



— 2016-2017 Impact Report —
Conquering Childhood Cancer

FOUR  DIAMONDS
— Conquering Childhood Cancer —

 **PennState Health**
Children's Hospital

The Four Diamonds mission: to

— **conquer childhood cancer** —

by assisting kids and families treated at Penn State Children's Hospital through superior care, comprehensive support and innovative research.



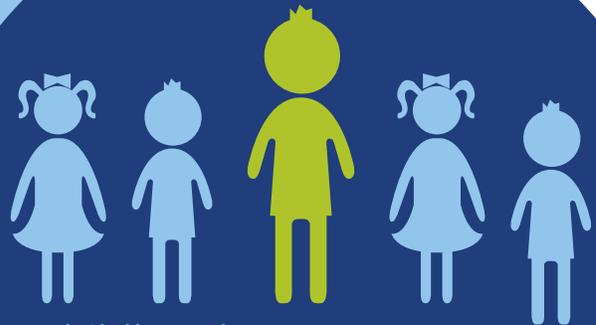
Four Diamonds child Levi

Why We Are FTK[®] **For The Kids**[™]

In the U.S.,

43

kids are diagnosed with cancer every day, and more children die from cancer than any other disease.*



Childhood cancer treatments have significantly improved over the past 50 years; however, **1 in 5 children will not survive.***

*Sources: American Cancer Society, American Childhood Cancer Organization

We won't stop fighting until all children survive and thrive.



Four Diamonds child Colby



Colby was diagnosed with cancer when he was 10 years old. Because Four Diamonds covers 100% of medical costs for every Four Diamonds patient, Colby's family never saw a medical bill.

“Four Diamonds removed that stress for us, and our family could focus on what really matters — getting our child better.”

— April, Four Diamonds mom





Local research. **Global Impact.**TM

Four Diamonds' support has been crucial to the development of Penn State Health's nationally and internationally recognized research programs, which are leading the fight to find better treatments and cures for all childhood cancers.

Four Diamonds scientists discover that the cell's self-cleaning process contributes to a specific type of leukemia.

A recent study from Penn State College of Medicine offers new insight into the role of autophagy, the cell's self-cleaning process, in the development of acute myeloid leukemia – the second most common type of leukemia in children. By understanding how cancer cells can be reprogrammed, this discovery could lead to better treatment of the disease.

September 2016 | *Cell Death and Disease*

Four Diamonds researchers find a specific lipid cooperates with the cell's self-cleaning process to maintain communication pathways in cell membranes.

A study led by Penn State College of Medicine offers insight into the importance of a specific type of lipid (called sphingolipids) in how things move from one cell to another. The findings could aid in the development of new cancer treatment strategies by targeting this specific lipid to continue communication and assist in the cell's self-cleaning process.

November 2016 | *Cell Reports*

Four Diamonds team learns new information about a specific cell channel's role in providing energy to cancer cells.

We know uncontrolled, rapid cell division is how cancer grows. Our research team continues to study a specific channel on the cell called TRPM2 that acts to control the mitochondria – the energy powerhouse of the cell. When this specific channel is blocked, the cell is not able to produce the energy it needs to survive or divide, but it does produce damaging oxygen radicals within the cell. As a result, blocking this channel may be an effective and novel approach in cancer therapy. We have demonstrated its role in leukemia and neuroblastoma and this may be applicable to many other cancers.

Manuscripts describing this discovery are in preparation.

Four Diamonds scientists discover evidence that genetic lesions can lead to tumors in children.

A recent study from Penn State College of Medicine found evidence that a type of genetic lesion, which is associated with a subgroup of childhood ependymal tumors, could lead normal cells to transform into cancer cells. The study provides direction on how to block this transformation.

A manuscript describing this discovery is in preparation.

New clinical trials offered by Four Diamonds provide hope when options are limited.

This year, Penn State had more than a dozen clinical trials open, including two early phase clinical trials that provide hope to children whose cancer has returned or has not responded to standard treatment. Offered through the Experimental Therapeutics Research and Clinical Team (ExTRaCT) program, this new approach develops an “individualized” treatment plan based on the unique molecular and genetic characteristics of each child’s tumor. This approach is in the very early stages of development; insights and results will be shared with the scientific community as more is learned.

Four Diamonds scientists discover new insight regarding regulation of gene activity in high-risk leukemia.

A study from Penn State College of Medicine provides new insights regarding the regulation of gene activity in high-risk acute lymphoblastic leukemia, which is associated with relapse and poor prognosis in children. This work identifies a new way to regulate the activity of genes in childhood leukemia, which could lead to the development of a new treatment for this particular form of cancer.

June 2016 | *Leukemia*



Helping children **thrive after cancer**

2/3

of childhood cancer survivors experience at least one late side effect.

Late effects can include:

Heart Attack • Stroke
Liver Failure
Infertility • Learning and Development Disabilities • Vision Loss • Hearing Loss
Osteoporosis

“Our childhood cancer survivorship clinic – one of the only clinics of this type in the nation – provides a personalized plan of care for every child in one annual visit.”

– Dr. Smita Dandekar, Director
Childhood Cancer Survivorship Clinic



Childhood Cancer Survivorship Clinic

As if it weren't hard enough to fight cancer as a kid, childhood cancer survivors are at a higher risk of developing physical and emotional difficulties once their treatment is complete.

Using long-term follow-up guidelines for each specific type of cancer and treatment regimen, young survivors are screened for physical and emotional side effects that may not surface until years after their diagnosis or treatment.

Depending on the type of cancer, the age at diagnosis and therapy given, the Survivorship Clinic team identifies necessary screenings for each patient. For instance, those who received radiation to the chest are screened for breast cancer, while those who were treated with abdominal radiation may be screened for colon cancer. Each survivor then receives a highly personalized, ongoing plan of care.

As a survivor reaches either age 22 or is 10 years off therapy, their care is transitioned from pediatric oncology care to a primary care provider.

Dr. Smita Dandekar said, "As survivors make this transition, our Survivorship Clinic empowers them to be their own health care advocates."

Four Diamonds teen Yafranny

Izzy was diagnosed with cancer when she was six years old, but Four Diamonds' care providers make her tough days easier.

“Four Diamonds’ social workers are amazing, and the child life specialists know more than Izzy’s name. They know she likes princesses, dancing and ballet. I’m overwhelmed with gratitude when I think of what a help Four Diamonds has been to our family in so many ways.”

— Jenifer, Four Diamonds mom



Four Diamonds child Izzy

Guiding treatment through **cancer genetics**

Researchers estimate that **about 8.5-10 percent of childhood cancers are due to hereditary factors.**

The Childhood Cancer Genetics Program, led by certified genetic counselors, uses risk assessment tools to determine whether a Four Diamonds child has a personal or family history associated with a hereditary cancer syndrome. Genetic counseling can help parents and families make informed decisions regarding testing, treatments and future plans.

How can genetic counseling help families?

If the disease indicates a genetic factor, genetic testing may identify:

Why a child developed cancer

Screening for other cancers

Treatment protocols and strategies

Other family members at risk



Four Diamonds Financials

July 1, 2016-June 30, 2017

Each spring, a robust grant process allocates all dollars raised that year by Four Diamonds to be used in the coming fiscal year to further our goal to conquer childhood cancer. All requests are evaluated on the guidelines established in the original gift agreement by the co-founders of Four Diamonds.

The first priority in funding is to ensure that every Four Diamonds child receives the highest quality of life-saving childhood cancer care at our Children's Hospital without ever seeing a bill for that care. This compassionate process relieves both the financial pressures and the burden of billing paperwork for all Four Diamonds families.

The next funding priority is to ensure every Four Diamonds child and their family are wrapped in comprehensive services.

This includes providing access to top-notch specialists proven to enhance positive treatment outcomes combined with support services to meet their physical, emotional, social and spiritual needs.

After these two funding priorities are met, grants are made to a variety of innovative research projects that are searching for deeper understanding of why and how childhood cancer happens, and new ways it can be treated. Funds are also invested in endowments. The interest earned on those endowments creates a secondary, permanent funding stream for our ongoing research efforts in pursuit of a cure for all childhood cancers.



100%

**of medical bills are covered
for all Four Diamonds
patients treated at
Penn State Children's Hospital,
ensuring families
never see a bill.**

88¢
of every
\$1.00
donated

directly impacts children
fighting cancer today
and helps improve the
path for kids who will
face cancer in the future.



84

pediatric oncology
research professionals
supported.

24

specialty care providers
serve our patients and
their families.



Summary of Sources and Uses of Funds

Sources of Funds

Philanthropic gifts received between July 1, 2016 - June 30, 2017

THON.....	\$10,227,225.57
Mini-THON.....	\$6,456,745.51
Special Events/Other Gifts.....	\$976,806.64
Honor/Memorial Gifts.....	\$68,993.95
TOTAL GIFTS	\$17,729,771.67

Uses of Funds

Use of funds received in FY2016 and allocated for use in FY2017

Patient Care and Family Support

Family Support.....	\$909,409.63
Patient Care	\$2,586,857.72

Research

Research Grants.....	\$1,620,986.17
Research Support	\$3,418,070.48

Investment in Research Endowments

Epigenetics.....	\$4,950,500.00
Millard Endowment.....	\$394,500.00

Administrative Expenses.....	\$2,129,672.87
-------------------------------------	-----------------------

TOTAL USES OF FUNDS	\$16,009,996.87
----------------------------------	------------------------

Four Diamonds child Devin

Our nationally-known fundraising programs inspire, empower and activate more than 100,000 people annually as our

Partners In The Fight™

to conquer childhood cancer.





Penn State Dance Marathon (THON™)

For more than 40 years, Penn State Dance Marathon (THON) has partnered exclusively with Four Diamonds.

Last year, 16,500 Penn State University students contributed 5,000,000 volunteer hours, continuing their tradition of the most successful dance marathon in the world and raising more than \$10 million For The Kids™.

Four Diamonds Mini-THON®

Inspired by THON, Four Diamonds Mini-THON began in 1993 and is a growing national movement, mobilizing 90,000 elementary, middle and high school students each year in our fight to conquer childhood cancer.

Mini-THONs are student-directed events, teaching leadership skills, encouraging teamwork and sparking creativity, while empowering youth to engage in philanthropy. Last year, Mini-THON raised \$6.5 million For The Kids.

Team FTK®

Passionate community supporters and grateful patient families contributed \$1 million from individual and corporate gifts, community fundraisers and gifts in honor or in memory of a loved one.

Every gift makes it possible for Four Diamonds to continue leading the fight to conquer childhood cancer.



Four Diamonds

1249 Cocoa Avenue, Suite 115 • P.O. Box 852 • Hershey, PA 17033
(717) 531-6086 • www.FourDiamonds.org

FOUR  **DIAMONDS**
— Conquering Childhood Cancer —



PennState Health
Children's Hospital