Information for first-degree relatives when participating in a scientific research project

Information for teens (15-17)

The prevalence of Bicuspid Aortic Valve and Associated Abnormalities of Newborns and First-degree Relatives

We are doctors at the Department of Cardiology at Rigshospitalet and Herlev Hospital. We aim for a better understanding of the heart valve failure called “Bicuspid Aortic Valve”, which some people are born with.

Normally the heart valve between the left heart chamber and the main artery, aorta is divided in 3 (tri-cuspid), but some people have a heart valve divided in 2 (bi-cuspid). A bicuspid aortic valve can be hereditary and therefore could the bicuspid aortic valve be found at other family members.

In the Copenhagen Baby Heart Study your brother/sister has been examined with a heart scan. The heart scan reveals if the aortic valve is bicuspid. When we find a bicuspid aortic valve, we invite the whole family to an examination to see if other family members also have a bicuspid aortic valve.

To help us understand the conditions concerning the bicuspid aortic valve better it is important that we also examine families where we HAVE NOT found a bicuspid aortic valve when scanning the baby hearts in Copenhagen Baby Heart. These families become the control group in this study. A control group helps us study if there is a difference between the control group and the families with a baby brother or sister with a bicuspid aortic valve.

If you and your family agree to participate you will be invited to one examination with your parents. Participation is optional and even if you now agree to be a part of the study you and your parents can always and without explanations change your mind and leave the study, and this will be of no consequences of the future/further treatment.

You have to make your decision with your parents, but your parents have to sign the consent if you choose to participate. Before you decide whether you want to participate or not it is important that you and your parents understand what the consequences are for you and why we do the study. Therefore, we ask you to read this information thoroughly.

You should also read the information for participation in research projects: ”Forsøgspersoners rettigheder i et sundhedsvidenskabeligt forskningsprojekt”.

You and your parents will be invited to a conversation about the examination. A doctor will tell you more about the bicuspid aortic valve and you can ask any questions you might have. You are welcome to bring a family member or a friend to the appointment.

The purpose of the study and who can participate

As a part of Copenhagen Baby Heart Study your brother/sister has been examined with a heart scan. The heart scan reveals if the aortic valve is bicuspid.

The purpose of the study is to examine how many babies have been born with a bicuspid aortic valve and to examine the families of those babies with a bicuspid aortic valve. We also want to examine to what extent the bicuspid aortic valve is due to a genetic change and to examine which genes can cause a bicuspid aortic valve.
The screening for genetic changes is done by a blood sample.

In order to get a better understanding of the bicuspid aortic valve it is very important that we also examine the families of the babies that DO Not have a bicuspid aortic valve. These families will be the control group of this study.

The control group helps us to examine if there is a difference between the control group and the families with a bicuspid aortic valve. When we examine the individual family members, we can find everyone in the family with a bicuspid aortic valve and make sure they get the correct clinical follow up and treatment. We will also be better at understanding the inheritance of the bicuspid aortic valve and show the value of a family examination.

The Procedure

As a part of Copenhagen Baby Heart Study your brother/sister has been examined with a heart scan. The heart scan is for instance used to check for a bicuspid aortic valve. If we find a bicuspid aortic valve, we invite the whole family to an examination to check for more bicuspid aortic valves in the family.

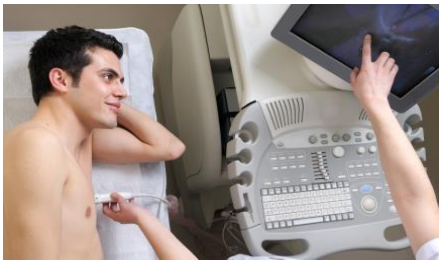
We would also like to invite the families of the newborn babies who do not have a bicuspid aortic valve to be part of the control group. Which is why we also invite you and your family to a heart examination.

Please understand that if you agree to this examination you also agree to receive other information about your health – also if they appear to be abnormal.

Which examinations will be involved if I participate in the project?

If you choose to participate in the project, we will examine you by various examinations:

- *Health examination:* We measure your height and weight, as well as your pulse and blood pressure. We listen to your heart and lungs with a stethoscope and ask you questions about your health (general health history) and about the health history in your family.
- *Heart diagram (electrocardiogram, ECG*): By an ECG we check your heart rhythm and check if you have a thickening of your heart muscle. When we record your ECG, you have to lie on your back without clothes on your upper part of your body. We put 6 stickers on your chest and a sticker on each of your arms and legs. The examination will only take a couple of minutes. It doesn't hurt and you can't feel the ECG being recorded.
- *Ultra sound of the heart outside the rib cage:* By this examination we can see how your heart pumps and relaxes. We can measure how thick the heart walls are, examine the heart valves and check if the aortic valve is bicuspid.
  During this examination you have to lie on your side on the examination table without clothes on your upper body. We will put 3 stickers on your chest that will monitor your heart rhythm while the examination takes place. The doctor or the nurse puts some gel on the ultra sound probe. By putting the probe close to your rib cage, we can see and record pictures of your heart.
  The examination takes about half an hour. It doesn't hurt, but it can be a little cold and uncomfortable to lie undressed on your side during the examination. But during the examination you will be able to follow the pictures of your heart.



- *Blood samples:* The blood samples are taken with a small needle from a blood vessel inside your elbow. You can feel a small sting as the needle goes through the skin, but the sting itself goes very fast. The needle has a small plastic tube and through the plastic tube we can transfer a small amount of blood into small glass containers. The blood sample takes about 5 minutes.
  If you join the control group as a family member – to a newborn who doesn't have a bicuspid aortic valve – we are not going to take a blood sample.

During the study we will try to get information from your medical journal at the hospital. It concerns hereditary deceases, chronical illnesses and pregnancy courses.

You also need to know that if you join the study it will give us the opportunity to use your medical journals in order to make quality control of the project – and the participation also involves exchange and analysis of necessary information about the test person's health, other private matters and other confidential information, as a part of the legal control of the study by the relevant authorities.

Disadvantages and discomfort by the examinations

If you choose to join the project, we will invite you to 1 session that covers all the examinations.

Please understand that if you agree to participate in the study you also agree to receive other information about other concerns we might find at the examinations – also if they are irregular. If we find something irregular during the examinations, we will ensure the correct follow up examinations and treatment. If we find a heart condition or an illness that is of no

concern, or if the irregularity doesn't require follow up and treatment until adulthood, this information could cause unnecessary concern for you or your family.

Ultrasound scan of the heart outside the rib cage

During this examination you lie on your side on an examination table without clothes on your upper body.

The examination takes approximately half an hour. The examination is safe, and it doesn't hurt, but it can be a little cold and uncomfortable to lie on your side without any clothes on your upper body while you are examined. But during the examination you will be able to follow the pictures of your heart.

Heart diagram

When we record the heart diagram you have to lie on your back with no clothes on your upper body.

The recording will only take a few minutes. The examination is completely safe. It doesn't hurt and you can't feel the heart diagram being recorded.

Blood samples

The blood samples are taken with a small needle from a blood vessel inside your elbow. You can feel a little sting as the needle passes the skin, but the sting is quickly over. It can bleed a little after the blood sample has been taken. A little bruise might appear, but it will disappear after a couple of days. An inflammation in the skin is very rare.

If you participate as a control group family member (to a newborn that doesn't have a bicuspid aortic valve), you will not have a blood sample taken.

Blood that will not be used for this project will be discarded immediately.

Genetic screening

If we find a bicuspid aortic valve in your family, the genetic screening will help us explain which genetic change caused this. From our present knowledge we will not, in many cases, be able to find the genetic change that caused the bicuspid aortic valve, but when we focus on screening a small number of genes, that are linked to deceases in the aortic

valve and the main artery, we expect to increase our knowledge of the effect of genetic changes that cause the development of the bicuspid aortic valve.
You could have a genetic change that hasn't caused a bicuspid aortic valve. In this case we will offer a future follow up to check if changes of the aortic valve or other heart abnormalities will develop. This will for some people be unpleasant knowledge, which however we will provide further guidance for.
Even if it's only a small number of genes we will be examining by this genetic analysis we might also find genetic changes that can be linked to development of other deceases. According to this it is very important that you and your parents - BEFORE THE BLOOD SAMPLE IS TAKEN - have considered if you/your parents want to be informed of the "random" genetic discoveries.

Advantages of your participation

This study will help us to a better understanding of the inheritance of the heart valve failure and will evaluate the significance of the examination of the whole family. For you and your family it will mean that you will be examined for a bicuspid aortic valve. If we find a bicuspid aortic valve, we ensure the correct clinical follow ups and treatment for the patient.

Results

When the project is over and all the results are ready, you will receive – if you want to - the written information about the results in the project.

If you choose not to participate

If you choose not to participate in the project, it won't be of any consequence to your future treatment.

Heads of project and clinical responsibilities

Professor, dr.med. Henning Bundgaard
Department of Cardiology, Rigshospitalet

Professor, dr.med. Kasper Iversen
Department of Cardiology, Herlev Hospital

Economy

This study has partly been financed by a private trust fund situated in Lichtenstein (Candys Foundation) – total amount is 1.287.600 DKK. We currently apply for funding from other foundations. If we are granted other funding, we will inform the Danish Health Research Ethics Committees and update the funding information. The doctors involved have no economic interests in the project:
We don't provide economic compensation for transportation to clinical follow ups or loss of working hours.

Authorisations

The project has been approved by the health research ethics committee for The Capital Region of Denmark (H-17029641) as well as The Danish Data Protection Agency.

Who do contact if you have any questions?

We hope that this information thoroughly covers what is to know about participation of this project, and that you feel ready, along with your parents, to make a decision about participation or not. If you have any questions you and your parents are always welcome to contact medical doctor and Ph.D.-student Jakob Boesgaard Norsk by phone: 3868 6530 / 3868 6405 or by e-mail: Jakob.boesgaard.norsk@regionh.dk.

Henning Bundgaard
Professor, overlæge, dr.med.
Rigshospitalet-Glostrup Hospital
Tlf. 3545 0512

Kasper Iversen
Professor, overlæge, dr.med.
Herlev-Gentofte Hospital
Tlf. 3868 6009

Anne-Sophie Sillesen
Læge, ph.d.-studerende
Herlev-Gentofte Hospital
Tlf. 3868 6432

Jakob Boesgaard Norsk
Læge, ph.d.-studerende
Herlev-Gentofte Hospital
Tlf. 3868 6530