



## **Baxter Challenge 2019-20**

### **Background:**

Every day, millions of patients and caregivers rely on Baxter's leading portfolio of critical care, nutrition, renal, hospital and surgical products. For more than 85 years, we've been operating at the critical intersection where innovations that save and sustain lives meet the healthcare providers that make it happen. With products, technologies and therapies available in more than 100 countries, Baxter's employees worldwide are now building upon the company's rich heritage of medical breakthroughs to advance the next generation of transformative healthcare innovations.

We also strive to make a meaningful difference in the lives of people who depend on our products, and in the communities where our employees live and work. The Baxter International Foundation helps advance our mission by partnering with organizations around the world to increase access to healthcare for the underserved, develop the next generation of innovators who will lead the way in advancing healthcare and to create a long-lasting impact in communities globally.

Baxter launched AMIA with SHARESOURCE, the first Automated Peritoneal Dialysis (APD) system with user-friendly features that help guide end-stage renal disease patients through home peritoneal dialysis (PD) therapy, while keeping them remotely connected with their healthcare providers. The use of water in this therapy and in many of their other products and manufacturing makes Baxter keenly aware of the importance of water in their work across the world. Another area of innovation for Baxter is clinical nutrition and the effect on patient outcomes. When medical conditions prevent patients from adequately feeding themselves, Baxter has a broad portfolio of life-saving clinical nutrition products and services. Nutrition is also a foundation for preventive care. For those reasons, Baxter has chosen to focus on the role of nutrition and reliance on clean water for their 2019-20 STEM Challenge.

### **Why Nutrition?**

Nutrition and Malnutrition are a key priority for The Baxter Foundation under its Increasing Access to Healthcare pillar.. Having access and awareness to nutritious choices is not readily available in some communities. Nutrition is more than just what you consume, it can also be a critical tool to prevent diseases such as diabetes. According to a CDC report more than 100 Million adults in the U.S are living with diabetes or prediabetes. People living with diabetes are at an increased risk of serious health complications including premature death, vision loss, heart disease, stroke, kidney failure, and amputation of toes, feet, or legs.

### **Reliance on Clean Water**

Some patients impacted by diabetes can develop kidney disease and even kidney failure. Kidney disease is the gradual loss of kidney function that results from a long-term disease and although it cannot be reversed, it can be treated. Baxter has been a pioneer in renal care and provides a variety of systems to allow patients around the world access to the appropriate



treatment. On-demand peritoneal dialysis (PD) offers a new solution for at home patient care. The innovative system is designed to improve the patient experience by making PD solutions in small batches in the patient's home. The on-demand technology uses a small water filtration device, concentrates and Baxter's Amia Automated Peritoneal Dialysis System to turn patient's tap water into dialysis solution, as it is needed to complete each therapy session. Unfortunately, not everyone has access to clean water, which is essential for making this treatment possible.

Nurturing a culture of innovation is critical to delivering Baxter's mission to save and sustain lives. They partner with world-class institutions, clinicians and scientists to continually find more efficient and smarter ways to help solve the healthcare industry's most pressing challenges. Here is where you, the student, comes in.

### **The Baxter Challenge**

**Problem Statement:** You are being recruited to assist in the development of new technologies to improve patient health outcomes through nutrition and access to clean water. Select one of the following options and challenge yourself to think creatively about the possible solutions.

**Option 1.** Pilot an innovation that focuses on nutrition as preventative care to address diabetes.

- **Think** about what barriers may play into poor nutrition.
- **Consider** how social determinants, geography, or access may prevent better practices.

**Phase 1:** Research the health side effects of diabetes and potential consequences if mismanaged. Observe which populations are most affected and WHY? Connect this with nutrition - how is diabetes impacted by nutritional factors?

**Phase 2:** Research nutritional programs happening locally and globally to prevent disease or increase awareness on healthy choices.

**Phase 3:** Define a population you will target and why you have selected those people? Consider how this problem may affect you, your family, your local community and other populations globally.

**Phase 4:** Create an innovation to work toward diabetes prevention. You can create an app, community campaign, or think about how to solve the problem through telemedicine/digital health solutions.

**Phase 5:** Get feedback from peers or community members and refine your idea.

**Option 2.** Create a home based or portable device that can be used to filter water used in PD solutions.

- **Think** about the volume of water needed for each solution

- **Consider** products that may already exist. How would yours be different to specifically meet the patient need?
- **Consider** how this solution might be implemented both in areas with good infrastructure (i.e. publicly supplied power and water) as well as underdeveloped areas where those resources may not be present.

**Phase 1: Research PD to gain a better understanding of the types of equipment and solutions needed to perform the therapy.** Think about how the solutions used in the therapy are currently manufactured and delivered to patients, and the demands on the patient to store those solutions. How might you improve upon the current situation?

**Phase 2: Research barriers to clean water both locally and globally.** Who is most affected? What patterns do you notice about access to water? How are organizations working to combat these barriers?

**Phase 3: Explore existing technology and evaluate compatibility with the PD System.**

**Phase 4: Sketch, design, and prototype your idea to look for feasibility and practicality.**

**Phase 5: Evaluate the cost of materials, device manufacturing costs and how they would impact your solution.** Consider how you would deploy your solution and the challenges you may face in delivering your solution to patients.

**Phase 6: Test your solution.**

**Helpful resources for further background-**

<https://www.baxter.com/patients/nutritional-care>

<https://www.baxter.com/baxter-newsroom/baxter-starts-us-clinical-trial-demand-peritoneal-dialysis-solution-system>

<https://renalcare.baxter.com/therapies/peritoneal-dialysis>

<https://www.mayoclinic.org/diseases-conditions/type-2-diabetes/symptoms-causes/syc-20351193>