

## WHAT IS

## TWIN-TWIN

## TRANSFUSION SYNDROME?

Twin-twin transfusion syndrome, or TTTS, is a condition in which the blood volume is distributed unequally between twins that share a placenta (monochorionic twins).



One twin (donor) pumps blood to the other twin (recipient).

The result: The recipient twin receives too much blood and the donor twin receives too little.

### TTTS CAN OCCUR WHEN TWINS:

- ✔ Share a placenta
- ✔ Are the same gender
- ✔ Are surrounded by different volumes of amniotic fluid

### TTTS occurs through vascular connections between the twins, which results in:

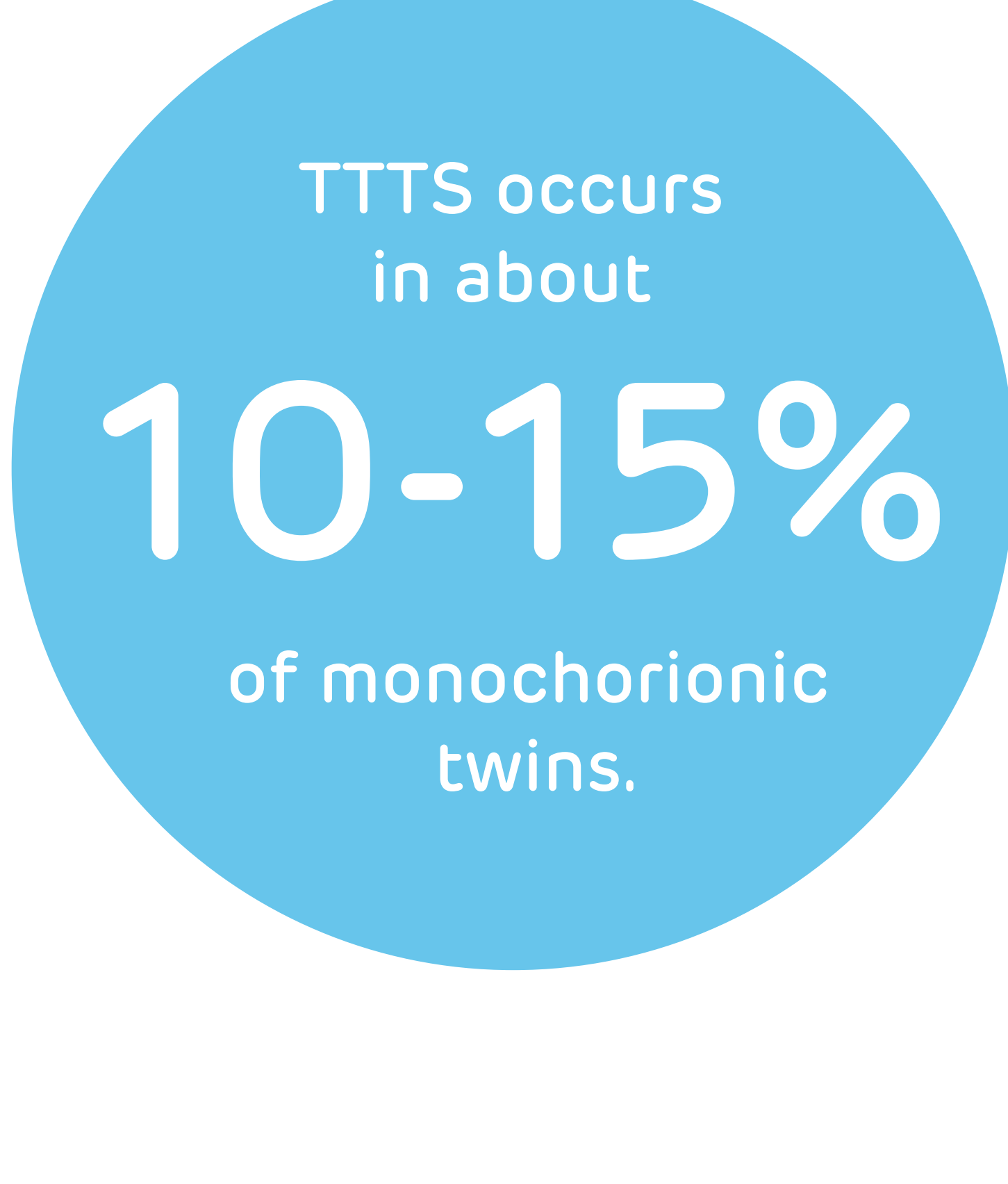
#### Donor twin

- Decreased blood volume resulting in decreased amniotic fluid
- Slowing down of fetal growth and development

#### Recipient twin

- Increased blood volume resulting in increased amniotic fluid
- Thickening of the heart muscle and increased risk for heart failure

Increased blood pressure and blood volume in the recipient twin affect cardiac function and can lead to heart dysfunction and eventual failure and death in one or both twins.



## DIAGNOSIS



Early diagnosis and evaluation at an experienced fetal therapy center is key!

- ✔ Why? **TTTS can progress rapidly**, and without intervention, the condition can be fatal for both twins.
- ✔ An important first step to an accurate diagnosis is determining if twins share a single placenta. This can be done using ultrasound during first trimester.
- ✔ Expert diagnosis can distinguish TTTS from other conditions like selective intrauterine growth restriction (SIUGR).

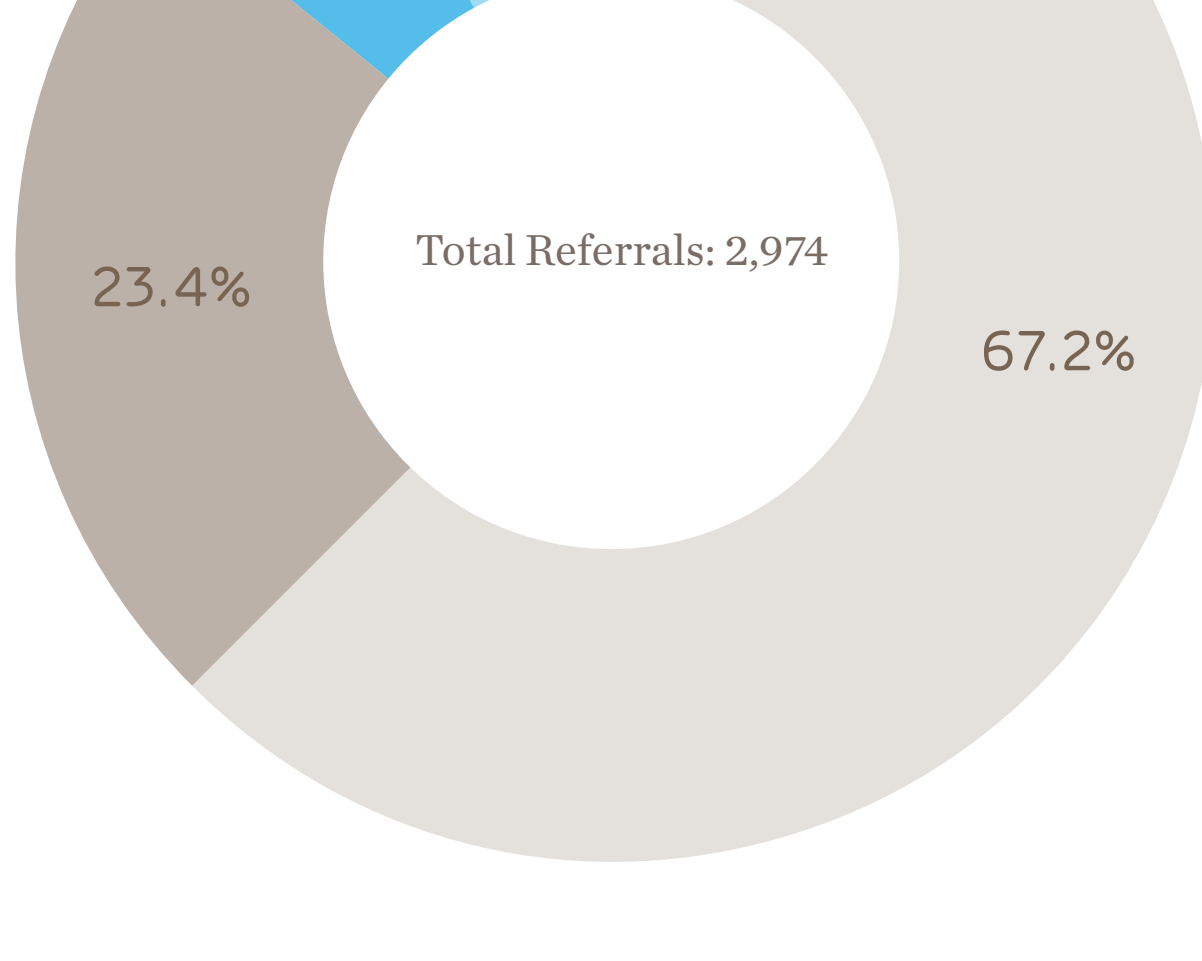
## THERE ARE 5 STAGES OF TTTS

In TTTS, there is a characteristic series of changes that happens in the recipient twin due to the extra blood being shunted from the donor twin.

- ✔ These are described as stages 1 through 5.
- ✔ Treatment depends on stage, gestational age, and placental location.
- ✔ TTTS can be progressive, which is why early evaluation is so important.

## EXPERIENCE MATTERS

The team at Children's Hospital of Philadelphia has managed more than 3,000 complicated twin pregnancies.



### Referrals for Complicated Twin Pregnancies

- TTTS (1,999 cases)
- Other (697 cases)
- TRAP (182 cases)
- Conjoined (96 cases)

Based on data from the Center for Fetal Diagnosis and Treatment at The Children's Hospital of Philadelphia - 1996 through June 2016.

## FETAL TREATMENT OPTIONS

If TTTS progresses, prenatal intervention may include:

### FETAL LASER SURGERY

Separates the vascular connections between the twins and stops the flow of blood from one twin to the other (also called fetoscopic selective laser ablation or selective laser photocoagulation).

### AMNIOREDUCTION

This reduces fluid buildup. It is performed at certain gestational ages when laser cannot be offered.

### SELECTIVE CORD OCCLUSION

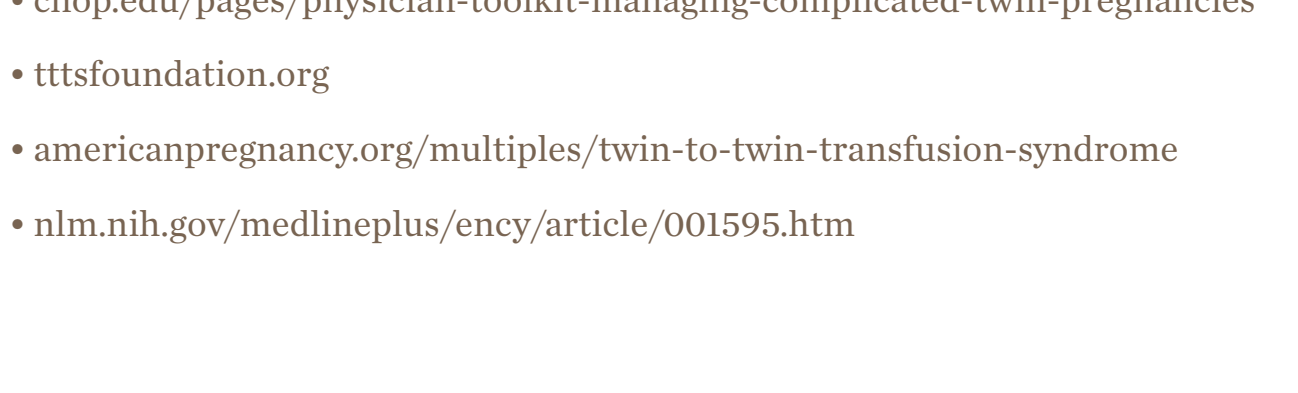
This is offered when the only option is to try and save one twin.

## HOPE FOR A BETTER FUTURE

CHOP is one of the few institutions to follow these patients after birth. Follow-up studies have shown that children who underwent laser therapy are likely to show normal neurodevelopmental outcomes at age 2.



For more information, visit [fetalsurgery.chop.edu/ttts](http://fetalsurgery.chop.edu/ttts)



### SOURCES

- [chop.edu/conditions-diseases/twin-twin-transfusion-syndrome-ttts](http://chop.edu/conditions-diseases/twin-twin-transfusion-syndrome-ttts)
- [chop.edu/pages/physician-toolkit-managing-complicated-twin-pregnancies](http://chop.edu/pages/physician-toolkit-managing-complicated-twin-pregnancies)
- [tttsfoundation.org](http://tttsfoundation.org)
- [americanpregnancy.org/multiples/twin-to-twin-transfusion-syndrome](http://americanpregnancy.org/multiples/twin-to-twin-transfusion-syndrome)
- [nlm.nih.gov/medlineplus/ency/article/001595.htm](http://nlm.nih.gov/medlineplus/ency/article/001595.htm)