

Sling Health Didactic Segment & Group Learning Exercise

“Identifying Clinical Problems and Needs-Oriented
Innovation Opportunities”

Sling Health: Our Story and Mission

- Est. in 2013 in STL by medical students to make healthcare entrepreneurship more attainable for medical trainees
- Developed an 8-month-long program for students to form teams and solve pressing clinical problems with coordinated mentorship from industry and clinical medicine
- National network includes 11 Sling Health chapters at 16 top universities
- Collaborators with the AMA to further promote entrepreneurial opportunities for medical students
 - Clinical Problem Database (CPD)



Launching Medical
Technology Entrepreneurs

Our Objective Today

1. **To introduce the concept and practice of writing Need Statements**
 - a. Critical initial step in need-oriented entrepreneurial, innovation, and quality improvement (QI) initiatives
2. **Empower student attendees to identifying opportunities to improve healthcare through entrepreneurship, innovation, and QI**

Why the MSS?

- **Medical students are uniquely positioned to gather critical insights to the comprehensive care experience as experienced by each key stakeholder**

Why Start with a Need?

Starting with an unmet clinical need is paramount to assuring innovations solve real medical problems and protect against expensive technologies that drive up cost without adding value to patient care

“The best way to get startup ideas is not to try to think of startup ideas. It’s to look for problems.”

- Paul Graham (Y-combinator)

What is a Need Statement?

“Need statements articulate the problem and the change in outcome that is required to satisfy the clinical dilemma” - Stanford Biodesign

Includes three essential components:

- 1) Problem
- 2) Impacted population
- 3) Targeted Change in Outcome

Examples:

- Need: *“A way to prevent urinary tract infections in ICU patients that decreases hospital stay” - Stanford Biodesign*
- Need: *A way to remotely monitor the progression of AMD that is proficient and convenient for the patient to use.*

Step 1: Develop a Point of View

1

Identify Stakeholders

Be mindful of each group's unique perspective and experience.

2

Observe Patterns

What are providers always struggling with?
What do patients constantly complain about?
What risk factors are frequently mentioned?

4

Critically Reflect

Have you observed recurrent negative outcomes? Explore ways to shorten the clinical learning curve. Identify problems faced by both students and senior providers.

5

Interview

Engage each stakeholder. Ask what their greatest challenges are.
Don't ask their opinion on a solution -- ask about their specific problems.

6

Read

Brainstorm ways to bring cutting edge diagnostics and therapeutics to care.

Real-World Example

Observations:

- Difficulty advancing biliary stents
- Claimed discomfort over many ERCP procedures

Problem: Physicians experience pain in their hands, neck, and back due to manual advancement of stents through an endoscope. Over many repetitions, this can lead to cumulative trauma disorders and/or shortened practice.

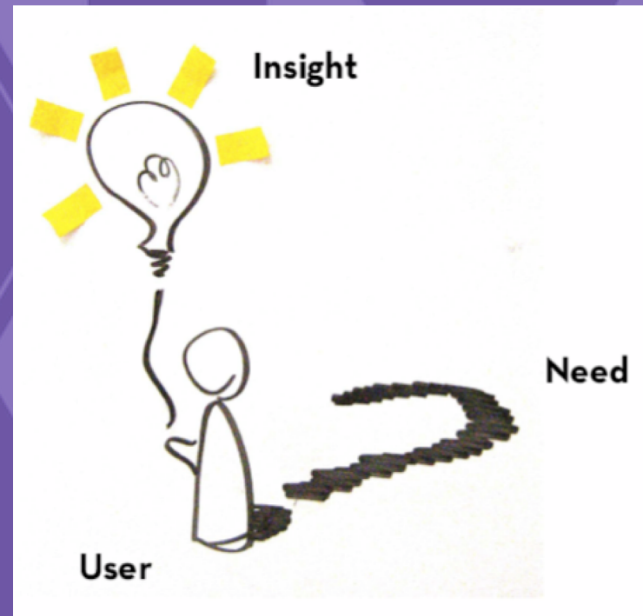


Step 2: Develop a Need Statement

Generic Format: A way to address [problem] in [population] that [outcome]

Characteristics of a Good Need Statement

- “Solution Free”
- Actionable
 - Avoid overarching Need Statements
- Appropriate Scope
 - Don't limit the range of possible solutions
- Not stuck in current practice
- Based on observation, not speculation
 - Validate your Need Statement -- it's an iterative process!



Pitfalls of Poor Need Statements

Solution Embedded: A urinary catheter that decreases the incidence of urinary tract infection in ICU patients

- Limited scope for potential solutions (only considers catheters)

Too Broad: A way to improve outcomes of spine surgery

- Not actionable; outcome is ambiguous and not quantifiable

Stuck in Current Practice: A way to close sternotomy that reduces risk of sternal-wire breaking

- Limited scope for potential solutions

Real-World Example

- A way to assist the endoscopist in advancing stents that reduces cumulative trauma and improves longevity of practice

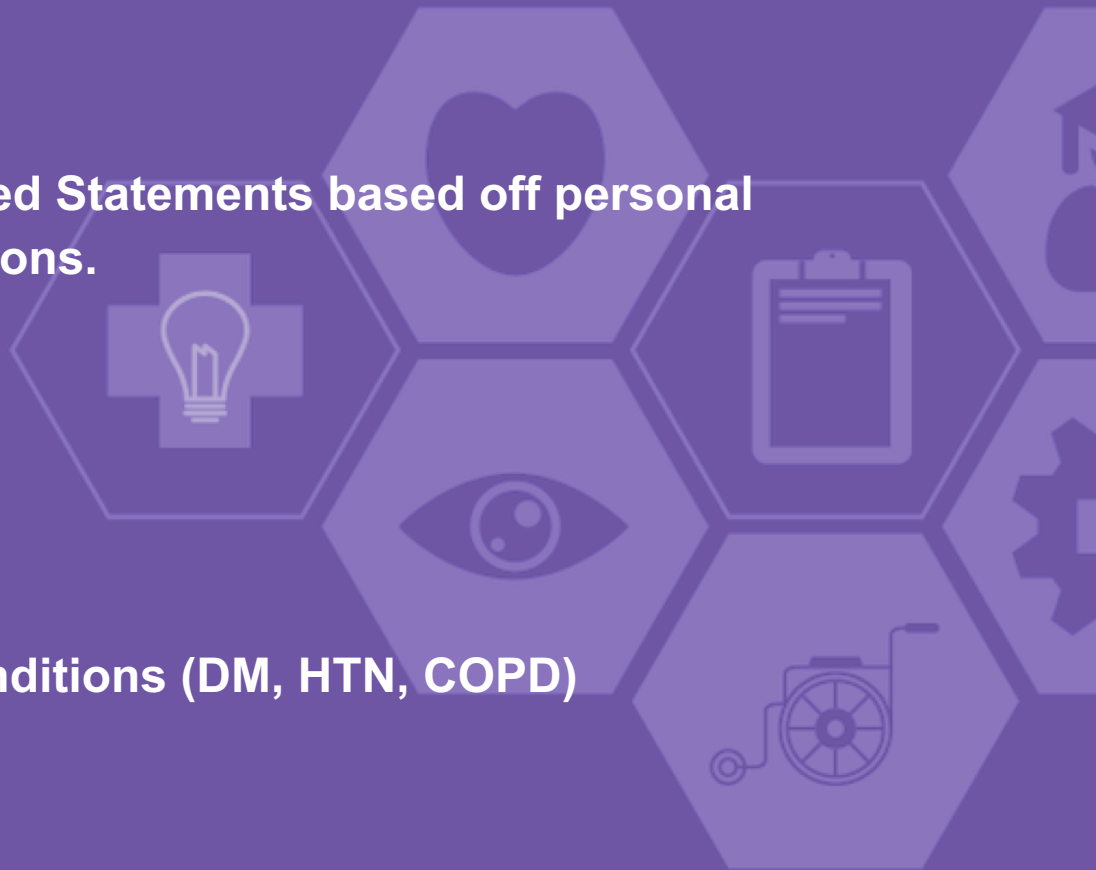


Audience Exercise

Assemble into groups. Write Need Statements based off personal experiences/first-hand observations.

Potential Topic Areas:

- Cardiovascular Health
- Surgery
- Mental Health
- Management of Chronic Conditions (DM, HTN, COPD)
- End of Life Care



End; Extra Slides Below

Keys of a Good Need Statement

- Based on observation, not speculation
 - Validate your Need Statement -- it's an iterative process!
- “Solution Free”
- Appropriate Scope
 - Don't limit the range of possible solutions
- Embraces constraints

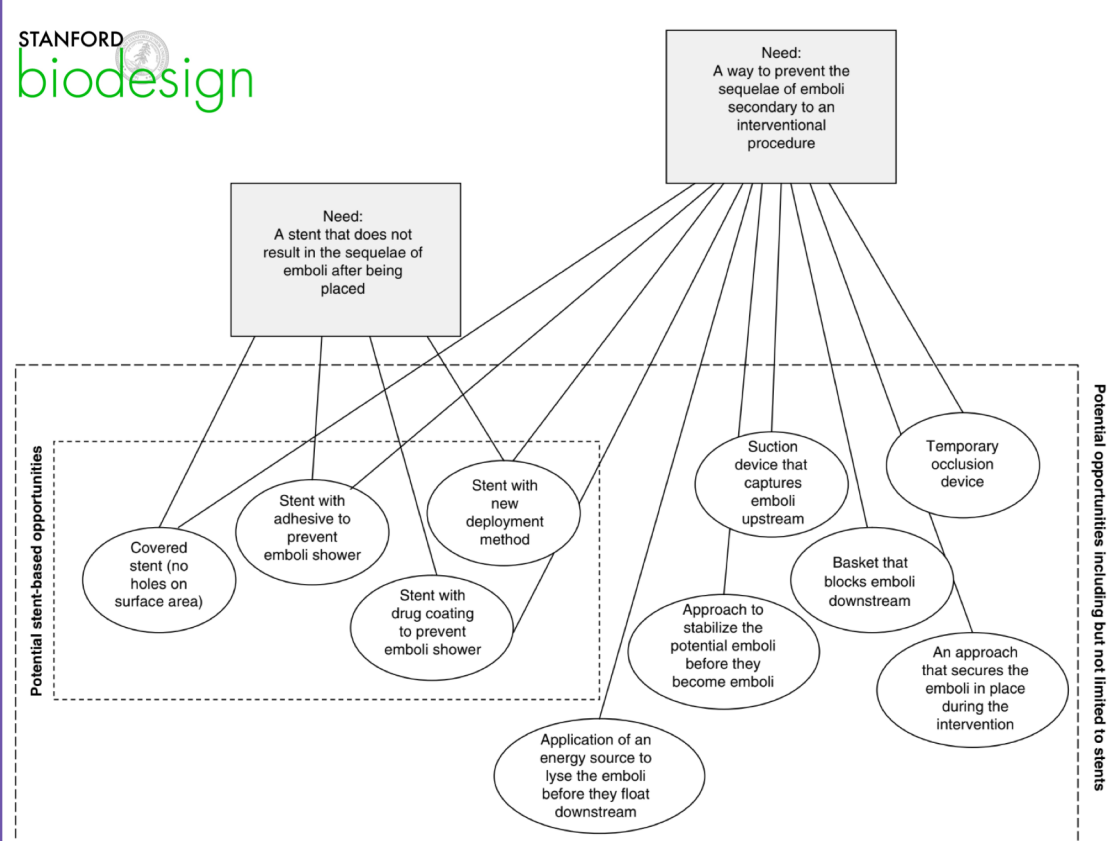
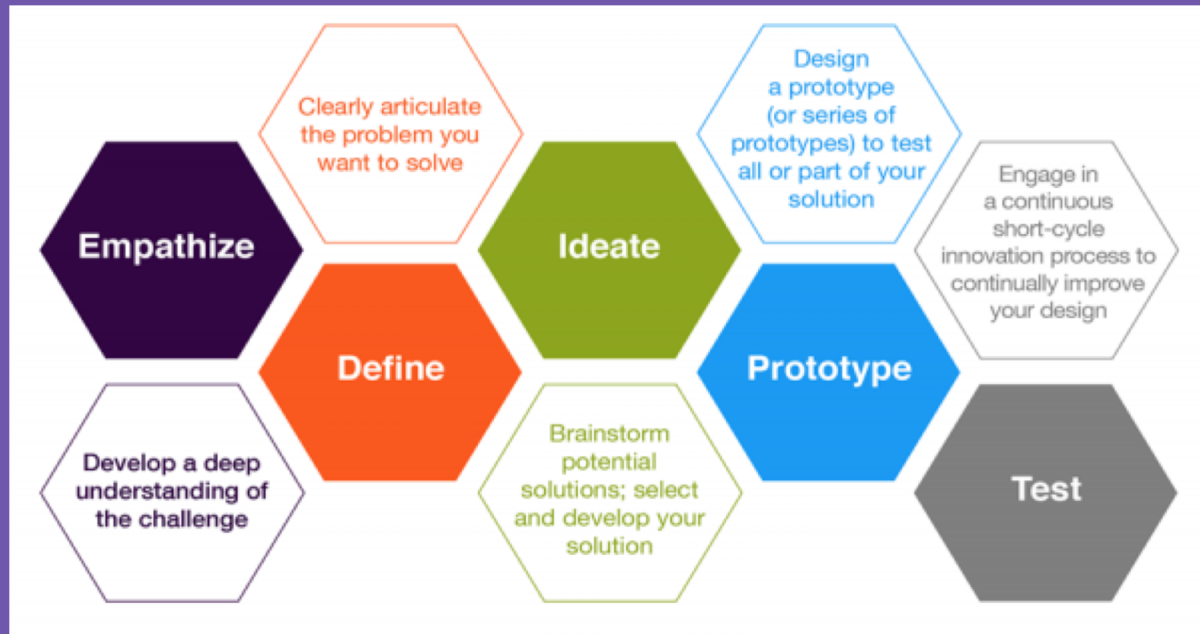


FIGURE 1.3.1

Embedding a solution within a need can dramatically limit the number and types of solutions that an innovator eventually explores.



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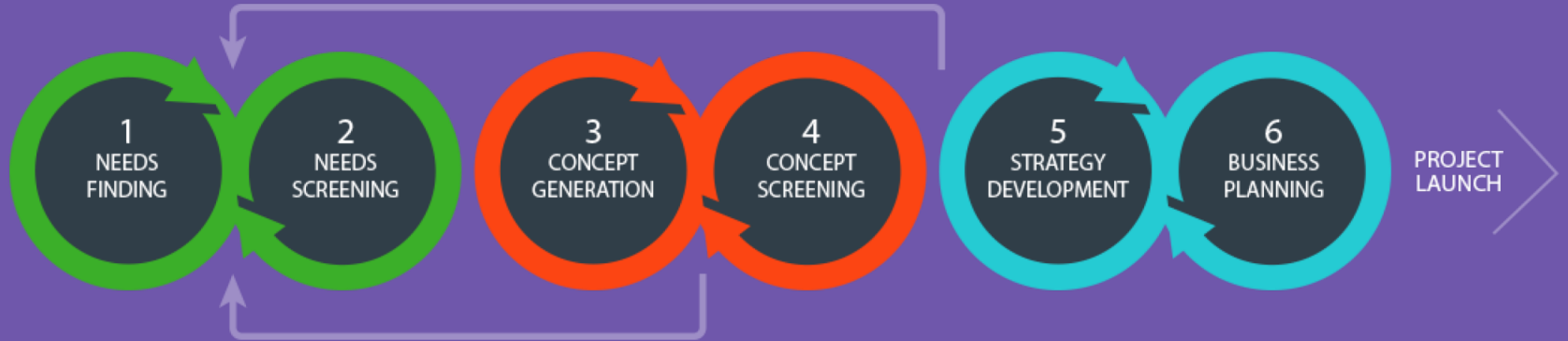
PHASES

IDENTIFY

INVENT

IMPLEMENT

STAGES



STANFORD BYERS CENTER FOR
BIODESIGN

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Research saying we need clinical innovators

<https://jamanetwork-com.ezp-prod1.hul.harvard.edu/journals/jama/article-abstract/1669828>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4424228/#CR11>

Couldn't really find something like they had suggested in the email

