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**Common Metrics Implementation**

# CAREERS IN CLINICAL AND TRANSLATIONAL RESEARCH CHANGE PACKAGE



*Career development of clinical and translational scientists*

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# Section 1 | Introduction & Background

The Clinical and Translational Sciences Awards (CTSA) Consortium, led by the National Center for Advancing Translational Sciences (NCATS), is charged with accelerating and improving clinical and translational research. So far, the potential of the CTSA Program is only partially realized. In order to maximize the Consortium's impact, NCATS has implemented the Common Metrics Initiative, which employs a set of common metrics for use in collaborative management based on the principles of the Results-Based Accountability (RBA) framework. The Common Metrics Initiative is using a set of common metrics to help to focus activities as a network and at the individual CTSA hubs on making significant improvements in research translation and workforce development. This change package outlines potential strategies for hubs to use as they begin or advance strategic management efforts for Careers in Clinical and Translational Research.

## What is a Change Package?

A change package is a concise and practical document that includes ideas and inspiration for teams seeking to apply methods to increasing the effectiveness and efficiency of their processes and outcomes. Change packages focus on a specific metric or process, and generally include background material; a summary of evidence or best practices; and specific strategies, tools and examples that can be applied to the work.



## How Was This Change Package Developed?

This change package was informed by research findings when available, as well as strategies implemented or planned by CTSA hubs participating in the Common Metrics Initiative. It will be revised as additional learning surfaces.

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## Strategic Management Method

The work of hub teams participating in the Common Metric Initiative is guided by the Results-Based Accountability framework. Developed by Mark Friedman and described in his book *Trying Hard is Not Good Enough*, RBA is used by organizations to improve the performance of their programs or services. RBA starts with ends and works backward, towards means. RBA provides a step-by-step process to get from ends to means. This process is called "Turn the Curve" thinking.

Hubs in the Common Metric Initiative use Scorecard software to enter and graph their common metric results and facilitate their Turn the Curve planning process.

An example Turn the Curve plan for the Careers in Clinical and Translational Research Common Metric is provided here.



Turn-the-Curve Planning
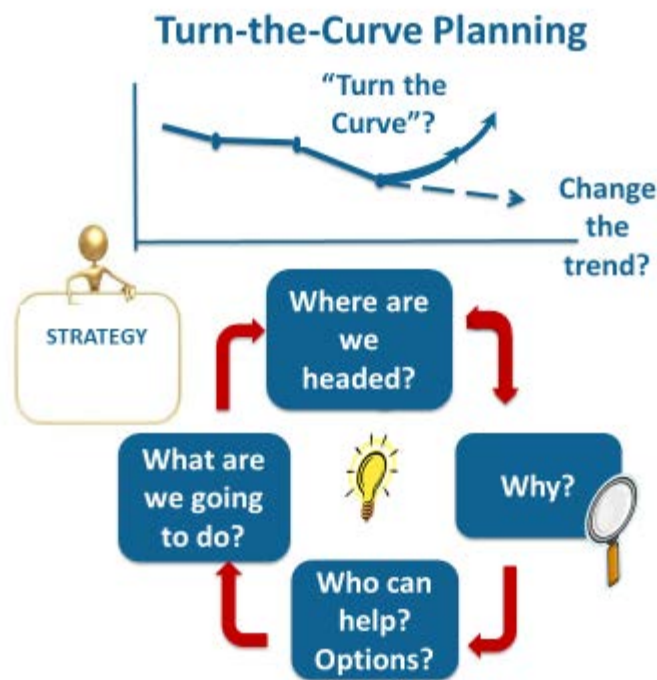
# Section 2 | Careers in Clinical and Translational Research Driver Diagram

An initial driver diagram for the Careers in Clinical and Translational Research (CTR) metric is depicted on the next page.

A Driver Diagram is a visual depiction of the theory behind an improvement effort—a roadmap of sorts. It illustrates the linkages between an overall aim (in this case, improving the number and percent of institutional scholars and trainees who complete the KL2 and TL1 programs who are engaged in CTR, and the number and percent of institutional scholars and trainees who are women or under-represented persons who are currently engaged in CTR), drivers (facilitating factors that, if present, can help achieve the aim), and the strategies that can help you get there (like those included in this Change Package).

7 drivers were identified during work with the hubs participating in the Common Metrics Initiative who elected to work first on CTR. They are:

1) Scholars receive high-quality mentorship

2) Resources specifically for career development are provided

3) Networking is facilitated between current scholars, alumni, and other successful CTR researchers in their discipline

4) Scholars develop research skills

5) Scholars receive exposure to and training in team science

6) Recruitment, marketing, and applicant review strategies target more diverse applicants

7) Graduates and their career statuses are tracked over time

Over time, the initiative will likely identify additional drivers and strategies that will lead to improvement and the driver diagram will be updated.

# Careers in Clinical and Translational Research Driver Diagram v2.0

| Drivers |
|---|

| Strategies |
|---|

**Common Metric Aim**

Improve:
- the number and percent of institutional scholars and trainees who completed the KL2 and TL1 programs, respectively, who are currently engaged in clinical and translational research (CTR).
- the number and percent of institutional scholars and trainees who are women or under-represented persons (URPs) who completed the KL2 and TL1 programs, respectively, who are currently engaged in CTR.

**1. Scholars receive high-quality mentorship**

- Provide mentorship for guidance, support, resources, connections, and funding
- Help develop mentor networks rather than hierarchical dyads
- Add a category to faculty profiles that designate which faculty have a focus on and expertise with mentoring underrepresented persons (URPs)
- Offer mentorship training to mid-career and early senior faculty
  - Incorporate implicit bias training into mentor training
  - Ensure that all mentors learn strategies to advise on career-life balance
- Identify and select for generic and CTR-specific mentor competencies
- Provide monetary support for mentors; acknowledge mentoring toward promotion
- Develop systems for mentor accountability
- Evaluate and give feedback to mentors

**2. Resources specifically for career development are provided**

- Conduct a pre-KL2 application session to provide information about institutional career development, answer questions
- Provide career development seminars and activities that emphasize necessary pace and steps in progression to independence
- Provide scholars with opportunities for external experiences (externships, etc.)
- Partner with Research Administration and Development Office staff to create systems to identify and communicate funding opportunities
- Survey or interview program graduates on strategies they found helpful
- Require scholars to develop/implement a personal professional development plan
- Provide training in: Negotiation skills, Maintaining work-life balance, Maintaining career trajectory after an absence from academia, and Resilience to respond to career criticism or rejection
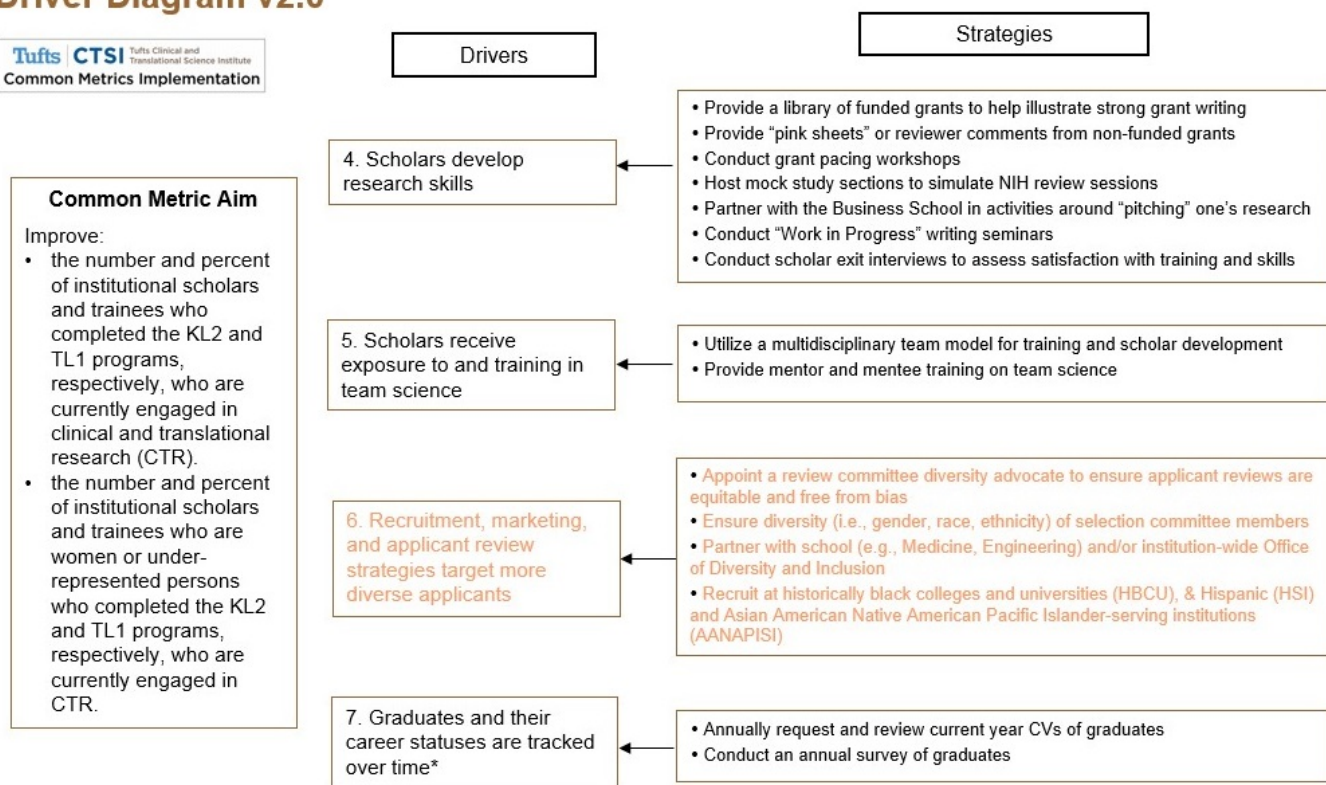
**3. Networking is facilitated between current scholars, alumni, and other successful CTR researchers in their discipline**

- Host a networking seminar of incoming scholars, current scholars and alumni to share suggestions about being a KL2 scholar
- Provide a Networking Forum for trainees and alumni to interact
- Hold regular "Lunch and Learn" or other sessions for K cohort support
- Provide encouragement or support for scholars to attend national events for networking
- Assist scholars to identify networking opportunities that best fit their needs
- Develop special interest groups for people from underrepresented backgrounds so that they can act as peer mentors to each other
- Provide opportunities for Information Networking (e.g., helping identify funding opportunities) to increase recruitment and reduce attrition of URPs
- Ensure women and URP seminar speakers to represent having a research career

Interventions do not need to be obviously gender- or race-specific. However, these strategies may contribute specifically to meeting the Common Metric Aim for women and URPs.

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# Careers in Clinical and Translational Research
# Driver Diagram v2.0

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**Drivers**

**Strategies**

### Common Metric Aim

Improve:
- the number and percent of institutional scholars and trainees who completed the KL2 and TL1 programs, respectively, who are currently engaged in clinical and translational research (CTR).
- the number and percent of institutional scholars and trainees who are women or under-represented persons who completed the KL2 and TL1 programs, respectively, who are currently engaged in CTR.

**4. Scholars develop research skills**

- Provide a library of funded grants to help illustrate strong grant writing
- Provide "pink sheets" or reviewer comments from non-funded grants
- Conduct grant pacing workshops
- Host mock study sections to simulate NIH review sessions
- Partner with the Business School in activities around "pitching" one's research
- Conduct "Work in Progress" writing seminars
- Conduct scholar exit interviews to assess satisfaction with training and skills

**5. Scholars receive exposure to and training in team science**

- Utilize a multidisciplinary team model for training and scholar development
- Provide mentor and mentee training on team science

**6. Recruitment, marketing, and applicant review strategies target more diverse applicants**

- Appoint a review committee diversity advocate to ensure applicant reviews are equitable and free from bias
- Ensure diversity (i.e., gender, race, ethnicity) of selection committee members
- Partner with school (e.g., Medicine, Engineering) and/or institution-wide Office of Diversity and Inclusion
- Recruit at historically black colleges and universities (HBCU), & Hispanic (HSI) and Asian American Native American Pacific Islander-serving institutions (AANAPISI)

**7. Graduates and their career statuses are tracked over time***

- Annually request and review current year CVs of graduates
- Conduct an annual survey of graduates

*Tracking will not change the underlying rate at which they are engaged in CTR, but is necessary in order to collect the data for the Careers metric and understand the Story Behind the Curve

Interventions do not need to be obviously gender- or race-specific. However, these drivers and strategies may contribute specifically to meeting the Common Metric Aim for women and URPs.

# Section 3 | Strategies & Examples

## Strategies

Starting on the next page are specific examples for a number of the strategies in the driver diagram that may yield to improvement at the level of a CTSA hub. These strategies are organized around the drivers outlined above.

A Strategy answers the question "What are we going to do?" [to Turn the Curve].

--Phil Lee, Clear Impact

**STRATEGY**

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# DRIVER: SCHOLARS RECEIVE HIGH-QUALITY MENTORSHIP

## EXAMPLE STRATEGIES

**Rationale:**

The availability of outstanding mentors has been proposed as an essential means of ensuring a pipeline for training researchers and for recruiting and retaining clinician-scientists. (Feldman, et al)

However, it is very improbable to find a single person who can fulfill all the diverse mentoring needs of another individual.
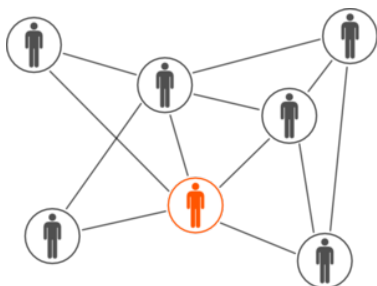
The University of Utah CCTS Matrix Mentoring Model moves away from "dyadic mentoring", allowing an individual to create a network where different mentors contribute unique skills and empowers individuals, especially women and URPs, with tools to thrive in academic medicine. A presentation about the model is here; a published article is here.

Designed to create national networking opportunities for underrepresented minorities, the National Research Mentoring Network links skilled mentors from various disciplines with diverse mentees.

University of Illinois at Chicago CCTS provides a number of mentoring resources, including best practices and tools.

Entering Mentoring training materials, developed by the Institute for Clinical and Translational Research at University of Wisconsin-Madison, for use with CTR mentors.

The UCSF CTSI Mentor Training Program is designed to train faculty to be effective clinical and translational research mentors.

A set of competencies for mentors of clinical and translational scholars is outlined here.

The Mentoring Competency Assessment (MCA) skills inventory has been shown to be reliable and valid. Mentoring evaluation forms developed by the University of Wisconsin Institute for CTR are available here.

# DRIVER: RESOURCES SPECIFICALLY FOR CAREER DEVELOPMENT ARE PROVIDED

## EXAMPLE STRATEGIES

**Rationale:**

Scholars and trainees reported that their overall interest in a career involving CTR increased as a result of their participation in the CTSA education and training programs.

– **Evaluation report** of CTSA program

Penn State CTSI requires a personal professional development plan as part of the KL2 application, and in the annual KL2 Progress Report.

The education and career development program at the Oregon Clinical and Translational Research Institute was designed around major inflection points in the research career trajectory.

A number of CTSA institutions are participating in the NIH-funded BEST (Broadening Experiences in Scientific Training) program; an effort to explore ways of improving biomedical career development. Information provided by Emory University about BEST is available here.

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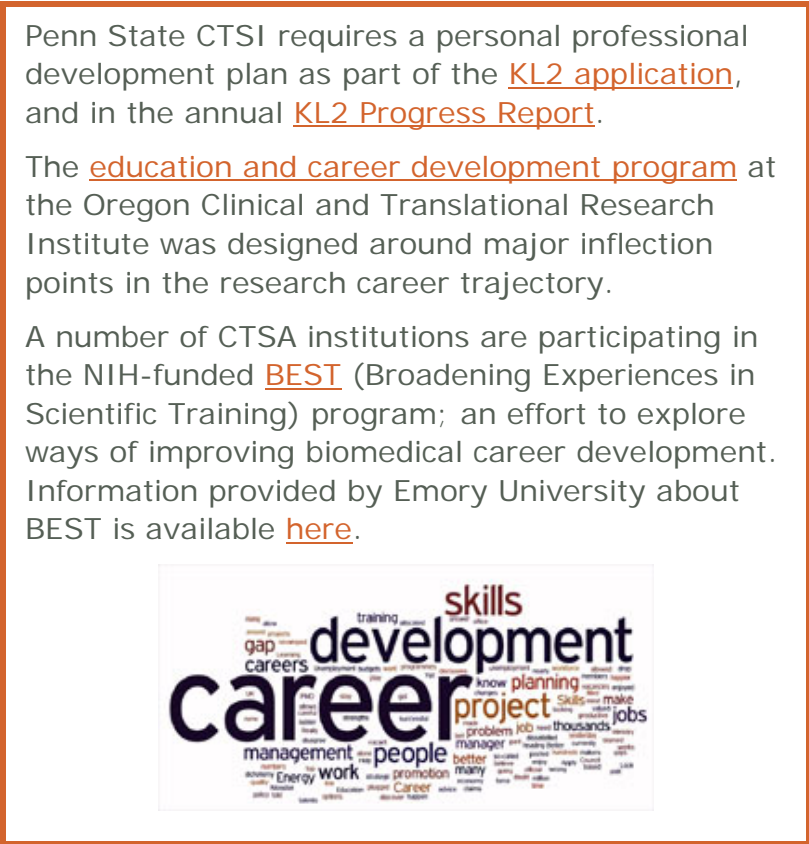
# DRIVER: NETWORKING IS FACILITATED BETWEEN CURRENT SCHOLARS, ALUMNI, AND OTHER SUCCESSFUL CTR RESEARCHERS IN THEIR DISCIPLINE

**Rationale:**

Networking can help the scholar or graduate make connections and form collaborations; develop new insights, perspectives, and approaches; and increase visibility and build their CV.



# EXAMPLE STRATEGIES

The Network for Women in Science program provides support, guidance, and opportunity for female scientists at Scripps Research Institute.

The University of Pittsburgh developed the Sunrise Series, an early morning venue for women faculty, fellows and students to network across schools and departments.

NCATS has started a LinkedIn page to feature KL2 scholars who have led innovative projects in the areas of workforce development, lifespan, methods and processes, collaboration and engagement, and informatics.

New York University CTSI hosted a Science Café to encourage researchers at the medical center to collaborate with researchers from engineering.
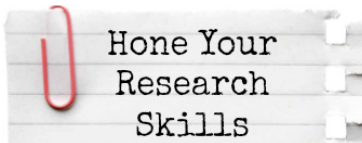
**Networking**

Interacting with others to exchange information and develop professional or social contacts.
    --Oxford English Dictionary

# DRIVER: SCHOLARS DEVELOP RESEARCH SKILLS

**Rationale:**

The ability to develop and maintain a CTR career requires skills to conduct, interpret, evaluate and apply research.



## EXAMPLE STRATEGIES

The Vanderbilt Institute for Clinical and Translational Research provides a grant pacing workshop to help scholars learn to coordinate all elements of grant preparation.

The Penn State CTSI leverages offerings of the business school to provide scholars a chance to learn to "pitch" their research.

# DRIVER: SCHOLARS RECEIVE EXPOSURE TO AND TRAINING IN TEAM SCIENCE

**Rationale:**

CTR generally requires an interdisciplinary approach. Scholars benefit from team membership, collaborations across interdisciplinary boundaries, and learning to address complex or challenging problems that require integration across multiple disciplines.

## EXAMPLE STRATEGIES

The UTMB Institute for Translational Sciences utilizes a Multidisciplinary Translational Team (MTT) model for training and development of translational research investigators. An article about the MTT is here.

Exposure to team science, a key strategy in clinical and translational research, is uneven.
--2012 CTSA National Evaluation Final Report

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## DRIVER: GRADUATES AND THEIR CAREER STATUS ARE TRACKED OVER TIME

**Rationale:**

Tracking graduates and their current involvement in research will not change the underlying rate at which they are engaged in CTR, but is necessary in order to collect the data for the Careers metric and understand the Story Behind the Curve.



## EXAMPLE STRATEGIES

The web-based electronic Rockefeller University Graduate Tracking Survey System can be used to track the careers and accomplishments of graduates in a comprehensive and standardized manner.

Developed by Weill Cornell CTSC, PROMPTR, a component of WebCAMP, supports alumni surveys in which KL2, TL1 and other training program graduates can be followed over time with questions about current involvement in research.

The Careers Metric Worksheet provides an example of how to calculate the Careers in Clinical and Translational Research Common Metric.

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