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## Impact of Remote Work for CCTSI Researchers During Coronavirus 2020

### Background

The Coronavirus pandemic has required many Colorado Clinical and Translational Science Institute (CCTSI) researchers and staff to work remotely to decrease the spread of the virus. The impact of remote work and the uncertainties presented by the Coronavirus pandemic may delay vital scientific research and strain researchers and staff.<sup>1</sup> This is because research is a collaborative work process between investigators, staff, leadership and participants of clinical, bioscience, health services and human subject's research. The absence of social connection, physical closeness and accountability that working in office and laboratory settings promotes holds the potential to decrease research productivity, increase stress, disengagement, burnout and turnover intentions of staff.<sup>2</sup> Remote work for CCTSI researchers may result in disruptions to the planning and execution of research projects that support patient health and safety, and may also negatively impact the professional development of junior researchers and challenge recruitment and retention of talented Colorado research staff. It is unknown how long recommendations to work remotely will be in place. Due to this, the CCTSI research community has a responsibility to discuss and share methods to enhance communication, build relationships and collective coping mechanisms to ensure the short and long-term success of the CCTSI research endeavor. Further, it is important to quantify the impact of remote work during Coronavirus on CCTSI staff productivity, engagement, satisfaction, burnout and turnover intentions.

To enhance collaboration and resiliency during remote work, high reliability theory suggests implementing targeted and purposeful strategies, adapted to the psychosocial and informational needs of individuals and teams.<sup>2-4</sup> Communication and relationship-building strategies include social technology-facilitated connections (e.g. phone calls and video chats versus email and texting) and daily virtual huddles. Social-emotional building strategies include opportunities to share gratitude, role model generosity, encourage self-care activities while setting realistic and achievable short and long-term goals. Anecdotally, individual CCTSI investigators and project managers are establishing novel communication and engagement strategies to support the health and productivity of their teams. Further, they are creating workarounds to address remote work challenges. CCTSI researchers and staff across Colorado would greatly benefit from the systematic collection, analysis, and spread of these practices so researchers can continue to move forward and inform science and patient care during these unprecedented times and into the future. The data from this study will inform planning and policy decisions regarding future events that require social distancing and remote work.

### Specific Aims

**Aim 1:** Understand how individual CCTSI researchers and staff are conducting remote work during the Coronavirus pandemic.

**Aim 2:** Assess the impact of remote work during the Coronavirus pandemic on CCTSI researchers and staff productivity, engagement, satisfaction, burnout and turnover intentions.

### Specific Activities:

**Aim 1:** We will distribute an author created survey informed by the high reliability and resiliency literature to identify the impact of remote work on productivity and communication and engagement best practices being used in the field. Face validity of the survey was established by members of the Denver-Seattle Veterans Health Administration (VA) Center of Innovation (COIN) works-in-progress meeting. We will announce the survey through CCTSI communication methods (e.g. email, newsletter, social media). The survey will be available as a link in an email and through the CCTSI homepage and will remain open for 2 weeks. Reminders to participate will be sent via CCTSI email and social media every 5 days.

**Aim 2:** We will distribute a follow-up survey after CCTSI researchers and staff are permitted to return to routine work (date to be determined) to query the impact of the remote work time on productivity, engagement, satisfaction, burnout and turnover intentions. Specific survey items will be developed at the time CCTSI researchers and staff are able to return to routine work using the findings of the initial survey and the literature.

Content validity of the author created survey will be established prior to distribution. The survey will be disseminated using the methods described in aim 1.

**Potential Study Challenges:** Recruitment challenges will be addressed by requesting support from CCTSI leadership to encourage participation and partnering with the CCTSI communications team to execute an evidence-based dissemination strategy. To expedite the launch of the study, we are requesting exempt, non-human subjects review.

#### **Anticipated Outcomes:**

**Aim 1:** We will identify remote work best practice workarounds, communication and engagement strategies and coping mechanisms from CCTSI researchers and staff. These will be compiled and compared to the literature to identify the theoretical underpinnings. The results will be shared as a report and/or toolkit to inform current remote work practices.

**Aim 2:** We will quantify the impact of remote work during the Coronavirus pandemic on CCTSI researchers and staff productivity, engagement, satisfaction, burnout and turnover intentions. This information will be shared with CCTSI leadership and partners to inform best practice remote work guidelines and planning for future broadscale remote work events.

**Research Team and Relevant Experience** The team will be led by Heather Gilmartin, PhD NP, investigator and nurse scientist at the Denver site of the Denver-Seattle VA COIN, clinical assistant professor at the Colorado School of Public Health, Health Systems, Management and Policy Department, Assistant Director of Dissemination for CCTSI and a 2020 VA Career Development Awardee (CDA). Dr. Gilmartin's research expertise in learning health systems, high reliability organizations, organizational surveys and psychometrics will inform all aspects of this study. Co-investigators include Bethany Kwan, PhD MSPH and Catherine Battaglia PhD RN. Dr. Kwan is a social health psychologist, health services researcher, associate professor at the University of Colorado Department of Family Medicine, and Director of Dissemination for CCTSI. Dr. Battaglia is an investigator and nurse scientist based at the Denver COIN and a clinical associate professor at the Colorado School of Public Health, Health Systems, Management and Policy Department. Drs. Kwan and Battaglia will bring their expertise in health services research, implementation science and mixed methods analyses to the project. Additional team members include Brigid Connelly, research assistant and Ashlea Mayberry, project manager and toolkit designer. CCTSI will provide a student research assistant and data analyst to support the project.

#### **Data Sources:**

**Aim 1 Survey:** To achieve aim 1, an author created survey hosted in REDCap will be distributed via email to CCTSI researchers and staff. The survey link will also be hosted on the CCTSI website homepage. The survey will use Likert scale ratings and open ended questions to query: (1) previous experience with remote work, (2) level of disruption to research activities, (3) barriers and work arounds to remote work, (4) specific research activities that are on hold (or ended) during remote work, if applicable, (5) strategies implemented to engage and communicate with research colleagues during remote work and (6) social emotional resources available in the home. *Data Analysis:* The survey data will be analyzed descriptively and stratified by credentials (PhD, MD, MPH, etc.), gender, age, professional role, CCTSI partner site and previous remote work experience.

**Aim 2 Survey:** To achieve aim 2, an author created survey will be designed and distributed to CCTSI researchers and staff using the methodology described in aim 1. The survey will use Likert scale ratings and open-ended questions to query: (1) perceived productivity during remote work, (2) level of engagement during remote work, (3) satisfaction during remote work, (4), level of burnout during remote work, (5) and turnover intention. *Data Analysis:* The survey data will be analyzed descriptively and stratified by credentials (PhD, MD, MPH, etc.), gender, age, professional role and CCTSI partner site.

#### **Management Plan**

Dr. Gilmartin is responsible for overseeing the study, with guidance from Drs. Kwan and Battaglia. All members of the research team are working remotely and have full access to University and CCTSI computing resources, including statistical analysis and word processing programs. We do not anticipate the need for printers, fax, copy machines, or office supplies, but they are available at Adult & Child Consortium for Health Outcomes

Research and Delivery Science (ACCORDS) offices if needed. ACCORDS will make available significant analytic resources including a large group of qualitative and quantitative methodologists, dissemination and implementation scientists.

<b>Roles</b>	<b>Tasks</b>
Principal Investigator (Gilmartin)	Manage study, recruit sites, oversee survey administration, analyze data, present findings
Co-Investigators (Kwan & Battaglia)	Mentor Dr. Gilmartin, participate in data collection and analysis
Study coordinators (TBD, Connolly, Mayberry)	Coordinate regulatory compliance, administer survey, design reports and toolkits, plan and execute dissemination strategy
Quantitative programmer (TBD)	Conduct REDCap data management and quantitative analyses as needed
CCTSI leadership	Advocate for completion of survey and assist in dissemination of best practices

### Timeline

	<b>April- May</b>	<b>June- July</b>	<b>Aug- Sept</b>	<b>Oct- Nov</b>
Notification of approval of study by CCTSI	<b>X</b>			
Obtain IRB exemption	<b>X</b>			
Communicate study aims to CCTSI leadership and partners	<b>X</b>			
Build aim 1 survey in REDCap, test, host on CCTSI website	<b>X</b>			
Design and deploy aim 1 survey dissemination strategy	<b>X</b>	<b>X</b>		
Analyze aim 1 survey data		<b>X</b>		
Develop remote work best practice report and/or toolkit		<b>X</b>		
Disseminate report and/or toolkit to CCTSI community		<b>X</b>	<b>X</b>	
Engage in program planning and policy discussions			<b>X</b>	<b>X</b>
Design survey for Aim 2		<b>X</b>		
Build aim 2 survey in Qualtrics, test, host on CCTSI website		<b>X</b>		
Deploy aim 2 survey dissemination strategy		<b>TBD</b>		
Analyze aim 2 survey data		<b>TBD</b>		
Develop report for CCTSI leadership and partners		<b>TBD</b>		
Engage in program planning and policy discussions		<b>TBD</b>		
Manuscript Writing		<b>TBD</b>		

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