Joslin Care
A team approach
A world of difference
It takes a team

When Rita Bridges developed diabetes at age 66, this Reading resident knew what to do. "I went to Joslin, where my husband, Bradford, has been treated for more than 30 years," says Rita, now in her second year of care provided by a Joslin team. "There are many parts to treating diabetes, and I wanted my care managed by all the specialists I need. At Joslin, I see clinicians at the top of their field."
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Joslin Diabetes Center is the world’s preeminent diabetes research and clinical care organization. Joslin is dedicated to ensuring that people with diabetes live long, healthy lives and offers real hope and progress toward diabetes prevention and a cure. Founded in 1898 by Elliott P. Joslin, M.D., Joslin is an independent, nonprofit institution affiliated with Harvard Medical School.

www.joslin.org

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What does Joslin mean by “team medicine”? Team medicine is a system of care in which a group of specialists works closely together to make decisions about an individual patient’s treatment and follow-up care to achieve the best outcome.

When did Joslin adopt the team model of care? The concept started with our founder, Dr. Elliott P. Joslin, who realized diabetes is a complex disease and people with diabetes need care from a team who understands that complexity. Today, the diabetes healthcare team consists of specialists from a wide range of areas where expertise is important to diabetes care.

What are the main components? A host of factors must come together to achieve good management of type 1 and type 2 diabetes—insulin and oral medication, nutrition, exercise, weight loss, behavioral counseling, glucose monitoring, insulin pumps, care of the eyes, kidneys and cardiovascular system—all done within an educational context to give patients effective tools to self-manage their diabetes. At Joslin, we integrate all diabetes specialties into a team model of care. Our patients get the best of all worlds.

What has Joslin recently brought into the team picture? Behavioral health now has greater prominence in the team model. Today we proactively provide each new patient an introductory visit with one of our counselors to talk about the psychological challenges of diabetes and to acquaint them with our support services.

We’re also creating teams to deliver appropriate cultural care to unique populations such as Asian Americans, Latinos and Blacks. And in another new program, we are helping young adults make a smooth transition from pediatric care to their new adult care team.

What about technology’s role in team medicine? Devices such as insulin pumps and continuous glucose monitors can help patients gain greater control of their blood glucose. But they also require a lot of hands-on instruction, monitoring and follow-up care. A team approach does that best.

How is Joslin shaping online approaches? Because the world looks to Joslin for the latest information on diabetes research and care, in many ways our teams are coaching an international audience of healthcare specialists, patients and families. We are continuously expanding our web-based presence to support that key communications function.

For our patients, we provide online social networks. And our eye specialists have teamed up with clinicians in other parts of the world to evaluate their patients’ retinal images, transmitted to Joslin.

Looking to the future, the power of the web has tremendous potential, as we develop new online tools for clinical teams to directly monitor and guide patients’ daily care. The best way to predict the future of diabetes care is to create it.
“At Joslin, we integrate all diabetes specialties into a team model of care. Our patients get the best of all worlds.”
Joslin never stands still. In addition to pioneering new diabetes treatments and technologies adopted the world over, our clinicians offer specialized care for every phase of life, from the youngest patient through geriatric care, with every step along the way supported by a dedicated diabetes team.

Replicating the pancreas

Patients with type 1 diabetes have probably wondered, “Why can’t someone invent a device to replace the pancreas?” In essence, this device would sense a person’s blood glucose level, determine how fast it’s rising or dropping, then maintain the appropriate amount of insulin in the bloodstream, just like the patient’s pancreatic beta cells used to do before they stopped working.

“We’re getting closer to creating that ideal,” says Howard Wolpert, M.D., who oversees two Joslin programs centered on new technologies—insulin pumps and continuous glucose monitors—designed to intensify patients’ control over blood glucose levels.

Insulin pump

People of all ages with type 1 diabetes, as well as some with type 2 diabetes, use insulin pumps. But before getting an insulin pump, patients first learn how to care for their diabetes and get used to injection therapy. With that understanding in hand, they may wish to switch to an insulin pump.

At Joslin, a specialized team is ready to help: physicians, Certified Diabetes Educators including nurse educators, dietitians and exercise physiologists, as well as support staff with state-of-the-art expertise in insulin pump therapy.

The insulin pump program at Joslin is the largest in the world, caring for patients of
all ages, including some of the youngest and oldest pump users in the United States. In addition to the adult program, Joslin offers a pediatric pump program for children.

Insulin pumps replace the need for periodic injections. About the size of a cell phone, they deliver insulin continuously through a catheter. Patients need to change the catheter site every two or three days.

The pump sends out a steady amount of insulin to maintain a basal level, calculated according to a person’s individual needs. When more insulin is needed to act on rising blood glucose, such as after meals, the patient pushes a button, prompting the pump to squirt more insulin through the catheter.

Insulin pumps offer certain advantages. They can keep blood glucose levels within target ranges both day and night—a prime goal of all diabetes patients. They deliver insulin more accurately and often improve A1C, the blood test that measures a patient’s diabetes control over a period of time.

Pump users have greater flexibility about when and what they eat, and they can exercise without having to eat large amounts of carbohydrates. “We find the pump reduces wide glucose fluctuations including severe hypoglycemia, or low blood glucose episodes,” says nurse educator Suzanne Ghiloni, R.N., B.S.N., C.D.E.

“It can take more work, including carbohydrate counting at meals, but tends to offer better glucose control,” she adds. “Nonetheless, it’s a personal choice. People who use insulin injections also can manage their diabetes successfully.”

Continuous glucose monitor

All people who use insulin, whether with the pump or injections, need to monitor their glucose levels. A new digital device called the continuous glucose monitor (CGM) is revolutionizing that key function, providing a continuous record of blood glucose levels and giving patients more data to manage their diabetes.

The CGM reading is more closely aligned with glucose levels in the brain, so patients are better attuned to avoid the dangerous cognitive episodes associated with severe hypoglycemia.

About the size of a smartphone, the monitor is worn close to the body, or in some cases is incorporated into an insulin pump. A sensor, which is inserted just under the skin, measures glucose levels. That’s where the math gets tricky.

“The CGM measures interstitial glucose, that is, glucose in the subcutaneous tissue under the skin, not blood glucose, on which most insulin dosing schedules are based,” Dr. Wolpert says. “It takes longer for glucose to show up in the subcutaneous tissue, up to a 30-minute lag time, so we had to compute new formulas for people reading their glucose levels on the monitor, verifying and fine-tuning these algorithms in clinical studies.”

Similar to pump therapy, patients who use the monitor need a lot of training. Since 2009, more than 500 Joslin patients have successfully adopted the monitor for their self-care. To get started, they attend classes designed to help them master the technical aspects of the device. With their diabetes team, they learn how to interpret the monitor’s readings and synchronize glucose control with meals, nutritional factors and exercise.

One advantage of the monitor is that patients can see if their glucose is going up or down. Also, the CGM reading is more closely aligned with glucose levels in the brain, so patients are better attuned to avoid the dangerous cognitive episodes associated with severe hypoglycemia.

An alarm is set to signal high or low glucose. For persons with impaired hypoglycemia awareness, the alarm can even wake them during sleep. As patients get used to the device, they tighten their personal control of the technology. Most people who use the monitor also use an insulin pump.

To determine who will do best with the monitor, Dr. Wolpert and Marilyn Ritholz, Ph.D., of the Behavioral Research Unit at Joslin, have done psychological studies. “People who have realistic expectations or are generally more self-controlled are less likely to be frustrated,” he says. “Like all technologies, it has a learning curve that flattens over time.”

To date, no single device can do both jobs, automatically monitor glucose and deliver insulin like a normal pancreas can do. “But the insulin pump and continuous glucose monitor are a major step forward,” Dr. Wolpert says. “For some patients, these technologies are transformative.”

Dynamic duo

The continuous glucose monitor is taking a lot of guesswork out of my diabetes management,” says Stephanie Smith, age 28, who has had type 1 diabetes since age 12.

She has found that the CGM technology, combined with using an insulin pump, is giving her greater control of her glucose levels, particularly before and after exercising at the gym. She especially likes being able to see which way her glucose is trending, up or down, helping her avoid episodes of hypoglycemia.

For Stephanie, the pump and monitor are a dynamic duo: “I’m achieving my best A1C levels ever.”
Total Patient Care

Patient education

The heart of JoslinCare

“T’S SO IMPORTANT FOR PEOPLE WITH DIABETES TO HAVE THE
skills to manage their own diabetes,” says Jo-Anne Rizzotto,
education is an integral part of JoslinCare™—the model of
diabetes care at the Joslin Clinic.

JoslinCare provides each of Joslin’s patients with an individualized
pathway of care based on their particular needs and empowers each
patient to self-manage the day-to-day care of diabetes. That’s why all
aspects of care at Joslin include education, from pediatrics to pregnancy
to geriatrics. Patient education is the core of the JoslinCare model.

Why there’s more at Joslin
The education staff at Joslin focuses exclusively on
diabetes, enabling them to develop a curriculum based on a high
volume of daily interactions with patients who are experiencing all the
issues related to diabetes. This level of experience is not available in a
general medical or hospital setting.

Working daily with a wide variety of diabetes patients also provides
ample opportunity to develop new classes and programs—and to find
opportunities to tailor the education offerings to the individualized
needs of patients. Joslin educators are all Certified Diabetes Educa-
tors and include diabetes nurse educators, registered dietitians and
exercise physiologists. Working as a key part of each patient’s diabetes
care team, they teach patients diabetes self-management skills and help
them incorporate those skills into their day-to-day lives.

“We are the experts in understanding the subject of diabetes,”
Rizzotto says. “But the patients are the experts in how to integrate
diabetes management into their lives.”

Many learning venues
Each year, Joslin educators teach diabetes self-management
skills to more than 15,000 patients. In addition to one-on-one con-
sultations, the educators hold more than 600 classes a year on over 25
diabetes self-management topics—all the skills a patient would need
for a complete self-care regimen—from healthy eating to complex car-
bohydrate counting, from mental health to exercise physiology, from
traditional medication delivery methods to new diabetes technologies
like insulin pumps and continuous glucose monitors.

Thanks to ongoing efforts by Joslin’s teams of educators and the
Center for Innovation in Diabetes Education (see next page), new
innovations in educating patients are being developed all the time.

Adult Diabetes Educators

Jo-Anne M. Rizzotto,
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C.D.E., Director of
Educational Services

Gillian Arathuzik, R.D.,
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Erica Albert, B.S., B.S.N.,
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Stacey O’Donnell, M.S.,
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Jacqueline Shahar,
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Learning power

The face of diabetes education is changing with the advent of newer technologies and approaches, making access to education easier than ever.

Center for Innovation in Diabetes Education
Paving the way for this transformation at Joslin is the Center for Innovation in Diabetes Education (CIDE), a department composed of both clinical specialists and behavioral researchers. Based on rigorous educational and behavioral research and with the goal of improving the delivery of diabetes education, the CIDE develops cutting-edge educational programs, materials and methods for successful long-term diabetes management and self-care.

Reinforcing the Diabetes Today curriculum offered by the Joslin Clinic, the CIDE has developed interactive games such as the CarbChallenge and FatChallenge. A new program, Discovering the Food Label, is in development.

The CIDE also has created short videos, dubbed “snippets,” which feature Joslin educators explaining complex diabetes information in a simple way.

The CIDE’s next project is to develop web-based and web-streamed diabetes programs, expanding the reach of Joslin’s innovative teaching tools to a wider audience with diabetes.

DO IT and JET
In the clinic, educators have responded to the demand for more intensive education that meets the needs of busy patients. True to its philosophy of finding the right care model for a patient’s life, Joslin offers two versions of diabetes self-care education programs to fit any schedule—Diabetes Outpatient Intensive Treatment (DO IT) and Joslin Express Tune-Up (JET).

Both programs feature one-on-one and small-group sessions with physicians, nurse practitioners, exercise physiologists, dietitians and nurses, all of whom are Certified Diabetes Educators, to help patients fine-tune their diabetes self-management.

While the DO IT program is a four-day comprehensive course, JET condenses more concise education into a single day.

The programs go beyond educating patients on basic diabetes knowledge. They foster behavioral change. They coach patients on how to successfully achieve goals in already busy lives.

“We’re taking into consideration the needs of today’s society,” says Ann Miller, M.S., A.P.R.N.-B.C., C.D.E., and JET co-coordinator.

Online technology

Joslin Everywhere

In today’s explosive age of websites, texting and smartphone apps, it’s easy to imagine personalized health guidance being just a click away. That’s exactly what Joslin is developing—an online system called Joslin Everywhere, designed to stay in touch with patients remotely.

“Patients who stay engaged with Joslin do better, something our team-based care model already encourages,” says Catherine Carver, M.S., A.P.R.N.-B.C., C.D.E., Vice President for Planning and Advocacy. “By adding electronic connectivity into the picture, the level of engagement would go far beyond our walls, reaching patients anywhere at any time.”

As a major part of Joslin Everywhere, the WebCare program, managed by Paul Penta, focuses on expanding web capabilities. On the drawing board are ideas such as creating online pathways for patients to download their blood glucose values, and as patterns emerge, receive feedback about how to address the self-care issue on the spot, not a few weeks later at the clinic. Or they might get immediate behavioral support to help them adhere to their care plan.

Information coming through these secure online portals would be stored in the patient’s electronic medical record, giving the healthcare team an expanded picture of the patient’s progress and challenges. Web-based guidance also would allow providers to care for more patients. “Time is a precious resource,” Carver says. “We anticipate clinicians will be able to coach more people in less time with better results, which is critical in these times of rising incidence of diabetes.”

“As patients improve their metrics—blood glucose, A1C, lipids and blood pressure—millions of healthcare dollars could be saved,” she adds. “This personal accountability is appealing to insurers.”

And for people around the globe—anyone, anywhere, anytime—Joslin envisions developing more interactive web tools, further enhancing its world leadership role in guiding the understanding of diabetes prevention and care.
Walking into the Pediatric Clinic at Joslin Diabetes Center, you get a warm feeling for the tremendous gift that founder Elliott P. Joslin, M.D., has given to the world.

Here, kids go about the business of being kids. Yes, they have diabetes. But they are being treated at Joslin, a place of incalculable expertise and hope.

“We help children and families find a new normal,” says Lori Laffel, M.D., M.P.H., who heads Joslin’s Pediatric, Adolescent and Young Adult Section. “We provide care and hope, and we help set care standards for all children, teens and young adults with diabetes.”

We know children
Joslin cares for the majority of children with diabetes in Massachusetts and more than a quarter of all children with diabetes in New England, totaling over 2,000 patients per year. The pediatric team also offers the widest range of patient and family support programs anywhere, including groups for families with very young children, school-age children, teenagers and young adults.

Approximately 90 percent of Joslin’s pediatric patients have type 1 diabetes, in which beta cells in the pancreas can no longer make insulin. “In the past 25 years, the incidence of type 1 diabetes in children has doubled,” Dr. Laffel says. “In the next 15 to 20 years, we expect it to double again.”

Studies also show the onset of diabetes is occurring at increasingly younger ages. “Soon, toddlers and preschoolers will comprise nearly one-third of our new onset patient population, an age in which there is more rapid and complete destruction of the insulin-producing beta cells,” Dr. Laffel says.

In type 1 diabetes, the child’s life depends on frequent injections of insulin or the use of an insulin pump. Doses are based on frequent monitoring of blood glucose levels, careful meal planning with attention to both the quantity and quality of consumed carbohydrates, and exercise patterns. The family’s daily routine needs to shift dramatically.

To help with that transition, Joslin’s clinical team meets the immediate crisis at hand, then helps the child and family sustain high-quality diabetes management in the years to come. The team includes pediatric endocrinologists, nurse practitioners and educators, social workers, child psychologists, child life specialists and other highly trained staff.

Child life specialists help young patients understand diabetes through therapeutic art, medical play and other coaching tools. Teachable moments, for example, may be a younger’s giving diabetes care to a doll or teddy bear, or caring for a flowering plant, dem-
New Onset Program

The days following the onset of type 1 diabetes can be the hardest. Stabilizing the child’s blood glucose levels sometimes requires hospitalization, which itself can elevate fear and distress.

“If we identify diabetes in an early stage, we often can manage it outside the hospital and teach families management tasks on an outpatient basis during that first week. In fact, most children probably do not need to be hospitalized at onset, which can hasten return to a normal routine,” Dr. Laffel says. In 2010, Joslin piloted the New Onset Program, now fully available for children whose medical condition allows for outpatient care guided by Joslin’s pediatric team.

Joslin knows teenagers

The developmental challenges of the teen years can be daunting; for those with diabetes, adolescence can derail diabetes routines. Teenagers may be starting to date, drive a car, or plan for college or a career. Some want more control over their care and can hardly wait to embrace technologies such as insulin pump therapy or continuous glucose monitoring (CGM), while others struggle to keep track of their diabetes care. Also, the hormones of puberty can cause fluctuations in blood glucose levels.

Joslin’s pediatric team takes teens through all these milestones. In addition to personal coaching and counseling, the team offers online discussion boards for teens and parents. And Joslin offers a special program to transition to adult care (see sidebar).

Type 2 diabetes in children

“The nationwide surge in obesity is taking its toll on kids, giving rise to type 2 diabetes,” Dr. Laffel says. About 10 percent of Joslin’s pediatric patients have type 2 diabetes, now occurring in children as young as age 10. In this form of diabetes, the body makes insulin, but not enough, or the insulin doesn’t work well, a condition called insulin resistance. Risk factors include a family history of diabetes plus an unhealthful lifestyle with inactivity and poor dietary intake, leading to excess weight or obesity, now affecting one-third of youth.

Clinicians and researchers at Joslin’s Pediatric Clinic address the full spectrum of childhood endocrine disorders, including “metabolic syndrome,” generally associated with increased risk for type 2 diabetes in older adults but now increasing in children; a key driver is excess weight. With a 2012 launch, Joslin’s Childhood Weight Management Program aims to identify children at risk, finding effective ways to intervene early on.●
At Joslin, every patient has the opportunity to meet with a psychological and behavioral counselor, giving them a chance to cope better with managing diabetes and to improve the quality of their lives.

“It’s normal to struggle with the complex emotional demands and lifestyle changes imposed by diabetes,” says John Zrebiec, L.I.C.S.W., C.D.E., who heads the Behavioral and Mental Health Unit. He is one of six Joslin counselors available to meet with adult and pediatric patients and their families, starting from their initial diagnosis and throughout their care.

Integrating counseling into Joslin’s model of team-based care stems from decades of clinical experience and research. “Our clinicians recognize the crucial role that self-confidence, motivation and behavior change play in a patient’s ability to successfully manage diabetes,” Zrebiec says.

Ups and downs

The diagnosis of diabetes is a life-changing experience. Patients need to learn many facts about how the body works while at the same time coping with strong emotions, adjusting to lifestyle changes, and balancing family relationships, work or school. Large chunks of the day may suddenly be devoted to monitoring blood glucose, thinking about food, exercise and medication.

“There are many unpredictable stresses with diabetes,” Zrebiec says. “That’s why psychological services are integrated into every aspect of Joslin’s medical care.”

Range of emotions

Common emotional reactions to diabetes include depression and anxiety. These feelings can be triggered or intensified by the diagnosis of diabetes, frustrations of changes in treatment, challenges in blood glucose control and the development of complications from diabetes. Fear of low blood glucose, or hypoglycemia, also is a common concern for people using insulin.

To help, Joslin offers the Hypoglycemic Prevention Program, a full-day workshop scheduled five times a year. It is specially designed for people taking insulin who have too many instances of low blood glucose, are afraid of having low blood glucose, or are unaware of its symptoms. The workshop is taught by an expert team of Joslin diabetes educators.

In addition, many patients struggle with trying to lose weight, and some patients develop eating disorders associated with insulin restriction. “Guilt, shame and self-blame easily arise, undermining self-confidence even more,” Zrebiec says.

“We try to help patients take a more positive approach to coping with diabetes,” he adds. “As a member of the clinical teams, we offer special skills to help patients achieve their health goals.”

The behavioral health team, led by John Zrebiec (left), helps patients gain self-confidence, motivation and positive coping skills to successfully manage diabetes.
Geriatric program

Unique approaches to elder years

“Older patients with diabetes need different goals and treatment strategies, based on their other medical problems, degree of function and level of support,” says geriatric endocrinologist Medha Munshi, M.D., who heads Joslin’s Geriatric Program.

As patients with diabetes age, they may develop traditional complications of diabetes as well as memory problems, depression, vision/hearing impairment and gait/balance problems. Some of these conditions interfere with an individual’s ability to take care of diabetes.

“Elders experiencing hypoglycemia, or low blood glucose, are at particularly high risk for falls, which can further compromise their independence and quality of life,” Dr. Munshi says. “Focusing on the immediate problem often becomes higher priority than preventing long-term diabetes complications. It’s important to balance risks in the future with the risks to the patient now.”

The geriatric team evaluates the physical, social, emotional and cognitive status of patients, helping them overcome specific barriers in performing diabetes self-care skills. “With the family, we develop a strategy that is safe and effective, supporting the dignity of each patient,” Dr. Munshi says.

Pregnancy care

Off to a good start

Each year, Joslin’s Pregnancy Program attracts more than 200 mothers-to-be from all parts of New England. “For mother and baby, there is much at stake,” says Florence Brown, M.D., who directs the program, served by four endocrinologists, a nutritionist and nurse educator.

Together they care for women with preexisting type 1 and type 2 diabetes as well as those with gestational diabetes, first detected in pregnancy.

Challenges abound. The placenta makes hormones that increase the body’s resistance to insulin, raising the mother’s blood glucose levels. If not well managed with a healthy diet or appropriate insulin doses, too much glucose goes to the baby and is stored as fat, causing a high-birth-weight infant with higher risks for obesity and diabetes later in life. High glucose also increases the mother’s risk of preeclampsia, characterized by high blood pressure and excessive protein in the urine.

“Many women with diabetes are already sophisticated about diabetes self-management,” Dr. Brown says. “Others become incredibly motivated to get their diabetes under control when planning pregnancy. Unfortunately, some women do not have good control, and high glucose at the time of conception increases risk of birth defects.”

Overweight and obese women are at higher risk of developing gestational diabetes, increasing the likelihood of developing type 2 diabetes in the future. Moderate weight loss and lifestyle changes can reduce this risk.

After the baby’s birth, follow-up care focuses on helping the mother adjust to a new hormonal state. “For women with preexisting diabetes, pregnancy is an opportunity to improve diabetes self-management skills,” Dr. Brown says. “For women with gestational diabetes, it’s a wake-up call to lose weight, eat healthfully, exercise and keep tabs on glucose metabolism with periodic lab tests for fasting glucose or glucose tolerance.”
Total Patient Care

Weight management

The biggest winners

Call it a revolution. Call it a life-changer. At Joslin Diabetes Center, an innovative weight-loss program—motivationally named “Why WAIT,” for Weight Achievement and Intensive Management—is transforming the lives of people with type 2 diabetes.

The concept is straightforward: lose 7 percent of body weight, and good things start to happen—positive changes in blood glucose, lipid levels, blood pressure, liver and kidney enzymes, and C-reactive protein, which signals inflammation linked to cardiovascular disease.

Perhaps most telling of all, patients achieve better A1C results, the lab test that gauges control of blood glucose over time.

“Some are getting their A1C back to normal levels and have been able to reduce or stop their diabetes medications,” says program director Osama Hamdy, M.D., Ph.D., the Joslin diabetologist who founded Why WAIT in 2005.

It takes a team

While studies such as the Diabetes Prevention Program achieved good results in intensively managed settings closely supervised by clinical staff, a big question remains: Can good results be achieved when patients come to the clinic just once a week for two-hour classes lasting 12 weeks? Can they keep it going?

The Why WAIT outcomes indicate the answer is yes. To date, the 450 people who’ve participated in Why WAIT have lost an average of 10.3 percent of their weight during the initial 12 weeks, then maintained an average loss of 7.6 percent on their own for three years afterwards. Shedding the weight and keeping it off long-term is a reality with the Why WAIT model.

Coaching them along the way is a dedicated Joslin team: endocrinologists, dietitians, exercise physiologists, behavioral psychologists and nurse educators. In group settings of 10 to 15 people, participants are guided toward a healthier life—meals with nutritional balance, daily exercise and medication adjustments, all designed to help them lose weight and improve their diabetes profile.

“It’s better to talk about how far you’ve walked than how little you’ve eaten,” said Joslin’s founder Elliott P. Joslin, M.D., emphasizing the major role that physical activity can play in weight loss. As part of Joslin’s Why WAIT program, weekly exercise classes, in photo led by exercise physiologist Jacqueline Shahar (right), are integrated with discussions about nutritional guidelines and medication adjustments. Class members also share their experiences, inspiring each other to achieve successful and long-lasting goals.

“Type 2 diabetes is more typically managed by focusing on reducing blood glucose levels by a combination of several diabetes medications,” Dr. Hamdy says. “Our innovative model attacks the core of the type 2 diabetes problem, the high body weight, a strategy that helps people achieve blood glucose control on fewer or no medications.”

And unlike weight-loss programs that
focus on body image, Joslin’s program focuses on reducing the risk associated with diabetes. “It’s not for your shape,” Dr. Hamdy says. “It’s for your health.”

Perfect dietary composition
For meal planning, dietitians give structure to eating. They describe healthful ways to prepare food and how to reduce saturated fats and calories. They take patients on tours of grocery stores, explaining how to read food labels and make good choices. Fifteen different dinner menus from commonly consumed foods are provided for patients to use at home, along with guidelines for eating out.

Why WAIT’s dietary recommendations are 30% protein, 40% carbohydrate and 30% fat (primarily mono- and polyunsaturated, low saturated fat, no transfat). High-fiber foods also are encouraged. Carbohydrates are selected from low-glycemic-index sources that do not raise blood glucose after meals.

“Although the protein percentage is higher than past recommendations for patients with diabetes, they are based on strong science,” Dr. Hamdy says. “Our guidelines are safe and effective for weight loss, help people feel more full, help reduce blood glucose and help them maintain their muscle mass during weight loss.”

Move it and lose it
Participants also get an uptick in energy from exercise. Classes provide a balanced exercise plan that includes stretching, strength training and aerobic exercises. At a later stage, yoga is added. The individualized exercise plan puts more emphasis on building muscles through increasing resistance exercise.

Eventually, they reach 45 to 60 minutes a day of exercise, adapting activities to their personal capabilities and lifestyles. As muscle mass builds, the metabolic rate rises, helping burn more calories and shed pounds.

Before and after exercise, people check and record their blood glucose. As the weight comes off, many are able to reduce their oral diabetes medications or insulin dose or even stop medications altogether.

Modifying medications
A key innovation of Why WAIT is how diabetes medications are managed. “We begin by carefully switching patients from medications that cause weight gain to those that either help with weight loss or have no or little effect,” Dr. Hamdy says.

Medications that can cause weight gain are sulfonylureas, glinides, thiazolidinediones and insulin. Medications facilitating weight loss or having no effect on weight gain are metformin, pramlintide, exenatide, lixisenatide and sitagliptin. “We also created ways to limit the effect of insulin on body weight, and they work just fine,” says Dr. Hamdy.

There’s another benefit—to the wallet. By reducing medications, Why WAIT participants save an average of $561 per year, spending 44 percent less on diabetes-related supplies.

Coaching and cheering squad
Unlike TV shows that pressure people to lose large numbers of pounds, the Joslin program is designed to support behaviors that lead to modest weight loss.

“Eating less and moving more is at the core, but doing those things and sticking to them can be hard,” says Joslin psychologist Ann Goebel-Fabbri, Ph.D. “In our program, people cut daily intake by only 250 to 500 calories. The goal is not a Mount Everest weight loss. It’s a healthy and achievable weight loss. Once patients lose 7 percent of their body weight, many go on to lose even more.”

Each “graduate” is offered a case manager, who checks with patients monthly and also is available for questions at any time.

All participants are provided the tools to better manage diabetes for life, Dr. Hamdy says. With the determination to keep doing what they’ve learned, they will stay winners.
Preventing Complications

Over time, high blood glucose can result in diabetic complications, including damage to vital organs. Joslin’s eye, cardiovascular and kidney specialists are at the forefront of successful prevention and treatment strategies for diabetes complications, offering proven pathways to attain good outcomes and quality of life.

Seeing the advantage

Patients who come to Joslin have a distinct advantage in being able to get their eye care from a world-acclaimed ophthalmic team whose services are fully integrated into their diabetes care.

“In diabetes, a lot of changes can occur in the back of the eye,” says Lloyd Paul Aiello, M.D., Ph.D., Director of Joslin’s Beetham Eye Institute (BEI). “In fact, a routine eye exam is how some patients initially find out they have diabetes.”

Joslin guidelines recommend that patients with diabetes have an eye exam at least every year by an eye doctor with expertise in diabetes eye care. This ongoing vigilance is essential.

“More than half of patients with sight-threatening disease don’t realize anything is wrong,” Dr. Aiello says. “By the time symptoms emerge, although there still are treatment options, treatment can be less effective than if started earlier. It’s always preferable to find and treat problems early.”

Team expertise

The Joslin eye team includes 10 ophthalmologists with expertise central to caring for people with diabetes. These physicians are supported by more than 30 staff, also specially trained to evaluate patients with diabetes—optometrists, ophthalmic technicians, eye imagers and readers, clinic and research coordinators, and specialists in telemedicine.

The team’s track record is stellar. “With proper diabetes management and eye care, we can essentially eliminate the fear of severe vision loss, a major concern with diabetes,” Dr. Aiello says. “For the past 18,000 patients in our care, the median vision was 20/20.”

The Beetham Eye Institute at Joslin is named for the late William P. Beetham, M.D., who in the 1960s pioneered the laser photocoagulation technique with Lloyd M. Aiello, M.D., the institute’s founder.
coagulation technique with Lloyd M. Aiello, M.D., the institute's founder, who is still active in eye research, clinical care and international outreach initiatives. In 2005, the directorial torch was passed to his son, Dr. Lloyd P. Aiello.

Why the eye
Eye problems in diabetes occur primarily because high blood glucose can affect the delicate lining, or endothelium, of blood vessels.

In proliferative retinopathy, an advanced stage of diabetic eye disease, blood vessels grow inside the eye where they don’t belong. For this condition, laser treatment, if started at the proper time, is generally very effective.

Diabetic macular edema is a different cause of vision loss. With this eye problem, blood vessels inside the eye leak, causing swelling in the macula, the area at the back of the eye responsible for the sharpest vision. For more than 25 years, the gold standard treatment for macular edema has been laser surgery, first developed at Joslin and shared with the world.

Impressive results
Other revolutionary eye therapies and technologies continue to emerge from Joslin’s labs and clinics. “Because we are a medical research institution, all our patients benefit from our front-line work in ophthalmology,” says Dr. Lloyd P. Aiello.

In 2010, he announced another breakthrough for macular edema. “Today we have an even better option—a drug called ranibizumab, injected into the eye, which inhibits vascular endothelial growth factor (VEGF), a protein involved in vessel growth and leaking,” he says. “We now can recover vision twice as often, and over time the injection frequency decreases. Although eight to nine injections are generally needed the first year, by the third year only one or two drug injections are required, on average.” Studies are now underway to see if less costly drugs in the same drug family will produce similar impressive results.

However, this therapy is highly effective in only about half of macular edema cases. Other cases of macular edema may be triggered by an enzyme called plasma kallikrein, which stimulates tissue inflammation and swelling. Joslin clinical researchers are now working to develop a drug to inhibit this enzyme.

Joslin Vision Network
Joslin’s eye team saved my life,” says diabetes patient Carole Newcomb (left in photo), age 69 and a resident of South Weymouth. “They discovered I was at high risk for suffering a stroke.”

The Joslin Vision Network (JVN) retinal imaging system developed at Joslin uses a retina camera to take detailed pictures of the back of the eye, looking for any abnormalities, which may or may not be diabetes-related. No pupil dilation is necessary—an appealing feature, allowing patients to go on their way immediately after the 15-minute imaging session.

The digital images are relayed to expertly trained readers at Joslin, who report findings to patients and the patients’ medical team. The network is so sophisticated that JVN cameras stationed in other parts of the world, such as a children’s hospital in Venezuela, are transmitting images to Joslin for evaluation.

Carole had the JVN test soon after her diabetes diagnosis in 2003. But she didn’t like the lights that the camera flashes to get a picture of the retina, so for five years she declined repeating the eye-imaging test, which Joslin recommends annually for all diabetes patients.

In February 2009, Carole’s doctor said she was overdue for an eye exam and even walked her to the JVN imaging center. She could be seen immediately, as the JVN team, directed by Jerry Cavallerano, O.D., Ph.D. (right in photo), is on standby to take patients at a moment’s notice.

“I got as far as the imaging center and again declined the test,” Carole says. “That’s when an inner voice of authority told me to sit down.”

Evaluating the images within minutes, doctors in the JVN reading room detected cholesterol blockage in a retinal blood vessel, a telltale sign that vessels elsewhere may be occluded. Sure enough, a subsequent neurological ultrasound showed 90 percent blockage in her left carotid artery, setting the stage for a stroke.

Carole had successful carotid surgery and today is a true believer in the JVN: “When I’m in the patient reception room, I tell everyone to have the test. It’s just so important.”
Kidneys are unsung heroes of the body, filtering gallons of blood each day. Protecting these biological workhorses is a key goal in diabetes care.

“We strive to prevent or detect problems early, when we can slow or stop damage to these vital organs,” says nephrologist Robert C. Stanton, M.D., who heads a team of five renal specialists at Joslin Diabetes Center. “When patients reach us early on, we are able to slow or even stop progression to kidney failure in many patients.”

People are born with two kidneys, located on either side of the spine. By adulthood, each weighs only four to six ounces. But these mighty mites have many crucial roles.

As a natural filter, they remove wastes from the bloodstream, excreting them in the urine. They balance electrolytes like sodium, potassium, bicarbonate, calcium and magnesium. They reabsorb water, glucose and amino acids. They regulate bone health through activation of vitamin D and also red blood cell numbers by producing the hormone that controls red blood cell growth.

Delicate tissues

Despite this impressive power, kidneys also are quite vulnerable. During filtration, blood passes into tiny individual filters called glomeruli, which are rich in blood vessels. Their lining, or endothelium, can be damaged by high blood glucose and elevated blood pressure, conditions that occur in poorly controlled diabetes.

At first, the onset of kidney damage may be imperceptible. But ultimately, the kidneys can become so scarred or congested that function is severely reduced or fails altogether, a serious condition called end-stage renal disease.

As diabetes rises to epidemic levels, the number of people with end-stage kidney disease also is skyrocketing, from 30,000 in 1972 to approximately 600,000 today. This number is expected to reach 1.5 million by 2030.

“At birth, kidney function, as measured by glomerular filtration rate (GFR), is 120–140 ml per minute,” Dr. Stanton says. “It normally declines at a rate of about

Maximizing quality

“For 48 years, Joslin has been my healthcare partner,” says Judy Ann Gordon (right in photo), who was diagnosed with type 1 diabetes at age seven. “They’ve helped me lead an active personal and professional life.”

Several years ago, kidney-function tests signaled her glomerular filtration rate (GFR) was rapidly declining at a pace that usually results in kidney failure.

But Judy Ann, a quality assurance manager at a pharmaceutical company in Cambridge, resolved to retain the quality of her life. Guided by Dr. Robert Stanton (left in photo), she dedicated herself to a diet, exercise and medication plan designed by her diabetes team to help her kidneys.

She has turned an amazing corner. Due to her efforts with the Joslin team, her kidney function stopped declining and has been completely stable for the past six years. “It’s simply a testament to how great the team at Joslin is,” she says.
1 ml per minute each year. When GFR is persistently poor, usually less than 10 ml per minute, dialysis or kidney transplantation may be necessary.”

Dialysis can extend life, but on average this external filtering method adds only about five to seven years. Kidney transplantation, which requires a donor match and surgery, is the best option for people with kidney failure, but the number of transplants is limited by the availability of kidney donors.

Reversing a trend
“Nonetheless, we can offer hope,” Dr. Stanton says. “To prevent or slow kidney damage, the key is to screen and treat patients early on. We have patients who have actually completely stabilized their kidney function.”

At Joslin, the healthcare team constantly monitors the patient’s blood glucose, blood pressure, urine albumin level and other factors important to reducing complications. If laboratory tests show kidney function is declining (GFR is below 60 ml per minute and/or urine albumin level is increasing), the patient is referred to a renal specialist.

The patient’s diet, exercise and medications may be adjusted to gain tighter control of diabetes, including use of an insulin pump or continuous glucose monitor (see story page 4). The renal specialist also may prescribe medications to balance electrolytes, blood pressure and other factors involved in kidney function.

“Beyond Joslin’s walls, we encourage primary care physicians everywhere to routinely monitor and interpret the glomerular filtration rate and urine albumin levels of all patients, not just those with diabetes,” Dr. Stanton says. “By identifying kidney disease early, we can dramatically slow its progression and save lives.”

Cardiovascular care

New twist on ‘good’ & ‘bad’ lipids

People with diabetes need to pay special attention to their blood vessels and the risk of cardiovascular complications. But there’s good news.

“We now have better markers in the blood that signal risk of blood vessel problems in diabetes,” says Om Ganda, M.D., who heads Joslin’s Lipid Clinic. “By achieving target goals for these markers, patients can lower their risks.”

At the core of the cardiovascular system is the heart, a muscular pump that sends blood through the arteries and veins, the body’s pipelines for a biological soup of substances—blood cells, nutrients, waste products, immune cells, hormones and more.

Cardiovascular culprits

Lining the pipes is the endothelium, a delicate layer of cells that can be damaged by high blood glucose and high blood pressure associated with uncontrolled diabetes. Adding to the problem are lipoproteins, fat-protein assemblies that travel in the bloodstream. These “butterball” substances, which come from foods we eat and also are produced by the liver, can clump together along the vascular wall.

Dr. Om Ganda, who directs the Lipid Clinic, works with diabetes patients to lower their cardiovascular risks.

For years, we’ve known that “bad” cholesterol called LDL, or low-density lipoprotein, is a culprit in vascular clogging, or atherosclerosis. If blockage occurs in the coronary artery, which feeds the heart muscle, a heart attack occurs. In the brain, it causes stroke. We’ve also known that “good cholesterol” called HDL, or high-density lipoprotein, helps clear blood vessels.

Both type 1 and type 2 diabetes tend to raise “bad” cholesterol and triglyceride levels and also lower “good” cholesterol levels. Studies also show a link between insulin resistance, a precursor to type 2 diabetes and blood vessel disease.

To reduce “bad” cholesterol, diabetes patients often are prescribed cholesterol-lowering drugs such as statins and advised to eat foods higher in fiber and lower in saturated fat and cholesterol. Nonetheless, studies show that even with statin treatment, people with diabetes are at higher risk for a cardiovascular event. Are there better ways to assess and treat diabetes patients?

Expanding the lipid primer

“Researchers now have identified other players in the lipoprotein lineup,” Dr. Ganda says. “Managing these lipoprotein markers can reduce vascular risks in people with diabetes.”

Among key blood markers are the non-HDL-cholesterol and apolipoprotein-B (Apo-B). More attention to these markers is among 2012 treatment recommendations issued by the American Diabetes Association. Research is showing that these components, beyond the traditional lipids, help guide decisions to reduce risk for complications.

At Joslin, patients are referred to the Lipid Clinic by members of their clinical team, as well as primary care physicians, and strategies are shaped to achieve lipid goals. In general, the LDL-C goal for diabetes patients is less than 100mg/dl; or under 70mg/dl for those already with cardiovascular disease or at higher risk. The target goal for triglycerides, another lipoprotein involved in damage to clogged blood vessels, is less than 150mg/dl. Age and gender also are taken into consideration.

Goals for elevating HDL “good” cholesterol are at least 40mg/dl, with 60mg/dl considered protective. Overall, patients are advised to lower risk factors like smoking, excess weight and high blood pressure through lifestyle changes and prescribed medications.

“This new information about lipids can be used to protect the vascular health of people with diabetes,” Dr. Ganda says, “and that’s very encouraging.”
The United States faces an epidemic of enormous impact. If current trends continue, the diabetes prevalence rate in the general population, currently 1 in 10, will spike to as many as 1 in 3 by the year 2050. Diabetes is an even greater threat to certain ethnic groups. Joslin continues to be committed to improving the health outcomes of populations disproportionately affected by diabetes.

**Asian American Diabetes Initiative**

**Aligning care with culture**

**Looks can be deceiving. In sharp contrast to Western populations for which weight gain is often a precursor or predictor of diabetes, many Asian Americans with diabetes are actually within the normal weight range.**

But Asian Americans are nearly twice as likely to develop diabetes, particularly type 2. Accounting for much of the nation’s fast-rising rate of diabetes, 10 percent of Asian Americans have the disease, and many others are at risk because they fall into the undiagnosed “pre-diabetes” category. To address this serious epidemic, Joslin launched the Asian American Diabetes Initiative (AADI) in 2000 to promote awareness of diabetes through relevant research, outreach, education and culturally appropriate treatment. Co-directed by Chief Scientific Officer George King, M.D., and William Hsu, M.D., the AADI is one of the first innovative academic endeavors of its kind.

“To answer important questions about clinical care for Asian populations, we sponsor research projects aiming to identify unique characteristics of diabetes in this ethnic group,” Dr. Hsu says. “Our Asian Clinic strives to tailor treatment approaches to align with the cultural values and beliefs of our patients, and that first begins with compassion.”

To provide culturally effective care, the Asian Clinic is staffed with a team of endocrinologists, a registered dietitian, a lifestyle specialist who provides mental health counseling, a medical assistant and a care coordinator. Patients can schedule one-on-one appointments with a physician, dietitian/diabetes educator, and lifestyle specialist.

The AADI team also creates multilingual educational resources to distribute to the Asian community and provides translations in patients’ languages. These resources include topics such as tips and recommendations on nutrition and diet, and strategies to incorporate physical activity into everyday life.

In addition, the Joslin initiative spans the seas. In China, an estimated 92 million people have diabetes. But physicians see 80 to 100 patients a day, so the role of patient education—a critical component of diabetes care—is significantly diminished. To turn the tide, the AADI is designing models of diabetes care to work within the healthcare delivery systems of China and providing Continuing Medical Education (CME) in Japan and other Asian countries.
Latino Diabetes Initiative

Family framework for care

The cornerstone of Joslin’s initiative for the Latino population is its focus on family and community. “Latino patients often seek encouragement, direction and advice from family members,” says Program Director Enrique Caballero, M.D., who founded the Latino Diabetes Initiative (LDI) in 2002.

Compared with other groups, Latinos have a very high incidence of type 2 diabetes. “This increased risk comes in part from genetic factors—those that trigger fat accumulation, decrease insulin production or action, or other biological signals implicated in diabetes,” Dr. Caballero says.

Additional factors have cultural, social and economic roots. For example, high-fat, high-calorie meals are a tradition for many Latinos. Fitness exercising is not a tradition. Many Latinos live in poverty with limited access to healthcare. In addition, healthcare providers and systems often are not prepared to provide culturally oriented, high-quality care to this population.

Combined, these risk factors can brew a perfect storm. To improve outcomes, Latino patients at Joslin are served by a Spanish-speaking team: two diabetologists, Dr. Caballero and Elizabeth Halprin, M.D.; a nurse practitioner; a registered dietician and educator; a psychologist; a patient care coordinator; a patient education and outcomes coordinator and other support staff; and a research and outreach team.

“We tailor the program to the individual Latino patient, taking into account where the patient comes from and personal needs and preferences,” says Andreina Millan-Ferro, patient education and outcomes coordinator.

On supermarket tours, patients learn good food choices within their budget. Other well-received family activities include the salsa dancing program or teaching patients at home how to prepare culturally oriented foods that benefit everyone in the household.

The LDI team also addresses issues in transportation, insurance, costs, work schedules and other barriers to clinical visits, reducing the no-show rate from 40 to less than 10 percent. A new offering is “group medicine,” a medical appointment in which 8 to 10 patients meet together to discuss their diabetes care, providing peer support.

In an effort to reach Latinos everywhere, Joslin offers a bilingual website, a Facebook game about diabetes, and a Spanish audio novella, *La Historia de Rosa*, or Rosa’s Story, which recounts a Latino woman’s journey in managing her diabetes. This teaching tool is so popular, Joslin’s LDI now plans to produce it in English.

Black Diabetes Initiative

Meeting the challenge

Following in the footsteps of successful programs providing diabetes care to Asian Americans and Latinos, Joslin is bringing the full measure of its expertise and resources to serve the African American community. The new Black Diabetes Initiative is under the direction of Eyiuche Okeke, M.D.

Evidence suggests an extremely high rate of insulin resistance among Blacks.

Socioeconomic barriers such as cost of diabetes medications and supplies may be major hurdles. Cultural factors also are at play, such as harboring incorrect information about diabetes or a willingness to accept obesity as a norm. Healthcare providers often can better connect by discussing diabetes in terms more meaningful to this patient population.

Strategic plans are underway to broaden Joslin’s reach to this community. These plans include designing specialized prevention programs, working to reduce health disparities and creating models to deliver culturally focused diabetes care, all with the goal of better self-management and outcomes.

Latin roots

A few years ago, Oscar Salas (at right in photo) was working 15-hour days, juggling two jobs at Logan Airport. He began feeling very thirsty and tired. When his doctor diagnosed type 2 diabetes, he was directed to Joslin, where he met Dr. Enrique Caballero, head of the Latino Diabetes Initiative (left).

“I didn’t even know Joslin had a Latino clinic,” says Oscar, a native of Lima, Peru. “I’m so comfortable here. It’s so much easier to discuss how the body works in my own language.”

Oscar is now exercising, avoiding fast foods and gravitating toward salads for lunch. Constantly on the lookout for coworkers having trouble managing their diabetes, he directs them to Joslin. He has improved his lifestyle without abandoning his cultural preferences and roots.
Cycle of Discovery

To advance diabetes care, Joslin is harnessing the power of translational medicine—a continuous cycle of discovery in which patterns observed in patients are studied in laboratory and clinical settings, which generate novel ways to prevent and treat diabetes, and in turn, spawn new ideas for further investigation.

**Translational medicine**

**Diabetes care, today and tomorrow**

*In addition to receiving the latest in diabetes care, all Joslin patients benefit from world-renowned basic and clinical research. Managing their care today are top specialists, who also are shaping the therapies of tomorrow.*

**Seeking protective factors**

Joslin has received a $3.9 million DP3 grant from the National Institute of Diabetes and Digestive and Kidney Diseases to identify protective factors that enable many patients to remain free of commonly occurring diabetes complications. Led by George King, M.D., Chief Scientific Officer and Director of the Research Division (left in photo), the research will study Joslin’s 50-Year Medalists: people who have lived 50 years or more with type 1 diabetes, and attempt to discover why a high proportion of this group remains free of diabetic retinopathy, kidney disease, neuropathy or cardiovascular disease.

**Reprogramming cells**

In studies directed by Rohit Kulkarni, M.D., Ph.D., and Amy Wagers, Ph.D., skin cells from patients are being used to create induced pluripotent stem (iPS) cells. These cells have the potential to differentiate into any type of cell in the body, yet maintain the unique genetic makeup of the individual. The idea is ultimately to generate insulin-secreting beta cells, which can be transplanted back to the patient to restore this key function. These researchers also are working to coax iPS cells into cells typically involved in diabetes complications including vascular cells, kidney cells and eye cells.
Commercialization and Ventures
Joslin continues to build bridges between science and industry in an ongoing quest to create better treatments and ways to prevent and cure diabetes through technology and clinical innovation. The Office of Commercialization and Ventures of Joslin Diabetes Center, headed by Nandan Padukone, Ph.D., M.B.A., takes a business center–like approach to create strategic relationships that will expand the reach of Joslin’s research and clinical expertise.

Joslin Technologies is an accelerator that connects Joslin to the pharmaceutical and biotechnology industry, leveraging Joslin’s expertise and infrastructure to advance sophisticated technologies such as cellular assays for screening drug candidates, validated testing models for drug toxicity and efficacy, and biomarkers for detection and monitoring of disease. It also facilitates clinical studies for the drug and device industry, and regulatory development and expertise in diabetes and its complications.

Aspirin’s valuable cousin
A generic drug called salsalate, widely prescribed for arthritis, is showing promise as an effective, safe and inexpensive new avenue for treating patients with type 2 diabetes. Salsalate is a nonsteroidal anti-inflammatory agent chemically similar to aspirin but easier on the stomach. In recent Joslin studies of people with type 2 diabetes, led by Allison Goldfine, M.D., director of clinical research, and Senior Investigator Steven Shoelson, M.D., Ph.D., people who took the drug showed significantly improved blood glucose levels. The team now is studying whether salsalate also may be useful in patients with coronary artery disease.

Potential eye therapy
Based on studies by Edward Feener, Ph.D., Investigator in the Section on Vascular Cell Biology, a novel approach to preserve vision and slow the progression of diabetic eye disease is being advanced through a partnership between KalVista Pharmaceuticals and JDRF, the nation’s largest charitable supporter of type 1 diabetes research.

Preclinical trials focus on developing drug inhibitors to plasma kallikrein, an enzyme that contributes to blood vessel leakage and thickening of the retina. Such inhibitors are a potential new therapy for treating diabetic macular edema, a leading cause of visual loss for people with diabetes.

Weight loss approaches
Osama Hamdy, M.D., Ph.D., at Joslin (in photo) and David Lautz, M.D., at Brigham and Women’s Hospital have teamed up with Dr. Allison Goldfine to compare two types of bariatric surgery with an intensive program of lifestyle and medical management (see story on page 12). Known as SLIMM-T2D (Surgery or Lifestyle with Intensive Medical Management in the Treatment of Type 2 Diabetes), the three-year study is examining whether the glucose levels of patients with type 2 diabetes are in the nondiabetic range one year later, comparing the surgical interventions, shown to be effective, with Joslin’s lifestyle modification and medical management program, also very effective. The comparison will illuminate the best option, particularly for less-overweight patients.

Imaging the pancreas
Type 1 diabetes results when the immune system destroys pancreatic beta cells. But due to the inaccessibility of the pancreas, it has been difficult to study this process in humans. Joslin researcher Jason Gablia, M.D., M.M.Sc., with colleagues at Harvard Medical School and Massachusetts General Hospital, is now using a tool called magnetic nanoparticle-enhanced magnetic resonance imaging (MNP-MRI) to visualize changes in the pancreas. This technique holds promise in improving the understanding of type 1 diabetes and facilitating the development of new therapies—for example, potentially reprogramming beta cells to resume insulin production.

Studying the brain
People with diabetes face a higher risk for neurological diseases such as Alzheimer’s. Because people developing Alzheimer’s often show unusual brain patterns, such as getting busier when the brain should be relatively quiet, Joslin researcher Gail Musen, Ph.D., is investigating whether warning signs can be detected in people with insulin resistance, a metabolic problem common in type 2 diabetes. Using functional magnetic resonance imaging, she and her colleagues are examining people with various levels of insulin resistance while mentally at rest or performing memory tasks. The goal is to work toward mechanisms to prevent the onset of neurodegenerative disease.

Rethinking fat
Weight gain happens when calorie intake exceeds calories burned. Joslin researchers C. Ronald Kahn, M.D. (left), and Aaron Cypess, M.D., Ph.D., show brown fat may hold the clue to balancing that equation. There are two kinds of body fat. White fat stores extra calories and shows up as body mass. Brown fat burns calories, which is why it is present in newborns, who need extra warmth. By adulthood most brown fat has disappeared, but Joslin researchers have shown a small amount remains. They are now working to understand how brown fat works and possibly use its power to enhance weight loss.

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Taking Joslin’s Expertise to the World

A significant part of Joslin’s mission is to extend our expertise beyond the immediate reach of our clinical center in Boston. Today Joslin exports its high-quality diabetes care to all corners of the world.

Diabetes afflicts nearly 26 million people in this country alone and 366 million worldwide. These numbers are expected to skyrocket. How can the healthcare delivery system respond?

The Joslin Affiliates Program provides a solution. “We partner with other medical institutions and providers,” says Judith Goodwin, M.B.A., Senior Vice President and Managing Director of Strategic Initiatives. “We have more than 46 national locations in this expanding global network.”

Hospitals, medical centers and physician practices

“On average, 36 percent of patients in a U.S. hospital at any given time have diabetes,” says Janice Murphy, J.D., who directs the National Affiliates Program. “By joining our network, hospitals, medical centers and physician practices have access to the finest models of diabetes care available. After an assessment of the Affiliate’s current diabetes services, we set up a comprehensive care and operational model. In many cases, a hospital is able to launch its Joslin-affiliated program in 90 days.”

Hospital staff members are immersed in Joslin’s guidelines for team-based diabetes care. If expansion is needed, Joslin works with the facilities team to optimize space utilization and patient flow, integrating diabetes care with related expertise areas such as cardiology, nephrology, ophthalmology and podiatry.

As Affiliates adopt new metrics and operational guidelines, they send data to the Joslin Affiliates Reporting System (JARS), a robust set of performance-measurement tools that analyzes data and generates feedback. They also receive site visits from Joslin professionals and monthly conferences calls.

“The outcomes data tell the story,” Murphy says. “Within a year, most see their patients’ aggregate A1C levels, which measures diabetes control over time, drop from levels higher than 9 to far more favorable levels. Patients start to achieve lower blood pressure goals, get eye screenings, heart and kidney assessments, and other services key to comprehensive diabetes care.”
Cypress Fairbanks Medical Center in Houston, TX, joins the Joslin network.

Resources and partnerships

Innovative education platforms

Joslin’s Healthcare Services Program, directed by Daphne Psacharopoulos, M.B.A., develops educational programs and tools—mobile, online, print, live instruction in primary care offices and elsewhere—and shapes corporate alliances that benefit people with diabetes, consumers and healthcare professionals. Through this “Joslin Inside” approach, the best of Joslin reaches a wide audience. Below is just a sampling.

Social media and apps

HealthSeeker: Helping people with diabetes and those at risk, Joslin provided the content for Facebook’s first mobile health game. Available in English and Spanish versions.

Epocrates: Research and written by the Healthcare Services medical director, this smartphone app provides clinicians with concise, relevant information on emerging news and research about diabetes.

Training for healthcare professionals

Innovative training: Joslin develops interactive training programs for case and disease managers, health coaches, other healthcare professionals, and industry representatives including medical scientific liaisons, product development teams and others.

Slide decks and monographs: These compelling presentations cover evidence-based, disease-state topics on various aspects of diabetes and related conditions, including pathophysiology and behavior change.

Educational resources

Take Your Best Shot: This resource for clinicians and patients features a flipchart and other materials about how, where and when to inject insulin.

La Historia de Rosa: This audio novella with accompanying booklet views diabetes through the eyes of a Spanish-speaking woman with diabetes.

What You Need to Know about Diabetes: Joslin’s bestselling publication is a great resource for people newly diagnosed with diabetes, or those needing to get back on track.

Joslin’s Diabetes Deskbook: This comprehensive guide for primary care providers offers state-of-the-art approaches for diagnosing and treating diabetes and its complications.

Skilled nursing and long-term care

A diabetes specialty program also is available for skilled nursing and long-term care facilities. Elderly and frail individuals are at higher risk for low or high blood sugar due to diabetes and other chronic medical conditions, functional impairments, eating difficulties, infections and cognitive problems.

“Thanks to increased vigilance and interventions by staff trained by Joslin at these sites, hypoglycemic and hyperglycemic episodes decline,” says Murphy. “Patients and families consistently report satisfaction with the program.”

Primary care certification

Due to the worldwide shortage of endocrinologists, more than 75 percent of diabetes care is provided by primary care physicians. Joslin provides a pathway for training and certifying these doctors to effectively manage diabetes and its complexities.

These practices receive training and tools to track providers’ progress outcomes in five areas—glycemic control, blood pressure, lipids, renal function and smoking—tracked with the Joslin Clinical Audit Tool (JCAT), which also assesses patients’ type and duration of diabetes and medications. A detailed report is generated for each physician. They also participate in conference calls and live training sessions that offer Continuing Medical Education.

International program

Joslin also is reaching out to global populations. “Each international program is tailored to the healthcare systems and priorities of the country served,” Goodwin says.

Programs are now underway in Canada, Kuwait, Abu Dhabi and India. Alliances are emerging in China, Armenia, the Caribbean, Latin America, Indonesia and Singapore.

Joslin-Walgreens Alliance: Delivers patient education through handouts, brochures and messaging on prescription printouts—more than 191 million to date; also supports training of over 26,000 Walgreens pharmacists and 36,000 pharmacy technicians.

Joslin staff helped determine the nutritional benefits of qualifying grocery store products for SUPERVALU’s nutrition IQ® program. Color-coded shelf tags provide shoppers with healthy food choices.

On the Road Program: Useful to any level of health advocate, this Joslin outreach program, developed in collaboration with the U.S. Department of Agriculture, emphasizes key diabetes messages. Designated a “Promising Practice” by the American Diabetes Association for reaching low-income and underserved populations.

Joslin’s Diabetes Deskbook, Joslin’s bestselling guide for primary care providers offers state-of-the-art approaches for diagnosing and treating diabetes and its complications.
The generosity of people who share the vision of a world without diabetes is bringing us closer to realizing that dream. What connects all Joslin donors is their heart, their dedication and their conviction to beat diabetes. Together, we are making progress toward prevention and a cure.

**The Herbert and Phyllis Graetz Fund**

Herb and Phyllis Graetz were two of Joslin’s most committed and visionary supporters, a couple whose unwavering focus promoted Joslin’s mission and the good of patients. For 25 years, they provided leadership support. Both Herb and Phyllis passed away in 2010, but their legacy of generosity lives on through a transformational gift committed to Joslin in 2007.

Established as a challenge grant, the Herbert and Phyllis Graetz Fund for Diabetes Research and Care provides bridge funding for Joslin’s highest-priority innovative research and pilot clinical projects in type 1, type 2 and complications of diabetes. The Graetz Fund Challenge has been matched, two to one, by Joslin donors.

It is important to note that the Graetz Fund has been a significant and successful driver of investigator-initiated research grants. To date, we can cite at least eight of the Graetz awards to Joslin investigators that have led to more than $8 million in multiyear awards from the National Institutes of Health, JDRF and other competitive industry funding.

This remarkable success continues the impact of these two philanthropists and serves as inspiration to our donors today. The following summary outlines the purposes and recipients of Graetz Fund awards to date.
The legacy of Herb and Phyllis Graetz lives on through a transformational challenge grant that supports innovative research and clinical projects at Joslin Diabetes Center.

**Challenge**

**CLINICAL AWARDS**

Jennifer K. Sun, M.D., M.P.H.
Lloyd P. Aiello, M.D., Ph.D.
Vascular Cell Biology
Novel programs to increase patient recruitment, enrollment, retention and satisfaction in Beetham Eye Institute clinical trials for diabetic eye complications

Gail Musen, Ph.D.
Clinical, Behavioral and Outcomes Research
Investigating early markers of Alzheimer’s disease in insulin-resistant patients, using neuro-imaging

Medha Munshi, M.D.
Cardiac autonomic dysfunction in older adults with diabetes

Eyiuche Okeke, M.D.
Elizabeth Halprin, M.D.
Katie Weinger, Ed.D., R.N.
William Hsu, M.D.
Quality of diabetes care for minority patients in a specialty diabetes clinic

Katie Weinger, Ed.D., R.N.
Clinical, Behavioral and Outcomes Research
Obtain pilot data to examine neurocognitive and psychosocial processes related to patients’ ability to change and maintain changes in dietary behaviors, using functional MRI imaging and continuous glucose monitoring

Elizabeth Halprin, M.D.
Jo-Anne Rizzotto, M.Ed., R.D., C.D.E.
Eyiuche Okeke, M.D.
Patricia Bonsignore, M.S., R.N., C.D.E.
Stacey O’Donnell, B.S., R.N., C.D.E.
Pilot study to evaluate the feasibility and impact of a care coordination system to improve diabetes self-management and glycemic control, and improve adherence to treatment plans

Cielo Alleyn, M.D.
Genetics and Epidemiology
Use electronic medical records to identify patients younger than 12 months diagnosed with diabetes to determine those likely to have monogenic diabetes, study its etiology and direct better therapies

Sanjeev Mehta, M.D., M.P.H.
Genetics and Epidemiology
Behaviors and health outcomes related to basal insulin analogs in type 1 diabetes: a novel application of the Joslin electronic medical record

**RESEARCH AWARDS**

Laurie J. Goodyear, Ph.D.
Integrative Physiology and Metabolism
Exercise regulation of skeletal muscle signaling mechanisms

Mary-Elizabeth Patti, M.D.
Integrative Physiology and Metabolism
Gene expression in prediabetes: molecular pathways to diabetes risk in humans

Mary-Elizabeth Patti, M.D.
Integrative Physiology and Metabolism
Dysregulation of actin-SRF transcriptional pathways in humans with diabetes risk

Robert C. Stanton, M.D.
Vascular Cell Biology
G6PD and diabetic complications

Susan Bonner-Weir, Ph.D.
Islet Cell and Regenerative Biology
Phenotypic analysis of young and old beta cells

Rohit Kulkarni, M.D., Ph.D.
Islet Cell and Regenerative Biology
Dissecting the death pathway in islet beta cells

Steven Shoelson, M.D., Ph.D.
Pathophysiology and Molecular Pharmacology
HSF-1 and the HSR define a new mechanism and target for treating type 2 diabetes

Arun Sharma, Ph.D.
Islet Cell and Regenerative Biology
RIPE3b1, an important insulin gene transcription factor
Clinical Staff

Adult Diabetes

Martin J. Abrahamson, M.D., is Chief Medical Officer and Senior Vice President of Joslin. He is an endocrinologist with special interests in new treatments for diabetes, blood glucose monitoring devices, and diabetes and heart disease. Associate Professor of Medicine at Harvard Medical School (HMS)

Allison Cohen, M.D., M.M.Sc., helps bridge the gap between childhood and adulthood diabetes care, working as a staff physician in the Adult Clinic while contributing time in Pediatrics to help patients make smooth transitions. She also specializes in managing diabetes during pregnancy. HMS Instructor in Medicine

Elizabeth C. Bashoff, M.D., is an endocrinologist focusing on the clinical care of patients with complex diabetes and related disorders. HMS Instructor in Medicine

Richard S. Beaser, M.D., is a diabetologist and Medical Executive Director of Professional Education, which includes directorship of the Continuing Medical Education program. HMS Associate Clinical Professor of Medicine

William Conners, M.D., a urologist and Director of the Men’s Health Clinic, specializes in male infertility, sexual dysfunction and male hypogonadism. HMS Clinical Instructor in Urology

Elizabeth M. Blair, M.S.N., A.N.P.-B.C., C.D.E., is a nurse practitioner and Certified Diabetes Educator. In addition to seeing adults with diabetes, she manages nurse practitioners in adult diabetes and the kidney division and coordinates Joslin’s clinical guideline development.

Aaron Cypess, M.D., Ph.D., a staff endocrinologist, researches the role brown fat plays in the human body and its applications towards diabetes and weight loss. HMS Assistant Professor of Medicine

Florence Brown, M.D., is Co-Director of the Joslin/Beth Israel Deaconess Medical Center (BIDMC) Diabetes and Pregnancy Program. She works to reduce maternal and fetal complications related to preexisting type 1 or type 2 diabetes and gestational diabetes. HMS Assistant Professor of Medicine

Jody Dushay, M.D., M.M.Sc., is an endocrinology consultant who specializes in obesity, type 2 diabetes and nonalcoholic fatty liver disease. HMS Instructor in Medicine

Enrique Caballero, M.D., Director of the Latino Diabetes Initiative and Director of Medical Affairs, Professional Education, is an endocrinologist and investigator in the Section on Clinical, Behavioral and Outcomes Research. HMS Assistant Professor of Medicine

Nuha El Sayed, M.D., is a staff physician whose interests include type 2 diabetes and lifestyle interventions for weight management. She is also interested in women’s health, global health delivery of diabetes care, and the use of technology in diabetes and weight management. HMS Instructor in Medicine

Jason L. Gaglia, M.D., M.M.Sc., is a staff physician specializing in endocrinology. His clinical and research focus is type 1 diabetes, its causes and potential treatments. HMS Instructor in Medicine
Om P. Ganda, M.D., is Medical Director of the Lipid Clinic and Chair of the Clinical Oversight Committee. A staff physician, he also conducts clinical trials examining the relationship between type 1 and type 2 diabetes and cardiovascular disease. HMS Associate Clinical Professor of Medicine

Susan Herzlinger Botein, M.D., is a staff physician interested in the effects of physical activity and weight management on diabetes. She is part of the YOU-Turn program, an intensive weight reduction program to help patients with type 1 and type 2 diabetes. HMS Instructor in Medicine

Chaunyun Gao, M.D., is a staff endocrinologist. HMS Instructor in Medicine

William C. Hsu, M.D., is an endocrinologist, Medical Director of the Asian Clinic and Co-Director of the Asian American Diabetes Initiative. His studies focus on understanding causes of diabetes in these populations and uncovering effective treatments through culturally effective approaches. HMS Assistant Professor of Medicine

Christopher Gibbons, M.D., Director of the Neuropathy Clinic, specializes in the evaluation and treatment of neuropathy and has several ongoing research projects to study nerve fibers in people with diabetes. HMS Assistant Professor of Neurology

Richard A. Jackson, M.D., is Director of Medical Affairs, Healthcare Services, Strategic Initiatives, and a staff physician specializing in the care of adults with type 2 diabetes. HMS Assistant Professor of Medicine

Elizabeth Halprin, M.D., is an endocrinologist who specializes in general diabetes and diabetes in pregnancy. She is also part of the Latino Diabetes Initiative. HMS Instructor in Medicine

Joan E. Larrabee, M.D., is a staff endocrinologist who sees adult patients who are having challenges managing type 1 and type 2 diabetes. Her special interests include treating elderly patients and the inpatient management of diabetes. HMS Instructor in Medicine

Allison Goldfine, M.D., is a staff physician focusing on identifying new treatments or preventions for insulin resistance, obesity, type 2 diabetes and cardiovascular complications. She also heads Joslin’s Section of Clinical, Behavioral and Outcomes Research. HMS Associate Professor of Medicine

Maria S. Koen, F.N.P., C.D.E., is a nurse practitioner and Certified Diabetes Educator focusing on cultural competency.

Osama Hamdy, M.D., Ph.D., a senior physician and Medical Director of Joslin’s Obesity Clinical Program, focuses on understanding metabolic and cardiovascular benefits of lifestyle changes and weight loss. HMS Assistant Professor of Medicine

Iris Marquis, A.N.P.-B.C., is a nurse practitioner seeing patients in the Adult Clinic and the Why WAIT program.
Clinical Staff

Adult Diabetes, continued

Ann R. Miller, M.S., A.P.R.N.-B.C., C.D.E., is a nurse practitioner and Certified Diabetes Educator and also co-coordinator of the Joslin Express Tune-up (JET) program.

Greeshma K. Shetty, M.D., is a staff physician with an interest in insulin pump therapy. HMS Instructor in Medicine

Lyle D. Mitzner, M.D., is a staff endocrinologist who sees patients in the Adult Clinic and at BIDMC and New England Baptist Hospital in inpatient settings. HMS Instructor in Medicine

Kenneth J. Snow, M.D., is a consultant in adult diabetes. HMS Assistant Professor of Medicine

Medha Munshi, M.D., is Director of the Geriatric Diabetes Clinic. HMS Assistant Professor of Medicine

William Sullivan, M.D., is a senior staff physician and Medical Director at the Joslin Clinic at Beth Israel Deaconess Hospital–Needham. His interests include type 1 and type 2 diabetes, secondary forms of diabetes and general endocrinology. HMS Assistant Clinical Professor of Medicine

Eyiuche Okeke, M.D., is an endocrinologist and Director of the Black Diabetes Initiative. She is interested in multicultural diabetes care, specifically disparities in diabetes care for patients from minority ethnic groups and ways to develop culturally competent diabetes programs. HMS Instructor in Medicine

Gordon C. Weir, M.D., is a senior staff endocrinologist and a senior research investigator who studies the potential growth or regeneration of insulin-producing beta cells. HMS Professor of Medicine

Mary-Elizabeth Patti, M.D., is an endocrinologist and Director of the Hypoglycemia Clinic. Her expertise includes treatment of severe insulin resistance, lipodystrophy and hypoglycemia including hypoglycemia after gastric bypass surgery. HMS Assistant Professor of Medicine

Howard A. Wolpert, M.D., is a diabetologist with a special interest in the intensive treatment of type 1 diabetes and challenges faced by young adults transitioning to independent diabetes self-care. He leads research to identify best practices for integrating technology into diabetes care. HMS Assistant Professor of Medicine

Shanti S. Serdy, M.D., is a staff endocrinologist. Her areas of interest include care of pregnant women with diabetes and young adults with diabetes. HMS Instructor in Medicine

M. Donna Younger, M.D., is a senior physician specializing in the treatment of long-term type 1 diabetes. She has been a part of the Joslin team since 1961 and worked with Dr. Elliott P. Joslin himself. HMS Assistant Clinical Professor of Medicine
Kidney and Hypertension

John D’Elia, M.D., is an endocrinologist specializing in nephrology and a member of Joslin’s Human Studies Committee. HMS Assistant Professor of Medicine

Melanie Hoenig, M.D., is a nephrologist with clinical interests in diabetic nephropathy, kidney disease in the setting of HIV, kidney stones and transition to adult care for young people with renal disease. HMS Assistant Professor of Medicine

Bijan Roshan, M.D., is a staff physician in nephrology with special interest in diabetic kidney disease and resistant hypertension. HMS Instructor in Medicine

Sherry Smith-Ossman, A.N.P., C.D.E., is a nurse practitioner and Certified Diabetes Educator involved in renal education for patients in all stages of chronic renal disease and preparation for dialysis and/or transplantation. Her clinical work focuses on renal hypertension, diabetes, anemia and hyperlipidemia.

Robert C. Stanton, M.D., is Section Head of the Nephrology Department. He is a staff physician and senior investigator in the Vascular Biology Section, where he studies the role of oxidants in diabetic complications. HMS Associate Professor of Medicine

Mark Williams, M.D., is Director of Outpatient Dialysis and Co-Director of the Inpatient Dialysis Unit at BIDMC. He focuses on end-stage renal disease, glycemic management in kidney patients and new drugs for diabetic kidney disease. HMS Associate Professor of Medicine

Behavioral Health

Anne Butler, M.D., is a senior psychiatrist with expertise in depression and anxiety experienced by patients with type 1 or type 2 diabetes. She also assists with family adjustments, fear of hypoglycemic episodes and adjusting to diabetes technologies. HMS Instructor in Psychiatry

Debbie Butler, M.S.W., L.I.C.S.W., C.D.E., a clinical social worker and Certified Diabetes Educator, works with children, adolescents, young adults and their families on the behavioral and emotional issues related to living with diabetes. HMS Instructor in Psychiatry

Ann Goebel-Fabbri, Ph.D., a clinical psychologist, specializes in treating eating disorders in type 1 and type 2 diabetes, including food and insulin restriction, binge eating and obesity. HMS Assistant Professor of Psychiatry

Jessica T. Markowitz, Ph.D., is a pediatric psychologist who provides support for children, adolescents and young adults with diabetes and their families. She also is a research associate in the Section on Genetics and Epidemiology. HMS Instructor in Psychology

Marilyn Ritholz, Ph.D., a senior psychologist, helps patients who experience depression, anxiety and the stress of lifestyle adjustments associated with new diagnoses, use of new self-care technologies, and fears of hypo- or hyperglycemic episodes. HMS Assistant Professor of Psychology

Debbie Butler, M.S.W., L.I.C.S.W., C.D.E., a clinical social worker and Certified Diabetes Educator, works with children, adolescents, young adults and their families on the behavioral and emotional issues related to living with diabetes. HMS Instructor in Psychiatry

John Zrebiec, L.I.C.S.W, C.D.E., Section Chief of Behavioral Health Services, helps patients make emotional and behavioral changes to improve diabetes self-management. His interests include preventing hypoglycemia and using the Internet to engage patients in chronic disease care. HMS Lecturer in Psychiatry

Adult Certified Diabetes Educators: See staff list on page 6
# Clinical Staff

**Beetham Eye Institute**

Lloyd M. Aiello, M.D., whose pioneering breakthroughs in managing diabetes eye complications include laser photocoagulation, now is broadening eye care worldwide through advances in telemedicine. He is Founding Director of the BEI. HMS Clinical Professor of Ophthalmology

Lloyd Paul Aiello, M.D., Ph.D., BEI Director and Vice President of Ophthalmology, is also Section Head of Eye Research at Joslin. His studies focus on the underlying causes of diabetic retinopathy. HMS Professor of Ophthalmology

Paul G. Arrigg, M.D., is Chief of Vitreo-Retinal Surgery. HMS Assistant Professor of Ophthalmology

Richard M. Calderon, O.D., F.A.A.O., is Associate Chief of Clinical Practice and Chief of the Center for Advanced Diagnostic Imaging. Adjunct Clinic Instructor, University of Massachusetts Medical School

Jerry D. Cavallerano, O.D., Ph.D., a staff optometrist and Chief of the Center for Ocular Telehealth, provides patient care and participates in clinical research on diabetic retinopathy and telemedicine. HMS Associate Professor of Ophthalmology

Kristen M. Hock, O.D., staff optometrist, is the first Morella M. Grossmann Global Tele-Ophthalmology Scholar. She also is Assistant to the Chief, Joslin Vision Network (JVN) Global Tele-Ophthalmology Program, and Assistant Chief, Venezuela JVN Diabetes Eye Care Program.

Timothy J. Murtha, M.D., specializes in vitreo-retinal problems and cataract surgery. HMS Instructor in Ophthalmology

Deborah K. Schlossman, M.D., specializes in diabetic eye disease and cataract surgery. HMS Assistant Professor of Ophthalmology

Sabera T. Shah, M.D., specializes in vitreo-retinal problems and cataract surgery. HMS Assistant Professor of Ophthalmology

George S. Sharuk, M.D., Chief of Clinical Practice, focuses on vitreo-retinal disease and facilitates clinical trials.

Paolo Antonio S. Silva, M.D., a staff ophthalmologist and Assistant Chief of Telemedicine, focuses on ultimately eliminating visual loss from diabetic retinal complications. He co-directs the Joslin Vision Network. HMS Instructor in Ophthalmology

Philip M. Silver, O.D., Chief of Vision Rehabilitation Services, evaluates and determines treatments for patients with low vision. He is Adjunct Clinical Professor of Optometry at New England College of Optometry.

Jennifer K. Sun, M.D., M.P.H., is a vitreo-retinal surgeon and Chief of the Center for Clinical Eye Research and Trials at BEI. Her research focuses on identifying new biomarkers for diabetic eye complications. HMS Assistant Professor of Ophthalmology

**OPHTHALMIC TECHNICIANS**

- Violet Asuquo, C.O.
- Leila Bestourous, C.O.M.T., C.D.O.S.
- Sarah Dempsey, C.O.A.
- Kayleigh Fitzpatrick
- Shireen Glynn, C.O.T.
- Rita Kirby, C.O.A.

**OPHTHALMIC PHOTOGRAPHER**

- Steve Papaconstantinou, C.O.A.
- Danette Thomas
- Elizabeth Weimann, C.O.T.
- Collin Weller, C.O.A.

- Robert Cavicchi, C.R.A., F.O.P.S.
Cielo Alleyn, M.D., is an endocrinologist whose research interests include the study of diabetes complications with the goal of preventing or postponing kidney problems. HMS Instructor in Pediatrics

Ashley Atkins, R.N., M.S.N., C.P.N.P., is a pediatric nurse practitioner with special interest in helping patients and families with new onset type 1 diabetes. She also assists with diabetes technologies such as insulin pumps and glucose sensors.

Angelina Bernier, M.D., is an endocrinologist who sees patients with type 1 and type 2 diabetes and prediabetes in the setting of obesity. Assistant Professor of Pediatric Endocrinology at Boston University School of Medicine

Julie Griffith, R.N., M.S.N., P.N.P., is a pediatric nurse practitioner with special interest in managing diabetes during adolescence and young adulthood and supporting patients through the transition from pediatric to adult care.

Deborah L. Holtorf, M.S.N., M.P.H., P.N.P., B.C.-A.D.M., is a pediatric nurse practitioner with special interest in toddlers and preschool-aged children with diabetes. She regularly presents at the Diabetes Education Programs for School Nurses.

Michelle Katz, M.D., M.P.H., is an endocrinologist. Her research interests include improving healthcare delivery for children with type 1 diabetes and managing the risk of acute and chronic complications. HMS Instructor in Pediatrics

Joyce Keady, R.N., M.S.N., C.P.N.P., is a pediatric nurse practitioner with special interest in managing diabetes across the many stages of childhood, particularly type 2 diabetes.

Lori Laffel, M.D., M.P.H., is Chief of the Pediatric, Adolescent and Young Adult Section. She runs a large pediatric clinical research program seeking ways to improve the health of youth living with diabetes. HMS Associate Professor of Pediatrics

M. Joan Mansfield, M.D., is Assistant Section Chief of Pediatrics and an endocrinologist. She is also a specialist in adolescent medicine. HMS Assistant Professor of Pediatrics

Sanjeev N. Mehta, M.D., M.P.H., a staff physician focusing on endocrinology, conducts research on the impact of nutrition on youths and young adults with type 1 diabetes. HMS Instructor in Pediatrics

Lisa E. Rasbach, R.N., M.S.N., P.N.P., B.C.-A.D.M., is a pediatric nurse practitioner. She is an expert in the use of diabetes technologies such as insulin pumps and continuous glucose monitors in pediatric patients.

Alyne T. Ricker, M.D., is an endocrinologist who sees patients with type 1 diabetes, thyroid and growth conditions. Her clinical research looks at treatments targeting the immune system in early type 1 diabetes. HMS Instructor in Pediatrics

Katherine Wentzell, M.S.N., P.N.P., is a pediatric nurse practitioner with a special interest in managing diabetes during adolescence and improving family communication.

Melissa Williams, R.N., M.S.N., P.N.P., a pediatric nurse practitioner, has special interest in helping families and children with type 1 diabetes through research and clinical practice.
The Big Picture

Joslin Diabetes Center

Our Mission
Prevent, treat and cure diabetes

Our Vision
A world free of diabetes and its complications
It takes a team

When Rita Bridges developed diabetes at age 66, this Reading resident knew what to do. “I went to Joslin, where my husband, Bradford, has been treated for more than 30 years,” says Rita, now in her second year of care provided by a Joslin team. “There are many parts to treating diabetes, and I wanted my care managed by all the specialists I need. At Joslin, I see clinicians at the top of their field.”


INTERIOR: Diabetologist William Sullivan, M.D., checks Rita Bridges’ respiration.