

COVID-19 PEP STUDY
UNIVERSITY of WASHINGTON
International Clinical Research Center

Hydroxychloroquine for Post-exposure Prophylaxis to Prevent Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection: A Randomized Trial

Ruanne V. Barnabas, Elizabeth R. Brown, Anna Bershteyn, Helen C. Stankiewicz Karita, Christine Johnston, Lorna E. Thorpe, Angelica Kottkamp, Kathleen M. Neuzil, Miriam Laufer, Meagan Deming, Michael K. Paasche-Orlow, Patricia J. Kissinger, Alfred Luk, Kristopher Paolino, Raphael J. Landovitz, Risa Hoffman, Torin T. Schaafsma, Meighan L. Krows, Katherine K. Thomas, Susan Morrison, Harald S. Haugen, Lara Kidoguchi, Mark Wener, Alexander L. Greninger, Meei-Li Huang, Keith R. Jerome, Anna Wald, Connie Celum, Helen Y. Chu, and Jared M. Baeten for the Hydroxychloroquine COVID-19 PEP Study Team

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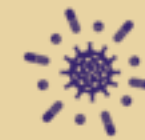
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Outline

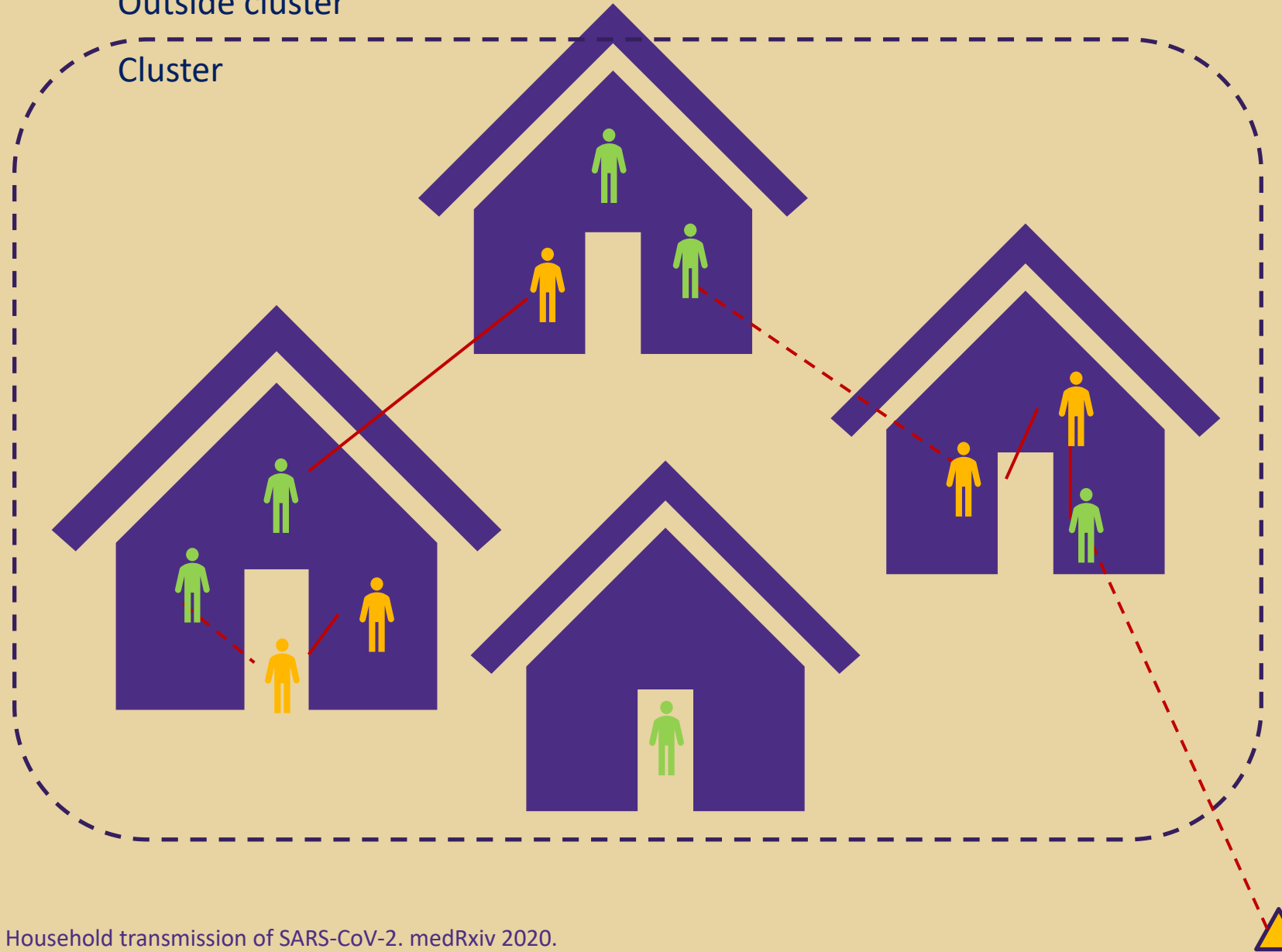
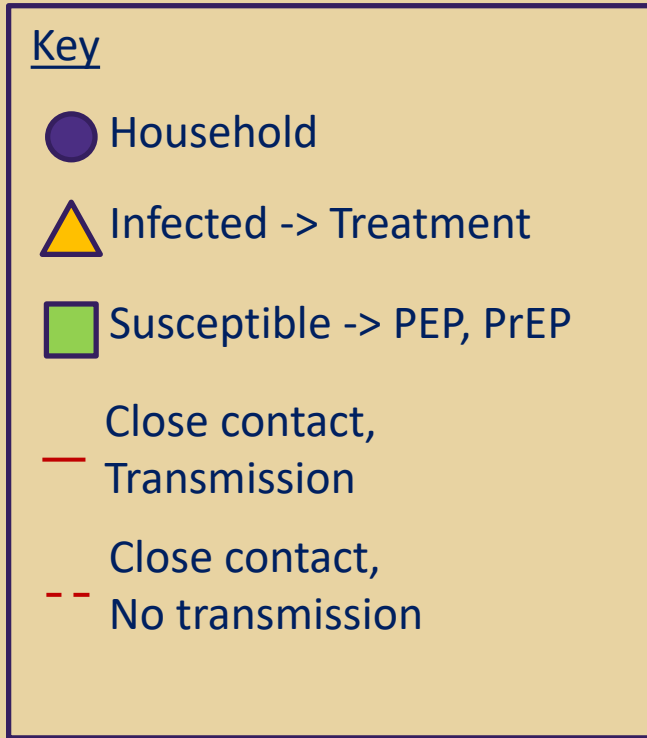
- > **Background & Rationale**
- > **Aims**
- > **Methods**
- > **Results**
- > **Conclusions**

Strategies to interrupt SARS-CoV-2 transmission: Vaccines, PEP, Treatment

Households – high incidence settings – observe transmission

Outside cluster

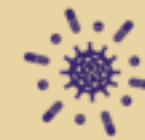
Cluster



- Household transmission: 15%-35%¹
- HCQ hypothesized to decrease transmission²

¹Madewell ZJ, Yang Y, Longini IM, Halloran ME, Dean NE. Household transmission of SARS-CoV-2. medRxiv 2020.

²Wang M, Cao R, Zhang L, et al. Remdesivir and chloroquine (2019-nCoV) in vitro. Cell Res 2020;30:269-71.

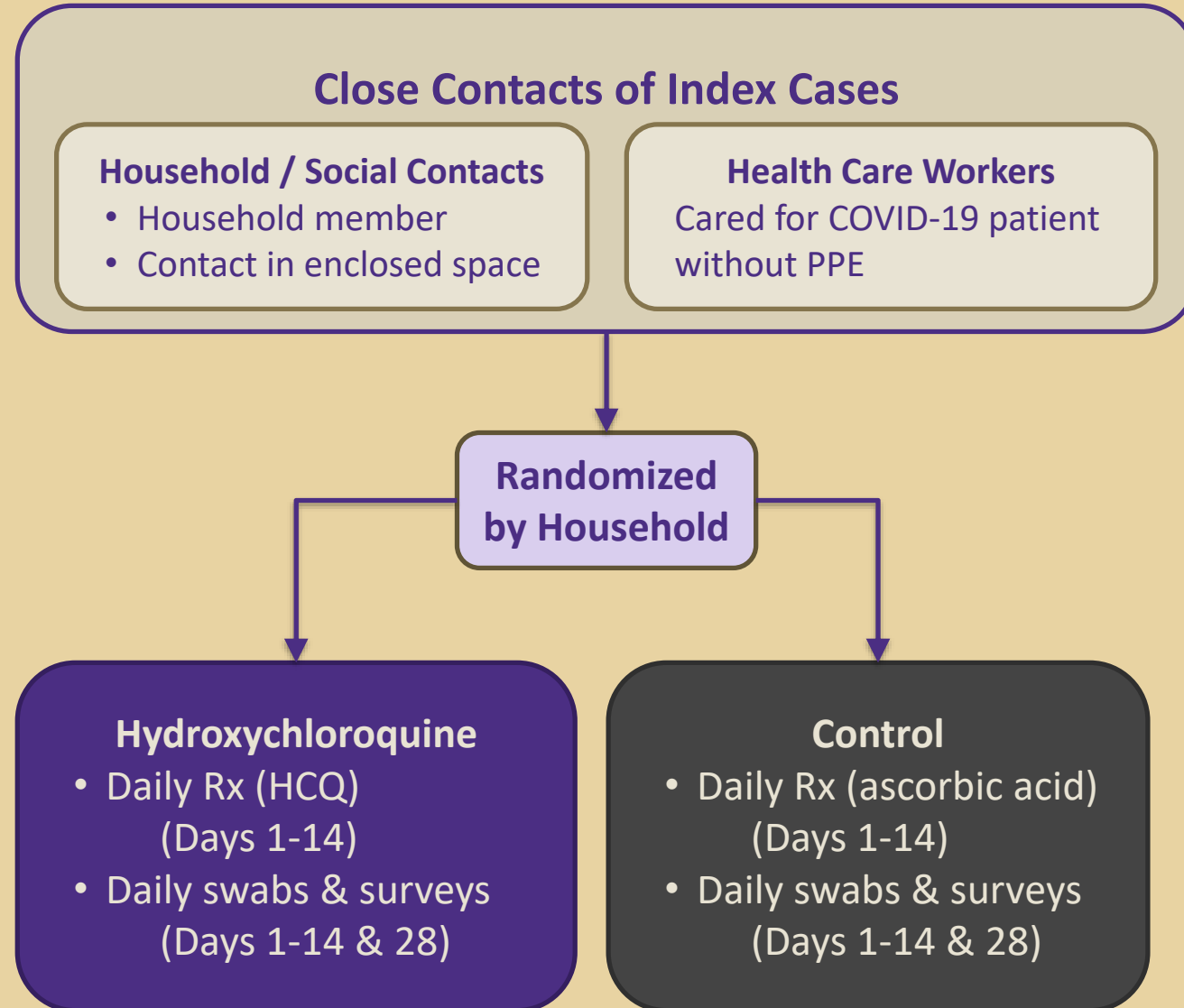


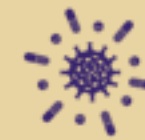
PEP for SARS-CoV-2

Hydroxychloroquine for Post-exposure Prophylaxis to Prevent Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection: A Randomized Trial^{1,2}

- Using repurposed medication to prevent SARS-CoV-2 transmission
- Multi-site, double-blind, controlled, house-hold level randomized trial of HCQ PEP to prevent SARS-CoV-2 acquisition.
- Between 3/31/20 and 8/21/20, 829 participants were recruited from 41 states.
- >90% retention over the 14 days of follow-up with >90% of swabs returned and tested (PCR)

HCQ COVID-19 PEP Study Design



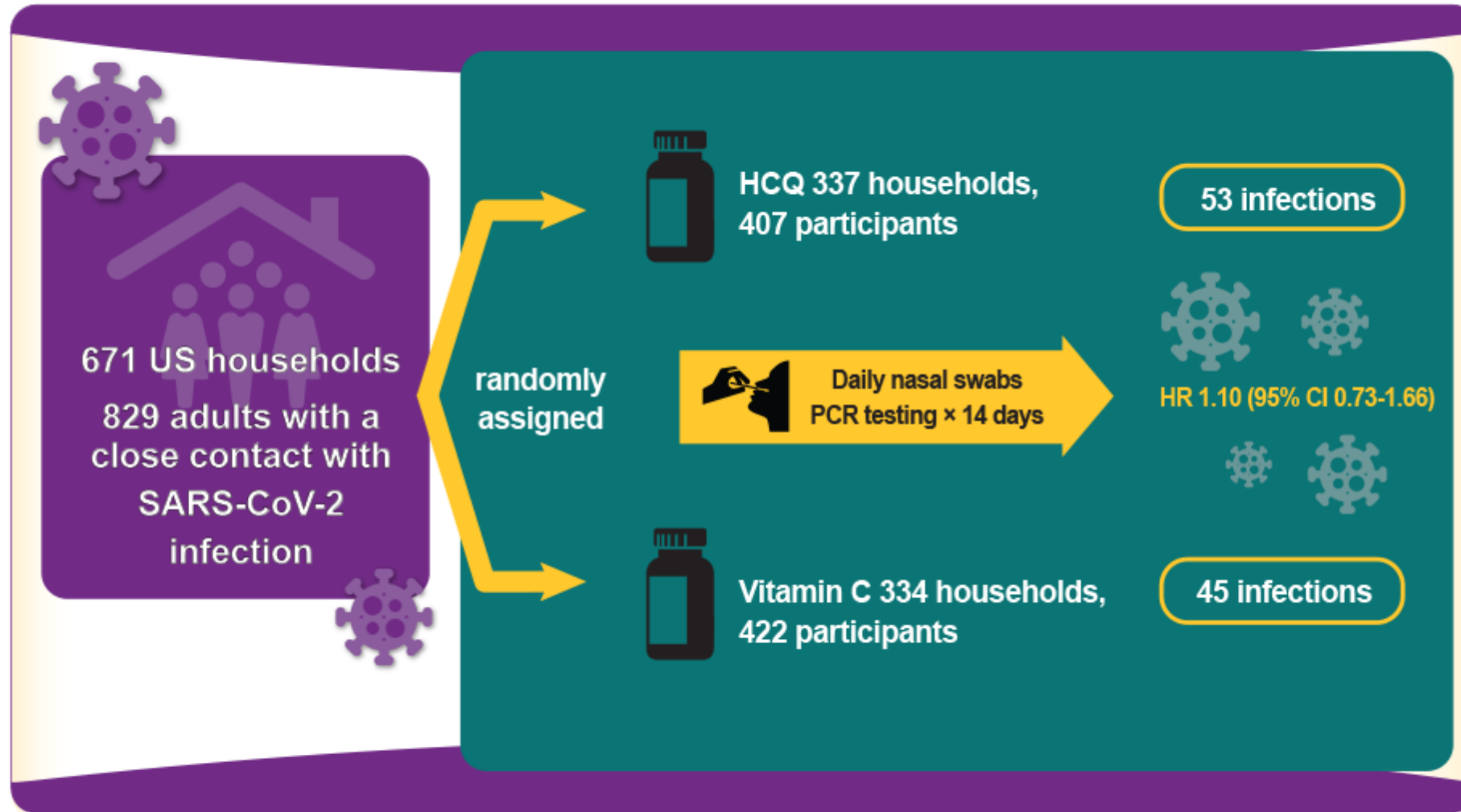


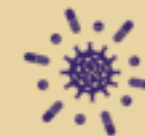
Study procedures

- Remote study: Recruitment through health systems, social media recruitment focused on high incidence areas, website sign-up, eConsent, telehealth, self-collection, courier/mail transport
- Daily on-line survey: Symptoms screen and adherence monitoring
- Outcome ascertained by daily swabs for 14 days



Does hydroxychloroquine (HCQ) prevent SARS-CoV-2 infection after close contact with a person with diagnosed SARS-CoV-2 infection?

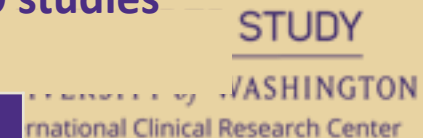




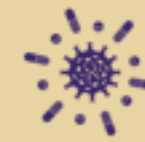
Participant racial, ethnic, and geographical diversity

- > Combined results with companion HCQ/Azithromycin treatment trial using the same methods**
- > A total of 307,632 unique online users clicked on online recruitment advertisements**
- > N=1,160 participants from 41 states**
- > Participants shipped 14,380 (90%) of expected nasal swabs and completed 17,129 (90%) of expected daily surveys over 14 days.**
- > Compared demographics to concurrent clinic-based Convalescent Plasma Study**

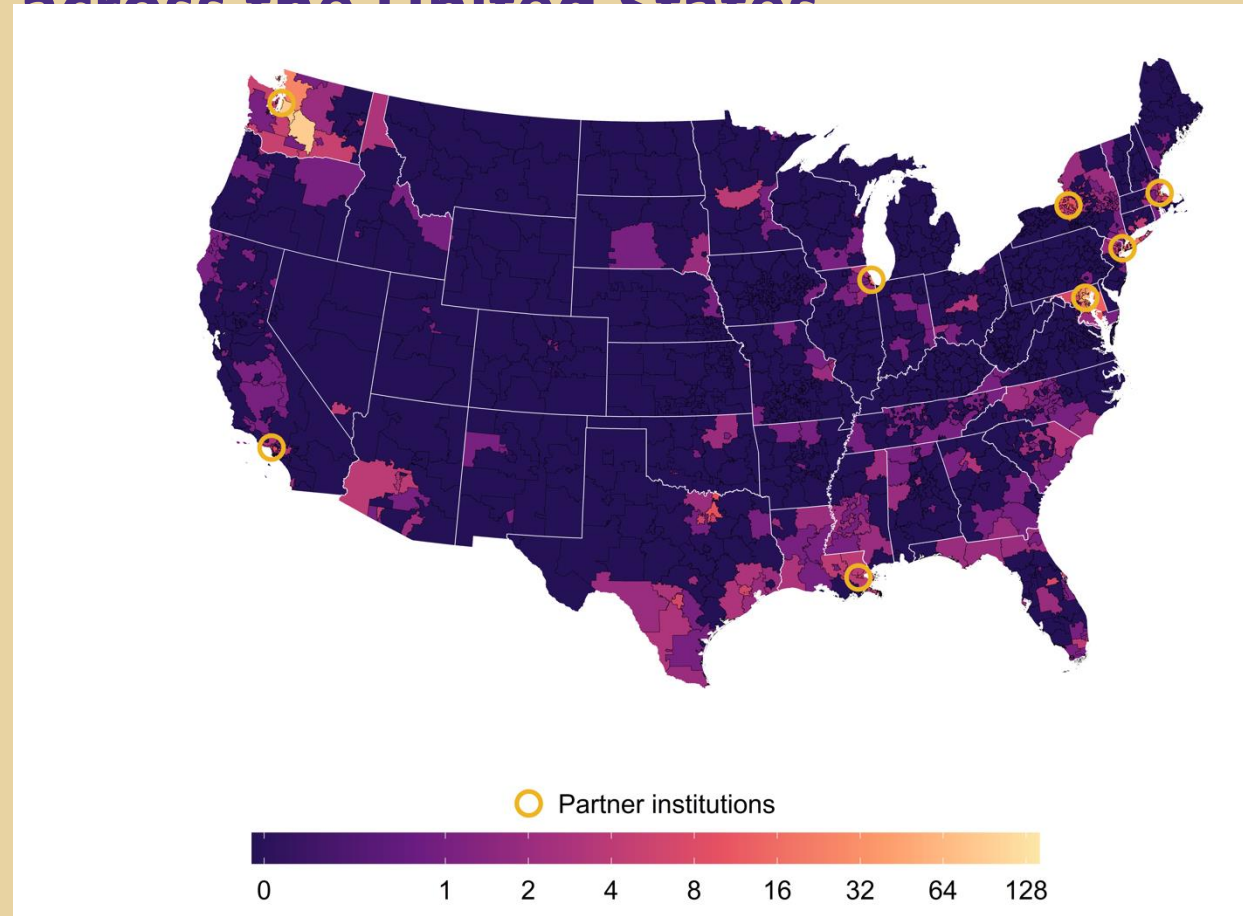
Observational post-hoc comparison of demographics between entirely remote vs. clinic-based COVID-19 studies (Lead: Jenell Stewart, University of Washington)



	Remote recruitment: COVID-19 PEP and Early Tx study (N=1160)	In clinic recruitment: COVID-19 convalescent plasma study (N=250)	p-value
Age, y	39 (18-80)	51 (19-91)	<0.001
Sex (assigned at birth)			0.18
Female	676 (58.3)	131 (52.4)	
Male	482 (41.6)	119 (47.6)	
Other	2 (0.2)	0 (0)	
Racial identity			<0.001
Alaska Native, American Indian	57 (4.9)	1 (0.4)	
Asian	98 (8.5)	22 (8.8)	
Black	114 (9.8)	4 (1.6)	
Native Hawaiian, Pacific Islander	9 (0.8)	1 (0.4)	
Other	166 (14.3)	8 (3.2)	
White	716 (61.7)	214 (85.6)	
Hispanic identifying	248 (21.4)	11 (4.4)	<0.001
Primary Language			<0.001
English	1062 (91.5)	250 (100)	
Spanish	98 (8.5)	0 (0)	
Community			0.02
Rural zip code	5 (0.5)	2 (0.8)	
Small town zip code	11 (1.0)	1 (0.4)	
Peri-urban zip code	65 (5.6)	3 (1.2)	
Urban zip code	1079 (93.0)	244 (97.6)	



Heat map of participant location by 3-digit zip codes relative to study site institutions across the United States



Timeline

March

- 3/8 Idea Conceived
- 3/20 WIRB Approval
- 3/30 UW VRC Activated
- **3/31 1st Enrollment**

April

- 4/3 NYU Activated
- 4/8 SUNY Upstate Activated
- 4/10 UMB and UCLA Activated
- 4/20 Tulane Activated
- **4/23 Protocol v1.2 Rollout**
- 4/24 Index Enrollment
- 4/27 BMC Activated

May

- 5/1 Enrolled 200th Participant
- 5/9 Social Media Campaign Launch
- **5/27 Nationwide Recruitment**
- 5/28 1st DSMB

June

- 6/16 SUNY and UCLA Close to Enrollment
- 6/29 Enrolled 600th Participant

July

- Facebook Boycott

August

- 8/7 2nd DSMB
- 8/21 Final DSMB
- Close enrollment

Sept

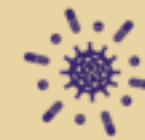
- Received specimens
- Data QCs
- Analysis

Oct

- Submitted abstract
- Submitted mss
- **10/24 Results public**

Pandemic Clinical Trial Guidance

- Responsive
- Service
- Science



Discussion

- > **Remote trials – support diverse trial participants**
- > **High fidelity to the protocol, procedures, and safety monitoring**
- > **Limitations:**
 - **Post-hoc comparison with convalescent plasma study is limited**
 - **Did not capture change in personnel or participant time for study involvement**
- > **Remote trial participation and recruitment may improve research equity and inclusion of participants from more diverse racial, ethnic, and geographic communities – additional trials will provide further evidence**

Thank you

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> Participants

> Investigators, UW ICRC Coordinating Center, COVID-19 PEP Study Team

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> Hydroxychloroquine COVID-19 PEP Study Team

> BMGF: INV-016204

> Sandoz donated hydroxychloroquine for this study

> REDCap (UL1 TR002319, KL2 TR002317, and TL1 TR002318 from NCATS/NIH)

HCQ COVID-19 PEP Study Team



Bill and Melinda Gates Foundation (Peter Dull, Scott Miller, Thy Pham); **Boston University School of Medicine** (Luisa Arroyave, Jonathan Berz, Pablo Buitron, Michael Camuso, Leticia Cardoso, Ricardo Cruz, Julien Dedier, Husam Dennaoui, Anna Goldman, Cheryl Greenstein, Lori Henault, Terrell Johnson, Sarah Kimball, Carlie Martinez, Erin Martinez, Crystal Ng, William Paarz, Qausarat Ogunneye, Lev Paasche-Orlow, Margot Rogers, Kathleen Salerno, Michael Smithline, Carl Streed, Nisha Verma, Katherine Waite); **Discovery Health** (Ann Jarris); **Everett Clinic** (Leslie Anna Greene); **Kaiser Permanente** (Diana Buist); **New York University Grossman School of Medicine** (Sandra India Aldana, Marissa Alsaloum, Elle Anastasiou, Rodrigo Arce Cardozo, Beita Badieli, Kamilla Bakirova, Zulfiya Bakirova, Caroline Barnes, Sukhleen K. Bedi, Dia B. Beggs, Stefanie E. Bendik, Meng Cao, Michelle Chang, Shirley Chen, Anna Cheng, Stella K. Chong, Jane Coates, Sarah Conderino, Jacqueline Connery, Megan Connolly, Aira L. Contreras, Matthew S. Dreier, Emily Duan, Eveline Teresa Hidalgo, Maja Fadzan, Samantha N. Fagan, Jamie Fried, Juan Gago, Nadia Gakou, Emily Gill, Akash Gujral, Xiaolei Hao, Christina Hughes, Robert T. James, Sean Kim, Penina Krieger, Susan N. Landon, Alice Li Juan Liang, Priscilla M. Lopez, Lia Mamistvalova, Mark D. Schwartz, Saydee McQuay, Wei (William) Miao, Sadia Mohaimin, Kaicy Gabriela Naranjo, Krissy Nguyen-Stone, Ashley Peltekci, Andrea Peña, Katherine Perdomo, Mary Lou Pompeii, Lindsey Quintana, Amanda J. Reynolds, Robert A. Pitts, Andrea Rodriguez, Prabhu Sasankan, Sneha R. Sharma, Amy Shire, Stela Sota, Ben R. Spoer, Bethany Springer, Jay Stadelman, Christina N. Wysota, Jackie Yang, Myriam Yopez); **PRA Health Sciences** (Danielle Cram, Stephen Eustace, Kathleen Mandziuk, Michael Massaro, Colleen Mullenix, Toze Reichard, Tiara Towner); **State University of New York Upstate Medical University** (Mark Abbott, Elizabeth Asiago-Reddy, Kristen Baxter, Kate Caiello, Timothy Endy, Ivayla Geneva, Peter Greco, Elizabeth Haraus, Michelle Klick, Patrick Mehlek, Christopher Miller, Melissa Reale, Kianna Ripich, Andrea Shaw, Keely Terrillion, Stephen Thomas); **Tulane University** (Mueenah Anibaba, Evan Atkinson, Michelle Blyth, Mary Beth Campbell, Lillianna Carsch, Ashita Ganguly, Sarina Gupta, Heather Larkin, Jake Hall, John Huntwork, Margaret Huntwork, Mariel McConville, April McDougal, Florice Numbi, Cedrick Ntambwe, Michelle Palomares, Demetrius Plaxico, Hamada Rady, Maria Ribando, Sydney Sauter, Daniel Triggs, Neha Upadhyay, Norine Schmidt, Shannon Watson, Crystal Zheng); **University of California Los Angeles** (Rubi Arias, Azra J. Bhimani, Cherie Blair, Catie Cambou, Meilani Cayabyab, Rafael Corona, Danielle Escobedo, Daisuke Furukawa, Amanda Gonzalez, Heather Karpf, Ryan Kofron, Karla Largaespada, Nancy Lopez, Hannah Mansky, Rachel Martin-Blais, Antonia Petreuse, Christina Shin, Tran T. Tran, Ameila Weldon, Gabriela Were); **University of Maryland School of Medicine** (Vaidehi Agrawal, Melissa Billington, Megan Birkhold, Colleen Boyce, Marianne Cloeren, Carlo Foppinao Palacios, DeAnna Friedman-Klabanoff, Alyson Kwon, Hanna LeBuhn, Esther Liu, Meredith Lu, Melissa McDiarmid, Melissa Myers, Faith Pa'ahana-Brown, Marian Poley, Biraj Shrestha, Gentry Wilkerson); **University of Washington** (Nathan Alidina, Samuel Arnold, Marie Bauer, Jennifer Baugh, Cara Bayer, Medhavi Bole, Elizabeth Brandstetter, Alyssa Braun, Clare E. Brown, Maxwell Brown, Michelle Bulterys, Jared Castor, Maianna Dematteis, Ivy Doan, Mark Drummond, Erika Feutz, Sean Galagan, Daphne Hamilton, Kirsten Hauge, Elsa Hay, Florian Hladik, Xuanlin Hou, Doug Houston, Madelaine Humphreys, Abir Hussein, Matthew Ikuma, Rodal Issema, Rachel Johnson, Mary Kirk, Jack Knauer, Steven R. Kuntz, Savannah Lawton, Rebecca Letterer, Elina Lingappa, Jairam R. Lingappa, Caroline H. Liou, Katie Lund, Toni Maddox, Anya Mathur, Mari Metter, Lindsey McClellan, Deidra Montoya, Jessica C. Moreno, Gregory Morlin, Urvashi Pandey, Gregory Pepper, Alicia Pettit, Thepthara Pholsena, Griffin Popp, Jeff Purcell, Justice Quame-Amaglo, Reigran Sampoleo, Elliott Sanger, Matthew Seymour, Alexander Shercliffe, Shabir Somani, Jenell C. Stewart, Selorm Tamakole, Jina M. Taub, Zoe Thuesmunn, Amena Tungara, Ethan Valinetz, Dana L. Varon, Vianey Vazquez, Bao-Chau Vo, Valentine Wanga, Chloe D. Waters, Yulun Wei, Meagan Welsh, Katie Wicklander, Brian R. Wood, Grant Young, Zohdi Young, Lucy Zhao, Azaad Zimmermann); **Virginia Mason Memorial Hospital** (Deborah J. Brown, Nathaniel Davenport, Omar Gambito)