



GUIDELINES AND AUDIT  
IMPLEMENTATION NETWORK

# **AUDIT OF THE MANAGEMENT OF OBSTETRIC CHOLESTASIS**

**May 2012**

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## **BACKGROUND**

Obstetric Cholestasis (OC) affects 0.7% of pregnancies in the United Kingdom<sup>1</sup>. This condition is normally recognised when the mother complains of itching, and is usually diagnosed in the third trimester. The diagnosis of OC is made when the mother experiences itching in the absence of a rash, with elevated liver function tests, with other causes of abnormal liver function being excluded. The itch and the abnormal liver function will resolve postnatally.

OC poses problems for the mother due to intense itch and sleep deprivation. In relation to the fetus, it increases the risk of meconium passage, preterm birth and a possible small increased risk of intrauterine death. This latter problem seems to be a sudden hypoxic event, therefore no test can accurately predict when, or to which fetus this risk is relevant. Some treatments are available such as Ursodeoxycholic acid (UDCA) and vitamin K, but none as yet appears to improve fetal outcome<sup>2</sup>. When the diagnosis has been reached, there is a decision to be made regarding possible early delivery; this should be considered once the patient reaches 37 weeks gestation.

The Royal College of Obstetricians and Gynaecologists issue a guideline “Obstetric Cholestasis”. This is a widely accepted guideline and was used as a standard for the proforma.

(Please note the 2006 guideline was used in the preparation of the proforma. There has since been an updated version published in 2011)

## **AIM**

The aim of this audit was to look at the diagnosis, management and outcomes of patients with Obstetric Cholestasis

## **OBJECTIVES**

- To assess if the diagnosis of OC was identified and other diagnoses excluded
- To find the gestation at diagnosis
- To assess how the patients are managed and treated
- To ascertain the gestation at delivery of those diagnosed with OC
- To ascertain fetal outcomes
- To assess the extent of postnatal follow-up and counselling

## STANDARDS

Criteria	Target %	Exceptions	Source and strength of evidence *	Instructions for where to find data
<b>Pregnancy Specific ranges for LFT's should be used during pregnancy</b>	<b>100</b>		<b>RCOG Guideline 2006 C</b>	<b>Attached to application</b> Also <a href="http://www.rcog.org.uk">www.rcog.org.uk</a>
<b>Other causes of itching /deranged LFTs should be excluded</b>	<b>100</b>		<b>RCOG Guideline 2006 C</b>	
<b>Postnatal resolution of itch and LFT should be ascertained</b>	<b>100</b>		<b>RCOG Guideline 2006 C</b>	
<b>Vitamin K should be prescribed if steatorrhoea or prolonged clotting</b>	<b>100</b>	<b>Allergy to Vitamin K</b>	<b>RCOG Guideline 2006 C</b>	
<b>Counselling regarding recurrence and contraceptive choices</b>	<b>100</b>		<b>RCOG Guideline 2006 D</b>	

\*Strength of evidence

- A** At least one randomised trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation
- B** Availability of well-conducted clinical & social care studies but no randomised clinical trial on the topic of the recommendation
- C** Expert committee reports or opinions and/pr clinical experience of respected authorities. Absence of directly applicable clinical studies of good quality
- D** Recommended good practice based on clinical & social care experience (local consensus)

## **METHODS**

A region wide team was drafted. This included a project lead, a supervising consultant and a lead contact in each trust. In each trust further people were recruited to fill out proformas. (See appendix 1 for full proforma)

The study included charts with an OC diagnosis recorded in the notes, or if on review of the chart it met the diagnosis of OC. (Diagnostic criteria – itch without a rash, with either elevated liver transaminases or bile acids). Elevated liver transaminases were those that fell outside the upper limit of the reference range for the trust. There were slight differences in the reference ranges between the trusts and none of the trusts used pregnancy specific ranges. The study excluded cases which had diagnoses of liver disease other than OC, and those with pre-eclampsia.

Charts were identified through the coding department. The ICD-10 Code used was O26.6 Liver disorders in pregnancy, childbirth and the puerperium.

The study also investigated the bile acids that had been processed. If the bile acid result was  $>14\mu\text{mol/L}$ , the chart was requested, and if OC was diagnosed it was included. In the Southern Trust if the bile acid result was normal, the liver function tests were also obtained and if these were elevated the charts were reviewed. (Alanine aminotransferase (ALT)  $>40\text{units/L}$ , or Aspartate aminotransferase (AST)  $>40\text{units/L}$ ). The latter was time intensive and therefore only carried out in one trust.

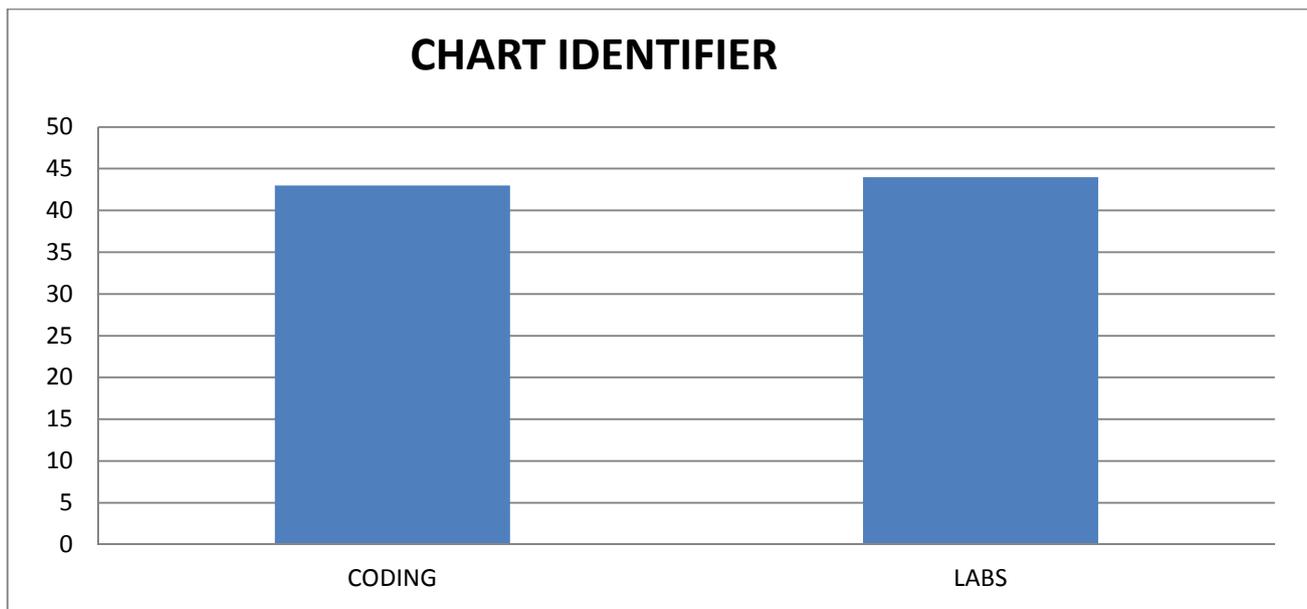
The proformas were filled out from the patient's notes and from the laboratory computer system. Data was collated onto an excel spreadsheet. Data was collected separately for each trust, and also collective figures for all trusts were calculated to look at totals for the region as a whole.

## RESULTS

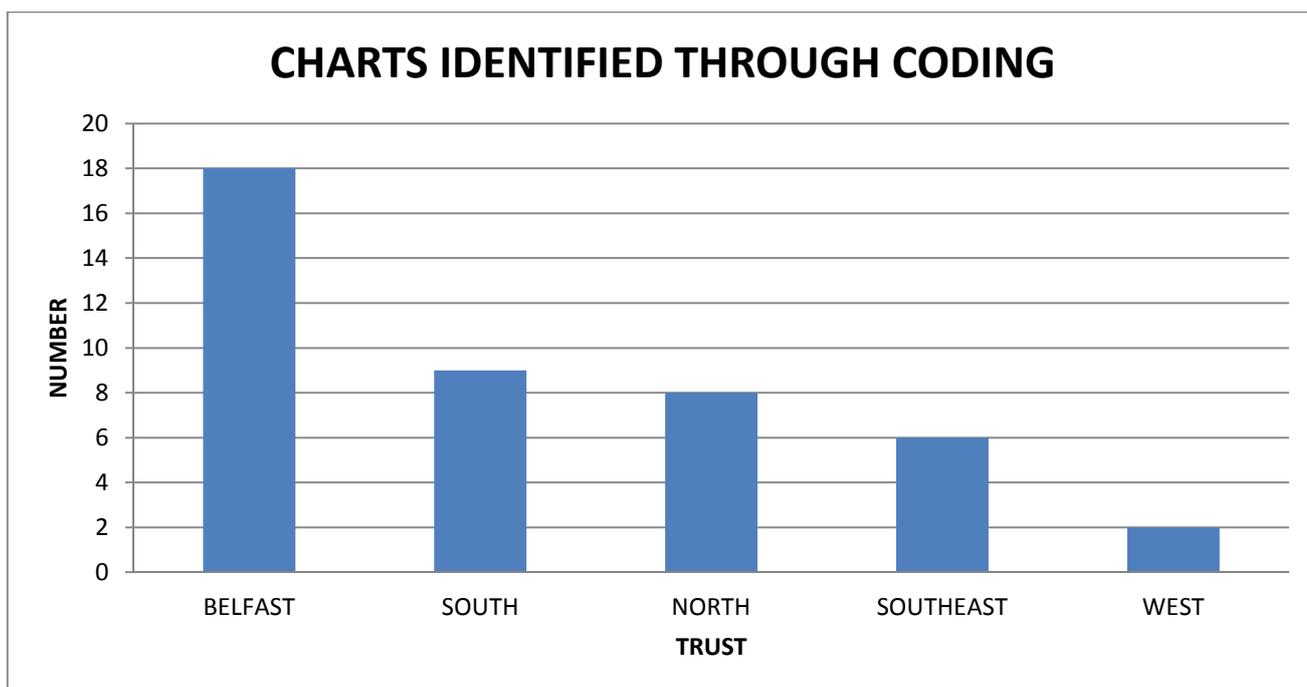
### CHART IDENTIFICATION

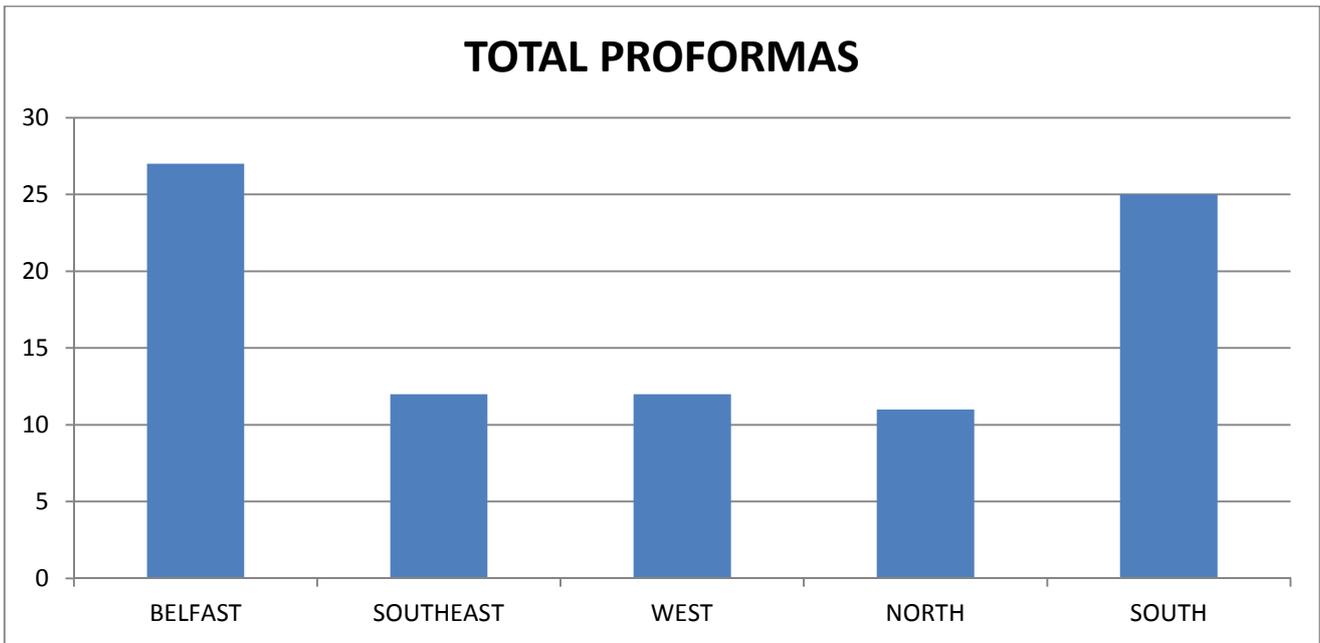
There was a region wide total of 87 charts - 81 singleton pregnancies and 6 twin pregnancies that were included in the audit.

On the initial chart identification through the coding department, there was a region wide total of 43 charts identified. Researching through the laboratory looking at bile acids and liver function tests 44 charts were identified.



The number of charts identified from the coding department ranged from 18 for the Belfast trust down to 2 for the Western trust.

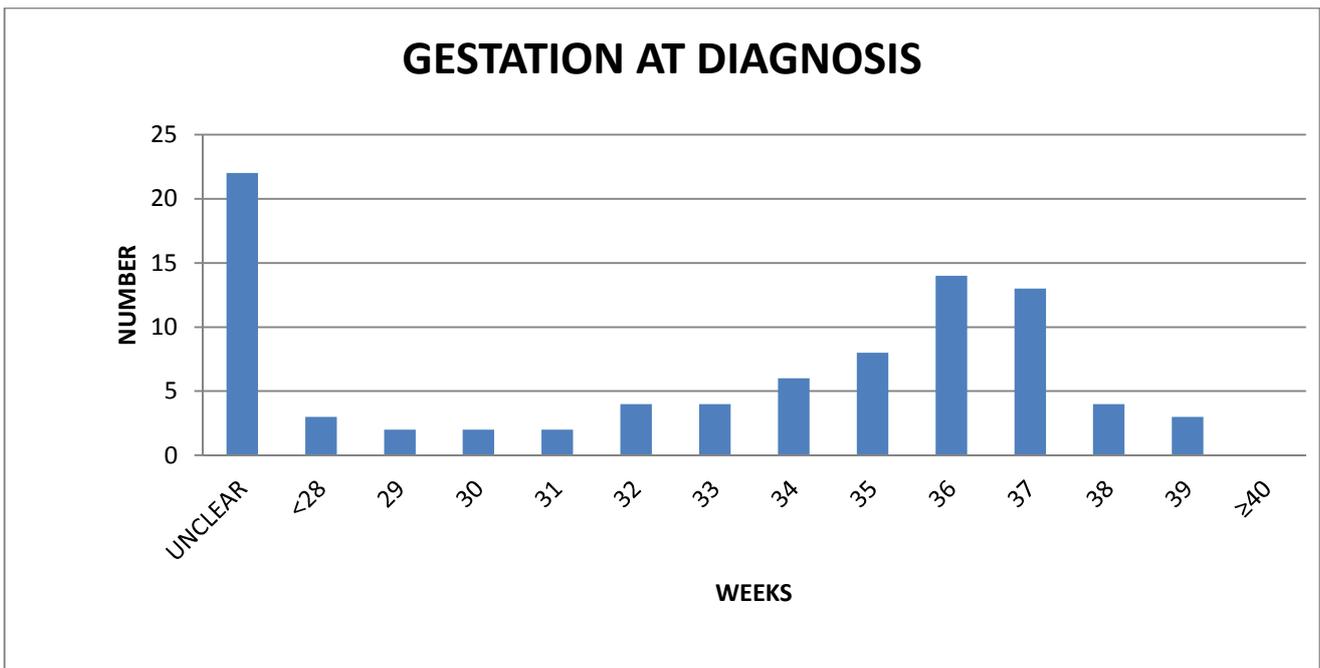




27 charts from the Belfast trust, 25 from the Southern trust, 12 from the South-Eastern and Western trusts and 11 from the Northern trust were obtained.

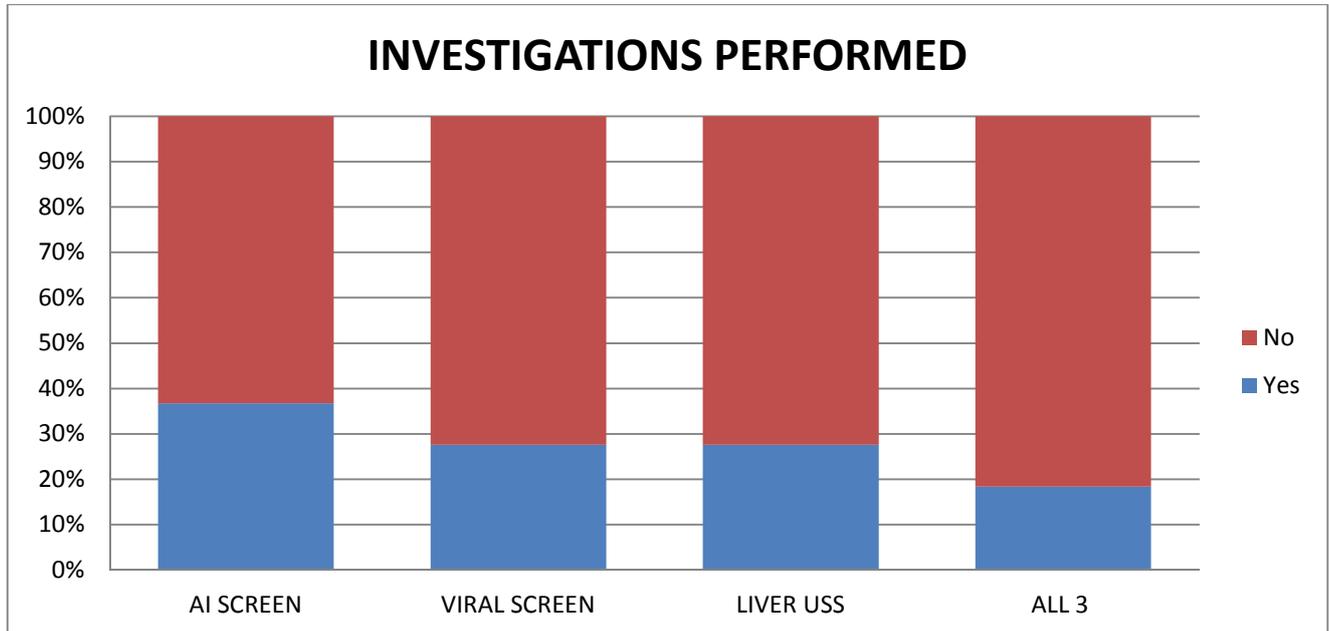
### GESTATION AT DIAGNOSIS

As expected the majority of cases were diagnosed in the late third trimester. In 22 of the cases the diagnosis did not appear in the medical notes as a firm diagnosis, therefore the gestation at diagnosis could not be recorded.

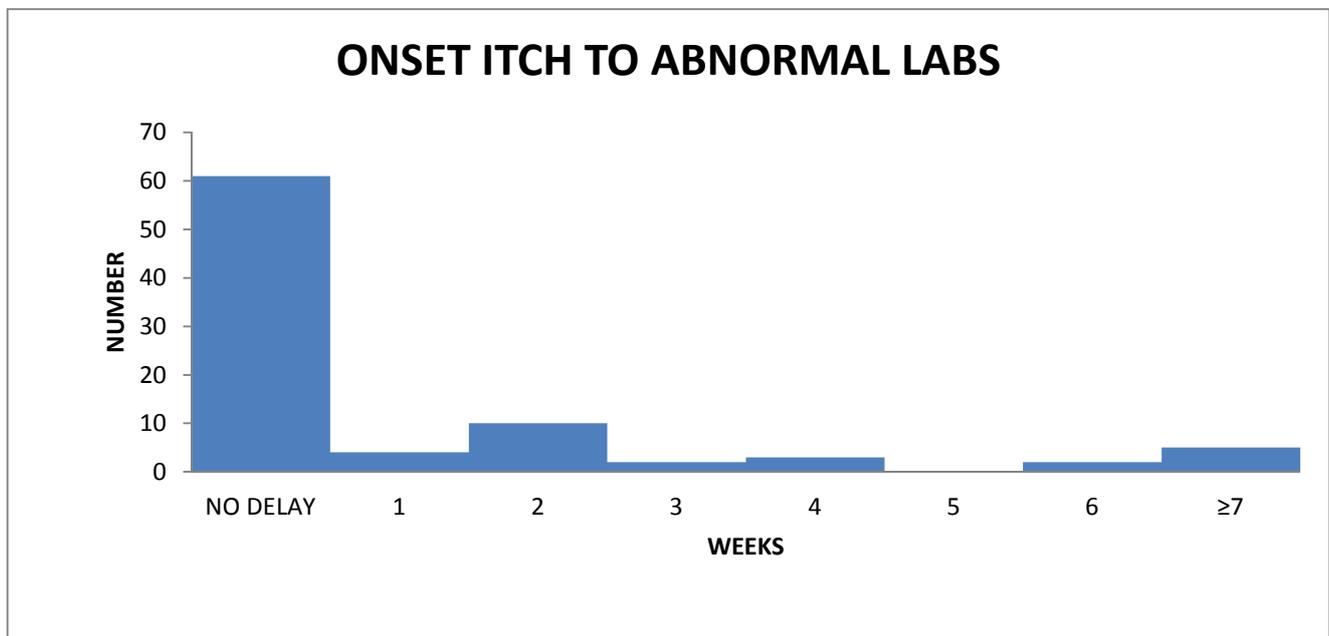


### INVESTIGATIONS

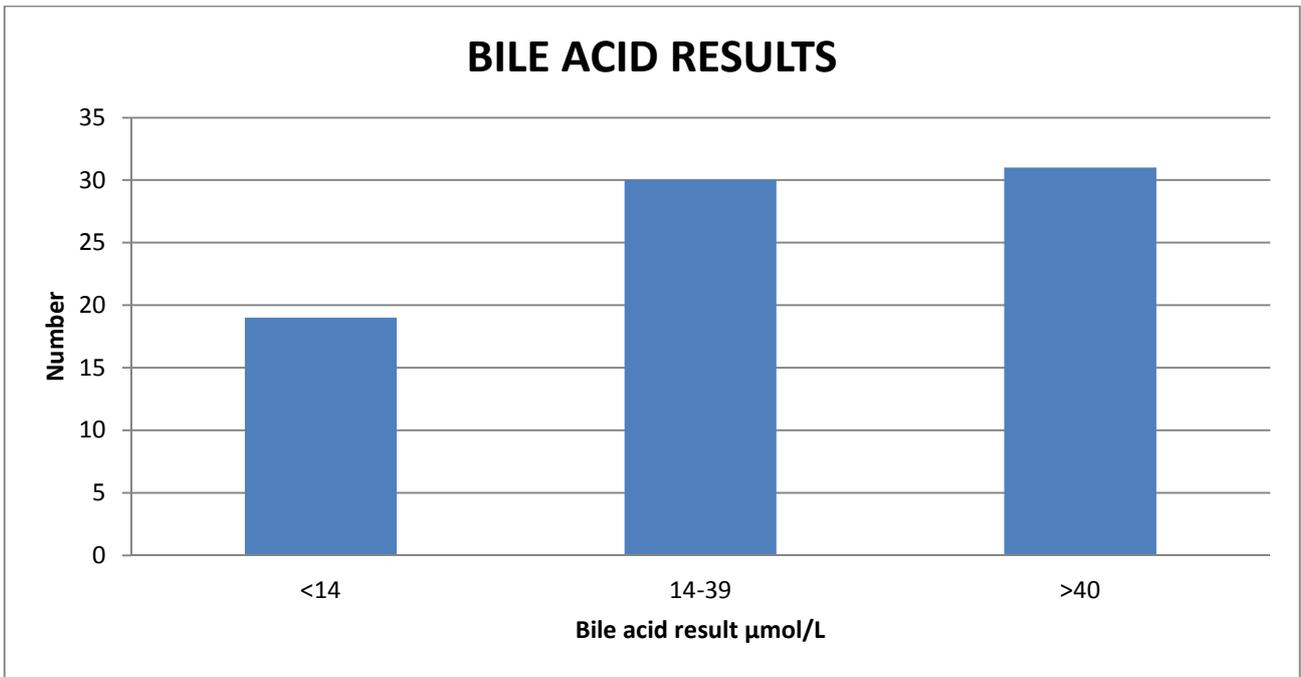
In order to exclude other diagnoses, complete investigation of the patient should include a viral screen, auto immune screen and a liver ultrasound. 32/87 had a viral screen, 24/87 had a liver screen and 24/87 had a liver ultrasound. 16/87 (18%) had all three investigations performed.



The study examined the interval between complaint of itch and the first abnormal LFT's. 60/87 patients had abnormal LFT's at the first presentation of itch, but in some cases the LFT's took over 7 weeks to become abnormal.

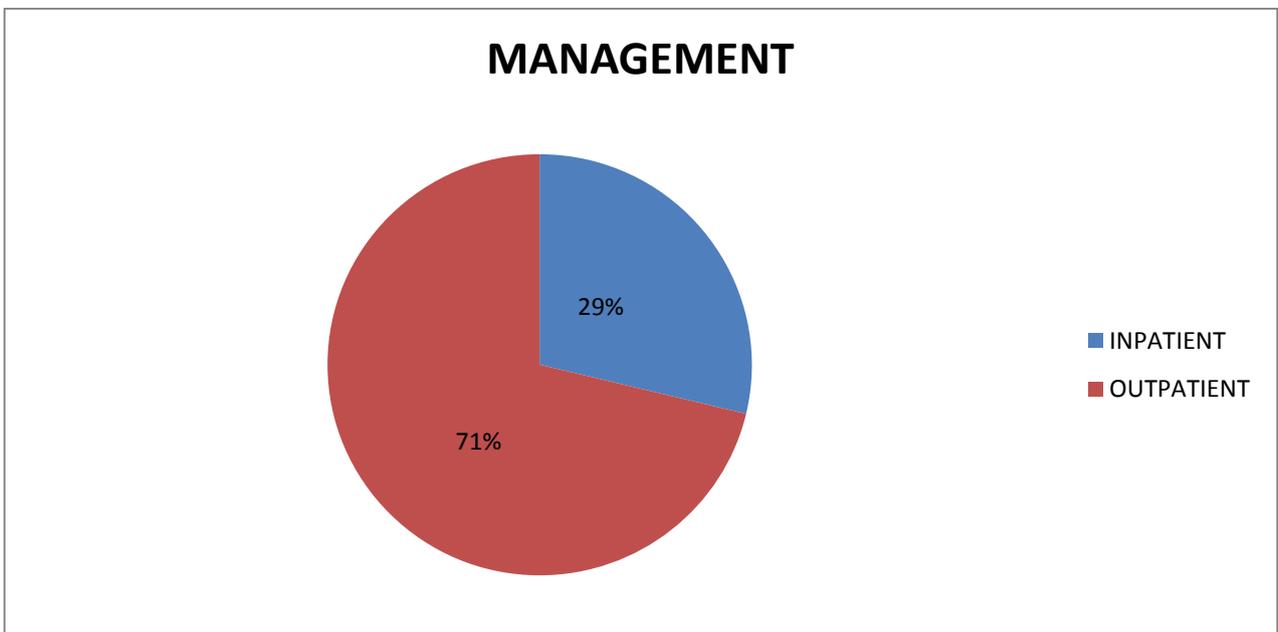


Another aid to diagnosis is a bile acid measurement, which if raised may help to confirm the diagnosis of OC. 80/87 patients had a bile acid measurement sent. Where multiple bile acids were sent in the same patient the highest value was included. 19 of these had normal results <14umol/L. 30 patients had results between 14 and 39 umol/L. 31 patients had a result >40umol/L (Severe OC)

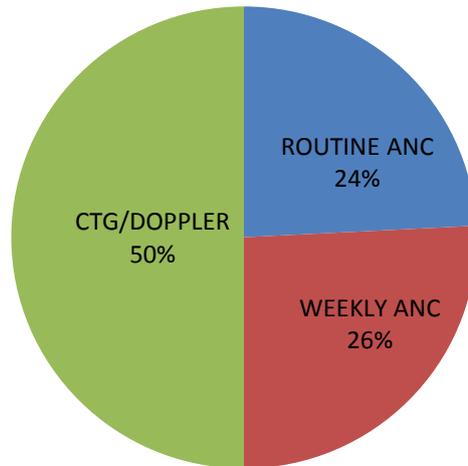


## MANAGEMENT

25 patients had some element of inpatient management in relation to OC. Of the 62 managed as outpatients- 15 had routine antenatal clinic appointments, 16 had weekly antenatal appointments and 31 had monitoring with cardiotocograph (CTG) and Doppler ultrasound.

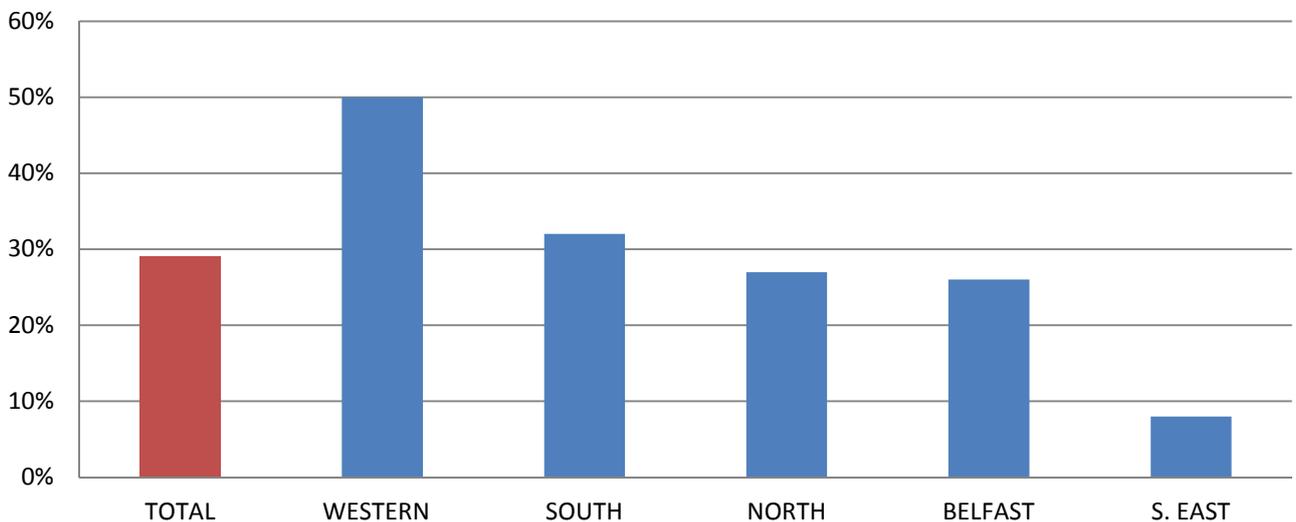


## TYPES OF OUTPATIENT MANAGEMENT

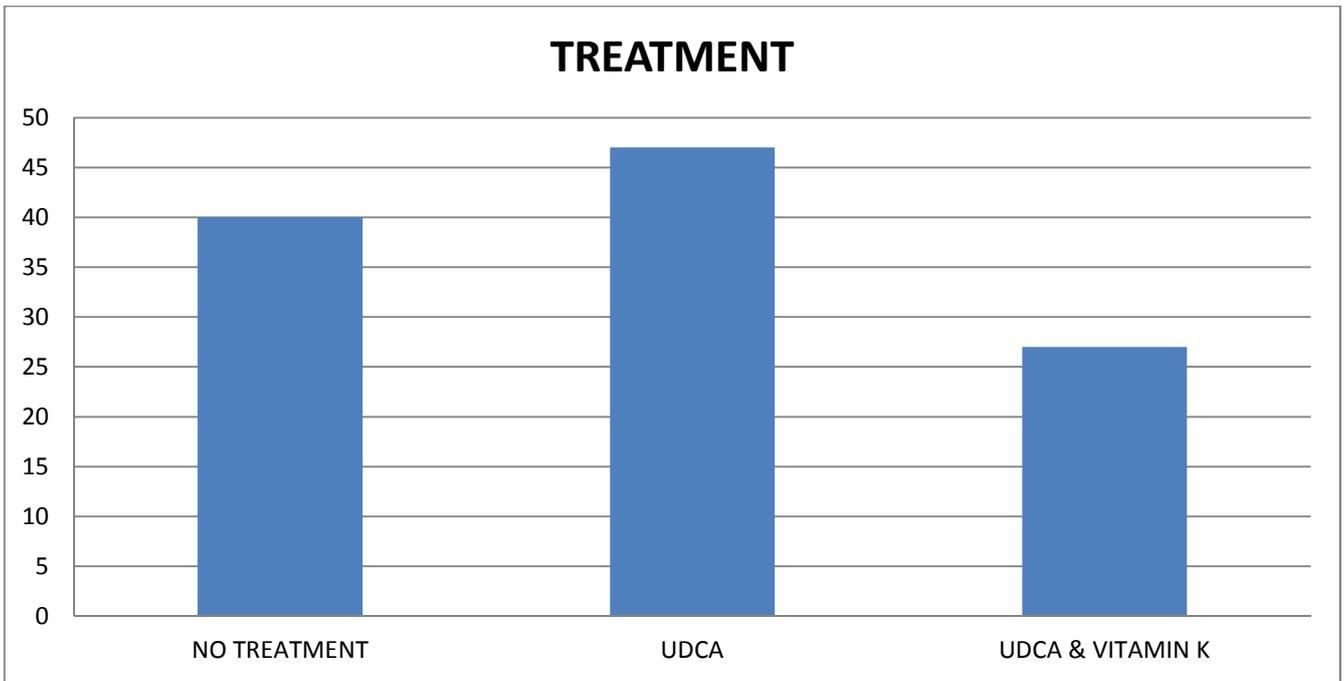


Across the trusts there was a 29% admission rate. These figures were similar when each trust was looked at separately apart from the South-Eastern trust which only had an admission rate of 8%, and the Western trust that had an admission rate of 50%.

## ADMISSION RATES



Fewer than half the patients (40/87) received no treatment in relation to OC. 47 patients received UCDA. 27 patients showed improvement in liver function tests following UCDA treatment. 27 patients received Vitamin K.

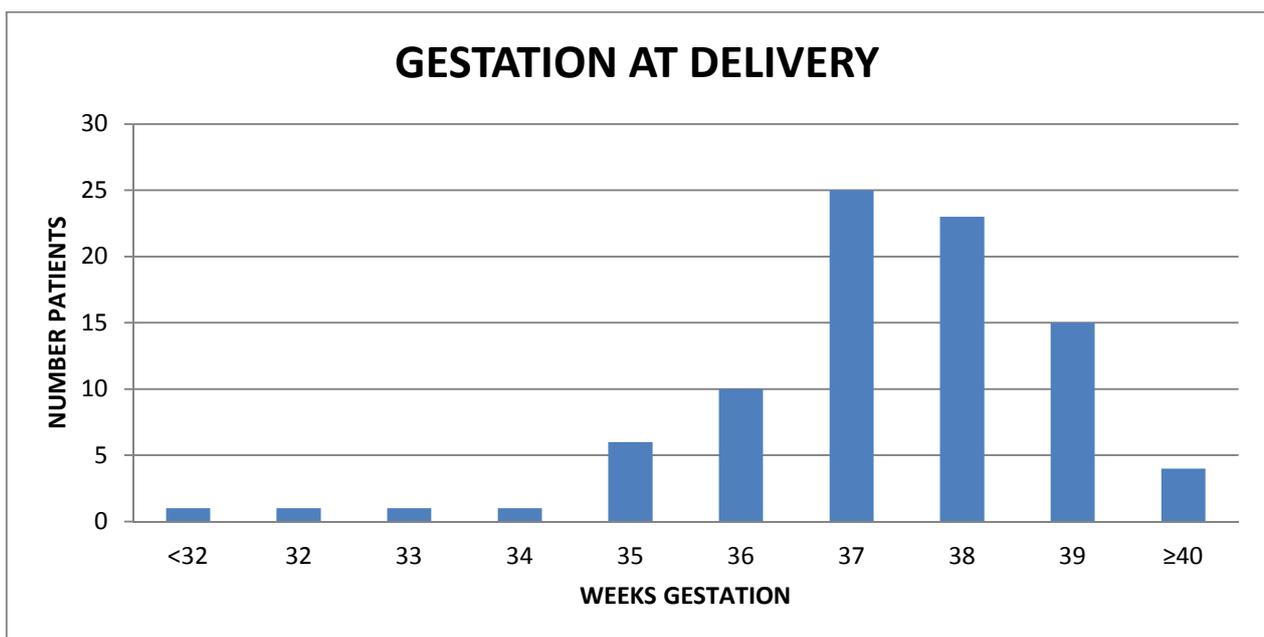


## DELIVERY

### GESTATION AT DELIVERY

77% of patients were delivered at or beyond 37 weeks gestation. The overall preterm birth rate both spontaneous and iatrogenic was 23 % (20/87). Fifteen of these cases were delivered as a result of another issue other than OC, for example preterm labour, spontaneous rupture membranes and antepartum haemorrhage.

In five there was iatrogenic preterm delivery, primarily due to OC. One patient was delivered at 32 weeks, two patients at 35 weeks and two patients at 36 weeks.

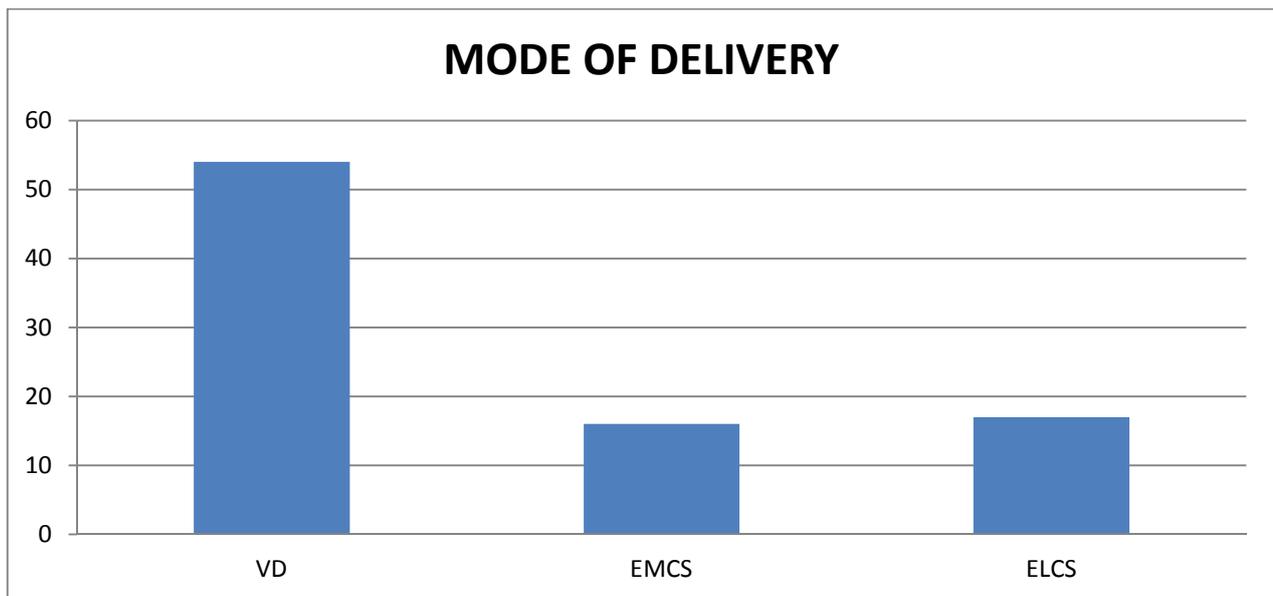


## INTRAPARTUM AND POST PARTUM EVENTS

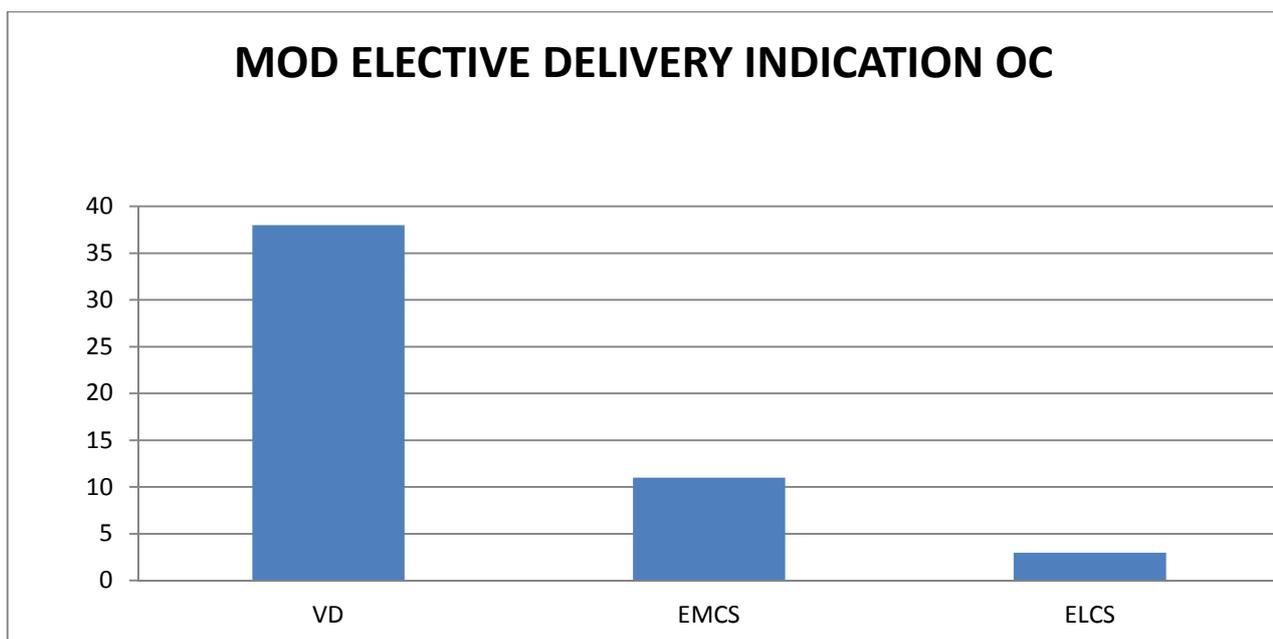
8/87 patients had meconium liquor. 16/87 patients had a Post-partum haemorrhage (PPH), 13 of these patients were not on vitamin K. None of the patients who had a PPH had antenatal steatorrhoea or coagulation abnormality.

## MODE OF DELIVERY

There were 54 vaginal deliveries, 17 elective caesarean sections and 16 emergency caesarean sections among the 87 patients.

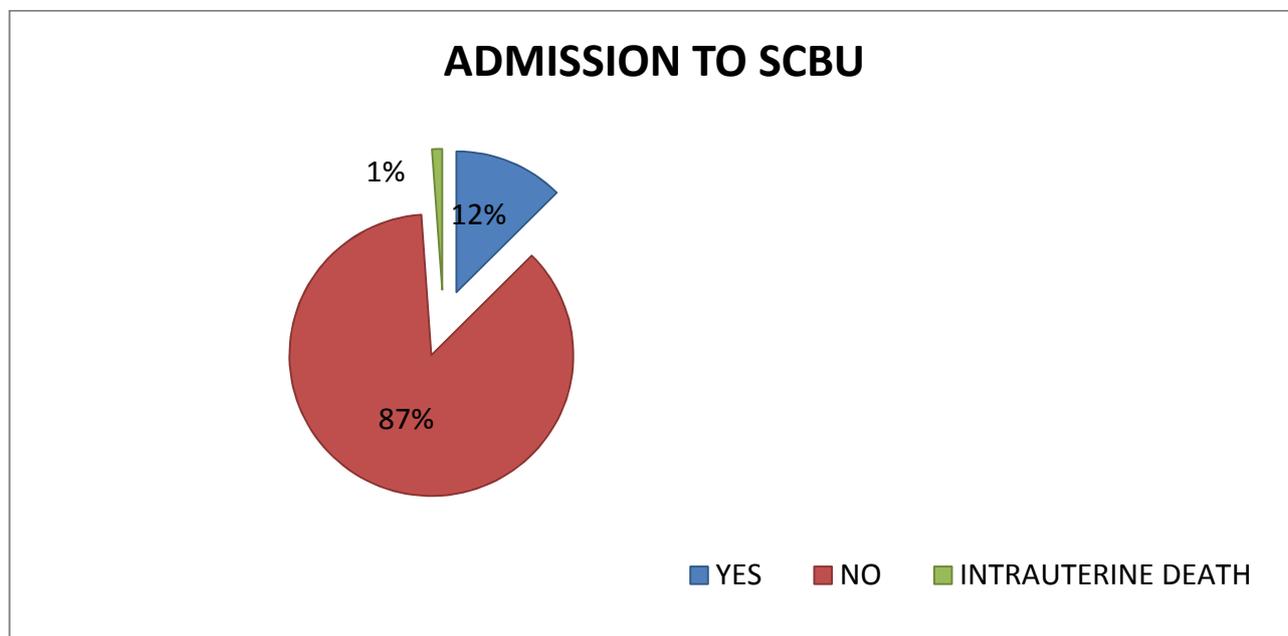


52/87 patients were electively delivered, the primary indication being OC. Of these there were 49 inductions – 38 vaginal deliveries and 11 emergency caesarean sections, and 3 elective caesarean sections.



## NEONATAL OUTCOME

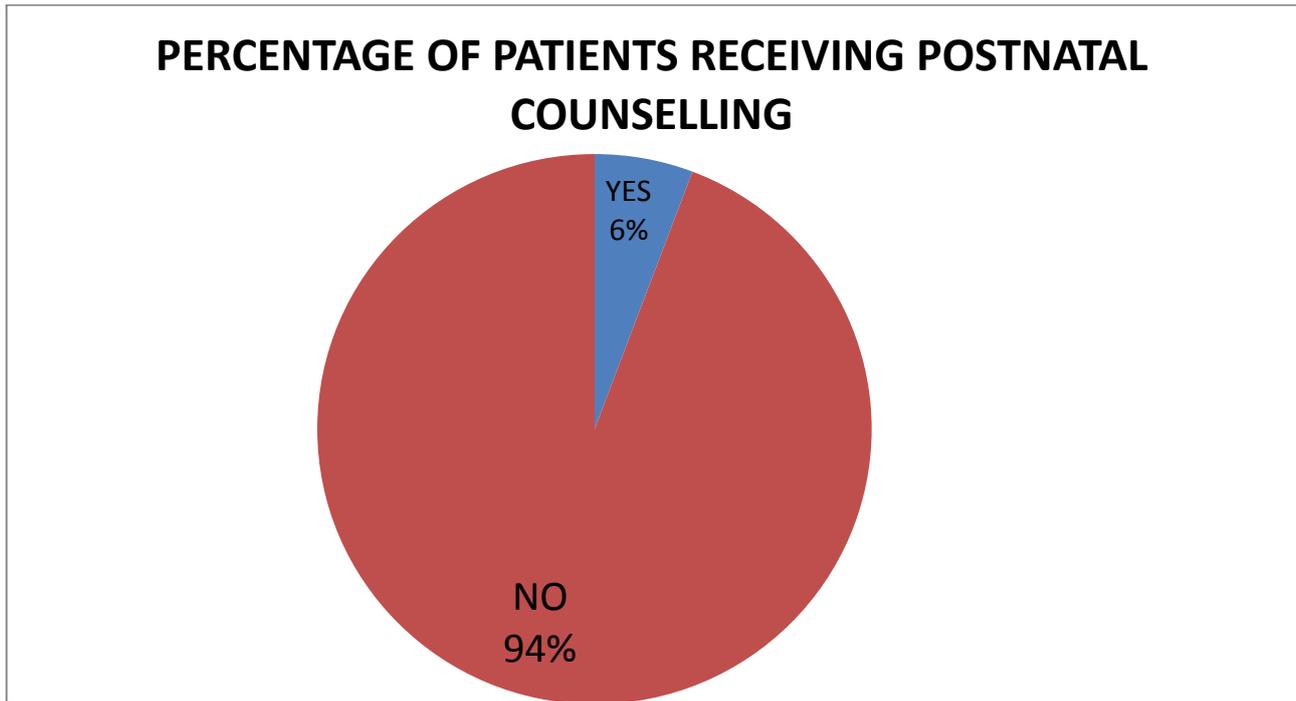
There were 92 live births and one intrauterine death. There were 11 admissions to the special care baby unit (SCBU).



There were 7 admissions for Transient tachypnoea of the newborn (TTN), 3 for prematurity and 1 for Group B Streptococcus (GBS).

REASON FOR SCBU ADMISSION	TOTAL	IATROGENIC
TTN	7	4
PREMATURITY	3	0
GBS	1	0

## POSTNATAL FOLLOW-UP



82 / 87 (84%) of patients received no postnatal counselling.

48 patients had evidence of postnatal LFT's. 27 of these patients had laboratory follow-up until normal results returned.

Postnatal resolution of itch was information that was not obtainable from the notes as there were no further entries once the patient was discharged.

## DISCUSSION

The study identified 87 patients who had a diagnosis of OC. In the Northern Ireland population, the expected number was approximately 175 cases regionwide (based on just over 25,000 deliveries in 2010). Initially, the coding department approached to identify charts. Throughout the region, 43 cases were identified. All of the coding departments apart from the Northern trust initially use NIMATS to pick up cases. The Northern trust relies on the labour ward register to pick up diagnoses. The South eastern trust use medical notes in conjunction with NIMATS to pick up diagnoses; however the other trusts do not routinely trawl medical notes. Obstetric cholestasis does not have an automatic code on NIMATS and necessitates the manual input of the diagnosis of OC. Other descriptions of the diagnosis of OC, such as pruritis, deranged LFT's or itching in pregnancy make it more difficult for the coders to place the diagnosis under the right code. This has an impact as if the diagnosis does not appear on NIMATS; it is possible it will be missed by the coding department. This would lead to inaccurate diagnosis and an inability to get a true picture of the number of cases in the region.

Following this, it was felt that there were potentially more cases to be identified. The study then proceeded to look at abnormal bile acid results. This allowed us to identify a further 36 charts. In the Southern Trust, the liver function tests were examined in the presence of a normal bile acid result. This allowed identification of a further 8 charts. This explains the larger number of diagnoses in relation to deliveries in the Southern trust, compared with the other trusts. The latter process was time intensive and we were unable to carry this out regionwide.

It is most likely that there were cases that were not identified, and therefore we are unable to make any comment about incidence rates in the region.

As expected the majority of cases presented in the late third trimester. There were also 22 charts that were not clear about the diagnosis or when it had been reached. This also explains why the coding search picked up so few cases.

The complaint of itch in a pregnant woman usually prompts the clinician to take LFT's. None of the trusts currently use pregnancy specific ranges. The abnormal range in pregnancy is 20% lower than the non pregnant range. If new lower ranges were used, it would allow more cases to be identified. In 60 of the patients the LFT's were abnormal at the onset of itch. There were five cases that took more than 7 weeks for the results to become abnormal, in one case it took 12 weeks. This underlines the importance of continuing to check LFT's in the patient with ongoing itch.

To make a diagnosis of OC, a liver ultrasound, viral screen and autoimmune screen should be carried out. Only 18% of patients had all these investigations carried out. This again is possibly secondary to the fact that the diagnosis of OC was not clear in some of the notes. Although some of the diagnoses these tests exclude are rare, for example PBC affects 2-4:100,000 of the general population<sup>3</sup>; they are important to exclude. This would not only help to confirm the diagnosis, but possibly lead to further treatments being needed for the patient. It must be noted that some of these tests take weeks until the results are available. It is important to remember that in clinical practice otherwise unexplained abnormalities in liver function or bile acids are sufficient to support the diagnosis of OC.

Bile acids are a useful investigation to aid in the diagnosis of OC, although the result may be normal in the presence of OC. In a small number of cases the LFT's may be normal, but in the presence of an elevated bile acid the diagnosis of OC can be made. 80/87 patients had a bile acid result sent. The large numbers having this investigation carried out are probably a reflection that half the charts were identified through this investigation. But also 36/43 charts identified through coding had this investigation performed. This may be due to the fact that this test is now available in the region. Previously, the test was performed in England. Turnaround times since this test has become locally available have gone from 13 days down to 2 days. The more rapid availability of the test has made it more clinically relevant in relation to decisions regarding diagnosis and treatment of the patient.

The regional laboratory range for elevated bile acids is  $>14\mu\text{mol/L}$ , and severe OC is defined by levels  $>40\mu\text{mol/L}$ <sup>4</sup>. 61 patients had elevated bile acids, 31 who had levels  $>40\mu\text{mol/L}$ . Some outcomes are discussed separately below for those with severe OC.

The majority of patients were managed as outpatients. Of those managed as inpatients, the admission rate varied between trusts from 8% (Southeast) to 50% (Western). This shows a variation in style of management between trusts. There is no mention in the guideline of optimum place of management, and no specific method of fetal monitoring is recommended. This would explain the variation in management styles.

47/87 patients received treatment for OC. Some patients did not receive treatment as the diagnosis was made after 37 weeks and the decision was then made to deliver rather than to treat. Others did not receive treatment as again the diagnosis was not clearly made. Also the 2006 guideline was not clear about the benefit of UDCA, and suggested it should not be widely used outside clinical trials. The 2011 guideline has grade A evidence to show that the use of UCDA improves pruritus and liver function tests.

Of the 47 patients who received UCDA, 27 patients showed improvement in liver function tests. This may be less than expected as most of the women in the study were diagnosed and delivered soon after, with little time for the UCDA to make an improvement. 27 of these patients also received vitamin K. Vitamin K is fat absorbable vitamin therefore the absorption of fat soluble vitamins may be sub-optimal with OC. Vitamin K has an important role in coagulation. There is a physiological theory that supplements may reduce PPH and neonatal bleeding. There is historic evidence that there is a possible risk to the neonate of haemolytic anaemia<sup>5</sup>, but this was with higher doses than would be prescribed currently. There were 16 patients (18%), who had a documented PPH. Background rates in the general obstetric population are up to 8%<sup>6</sup>. In this group of patients there were more patients with PPH than expected. In relation to post-partum haemorrhage 3/27 (11%) of those treated with vitamin K had a PPH, compared with 13/60 (22%) who were not treated with vitamin K.

67 patients were delivered at or beyond 37 weeks, with 20 patients (23%) having a preterm delivery. The rate of preterm delivery expected in a general obstetric population is up to 12%<sup>7</sup>. Of the 20 cases that delivered preterm, there were 3 spontaneous PTL. There were 17 cases of iatrogenic preterm delivery, 5 of these giving the primary indication as OC. There were 3 preterm inductions and 2 preterm elective caesarean sections due to OC. 3/5 of the iatrogenic preterm deliveries occurred in the Southern trust, although the admission rates to SCBU did not vary between trusts.

One of the patients was induced at 35+6 weeks. OC had been diagnosed at 24 weeks. UCDA was commenced at this stage. The transaminases were less than 100 units and the maximum bile acid level was 22µmol/L. In the week preceding delivery, the LFT's and the bile acid had started to rise, which may have prompted the early delivery. Another case was induced at 35+1. The patient was diagnosed and delivered within 4 days. The transaminases were elevated, but less than 100, with an elevated bile acid of 67µmol/L. No treatment was given. The third patient was induced at 36 weeks. The diagnosis was made at 34 weeks and UCDA commenced. Within 2 weeks the transaminases had doubled from 150 to 300 units despite UCDA. The bile acid was slightly elevated at 26µmol/L.

Of the preterm elective caesareans, one section was carried out at 36 weeks, the reason being severe itching. The transaminase results were elevated at several hundred units and the bile acid was 64µmol/L. This patient was treated with UCDA for 2 weeks prior to delivery with subsequent improvement in liver function tests. The second preterm elective caesarean was at 32 weeks, the indication being OC. Transaminases were several hundred, and the bile acid was 41µmol/L. UCDA was started at diagnosis at 31 weeks, with subsequent improvement in LFT's and bile acids.

Of the 5 iatrogenic preterm deliveries, there was one admission to SCBU, due to prematurity.

Of the 87 patients, there was an induction rate of 75%. The induction rate in a general obstetric population is 20%<sup>8</sup>. This would be explained as once the diagnosis was reached and the patient reached 37 weeks, the majority of patients were induced. 49 of the inductions gave the primary indication as OC – 38 achieved vaginal delivery and 11 had emergency caesarean sections.

There were also 3 elective caesarean sections, the primary indication being OC, 2 of these were preterm. OC in itself is not a reason for caesarean section.

OC is a risk factor for meconium liquor, and there appears to be a higher risk as the bile acid result rises<sup>2</sup>. 9% of cases had documented meconium liquor, although the background rate is up to 25% of deliveries<sup>9</sup>. Of the 31 patients with bile acids > 40, only 2/31 (6%) had meconium liquor, actually less than the figure for the group as a whole. Therefore, in this sample of patients with OC, a higher rate of meconium staining was not found.

There were 81 singleton and 6 twin pregnancies which resulted in 92 live births and one intrauterine death. There were 11 admissions to SCBU. The rates of admission to SCBU were similar between trusts, with an average admission rate of 12%. Of note, the South-Eastern trust had no iatrogenic preterm deliveries and no admissions to SCBU.

### **Details of IUD**

There was one intrauterine death (IUD) in the audit. This was a 32 year old woman, with one previous full term healthy pregnancy. She had no prior history or family history of OC. At 34 weeks she presented with itch and a liver function test showed an ALT 44 Units/L (normal range 4-33 Units/L). At 36 weeks a further LFT was taken – the ALT had risen to 168 Units/L. At this stage she was admitted and a bile acid was sent, which was elevated at 119µmol/L, and putting the patient into the category of severe OC. She was treated with UCDA and vitamin K. She was kept as an inpatient for a week, with CTG and Doppler studies being normal. She was discharged at 37 weeks and 4 days with a date for induction in two days time. She presented the next day, at 37 weeks and 5

days with no fetal movement and an IUD was diagnosed. A post-mortem was carried out which returned as unexplained. In cases of OC, the post-mortem is normal<sup>10</sup>, and the placenta shows non-specific hypoxic changes, but it is not known whether this is primary or secondary. This underlines the fact that fetal death in these cases does appear to be a sudden event, as there were very recent normal CTG's and Doppler studies.

### **Severe Obstetric Cholestasis**

There were 31 patients out of the 87 who had a bile acid of  $>40\mu\text{mol/L}$  who have been classified as severe OC. There is evidence that those who fall into the severe OC group have an increased rate of preterm delivery, fetal asphyxial events and meconium staining<sup>11</sup>. This risk rises by 1-2% for each additional  $\mu\text{mol/L}$ . There may well be a relationship between fetal demise and bile acid level, but definitive research is still awaited.

The one case of intrauterine death was from the subgroup with severe OC. Interim results from a national study of severe OC had 272 cases of severe OC, with only one stillbirth<sup>12</sup>. Further analysis of this data is awaited.

In the group of patients, there were differences in management in those with severe OC, compared with those with bile acids  $\leq 40\mu\text{mol/L}$ . Severe OC patients were more likely to be managed as an inpatient when compared with the group as a whole, 48% vs. 29%. In the severe OC sub-group there was a preterm delivery rate of 35%. Comparing this with a 23% preterm delivery in the group as a whole, there seems to be a higher risk of preterm delivery in those with severe OC. Of the 5 patients with iatrogenic preterm delivery, 3 of these patients had severe OC. The RCOG do not define severe OC in the 2011 guideline, but do state that the case for intervention maybe stronger in those with more severe biochemical abnormality.

### **Postnatal Management**

In regard to postnatal counselling, the RCOG guideline suggests that as a minimum the LFT's should be followed to normal, and the mother should have counselling regarding the implications of the disease. Overall 94% of patients received no postnatal counselling. Of the 5 patients who did receive counselling – 1 received information regarding recurrence rates, 2 patients received information regarding contraceptive pill use and 2 had documented evidence in the notes of a postnatal discussion.

OC has a recurrence rate of 45-90%. With such a high number of patients receiving no counselling, it may impact on the management of future pregnancies if the patient does not realise the importance of stating to her carers that she had this condition in a prior pregnancy. This is compounded by the issue as discussed earlier, that many cases are not being coded, or definitely diagnosed, so the notes cannot be relied on to identify OC cases in a prior pregnancy.

Another aspect of securing the diagnosis of OC is postnatal resolution of itch and normalisation of LFT's. 48/ 87 patients had postnatal LFT's, with 27 showing follow-up until normal results returned. Again, there may be cases in which the diagnosis was not made clear in the notes, and therefore there

would not have been a message relayed to the community to follow-up the blood tests. We were unable to obtain information regarding resolution of itch, as there was no documentation in the notes once the patient was discharged.

## SUMMARY

- A significant proportion of patients are not being clearly diagnosed, or being picked up by the coding department
- Investigation to rule out other causes of deranged liver function was carried out fully in only 18% of cases
- In cases of itch in pregnancy, liver function tests may take weeks to become abnormal
- The majority of patients had bile acids sent to help confirm diagnosis
- The majority of patients were managed as outpatients
- Over  $\frac{3}{4}$  patients were delivered  $\geq 37$  weeks, although there was a higher preterm delivery rate than expected for a general population
- There was one intrauterine death in the 87 cases
- Over  $\frac{1}{3}$  of the patients had severe OC, when compared with those not classified as severe OC
  - They were more likely to have a preterm delivery
  - There was no increase in meconium staining
  - They were more likely to be managed as an inpatient
- 75% of patients were induced, 56% giving OC as the primary indication
- 47 patients were treated with UDCA, 27 showing subsequent improvement in LFT's
- Patients not on vitamin K were twice as likely to have a PPH
- 94% of patients did not receive any postnatal counselling

## RECOMMENDATIONS

- Itch and abnormal laboratory results (LFT's or bile acids) should prompt a working diagnosis of OC while other causes are being excluded
- Fully investigate patients for other causes of deranged LFT's
- Record the diagnosis of OC clearly in the notes – obscure comments such as deranged liver function tests or itch of pregnancy should be avoided
- Record the diagnosis of OC on the NIMATS system, again avoiding obscure descriptive terms. The majority of the trusts coding departments rely on the NIMATS printouts to pick up diagnoses. If the diagnosis of OC is not clear, the diagnosis will be missed
- Pregnancy specific ranges of LFT's should be used
- Continue to check LFT's in the presence of itch, even if initial results are normal
- Treatment with UDCA should be considered to improve itch and LFT's
- Consider delivery at 37 weeks with a diagnosis of OC
- Counsel patients postnatally
- Ensure follow-up of symptoms and LFT's – clearly document on the discharge letter

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**APPENDIX 1****ABBREVIATIONS**

ALT	Alanine aminotransferase
AST	Aspartate aminotranferase
GBS	Group B Streptococcus
IUD	Intrauterine death
LFT's	Liver function tests
NIMATS	Northern Ireland Maternity System
OC	Obstetric Cholestasis
PPH	Postpartum haemorrhage
PTL	Preterm labour <37 weeks gestation
RCOG	Royal College of Obstetricians and Gynaecologists
SCBU	Special care baby unit
TTN	Transient tachypnoea of the newborn
UDCA	Ursodeoxycholic acid

**We would like to thank the following people for their ongoing assistance throughout the duration of this audit -**

**The Guidelines and Audit Implementation Network (GAIN) for funding and ongoing assistance**

**The Project Group**

Dr Katie Johnston (Project lead, Data collation and report author)

Dr Caroline Bryson (Supervising Consultant)

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**The Region-wide data collectors**

Dr Kathy Niblock, Dr Nicola-Ann Henderson, Dr Swetha Bhaskar, Dr  
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**The Coding Departments in each trust**

**The Clinical Chemistry Departments** – with special thanks to Dr Ellie Duly and Dr Derek Mc  
Killop for their cooperation and assistance

**The Audit Department of the Southern Trust** - with a special mention for Mrs Anne Quinn who  
helped with the initial application and expenses

**APPENDIX 3**

**OBSTETRIC CHOLESTASIS PROFORMA**

Hosp No H&C No	Trust	Hospital
Parity	Ethnicity	EDC
Age		
Diagnosis of OC	YES NO	Gestation @ OC diagnosis _____ Is it unclear <sup>1</sup> ? YES NO
Other Diagnosis to explain	YES – Specify _____ NO	
No diagnosis of OC but on your review of notes OC should have been Diag <sup>2</sup> .	YES NO	
Any record of itch	YES NO	Date of first complaint of itch _____
Any record of rash	YES NO	
Abnormal LFT	YES NO If Yes – date first abnormal _____ highest AST result _____	
	Record weekly AST results	
	How many antenatal LFT taken - _____	
	Pregnancy specific ranges used YES NO	
	Were following carried out (please circle those performed and record any positive results)	VIRAL SCREEN / AUTOIMMUNE SCREEN / LIVER USS
Bile acids	YES NO Total number sent _____	If yes, weekly results
PMHx of OC	YES NO	
Co-existing pre-eclampsia	YES NO	
PFHx of OC	YES NO	
Managed as:	Inpatient From what gestation	Outpatient What type monitoring?
Treatment with UDCA	YES NO date commenced _____ Documentation of risk / benefit	YES NO
Improvement in LFT	with UDCA treatment	YES NO

Treatment with Vit K	YES NO Allergy to Vit K If YES – date commenced _____	
	Prolonged Prothrombin time Steatorrhoea	YES NO Coag not done YES NO
	Date _____ Gestation _____ Weight _____	
Mode delivery (1)	IOL SOL ELCS	Indications for IOL / ELCS
Mode delivery (2)	NVD VE FD EMCS	Indications for instrument EMCS
Mec Liquor	YES NO	
PPH	YES NO	
Apgars +PH	_____@1 _____@5	Ph ART _____VEN _____ Not done
Admission SCBU	YES NO	Reason
If stillbirth	Date Diagnosis _____ Cause _____ _____	
Postnatal LFT	YES NO 1 <sup>st</sup> PN sample at least 10/7 PN F/U until Normal	YES NO YES NO
Postnatal GOPD	YES NO	
Any record of counselling	Re Recurrence YES NO Re COCP YES NO Documentation YES NO given to pt.	
Diagnosis recorded on NIMATS	YES NO	
How chart identified (circle all relevant)	CODING LABS ABN LFT LABS ABN BILE ACIDS	NIMATS OTHER (specify)
ICD-10 code used by coding dept.	CODE _____ NOT CODED	