Inclusive Trial Design Case Example: Direct-to-Family Pediatric Lupus Trial

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Enhancing Diversity in Therapeutics Development for Pediatric Patients
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Duke Clinical Research Institute | FROM THOUGHT LEADERSHIP TO CLINICAL PRACTICE

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- I **do** intend to discuss an unapproved/investigative use of a medication in children in my presentation
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Current paradigm of pediatric clinical trials

- Pediatric trials are difficult to conduct because of generally low disease prevalence, few pediatric subspecialists, lack of access to academic medical centers, ethical considerations, logistics, others[1]
- Multicenter research networks can overcome many challenges
  - Pediatric Trials Network: >200 sites, >50 studies, 21 FDA label changes[2,3]
  - Childhood Arthritis and Rheumatology Research Alliance (CARRA): 74 sites, 90,000 visits[4]

CARRA
Childhood Arthritis and Rheumatology Research Alliance

Clinical Coordinating Center

Data Coordinating Center

1. Balevic SJ, et al Paediatr Drugs. 2017 Oct;19(5):379-389
2. Randell RL, et al Hosp Pediatr. 2022 Sep 1;12(9):e309-e311.
3. https://pediatrictrials.org
4. https://carragroup.org/

DCRI Image courtesy of Duke Health News & Media

Challenges with traditional, multicenter, site-based pediatric trials

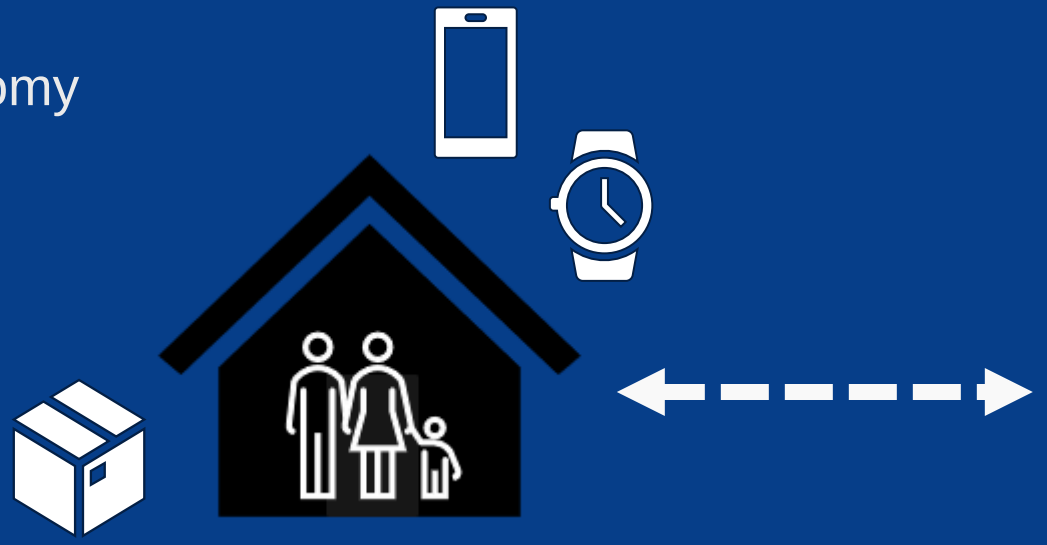
- Complex
- Expensive
  - $10,000 per subject[5]
- Slow
  - 200 hours per subject[5]

- Potential burdens and barriers
  - Time off work and school
  - Transportation
  - Financial impacts
  - Geographic location
- Exacerbated by socioeconomic disparities
- Research unfeasible or impossible for many

5. Estimate after adjusting for inflation from Emanuel EJ, et al. J Clin Oncol. 2003 Nov 15;21(22):4145-50.

New approach: Decentralized, virtual, or “direct-to-family” design

- Research occurs outside of brick-and-mortar clinical research site in a real-world setting, like home[6]
- Observational or interventional, randomized or non-randomized
- Technology is a key underpinning
  - Remote data collection via video, devices, electronic questionnaires
- Biological samples[7]
  - Home health phlebotomy
  - Local laboratory
  - Self-collection
    - Blood
    - Saliva
    - Urine



Single Site

6. Balevic SJ et al. Pediatr Res. 2021 Feb;89(3):404-406.
7. Randell RL et al. JMIR Res Protoc. 2016 Jan 5;5(1):e3.

Can a direct-to-family design overcome barriers to pediatric trial participation?

Schedule on evenings and weekends

Deliver study materials and team members to the family's home

Decrease financial burden due to less time off work, fewer travel expenses

Remove geographical limitations

Case Example: iPERSONAL Trial

iPERSONAL
Individual Patient Exposure and Response in Pediatric Lupus

NCT04358302

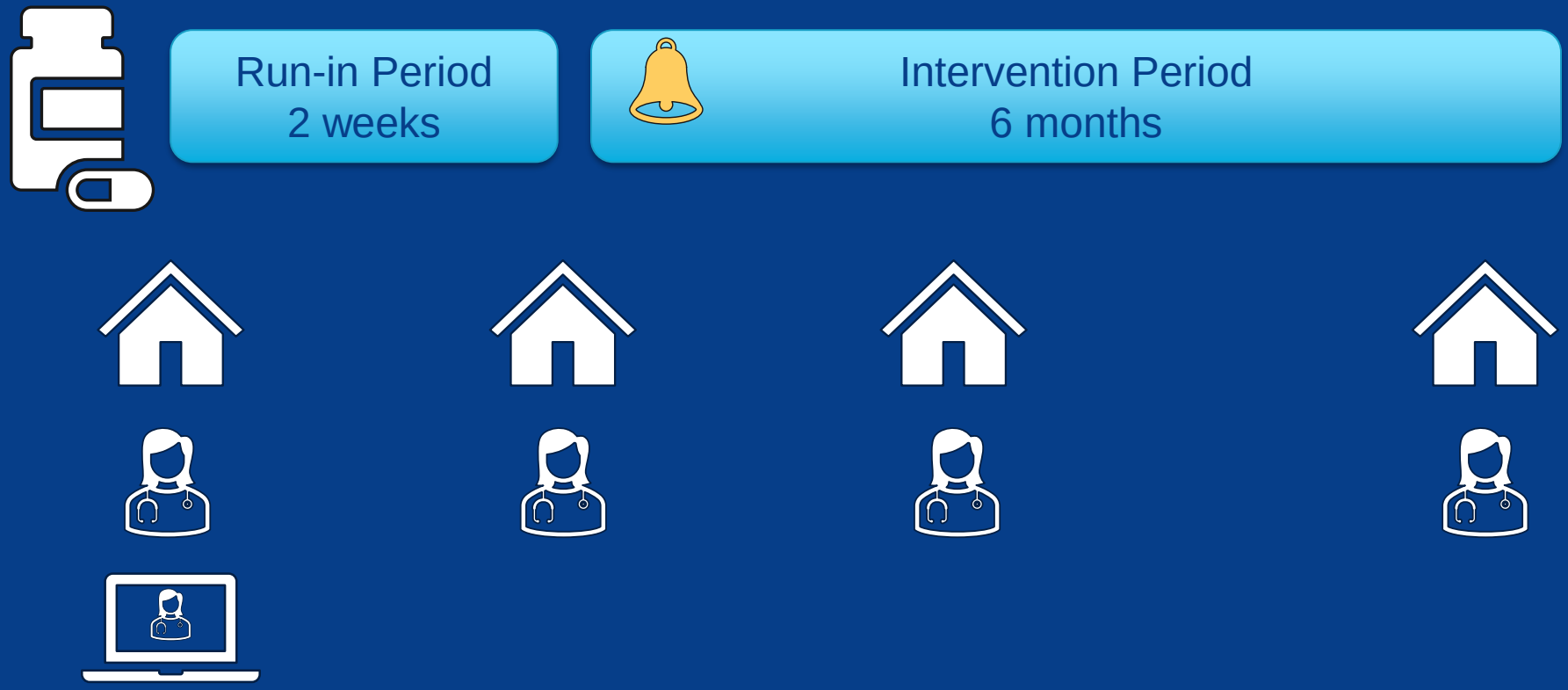
- Direct-to-family, open label, pre/post pilot trial evaluating preliminary effectiveness of a medication management device on adherence to hydroxychloroquine in pediatric systemic lupus erythematosus
- Lupus: Rare, chronic autoimmune disease that disproportionately affects Black/African American, Hispanic, Asian, American Indian/Alaska Native women[8]
  - #5 cause of death in Black and Hispanic women aged 15-24[9]
  - 1 in 5 cases diagnosed during childhood → worse prognosis
- Hydroxychloroquine is safe and effective but only ***half*** take it regularly as prescribed
- Direct-to-family design may be especially helpful in lupus
  - Geography[8]
  - Negative impact of socioeconomic factors on lupus outcomes[9]
  - Major lack of racial and ethnic diversity in traditional trials[10]

8. Buie J et al ACR Open Rheumatol. 2023 Sep;5(9):454-464.
9. Yen EY et al Arthritis Rheumatol. 2018 Aug;70(8):1251-1255.
10. Falasinnu T Curr Rheumatol Rep 2018;20:20.

Direct-to-family trial design

iPERSONAL
Individual Patient Exposure and Response in Pediatric Lupus

NCT04358302



Results: Recruitment

iPERSONAL
Individual Patient Exposure and Response in Pediatric Lupus

NCT04358302

191 potentially eligible participants

↓

180 phone calls

↓

84 live discussions

↓

44 scheduled consenting calls

↓

26 enrolled
- 18 added to back up list

Enrollment goal met in
10 Days

Results: Demographics

iPERSONAL
Individual Patient Exposure and Response in Pediatric Lupus

NCT04358302

- Mean age: 14 years
- 85% Female
- Self-reported ethnicity
  - 35% Hispanic or Latino
  - 54% Not Hispanic or Latino
  - 12% Not reported
- Self-reported race
  - 12% Asian
  - 12% Black, African American, African, or Afro-Caribbean
  - 35% White
  - 42% Other
  - 0 Middle Eastern/North African, Native American, American Indian, Alaskan Native, Native Hawaiian or other Pacific Islander

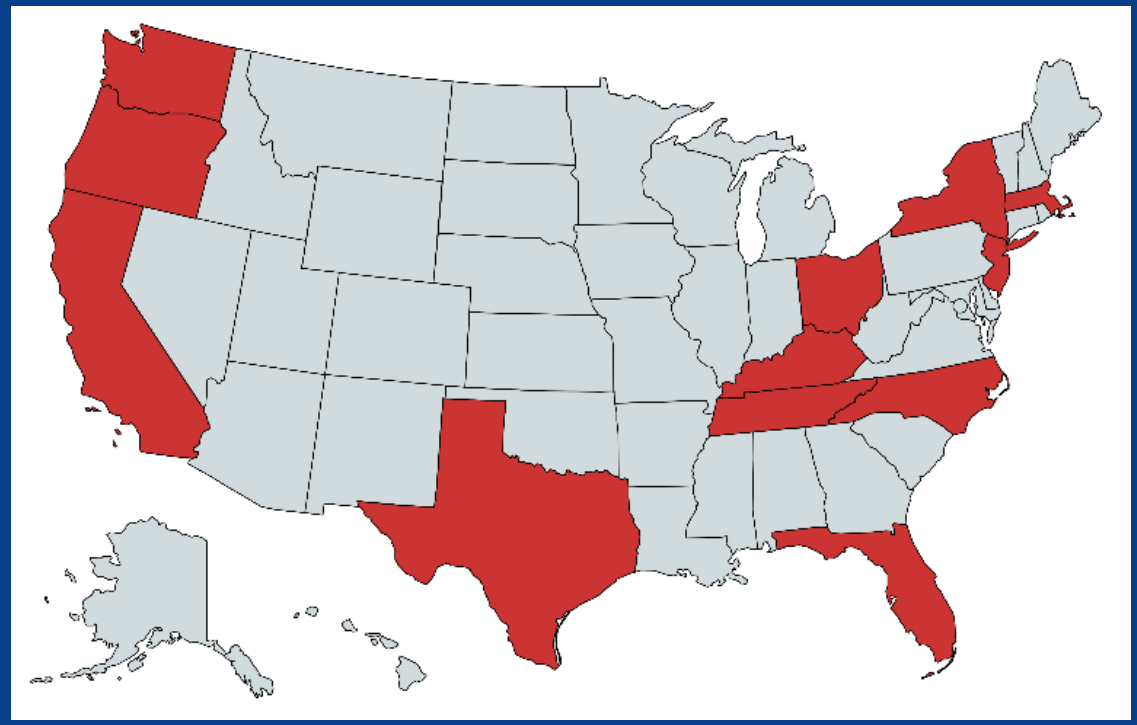


Figure created with mapchart.net

Results: Feasibility, Satisfaction

iPERSONAL
Individual Patient Exposure and Response in Pediatric Lupus

NCT04358302

- Between October 2020 – June 2021
  - 97 home visits
  - 94 urine samples
  - 88 blood samples
  - >3,900 dosing records

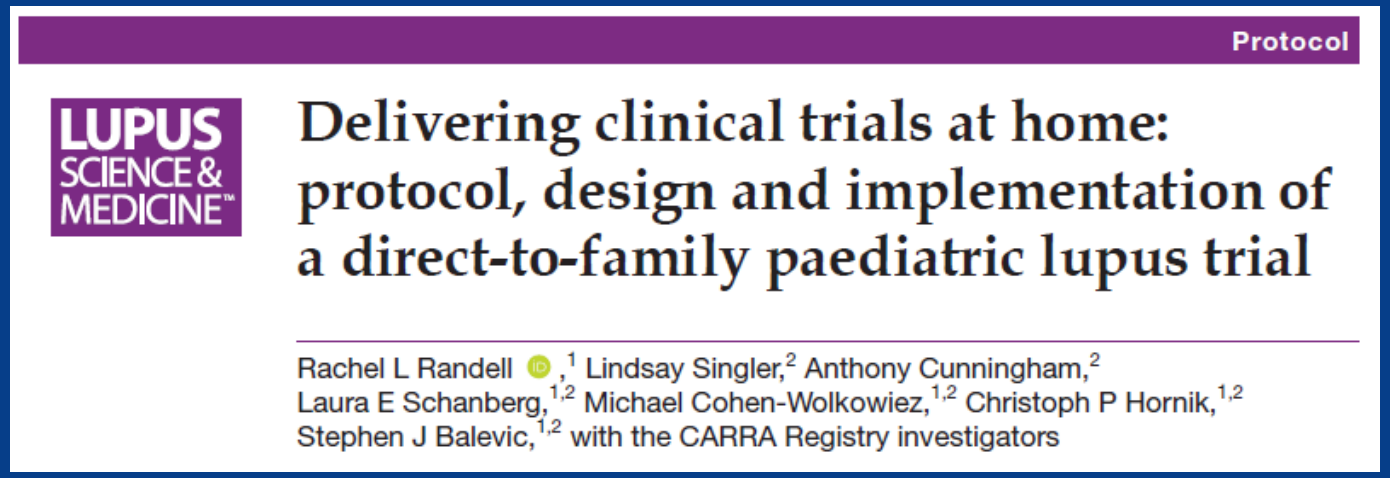
% Agreed or strongly agreed	
99%	I felt comfortable participating in research activities at home
94%	I would take part in an in-home research study like iPERSONAL again
80%	I would rather participate in an in-home study than go to a site

"deeply satisfied with nurse and other coordinators"
"Really professional, flexible, and safe experience"

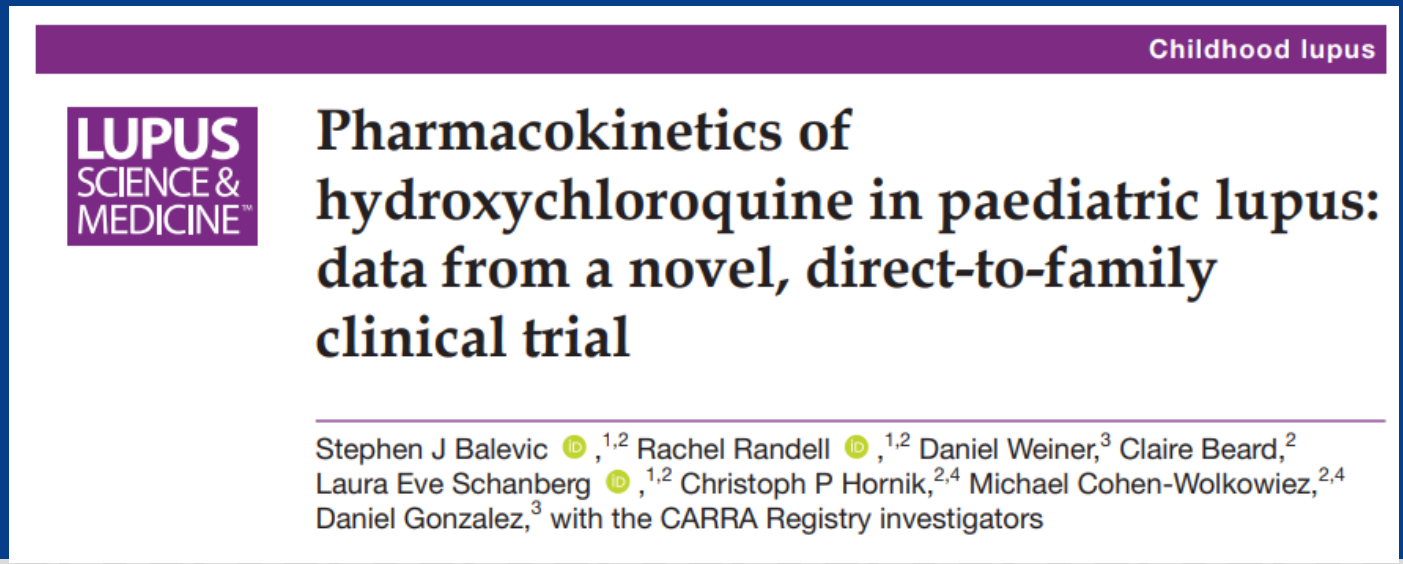
Key Lessons Learned from iPERSONAL

- Direct-to-family study was desirable, feasible, and satisfactory in pediatric lupus population
  - Potentially promising approach to increase geographic and other types of diversity
- Challenges and limitations
  - Safety
  - Location
  - Technology
  - Data integration
- Partnerships were critical to success
  - Patients and families
  - CARRA Registry
  - Lupus Foundation of America

iPERSONAL Publications



Adherence analysis coming soon!



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Thank you!

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