Summer Training at
Asian Institute of Medical Science, Faridabad
(April 3 to June 2, 2017)

Analysis of the Compliance Rate of Retinopathy on Prematurity Screening Done /Advised in Preterm Babies at Aims According to the AIIMS Protocol'2014

By
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Under the guidance of
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MBA Hospital & Health Management
2016-2018

Institute of Health Management Research
The IIHMR University, Jaipur
2017

INSTITUTE OF HEALTH MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

CERTIFICATE

This is to certify that Ms. Sudamini Saproo has undergone summer training in Asian Institute of Medical Sciences (Faridabad) from 3rd April to 2nd June 2017.

The candidate herself/himself completed the project assign to his/her during summer training.Her approach to the project was sincere and proactive.This summer training is in partial fulfillment of the course requirement recommended for the award of MBA in Hospital and Health Management.

I wish him/her success in all her future endeavors.

Col. (Dr.) Ashok Kaushik

Dean (Academic & Student Affair)

The IIHMR University, JaipurThe IIHMR University

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asian
Institute of Medical Sciences

Certificate of Internship Completion

Date: 2nd June'17

TO WHOM IT MAY CONCERN

This is to certify that Ms. Sudamini Saproo – pursuing MBA in Hospital & Health Management from IIHMR University, Jaipur has successfully completed her internship at Asian Institute of Medical Sciences, Faridabad in the Department of Quality & Operations - from April 1st, 2017 to June 2nd, 2017. She has successfully completed projects on:

- **Clinical Audit on Retinopathy on Prematurity**
- **Clinical Audit on Phototherapy**

Apart from project, she actively contributed in following areas:

- Internal Audit Closures
- Active Audit Analysis
- Quality Indicator Validation

During the period of her internship programme, she was found punctual, hardworking and inquisitive.

We wish her good luck for all her future assignments.

Dr. Ankur Kathuria

Sr. Manager – Quality & Operations

Asian Institute of Medical Sciences

PROJECT-1

CLINICAL AUDIT

(SEPTEMBER'2016- MARCH'2017)

ANALYSIS OF THE COMPLIANCE RATE OF *RETIONOPATHY ON PREMATURITY* SCREENING DONE /ADVISED IN PRETERM BABIES AT AIMS ACCORDING TO THE AIIMS PROTOCOL'2014

AIM OF THE STUDY

To study whether the Paediatrics unit is adhering to the guidelines as directed in the AIIMS PROTOCOLS 2014 regarding the compliance OF ROP screening done /advised in preterm babies at AIMS.

METHODOLOGY

- **Period of Study:**
  September'2016 – March'2017

- **Inclusion Criteria:**

1. Birth weight more than or equal to 1500g.
2. Born at more than or equal to 32 weeks of gestation.
3. 1500 g and 2000g birth weight or gestation more than 32 weeks with respiratory sickness, anemia, neonatal sepsis or at high risk.

- **Type of Study:**
  Retrospective.

- **Sample size**:
  40

- **Sampling technique**:
  Random

GUIDELINES FOR SCREENING

The aim of the study is early detection, follow up and timely treatment of ROP.

SCREENING CRITERIA

Selecting neonates for screening depends on risk of ROP at different gestation. Gestation and birth weight cut-off for screening shifts lower as the quality of care improves. Current incidence and risk factors should be made the screening basis.

1. Birth weight more than or equal to 1500g.
2. Born at more than or equal to 32 weeks of gestation.

3.1500 g and 2000g birth weight or gestation more than 32 weeks with respiratory sickness, anemia, neonatal sepsis or at high risk.

FULL COMPLIANCE	PARTIAL COMPLIANCE	NON COMPLIANCE
1. ROP screening done in the hospital and notes present in patient's file. 2. ROP screening adviced in the discharge summary if not performed in the hospital. 3. 3.If follow up adviced at the time of screening and patient got discharged before the adviced time , advice mentioned in the discharge summary.	1. ROP screening done but not mentioned in the discharge summary. 2. Follow up advice mentioned in the referral form but not in the discharge summary.	ROP screening not done/adviced.

CLASSIFICATION OF ROP

Classification of ROP is done by International Classification of ROP (ICROP).

Table 1: Classification of ROP (ICROP)[15]

Location	Zone 1	Circle with optic nerve at its centre and a radius of twice the distance from optic nerve to macula
	Zone 2	Concentric circle from edge of zone 1 to ora serrata nasally and equator temporally
	Zone 3	Lateral crescent from zone 2 to ora serrata temporally
Severity	Stage 1	Presence of thin white **demarcation line** separating vascular from avascular retina
	Stage 2	Addition of depth and width to the demarcation line of stage 1, so as the line becomes **ridge**
	Stage 3	Presence of **extra retinal fibrovascular proliferation** with abnormal vessels and fibrous tissue extending from ridge to vitreous
	Stage 4	**Partial retinal detachment** not involving macula (4A) and involving macula (4B)
	Stage 5	**Complete retinal detachment**
Plus disease		Presence of dilatation and tortuosity of retinal vessels at posterior pole of eye. Also associated with papillary rigidity and vitreous haze.
Extent		Extent of ROP described in 30^0 clock hours (a total of 12 clock hours of 30^0 each)

Aggressive posterior ROP:

A rapidly progressing, severe form of ROP, if untreated, it usually progresses rapidly to stage 5 ROP. The characteristic features of this type of ROP include its posterior location, prominence of plus disease, and the ill-defined nature of the retinopathy. This may not have classical ridge or extra-retinal fibrovascular proliferation, but rather have innocuous looking retina and vessels forming arcades. This type of ROP is likely to get missed by inexperienced examiners. Observed most commonly in Zone I, it may also occur in posterior Zone II.

TOOLS

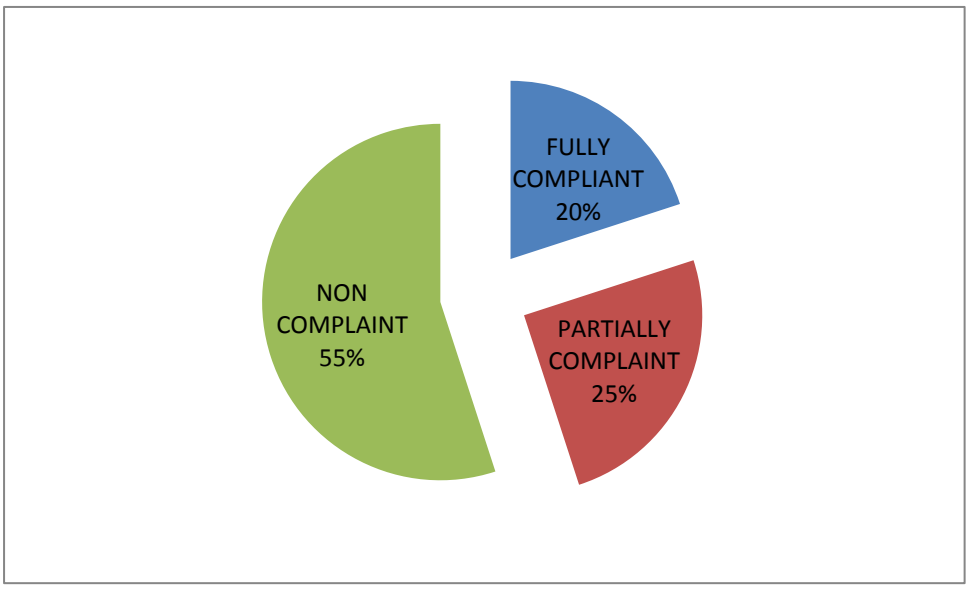
The checklist for the audit on ROP has the following components:

- S. No
- IPD No.
- Gestational Age (in weeks)
- Weight (in grams)
- Inborn/outborn
- If Outborn, DOB
- DOA
- DOD
- Associated conditions at birth
- Gestational Age+4 weeks
- >/= 4 weeks stay : ROP notes in file
- ROP present/Absent"
- If present laser given or not
- < 4 weeks stay : Advice on discharge summary for ROP
- Remarks
- "Compliant/non-compliant

FINDINGS

Out of the total 40 in-patient files audited of the last 08 months i.e. from September'2016 to March'2017, the observations were: -

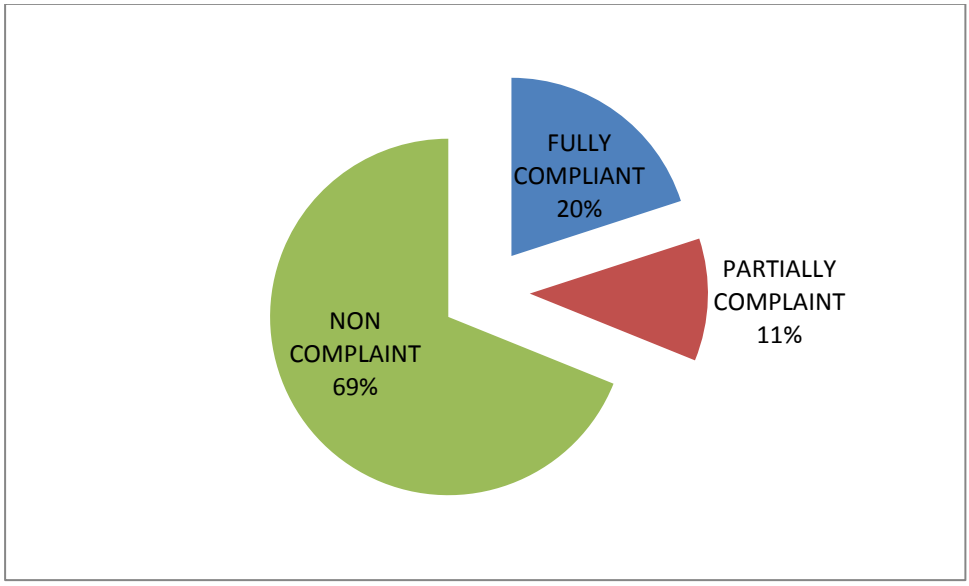
FULLY COMPLIANT	8	20%
PARTIALLY COMPLAINT	10	25%
NON COMPLAINT	22	55%



PREVIOUS AUDIT FINDINGS

Out of the total 45 in- patient files audited of the last 06 months i.e. from November 2014 to May 2016, the observations were:-

FULLY COMPLIANT	09	20%
PARTIALLY COMPLAINT	05	11.11%
NON COMPLAINT	31	68.88%



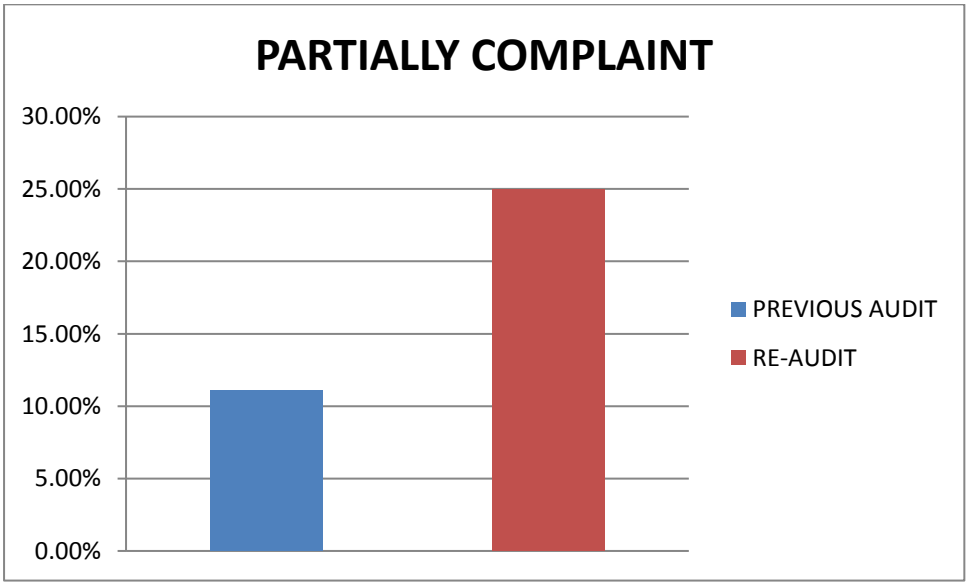
COMPARISONS

FULLY COMPLIANT:

- On comparison of previous audit findings and the re-audit findings, percentage of fully complaint cases was 20%.
- No rise or fall in the percentage of fully complaint cases is noticed.

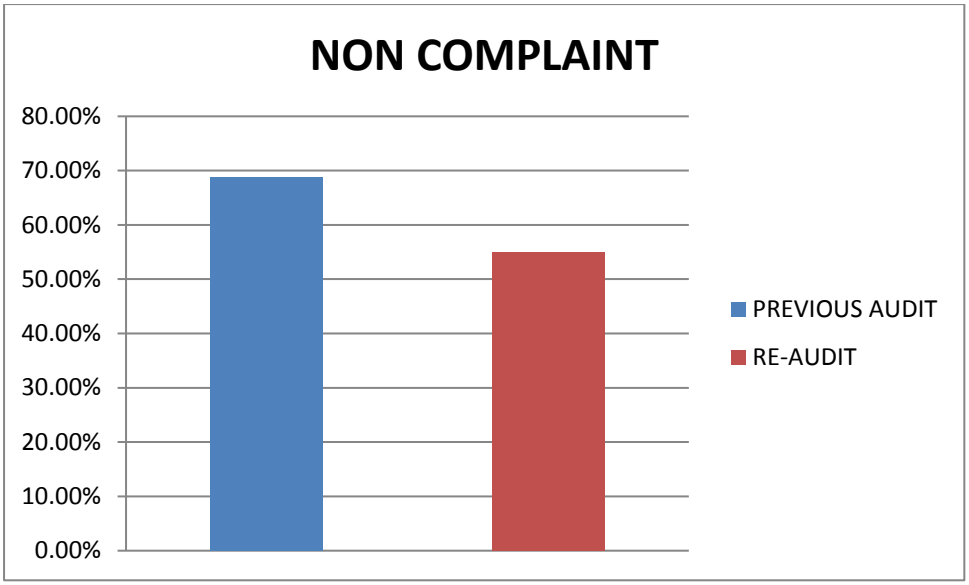
PARTIALLY COMPLIANT

- The re-audit findings show 25% of partially compliant cases as opposed to the 11.11 % that were noted in the previous study.
- An improvement of 14% of partial compliance is seen in comparison to the previous study.



NON COMPLIANT

- The re-audit findings show 55% of non compliant cases as compared to the 68.88% of the previous study.
- A decrease of 13.88% in the non compliance is seen.



RECOMMENDATIONS

- Post audit, the findings should be discussed with the senior doctors and better alternatives for raising compliance should be worked upon.
- Training should be given to the staff regarding importance of Retinopathy on Prematurity and its effects
- Duty Doctors and Nurses should be instructed to comply with the guidelines in the AIIMS Protocol'2014.

PROJECT - 2

PROJECT-2

CLINICAL AUDIT

(SEPTEMBER'2016- APRIL'2017)

A study to assess the Compliance of Guidelines for Phototherapy in hospitalized infants of 35 Weeks or more weeks Gestation as recommended by American Academy of Paediatrics.

AIM:
To improve the phototherapy protocol in the organisation

OBJECTIVES:
1. To ensure phototherapy is started at appropriate time and level of bilirubin.
2. To ensure patient risk factors are considered for phototherapy.

STANDARDS:
1. 100% of the pre-term babies at higher risk i.e. 35-37 6/7 weeks of gestational age with risk factors receive phototherapy as per American Academy of Pediatrics (AAP) guidelines.

2.100% of the pre-term babies at medium risk i.e. 35- 37 6/7 weeks of gestational age and well receive phototherapy as per AAP guidelines.

3.100% of the pre-term babies at medium risk i.e. equal to and above 38 weeks of gestational age with risk factors receive phototherapy as per AAP guidelines.

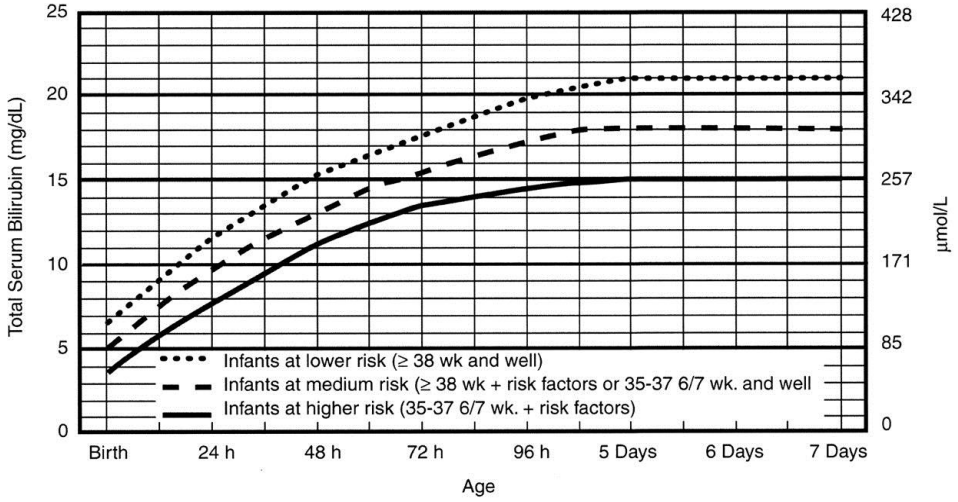
4.100% of the pre-term babies at lower risk i.e. equal to or above 35 to 37 weeks of gestation well receive phototherapy as per AAP guidelines.

METHODOLOGY

- **Period of Study:** September'2016 –April 2017 (08 months)
- **Sample Size:** 50
- **Inclusion Criteria:**
  - Patients who have completed or at gestational age 35 weeks and above
- **Exclusion Criteria:**

– Patients of 35 weeks less gestational age.

Guidelines for phototherapy in hospitalized infants of 35 or more weeks' gestation.



- Use total bilirubin. Do not subtract direct reacting or conjugated bilirubin.
- Risk factors = isoimmune hemolytic disease, G6PD deficiency, asphyxia, significant lethargy, temperature instability, sepsis, acidosis, or albumin < 3.0g/dL (if measured)
- For well infants 35-37 6/7 wk can adjust TSB levels for intervention around the medium risk line. It is an option to intervene at lower TSB levels for infants closer to 35 wks and at higher TSB levels for those closer to 37 6/7 wk.
- It is an option to provide conventional phototherapy in hospital or at home at TSB levels 2-3 mg/dL (35-50mmol/L) below those shown but home phototherapy should not be used in any infant with risk factors.

Subcommittee on Hyperbilirubinemia Pediatrics
2004;114:297-316

PEDIATRICS®

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Discussion:

I. **PHYSIOLOGIC HYPERBILIRUBINEMIA**.
This "normal jaundice" is attributed to the following mechanisms:Increased bilirubin production due to

1. Increased RBC volume per kilogram and decreased RBC survival (90 day versus 120 day) in infants compared with adults.

2. Increased ineffective erythropoiesis and increased turnover of nonhemoglobinheme proteins.

Increased enterohepatic circulation caused by high levels of intestinal β-glucuronidase, preponderance of bilirubin monoglucuronide rather than diglucuronide, decreased intestinal bacteria, and decreased gut motility with poor evacuation of bilirubin-laden meconium.

- Defective uptakeof bilirubin from plasma caused by decreased ligandin and binding of ligandin by other anions.

- Defective conjugationdue to decreased UDPG-T activity.Decreased hepatic excretionof bilirubin.

II. **NONPHYSIOLOGIC HYPERBILIRUBINEMIA**.

Nonphysiologic jaundice may not be easy to distinguish from physiologic jaundice. The following situations suggest nonphysiologichyperbilirubinemia and require investigation:

B. History
1. A family history of jaundice, anemia, splenectomy, or early gallbladder disease suggests hereditary hemolytic anemia (e.g., spherocytosis, G6PD deficiency).
2. A family history of liver disease may suggest galactosemia, α_1-antitrypsin deficiency, tyrosinosis, hypermethioninemia, Gilbert disease, Crigler-Najjar syndrome types I and II, or cystic fibrosis.

3. Ethnic or geographic origin associated with hyperbilirubinemia (East Asian, Greek, and American Indian) (see I.B.3 for potential genetic influences).

4. A sibling with jaundice or anemia may suggest blood group incompatibility, breast-milk jaundice, or Lucey-Driscoll syndrome.

5. Maternal illness during pregnancy may suggest congenital viral or toxoplasmosis infection. Infants of diabetic mothers tend to develop hyperbilirubinemia.

6. Maternal drugs may interfere with bilirubin binding to albumin, making bilirubin toxic at relatively low levels (sulfonamides) or may cause hemolysis in a G6PD-deficient infant (sulfonamides, nitrofurantoin, antimalarials).

7. The labor and delivery history may show trauma associated with extravascular bleeding and hemolysis. Oxytocin use may be associated with neonatal hyperbilirubinemia, although this is controversial. Asphyxiated infants may have elevated bilirubin levels caused either by inability of the liver to process bilirubin or by intracranial hemorrhage. Delayed cord clamping may be associated with neonatal polycythemia and increased bilirubin load.

Tool:

- Name of the Patient
- UHID No
- IPD NO
- Name of Consultant
- Gestational Age
- Date of Birth
- Time of Birth
- Date of Admission
- Time of Admission
- Hours of Life

- Transcutaneous Bilirubin
- Serum Bilirubin
- Risk Factors (Yes/ No). If Yes, mention the Risk-
    - Blood Group Incompatibility
    - G6PD Deficiency
    - Sepsis
    - Acidosis
- Level of Bilirubin at which phototherapy should be started (according to AAP)
- Compliant/ Non Compliant

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CLINICAL AUDIT-

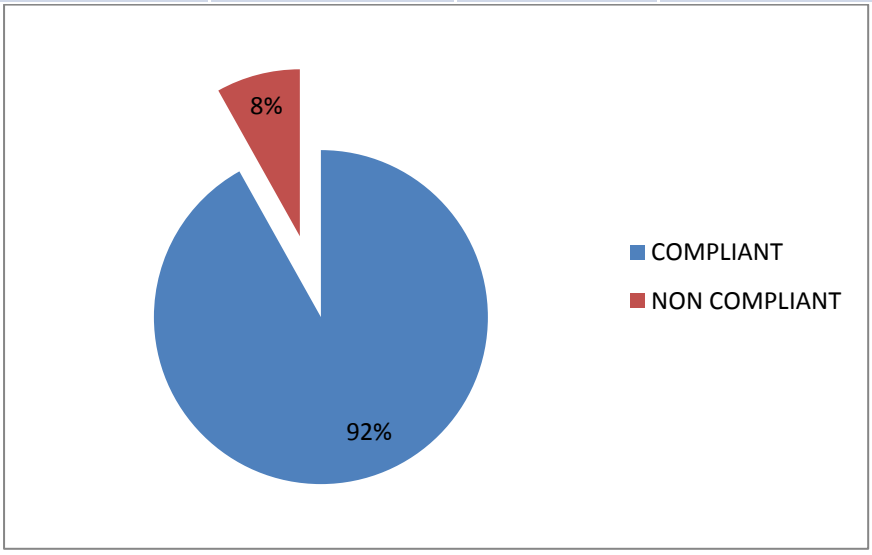
BILIRUBIN GRAPH : AMERICAN ACADEMY OF PEDIATRICS

Name of Patient	UHID No	IPD No	Name of Consultant	Gestational Age	DOB	TOB	DOA	TOA	Hours of Life	Transcutaneous Bilirubin	Serum Bilirubin	Risk factors 1.Blood Group Incompatibility 2.G6PD Deficiency 3.Spesis 4.Acidosis (Yes/ No)	Level of Bilirubin at which phototherapy should be started(according to AAP)	Complaint/ Non Complaint

Findings:

Out of the total 97 in- patient files audited over a period of 11 months i.e. from July 2014 to May 2015, 8 files were found to be Non- Compliant to the guidelines as suggested by American Academy of Paediatrics:-

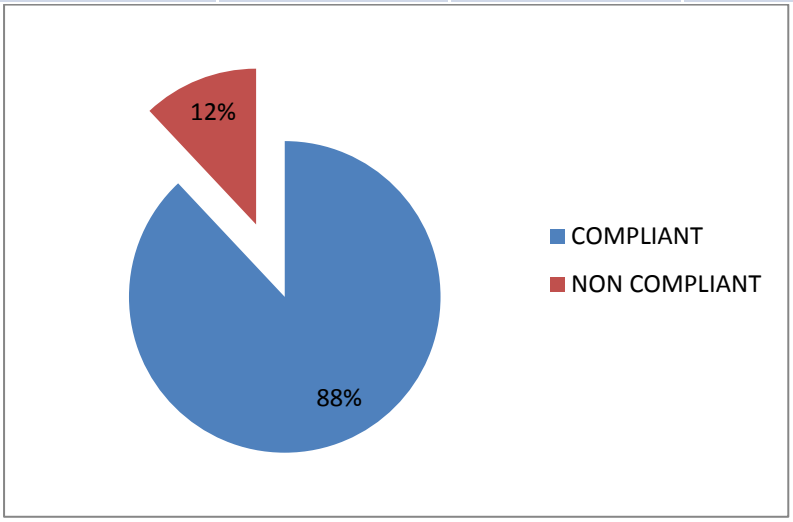
Total Files	Compliant Files	Non-Compliant Files	% of Non Compliance
97	89	8	8.2%



RE-AUDIT:

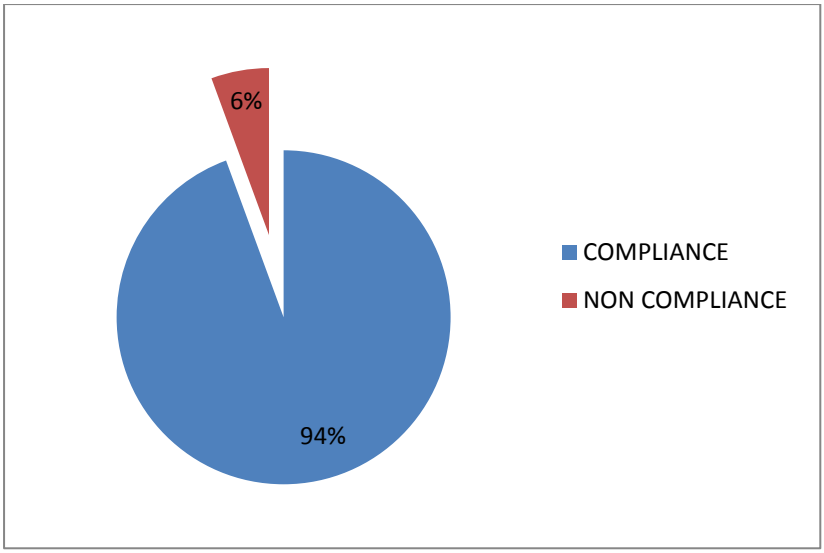
Out of the total 50 in- patient files audited over a period of 08 months i.e. from September 2016 to April 2017, 6 files were found to be Non- Compliant to the guidelines as suggested by American Academy of Pediatrics.

Total Files	Compliant Files	Non-Compliant Files	% of Non Compliance
50	44	6	12%



% CASES AT HIGH RISK (35-37 6/7 WEEKS + RISK FACTORS)

CRITERIA	TOTAL CASES	PERCENTAGE
COMPLIANCE	17	94.4%
NON COMPLIANCE	1	5.6%
TOTAL	18	



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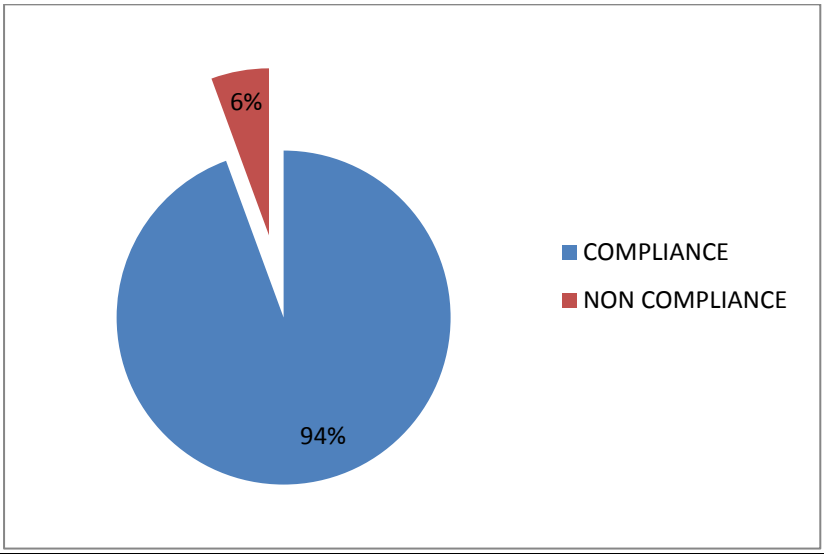
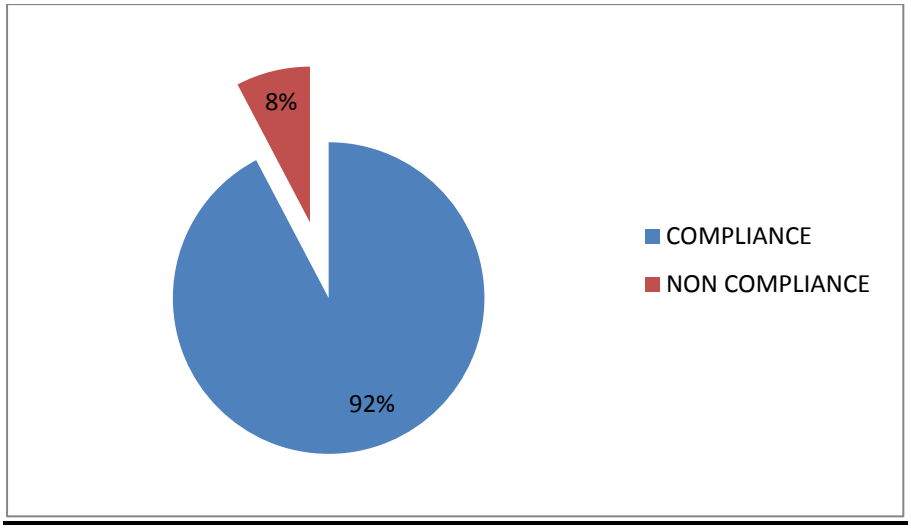


% CASES AT MEDIUM RISK (38 WEEKS AND ABOVE + RISK FACTORS)

CRITERIA	TOTAL CASES	PERCENTAGE
COMPLIANCE	12	92.3%
NON COMPLIANCE	1	7.7%
TOTAL	13	



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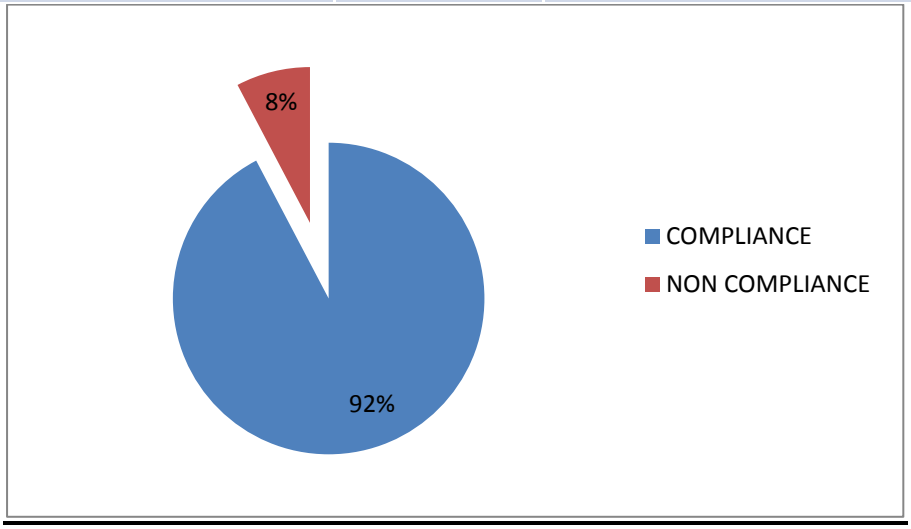

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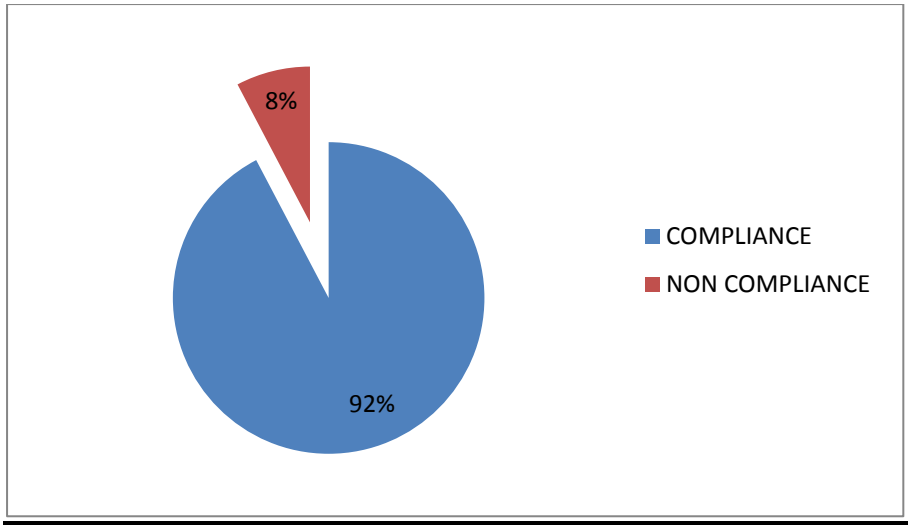
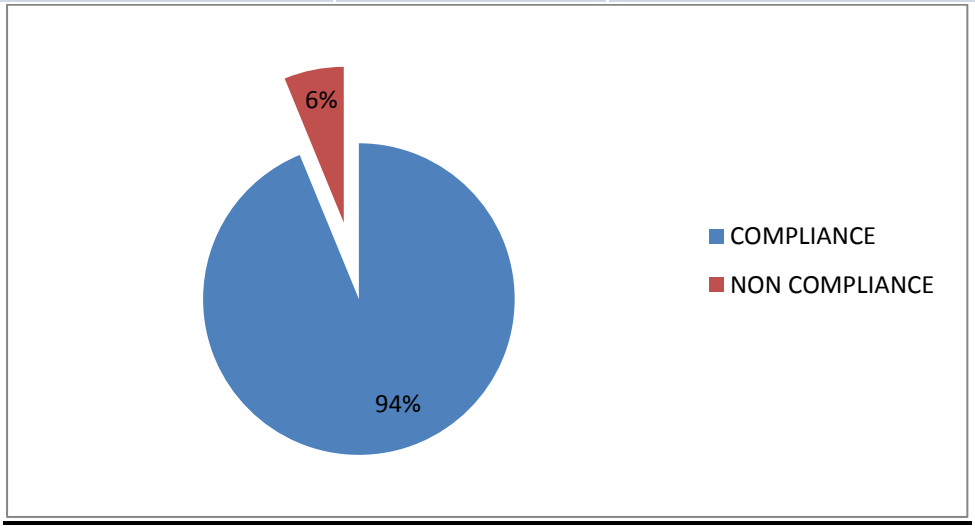


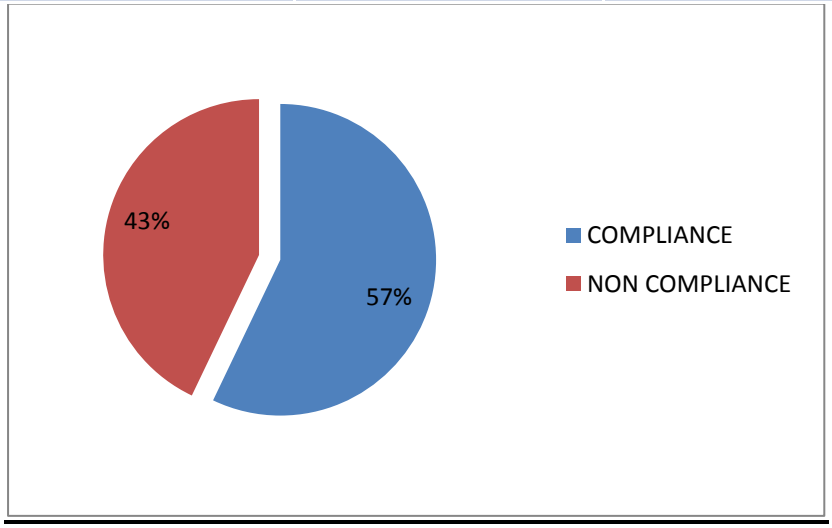
% CASES AT MEDIUM RISK (35-37 6/7 WEEKS + WELL)

CRITERIA	TOTAL CASES	PERCENTAGE
COMPLIANCE	15	93.8%
NON COMPLIANCE	1	6.2%
TOTAL	16	



% CASES AT LOW RISK (38 WEEKS AND ABOVE + WELL)

CRITERIA	TOTAL CASES	PERCENTAGE
COMPLIANCE	4	57.1%
NON COMPLIANCE	3	42.9%
TOTAL	7	



Recommendations:

- Internal audits should be carried out by the Head of the Department to check the compliance.
- Proper training on phototherapy of DNB students should be done.
- Peer review and cross checking of files should be done on a regular and random basis.
- Interpretation of the TSB and TCB should be done according to the graph before starting phototherapy.
- Post audit, training has been given to the staff regarding importance of Neonatal Hyperbilirubinemia and its effects.