INTO THE WORLD OF HAEMOPHILIA

Seeing through the eyes of **haemophilia patients**

Collaborators:

HOW TO USE
THIS BOOKLET?

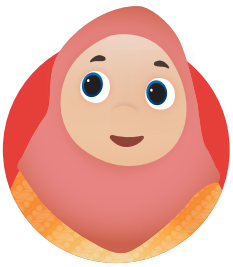
This booklet is divided to 4 parts to help you understand all you need to know about haemophilia

PART A: Understanding haemophilia
PART B: Looking out for haemophilia
PART C: Management options for haemophilia
PART D: Living daily with haemophilia

CHARACTERS INTRODUCTION


ADAM


ADAM'S DAD


ADAM'S MOM


DOCTOR

When a new topic is introduced, you will see this:

Fun facts that appear at the bottom of some pages look like this:

We want you to learn while watching, so when you see the following instruction, click the play icon or link to watch more about the topic


CLICK HERE TO WATCH VIDEO

We hope that this booklet will help you navigate through the World of Haemophilia!

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INTRODUCTION

This is an educational booklet specially targeted for parents (especially new parents) with young children diagnosed with Haemophilia. We hope that this booklet serves as a reference of basic information to raise the awareness of and to make them familiar with the management of children living with Haemophilia.

This booklet is not a substitute for the healthcare professional's advice, so do refer to your doctor if there are any sections within this booklet that you are unsure of.

The production of this booklet is a co-creation by the patient group Hemophilia Society Malaysia (HSM) and Roche Malaysia, supported by content contributors and reviewers as below:

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MESSAGE

FROM HEMOPHILIA SOCIETY OF MALAYSIA (HSM) TO READERS

This booklet is developed by the Hemophilia Society of Malaysia in both English and Bahasa Malaysia as a mean to provide some basic facts about haemophilia to the bleeding disorder communities especially for new parents with children with haemophilia and to serve as a guide for simple management of haemophilia problems. It is also aimed to provide some information to the general public with the hope of creating better awareness about this hereditary condition.

Haemophilia is a rare bleeding disorder, for which treatments are still being developed and several new agents are providing better quality of life for patients. The progress in haemophilia therapy has been remarkable from cryoprecipitate in the 70's to the availability of plasma-derived concentrates of coagulation factor VIII (FVIII) and factor IX (FIX) provided efficacious treatment of bleeding in patients with haemophilia A and B. This meant that, instead of only treating episodic bleeding events, prophylaxis regimens could be implemented as a preventive measure.

Alongside this, the last decade has witnessed further spectacular therapeutic progress, such as the availability of coagulation factors with a longer plasma half-life that allow for wider intervals between treatment. While there is still no cure as yet, new therapeutic products based on new mechanisms other than the replacement of the deficient factor, have become available or are at an advanced stage of development including gene therapy in high-income countries.

Together We Care. Treat. Heal.

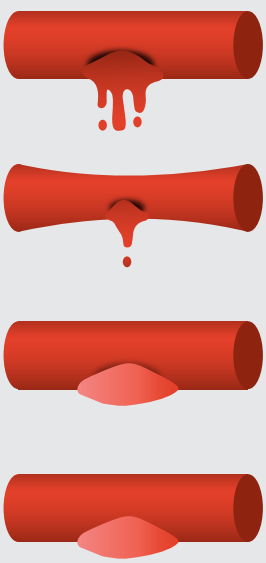
Mr. Edwin Goh Toke Yen
President 2021/2022
Hemophilia Society of Malaysia (HSM)

The Hemophilia Society of Malaysia (HSM) was formed in 1980 as a support group for haemophiliacs and their families and caregivers. We urge all haemophiliacs to keep in contact with other members and join whatever activities that are being held by HSM as we empower the community to be more informed about their condition.

PART A
UNDERSTANDING HAEMOPHILIA

A1: WHAT IS HAEMOPHILIA?

Meet Adam. He fell down, injured his knee and the bleeding takes longer time to stop.[1] Why is it difficult for bleeding to stop?



When bleeding happens, blood from capillaries starts to leak out from the wound[2]

Platelets will come together to form a plug[2]

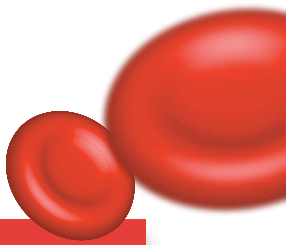
The presence of clotting factors will make the plug stronger and stop the bleed[2]

Because Adam has haemophilia, one clotting factor is missing or his clotting factor level is low. This makes it difficult for the blood to form a clot. Therefore, his bleeding may take longer to stop (low levels) or it would not stop until medical attention is sought (missing factors).

A2: TYPES OF HAEMOPHILIA

There are three major forms of haemophilia – A, B and C[3]

Haemophilia A[3,18]	Haemophilia B[3]	Haemophilia C[3,5]
Known as classical haemophilia	Known as Christmas disease	Known as Rosenthal's disease
Mutation of the Factor 8 gene at the X chromosome	Mutation of the Factor 9 gene at the X chromosome	Mutation of the Factor 11 gene at the non-sex chromosome



A3: HOW IS HAEMOPHILIA INHERITED AND WHAT IS A CARRIER?

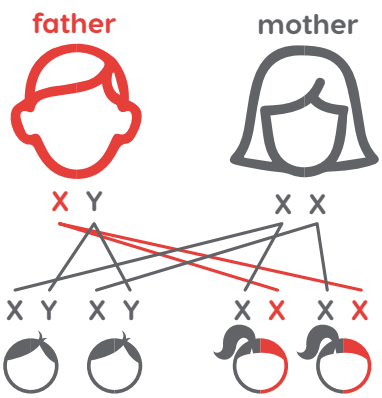
See the examples below to understand how Haemophilia A can be inherited

Since genes of clotting factors are located in the X chromosome, children can inherit haemophilia from their parents[4]

SCENARIO 1

Father has haemophilia, mother is unaffected

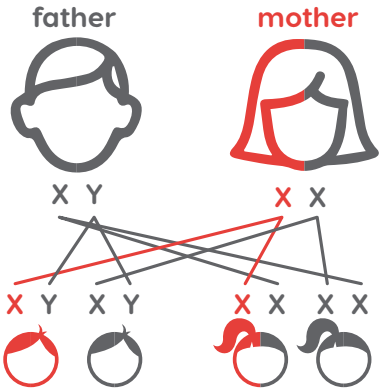
Sons: None will have haemophilia
Daughters: **All will be carriers**



SCENARIO 2

Father does not have haemophilia,
mother carries a mutated gene (a carrier)

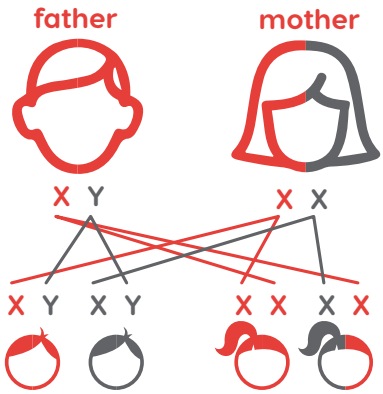
Sons: 50% chance of getting haemophilia
Daughters: 50% chance to be a carrier



SCENARIO 3

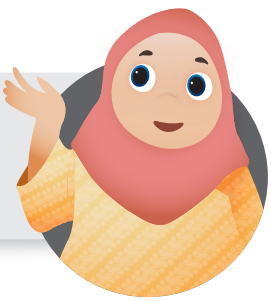
**Father has haemophilia,
mother carries a mutated gene (a carrier)**

Sons: 50% chance of getting haemophilia
Daughters: 50% chance of getting haemophilia;
50% chance to be a carrier

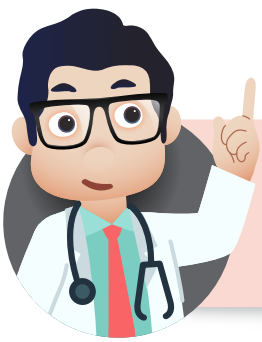


RED means the parent has an abnormal X chromosome (mutated)

GREY means the parent has a normal X chromosome



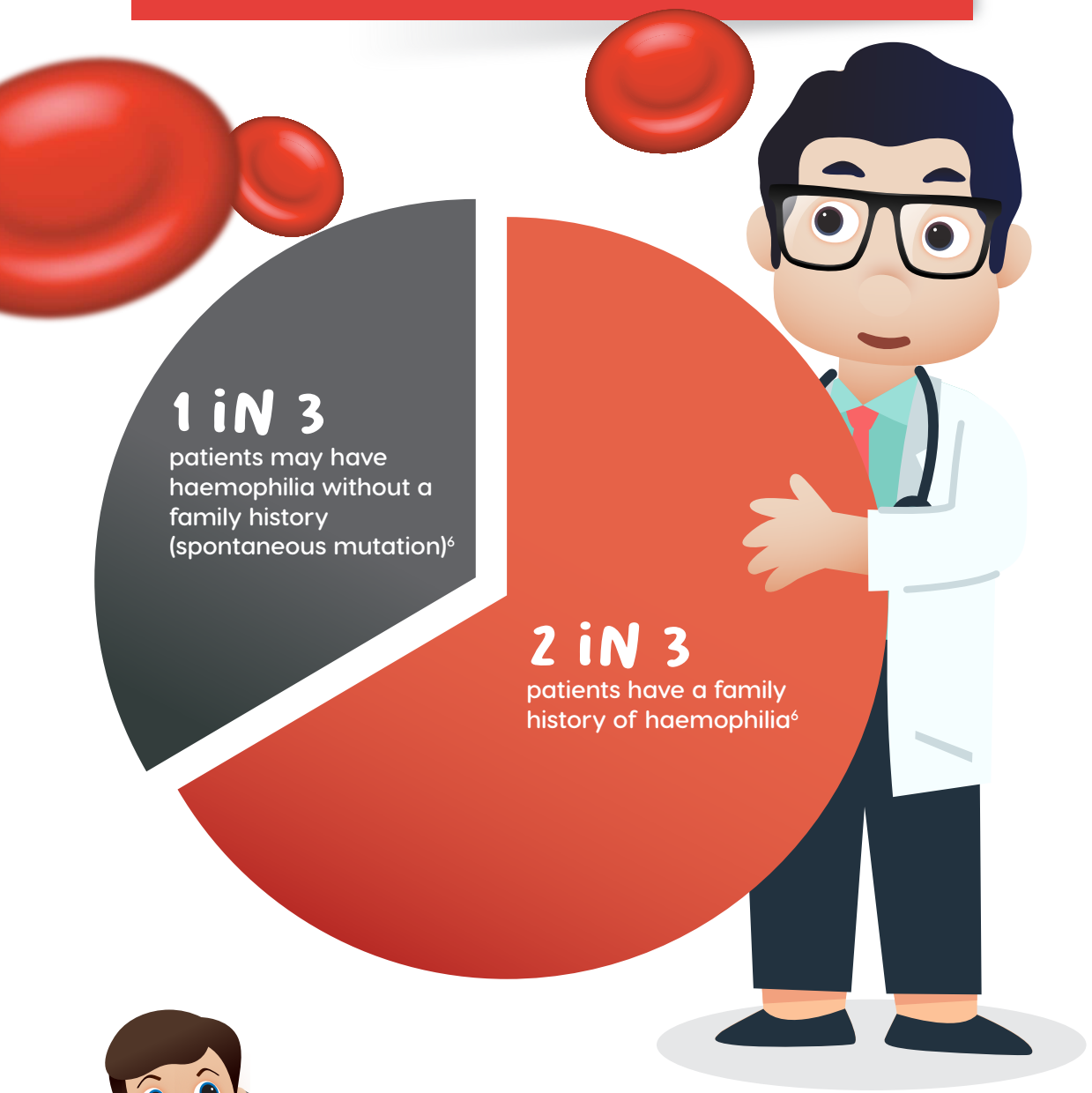
Females are usually carriers, so we should encourage our sisters to speak to their doctors to understand what are the chances of them being a carrier.



Parents with known family history of haemophilia who are planning to have children OR currently pregnant should **inform their doctors regarding their family history**. Your doctor will inform you regarding the chances of your child inheriting haemophilia and ensure necessary precaution taken during pregnancy, delivery and for newborn baby.

A4: ARE ALL HAEMOPHILIA INHERITED?

No, approximately 30% of congenital haemophilia are spontaneous mutation and not inherited from family.[16]



Do you know that haemophilia is not contagious? Other people cannot catch it from us![2]

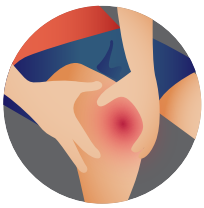
PART B
LOOKING OUT FOR HAEMOPHILIA

B1: WHAT ARE THE SUSPECTED SYMPTOMS?

Bleeding can happen anywhere in the body. Sometimes, it can be seen and sometimes it is concealed[11]

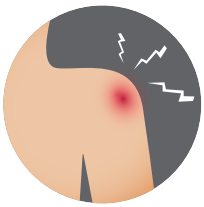
Haemophilia can be suspected when patient is presenting with any of the following symptoms[3,16]:

Easy bruising, especially when babies start to walk[3,16]



Spontaneous bruising without known reasons or swelling at joints[16]

Prolonged bleeding after an injury or surgery[16]



Serious bruising after vaccination[3]

Symptoms of spontaneous bleeding, especially in young children, may not be immediately obvious. Parents might notice an unexplained change in their child's behaviour/activity. For example, when their child refuses to:

- stand on their own
- play, walk or crawl
- hold or reaching out for objects

CLICK HERE TO WATCH VIDEO
The journey from suspicion to diagnosis for a new child

B2: SCREENING TESTS FOR HAEMOPHILIA

When haemophilia is suspected, a few blood screening tests are done for confirmation. Do check with your doctor for further information on what these tests are[7]

Screening tests are to measure[7]:

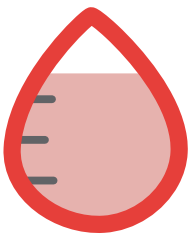
- Platelet levels
- Activated partial thromboplastin time (APTT)
- Prothrombin time (PT)

If the test results from screening are abnormal and haemophilia is suspected, your doctor will carry out the specific factor assay tests to determine the clotting factor levels in the body (mild, moderate or severe haemophilia).

Thank you for informing us early about you and your husband's family history of haemophilia. We will take necessary precaution throughout your pregnancy and delivery.

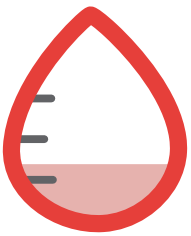
B3: HAEMOPHILIA IN DIFFERENT DEGREES OF SEVERITY

The lower the clotting factor level, the easier bleeding/bruising occurs[2]



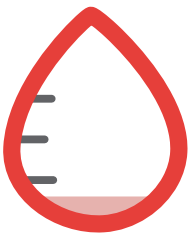
Normal

Factor level: **40–150%**
Bleeding stops normally



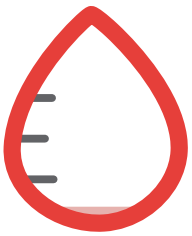
Mild haemophilia

Factor level: **5–40%**
Bleeding may continue longer than normal, usually after injury/surgery



Moderate haemophilia

Factor level: **1–5%**
Bruising/bleeding can happen easily after an injury/surgery and when it does, it will continue longer than normal



Severe haemophilia

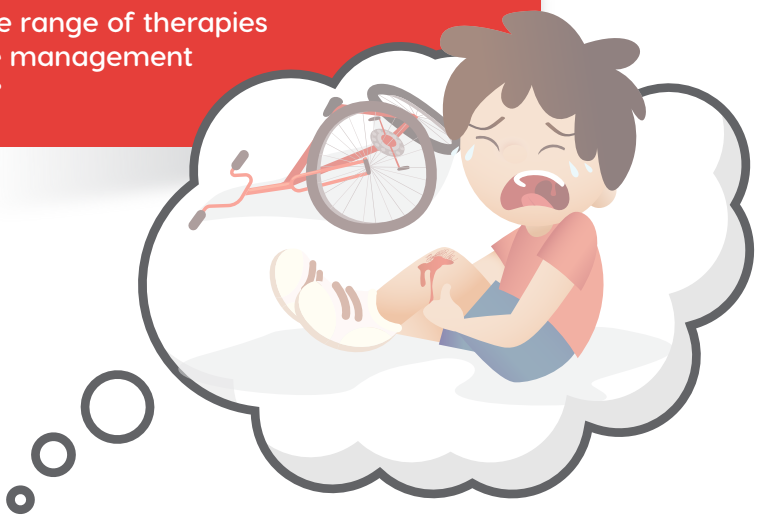
Factor level: **<1%**
Bleeding can happen for no clear reason

If your child has severe haemophilia, the risk of bleeding is the highest. So, prevention using 'prophylaxis therapy' is very important! Let's learn about prophylaxis therapy in the next section.

PART C
MANAGEMENT OPTIONS FOR HAEMOPHILIA

C1: THERAPIES FOR HAEMOPHILIA

There are a wide range of therapies available for the management of haemophilia[16]



Remember Adam?
With haemophilia, Adam is at risk to have[18]:

- Spontaneous (unexplained) bleeding
- Prolonged bleeding after dental procedure or surgery

How can we help Adam avoid the above complications?

- Adam needs regular clotting factors to avoid spontaneous bleeding
- Adam needs clotting factors before going for surgery to minimise bleeding during surgery

Since we know Adam's blood is lacking of clotting factor, how can we help him prevent bleeding in the future?

Factor replacement therapy[11]

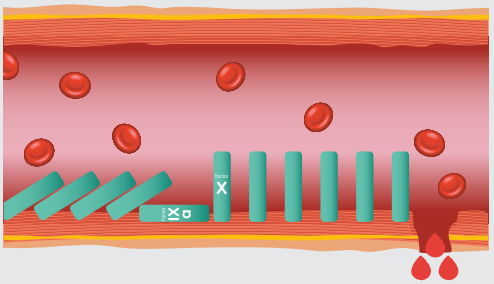
Non-factor replacement therapy[11]

GOAL

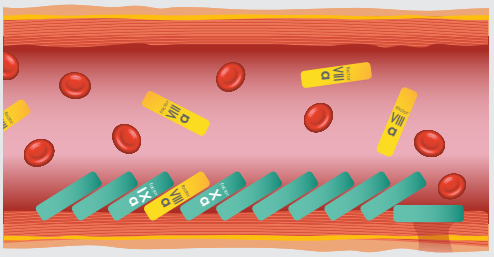
To replace the missing clotting factor

To mimic the action of the missing clotting factor

HOW iT WORKS?

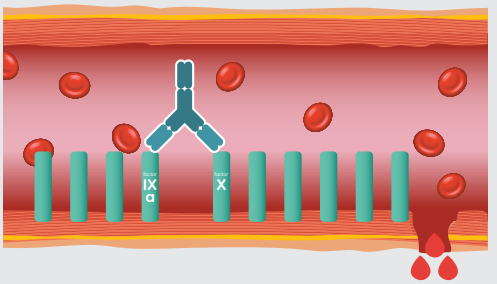


When clotting factor (for eg, factor 8) is missing, the 'domino effect' of blood clotting process cannot happen

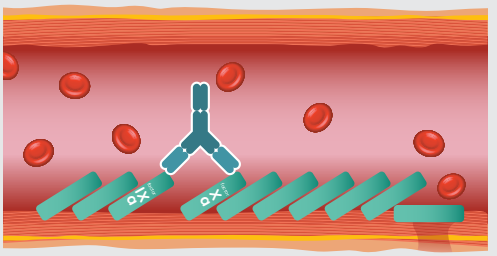


When replacement of factor 8 is given, the factor replaces the missing factor and promotes the 'domino effect' of blood clotting

HOW iT WORKS?



Non-factor replacement therapy creates a bridge between two other clotting factors



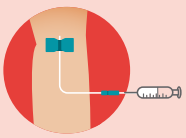
This allows the rest of the clotting factors to continue to function in the 'domino effect' of blood clotting process

C2: HOW DO WE GIVE HAEMOPHILIA THERAPIES?

There are two main methods of administration.[11] This depends on the type of therapy your doctor has prescribed for your child. Please speak to your doctor for more information

Intravenous administration*[11]

Peripheral venous: The factor is infused into the bloodstream via the blood vessels on hand or arm



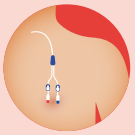
Through the arm

Through the hand

Central venous:

- The factor is infused directly into major central vein, in the chest through a central catheter or ports
- Usually for patients with peripheral venous access issue

Port-a-cath

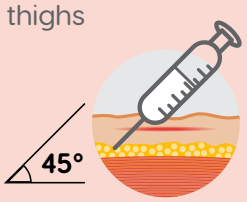


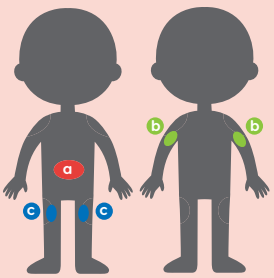
Hickman line

*For example, clotting factor replacement therapies

Subcutaneous administration[11]

- Injection into the tissue under the skin
- Usually done on the recommended injection sites, which are[8]:
  - a abdomen
  - b upper outer arms
  - c thighs





front back

Did you know that parents and kids can learn how to administer these therapies at home instead of going to the hospital?
Please speak to your doctor or HSM team to find out more!

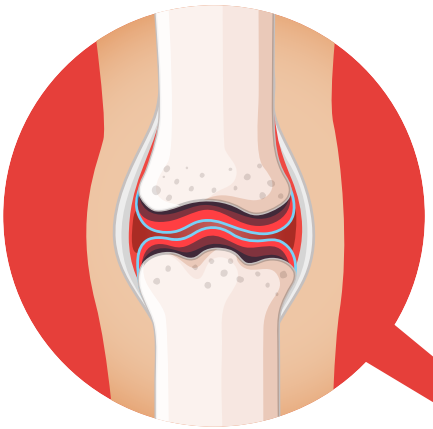
CLICK HERE TO WATCH VIDEO
Moving from hospital to home infusion

CLICK HERE TO WATCH VIDEO
Video of a child self-administering prophylaxis therapy at home

C3: WHAT IS HAEMARTHROSIS (JOINT BLEEDING) AND WHY ARE DOCTORS EMPHASISING ON AVOIDING THIS?

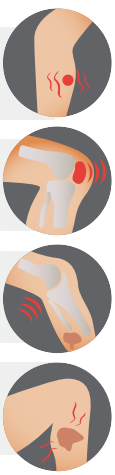
Haemarthrosis is a condition where bleeding happens in the joint space and it commonly occurs in people with severe haemophilia and occasionally for those with moderate haemophilia.[13] It is important to avoid haemarthrosis because it can lead to joint damage and deformity[13]

The most affected joints are knees, elbows and ankles[6]

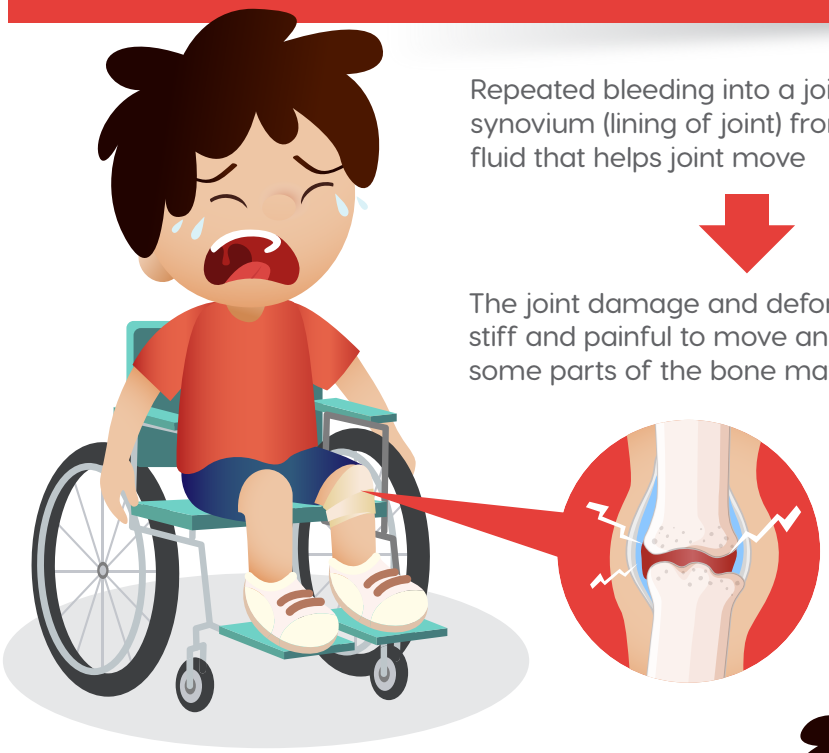


People experiencing haemarthrosis is presented with the following conditions[1,2,9]

1. Ticklish at the joint. It means a bleeding starts!
2. Joint becomes hot, swollen and painful
3. Difficulty in flexing the elbow or knee
4. Skin on the elbow or knee is stretched or swollen



C4: COMPLICATIONS OF HAEMARTHROSIS[2]



Repeated bleeding into a joint can stop synovium (lining of joint) from producing fluid that helps joint move

The joint damage and deformity becomes stiff and painful to move and over time, some parts of the bone may wear away

C5: HOW TO PREVENT JOINT DISEASE IN PEOPLE WITH HAEMOPHILIA?[6]

Early and regular prophylaxis with factor or non-factor replacement therapies as per guidelines

Early treatment of joint bleeds with factor concentrates

Maintain a **healthy body weight** to decrease joint burden

Regular exercise to strengthen muscles supporting joints

C6: PROPHYLAXIS AS A REGULAR REGIMEN FOR HAEMOPHILIA

Prophylaxis therapy (factors/non-factor replacement) is given to people with haemophilia at regular interval to prevent bleeding[16]

Why initiate prophylaxis at a young age?

For Adam, it means healthy joints when he is growing up! Prophylaxis should be initiated as soon as possible after a first major bleed (joint, muscle or intracranial bleed) and before the age of three if there is no major bleed[6]

Benefits of receiving prophylaxis early:

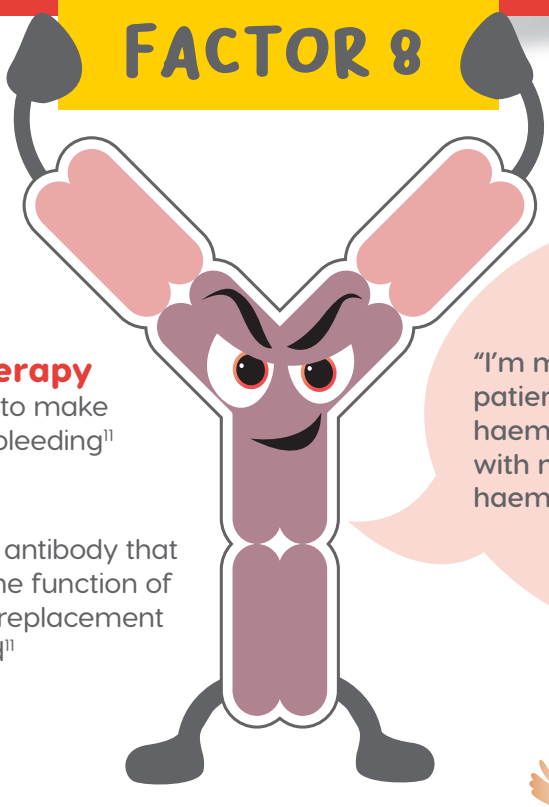
- Reduced risk of bleeding, which often happens in very young children[16]
- Can live a healthy and active lifestyle, just like people without haemophilia[16]
- Healthier joints than those who didn't receive prophylaxis therapy[9]
- Lower risk of inhibitor development than on-demand treatment[6]

I listened to my doctor and have been taking regular prophylaxis dosing since I was 2 years old to reduce bleeding as much as possible and to protect my joints so I can remain mobile during my adulthood!

CLICK HERE TO WATCH VIDEO
The importance of prophylaxis therapy

C7: WHAT ARE INHIBITORS?

About one-third of patients with severe haemophilia A would develop antibodies against factor 8 replacement therapy. These antibodies are called inhibitors, which prevent the replacement therapy to function properly[11]



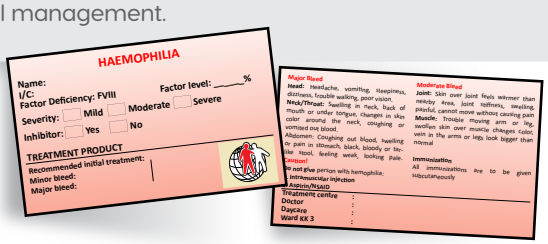
Factor 8 replacement therapy which the body used to make blood clots and stop bleeding[11]

An inhibitor is an antibody that sticks to and blocks the function of factor 8 and factor 8 replacement therapies in the blood[11]

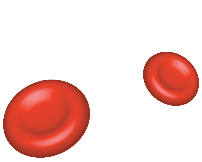
"I'm more common in patients with severe haemophilia than those with mild-to-moderate haemophilia[16]"

Speak to your doctor to understand more about inhibitors and what can be done to prevent them from developing for your child.

In some Haemophilia Treatment Centres, your child might be given a Haemophilia ID card (example below). Please bring this to every visit to the hospital or clinic, especially during bleeding emergencies, so that your doctor is aware that you have inhibitors and therefore, require extra careful management.



PART D
LIVING DAILY WITH HAEMOPHILIA

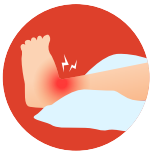


D1: RECOGNISING AND HANDLING BLEEDS

It is important for parents/caregivers to start recognising the possible signs of bleeding in younger children in order to start an appropriate treatment immediately. When children are older, they will be able to explain any discomfort they may feel[11]

Types of bleeding	Management tips*
Minor cuts and bruises[11] If the child is on prophylaxis treatment and the cut is not deep, basic first aid measures will be able to help slow and stop bleeding	**How to clean cuts?**[10] **STEP 1** Clean the cut with antiseptic  **STEP 2** Apply firm pressure until the bleeding stops  **STEP 3** Apply a band-aid or dressing  **When to seek help*?**[11] • When the wound is deep and requires stitching • When the bleeding does not stop after the steps above • Put pressure on the wound and contact the nearest hospital

Types of bleeding	Management tips*
Head injuries[11] Any head injury may potentially be serious as internal bleeding can happen under the skull. Keep a close eye on any signs of internal bleeding	**When to seek help*?**[11]  Feeling dizzy/ having a headache  Experience nausea and/or vomiting  Loss of balance/ poor body coordination  Experience convulsion/seizure
Nose bleeds[11]	**What to do**[11] **STEP 1** Sit on a chair and hold the head with the chin down  **STEP 2** Press the nostril that is bleeding for at least 10-20 minutes  **OR** Place an ice pack in a towel on the bridge of the nose for a maximum of 5 minutes  **When to seek help*?**[11] If the bleeding does not stop, contact the parents/caregivers or the nearest hospital

Types of bleeding	Management tips*
Oral bleeding (tongue or mouth)[11] Bleeding may be more difficult to stop as the clot would be easily dislodged by tongue, food or saliva	**What to do?**[2] This is common as children have wobbly teeth or a tooth that is falling off. Ensure your child has regular dental appointment.  **When to seek help*?**[11] Treat any bleed around the neck and throat as an emergency and immediately seek advice from haemophilia centre.
Muscle and joint bleeds[11] This can happen during playtime or spontaneously. While older children can tell when they are bleeding, younger ones may require observation, such as limping or appearing upset	**What to do?**[2] **Start RICE as soon as possible** **REST** Rest the arm or leg on pillows or put a sling or bandage. Avoid moving  **ICE** Wrap an ice pack in a damp towel and put over the bleed. Alternate 5 minutes on with 10 minutes off  **COMPRESSION** Apply gentle pressure using bandage or elastic stocking  **ELEVATION** Raise the affected area above the heart level to slow down bleeding 

Types of bleeding	Management tips*
	RICE is just an emergency measure. Please consult your child's doctor afterwards. Your child may require additional treatment e.g. specific painkillers or clotting factors.[7] **When to seek help*?**[11] • Suspicion of a broken bone • Pain, swelling or any related symptoms that did not go away after 3 days
Abdominal injuries[11] Internal injury and bleeding can be difficult to detect by looking from the outer appearance	**When to seek help*?**[11] If worrying signs, such as the following appear, immediately contact the nearest haemophilia centre  Abdominal pain  Vomiting of blood (black or red in colour)  Red-brown coloured urine or bloody stool

*These management tips are only for emergency measures.
To seek help, please contact your child's haemophilia doctors or visit the nearest haemophilia treating centre.

CLICK HERE TO WATCH VIDEO
Managing bleeding at home

CLICK HERE TO FIND OUT
Haemophilia treatment centre is nearest to your location

D2: ENJOYING OUTDOOR ACTIVITIES WITH HAEMOPHILIA

There are many non-direct contact outdoor activities that people with haemophilia can enjoy. Other than keeping your heart strong, they also help to strengthen your muscles, bones and joints!

When Adam is swimming, he makes sure that[1]:

- He swims with a companion, friends or family
- He does not attempt to jump from great heights
- He gets out of the water immediately when he's tired

When Adam is cycling, he makes sure that[1]:

- He wears protective gears, including a helmet and knee pads
- Brakes are checked and working properly
- The tires have enough air
- He avoids cycling at high speed
- He avoids riding at night and turn on bike light when needed
- He always slows down at junction and cross checks for cars before crossing the road

Did you know that different sports/physical activities are ranked from 1 to 3 depending on their risk level?[6] Speak to your doctor to find out more about this!

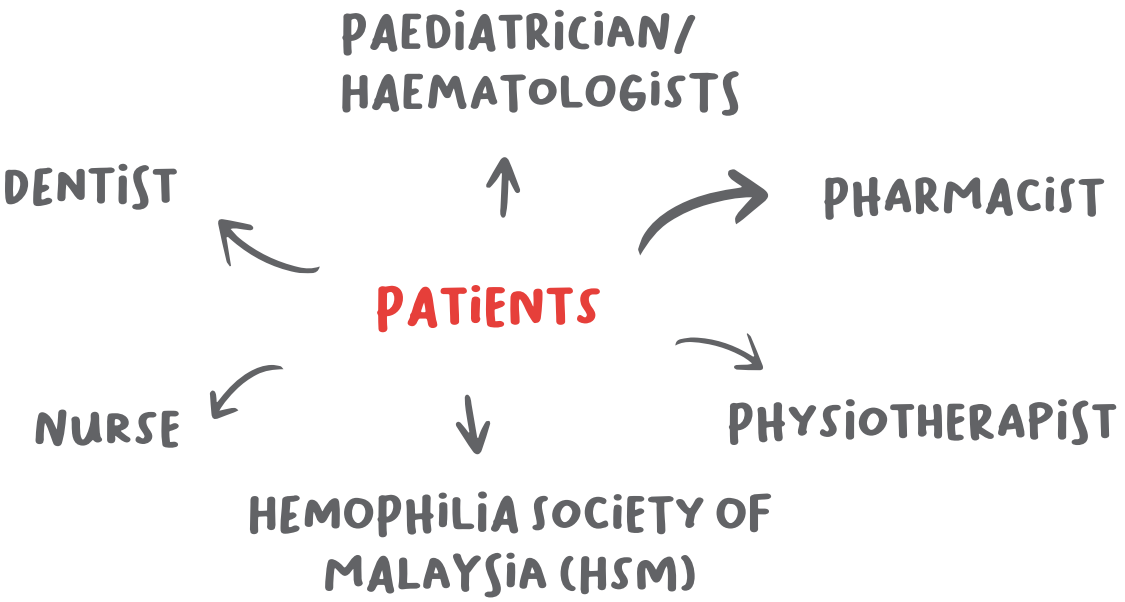
Level	1	1.5	2	2.5	3
	Safe	Safe to moderate risk	Moderate risk	Moderate to dangerous risk	Dangerous risk
E.g.	Swimming Walking	Badminton Bicycling	Running/Jogging Bowling	Basketball Soccer	Boxing Hockey

CLICK HERE TO WATCH VIDEO

Should children living with haemophilia enrol in special needs schools? What about choices of sports activities?

D3: SUPPORT AVAILABLE FOR YOU AND YOUR FAMILY FOR HAEMOPHILIA MANAGEMENT

You are not alone in the journey of haemophilia management as there is a team of professionals who are there to support you



Locate your nearest haemophilia centre
Remember to ask your doctor about these details:

Who do you have to meet and for what purpose?
How often do you need to meet them?
How do you contact them?

Do you know what are the advantages of being a member of the Hemophilia Society of Malaysia? Contact them HERE to find out more today!

CLICK HERE TO WATCH VIDEO
Experience as a member of HSM

GLOSSARY

Carrier	a female who inherits one X chromosome with haemophilia mutation[11]
Factor 8	a protein (called coagulation factor) that helps in formation of blood clot[12]
Haemarthrosis	a condition where bleeding into the joint spaces occurs[13]
Inhibitors	antibodies that bind themselves to the clotting proteins, making it difficult, if not impossible, to reach a level of sufficient bleeding control[14]
Intravenous administration	an administration method of using a needle of tube to deliver medication into the vein[15]
On-demand therapy	treatment of a condition as and when required instead of regular administration; also known as an 'episodic' treatment[11,16]
Prophylaxis	regular administration of treatment at specific intervals to prevent bleeding, also known as "preventative" treatment[11,16]
Subcutaneous	an administration method to deliver medication under the skin[17]
Severe haemophilia	haemophilia in individuals with clotting proteins/factors activity less than 1% of normal level[18]
Spontaneous bleed	when bleeding occurs without a known cause[18]
X chromosome	X chromosome is one of the two sex chromosomes in humans (the other is Y chromosome). The sex chromosomes form one of the 23 pairs of human chromosomes in each cell[19]

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We hope that this booklet will help you navigate through the World of Haemophilia!

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