



# ASUK EARLY YEARS QUESTIONNAIRE

## Abstract

Initial findings following analysis of the ASUK early years data  
vs 1.1

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TABLE OF CONTENTS

1.1	Introduction .....	1
1.2	Method .....	2
1.3	Key Findings .....	2
1.3.1	Pregnancy and Birth .....	3
1.3.2	Percentage of births by age group of Mother .....	4
1.3.3	Weight at birth .....	5
1.3.4	Feeding .....	6
1.3.5	Sight .....	8
1.3.6	Hearing Loss .....	10
1.3.7	First Steps .....	11
1.3.8	The Heart .....	11
1.4	Conclusion .....	12
1.4.1	Next Steps .....	12
1.4.2	Future Development .....	12
1.4.3	Acknowledgements .....	13

## 1.1 Introduction

Alström Syndrome (AS) is ultra-rare which unfortunately means there continues to be very little awareness of the condition amongst the medical profession, often leading to some of its features being misdiagnosed. For example; infant cardiomyopathy can be misdiagnosed as a virus, or obesity may be considered to be caused by diet rather than by an underlying genetic condition. It is widely agreed that early diagnosis and appropriate management of AS and its symptoms, leads to better health outcomes for patients and improved quality of life.

Following the ASUK research consortium meeting in December 2018, the issue of delayed or misdiagnosis was discussed. Despite the identification of the ALMS1 gene and the availability of genetic testing throughout the UK, developments still need to be made to improve the diagnostic odyssey. AS patients often face a difficult journey to diagnosis, moving from clinician to clinician, seeking the much-needed specialist advice from those who understand the nature of the condition best. It can be difficult to understand why an ultra-rare disease like AS, with its unique set of features, isn't instantly recognisable. However, although there are a number of conditions that are both characteristic of AS and have early /infant onset such as nystagmus, photophobia, obesity and cardiomyopathy, awareness amongst doctors is limited and symptoms are often dealt with independently of one another. The age of onset of certain AS symptoms can vary from patient to patient which can further complicate the path to diagnosis. In 2018 alone, ASUK reported a case of male twins diagnosed with AS aged 40.

The consequences of the 'diagnostic odyssey' for AS patients, their quality of life and the progression of the disease is significant. ASUK's aim is to identify any gaps and learning opportunities by focussing on the experiences of patients and their health throughout infancy, identifying key patterns in the disease at this stage and promoting a multi-disciplinary approach amongst professionals to help accelerate the rate of diagnosis of the condition.



Hearing impairment



Cardiomyopathy

### Delayed diagnosis – Why?

- Lack of co-ordinated care - key symptoms & disease patterns often missed
- Too rare for doctors to learn
- Little research
- Inadequate patient information
- Failure to treat properly



Obesity



Diabetes



Vision impairment

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## 1.2 Method

The research consortium proposed that an early years questionnaire could be an effective way to document the timeline of the development of symptoms which would help to:

- Promote a better understanding of the key indicators of the disease
- Support a more effective diagnosis
- Promote early genetic testing and identification of key ‘red flag’ symptoms, for example; the combination of vision loss with obesity.

In consultation with Clinicians and the ASUK family support team a questionnaire has since been designed with the primary focus of capturing data relating to a patients infant health. It has been distributed to 84 families by email and post and given to families at the Birmingham Children’s Hospital (BCH) and the Queen Elizabeth Hospital (QE) multidisciplinary clinics. The initial mailout took place in June 2019 and to date we have received 21 responses most of which have been returned handwritten. Respondents are not required to answer every question and so the numbers of responses vary for the different questions.

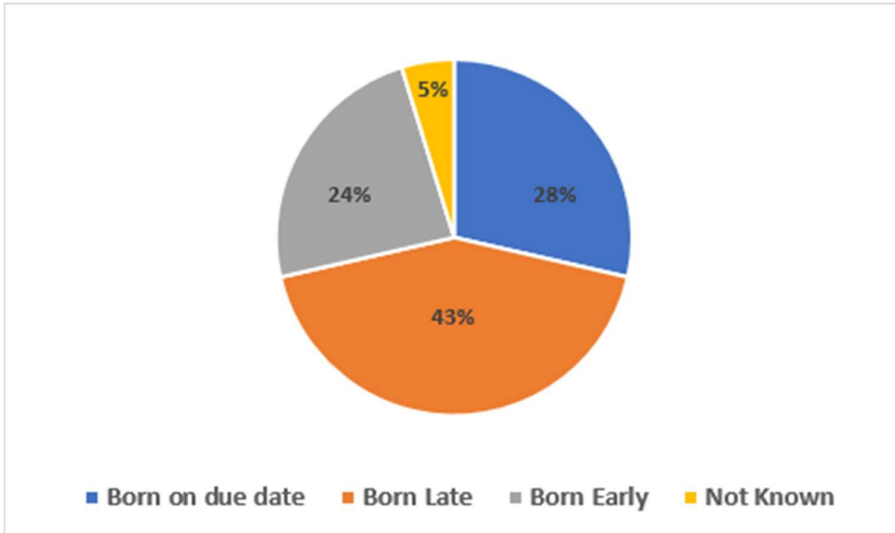
As part of the questionnaire families are asked to read a short summary document about the questionnaire before answering the questions. This document provides some background about the purpose of the early years project and how we think it will help health professionals recognise the signs and symptoms of AS much earlier on in a child’s life. A copy of the questionnaire and the background document is included at Appendix A and B at the end of this report.

## 1.3 Key Findings

In September 2019 we reached a response rate of 25% and decided it would be a good point to undertake an interim analysis of the data. Our findings and commentary are detailed below, the results will be reviewed and analysed again once we reach a response rate of 50%.

### 1.3.1 Pregnancy and Birth

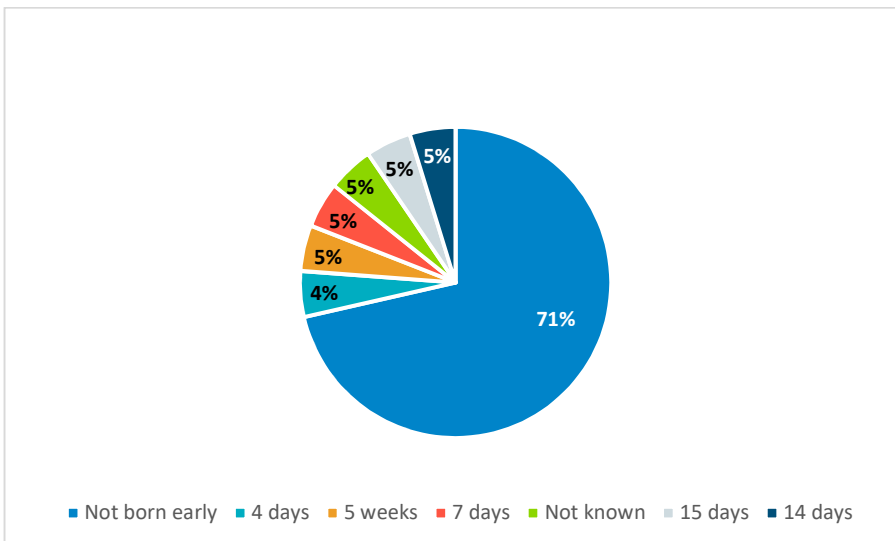
Question 4. Was your baby born on his or her due date?



Data from the Perinatal Institute, a non-profit organisation, shows that in the UK a baby is born on its predicted due date just 4% of the time, our results however show:

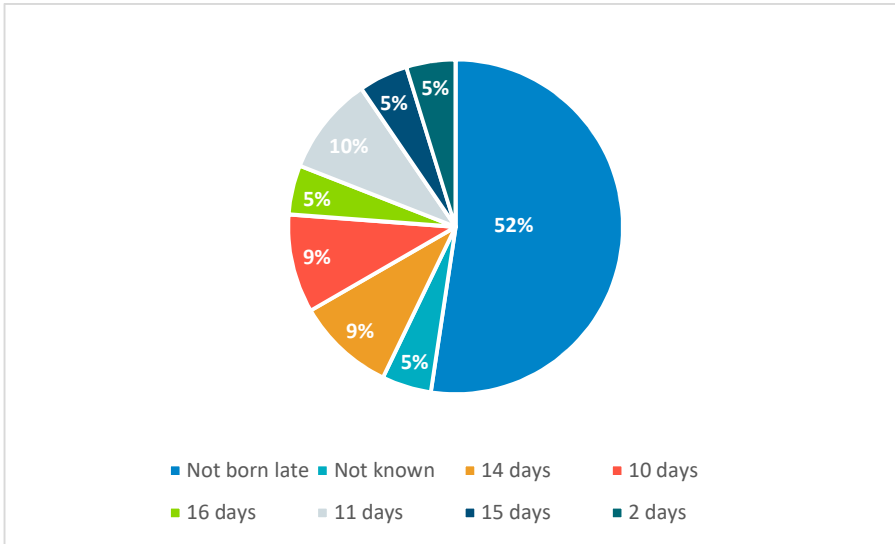
- 28% of babies were born on time
- 43% of children were born late.

Question 4a. Or if born early by how many days?



24% of respondents told us their babies were born early. Only one of these babies was premature (born 3 or more weeks early).

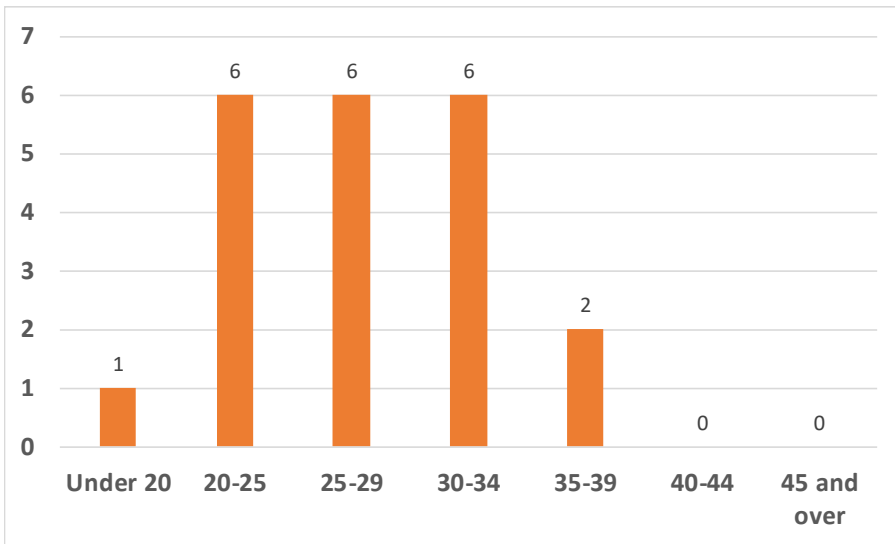
Question 4b. Or if born late by how many days?



43% of respondents told us their babies were born late.

### 1.3.2 Percentage of births by age group of Mother

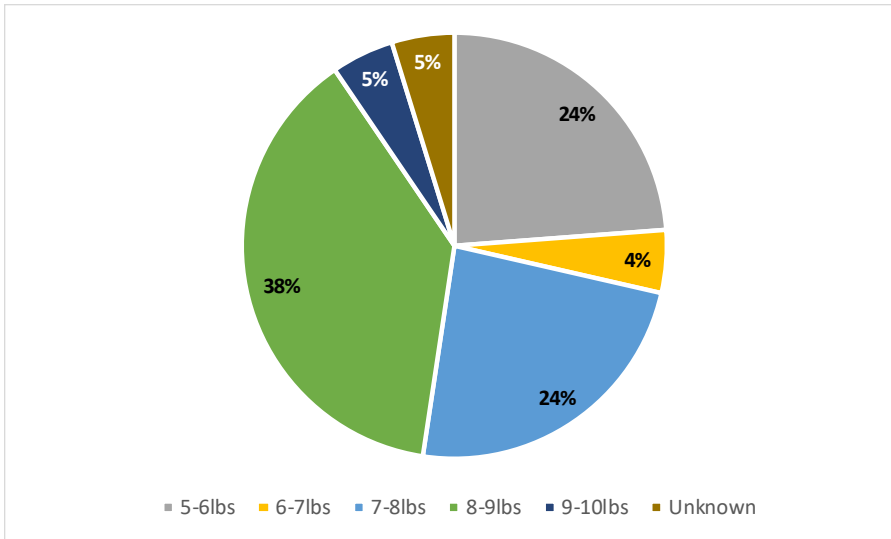
Question 5. How old were you/ the baby's Mother when your baby was born?



### 1.3.3 Weight at birth

We asked respondents to tell us about their child’s weight at birth. We already know that some children with AS can develop early-onset obesity and it is a significant symptom of the condition. Obesity in infancy is therefore an important factor to consider as part of the diagnostic process.

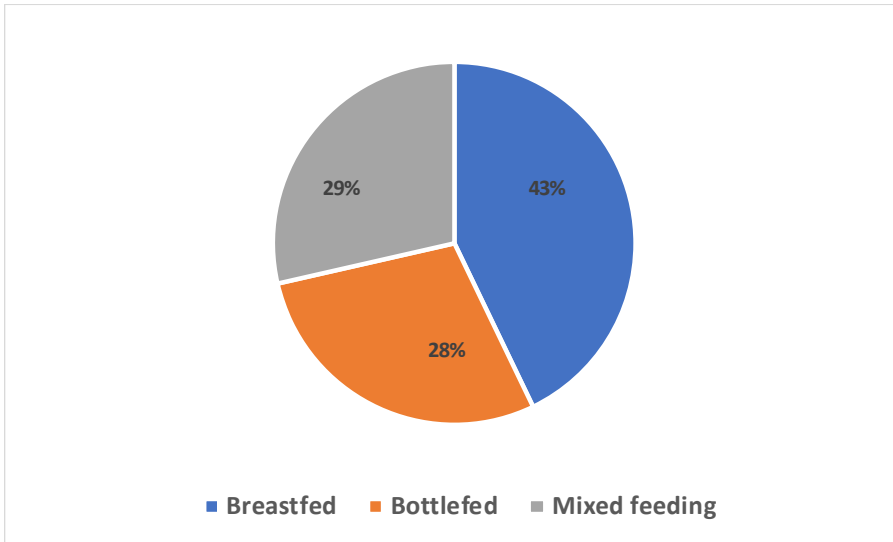
Question 6. What was your baby’s weight at birth?



Children diagnosed with AS usually have normal birth weight but develop obesity during their first year (Paisey RB, Steeds R, Barrett T, et al. 2003 Feb 7. Updated 2019 Jun 13). This is reflected in our results which show that a high percentage (67%) of AS babies are born at least 7lbs or more. Very few are less than 7lbs and there are no babies born under 5lbs.

### 1.3.4 Feeding

Question 13. How did you feed your baby?

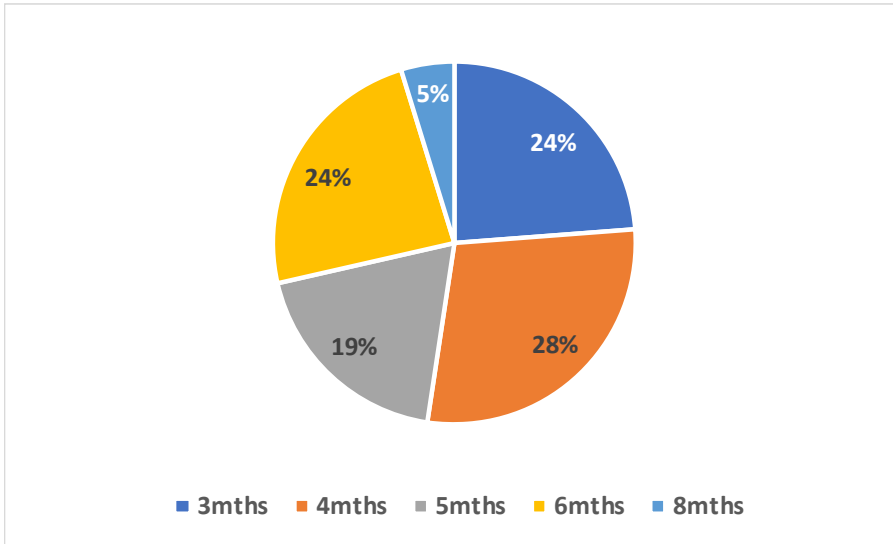


Respondents told us how they fed their baby. A high proportion (43%) of AS mothers exclusively breastfed, a seemingly much higher proportion than the wider UK population. The last UK wide Infant Feeding Survey conducted in 2010 revealed:

- Exclusive breastfeeding at six weeks - 24%
- Exclusive breastfeeding at three months: 17%
- Exclusive breastfeeding at four months: 12%
- Exclusive breastfeeding at six months 1%



Question 14. At what age did you start weaning your child onto solid food?



Current advice from the Department of Health (DH) DH2003) recommends that healthy term infants need no additional nutrition other than breast milk or formula milk until six months (26 weeks) of age, they also advise however that some babies may benefit from solids sooner and may be ready for solids from four months (17 weeks of age). Advice about weaning babies has changed over the years, so depending on when a child was born and what the recommendation was at that time, this could be one of the factors that determine when a baby was weaned onto solid food. 71% of respondents told us their baby was weaned before 5 months old, 24 % were weaned at 3 months old. It could be concluded from this that there are other factors determining the age of weaning in babies with AS. Respondents told us:

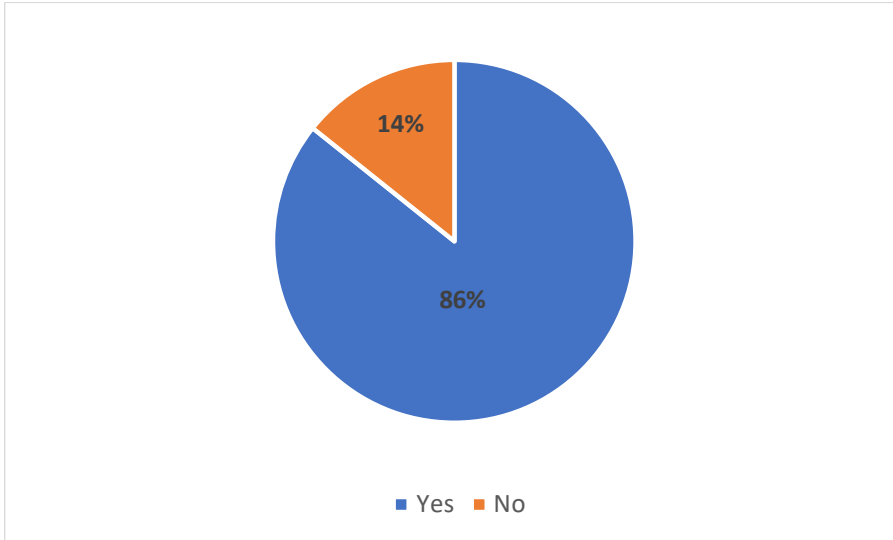
**Respondent 50** – “(He was) weaned at 4 months as milk alone would not satisfy him”.

“He was very overweight by 6 months old and wanted to feed every 2 hours. He also slept a lot.....still eating lots between 12 months and 3 years old. Always hungry, (there were) concerns about weight gain and sedentary lifestyle”.

**Respondent 74** - “He was always hungry, didn't seem to register when he was full”.

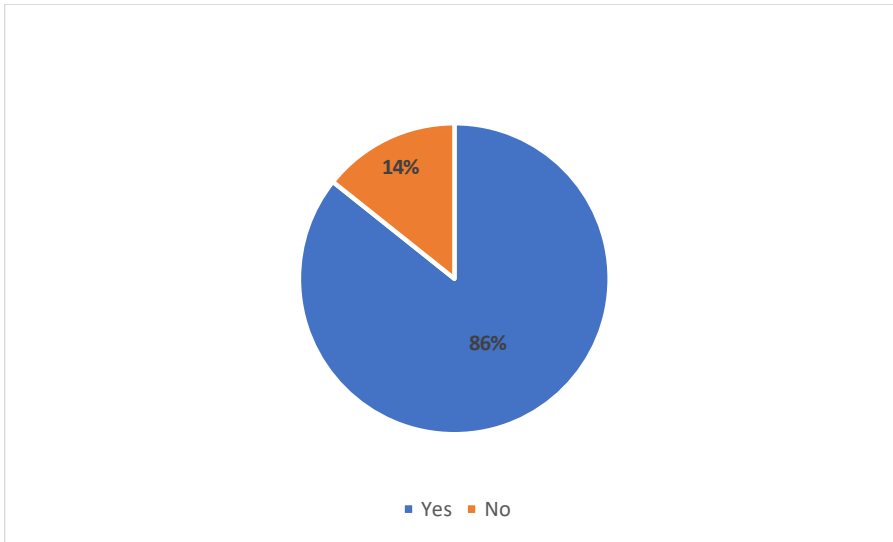
### 1.3.5 Sight

Question 7. Did your son/daughter have Nystagmus (wobbly eyes) as a baby?



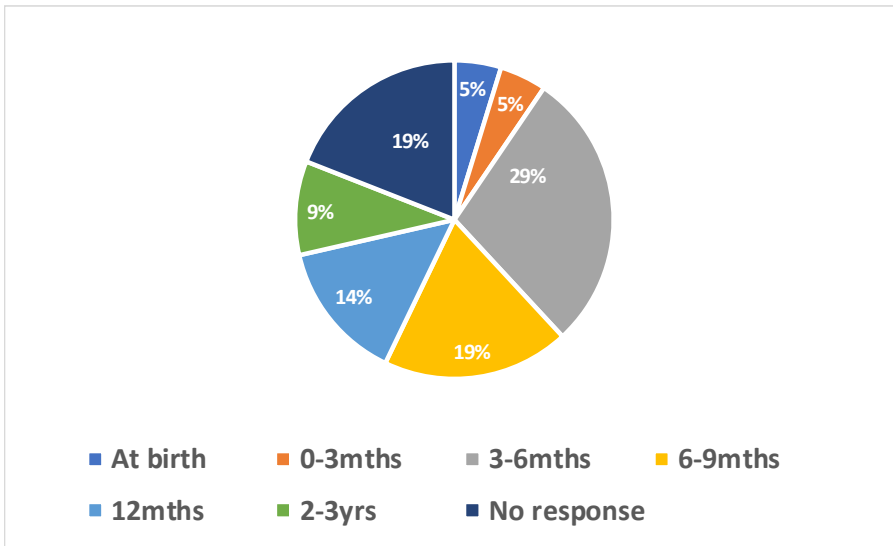
86% said Yes, 14% said No.

Question 8. Did your child have Photophobia (light sensitivity) as a baby?

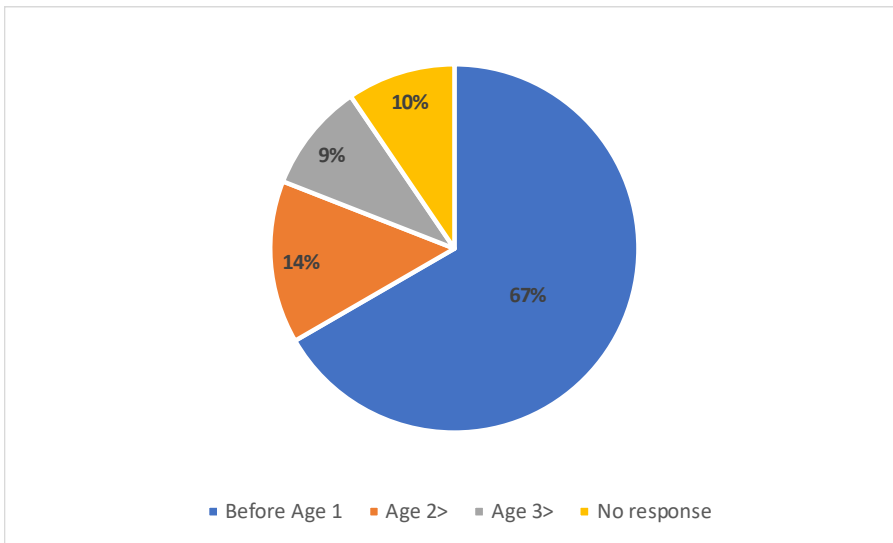


86% said Yes and 14% said No.

Question 8a - At what age did you notice your child was sensitive to light?



Question 9. When did you first notice that your child had some problems with their sight?

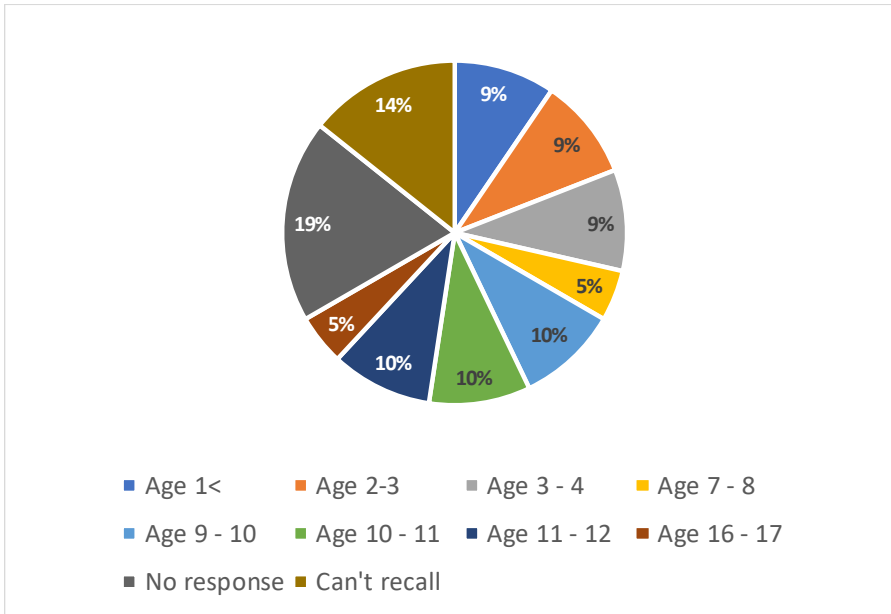


Initial findings show that visual impairment presented in at least half of respondents we asked about Nystagmus and 88% of those we asked about Photophobia. 67% of respondents confirmed that visual impairment was noticed by Parent(s) and/or Clinicians before the child was 1 year old.

To improve the rate and timing of diagnosis an individual presenting with vision symptoms along with another symptom characteristic of AS should be referred for AS genetic testing.

### 1.3.6 Hearing Loss

Question 10. If your child has hearing problems when did you first notice it?



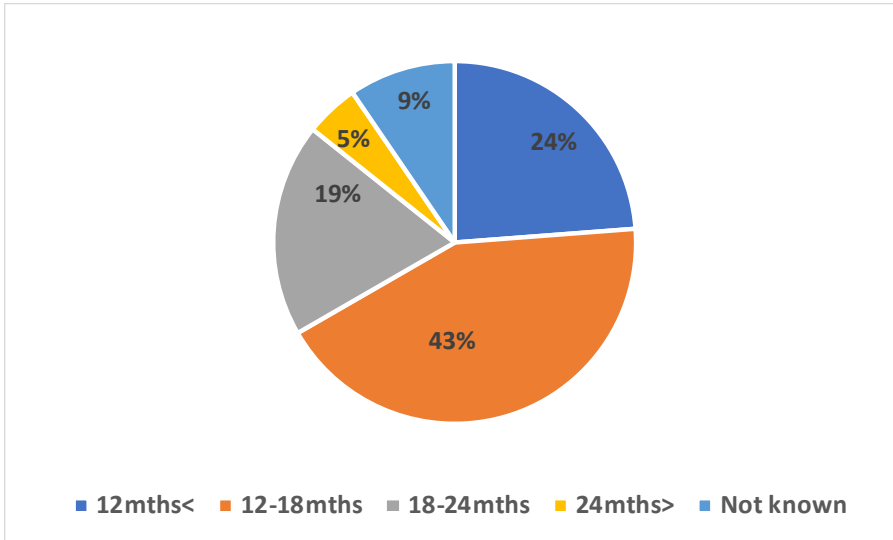
Hearing impairment in AS presents within the first decade of a child’s life in as many as 70% of individuals. This may progress to the severe or moderately severe range by the end of the first to second decade (Paisey RB, Steeds R, Barrett T, et al. 2003 Feb 7. Updated 2019 Jun 13. Respondents told us about when they first noticed their child’s hearing loss; results so far do not show a specific age group under the age of 16 where hearing loss is noted more than any other, although there are fewer parents noticing hearing loss between the ages of 7-8 and 16-17.

33% of respondents told us they either could not remember when they first noticed hearing loss or did not answer the question at all.

More data may lead to patterns emerging between age ranges and the identification of symptoms.

### 1.3.7 First Steps

Question 11. When did your child take their first steps?

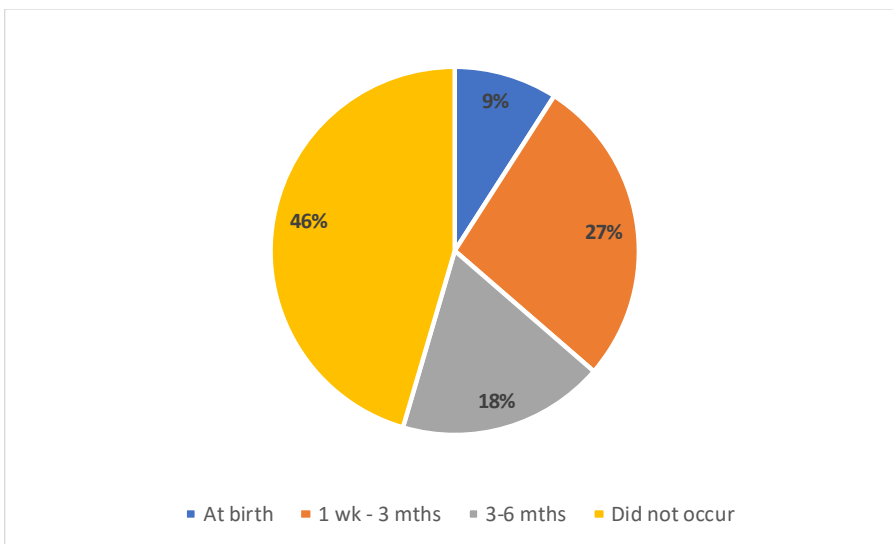


A child’s first steps typically occur between the age of 10 – 18 months (Public Health Agency, Birth to five 2019). Parents of babies who have not started walking by 18 months are advised to check with their GP (Public Health Agency, Birth to five 2019).

Significantly our results show that 43% of AS babies did not take their first steps until sometime between the ages of 18 – 24 months. 5% of babies did not walk until the age of 2 or over.

### 1.3.8 The Heart

Question 12. Did heart failure occur in your child under the age of 1?



54% of respondents asked told us that heart failure occurred in their child before the age of 1.

46% of children did not suffer heart failure before the age of 1 but this does not rule out incidences age 1+.

Open questions in this section of the Questionnaire also captured the following commentary from Parents (to protect their privacy parents/respondents are identified by a number)

**Respondent 46** “Child X collapsed in heart failure at 3 weeks and we were told it was probably a virus that entered his heart, although this was never confirmed. He collapsed again at 4 months and was diagnosed with dilated cardiomyopathy”.

**Respondent 77** “Child Y suffered an out of hospital cardiac arrest at 3 months old”

**Respondent 84** “Child Z was losing weight and diagnosed at 4 weeks old with Myocarditis”

**Respondent 31** “Innocent heart murmur identified at 2 days old”.

## **1.4 Conclusion**

The data collected to date, although only a small sample size, is already highlighting some interesting patterns and trends in children affected by AS. The results show that there is a need for more specific information for both health professionals and patients and for an improved awareness and understanding amongst clinicians. The information also highlights:

- Diagnosis is very difficult due to a notable variation in the age of children when certain AS symptoms first present
- The severity of symptoms differs for each affected person, again making it difficult to identify symptoms as AS related
- A clear pattern developing showing that children with AS are born heavier than that of the general population
- Children with AS appear to walk much later than the general population

### **1.4.1 Next Steps**

The Early Years Questionnaire is still active having received 21 of 84 potential responses. ASUK will continue to collect data and will undertake a further analysis exercise once we reach a 50% response rate.

### **1.4.2 Future Development**

We hope that the findings of the Early Years Questionnaire will prove useful for the ASUK research consortium and that this will help contribute towards further research.

As a result of this exercise we have identified several additional questions that would provide more insight. These are being noted and are helping to shape the design of the CoRDS patient registry questions which we are in the process of drafting.

### 1.4.3 Acknowledgements

Alström Syndrome UK would like to thank all the participants for their contribution to the Early Years Questionnaire, we are very grateful for your time and help.

We would also like to thank the ASUK research consortium which includes:

- Tim Barrett - Professor of Paediatrics
- Shaun Bolton - Inherited Metabolic Disease Research Coordinator
- Tarek Hiwot - Consultant in Inherited Metabolic Disorders
- Archana Kulkarni - Consultant Ophthalmologist
- Richard Paisey – NDHT Honorary Consultant
- Rob Semple – Professor of Translational Molecular Medicine
- Rick Steeds – Consultant Cardiologist
- Denise Williams – Consultant Clinical Geneticist.

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- <http://www.perinatal.org.uk/>
- <http://euro-wabb.org/media/downloads/patient-information-sheets/Alstrom%20Syndrome%20Leaflet.pdf>



**Appendix A – ASUK Early Years Questionnaire**

**ASUK INFANT & CHILD HEALTH HISTORY  
QUESTIONNAIRE**

<b>1. Name of individual with Alström Syndrome (AS)</b>		
<b>2. Date of Birth</b>		
<b>3. Gender at birth</b>	Male	
	Female	
<b>4. Was your baby born on his or her due date?</b>	Yes	
	No	
4a. Or if born early by how many days?		
4b. Or if born late by how many days?		
<b>5. How old were you/ the baby's Mother when your baby was born?</b>		
<b>6. What was your baby's weight at birth?</b>		
6a) Did you, the Midwife, Health Visitor, GP or other health professional have any concerns about your baby's weight in their first 12 months? If yes, please explain why.		



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6b) Did you, the Midwife, Health Visitor, GP or other health professional have any concerns about your child's weight when they were between 12 months and 3 years old? If yes, please explain why.

7. Did your son/daughter have Nystagmus (wobbly eyes) as a baby?

Yes

No

7a) How old was your child when you first noticed their wobbly eyes?

3 months or under

Between 3 – 6 months

Between 6 – 9 months

Between 9 months – 1 year

Between 1 – 2 years

Between 2 – 3 years

Over 3 years

7b) When did you talk about this with your child's GP? (or any other health professional?)

Yes



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<b>8.</b> Did your child have Photophobia (light sensitivity) as a baby?	No	
8a) At what age did you notice your child's eyes were sensitive to light?		
8b) When did you talk about this with your child's GP (or any other health professional?)		
<b>9.</b> When did you first notice that your child had some problems with their sight?	Age 1 or under	
	Age 2	
	Age 3	
	Over 3 years	
9a) When did you talk about this with your child's GP? (or any other health professional?)		
9b) If your child is registered sight impaired are they registered 'severely sight impaired' or 'sight impaired'?		
<b>10.</b> If your child has hearing problems when did you first notice it?	Age 1 or under	



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	Age 2	
	Age 3	
	Over 3 years (please specify exact age)	
10a) When did you talk about this with your child's GP? (or any other health professional?)		
11. When did your child take their first steps?		
11a) When did your child begin to walk with confidence?		
12. Did heart failure occur in your child under the age of 1?	Yes	
	No	
12a) If you answered yes to Questions 12 please tell us the age of your child when heart failure occurred	At birth	
	Between 1 week – 3 months	
	Between 3 months – 6 months	
	Between 6 months – 1 year	
13. How did you feed your baby?	Breast fed	
	Bottle fed	



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	Mixed Feeding	
<b>14.</b> At what age did you start weaning your child onto solid food?	3 months	
	4 months	
	5 months	
	6 months	
	7 months	
	8 months	
	9 months	
	10 months	
	11 months	
	12 months or over	
If you have any other details or information about your child's health within their first year please tell us about it here		

**15.Ethnicity**

Ethnic monitoring is important to ASUK as it helps us to better meet the cultural, religious and language needs of our families. The following list is designed to allow you to identify your child. However, if you feel the categories do not describe your child’s ethnic origin or would prefer not to disclose it then please either select ‘any other group’ together with details of how you would describe your child’s ethnicity or simply leave the boxes blank.

White British	
White Irish	
Any other White background	
Mixed race – White & Black Caribbean	
Mixed race – White & Black African	
Mixed race – White & Asian	
Mixed race – any other mixed background	
Asian or British Asian – Indian	
Asian or British Asian – Pakistani	

Asian or British Asian – Bangladeshi	
Asian or British Asian – any other mixed background	
Black – Caribbean	
Black – African	
Black – any other Black Background	
Other ethnic group	

**Data Protection**

All personal information received will supplement the information held on the ASUK patient database but will be kept strictly confidential. All data from this survey that is used for statistical purposes will be anonymised.

**What happens next?**

When we have gathered together the information, we will analyse it and see if there are any patterns, we will then write a short summary of the findings (all anonymised) and share this with you.

If you are happy for us to use quotes from your response (again these will be anonymous) please mark an 'X' in the space below:

## Appendix B – ASUK Early Years Questionnaire – Background Information

### EARLY YEARS PATIENT DATA

**YOUR data is critical in the fight to make a real difference to the lives of all those affected by Alström Syndrome (AS).**

***The POWER of our Information is YOU!***

YOU have the power to improve lives for the better by simply providing us with answers to some of the questions we have about infant health.

ASUK have created an infant questionnaire and your response will greatly strengthen the quality of the data we keep and will form part of a broader project we are embarking on to use data to

- Improve care
- Increase understanding of the condition
- Accelerate patient diagnosis.

In about 15 minutes YOU can make an incredibly valuable contribution to research, without ever leaving your home!

Read on to find out how YOU can make a difference **TODAY!**





## DATA COLLECTION – WHY IS YOUR PARTICIPATION IMPORTANT?

### Early diagnosis and better treatment

Information about AS health in infants will help Clinicians and Researchers recognise patterns in the occurrence of symptoms in particular ‘red flag’ signs that could inform an early diagnosis.



#### **What does this actually mean for**

**patients?** An early diagnosis of AS means

patients can receive the right medication

and treatment at the right time and share their experiences with others sooner. Diagnosis is complex, as very often infants do not present with the same set of symptoms - AS can affect

babies in different ways.



## How you can help



Information is KEY. We know that the more information we can gather about Alström the more we can learn about the condition and improve its' management and treatment.



You may be familiar with the little 'Red Book' that tracks your child's health and developmental milestones, using this information and what you remember about your babies early years ASUK would like to start to document your child's health information in a similar way, so that we can get a broad picture of how your baby progressed from birth through to their early years.



Working with Clinicians we have developed some questions that we hope will give Clinicians a greater understanding of infantile symptoms and when and how they appear.



If you're willing to share some of your child's early health information we would be very grateful if you could respond to the questionnaire that follows. It should only take around 15 minutes to fill in. We are happy to receive responses by post, email or over the telephone - whatever is easiest for you. **Our contact details are provided in the letter enclosed with this form.** There are 16 questions in total, please complete each one as far as possible. Where there is a multiple-choice response please mark an 'X' in the box that is most applicable to your child.