



## Community Care Centers of Excellence (CCCE) Statewide Workshop Announcement

California Institute for Regenerative Medicine  
Thursday, June 22<sup>nd</sup>, 2023, 9:00am-5:00pm  
Betty Irene Moore Hall Commons  
UC Davis Betty Irene Moore School of Nursing  
2570 48th St, Sacramento, CA 95817



Google Maps:

<https://goo.gl/maps/rZ8sCoiV4bnKRQRh6>

This statewide stakeholder engagement event *is* to consider opportunities for developing the Community Care Centers of Excellence (CCCE) program. The goal of the Community Care Centers of Excellence Program is to promote access to clinical trials and treatments arising from institute-funded research. As described in CIRM's 5-year strategic plan, the CCCE program is envisioned to expand clinical research, increase patient access to therapies and grow the regenerative medicine workforce.

This workshop is informed by a series of Listening Sessions and stakeholder discussions designed to understand the needs, capacities, and interests of stakeholders in the CCCE program. Drawing on this foundational knowledge derived from CIRM's capacities and needs assessment; participants will be invited to consider ways the program can be designed to be responsive to the goal of promoting access to clinical trials and treatments.

A major aim of this workshop is to consider how CIRM can invest to enable access to clinical research statewide, increase patient access through robust community engagement and, leverage education and training efforts to help build regenerative medicine's future workforce.

## Agenda

| Time (PST)     | Title  |
|----------------|--|
| 8:45AM         | Light Breakfast  |
| 9:00AM         | <b>Welcome &amp; Introduction:</b>   |
| 9:30AM         | <b>Patient Journey Perspective:</b>  |
| 10:00AM        | <b>Participation in Cell and Gene Therapy Clinical Trials: Considerations for Patients<br/>CIRM Needs Assessment &amp; Listening Session Findings</b>  |
| <b>10:45AM</b> | <b>BREAK</b>   |
| 11:00AM        | <b>Panel 1: Clinical Infrastructure Panel Discussion:</b>  |
| 11:45AM        | <b>Panel 2: Workforce Development and Training Panel Discussion:</b>   |
| <b>12:30PM</b> | <b>LUNCH</b>   |
| 1:15PM         | <b>Panel 3: Patient Access/Community Engagement Panel Discussion:</b>  |
| 2:00PM         | <b>Frameworks for Action: Opportunities to Leverage Existing Initiatives in the CCCE</b> <ul style="list-style-type: none"> <li>○ Developing Vision for CAR-T Treatments in California</li> <li>○ Patient Support Program</li> <li>○ Clinical Trials Transformation Initiative: A Possible Framework for Implementation</li> </ul> |
| <b>2:45PM</b>  | <b>BREAK</b>   |
| 3:00PM         | <b>Panel 4: Social Determinants Impacting Program Development Panel Discussion:</b>  |
| 3:45PM         | <b>Perspectives of Prospective Applicants: Opportunities, Challenges and Needs</b>   |
| 4:15PM         | Q & A, Next Steps  |
| <b>5:00PM</b>  | <b>CLOSING STATEMENTS</b>  |
| 5:00PM         | Networking & Light Refreshments  |



# California Institute for Regenerative Medicine

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## Community Care Centers of Excellence Statewide Workshop

Background Materials

June 22, 2023

UC Davis Medical Center, Sacramento

CIRM

## OUR MISSION

Accelerating world class science  
to deliver transformative  
regenerative medicine treatments  
in an equitable manner to a  
diverse California and world



## The CCCE Development Process Involves Multiple Information Sources

### Activities Informing Program Development Since 2020

- Review previous CIRM research (strategic planning process, conferences, workshops and PSP Program research)
- Regional Listening Sessions and meetings
- Key informant and participant interviews
- CIRM Clinical Advisory Panels
- Interviews with Alpha Clinic sites

## Foundational Deliberations Started in January 2020

### Navigating Regenerative Medicine Workshop January 2020:

1. There is a growing gap between standard of care and optimal care
2. Regenerative medicine, including clinical trials, may represent optimal care for certain conditions
3. Patients should be active participants in therapy development
4. Knowledge, financial considerations and logistics can be barrier to participation
5. Sickle cell disease is an opportunity to build a navigation platform



**Program Report in Appendix A**

## Three Program Areas Were Presented to Listening Session Attendees

### Program Purpose:

CIRM listening sessions are designed to inform the development the Community Care Centers of Excellence (CCCE) program. As described in CIRM's 5-year strategic plan, the CCCE program is intended to expand clinical research, increase patient access to therapies, and grow the regenerative medicine workforce. CIRM recognizes that for the CCCE program to be effective, it must be responsive to the unique needs of California's diverse health care delivery infrastructure. To better understand these needs, CIRM is conducting a series of listening sessions with the purpose of understanding the diversity of needs.

CIRM Listening Sessions & Needs Assessment for CCCE: Summary of Activities and Findings

**Real Life**

### Bringing Stem Cell Treatments Home: Considerations for Delivering Regenerative Medicine to All Californians

Listening Session Purpose

*Bringing Stem Cell Treatments Home* will serve as CIRM's kickoff conversation to consider opportunities for developing the Community Care Centers of Excellence (CCCE) program. As described in CIRM's 5-year strategic plan, the CCCE program is intended to expand clinical research, increase patient access to therapies and grow the regenerative medicine workforce.<sup>1</sup> This conversation builds on a previous conversation, [Navigating Regenerative Medicine](#), that suggested regenerative medicine holds the potential to provide more optimal care for certain disease conditions. However, to reach all patients who stand to benefit, specific operational needs remain, and they may be addressed by the CCCE program. These needs include community engagement, patient navigation and ongoing supportive clinical care.

A major aim of this workshop is to consider how CIRM can invest in California's existing clinical care and research infrastructure to support these needs and grow the regenerative medicine workforce.

Expand Alpha Clinics Network

Enable Innovative Clinical Research

Increase Patient Access to Therapies

Train Future Workforce

Equip Community Care Centers to serve the needs of the community as identified by the community

Program Flyer

## Three Listening Session Were Conducted to Date

### Listening Session Locations:

Fresno | Clovis October 25, 2022

UC Riverside | Inland Empire January 18, 2023

Palm Desert | Coachella Valley March 6, 2023

Average participants 15-20 in-person and online



## Listening Sessions Focused on Three General Program Activities

### Listening Sessions Program Outline:

Provide an overview of CIRM's clinical research programs

Describes the future Community Care Centers of Excellence program

Understand the capacities and needs of communities

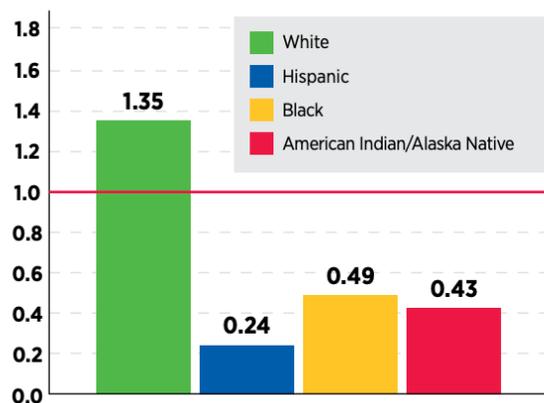
- Expanding clinical research
- Increasing patient access and community engagement
- Growing the regenerative medicine workforce



# Documenting the Problem of Under Representation in Clinical Research

## Literature Review

In a recent **analysis of 93 precision oncology clinical trials** with 5,867 participants, **representation of racial and ethnic minorities** was calculated using the **ratio of the actual number of enrolled cases to the expected number of cases** based on their corresponding U.S. population (495).



**Ratio >1** signifies **overrepresentation**  
**Ratio <1** signifies **underrepresentation**

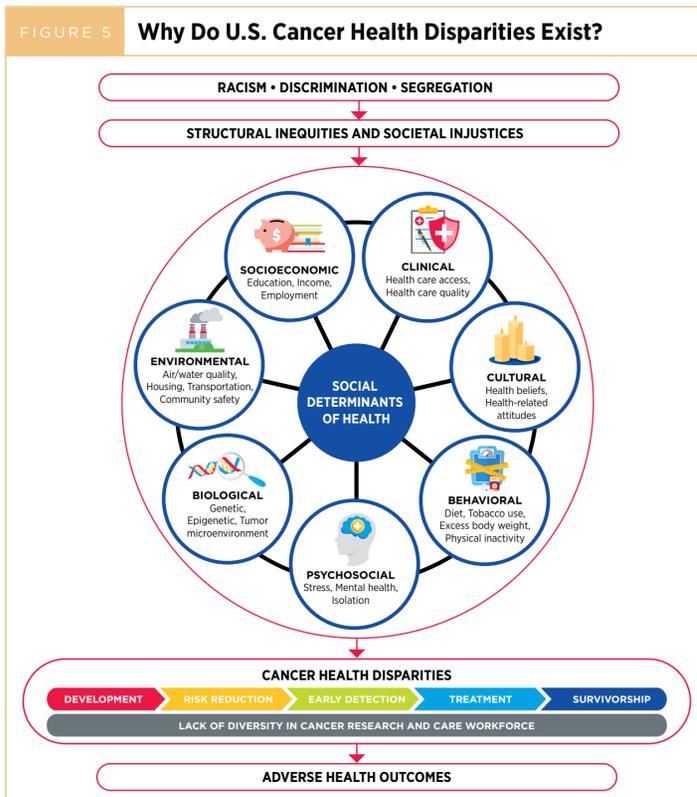
A recent **analysis of phase I clinical trials** for anticancer agents developed by biopharmaceutical companies, showed **extremely low participation of patients from racial and ethnic minorities** compared to their proportion in the U.S. population (501).

| RACE/ETHNICITY                            | PERCENTAGE OF PATIENTS | PERCENTAGE OF U.S. POPULATION |
|---|------------------------|-------------------------------|
| White                                     | 84.2                   | 76.5                          |
| Black                                     | 7.3                    | 13.4                          |
| Asian                                     | 3.4                    | 5.9                           |
| Native Hawaiian or Other Pacific Islander | 0.1                    | 0.2                           |
| American Indian or Alaska Native          | 0.1                    | 1.3                           |
| Hispanic                                  | 2.8                    | 18.3                          |

<https://cancerprogressreport.aacr.org/>

# Social Determinants Impacting Health Disparities and Access to Clinical Trials

## Literature Review



<https://cancerprogressreport.aacr.org/>

## Multiple Outreach Methods Were Employed to Recruit Participants

### Listening Sessions Stakeholder Recruitment:

#### Fresno / Clovis

- Engage Clovis Cancer Center
- Identify local individuals and organizations
- Coordinated outreach
- Engage patient advocates, providers and community leaders in advance (landscape review)

#### Inland Empire

- Engage UC Riverside Center for Health Disparities Research & School of Medicine
- Identify CBOs for partnership
- Coordinated outreach
- Engage patient advocates, providers and community leaders in advance (landscape review)

#### Coachella Valley

- Contracted CBO that participated in Inland Empire session
- CBO engage CHWs and other CBOs
- CIRM engaged health care providers

## Each Session Included Common and Unique Themes

### Fresno | Clovis October 25, 2022:

#### Clinical Readiness

##### Prep and Follow Patients Locally

Transplant model prep locally with local follow up.

##### Proximity, Proximity, Proximity

Support networks are local so keeping services as local as possible is advantageous.

##### Infrastructure is Comprehensive in Fresno Clovis

High capacity center for oncology, SCD and other conditions. Technical assistance and training is the major need.

##### Eager for Alpha Clinic Collaboration

Many potential collaborative opportunities with Alpha Clinics. UC Davis in particular identified collaborative opportunities.

#### Training

##### Remote Grand Rounds

Training is needed and remote / virtual option is most practical.

##### Time Constrains

Doctors are busy and often don't have time so online alleviates constraints.

A peer-to-peer network providing technical assistance is desirable (as opposed to cross training or residency programs)

##### CMA & Primary Care Association Engagement

Connect up with established training and education programs and develop continuing education regenerative medicine modules to build great awareness among membership.

##### Train the Trainer Opportunities

Alpha Clinics can facilitate knowledge transfer to CCCE sites so they can then develop local training programs. Resources exist in Fresno connectivity with experienced sites can help develop local programs.

#### Increase Patient Access | Engagement

##### Trusted Intermediaries

Engage trusted community leaders irrespective of health background

##### Young Professionals

Young professional can explain issues and they bridge generations. Find opportunities to engage.

##### COVID Trauma

Patients went to hospitals and could not be seen by family and died. Rebuild trust; what is different now?

##### Local Doctors

Local doctors have trust, engage them as this may be one way to get past "tribal" relations.

##### Local Community Center / Gathering Places

Existing community centers that bring together groups are a great "entry point".

##### Local Elected Officials

Many elected officials have an interest in health-related issues. They have established engagement networks and they may be leveraged for specific campaigns.

## Each Session Included Common and Unique Themes

Riverside | Inland Empire January 18, 2023:

### Clinical Readiness

#### Community Based Participatory Research

High capacity to engage patients in program development and implementation

#### Consultation and Navigation

Capacity to support patients in their journey

#### Patient Assistance and Support

Capacity to link patient to support programs. Such programs should include support for initial physician consult

#### Primary Care Deficit

Clinical research is a potential stretch for populations experiencing a primary care deficit. Connect clinical trials to population health.

### Training

#### Clear Value Proposition

Career paths need to be clear and compelling

#### Engage Early

Literacy and understanding should be developed in early educational curricula

#### Community Health Workers

Community health workers (promotores de salud) are trusted messengers in the community

#### Workforce Should Reflect Population

Educators and navigator should be able to relate to the population

### Increase Patient Access | Engagement

#### Trusted Intermediaries | Youth

If you're asking to do an "experiment or research" on my child, why should people trust you?

Resources for student clubs and youth organizations to conduct engagement activities [BRIDGES]

#### Incentives for Messenger

Make engagement activities rewarding for the messenger

#### Foster Innovation in Communications

Use diverse communications platforms and methods to engage audiences. They will likely be highly segmented, so tailor towards specific audiences.

Start with partnership with communities. People don't realize how having community buy in affects many more groups of people.

## Each Session Included Common and Unique Themes

### Palm Desert | Coachella Valley March 6, 2023:

#### Clinical Readiness

**Regional Health Centers Support Clinical Trials**  
Regional medical centers support clinical research in collaboration with academic centers

#### Consultation and Navigation

Capacity to support patients in their journey. Especially important given concentration of “stem cell” clinics in boarder region

#### Primary Care Deficit

Clinical research is a potential stretch for populations experiencing a primary care deficit. Connect clinical trials to population health. Reiterated from previous session.

#### Better Networking

UC Riverside has a local presence but is very underutilized in the area, it’s very well established and should be used more to reach communities.

#### Training

#### Regional Health Centers

Cross training with academic centers is a way to support trials

#### Understand Opportunity

CHW first need to understand why regenerative medicine is relevant to their community. What type of messaging can CIRM provide? People like promotoras (or messengers) needs to have training to make the ask.

#### Community Health Workers

Community health workers (promotores de salud) are trusted messengers in the community and have a well developed model for engagement

#### CHWs Training PIs on Working In Community

Community Health Workers and Promotores can provide training and education to PIs and research programs working in the community.

#### Increase Patient Access | Engagement

#### Basic Knowledge

Can’t have a convo about clinical trials in regenerative medicine without talking about what IS regenerative medicine first. Educate people about the topic.

#### Unproven Treatments

Lots of [health care providers] patients go to Mexico to get access to stem cell treatments.

#### Informational and Financial Support

Travel time a costs will be a major barrier to participation especially if the patient need to drive for two hours

#### Overcome Negative History

Experience with HIV clinical trials. Important to understand that clinical trials also have a negative history. If promotoras are promoting clinical trials, at the end of the day they need to trust you.

## Memorable Comments Were Provided by Participants

- *There is no center in the Central Valley right now that can offer these kinds of novel therapies. There is a real need for one, particularly for poor and underserved communities.*
- *Ask physicians to identify trusted community resources to do education and engage patients. You cannot give providers talking points to educate patients, they do not have time.*
- *There is a “thirst” for access to clinical trials in her communities. [Participant] sees that lots of their patients go to Mexico to get access to stem cell treatments.*

## There Were Common Themes Across Sessions and Stakeholder Interviews

### Cross Cutting Themes From Listening Sessions

| Theme  | Issue Context  | Recommendation  |
|--|--|---|
| <p><b>Knowledge:</b> What is regenerative medicine?</p> <p><b>Trust:</b> why should I trust you?</p> <p><b>Cost &amp; Burden:</b> Money and time make it difficult to participate</p> <p><b>Leverage Expertise:</b> Communities have organizing systems.</p> | <p>Regenerative medicine is unfamiliar and may not be relevant</p> <p>Negative experiences with healthcare system and research can impact participation</p> <p>Financial and time commitments along with other social determinants can make participation impossible for many</p> <p>Overcoming “knowledge” and “trust” barriers can be facilitated by partners in the community</p> | <ul style="list-style-type: none"> <li>• Focus on health literacy and frame discussions around conditions that impact community / audience</li> <li>• Give visibility to the patient journey in SC/GT trials</li> <li>• Underscore commitment to access to optimal treatments for unmet medical needs</li> <li>• Avoid “top-down” relations; partnerships among equals; Bidirectionality</li> <li>• Patient Support Program to cover costs associated with participation</li> <li>• Additional navigation system to reduce informational and logistical barriers to entry</li> <li>• CCCE aim to provide clinical trial support close to home</li> <li>• Edu and training should be accessible on the students time</li> <li>• CCCE as “engagement hubs” for regenerative medicine</li> <li>• Active outreach and engagement of community leaders</li> <li>• Utilize creative engagement methods (multi-media, comic books, etc)</li> <li>• Engage youth and young professionals in communities who translate information</li> <li>• Leverage the work of CHWs as they are important messengers</li> <li>• Coordinate with CIRM’s Engagement Program</li> </ul> |

## Additional Inputs Were Obtained From Interviews

### Key Informant Interviews

- Medical Director Coachella Valley Clinic reports strong interest in clinical research / regenerative medicine particularly for addressing neurological conditions. His center already support clinical research and has interest in growing into the regenerative medicine space.
- Bridges Directors and students report interest in community engagement activates consistent with comments provided at listening sessions. Recommend that CIRM resource clubs, regional events and other activities that provide a consistent and familiar platform for engagement.
- Stem cell politics is still an issue in some areas (negative perception of the filed) and more community base activities demonstrating the value of treatments would be valuable. Such activities may also influence primary care physicians that can be hesitant to refer their patients to clinical trials.
- Centers outside of academic settings do not have the resources or experience to develop a CIRM grant. Non-academic centers need support to respond to the RFA. (see FQHCs)
- Whether a patient can engage specific centers will depend on whether there is a provider agreement in place. "Coverage analysis" approach will be required at the center. Such a position may be needed in the award.

## Additional Inputs Were Obtained From Interviews

### Key Informant Interviews

- We [community hospitals] would still need to collaborate with academic centers for most trials. Our teams are limited and there are limited resources to support research.
- The VA does have a clinical research network (Partnered Research Program), and Long Beach VA has partnered with the UCI Alpha Clinic. The VA PI on the UCI award indicated that the primary difficulty for VA sites is “buying peoples time” so they can support CIRM or other Alpha Clinic projects. One suggested model was to support positions across the VA network that are dedicated to CIRM or other Alpha Clinic projects.
- Federally Qualified Health Centers (FQHCs) were engaged in Coachella Valley and Northern California. After learning of the aims and objectives of the CCCE, representatives expressed excitement over the opportunity. Like other regional or community hospitals / clinics, they indicated the grant / proposal development process presents challenges and would likely require partnering with those who have expertise in this area.
- The Northern California network of FQHCs has already connected with Humboldt State BRIDGES and suggested a collaboration would be beneficial.
- Our center is distinct as we maintain a clinical care team (or research team) that surrounds the patient and maintains a continuity of care.

## Additional Inputs Were Obtained From Interviews

### Key Informant Interviews

- A CIRM-funded program reported that time delays in navigating and supporting enrollment resulted in eligible patients being lost to follow up or unnecessary delays. Platforms such as the CCCE that can engage patients locally and plug them into support and navigation systems, such as the PSP, would likely improve clinical program efficiency.
- A CIRM-funded program (CLIN2) is applying the Novel Interventions in Children's Healthcare (NICH) Program. The NICH program applies a validated framework intended to address social determinants of health. Historically, this program has supported patients adhere to disease treatment needs. The program is adapting this framework to clinical research and partnerships could be mediated through the Alpha Clinics.
- A CIRM-funded trial (CLIN2) for neurological disorders relied on referrals from regional hospitals. This model can be replicated to support patient navigation to additional trials.

## Additional Inputs Were Obtained From Interviews

### Key Informant Interviews

### Community Health Workers

#### DHCS Proposal to add Community Health Workers

The Department of Health Care Services (DHCS) added Community Health Worker (CHW) services as a Medi-Cal benefit starting July 1, 2022.

The federal Centers for Medicare and Medicaid Services (CMS) approved [State Plan Amendment \(SPA\) 22-0001](#) to add CHW services as a Medi-Cal benefit. DHCS conducted four stakeholder meetings to receive input on how to meet federal requirements for the SPA to add CHW services. Based upon stakeholder input, DHCS formally submitted SPA 22-0001 to CMS on April 29, 2022, and received CMS' approval on July 26, 2022.

Implementation had involved grants to county agencies to perform outreach and program navigation to specific populations.

## Additional Inputs Were Obtained From Conferences and Workshops

### Conferences and Workshops

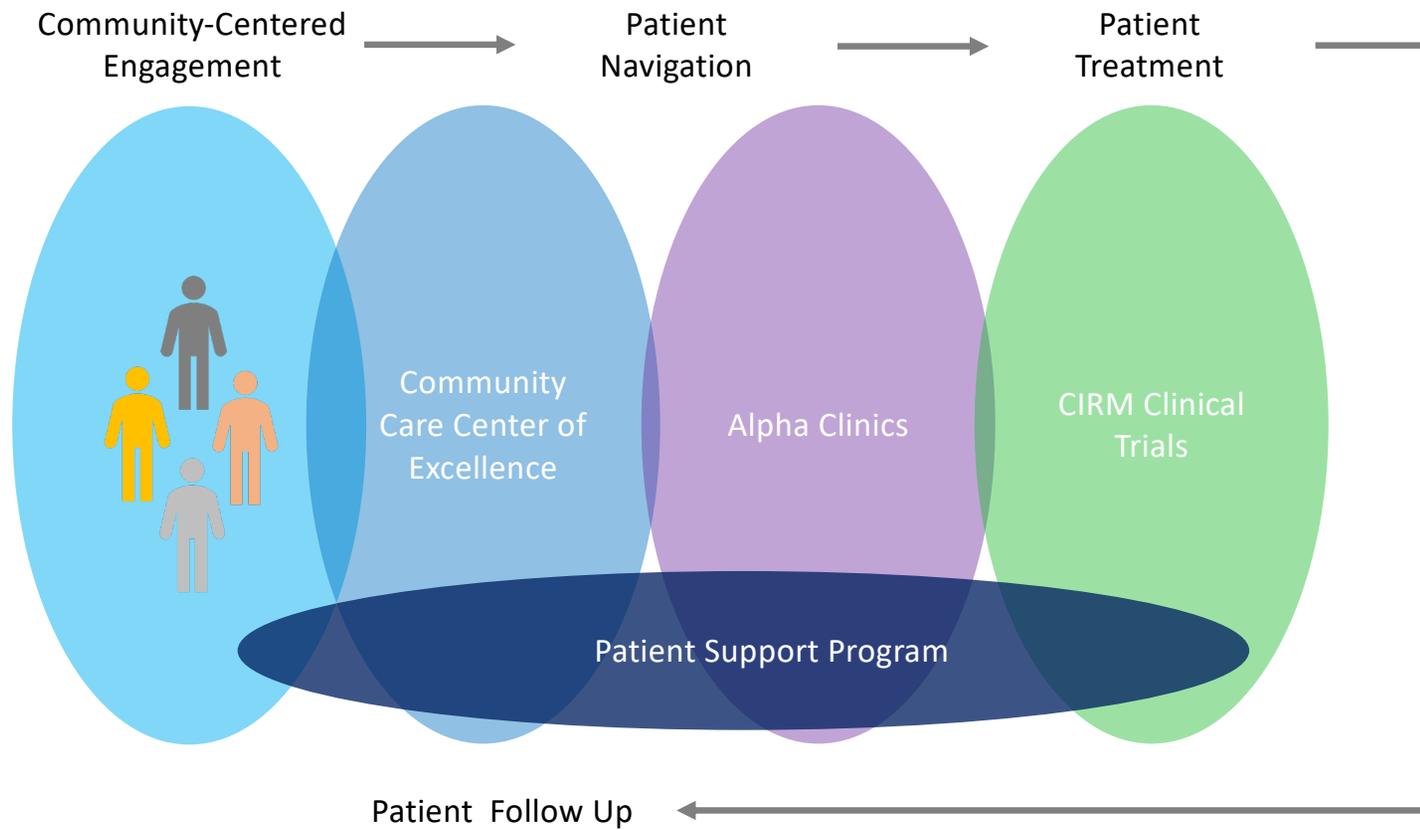
- A commercial gene therapy sponsor reports challenges performing intensive long-term follow up on patients. Patients receiving a potentially curative treatment for chronic disease may view the value proposition as no longer having to go to the clinic repeatedly. Bringing clinical follow up closer to home or to the patient's home may improve follow up.
- The development of a rural community clinic was instrumental in supporting the recruitment of patients for a Spinal Muscular Atrophy (SMA). This clinic coordinated care of the clinical cohort and has subsequently served to partner with other programs address genetic diseases in pediatric populations.
- CZI has funded a partnership with Charles Drew university to advance genomics in precision health.  
<https://chanzuckerberg.com/newsroom/partnership-genomics-research-historically-black-colleges/>
- Informed Consent Translation is a barrier to participation. Resources needed to provide appropriate consent translation. Patient must be consented in a language in which they are comfortable.

## Additional Inputs Were Obtained From Conferences and Workshops

### Conferences and Workshops

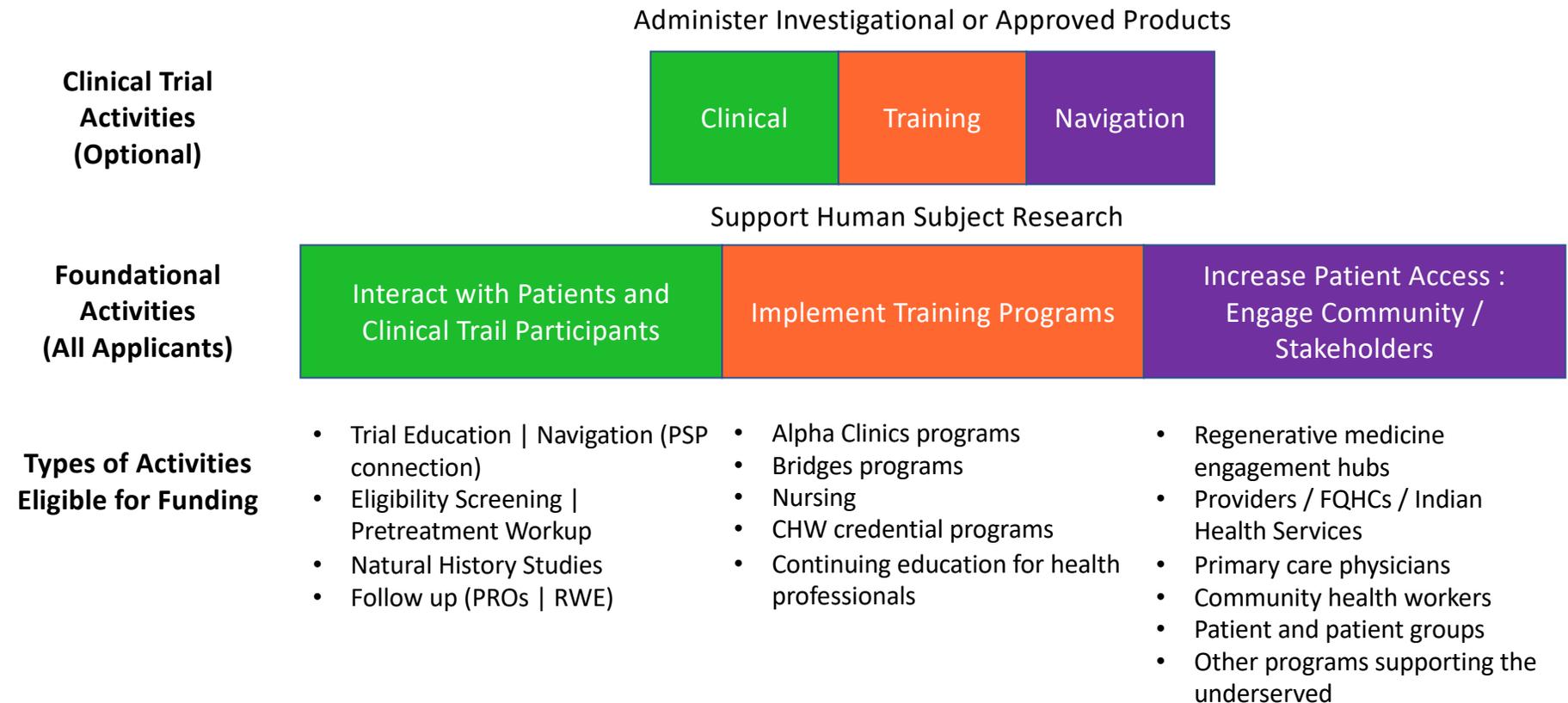
- Patient navigation and or independent counseling is an emerging field for gene therapy. Practitioners report successes and challenges in this emerging discipline (see LABEST). The CCCE program has the potential to build on existing efforts and consider how counseling capacity can be developed specifically for cell and gene therapy.
- The Cancer Research Center for Health Equity supports the expansion of clinical trial participation in underserved populations. The center is dedicated to educating L.A. community members about the facts and myths surrounding clinical trials. This center has developed and implemented a primary physician education program for clinical trial awareness. This education program has adopted a social determinants of health approach to support clinical trial education.

## Potential Pathways to the Clinic



# How Might Participants' Needs be Addressed in Program Development?

## Concept Ideas



## Navigating Regenerative Medicine: Highlights from the CIRM-CURA

### Roundtable Conversation

In January 2020, the California Institute for Regenerative Medicine and the CURA Foundation hosted a roundtable discussion titled *Navigating Regenerative Medicine*. Participants included thought-leaders attending the JP Morgan Health Care conference among others. The roundtable was organized as a series of panels comprised of patients and representatives from patient advocacy organizations, pharma, government agencies, academia and the broader health-care industry. CIRM and the CURA Foundation organized the roundtable to consider what infrastructure is needed to enable patients to make informed choices in the emerging regenerative medicine space.

The need for patient access to objective and reliable information is particularly acute in the regenerative medicine space in light of two contemporary developments. First, we are at a turning point in regenerative medicine where the initial wave of treatments has obtained FDA approval. Some patients ask: *are these treatments right for me?* There are also numerous regenerative medicine products in the development pipeline and in some cases multiple treatments for the same indication, e.g., gene therapy treatments for sickle cell disease. Patients may wonder if participating in a clinical trial is the best choice for them, and looking forward, they may need to consider what is the best approved treatment options for their disease.

The second development is the proliferation of “unproven stem cell treatments.” In the process of seeking information about promising new regenerative medicine treatments, patients are likely to encounter advertisements for fee-for-service “stem cell treatments.” Typically, such treatments cost thousands of dollars, lack evidence of clinical effectiveness and may have dangerous side effects. Ultimately, unproven treatments can put patients in medical and financial risk without alleviating their underlying condition.

Against the backdrop of promising regenerative and potentially curative treatments emerging alongside the proliferation of unproven treatments, the roundtable sought to address a fundamental question:

***How does a patient navigate this environment and get trusted and reliable information to help sort through their options?***

To address this question the roundtable participants were asked to consider three broad themes:

- 1) **Quality Information:** What systems are needed to enable patients, health care providers and payers to objectively evaluate regenerative medicine treatment options?
- 2) **Policy and Infrastructure:** How can we advance evidence-based treatments that demonstrate clinical benefit while curtailing the marketing of products that pose medical and financial risk?
- 3) **Regenerative Medicine and Society:** How can we empower patients and the public to be active participants in research and medical decision-making?

The roundtable was divided into three panel discussions where participants were asked to provide their perspective on the discussion theme. Discussion among all participants followed the panelists remarks. This report summarizes the panelists major themes and the ensuing roundtable discussion. The summary is organized by session and thematic area.

## **I. Opportunities to Enhance Patient-Centered Personalized Care**

### **Theme 1: There is a Growing Gap Between Standard of Care and Optimal Care**

There is a lag in the uptake in technologies that have the potential to optimize patient care. Genomics, imaging and other advanced diagnostics can serve to identify an optimal treatment plan. Previous research suggests that 45 percent of the time patients are not getting prescribed evidence-based medicine. More recently JAMA reported that for the most common cancer mutations about one-third of patients are not receiving the best treatment based on genomic testing. A number of barriers to optimal care were identified, including:

- Lack of information among health care providers
- Resistance to change or sticking with what feels safe
- Concerns over cost-containment especially if the new treatment is more expensive

These barriers actually have the potential to increase health care disparities if some patients have access to optimized care while others do not. The City of Hope described an initiative it has developed to partner with employers. Employers are considered “great partners” because “they care not just about affordability, but also the patient experience and health outcomes.” The partnership focuses on employees diagnosed with cancer and is designed to allow City of Hope to work directly with a patient’s treating physician (regardless of health plan). City of Hope analyzes the advanced diagnostic data and provides the treating physician with options of optimal care. Today numerous companies are using this suite of services to improve employee care.

### **Theme 2: The Value of a Relationship-based Care**

Regenerative medicine is causing providers to reevaluate their systems for the delivery of care. These treatments tend to be complex so managing the delivery system is becoming more important. Effective delivery systems seek to align human and physical resources with the overall patient journey. Alignment is accomplished through:

- Redesigning facilities based on how patients move around them
- Continually interacting with patients and their families to understand how to improve the patient experience
- Including emotional support along the treatment continuum
- Maintaining patient portals that allow any question regarding the patient journey (from “where do I park” to “where are my medical records”?) to be addressed through a single point of contact

### **Theme 3: Patients Should be Active Participants in Therapy Development**

In the rare disease space, Global Genes has been working with patients so they can become actively engaged in therapeutic discovery and development. A major focus is the “hows” and “whys” of data collection and management. One aim is to arm patients with “research-ready” data so they can become partners in research. The overall goal is to forge partnerships with patients to improve the speed, efficacy and efficiency of rare disease research.

### **Theme 4: Sickle Cell Disease (SCD) is an Opportunity to Build a Navigation Platform**

There are a number of curative SCD treatments in the pipeline and the American Society of Hematology (ASH) has made a “full commitment” to create a collaborative research infrastructure. This infrastructure includes a data hub and clinical trial network representing 52,000 patients. Despite this success, barriers remain including:

- Finding qualified investigators to manage clinical trials within the network
- Locating the appropriate patient population for specific regenerative medicine treatments
- Educating patients early-on about their treatment opportunities
- Identifying ways of financing treatment

#### **Discussion Points:**

- We must be aware of the psychosocial needs of patients. Many patients have developed a community or identity related to their disease condition. It will be important to work with patients early on to understand how to provide psychosocial support.
- Related to the point above, it is critical to engage the patient community to ensure they are interested in new treatments. This point is particularly important for non-life-threatening conditions that patients may have adapted to.
- Patient navigation will be critical for conditions such as sickle cell disease where there are a number of regenerative medicine treatments. Patients will need support determining if there is a treatment that is right for them and also consider what is currently available versus those in the pipeline.

## **II. Essential Policy and Infrastructure for Regenerative Medicine**

As was discussed in Theme 1, there is a mismatch between the care patients are getting and optimal evidence-based care. Perhaps the most striking indicator is the fact healthcare technologies are better than ever but on a population basis, health outcomes are getting worse. The policy challenge becomes not only getting better treatments to market but also translating this innovation into better health in the population.

### **Theme 5: Manufacturing Challenges in Stem Cell Research Need to be Addressed**

We are “now at an inflection point” where regenerative medicine treatments may provide optimal care for some patients. Current success stories include gene modified stem cells for blood diseases and immune therapies for cancers. The longer-term vision for the field is to have

allogenic treatments for a wider range of diseases. Because of “the degree of complexity of cell-based therapy,” we need to start a “collective think” about how to “bring variables under control.” To reach this point, a rational drug design paradigm is needed where manufacturing processes can be replicated to produce products that perform consistently from trial to trial. We “haven’t really gotten there yet.” As a field, there needs to be focus on the critical quality attributes in manufacturing and development of standardized tools (cell line, reagents, and processes) to support rational design.

### **Theme 6: Unproven Treatments are the Enemy of the Good**

The good faith efforts of those committed to overcoming the challenges to advancing the field are being put at risk by people who “are just trying to make a buck.” People are paying tens of thousands of dollars out of pocket for a series of treatments for the “muck du jour.” Further, those profiting from unproven treatments are trying to frame the issue as a libertarian right to use your cells rather than an issue of efficacy – do these treatments work and is the product effective. At the policy level, right-to-try laws are examples where providers of unproven treatments are attempting to circumvent scientifically rigorous test in products.

### **Theme 7: Coverage and Pricing are Critical Policy Considerations**

If we want to bring regenerative medicine to all, we must have products “that will be reimbursed by payers in the United States across the board.” Up until today there have been a relatively small number of regenerative medicine products for conditions that tend to be rare in the population. As a consequence, such treatments have not registered on the payer side, but that is changing. We have seen examples, internationally, of payers agreeing to reimbursement models that are tied to outcomes over time. Over the next five to ten years, we can anticipate new gene therapies. We must continue to consider different reimbursement models to help address current funding constraints. For example, sickle cell is one case where many could benefit from these treatments, but they are covered through state Medicaid programs where there is little or no budgetary “slack.”

### **Theme 8: Leverage Interoperability Standards and Evidence to Accelerate Treatments**

The efficacy of regenerative medicine treatments will be determined by clinical evidence that definitively demonstrates “measurable effect sizes.” We have made great strides in setting interoperability standards for formatting and exchanging clinical data – Fast Healthcare Interoperability Resources (FIRE). Further, the 21 Century Cures Act provides a framework for enabling real-world-evidence to support product registration. Optimally we should develop an evidence engine that allows us to link clinical outcomes “in the post-market setting” to reimbursement decisions (Theme 7). There have been efforts, through federal legislation, to develop information systems to support regenerative medicine treatments. To be successful, these efforts will require partnerships between the public, private and non-profit sectors to continue to develop objective, standardized and reliable data.

### **Theme 9: Aim for International Data Harmonization (Regulatory)**

Early regenerative medicine development programs faced challenges compiling data related to manufacturing, safety, efficacy and long-term outcomes. Requirements have varied between international jurisdictions (e.g. EMA vs. FDA). This regulatory variation may be expected in a new field, and ideally, variation would diminish over time as evidentiary standards harmonize. In addition, organizations like CIRM should focus academic programs to develop standardized data as early as possible. International harmonization for manufacturing standards (Theme 5) will also be important for ensuring safety and efficacy evaluation. One participant encapsulated this theme by stating, “until we treat cellular therapies like we would any other medical products, defined products, well-made, well-understood, well-studied, they are going to languish.”

## **III. Regenerative Medicine and Society**

### **Theme 10: Patients Advocacy Groups are Spreading Awareness**

Patient advocacy groups are effectively utilizing social-media and other advocacy tools “to spread that awareness and let the other (patients) know that what you are doing is legitimate.” These networks emerged both to fill information gaps and expand support options where patients-to-patient communication allows the sharing of clinical trial and treatment experiences. Advocates play a valuable role in directing new patients away from “quacks” or “muck” and toward scientifically rigorous clinical trials or treatments. Advocacy organizations fill the role of trusted intermediaries for patients considering clinical trials or approved treatments. Increasingly, patient networks are partnering with medical centers and other providers to support comprehensive patient navigation.

### **Theme 11: Patients / Researcher Partnerships Enhances Clinical Research**

Patient organizations and support groups have approached disease research programs at medical research centers. The support groups have the ability to disseminate information to patients in the service area, particularly for more prevalent indications (e.g. Parkinson’s disease). This dissemination can be particularly valuable for supporting clinical trial recruitment. Fundamentally, you have networks of people that are “trusted and interact to become socially connected.” Organizations that have developed this connectivity are ideal partners for clinical researchers.

### **Theme 12: Trusted Intermediaries are Critical for Regenerative Medicine**

Digital information providers (e.g. GoogleHealth) face a challenge of deciding where to go for trusted and reliable evidence. Obtaining unbiased information about medical products is a challenge. Content providers need to know who to trust so they can “prioritize intermediaries.” This can be particularly complicated in the United States because states regulate the practice of medicine while the FDA addresses products. Addressing these issues to serve patients and the public will require robust information systems (Theme 9) and trusted organizational systems (Theme 10). Public organizations and non-governmental organizations might consider partnerships to provide unbiased information.