

VOYAGES  
ON THE...

M \* I \* C \* R \* O \* S \* U \* B

# DISCOVERY

RECEIVING  
A

YOUR MISSION IS TO UNDERSTAND WHY YOU MAY NEED A BLOOD TRANSFUSION

## BLOOD TRANSFUSION



HI, I'M  
NURSE  
NICKY!

THERE ARE LOTS OF REASONS WHY CHILDREN JUST LIKE YOU MAY NEED EXTRA BLOOD. YOUR BODY IS FILLED FROM TOP TO TOE WITH BLOOD, BUT FOR DIFFERENT REASONS, YOU MAY NEED A TOP UP. THIS TOP UP IS CALLED A BLOOD TRANSFUSION... AND NOW MEET TWO OF MY BRAVE FRIENDS WHO NEEDED A BLOOD TRANSFUSION.

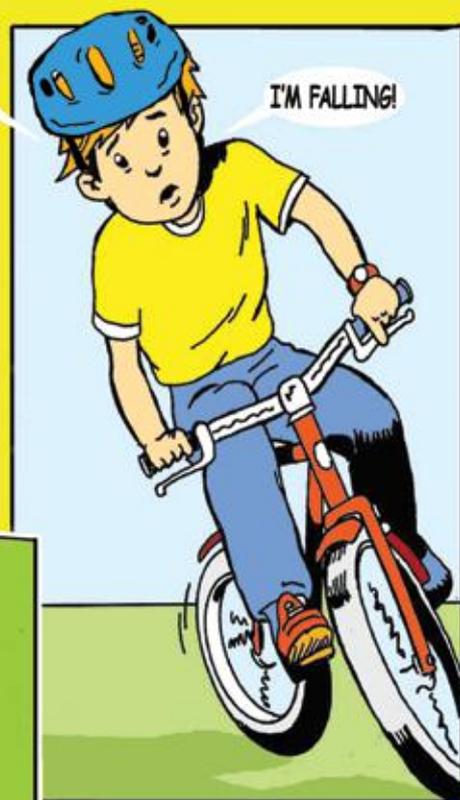
GARY LOVES RIDING HIS BIKE, PLAYING IN THE PARK, AND COMPUTERS. GARY FELL OFF HIS BIKE AND LOST A LOT OF BLOOD. THE BLOOD WAS REPLACED BY GIVING HIM A BLOOD TRANSFUSION.

SOPHIE LOVES POP MUSIC, WATCHING CARTOONS, AND BASKETBALL. SOPHIE HAD SOMETHING CALLED ANAEMIA WHICH MEANS HER BODY DIDN'T HAVE ENOUGH RED BLOOD CELLS. BECAUSE OF THIS SOPHIE FELT TIRED AND BREATHLESS. A BLOOD TRANSFUSION MADE HER FEEL MUCH BETTER.

GASP!  
I'M WORN  
OUT!

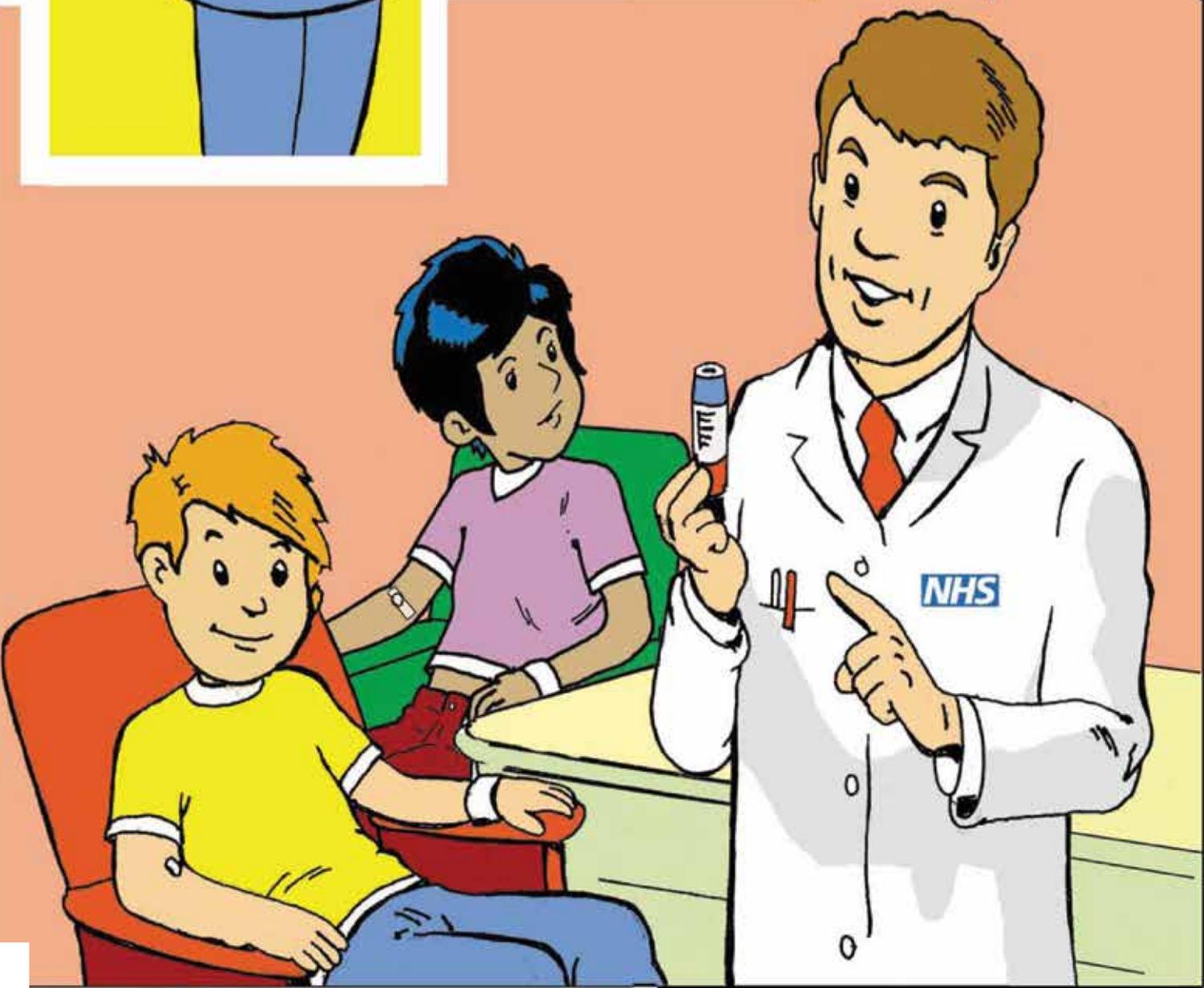
OOOER!

I'M FALLING!





MANY OTHER CHILDREN WHO ARE RECOVERING FROM ILLNESS, ACCIDENT, OR INJURY ALSO NEED REGULAR BLOOD TRANSFUSIONS.



BEFORE YOU ARE GIVEN A BLOOD TRANSFUSION, A SMALL SAMPLE OF BLOOD WILL BE TAKEN FROM A VEIN IN YOUR ARM. THIS IS TO FIND OUT WHAT BLOOD GROUP YOU ARE.

THERE ARE MANY DIFFERENT BLOOD GROUPS. THE MAIN ONES ARE A, B, AB, AND O AND EACH ONE OF THESE CAN EITHER BE RH POSITIVE OR RH NEGATIVE. SO THAT'S EIGHT IN TOTAL.

EVERY TIME YOU NEED BLOOD THE NURSE OR DOCTOR WILL ASK YOU YOUR NAME AND BIRTHDAY, BEFORE THEY TAKE A BLOOD SAMPLE AND BEFORE YOU START YOUR BLOOD TRANSFUSION. THEY WILL CHECK YOUR ANSWER WITH YOUR IDENTITY BAND AND THE LABEL ON THE BAG OF BLOOD.

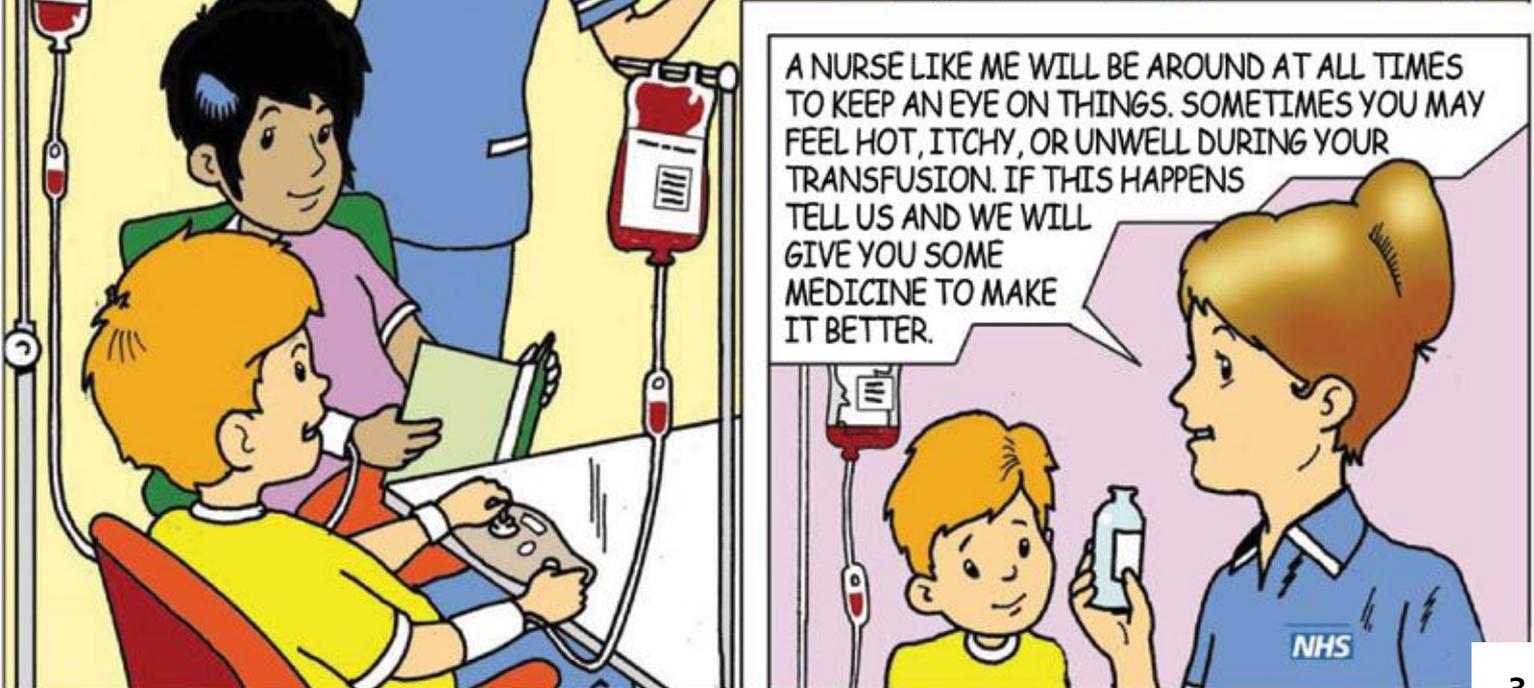
THIS MIGHT SEEM DAFT IF THEY ALREADY KNOW YOU, BUT THEY ARE TRAINED TO DO IT THIS WAY TO ENSURE THAT YOU GET THE RIGHT BLOOD. YOU CAN HELP BY REMINDING THEM TO ASK IF THEY FORGET.



THE NURSE WILL THEN ATTACH A PLASTIC TUBE FROM THE BAG OF BLOOD TO THE TUBE IN YOUR ARM. AT FIRST THE BLOOD MAY FEEL A BIT COLD AS IT DRIPS INTO YOUR ARM. YOU MAY BE ATTACHED TO THIS TUBING FOR A FEW HOURS, BUT DON'T WORRY YOU'LL STILL BE ABLE TO DO THINGS.



A NURSE LIKE ME WILL BE AROUND AT ALL TIMES TO KEEP AN EYE ON THINGS. SOMETIMES YOU MAY FEEL HOT, ITCHY, OR UNWELL DURING YOUR TRANSFUSION. IF THIS HAPPENS TELL US AND WE WILL GIVE YOU SOME MEDICINE TO MAKE IT BETTER.



# SO WHERE DOES THE BLOOD COME FROM?

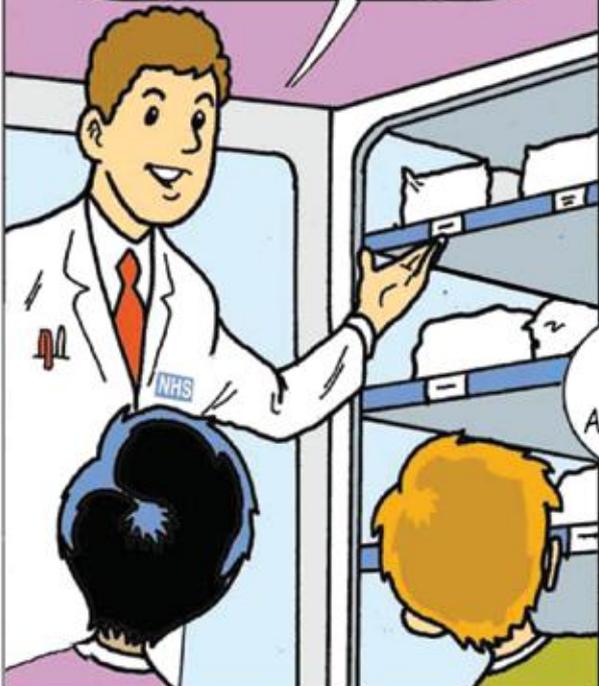
BLOOD FOR TRANSFUSIONS COMES FROM VERY KIND PEOPLE, WHO GIVE THEIR BLOOD FOR FREE AND ARE KNOWN AS BLOOD DONORS.



ALL THE BLOOD THAT DONORS GIVE IS CHECKED VERY CAREFULLY TO MAKE SURE IT IS AS SAFE AS POSSIBLE.

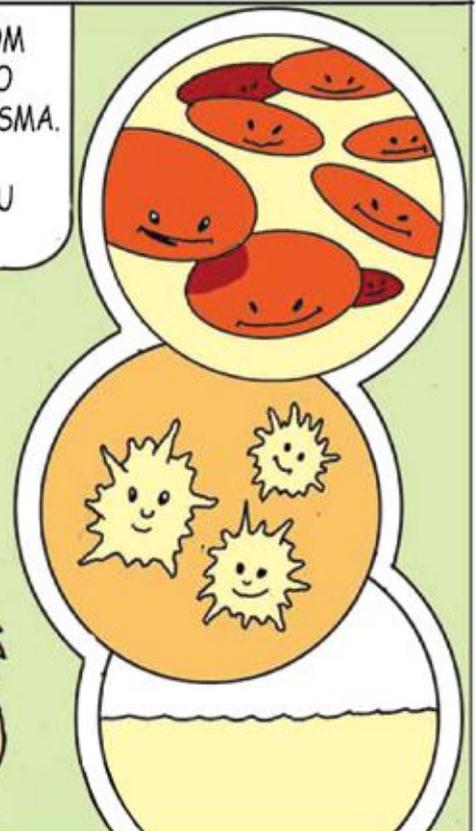


WHILE IT IS WAITING TO BE DELIVERED TO HOSPITAL IT IS STORED IN LARGE FRIDGES



MOST BLOOD COLLECTED FROM DONORS IS SEPARATED INTO RED CELLS, PLATELETS, AND PLASMA. YOU WILL ONLY BE GIVEN THE PART OF THE BLOOD YOU REALLY NEED.

WOW!  
THAT'S  
AMAZING.



TURN THE PAGE TO LEARN MORE ABOUT RED CELLS, PLATELETS, AND PLASMA AS YOU TRAVEL ON THE MICROSUB DISCOVERY.

# DISCOVERY



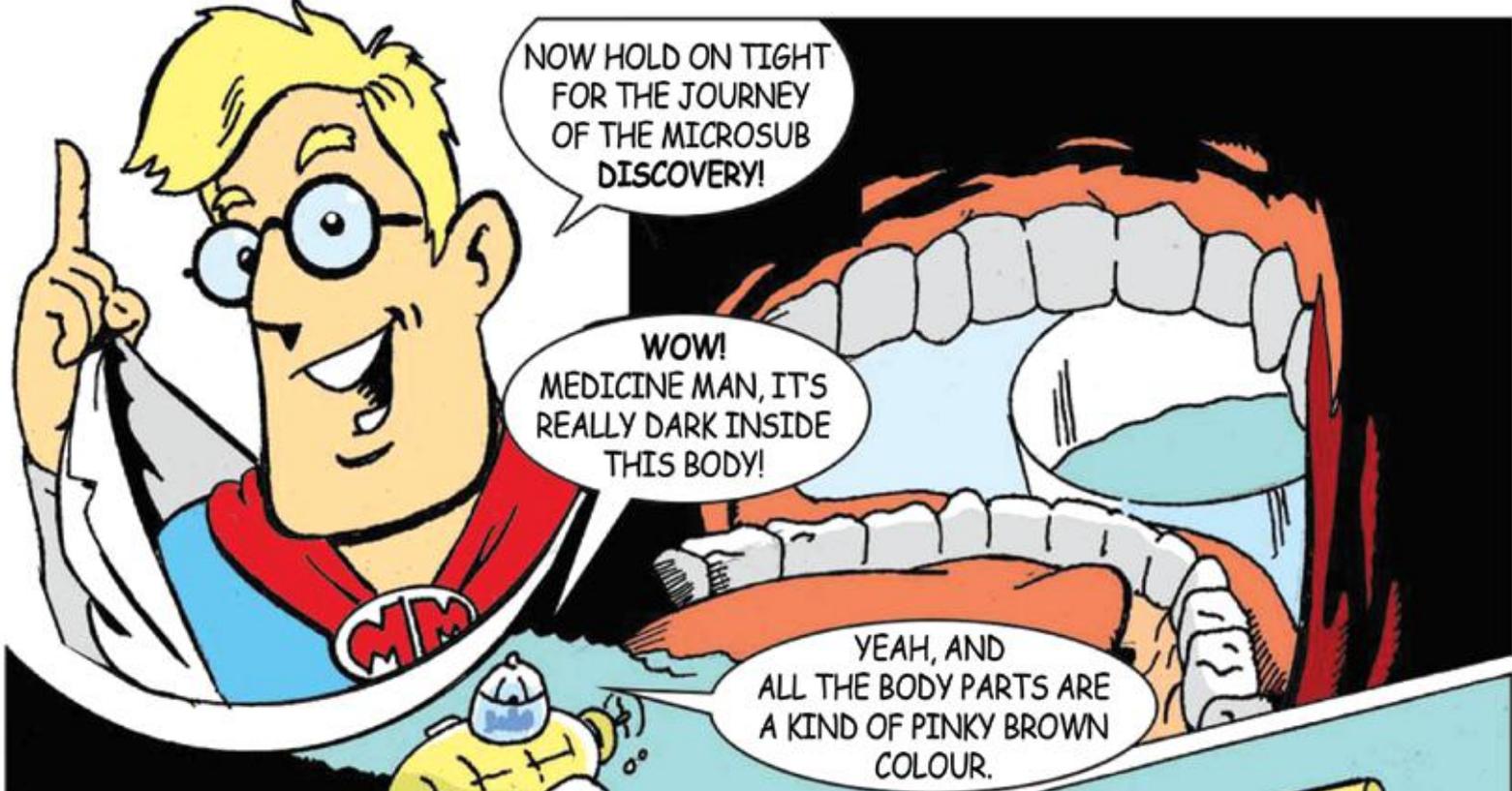
HI, I'M MEDICINE MAN, I'M GOING TO TAKE YOU ON A SPECIAL JOURNEY AROUND YOUR BODY WITH MY TWO FRIENDS SOPHIE AND GARY.



WE'RE GOING TO CONCENTRATE ON BLOOD BECAUSE BLOOD IS THE BODY'S MAIN LIFE SUPPORT SYSTEM. WHEN YOU BREATHE IN AIR THROUGH YOUR LUNGS IT CONTAINS OXYGEN. BLOOD CARRIES THE OXYGEN ALL AROUND YOUR BODY, TOGETHER WITH OTHER IMPORTANT FOOD.

**DIVE!**  
**DIVE!**  
**DIVE!**

10...9...8...7...6...5...4...3...2...1...



NOW HOLD ON TIGHT FOR THE JOURNEY OF THE MICROSUB DISCOVERY!

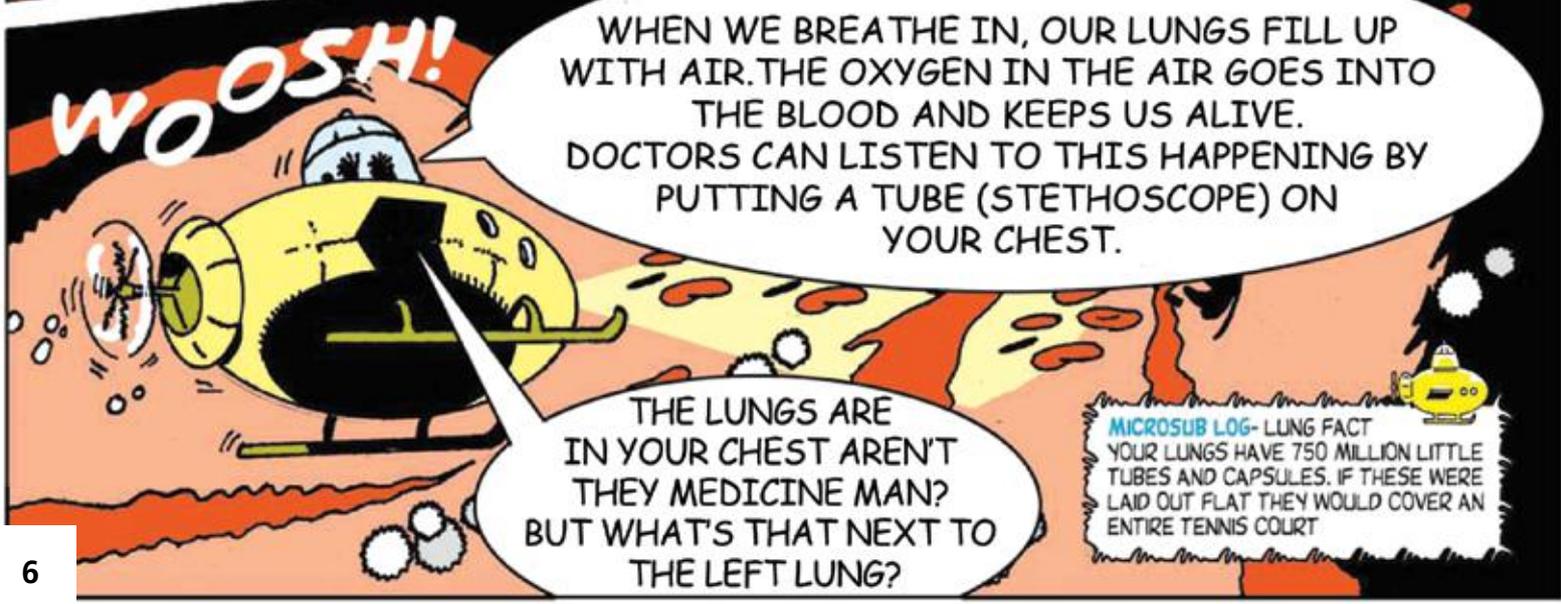
WOW! MEDICINE MAN, IT'S REALLY DARK INSIDE THIS BODY!

YEAH, AND ALL THE BODY PARTS ARE A KIND OF PINKY BROWN COLOUR.

WHAT ARE THOSE SPONGY THINGS? THEY LOOK LIKE TWO PUMPED UP PILLOWS.



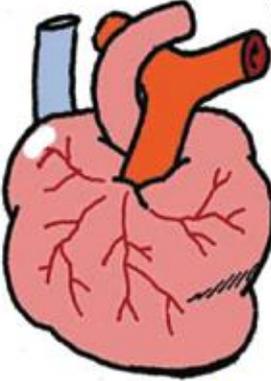
THOSE ARE LUNGS. THEY CAN HOLD UP TO 6 LITRES OF AIR. HOLD ON TIGHT GUYS, I THINK HE'S GOING TO BREATHE IN AGAIN.



WHEN WE BREATHE IN, OUR LUNGS FILL UP WITH AIR. THE OXYGEN IN THE AIR GOES INTO THE BLOOD AND KEEPS US ALIVE. DOCTORS CAN LISTEN TO THIS HAPPENING BY PUTTING A TUBE (STETHOSCOPE) ON YOUR CHEST.

THE LUNGS ARE IN YOUR CHEST AREN'T THEY MEDICINE MAN? BUT WHAT'S THAT NEXT TO THE LEFT LUNG?

**MICROSUB LOG- LUNG FACT**  
YOUR LUNGS HAVE 750 MILLION LITTLE TUBES AND CAPSULES. IF THESE WERE LAID OUT FLAT THEY WOULD COVER AN ENTIRE TENNIS COURT



THAT BIG MUSCLE IS CALLED THE HEART AND IT PUMPS BLOOD AROUND THE BODY IN ONE MINUTE FLAT. IN YOUR LIFETIME IT BEATS 4 BILLION TIMES AND PUMPS OVER 300 MILLION LITRES OF BLOOD, ENOUGH TO FILL 5000 SWIMMING POOLS!

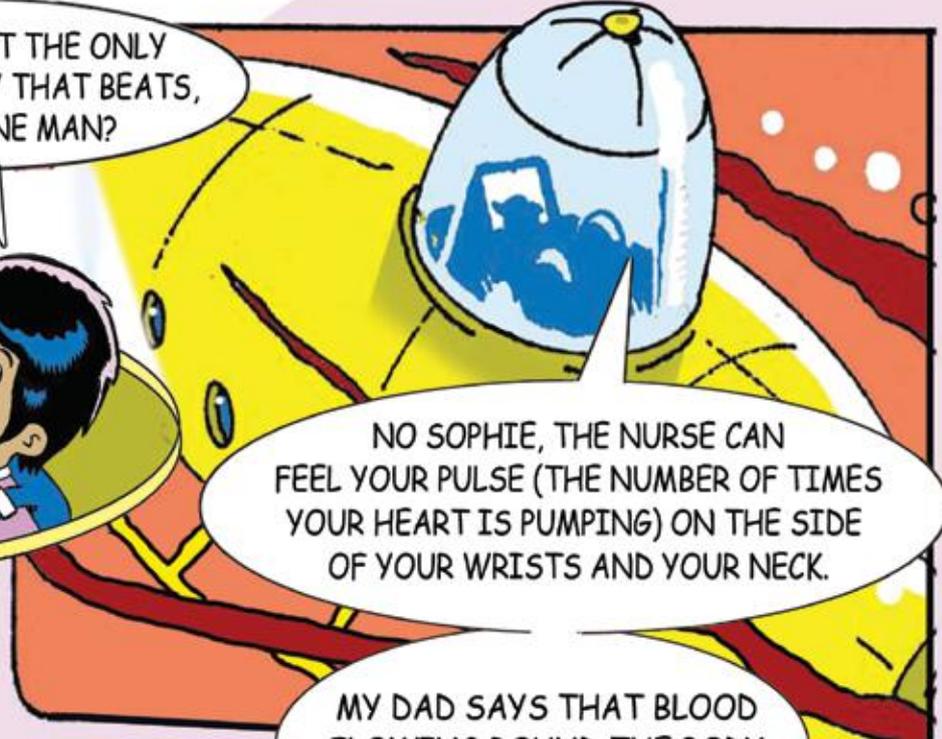


I ALWAYS THOUGHT IT WAS HEART SHAPED.

NO, IT'S A SORT OF BLOB SHAPE WITH FOUR BIG TUBES (BLOOD VESSELS) HANGING OUT OF THE TOP. IT NEVER STOPS BEATING, EVEN WHEN YOU'RE ASLEEP.



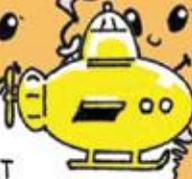
YOUR HEART ISN'T THE ONLY PART OF YOUR BODY THAT BEATS, IS IT MEDICINE MAN?



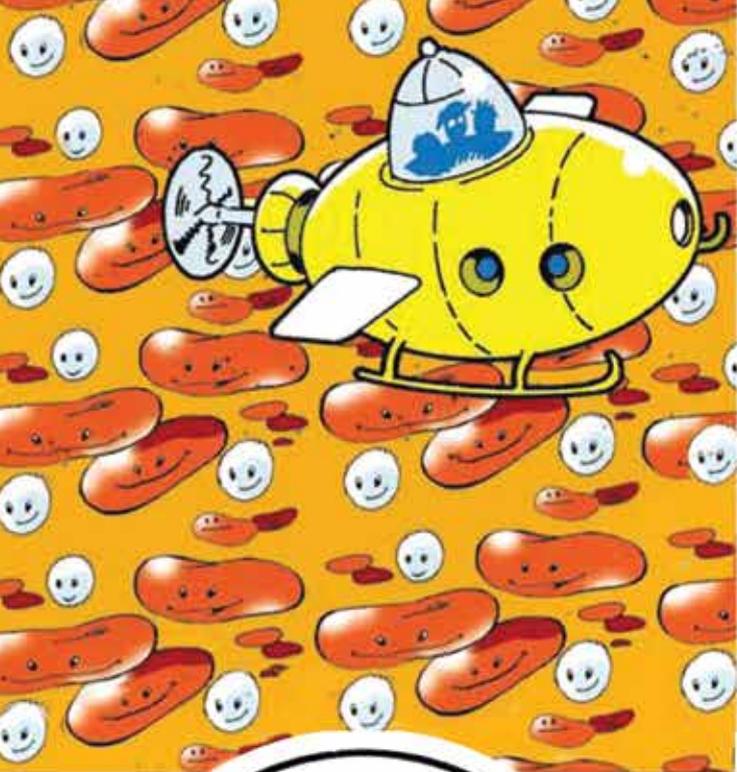
NO SOPHIE, THE NURSE CAN FEEL YOUR PULSE (THE NUMBER OF TIMES YOUR HEART IS PUMPING) ON THE SIDE OF YOUR WRISTS AND YOUR NECK.

MY DAD SAYS THAT BLOOD FLOWING ROUND THE BODY IS CALLED CIRCULATION.

**MICROSUB LOG- BLOOD FACT**



ONE TINY DROP OF BLOOD CONTAINS THREE SUPER HEROES: 7000 WHITE CELLS THAT FIGHT OFF ANY GERMS THAT GET INSIDE YOUR BODY, 50,000 PLATELETS - LIKE LITTLE ELVES WHO STOP BLEEDING BY LOCKING THEIR ARMS TOGETHER TO PLUG THE HOLES IN YOUR BLOOD VESSELS, AND 5 MILLION RED BLOOD CELLS THAT CARRY OXYGEN AROUND YOUR BODY.

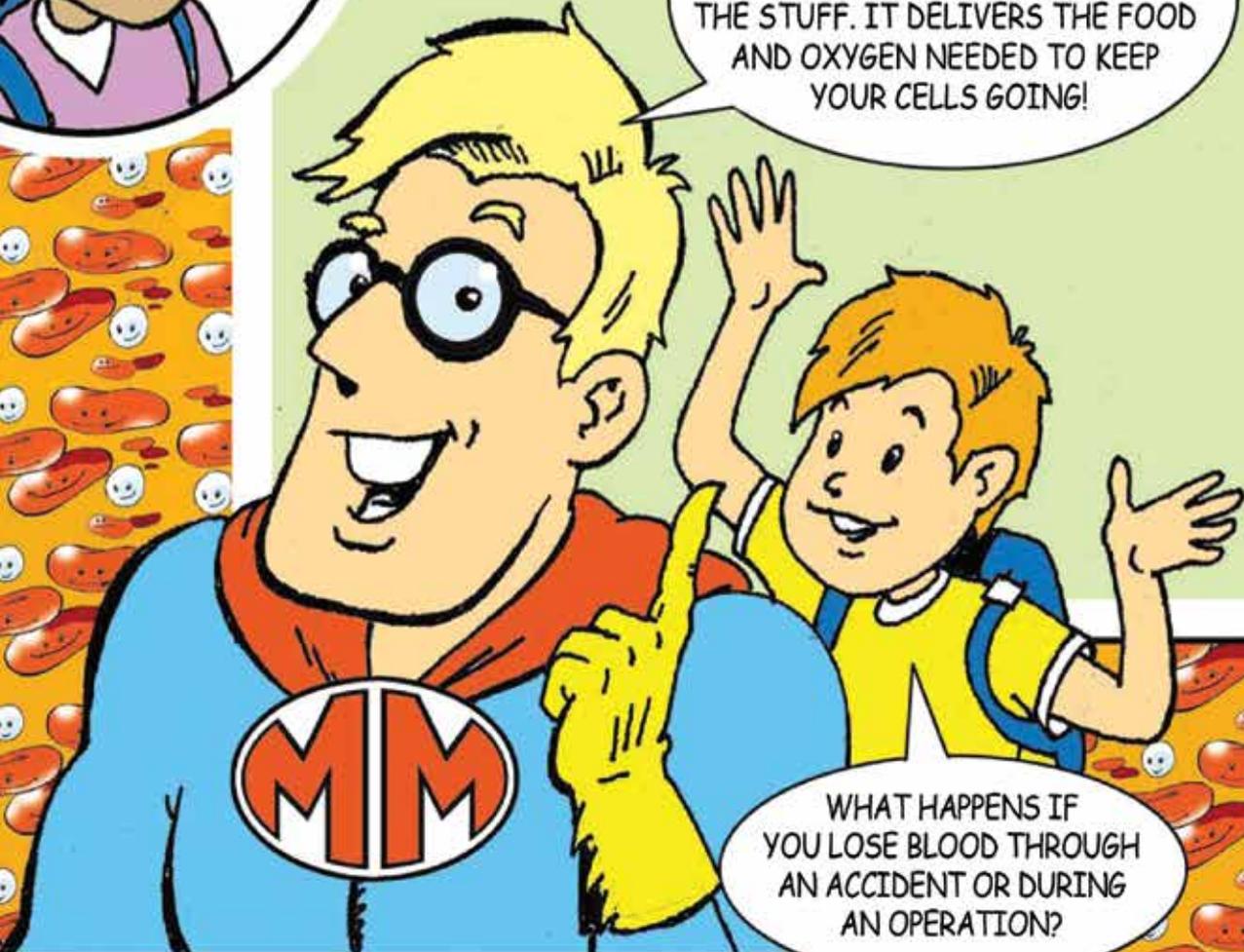
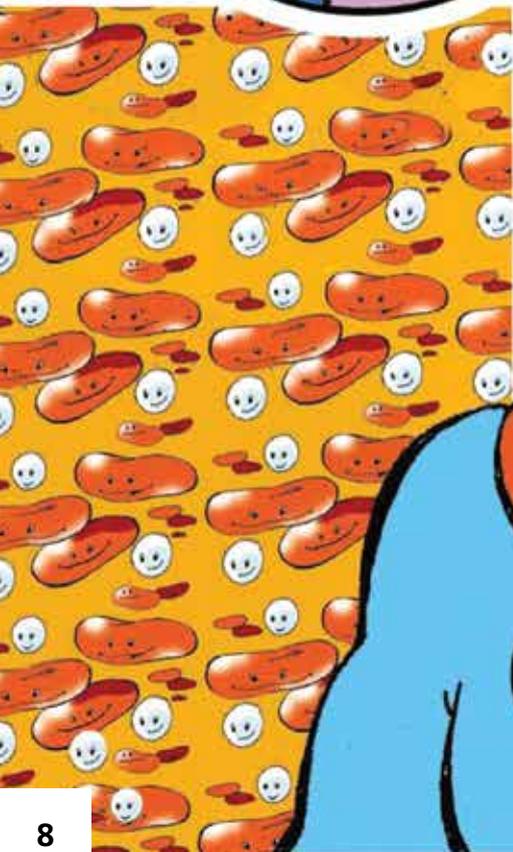


HE'S RIGHT SOPHIE, THERE ARE TWO MAIN KINDS OF BLOOD VESSEL: **ARTERIES** THAT CARRY BLOOD FROM THE HEART AROUND YOUR BODY AND **VEINS** THAT CARRY BLOOD BACK TO YOUR HEART.



TELL US MORE ABOUT BLOOD, MEDICINE MAN.

YOU CAN'T LIVE WITHOUT BLOOD AND YOUR BODY CONTAINS FIVE LITRES OF THE STUFF. IT DELIVERS THE FOOD AND OXYGEN NEEDED TO KEEP YOUR CELLS GOING!



WHAT HAPPENS IF YOU LOSE BLOOD THROUGH AN ACCIDENT OR DURING AN OPERATION?

YOU CAN LOSE ONE THIRD OF YOUR BLOOD WITHOUT HARM, BUT IF YOU LOSE HALF OF THE BLOOD IN YOUR BODY YOU'D BE VERY ILL.

BLOOD ISN'T REALLY RED, IT'S YELLOW WITH RED BITS FLOATING IN IT. THE YELLOW STUFF IS CALLED PLASMA AND IS 90% WATER AND 10% CHEMICALS THAT YOUR CELLS NEED TO STAY HEALTHY.

WHAT ARE THOSE RED AND WHITE THINGS OVER THERE, MEDICINE MAN?

**MICROSUB LOG - BLOOD FACT**  
YOUR BODY CONTAINS ABOUT 60,000 MILES OF BLOOD VESSELS. IF YOU LAID THEM END TO END THEY WOULD CIRCLE THE EARTH TWICE!

OH, THEY'RE TWO SUPERHEROES THAT YOUR BODY CAN'T DO WITHOUT. THE RED BLOOD CELLS CARRY OXYGEN AND GIVE THE BLOOD ITS RED COLOUR, THE WHITE CELLS HELP TO DEFEND YOUR BODY AGAINST GERMS.

**MICROSUB LOG BLOOD FACT**  
IN ONE DAY YOUR HEART PUMPS ENOUGH BLOOD TO FILL A 10,000 LITRE TANKER!

I THINK WE'RE UNDER ATTACK... SOMETHING IS ATTACKING THE BODY!!

I'M SCARED!

DON'T WORRY ABOUT THEM... THEY ARE GERMS (BACTERIA AND VIRUSES). THEY'RE TRYING TO GIVE THE BODY AN INFECTION, BUT THERE ARE PLENTY OF WHITE CELLS TO HELP FIGHT THEM OFF!!



LOOK SOPHIE...

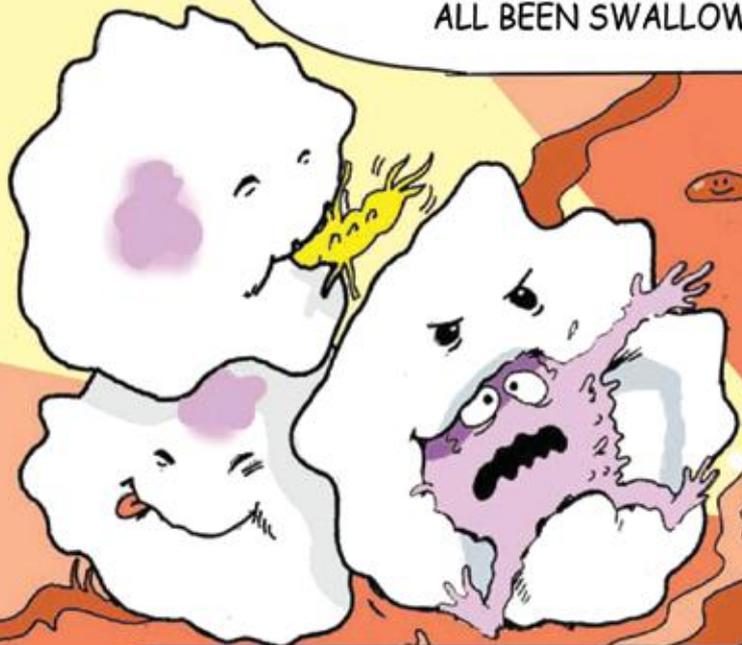


**MICROSUB LOG BLOOD FACT**

BLOOD IS FOUR TIMES THICKER THAN WATER!!!

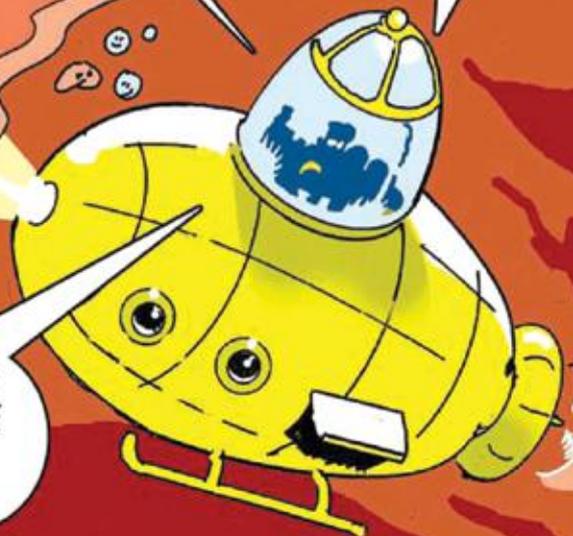


LOOK... THE WHITE CELLS ARE SURROUNDING THE GERMS AND THEY HAVE ALL BEEN SWALLOWED UP!



NEVER FEAR... THE WHITE CELLS ARE HERE. DURING AN INFECTION, SPECIAL WHITE BLOOD CELLS KILL GERMS BY PRODUCING LITTLE HELPERS CALLED ANTIBODIES.

ANTIBODIES REMEMBER ALL THE DIRTY TRICKS THAT THE GERMS PLAYED ON YOUR BODY IN THE PAST, THEY STAY IN YOUR BODY TO STOP THE SAME GERMS FROM ATTACKING AGAIN!!



PHEW, THAT WAS CLOSE! I ALSO LEARNED AT SCHOOL THAT PLENTY OF EXERCISE, SLEEP, AND HEALTHY EATING CAN HELP TO FIGHT GERMS AS WELL.

ABSOLUTELY RIGHT! TALKING OF SLEEP AND REST... OUR JOURNEY THROUGH THE BODY IS ALMOST OVER. THANKS FOR COMING ABOARD THE MICROSUB DISCOVERY.



BYE, KIDS!

BYE, MEDICINE MAN!

COME ON SOPHIE, I'LL RACE YOU...

THAT WILL KEEP OUR HEARTS PUMPING!



SEE HOW MANY OF THE WORDS LISTED BELOW YOU CAN FIND IN THIS WORDSEARCH, THEY ARE ALL LINKED TO THE VOYAGE ON THE MICROSUB DISCOVERY.



# Blood and Transplant

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- ANTIBODIES
  - ARTERIES
  - BACTERIA
  - BLOOD
  - BLOOD DONOR
  - EXERCISE
- LUNGS
  - OXYGEN
  - PLASMA
  - PLATELETS
  - PULSE
  - PUMP
- RED CELLS
  - REST
  - TRANSFUSION
  - WHITE CELLS
  - VEINS



IF YOU KNOW AN ADULT WHO WANTS TO BECOME A BLOOD DONOR OR FOR MORE INFORMATION ON GIVING BLOOD PLEASE CALL

**0300 123 23 23**

OR VISIT

**www.blood.co.uk**

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A big thank you goes to the children, parents and medical staff of the following hospitals

- Southampton General Hospital • St Mary's Hospital, London • John Radcliffe Hospital, Oxford
- Birmingham Children's Hospital • Royal Manchester Children's Hospital • Alder Hey Hospital

Special thanks also go to Upper 3N class at Maynard School, Exeter

We would welcome your feedback and comments on this leaflet. You can contact us in the following ways:

By post to: Customer Services, NHS Blood and Transplant, Part Academic Block – Level 2, John Radcliffe Hospital, Headley Way, Headington, Oxford OX3 9BQ.

By email to: [nhsbt.customerservice@nhsbt.nhs.uk](mailto:nhsbt.customerservice@nhsbt.nhs.uk) or by phone: **01865 381010**.

This leaflet was prepared by NHS Blood and Transplant in collaboration with the National Blood Transfusion Committee. Further supplies can be obtained by accessing <https://hospital.nhsbtleaflets.co.uk>

Individual copies of this leaflet can be obtained by calling **01865 381010**.

## NHS Blood and Transplant

NHS Blood and Transplant (NHSBT) saves and improves lives by providing a safe and reliable supply of blood components, organs, stem cells, tissues, and related services to the NHS and other UK health services.

We manage the UK-wide voluntary donation system for blood, tissues, organs, and stem cells and turn these donations into products that can be used safely to save lives or radically improve the quality of people's lives.

We rely on thousands of members of the public who voluntarily donate their blood, organs, tissues, and stem cells. Their generosity means each year we're able to supply around 2 million units of blood to hospitals in England and 7,500 organ and tissue donations within the UK, which save or improve thousands more people's lives.

### For more information

Visit [nhsbt.nhs.uk](http://nhsbt.nhs.uk)

Email [enquiries@nhsbt.nhs.uk](mailto:enquiries@nhsbt.nhs.uk)

Call **0300 123 23 23**

Add local contact details here.