



**“Sepsis still lacks a targeted therapy, with clinicians relying primarily on antibiotics and supportive care. Antibiotics are, however, not always effective in reversing disease, and my mission is to find a solution.”**

MICHAEL DONNINO, M.D.

As director of BIDMC's Center for Resuscitation Science, he leads a large multidisciplinary team that is focused on developing alternative interventions to improve patient survival and reduce organ damage.

The concept of using vitamins as an adjunct treatment builds on Donnino's research of more than a decade. Focusing on vitamin B1 (thiamine) levels in critically ill sepsis patients, he found that individuals with the disorder may be predisposed to a deficiency, which can have detrimental health effects. He postulated that giving thiamine to these patients might help improve metabolism when facing septic shock's destructive cascade of symptoms.

This intervention showed potential benefit for those with thiamine deficiency in an initial clinical trial. Donnino became even

more intrigued when Paul E. Marik, M.D., chief of pulmonary and critical care medicine at Eastern Virginia Medical School, called to share his own preliminary results: adding vitamin B to his “cocktail” treatment of vitamin C and corticosteroids substantially reduced mortality and organ injury in patients with severe sepsis.

Donnino and Marik have now joined forces on a double-blind clinical trial across 12 hospitals—which Donnino's colleague, Ari Moscovitz, M.D., will help lead—to test the combination of these three potentially synergistic, yet safe interventions.

“Because the drugs used in this therapy are inexpensive, widely available, and easy to administer, it is possible that this treatment could be used in hospitals globally,” says Heather Youngs, program officer for scientific research at the Open Philanthropy Project, which is helping to fund this trial. “We believe people have equal value regardless of where they live, so we are attracted to opportunities like this one that improve lives worldwide.”

Donnino, who is just as enthusiastic about the far-reaching promise of this BIDMC-led study, adds: “We have an opportunity to improve patient outcomes with this work. I am excited about what our results might mean for sepsis treatment.”



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THE KLARMAN FAMILY  
NEONATAL INTENSIVE CARE UNIT (NICU)



# Lifesaving

## THE KLARMAN FAMILY NEONATAL INTENSIVE CARE UNIT (NICU)

Each year, approximately one in eight babies in the United States is born prematurely, which has a profound impact on newborns and their families. These vulnerable babies often present with complex medical needs, ranging from severe breathing difficulties to underdeveloped organs, and require specialized care to give them a healthy start. The NICU provides state-of-the-art, family-centered care for approximately 1,000 high-risk newborns and their families each year. New mother and BIDMC patient Chelsea shares her story below.

**My name is Chelsea, and I am an aerospace engineer and proud mom from Cambridge, Massachusetts. Here is my BIDMC lifesaving story.**

I once heard a fellow preemie parent describe the NICU experience as “the best worst thing and the worst best thing.” I’ve really come to appreciate just how true those words are.

I was terrified when my water broke just 30 weeks into my pregnancy. And I was devastated when I found out I’d have to spend the remaining days of my pregnancy confined to the hospital. But fortunately for us, it was BIDMC—a hospital with world-class obstetricians, gynecologists, and maternal-fetal medicine physicians, and equally important, a team of the most caring and capable nurses anywhere.

I was elated when Jacob was born, kicking and screaming—only three pounds and three ounces but very feisty. He (and we) would have a long road ahead, requiring weeks in the NICU. The Klarman Family NICU became far more than a hospital unit; it was our second home.

Over the next 47 days, we paced our lives to the rhythm of the NICU, listening to the endless beeps and alarms. We learned to speak a new language with words like “gavage,”



**Chelsea and her husband and son**

“CPAP,” and “isolette.” We became friends with other NICU families and heard stories similar to, and far scarier than, our own. We laughed, we cried, and we worried constantly. But most of all, we celebrated each passing milestone: No more respiratory support! First smile! Photo with Santa! First bath! Moving to an open crib! Successful surgery! Feeding on demand! And finally—going home!



**Chelsea’s son, Jacob, once a BIDMC patient in the NICU**

Looking ahead, I cannot think of a more fitting culmination to this story than giving back to a hospital that made my family complete. I look forward to raising money for BIDMC by running the 2019 Boston Marathon as part of Team BIDMC and honoring the city where it all began.

Ultimately, it will be a celebration of the journey home—once measured in grams and milliliters, and now in footsteps and miles. Thank you BIDMC for completing my family.

**“As we celebrate Jacob’s first birthday, there is so much to be grateful for—a healthy and thriving baby, the wonderful community that gave us tremendous love and support, and the amazing BIDMC medical team that made this milestone possible for our family.”**

CHELSEA, GRATEFUL PATIENT AND MOM



## SOLVING SEPSIS

**Michael Donnino, M.D., is leading a landmark clinical trial**

Could vitamins save lives? BIDMC’s Michael Donnino, M.D., hopes to prove they can. He is leading a new large-scale clinical trial testing a simple “cocktail” of vitamins and steroids to treat sepsis—an often-deadly complication from infection. The study aims to demonstrate this combination therapy could change the standard of sepsis care.

Each year almost 300,000 of the 1.7 million Americans who contract sepsis do not survive. With a clinical practice that spans both BIDMC’s intensive care unit and emergency department, Donnino has ample firsthand experience with the life-threatening response to infection, which is the third leading cause of death in hospitals. Patients of all kinds are at risk. “Sepsis may be the ultimate cause of death for patients with chronic diseases such as Parkinson’s disease or cancer,” notes Donnino. “But, sepsis can lead to death and serious morbidity in young and healthy people as well.”

*Continued on back*