemic has been maintaining physical distancing between individuals. Health care providers have balanced distancing and the need to screen, test, and treat people for COVID-19, and provide other necessary health care by using and continuing to use telehealth as a tool to maintain access to health care throughout the pandemic.

Public Health Emergency (PHE) Telehealth Flexibilities[9]

The federal Centers for Medicare and Medicaid Services (CMS) and the California Department of Health Care Services (DHCS) approved telehealth flexibilities for Medi-Cal providers and members. These flexibilities will go away after the PHE expires.

APPROVED MODALITIES

Phone services added to list of approved telehealth modalities during PHE ➤ Particularly important for communities without sufficient connectivity, and/or broadband access

PATIENT AND PROVIDER LOCATION

During PHE, patients may access telehealth services from home or other locations outside the four walls of a clinic ➤ Includes visits for general medical needs, mental health, and substance use disorder treatment

ESTABLISHING PATIENTS

Providers can serve new patients via telehealth even if they were not established patients of the clinic before PHE ➤ Before PHE, patients had to be established patients before receiving telehealth services

PAYMENT OF TELEHEALTH SERVICES

Medi-Cal providers can be paid the same rate for in-person visits and telehealth visits, regardless of the modality ➤ Before PHE, payment for telehealth services was more limited

Related Terms:[10]

TELEHEALTH MODALITIES: The type of technology used to provide telehealth. Typical modalities include synchronous two-way interactive, audio-visual communications, telephonic, and store and forward (e.g. email, telephone call, video visit via smartphone, tablet, or computer).

ASYNCHRONOUS STORE AND FORWARD: Email or other secure web-platform-based communication between patient and a health care provider where a message is sent at a point in time and is then received and read at a different point in time.

SYNCHRONOUS, OR E-VISITS: Real-time, two-way interactions between a patient and provider, typically a video conferencing call or phone call, depending on telehealth policies and insurance coverage.

E-CONSULTS: Synchronous or asynchronous health care consultation services used for patient assessment, diagnosis, and management between two providers, typically a primary care physician and a specialist.

DISTANT SITE: Place were a health care provider is located while providing health care services via telehealth.

ORIGINATING SITE: Place where the patient is located at the time when health care services are being delivered via telecommunications systems.

ESTABLISHED PATIENT: Patients who have been seen by a clinic within the last three years, or, for Medi-Cal managed care members, a patient is "established" when their managed care plan assigns them to a particular clinic. Thus, managed care members would be considered established regardless of if they have been served by a clinic prior to their first visit.[11]

FEDERALLY QUALIFIED HEALTH CENTERS: (FQHCs), RURAL HEALTH CLINICS (RHCs), AND TRIBAL 638 CLINICS (CLINICS): Community-based health care clinics that receive federal funds to provide primary care and behavioral health care services to the safety-net population.[12] Prior to the PHE, clinics had the most restrictions on them for using telehealth to deliver health care services.

Spotlight: FQHCs
Telehealth Before and During COVID-19

	Pre-COVID-19	During COVID-19 PHE
Approved Modalities	Synchronous, asynchronous	Synchronous, asynchronous, telephone
Established Patient Requirement	Patients must be established, and asynchronous telehealth cannot be used to establish a patient	Requirement waived
Face-to-Face Requirement	A visit must be face-to-face between the patient and provider	Requirement waived
Four-Wall Requirement	Services must be provided within the physical four walls of the clinic	Requirement waived

Table adapted from California Primary Care Association July 2020 presentation

Resources from the California Telehealth Policy Coalition:

- Telehealth 101 Fact Sheet
- Telehealth and COVID-19: Debunking Myths About Telehealth
- Telehealth and COVID-19: FAQ for California Patients

State and Federal Resources:

- DHCS Telehealth FAQs
- DHCS Medi-Cal Payment Guidance
- HHS Telehealth and COVID-19

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About ITUP

Insure the Uninsured Project (ITUP) is a Sacramento-based nonprofit health policy institute that for more than two decades has provided expert analysis and facilitated convenings for California policymakers and decisionmakers focused on health reform.

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Fact Sheet

Health Information Exchange

JUNE 2021

WHAT AND WHY "HEALTH INFORMATION EXCHANGE"?

One of the many lessons learned throughout the COVID-19 pandemic has been the critical need for high-quality, transparent, and accessible electronic health data to better serve consumers. **The goal of health information exchange (HIE) is to facilitate secure, efficient, effective, and equitable patient-centered care.**

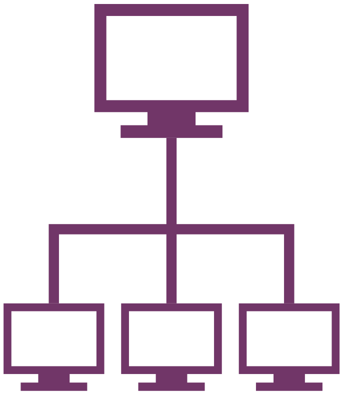
BENEFITS OF HIE

- Enables care coordination for better patient care, health outcomes
- Allows patients and providers to access a patient's full health history
- Promotes and facilitates population health management
- Assists in reducing racial and ethnic health disparities
- Makes health care delivery efficient and reduces medical error
- Improves public health emergency responses

CHALLENGES OF HIE

- Patient privacy concerns
- Conflicting state and federal laws and regulations around information-sharing
- HIE governed and led predominately at the federal and local levels, not at the CA state level
- Disparate data definitions vs. use of common data elements

POLICY CONSIDERATIONS / DECISION POINTS



GOVERNANCE: What government agency should oversee HIE at the state level, what model system would be implemented, and how will this coordinate with existing databases?

Relevant state agencies include: *CA Health and Human Services Agency*, *Office of Statewide Health Planning and Development*, *Department of Health Care Services*, *CA Department of Public Health*, *Department of Social Services*, *Department of Justice*, *California Department Corrections and Rehabilitation*, and *Department of Technology*

PROVIDER PARTICIPATION: Which providers should exchange information and should participation in information exchange be mandatory or optional?

PATIENT PRIVACY AND INFORMATION SECURITY: How should consumers' information be protected?

FUNDING: How should HIE regulation and infrastructure be financed?

DATA: What types of data should be exchanged, by whom, and for what purpose? Should this change over time?

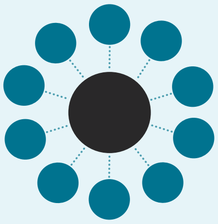
QUALITY: How should HIE be used to promote quality of services?

HEALTH EQUITY: How should HIE be used to address the social determinants of health and achieve health equity?

3 TYPES OF HIE DATA MODELS: [1, 2, 3]

In any given environment, from the community to the state level, HIE is organized along the following spectrum.

← CENTRALIZED | HYBRID | DECENTRALIZED →



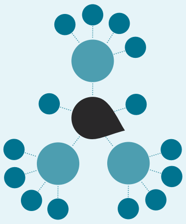
CENTRALIZED DATA STORAGE & MANAGEMENT

Pros

- One privacy consent approach
- Less expensive to maintain
- Rich set consolidated data

Challenges

- Difficult to standardize data
- More difficult to scale-up
- Requires greater trust of users



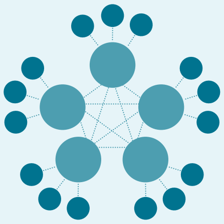
NETWORK-OF-NETWORKS & CENTRAL HUB

Pros

- Less standardization needed
- Leverage existing investments for buy in
- Central Hub can be pass-through to avoid control concerns

Challenges

- More costly to sustain multiple platforms



DECENTRALIZED W/ USER AGREEMENT

Pros

- Minimizes privacy issues
- Leverages existing investments

Challenges

- More expensive to share data
- Relies on voluntary compliance
- Generally not statewide
- No formal accountability to state
- Current CA regional model

This chart was adapted from a presentation given at ITUP's Health Information Exchange Policy Forum. For more detail on different data models for HIE, see the California Health Care Foundation's publication: Designing a Statewide Health Data Network: What California Can Learn from Other States.

TIMELINE

Federal Policies = ——

State Policies = ·······

- → 1996 Health Information Portability and Accountability Act (HIPAA) [4, 5, 6]
- ···→ 2001 Confidentiality of Medical Information Act (CMIA) [7, 8, 9, 10]
- → 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act of the American Recovery and Reinvestment Act (ARRA) [11, 12, 13]
- → 2011 Promoting Interoperability Programs (formerly the Electronic Health Records Incentive Program) [14, 15, 16, 17]
- ···→ 2011 Medi-Cal Electronic Health Records Incentive Program—$1.7B Federal Funds [18, 19, 20]
- ···→ 2013 Patient Access to Health Records Act (PAHRA) [21, 22, 23]
- → 2016 21st Century Cures Act [24, 25, 26]
- ···→ 2019 California Health Information Exchange On-Boarding Program (Cal-HOP)—$50M Federal Funds [27, 28]
- → 2020 Centers for Medicare and Medicaid Services Interoperability and Patient Access Final Rule [29, 30, 31, 32]
- → 2020 Office of the National Coordinator (ONC) Cures Act Final Rule [33, 34]

WAYS TO SHARE HEALTH DATA [35]

Directed Exchange:
Providers easily and securely send/receive patient health information electronically with other health care providers.

Query-Based Exchange:
Providers search and request patient health information from other health care providers; often used in cases of unplanned care, such as an emergency room visit.

Consumer-Mediated Exchange:
Patients access and manage their own health information; allows patients control over use of their health information with/among health care providers.

Definitions of Key Terms:

Health Information Exchange (HIE): HIE is the act of secure, electronic transfer or sharing of a patient's health related information, and the technology and policy infrastructure that enables its action. [36, 37]

Health Information Organizations (HIOs): An HIO, also referred to as a Health Information Exchange Organization (HIE Organization), facilitates the transfer of health care information electronically among stakeholders of the HIO's designated health care network. Stakeholders include health care providers, hospitals, clinics, payers, and government agencies. Two common types of HIOs are:

- **Enterprise HIOs**—System-specific HIEs built by large hospitals and health systems that only serve partnered/contracted organizations.
- **Regional HIOs (RHIOs)**—Non-profit entities that serve defined geographical areas, are open to any health care organization, and seek to improve quality of patient care through the greater sharing of patient health information. [38, 39]

Health Information Technologies (HIT): HITs are electronic systems used by health care professionals and patients to record, share, and analyze health information. HITs include EHRs, PHRs, and electronic prescribing, privacy, and security tools. [40, 41]

Electronic Health Records (EHR): EHRs, also known as Electronic Medical Records (EMRs), are electronic versions of a patient's medical history, which include key administrative and clinical data relevant to patient care. EHRs are tools to manage, store, and, in some cases, share patient health data. [42, 43]

Personal Health Record (PHR): PHRs are electronic patient health records that patients can maintain, manage, and share themselves. PHRs can be linked to provider managed EHRs, but the patient authorizes access to their PHRs. [44, 45]

Protected Health Information (PHI): PHI includes demographic information, medical histories and conditions, and insurance information. [46]

Interoperability: Interoperability is the ability of health information systems to cooperatively use health data in a coordinated manner to optimize health care. Interoperability also allows information portability among different health information systems and the patient. [47]

Population Health: Population Health is the process of using information, or data, to improve the health outcomes of specific groups and to promote and assist with healthy living in communities. [48]

Use Case: A use case is a unique instance of sharing a specific type of patient health information to resolve a particular health care scenario. Each use case has a specific purpose and goal. [49]

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About ITUP

ITUP is an independent, nonprofit, health policy institute that has been a central voice in the California health care and health reform landscape for more than two decades. ITUP serves as a trusted expert, grounded in statewide and regional connections with a network of policymakers, health care leaders, and stakeholders. The mission of ITUP is to promote innovative and workable policy solutions that expand health care access and improve the health of all Californians.

ITUP is generously supported by the following funders:

- California Community Foundation
- California Health Care Foundation
- The California Endowment
- The California Wellness Foundation

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School-Based **Telehealth:**

Advancing Whole Child Health and Well-being

all in HEALTH CARE FOR ALL FAMILIES

A PROJECT OF The Children's Partnership

School-Based Telehealth: Advancing Whole Child Health and Well-being

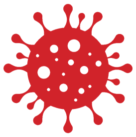
Introduction

School-based telehealth is health care that is delivered virtually through technology like a phone, laptop or tablet to a child in a trusted, convenient, and familiar setting: their school. Many children still don't receive consistent—or any—health care due to parents' inability to take time off from their work day, economic hardships, transportation challenges, and lack of health care providers in their neighborhoods. With school-based telehealth, children who otherwise wouldn't have access to behavioral, dental or health care can access care, setting them up for success in school and in life.

Telehealth is becoming a critical tool to close the health care gap for children, especially for low-income children and those from Black, Indigenous, and People of Color (BIPOC) communities who have historically lacked access to high-quality care that addresses their health needs.

Telehealth addresses systemic barriers to health care access for many families in low-income communities, including:

- a lack of affordable transportation,
- an inability to take time off work and school,
- finding a provider that treats patients enrolled in Medi-Cal (California's Medicaid program which provides health care to people with low-incomes), and
- language and cultural barriers.



The COVID-19 pandemic has demonstrated telehealth to be a life-saving resource by keeping both patients and providers safe during health care visits, making the use of telehealth more widespread than ever. We now have an opportunity to build on telehealth's momentum to bring care to where children and youth are daily—schools—by advancing school-based telehealth.

The Case for Telehealth in Schools

Educators know that keeping students healthy is vital to improving their academic achievement and life prospects. Unfortunately, most of California's more than 10,000 schools do not have the resources to meet their students' physical and mental health care needs. Only 43 percent of public-school districts in California have a nurse, and only two percent of schools have a school-based health center.

Across the nation and state, telehealth has proven to be a valuable and cost-effective tool to help meet the health care needs of children by bringing timely, high-quality care to them at school. Through video conferencing, phone calls, electronic health monitoring tools, specialized cameras and other technology, telehealth in schools is increasing access to preventive services, acute and specialty care, mental health and behavioral services, as well as care coordination, health education, and other vital health services. School-based telehealth allows doctors and other health care providers to provide a range of virtual services without students needing to leave their school campus.

School-Based Telehealth is Making a Difference

Telehealth has proven to meet a range of health care needs while keeping students healthy and in school, such as:

PRIMARY CARE:

Well-child visits are health visits that check up on a child's health to make sure they're growing and developing well. During COVID-19, most providers are conducting parts of the well-child visits using telehealth, and then scheduling brief in-person visits for vaccines and other components that need to be done in-person.

MENTAL HEALTH:

Telehealth is being used across the county to help diagnose and treat mental and behavioral health conditions among children and adolescents. Not only does telehealth help address shortages in mental health care providers for children and youth, but school-based telehealth also provides students with the flexibility to have a mental health visit when and where it is convenient for them at school, making them more likely to both seek and follow through on their mental health care appointments.

ACUTE CARE:

By connecting schools to health care providers, telehealth enables the distant health care provider to assess and diagnose a child's acute condition—such as a common cold, a flu or an ear infection. The provider can provide recommendations for treatment as well as write a prescription for the parent to pick up at the pharmacy of their choice. The child can stay in school for the rest of the day, if appropriate, and the parents can stay at work.

ORAL HEALTH:

Telehealth can be used to diagnose and develop recommendations to prevent and treat dental disease. For example, a dental hygienist can go to a school and collect dental information from patients and use telehealth to send that information to a dentist. The dentist then can create a dental treatment plan for the hygienist carry out or to make a referral for procedures that require the skills of a dentist.

CHRONIC DISEASE MANAGEMENT:

Connecting children to health providers on a regular basis has proven to help children and families manage children's chronic conditions, such as asthma and diabetes. Using video conferencing, cell phone apps, patient portals and other tools, children and youth can work with their provider to manage and improve their conditions and reduce disease-related emergencies.

SPECIALTY CARE:

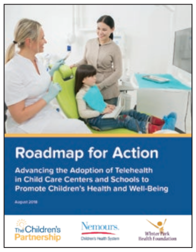
Telehealth is a critical tool in bringing specialty care—such as pediatric cardiology, neurology and other subspecialty care—to children in their communities. It is also an important tool in connecting children to other special services, including physical therapy, speech therapy, hearing screenings, nutrition counseling and others.

Getting Started: Tips for Developing a School-Based Telehealth Program

Building on lessons from school-based telehealth programs from across the country, including California, listed below are select elements for building a successful program.

- **Engage all stakeholders.** Successful school-based telehealth programs engage the right stakeholders at the right time, ranging from school administrators, to parents and teachers, to a broad array of providers and payers.
- **Assess health care needs.** When establishing a program, it is important to first gather data and determine areas of greatest need for children's health in the school community.
- **Develop project scope and workflow.** Once needs are identified, the next phase is to develop a scope that outlines how telehealth can address the needs. From there, one can identify how the program will run on a day-to-day basis.
- **Assess technology and internet needs.** Central to the success of any school-based telehealth program is the quality and efficacy of equipment that enables a high-quality telehealth visit. Further, broadband access continues to challenge widespread adoption of telehealth; it is important to explore broadband needs and solutions up front.
- **Develop a funding and sustainability plan.** From purchasing equipment, to paying for salaries, to billing for reimbursable services and funding non-reimbursable services, a thorough funding and sustainability plan is key to success. Most school-based health centers bill Medi-Cal and commercial health insurance carriers for providing services and also rely on outside funding from foundations and local, state and federal agency grants.
- **Measure and document success.** Data collection and storytelling are vital to ensuring children's health care needs are being met, sharing best practices to the community, policy makers and funders.

School-based telehealth programs provide an opportunity to leverage technology to improve health outcomes for children, while addressing barriers that many families from low-income, BIPOC, and medically underserved communities face in ensuring their children get the health care they need. In short, school-based telehealth helps communities achieve health equity.



Roadmap for Action

Advancing the Adoption of Telehealth in Child Care Centers and Schools to Promote Children's Health and Well-Being

August 2018

The Children's Partnership

Nemours. Children's Health System

Winter Park Health Foundation

A comprehensive, step-by-step guide on how to establish a school-based telehealth program, can be found at:

https://www.childrenspartnership.org/wp-content/uploads/2019/06/Roadmap-For-Action-Advancing-the-Adoption-of-Telehealth.pdf

For more information, contact Gabriella Barbosa at ***gbarbosa@childrenspartnership.org***

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Telehealth + CHILDREN

FREQUENTLY ASKED QUESTIONS

What is telehealth?

Telehealth is a tool in which medical visits can be conducted over video, phone, and other forms of electronic communication between providers, like doctors or therapists, and patients. With telehealth, you can have a visit with your child's health care provider without having to go to the doctor's office or clinic. Telehealth can help families get care at all times, but is particularly valuable during the COVID-19 pandemic. Additionally, some familiar community settings like schools or Head Start centers can use telehealth to help your child get health care.

With telehealth, get quality health care virtually while social distancing and limiting your exposure to others.

▸ www.allinforhealth.org ▸ www.childrenspartnership.org

How can I use telehealth to get health care for my child?

Call your child's provider or your local community clinic to ask if they are offering telehealth visits for children during this time. When you schedule an appointment, they should provide instructions for logging on, or if you need to download a mobile application on your phone before the appointment. You can also ask your provider if they are offering telehealth visits for mental health or dental care.

Does my child's health insurance pay for telehealth?

Yes. All California health plans are now offering health care via telehealth. The state of CA has a webpage where you can search to find your health plan's website and telehealth services. If you have Medi-Cal, you can also call Medi-Cal's member helpline at ***(800) 541-5555.*** If you have another health plan, you can call them directly or contact California's health plan help center at ***(888) 466-2219.***

Telehealth + Children

Can well-child visits be conducted over telehealth?

Caring for your child's health during this time is important! Well-child visits are health visits that check up on a child's health to make sure they're growing and developing well. The American Academy of Pediatrics (AAP) Bright Futures schedule recommends how often infants and young children should visit the doctor for regular check-ups and immunizations. The AAP recommends that most well-child care take place in-person, whenever possible. However, during COVID-19, most providers are conducting parts of the well-child visits using telehealth, and then scheduling brief in-person visits for vaccines and other components that need to be done in-person. Check with your provider about the steps they have taken to protect your and other patients' safety during this pandemic and how to prepare for the visit.

How can I get telehealth care in my primary language? Can I ask for an interpreter?

All health plans in California must provide language assistance services. Medi-Cal is required to provide language assistance at no charge to you and your family, including during virtual visits. Using the online Medi-Cal provider directory, you can find providers that speak a language other than English, but you also can request an interpreter in advance of an appointment with your provider.

Interpretation will take place much like it does in person, except that the interpreter will call or log into the appointment separate from the health care provider. You can ask your provider team how you can get an interpreter/translator to join the appointment, or receive instructions in other languages. In many cases, families have successfully been able to have interpreters join video visits.

How do I prepare for a telehealth appointment?

If you have a phone, tablet or computer, you can have a telehealth visit! Ask your provider if you will need to download or log in to an app before your visit. Every provider is different. It can be helpful to ask your clinic or provider team if they can help you get ready for the visit and make sure your connection works.

Since you and your child will have limited time talking to your provider, be prepared. It is good to have notes ready before your appointment starts.

When you log or call into a telehealth appointment, you may need to wait in a virtual waiting room, and the health care provider may give you a window within which your appointment will begin.

Teens may be able to have their visit in a private location, depending on the type of service provided. Info about minor consent at: *www.teenhealthlaw.org/consent*

Thank you to the **California Telehealth Policy Coalition** for their assistance in developing this fact sheet.

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Partners in Care Foundation
The Social Determinants Specialists

CETF
California Emerging Technology Fund

CENIC
Connecting California

California Primary Care Association

Delivering on the Promise of Telehealth to Improve Health Status in California
Fact-Finding Listening Conferences
October 22 and December 2, 2020

Final Report and Action Plan

- Enact legislation to permanently reimburse Telehealth services comparable to in-person visits.
- Invest in and ensure ubiquitous high-speed Internet infrastructure to support Telehealth for all patients and providers.
- Institutionalize Telehealth with accountability for improving patient outcomes and overall population health.

March 2021

Delivering on the Promise of Telehealth to Improve Health Status in California
Fact-Finding Listening Conferences
October 22 and December 2, 2020

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Delivering on the Promise of Telehealth to Improve Health Status in California
Fact-Finding Listening Conferences
October 22, 2020 and December 2, 2020

SUMMARY OF PROCEEDINGS

Introduction

The Fact-Finding Listening Conferences explored the convergence of technology with healthcare to optimize Telehealth to ensure quality care for medically-disadvantaged residents and to improve overall population health. The California Emerging Technology Fund (CETF) co-sponsored the Fact-Finding Listening Conferences with Partners in Care Foundation (PICF), CENIC (Corporation for Education Network Initiatives in California), and California Primary Care Association (CPCA). Each organization has a unique perspective and together hold a collective vision to optimize Telehealth in California. The collaboration brought together experts in Telehealth, healthcare systems and providers, along with Digital Equity champions who are helping to deploy broadband (high-speed Internet infrastructure, including wireline and wireless networks) and promote adoption to get online all Californians.

PICF is a non-profit organization whose mission is to shape the evolving health system by developing and spreading high-value models of community-based care and self-management for diverse populations with chronic conditions. PICF strives to achieve better health outcomes by marrying social care and medical care. PICF is a change agent that has helped residents stay at home and out of nursing homes and hospitals during COVID-19.

CENIC is a non-profit organization established in 1997. CENIC operates the California Research and Education Network (CalREN), a high-capacity computer network with more than 8,000 miles of optical fiber. The network serves over 20 million users across California, including the vast majority of K-20 students together with educators, researchers, and individuals at other vital public-serving institutions. CENIC connects California to the world, advancing research and education statewide by providing the world-class computing network essential for innovation, collaboration, and economic growth.

CPCA is a non-profit organization established in 1994 to represent community health centers and their patients. CPCA has become the statewide leader and recognized voice for community health providers. CPCA represents more than 1,380 not-for-profit Community Health Centers (CHCs) and Regional Clinic Associations (RCAs) who provide comprehensive, quality healthcare services, particularly for low-income, uninsured and underserved Californians, who might otherwise not have access to healthcare. Many of the CPCA members are Federally-Qualified Health Centers (FQHCs).

CETF is a statewide non-profit organization directed to be established in 2005 by the California Public Utilities Commission (CPUC) as a public benefit derived from corporate consolidations. The mission assigned to CETF by the CPUC is to close the Digital Divide in California by accelerating broadband deployment and adoption. Research shows that one of the most valued uses of the Internet by residents is for finding healthcare information and connecting with health and medical care providers. Supporting and promoting the use of Telehealth is a major strategy to help close the Digital Divide.

Background

The COVID-19 pandemic shelter-in-place and social distancing orders spotlighted the need for all Californians to have access to Telehealth and exposed the existing digital access inequities. It illuminated the imperative for investments in constructing high-speed Internet infrastructure capable of supporting Telehealth services and the imperative for getting all residents online with appropriate computing devices and functional digital literacy. The Digital Divide has become a “Digital Cliff” with residents falling off into deeper poverty and greater isolation. Although much progress has been made in advancing Telehealth and the federal government issued temporary emergency waivers that removed significant reimbursement hurdles, California has not optimized the use of Telehealth to close gaps for medically-underserved communities and economically-segregated neighborhoods, which also are home to the most digitally-disadvantaged residents.

Further, technology is only a tool—powerful and empowering—but, alone not the end game. It is essential for policymakers who seek to achieve Digital Equity to understand how to effectively integrate the use of technology into all institutions and systems, including the delivery of health and medical care. Therefore, CETF, PICF, CENIC, and CPCA joined forces to convene Fact-Finding Listening Conferences to gather data and input for an Action Plan to inform State and federal policymakers about how to optimize the use of Telehealth.

Vision Goal for Telehealth in California

Optimize the use of Telehealth to augment and enhance health and medical care for all California residents, especially those who are medically-underserved, to improve individual patient outcomes and overall health status.

Purpose of Fact-Finding Listening Conferences

- Understand the status of Telehealth in California.
- Identify the gaps and barriers to optimizing Telehealth to improve health status for Californians.
- Develop an Action Plan to advance Telehealth policy and funding in California.

Conference Focus

The Fact-Finding Listening Conferences were held virtually by videoconference on October 22, 2020 and December 2, 2020 from 8:30 a.m. to Noon (Pacific Time).

October 22, 2020 Conference Focus:

- Community Health Clinics and Federally Qualified Health Clinics (FQHCs)
- Senior Care Facilities – Skilled Nursing Facilities and Assisted Living Facilities

December 2, 2020 Conference Focus:

- Managed Health Care Plans – Private and Public
- Medical Centers
- Veterans Affairs Administration

Partners in Care FOUNDATION The Social Determinants Specialists

CETF California Emerging Technology Fund

CENIC Connecting California

California Primary Care Association

Delivering on the Promise of Telehealth to Improve Health Status in California
Fact-Finding Listening Conferences
October 22, 2020 and December 2, 2020

Executive Summary

The COVID-19 pandemic exposed both barriers and opportunities to optimize Telehealth to improve the health status for Californians. It accelerated Telehealth innovation and adoption and has motivated both bureaucracies and health care providers to move quickly to identify barriers and adjust the necessary regulations, policies and practices that allow the expansion of Telehealth during this pandemic.

The Fact-Finding Listening Conferences held on October 22 and December 2, 2020 provided a robust engagement in which to: (1) Understand the status of Telehealth in California. (2) Identify the gaps and barriers to optimizing Telehealth to improve the health status for Californians. (3) Inform an Action Plan to advance Telehealth policy and funding in California. These conferences brought together thought leaders and experts from Community Clinics and FQHCs Servicing Medically-Underserved Populations, Senior Care Facilities from skilled nursing and assisted living, Managed Health Care Plans (Public and Private), Medical Centers, and Veterans Affairs Administration, as well as the Governor's Office, Legislators, Regional Consortia, community-based organizations, and philanthropy. The Conferences were well attended—more than 170 participants on October 22 and 100 participants on December 2. This Executive Summary consists of Key Findings, Barriers, and Recommendations that emerged from the Fact-Finding Listening Conferences.

Key Findings

<u>Telehealth Utilization Rates</u>

Telehealth utilization rates have increased exponentially. Preliminary data from CMS suggests that services delivered via Telehealth increased from February through April 2020 at a rate of 2,632% more when compared to March-June in 2019. Due to virtual visits, patient "no show" rates have decreased dramatically in all specialties. Notably, Behavioral Health has seen "show rates" increase by 90%-100%. Psychiatry expects to see an increase in treatment for COVID-19 related to social isolation in the general population, but also among their frontline providers who have been battling COVID for the past year. The proverbial genie is "out of the bottle" and government, providers and communities alike welcome this trend and signal their support for further, collective forward momentum.

Reimagining Health Care

The pandemic created an opportunity to reimagine the delivery of health care, as poignantly stated by Dr. James Marcin of UC Davis Children's Hospital—a perspective shared by many of the presenters from the various health care systems. Dr. Marcin explained that UC Davis is hoping to rebuild the infrastructure of its Telehealth program and its health care delivery so that it is effective and patient-centered and provider-centered system. He added that UC Davis is reimagining the way it delivers health care and is being proactive in making this health care system fairer for everyone.

Broadband Infrastructure and Access

The need for broadband infrastructure and access was a common theme throughout both Conferences. Patients must have access to broadband, especially populations in unserved and underserved communities that are in rural and metropolitan areas. Implications due to lack of access to broadband were summarized succinctly by Assemblymember Aguiar-Curry who stated that it is unfortunate that it took a pandemic for leaders to understand the importance of having broadband. Typically, broadband discussion focus on schools, which are important, but they need to be expanded to healthcare, job generation, training, and agriculture. California cannot be left behind.

Access to Devices

Equally important is the need for Californians to have access to the necessary electronic devices that allow them to access Telehealth care. Both access to broadband and devices are essential to health equity. Californians must have access to devices such as telephones, smartphones, computers, Internet-connected tablets, and high-definition web cameras. Dr. Natalie Pageler of Stanford Children's Health shared that fortunately children had access to Chromebooks for school and were able to use them for Telehealth visits as well.

Main Drivers of Change

The main drivers of change for Telehealth were outlined by Dr. Peter Yellowlees, nationally and internationally recognized pioneer in telepsychiatry. His conclusions were echoed by presenters throughout both Conferences. These 3 main drivers of change are:

- Relaxed Regulations Associated with the COVID-19 Emergency: Licensing changed to allow providers to cross state lines. Reimbursement changed to allow providers to be reimbursed for Telehealth visits at the same rate as an in-person visits. Geographic barriers were suspended to allow providers to expand Telehealth beyond rural areas, which are now able to include urban areas that are significantly underserved in health care. Controlled substances can now be prescribed via Telehealth. HIPPA requirements have been relaxed to enable more Telehealth visits.

- Ubiquity of Mobile Devices: The revolution in mobile devices has dramatically opened the possibilities for health care. Providers are able to see, talk, and meet with patients as well as access and evaluate test results with them. Mobile devices allow patients to access and providers to administer telehealth services from virtually anywhere. Both having access to a smartphone and to broadband must be considered as part of the human infrastructure and essential for health care.

- Many Advantages of Telehealth: Telehealth makes efficient use of provider's time—essentially, they can see patients wherever and whenever they want to be seen. Providers can offer appointment times that are much more convenient for patients, including night and weekend appointments. Telehealth saves the healthcare system money and time. It can reduce stress on providers, improve their quality of life by allowing them to work from home and reduce burnout. With Telehealth, providers can safely see an increased variety of patients, better integrate with their care team and bring families together as part of shared decision making.

Models for Telehealth

The Conference elucidated 3 models of Telehealth that provide critical considerations for informing and transforming Telehealth. Dr. Peter Yellowlees illustrated how the retail industry transformed consumer shopping from in-person to an online trusted experience. Dr. Alka Mathur of Veterans Affairs (VA) Palo Alto Health Care System shared that the VA has long been at the forefront of Telehealth and can serve as a roadmap for advancing Telehealth in California. Dr. Khang Nguyen of Kaiser Permanente shared how Kaiser provides synchronous, asynchronous and remote patient monitoring. All 3 models offer insights into constructing a Telehealth model for the future.

- Dr. Yellowlees offered the retail industry model from which can inform a Telehealth model. The retail industry transformed consumer shopping from in-person to online, but it did not occur overnight. It required the industry to invest in marketing, education, and in persuading consumers to have confidence and trust in the online modality. The retail industry helped consumers understand that shopping online was convenient, consistent, safe and of high quality. The 3 big changes the retail industry made include: (1) Changed its wholesale workflow to become more consumer focused. (2) Increased choice and range of services and goods. (3) Installed impressive IT systems to continuously monitor what is going on to predict such things as package arrival times, investing in data to inform consumers of the status of their individual transactions. Telehealth can learn from this model to place much more focus on the consumer experience, particularly populations suffering the most disparities. Data indicates that consumers prefer to be seen virtually and in their homes; therefore, providers should see patients where they want to be seen. Reimbursement for Telehealth must be the same as in-person—particularly when considering that retail consumers do not expect to pay a different price because they go into a store rather than purchase online.

- Dr. Mathur reported that the VA has been providing Telehealth services for the last two decades, and they still stand as the largest health care agency in the US that uses a Telehealth system. Since COVID there has been about a 1,000% increase in Telehealth visits across all specialties. The VA is fortunate that the Telehealth system it operates offers several essential advantages: (1) The VA has the ability to dispense technology. It is able to send WiFi-enabled iPads and iPhones to veterans that struggle with getting Internet access and also can subscribe to Internet service to allow patient access with a discounted or free device. (2) The VA has its own internal platform called BBC or VA video Connect, which it deployed nationally, and software administrators are very receptive to any changes that physicians need to implement. (3) The VA has the unique ability to provide services across state lines and access specialists outside of California.

- Kaiser Permanente (KP) is another model emerging as a leader in Telehealth. According to Dr. Khang Nguyen, KP provides synchronous, asynchronous and remote monitoring for primary care and specialty care. For example, Tele-stroke technology can be used for Emergency Room patients so that the attending physician can consult a neurologist virtually for guidance on preserving patient functions. Pre-COVID-19, virtual visits in the KP system comprised about 20% of all primary care visits and about 1-5% for specialty care visits. Once COVID hit, Kaiser transitioned to 98% virtual visits by April 2020. Dr. Li of L.A. Care lauded KP as a leader in the health care industry. He cited KP infrastructure and system that has the ability to support expansion of Telehealth effectively. KP has the program managers, thought leaders, including doctors, and administrative leadership, along with the reserves to make those investments. KP has one electronic health record (EHR) as opposed to multiple EHRs to share information among providers. He concluded that the rest of the healthcare community must step up their game and collaborate.

Telehealth Revolution

Patients and providers are now embracing virtual care and are revolutionizing the use of Telehealth. This mode of care is here to stay. The pandemic sparked the needed motivation for patients, families, and providers to try Telehealth. Barriers were eliminated due to the need to minimize the spread of COVID-19 while continuing to provide healthcare services in a safe environment. Practitioners are central to virtual care adoption and use. However, patients, payers, and regulators have a key role to move Telehealth forward.

Swift Shift to Telehealth

The pandemic required swift action to enable Telehealth to prevent and reduce the spread of COVID-19 to patients, communities and providers, while also allowing regular non-COVID related medical care. There was consistent recognition for the expediting relation of both State and federal rules, regulations and reimbursement policies to enable the expansion of Telehealth. Providers reported that, in turn, they quickly pivoted to Telehealth in a matter of a few days—many expected regulation flexibilities to require weeks or months. Providers were eager to keep their patients safe—particularly the elderly and the most medically vulnerable—to protect their populations from the spread of COVID-19.

Telehealth Advantages

There are several advantages to Telehealth, which is expected to be a greater part of the mix of healthcare delivery in the future. The right mix of in-person and Telehealth visits will have to be tailored to each patient to optimize health outcomes.

- Telehealth helps to remove barriers such as access to transportation, parking costs, needed childcare, time off from work and loss of wages for patients seeking access to health care. Telephonic visits are often the preferred mode due to patients having easier access to telephones. Many providers reported telephonic visits were often the only access patients had, and, in some cases, patients preferred this mode as they were uncomfortable with providers seeing their homes via video.

- Telehealth reduces costs in allowing patients to access the right care, at the right time and in the right settings. Patients should not have to access Emergency Room care because they are unable to seek care during traditional office hours.

- Telehealth brings people together in different ways that benefit patient care. Physicians, nurse practitioners, physicians assistants, nurses and other frontline providers are able to work as a team to provide care in an integrated manner.

- Telehealth improves care, particularly for home visits. When Telehealth visits are scheduled during the time a home health nurse is seeing a patient, it can be a tremendous advantage to the patient and provider. For example, a home health nurse can help a provider identify the problem with a wound or a health condition to determine the appropriate care regimen. This process has positive equity implications.

- Telehealth can minimize developmental issues with children who have chronic health conditions and must access care frequently. These children can experience delays in development of social autonomy and/or logic skills when their routines are interrupted and when they are unable to participate in school or after school activities.

- Telehealth is being pushed by COVID-19 into a new era. Although Telehealth utilization rates are not as widespread in senior care facilities, COVID-19 has driven an increased interest in Telehealth to keep patients and providers safe and families connected to their loved ones. The advantages of Telehealth in these facilities include: (1) Providers now have an expanded number of Telehealth visits they can provide. Previously they were limited to one Telehealth visit every 30 days in nursing homes. With the temporary waivers, there are no limits to the number of Telehealth visits, and it has expanded to telephonic visits. (2) Patients do not need to access higher levels of care, such as ER, when they do not need it. (3) Telehealth reduces patient transport trauma and staff time in preparing patients for transport. Patients have to be ready two hours in advance for some transportation companies. (4) Telehealth allows access to specialists and geriatricians. In many California regions there are limited access to geriatricians whether patients are seeking a house call or even an in-clinic visit. With Telehealth, geriatricians throughout the country can be accessed.

- Telehealth allows patients in rural regions to avoid traveling long distances to receive care. Traveling to a clinic is not the most convenient or cost-effective approach for patients who must take time off from work or secure childcare to seek healthcare. Telehealth is paramount to population health management in rural regions. It is a vital tool in the toolbox to be need to use more effectively.

Major Barriers

The Fact-Finding Listening Conferences identified major barriers for both individual patients and for providers and medical institutions. These barriers tend to intersect and have implications for economically-disadvantaged communities and those systems that serve them. The economically-disadvantaged residents also are the digitally-disadvantaged households and disproportionately live in medically-underserved communities.

Telehealth is Underfunded

Telehealth remains grossly under-funded in support and resources needed for implementation, deployment, training, equipment and technical assistance. California lacks a comprehensive statewide strategy to expand Telehealth, as well as address disparities.

Broadband Access

The lack of access to broadband—high-speed Internet infrastructure—is an enormous barrier to Telehealth care in both rural and urban areas. These barriers impact both individuals and providers. In addition to bringing the broadband infrastructure to the site of the providers, there is a need to bring the connectivity inside the facilities (penetrate the walls) and connect to equipment. Importantly, providers with sufficient broadband capabilities can guarantee only their side of the connection and have no control over the quality of connection for their patients. This can lead to frustration for both the provider and the patient and reluctance to use Telehealth again. Affordability to connect to broadband remains an issue in unserved and underserved communities.

Access to Devices

Many vulnerable populations not only have insufficient access to broadband, but also lack access to the necessary devices (smartphones, computers, tablets, computer cameras) needed to access quality health care through Telehealth. In addition, they often lack the technical expertise and the training needed to use devices to access Telehealth.

Reimbursement

In the recent past the Centers for Medicare and Medicaid Services (CMS) did not reimburse for Telehealth due to incongruous rules. CMS would only allow reimbursement for patients in rural regions and not in metropolitan regions. However, the facts betray the CMS policy. Across the country, visits during COVID-19 shelter-in-place orders have increased about 3,500-fold for Telehealth. About two-thirds of Telehealth visits were provided to people in metropolitan areas, not rural areas. This is in strong opposition to the previous CMS view, which provided funding for Telehealth only in rural areas. This view must be changed for the long-term. Furthermore, payment parity is a major barrier. Until the notion is dispelled that there is less value in a Telehealth visit than an in-person visit, the potential for Telehealth to improve patient outcomes and overall population health status will not be fully realized.

Accommodation Barriers

The acceleration of Telehealth in response to the pandemic has given rise to understanding the various accommodation barriers that must be addressed. Non-English speaking communities face language and cultural barriers in accessing Telehealth. This often impacts the Telehealth connection and workflow with providers requiring a multi-party connection that includes the patient, the interpreter and provider, and sometimes a consulting physician or another family member at another location. Telehealth visits, whether via video or telephonically, can be problematic for patients living in large family settings without privacy for health consultations. Patients with hearing aids often experience interference when technology is in use. Elderly patients with significant hearing loss must be accommodated so they can understand and communicate with their provider.

Partners in Care FOUNDATION The Social Determinants Specialists
CETF CALIFORNIA EMERGING TECHNOLOGY FUND
CENIC Connecting California
California Primary Care ASSOCIATION

Summary of Conclusions and Recommendations from Fact-Finding Listening Conference
Delivering on the Promise of Telehealth
October 22, 2020 and December 2, 2020

Major Barriers to Optimizing Telehealth

For Individuals

- Insufficient access to broadband and devices and lack of affordability for adoption.
- Need for language, culture, trust, and "ability" capacity in Telehealth.
- Lack of consumer information on Telehealth and how to request special accommodations.

For Medical Institutions and Providers

- Lack of support for implementation: deployment, training, and technical assistance.
- General under-funding of all aspects of Telehealth.
- Uncertainty about reimbursements and continuation in public policy post pandemic.

Key Action Steps to Optimize Impact of Telehealth on Health Status

1. Increase government investments in Telehealth (infrastructure, equipment, training).
2. Invest in broadband access and devices (including health monitoring devices), and adoption.
3. Sustain Telehealth reimbursement same as in-person visits post-COVID-19.
4. Authorize MediCare and Medicaid reimbursements for devices for low-income households.
5. Advocate for a national license post-COVID-19.
6. Establish a national credentialing agency for physicians.
7. Allow continuation of prescribing controlled substances via Telehealth post-COVID-19.
8. Support multiple modalities for delivery of Telehealth services and cost savings.
9. Advocate for permanent elimination of geographic location restrictions post-COVID-19.
10. Expand provider training and technical support.
11. Expand consumer information on telehealth access.
12. Understand issues of culture, language, and trust and provide necessary support structures.
13. Broaden access to virtual language interpretation services for Telehealth.
14. Review and update HIPAA requirements (enacted in 1996) to support Telehealth and IT.
15. Ensure that public policy and funding are commensurate with practice (update forms).
16. Develop comprehensive care: integrate social and medical care in the Telehealth context.
17. Include long-term care facilities in comprehensive Telehealth policy.
18. Understand and address privacy and data security issues.
19. Assign responsibility within the California Health and Human Services Agency to advance and optimize Telehealth with quantified goals and performance metrics.
20. Establish a non-profit statewide mission-driven organization to optimize Telehealth to improve patient outcomes and improve overall population health status.

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TELEHEALTH: A CALL TO ACTION

June 22, 2021

The COVID-19 pandemic is nearly behind us, but in its wake is tragedy as well as vital lessons to be heeded and reflected in public policy priorities **NOW!** The pandemic underscored the convergence of Broadband technology and healthcare to optimize Telehealth to ensure quality care for medically- disadvantaged residents to improve overall population health. It illuminated the imperative for investments in constructing high-speed Internet infrastructure capable of supporting Telehealth services and the urgency of getting all residentsonline with appropriate computing devices and functional digital literacy.

Late last year, the California Emerging Technology Fund (CETF) in co-sponsorshipwith Partners in Care Foundation (PICF), Corporation for Education Network Initiatives in California (CENIC) and California Primary Care Association (CPCA) convened two Fact-Finding Listening Conferences: ***Delivering on the Promise ofTelehealth to Improve Health Status in California***[1]. These proceedings were rich in content, robust in insight, and timely in conferring as California harnessesits policy leadership and expertise to close the Digital Divide and advance Telehealth for all Californians. Conferences were attended by over 250 stakeholders, including the Governor's Office, California Legislators, state and local – both public and private healthcare system leaders, medical centers, community clinics and federally qualified health centers, senior care providers,Veterans Affairs administrators and statewide health advocates and organizations.

The Final Report and Action Plan Framework provide a path forward for California. The Action Plan Framework is built on three over-arching recommendations:

Action Plan
Framework

- Enact legislation to permanently reimburse Telehealth services comparable to in-person visits.
- Invest in and ensure ubiquitous high-speed Internet infrastructureto support Telehealth for all patients and providers.
- Institutionalize Telehealth with accountability for improvingpatient outcomes and overall population health.

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[1] Final Report and Action Plan, March 2021. https://www.cetfund.org/wp-content/uploads/2021/04/Delivering-on-the-Promise-of-Telehealth-to-Improve-Health-Status-in-California-Final-Report-and-Action-Plan_210409.pdf.

We, the undersigned Co-Sponsors and stakeholders, urge state and federal policy leaders to integrate this Action Plan Framework into the highest policy and funding priorities for Telehealth.

If you have questions, please contact Leticia Alejandrez, CETF Director of Telehealth and Human Services at LeticiaA@LA2020ConsultingSolutions.com.

Sincerely,

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Additional Materials

California Health Care Foundation, Ending Phone Visits Would Be a Setback for Patients with Low Incomes: https://www.chcf.org/blog/ending-phone-visits-setback-patients-low-incomes/

California Northstate University, The Virtual Dental Home: https://dentalmedicine.cnsu.edu/research-community/research-vdh/

California Northstate University, Community Research: https://dentalmedicine.cnsu.edu/research-community/research-dti/

Department of Health Care Services, Telehealth Advisory Workgroup: https://www.dhcs.ca.gov/provgovpart/Pages/TelehealthAdvisoryWorkgroup.aspx

ITUP, Publications: https://www.itup.org/publications/newsletter-signup/

ITUP, Events: Partnering for Success: https://www.itup.org/events/partnering-for-success-leveraging-telehealth-as-a-use-case-for-community-broadband-and-connectivity/

ITUP, Events: Telehealth During the Covid-19 Pandemic: https://www.itup.org/events/telehealth-during-the-covid-19-pandemic/

ITUP, Policy Forums: https://www.itup.org/events/itup-2021-policy-forums/