"Multi-modal training package for preterm care"
Development and Dissemination

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'On behalf of developers of preterm baby package'

Vision of the team……

Quality Improvement (QI) Program to improve the healthy survival of preterm neonates without severe retinopathy of prematurity (ROP)

Objectives

- Creation of preterm package
- Domains, focus
- Teaching methodology: Small group
- Online platform with certificate generation
- Skill testing and simulation exercises
- Dissemination, NNF Collaboration
- Feedback by users
- App “Facility based preterm care”
- Field experience

Development of multimodal training package

Formative assessment → Data Analysis (Transcription, coding and analysis) → Stakeholders meeting → Content Design workshop → Requirements of content presentation

Madhya Pradesh: 4 SNCUs
March-April 2016

- Knowledge, skills, attitudes and practices of SNCU health-care personnel, coordinators and parents
- Barriers and assumptions in implementation of the program

Mixed methods study: Quantitative data (MCQ, OSCEs, Observation checklist,); Qualitative: IDI and FGD

Focus Areas of Training

- SNCU care
- Sepsis prevention
- Management of Jaundice
- Surfactant administration
- Ventilator, FiO2 settings
- CPAP
- Oxygen saturation
- Assessment of apnoea
- Blood sampling
- IV fluid preparation
- Feeding, TPN
- ROP

May 2016

- Information flow
- Navigation buttons
- Knowledge check at each step
- Inline material; no pdf
- Short videos
- Simple language
- Learning corner

Scope for improvement in many practices; real challenge is to translate improved knowledge and skills to improvement in practices

Domain 1: Good Control of Oxygen…

Strengths

- Awareness about oxygen as a risk factor of ROP
- 40% use pulse oximeter readings while making decisions about stopping oxygen therapy

Weaknesses

- Unaware about optimal oxygen saturation range
- 22% stated not setting alarm limits for high or low oxygen saturation
- 60% set appropriate lower limit (89-90%) and
- 45% appropriate upper alarm limit (93-95%)

Optimal Oxygen Saturation

Opportunities

- Incorporation of ROP data in existing SNCU software
- Willingness to learn

Threats

- Attitude to mute pulse oximeter alarm by nurses
- Shortage of pulse oximeter at all SNCUs

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Core working group meetings

Content development framework workshop

Core group meetings

10 modules

November 2016 to February 2017

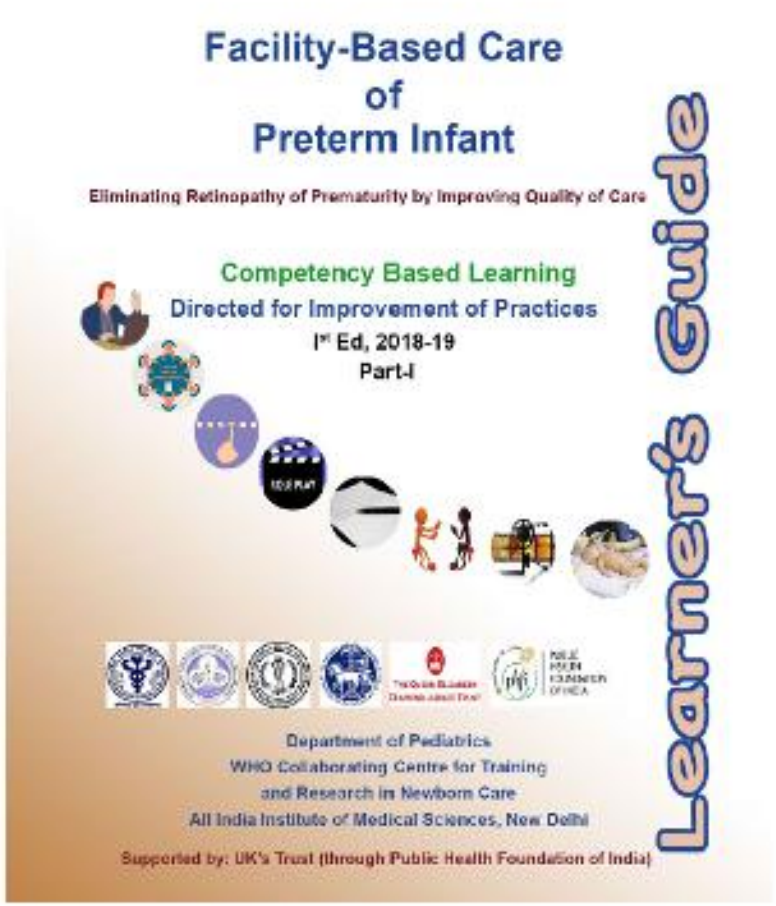
Script for webinars and videos

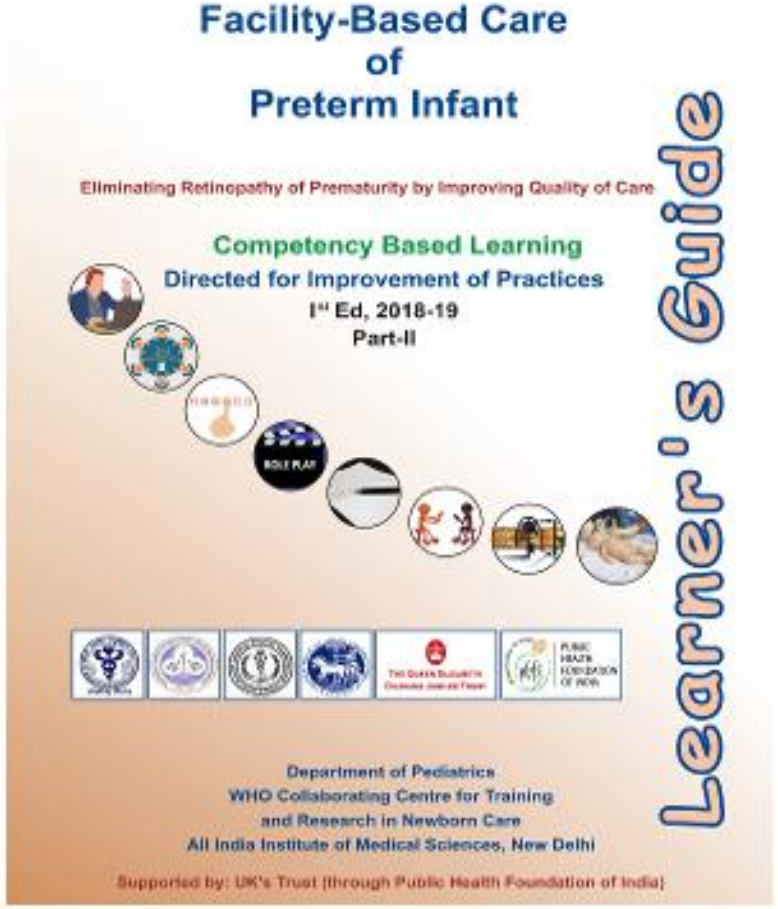
MCQ; OSCE
Simulation exercises

Tasks steered by each team

- Webinars
- Videos
- Scripts
- Key messages
- Multiple choice questions
- OSCE stations
- Simulation exercises
- Job aids
- Role plays

Educational package: Learner and Facilitator guide Part 1 and Part 2





Teaching methodology

- A paradigm shift in training & skill upgradation of doctors and nurses
- Participatory learning methodology
- Competency based learning (to make confident, competent and compassionate - communication skills and team building)
- Teaching as nurse and doctor teams

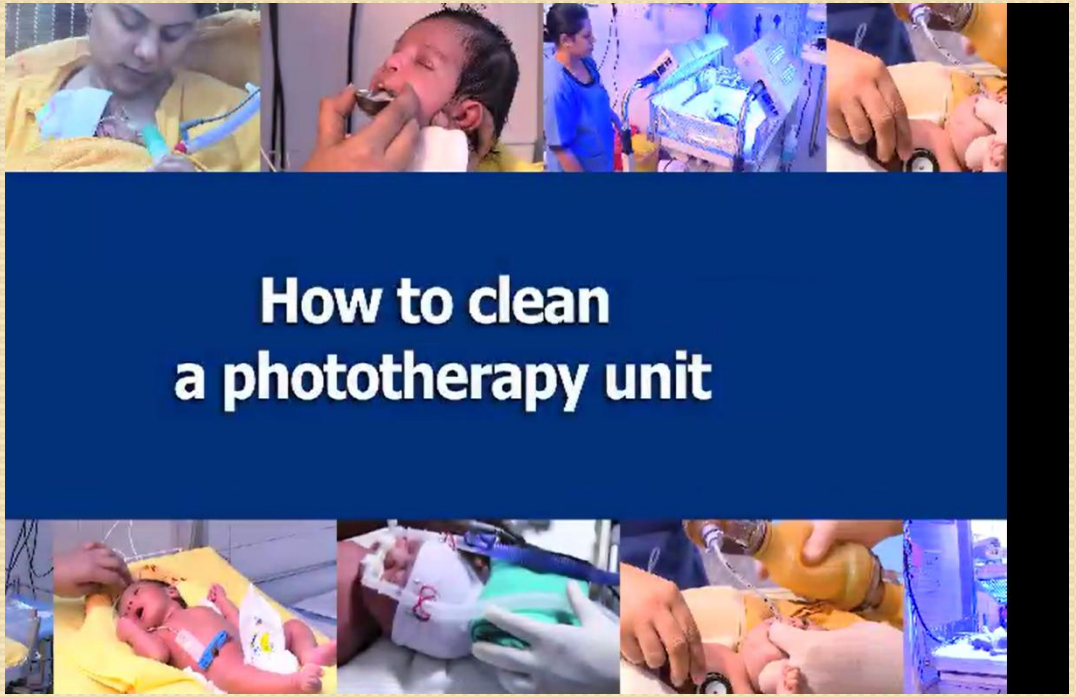
Training methods

- Small group teaching learning
  - Self reading
  - Webinars and videos
  - Demonstration and return demonstration
  - Role play
  - Self evaluation by MCQ (emphasis on knowing and not scoring)
  - Skill assessment (emphasis on doing)
  - Simulation (Emphasis on understanding, doing and team behaviour)

Deliverables- Using Latest Technology , High Class mobile reflective contents

Webinars-65

Short Videos-130



Structured OSCE

OSCE
(Pulse oximeter and oxygen therapy)

Case scenario: A preterm neonate, 33 wk by gestational age /1.8 Kg now 2 days old is brought with respiratory distress. Saturation reading in pulse oximeter without oxygen is 70%. You are in a peripheral with availability of oxygen and compressed air source. How will you monitor oxygen in this neonate?

S NO.	Item	Marks
1.	Does hand hygiene	
2.	Searches for necessary equipment: Oxygen and compressed air source, flow meter for air and oxygen, humidifier and device for warming gas, appropriate size nasal prongs , adhesive for fixation of prongs, scissors and job aid to adjust flow (3 marks, 0.5 each)	
3.	Counsels mother regarding the need for oxygen administration	
4.	Connects flow meters to air and oxygen source	
5.	Connects these two one T piece	
6.	Connects humidifier and warmifier	
7.	Connects the system to nasal prongs	
8.	Adjusts flow of oxygen and flow of air looking at the job aid	
9.	Attaches nasal prongs to neonate	
10	Attaches baby to pulse oximeter after cleaning the probe	
11	Applies the probe to an extremity ensuring that the LED and the sensor are exactly opposite each other	
12	Secures the probe with the attached Velcro/Micropore	
13.	Checks for upper and lower set alarm, if not appropriate adjusts upper alarm limit to 95% and lower limit to 90%.	
14	Positions the infant's head in the midline and keep it in neutral position by placing the shoulder roll if required	
15	If the neonate does not improve; expresses intent to take corrective steps	
16	Expresses intent that shall look at pulse oximeter probe for waveform or re tie if not able to see the waveform	
17	Increase FIO2 level by adjusting flow of oxygen and air as per job aid if lower limit of alarm saturation is not achieved	
18	If upper alarm limit of saturation is achieved, desires to decrease FIO2 by adjusting flow rate of oxygen and air.	

Instructions to facilitator

- Read aloud to the learner the following instructions and the case.
- As you observe the learner, give a score of one for each correct step.
- If the learner expresses inability do not nudge further, please proceed to the next skill assessment and grade the not done steps as zero marks.

Facilitator to speak

- "I am going to read a role play case. Please listen carefully, and then show me or tell me how you would proceed."
- I will not volunteer information unless you ask. I will provide no other feedback until the end of the case."
- "You have a maximum of 10 minutes to demonstrate the skill"
- If you are not able to attempt any particular step/ you shall still be assessed on the subsequent steps and shall not be marked for the steps un-attempted.

S. No.	OSCE
1	Counsel the mother about kangaroo mother care
2	Procedure of kangaroo mother care
3	Monitoring while in kangaroo mother care

Simulation Scenario

You are in the delivery room with a primi, with PIH, who is about to deliver a 34 week newborn. How do you get ready for resuscitation? *(Team leader takes over in managing the case. Asks instructor relevant questions, if required.)* The baby is born. (*The team leader asks relevant questions to the instructor).*

As the baby has not cried the team leader cuts the cord and shifts the baby under warmer. He asks relevant questions and performs the initial steps. The team members participate and assist the team leader in managing the case.

The team proceeds to PPV as baby does not respond to initial steps. The team leader asks for initiation of co-ordinated chest compression and PPV as there is no response. The team administers drugs and checks for the response.

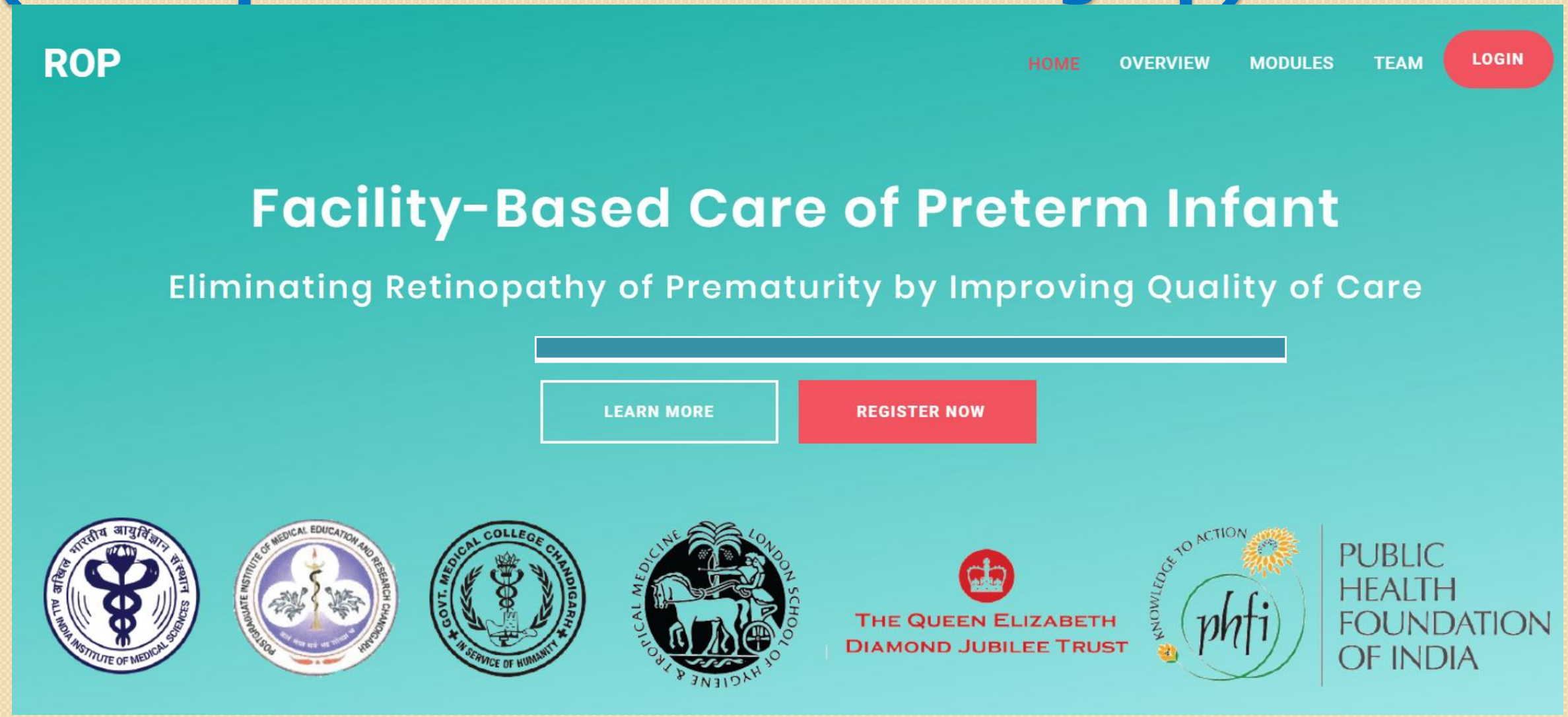
The instructor stops the case after epinephrine administration and assessment of baby.

Team Performance (all participate)	**Tick**
Identify role and responsibilities	
Effective communication	
Steps done in logical fashion – correct/incorrect/missed	
Steps performed within time limits	
What went right?	
What went wrong –When? Why?	
How could the case be solved in a better manner?	
Team leader summarizes	

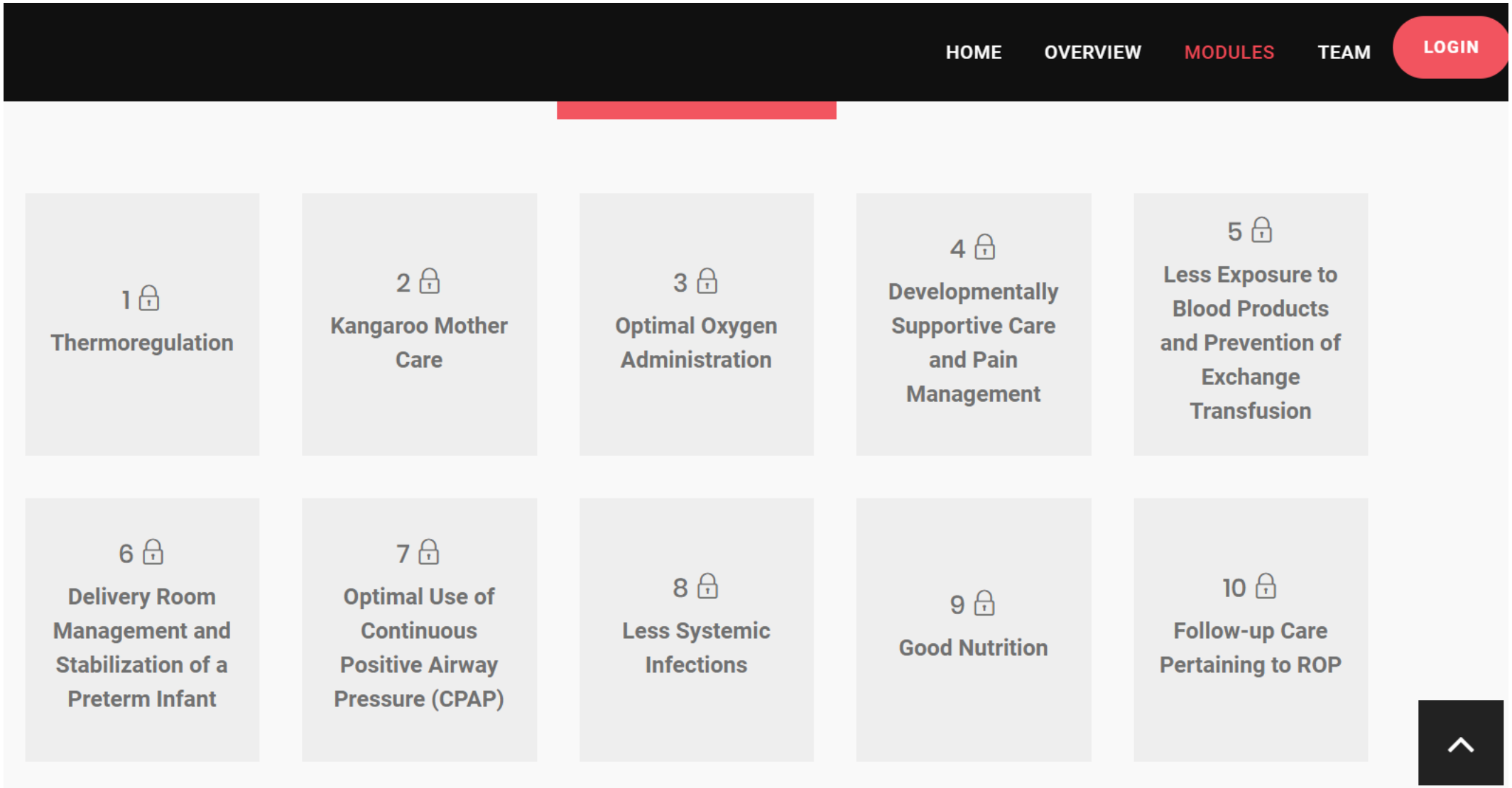
E learning Platform

FOCUS ON SELF LEARNING FOLLOWED BY SKILL LEARNING AND SIMULATION AT PARTNER INSTITUTION

E learning platform (www.pretermcare-eliminatingrop)

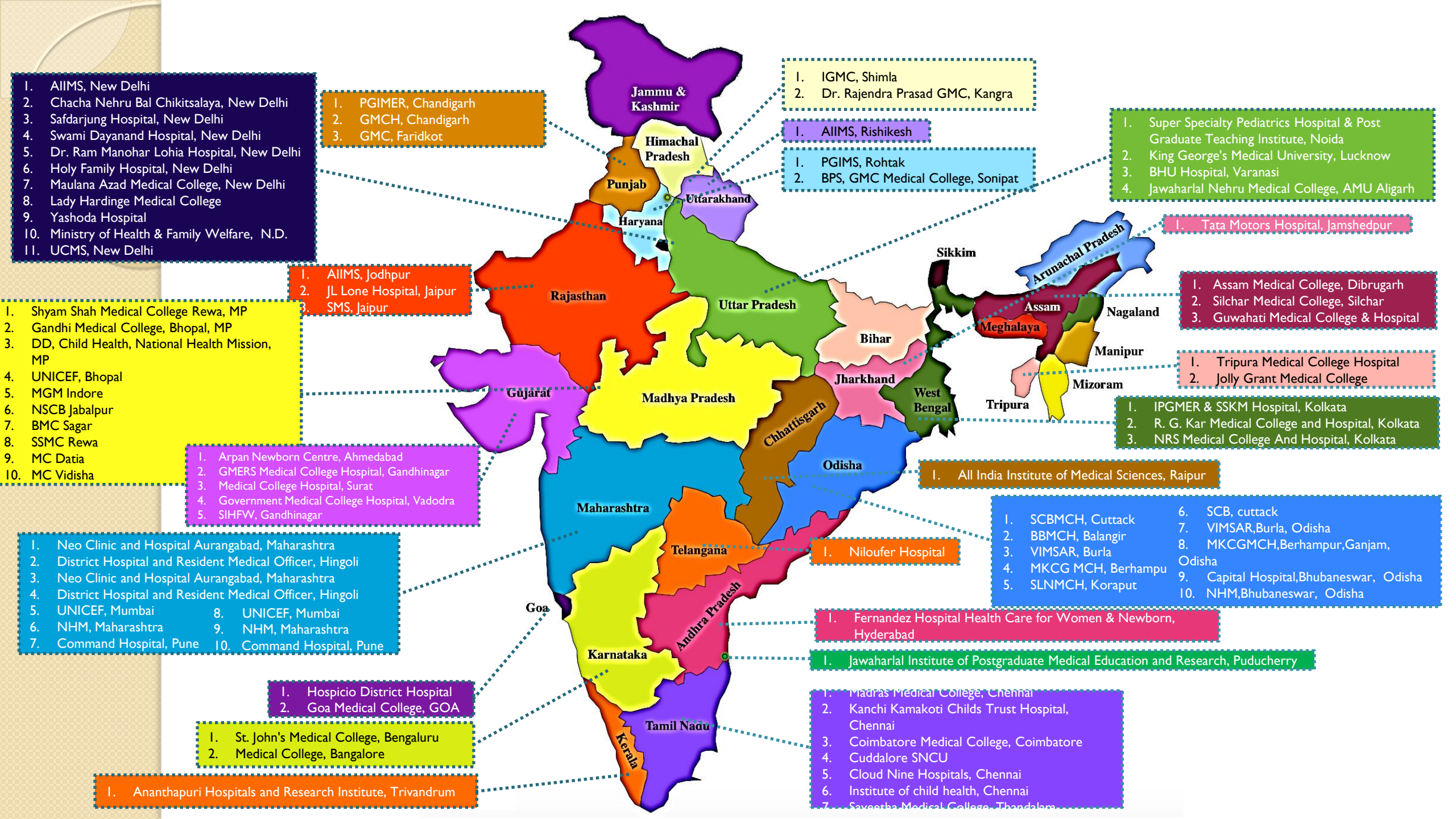


10 modules


HOME
OVERVIEW
MODULES
TEAM
LOGIN
1
Thermoregulation
2
Kangaroo Mother Care
3
Optimal Oxygen Administration
4
Developmentally Supportive Care and Pain Management
5
Less Exposure to Blood Products and Prevention of Exchange Transfusion
6
Delivery Room Management and Stabilization of a Preterm Infant
7
Optimal Use of Continuous Positive Airway Pressure (CPAP)
8
Less Systemic Infections
9
Good Nutrition
10
Follow-up Care Pertaining to ROP

Dissemination

- May 2017 to December 2019
  - MP: Four
  - Delhi: Six
  - Odisha, Chhattisgarh, Telangana
- First day: Quality improvement
  - Formulation of a quality improvement project by the team of the medical college
- Next two days spent on skill training and assessment
- Package is envisioned to be administered by state medical colleges to the SNCUs under their supervision via 'hub and spoke' model



1. AIIMS, New Delhi
2. Chacha Nehru Bal Chikitsalaya, New Delhi
3. Safdarjung Hospital, New Delhi
4. Swami Dayanand Hospital, New Delhi
5. Dr. Ram Manohar Lohia Hospital, New Delhi
6. Holy Family Hospital, New Delhi
7. Maulana Azad Medical College, New Delhi
8. Lady Hardinge Medical College
9. Yashoda Hospital
10. Ministry of Health & Family Welfare, N.D.
11. UCMS, New Delhi

1. PGIMER, Chandigarh
2. GMCH, Chandigarh
3. GMC, Faridkot

1. IGMC, Shimla
2. Dr. Rajendra Prasad GMC, Kangra

1. AIIMS, Rishikesh

1. PGIMS, Rohtak
2. BPS, GMC Medical College, Sonipat

1. Super Specialty Pediatrics Hospital & Post Graduate Teaching Institute, Noida
2. King George's Medical University, Lucknow
3. BHU Hospital, Varanasi
4. Jawaharlal Nehru Medical College, AMU Aligarh

1. Tata Motors Hospital, Jamshedpur

1. AIIMS, Jodhpur
2. JL Lone Hospital, Jaipur
3. SMS, Jaipur

1. Assam Medical College, Dibrugarh
2. Silchar Medical College, Silchar
3. Guwahati Medical College & Hospital

1. Shyam Shah Medical College Rewa, MP
2. Gandhi Medical College, Bhopal, MP
3. DD, Child Health, National Health Mission, MP
4. UNICEF, Bhopal
5. MGM Indore
6. NSCB Jabalpur
7. BMC Sagar
8. SSMC Rewa
9. MC Datia
10. MC Vidisha

1. Tripura Medical College Hospital
2. Jolly Grant Medical College

1. IPGMER & SSKM Hospital, Kolkata
2. R. G. Kar Medical College and Hospital, Kolkata
3. NRS Medical College And Hospital, Kolkata

1. Arpan Newborn Centre, Ahmedabad
2. GMERS Medical College Hospital, Gandhinagar
3. Medical College Hospital, Surat
4. Government Medical College Hospital, Vadodra
5. SIHFW, Gandhinagar

1. All India Institute of Medical Sciences, Raipur

1. Neo Clinic and Hospital Aurangabad, Maharashtra
2. District Hospital and Resident Medical Officer, Hingoli
3. Neo Clinic and Hospital Aurangabad, Maharashtra
4. District Hospital and Resident Medical Officer, Hingoli
5. UNICEF, Mumbai
6. NHM, Maharashtra
7. Command Hospital, Pune
8. UNICEF, Mumbai
9. NHM, Maharashtra
10. Command Hospital, Pune

1. SCBMCH, Cuttack
2. BBMCH, Balangir
3. VIMSAR, Burla
4. MKCG MCH, Berhampu
5. SLNMCH, Koraput
6. SCB, cuttack
7. VIMSAR,Burla, Odisha
8. MKCGMCH,Berhampur,Ganjam, Odisha
9. Capital Hospital,Bhubaneswar, Odisha
10. NHM,Bhubaneswar, Odisha

1. Niloufer Hospital

1. Fernandez Hospital Health Care for Women & Newborn, Hyderabad

1. Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry

1. Hospicio District Hospital
2. Goa Medical College, GOA

1. St. John's Medical College, Bengaluru
2. Medical College, Bangalore

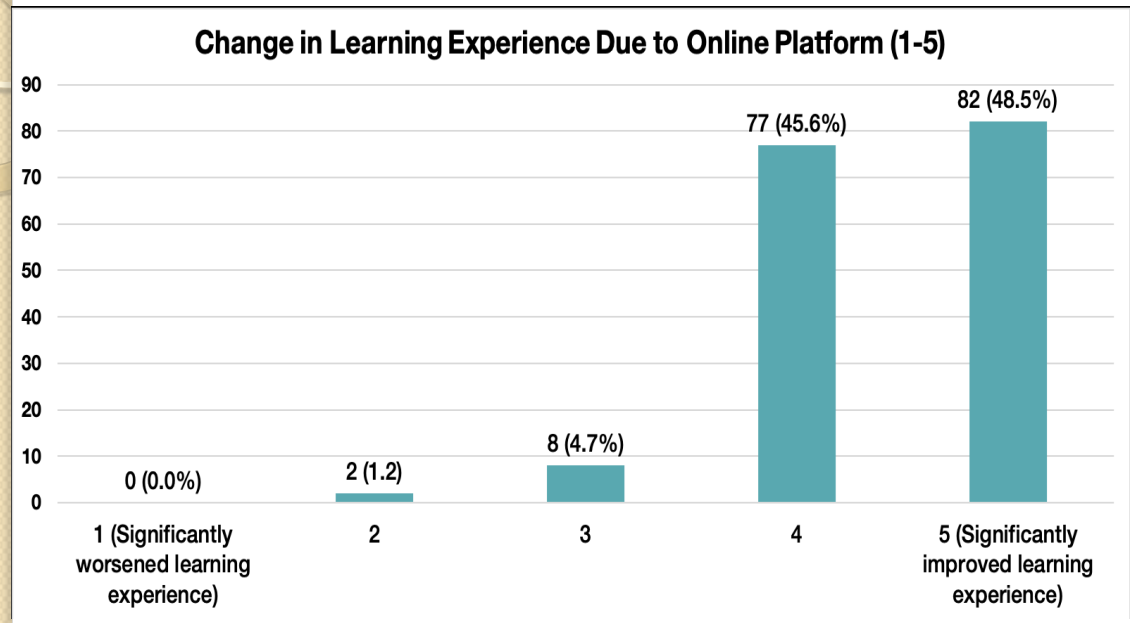
1. Madras Medical College, Chennai
2. Kanchi Kamakoti Childs Trust Hospital, Chennai
3. Coimbatore Medical College, Coimbatore
4. Cuddalore SNCU
5. Cloud Nine Hospitals, Chennai
6. Institute of child health, Chennai
7. Saveetha Medical College, Thandalam

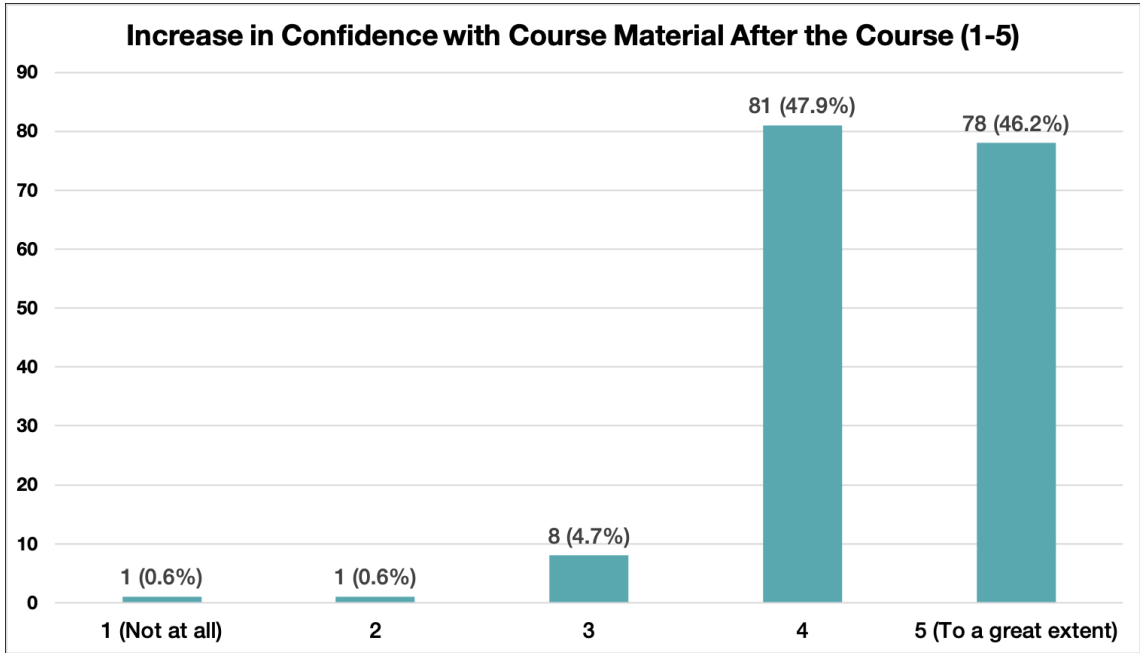
1. Ananthapuri Hospitals and Research Institute, Trivandrum

NNF Collaboration (August to October 2020)

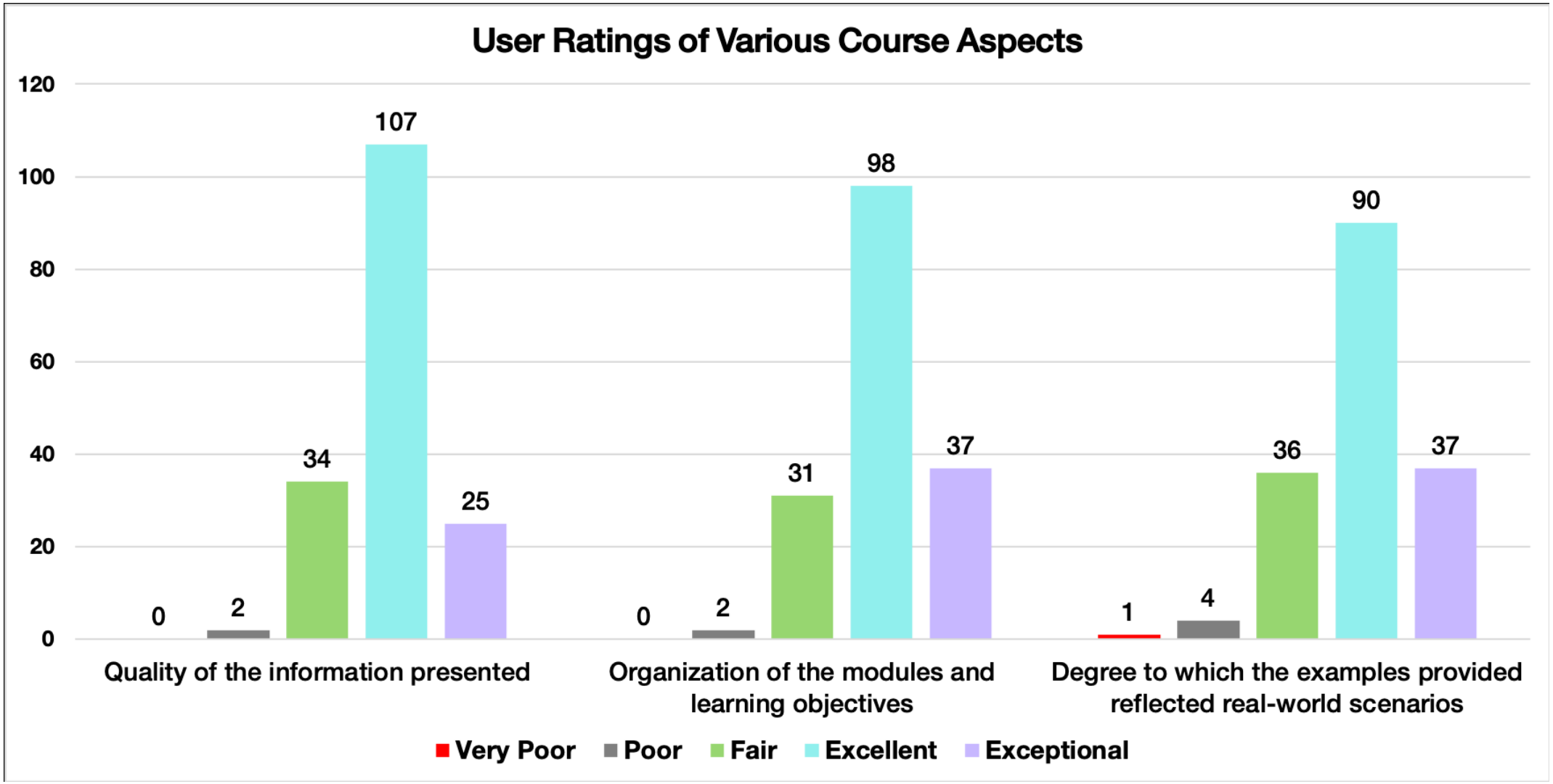
- Virtual and Online
  - "Online Course for best practices for preterm infants" PART I (Basic preterm Care) three weekends covering six modules
  - Completion of modules on online platform and attendance and interaction with experts online for 20 hours spread over three weekends. (August to September 2020)
  - "Online Course for best practices for preterm infants" PART II (Advanced preterm care) three weekends covering six modules
  - Completion of modules on online platform along with mandatory attendance and interaction with experts online for 20 hours spread over three weekends. (October 2020)

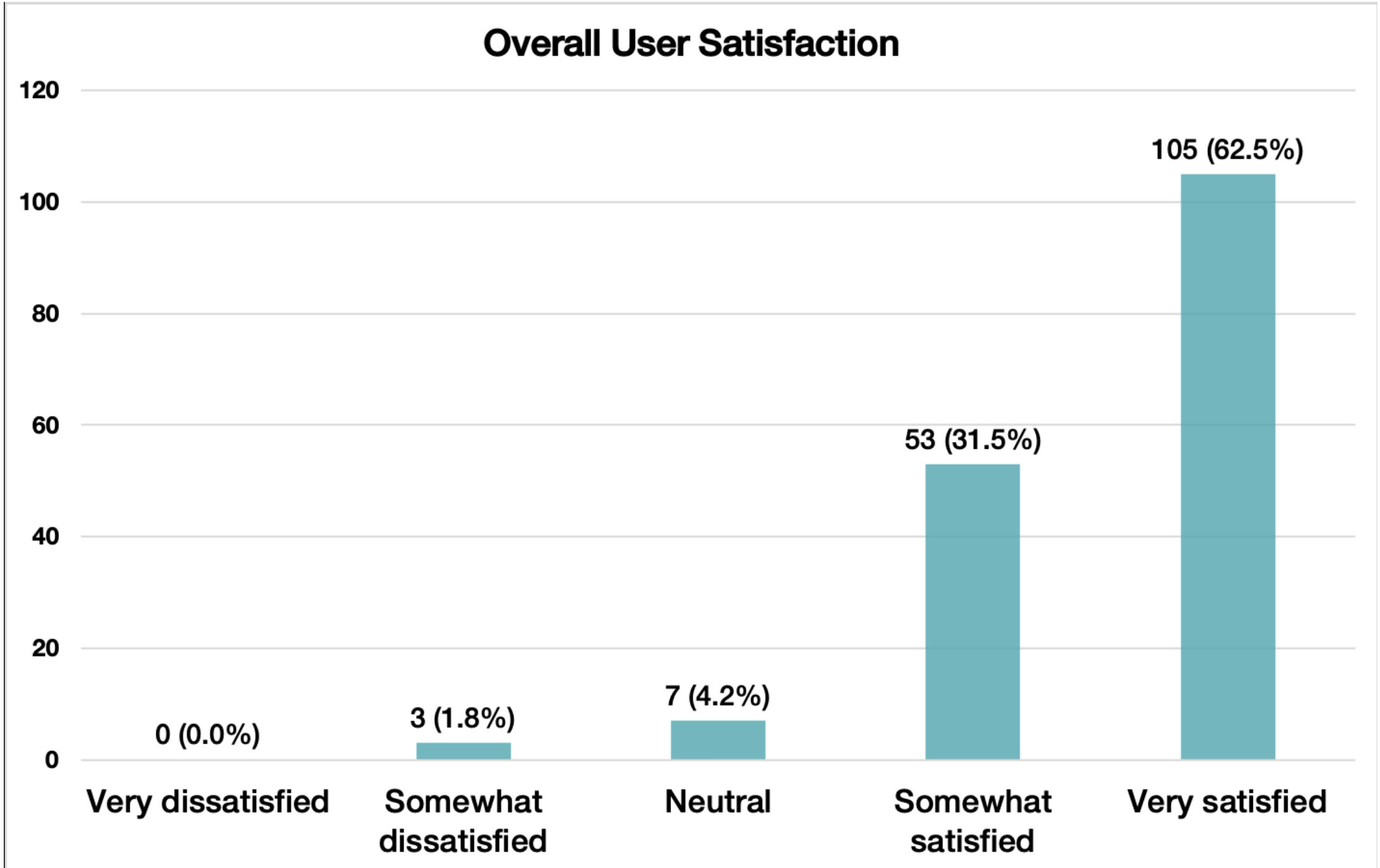
Feedback by users of the platform





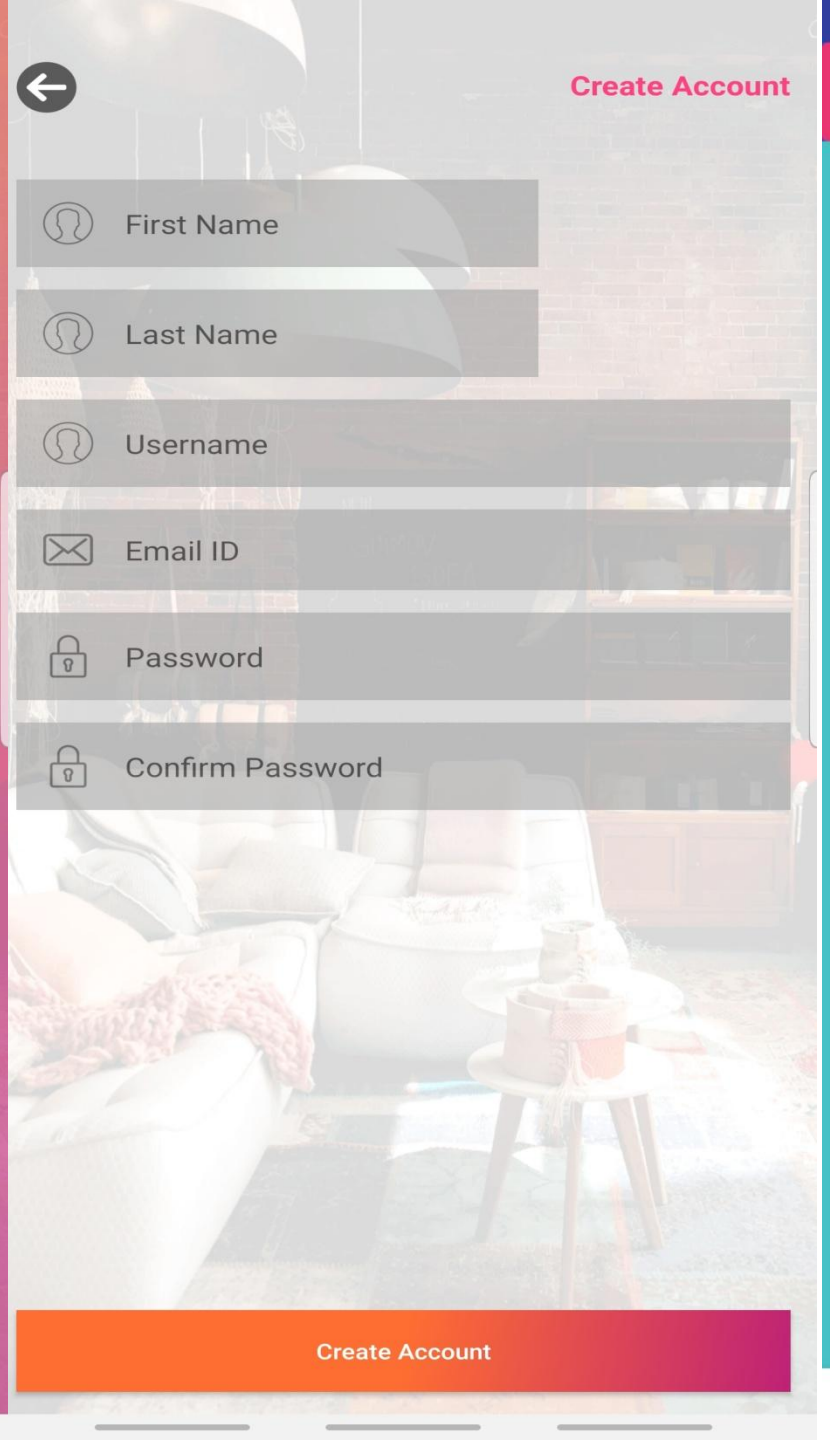
User ratings of different course aspects

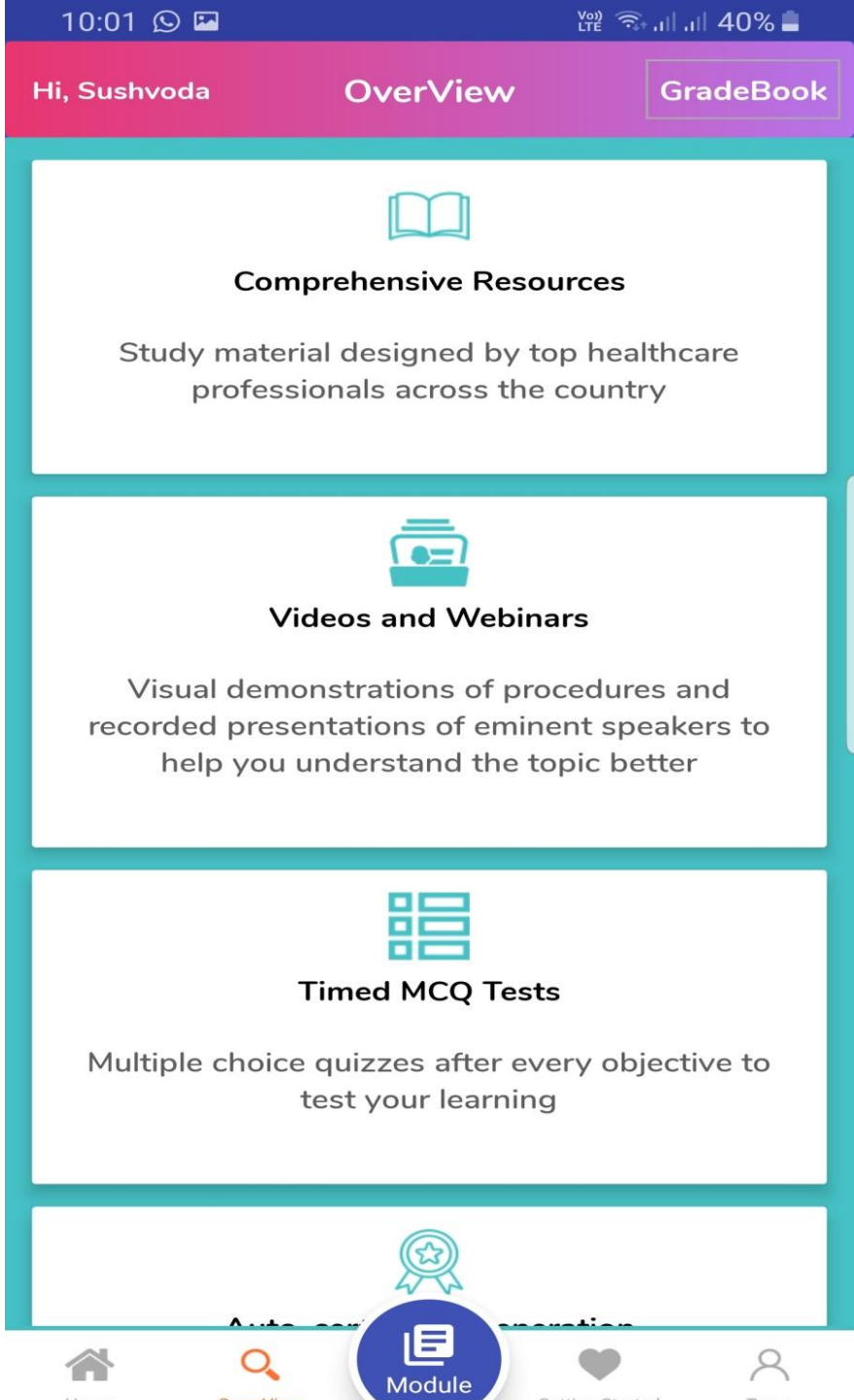



Overall User Satisfaction
120
100
80
60
40
20
0
0 (0.0%)
3 (1.8%)
7 (4.2%)
53 (31.5%)
105 (62.5%)
Very dissatisfied
Somewhat dissatisfied
Neutral
Somewhat satisfied
Very satisfied

App on preterm educational package


Facility-Based Care of
Preterm Infant


Create Account
First Name
Last Name
Username
Email ID
Password
Confirm Password
Create Account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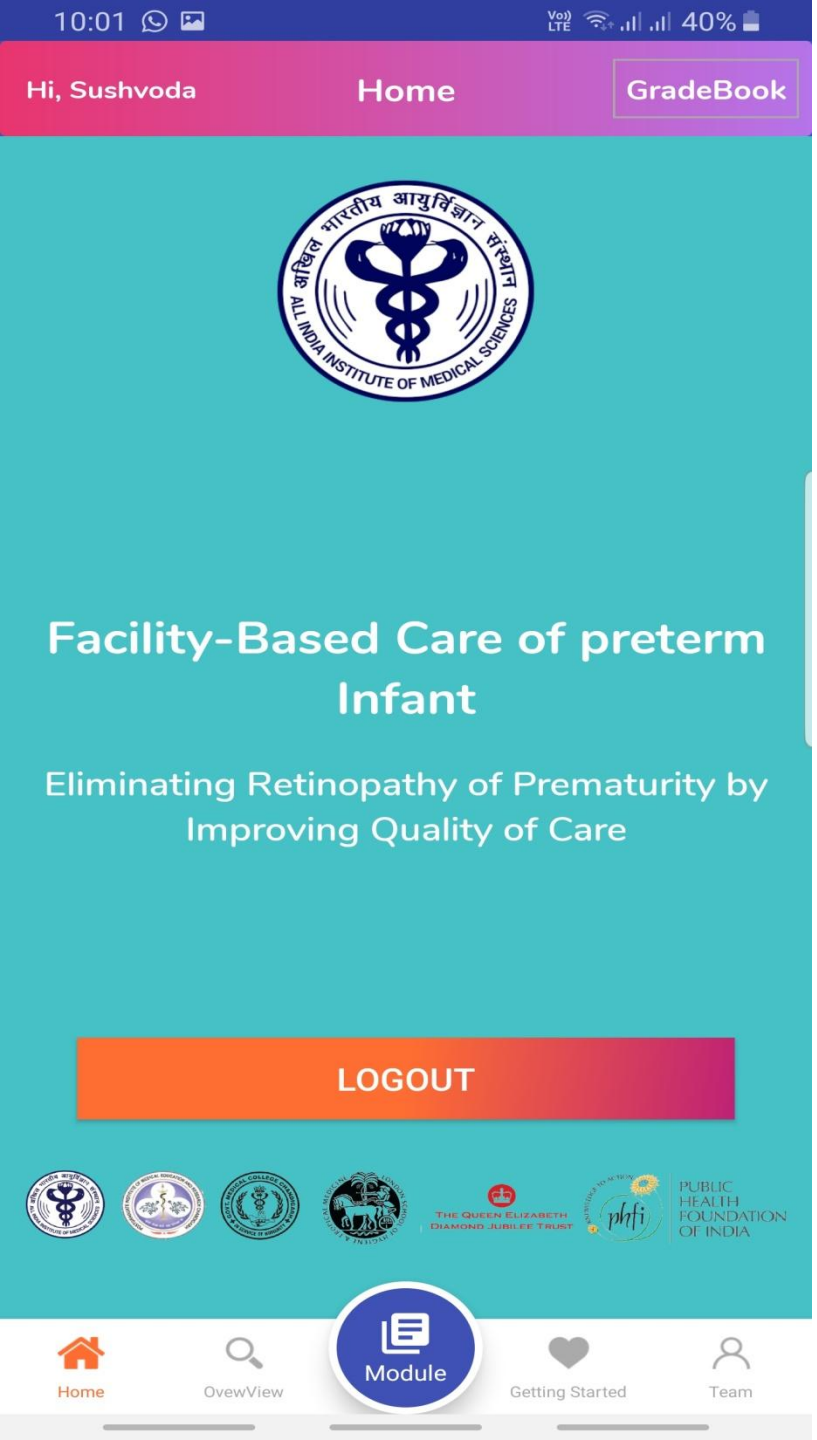
Hi, Sushvoda
OverView
GradeBook
Comprehensive Resources
Study material designed by top healthcare professionals across the country
Videos and Webinars
Visual demonstrations of procedures and recorded presentations of eminent speakers to help you understand the topic better
Timed MCQ Tests
Multiple choice quizzes after every objective to test your learning
Module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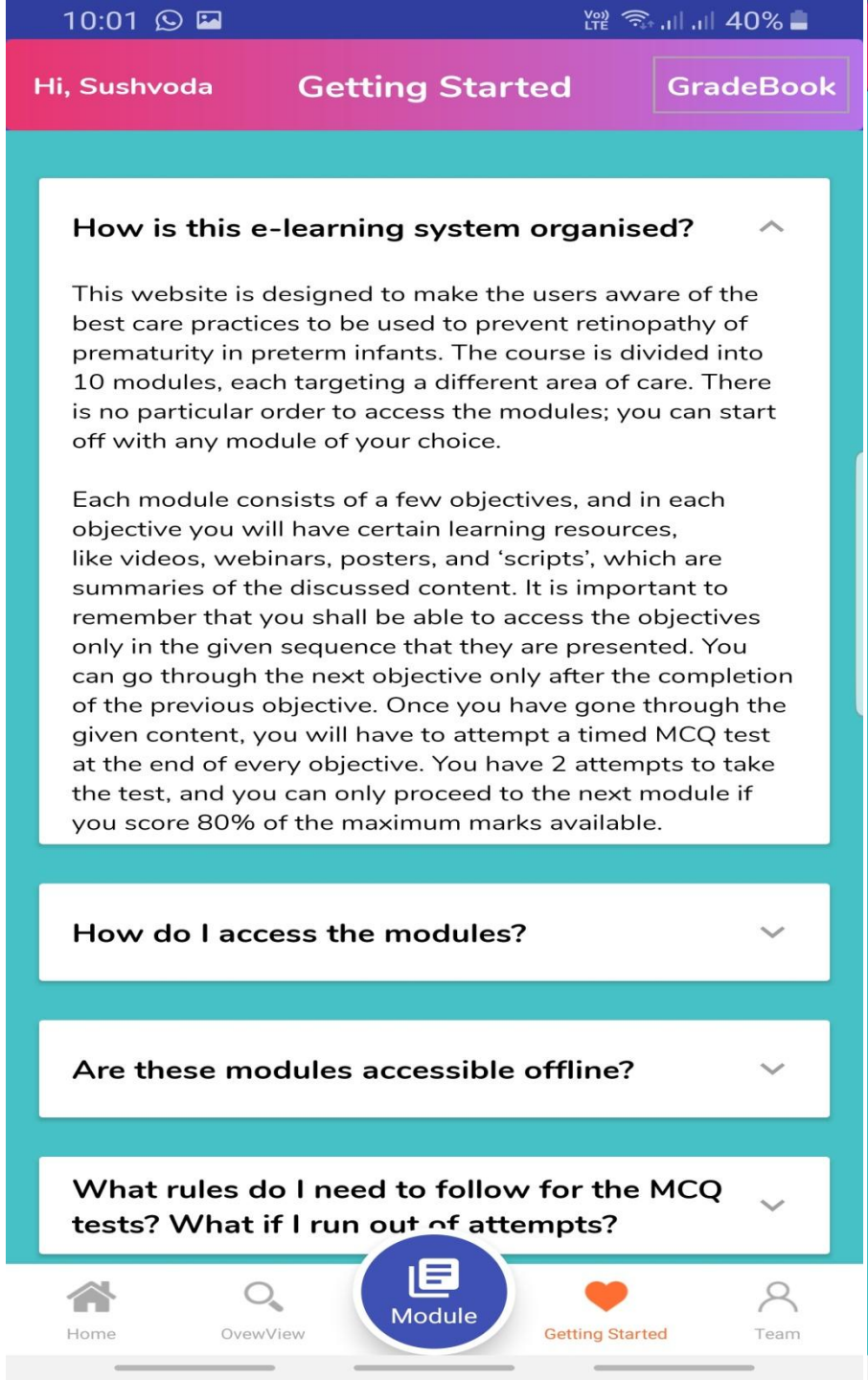
Hi, Sushvoda
Home
GradeBook
ALL INDIA INSTITUTE OF MEDICAL SCIENCES
Facility-Based Care of preterm Infant
Eliminating Retinopathy of Prematurity by Improving Quality of Care
LOGOUT
THE QUEEN ELIZABETH DIAMOND JUBILEE TRUST
PUBLIC HEALTH FOUNDATION OF INDIA
Home
OvewView
Module
Getting Started
Team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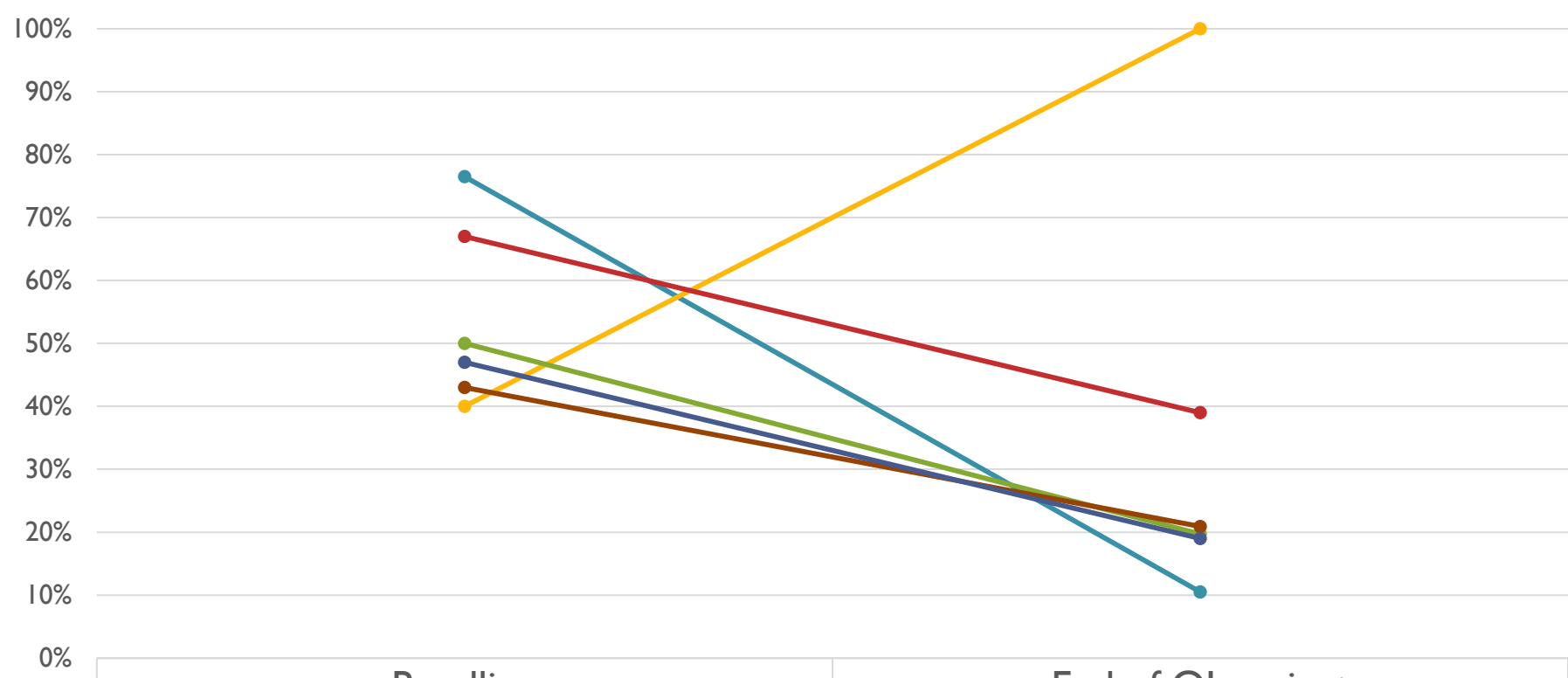
40%
Hi, Sushvoda
Getting Started
GradeBook
How is this e-learning system organised?
This website is designed to make the users aware of the best care practices to be used to prevent retinopathy of prematurity in preterm infants. The course is divided into 10 modules, each targeting a different area of care. There is no particular order to access the modules; you can start off with any module of your choice.
Each module consists of a few objectives, and in each objective you will have certain learning resources, like videos, webinars, posters, and 'scripts', which are summaries of the discussed content. It is important to remember that you shall be able to access the objectives only in the given sequence that they are presented. You can go through the next objective only after the completion of the previous objective. Once you have gone through the given content, you will have to attempt a timed MCQ test at the end of every objective. You have 2 attempts to take the test, and you can only proceed to the next module if you score 80% of the maximum marks available.
How do I access the modules?
Are these modules accessible offline?
What rules do I need to follow for the MCQ tests? What if I run out of attempts?
Home
OvewView
Module
Getting Started
Team


Module
1
Thermoregulation
2
Kangaroo Mother Care
3
Optimal Oxygen Administration
4
Developmentally Supportive Care and Pain Management
5
Less Exposure to Blood Products and Prevention of Exchange Transfusion
6
Delivery Room Management and Stabilization of a Preterm Infant
7
Optimal Use of Continuous Positive Airway Pressure (CPAP)
8
Less Systemic Infections

Improving Quality of Care in Special Care Newborn Units (SCNUs) of Madhya Pradesh



	Baselline	End of QI project
SNCU Dhar - Reducing hypothermia	76.50%	10.50%
SNCU Sehore - Increasing feed initiation	40%	100%
SNCU Vidisha - Reducing use of oxygen	67%	39%
SNCU Ujjain - Reducing use of antibiotics	50%	19.70%
SNCU Chhindwara - Reducing use of antibiotics	43%	20.90%
SNCU Bhopal - Reducing use of antibiotics	47%	19%

Antibiotic use – SNCU database

Name	July	Aug	Sep	Oct	Nov	Dec	
SNCU J P Hospital Bhopal	53.09	36.21	26.72	40.96	47.73	15.15	QI project
SNCU KN Hospital Bhopal	97.63	96.81	97.13	94.16	95.54	89.47	
SNCU DH Chhindwara	40	40	20.51	26.87	21.55	27.48	QI project
SNCU DH Dhar	20.59	41.83	42.66	38.46	34.69	29.27	
SNCU DH Mandsaur	46.46	50.29	50	44.27	39.02	40.78	
SNCU DH Sehore	30.87	28.52	44.83	46.1	43.6	42.45	
SNCU DH Ujjain	53.04	46.91	25.6	36.19	36.4	27.8	QI project
SNCU DH Vidisha	55.32	56.11	55.06	57.65	56.92	57.27	
MP overall	**54.66**	**56.11**	**54.76**	**55.16**	**55.84**	**52.73**	

Feasibility, effectiveness and sustainability of the implementation of “facility-team-driven” approach for improving the quality of care in Special Newborn Care Unit in South India

Primary objective

To assess the feasibility and sustainability of implementation of QI system projects using POCQI methodology in Special new-born care unit at Shimoga

Secondary objective

To evaluate the effectiveness of the QI-preterm baby package training model for improving knowledge & practices of health care providers

STUDY FLOW

Base line phase

Baseline data collection through proforma
Data was analysed and was
Presented in AIIMS, QI team.

Intervention phase

Workshop on QI
- Conducted in SIMS by AIIMS faculty
- Topic on quality improvement
- 14 doctors and 22 sisters attended
- Pre and post test was conducted

Workshop on specific topic
- Conducted in SIMS by St Johns team
- Topic on preterm baby package
- 14 doctors and 22 sisters attended
- Pre/post test and skills was assessed

Video calls from AIIMS
- Monthly QI updates
- Hurdles were rectified
- New ideas were discussed

WhatsApp calls
- QI videos were shared
- Problems among sisters were discussed
- All health workers were kept on board by motivation

Telephonic call
- **Receiving feed back from individual doctors and sisters**

Finalization of 5QI on different areas
- EBM expression
- Antibiotics usage
- Early enteral feeds
- KMC duration
- IV fluids in phototherapy

Multiple PDSA cycles were initiated on individual QI
Continuous data collection
Monthly QI meeting in the department
Minor issues rectification
Filling the quality gaps

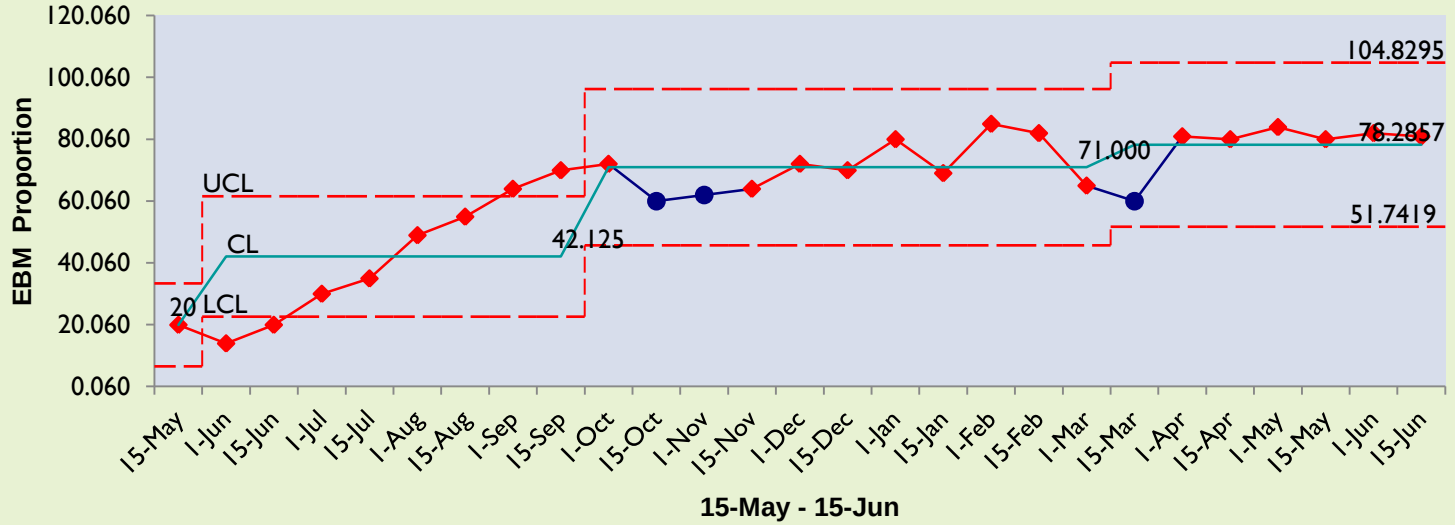
Sustenance phase

Withdrawal of all supports for three months

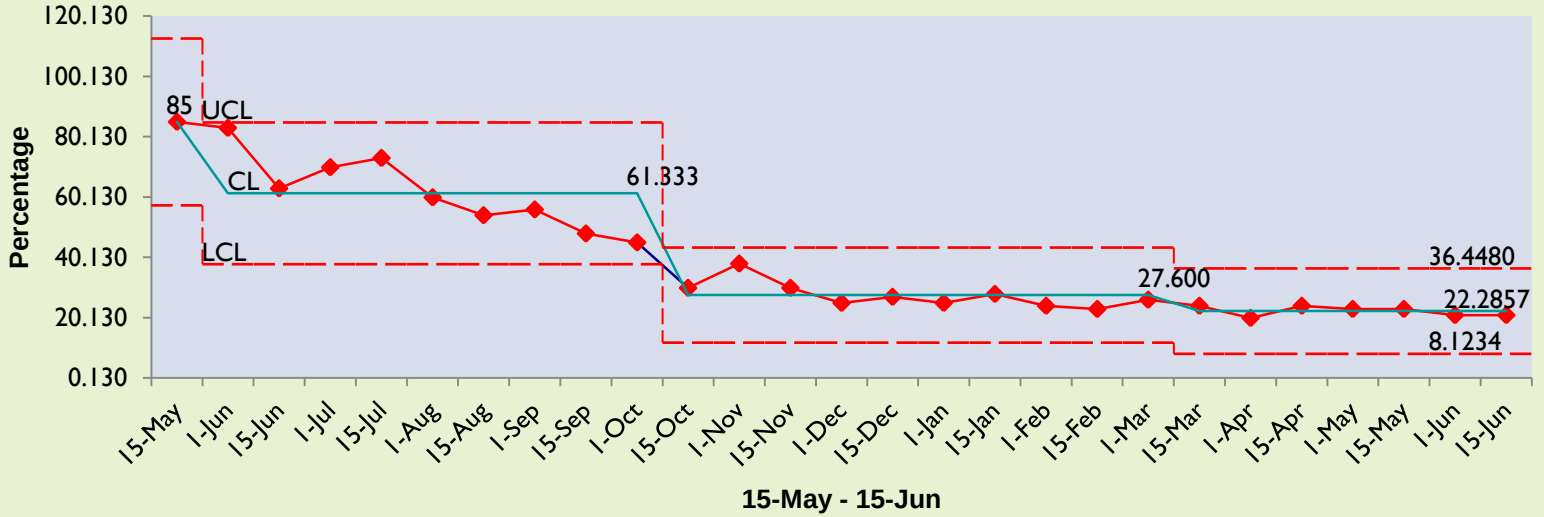
Study flow.
Phase 2: Intervention phase

- Aim: - To increase the percentage EBM of total feed volume on Postnatal day-5 who are admitted in SNCU from 20% to 50% over six weeks.
- Aim: To decrease the unnecessary use of antibiotics in neonates admitted in SNCU from 85% to 40% over eight weeks.
- Aim: To increase the percentage of enteral feeds of the total fluid received on day one who is admitted in SNCU who are eligible for full enteral feeds from 8.6% to 60% over six weeks.
- Aim: - To increase the average KMC duration per day from 2hrs to 8 hrs. of all the eligible newborn neonates admitted in SNCU within eight weeks.
- AIM: To reduce the usage of IV fluids in neonates admitted in SNCU for phototherapy from 62% to 20% within six weeks.

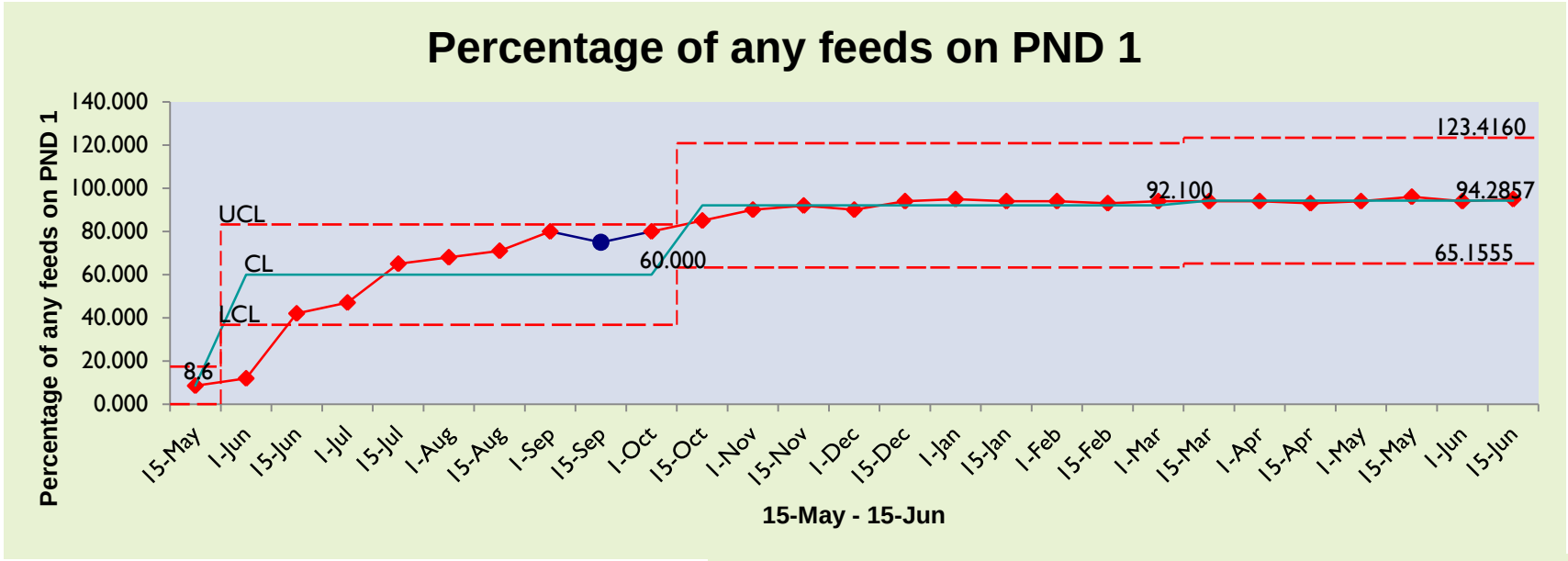
EBM Proportion

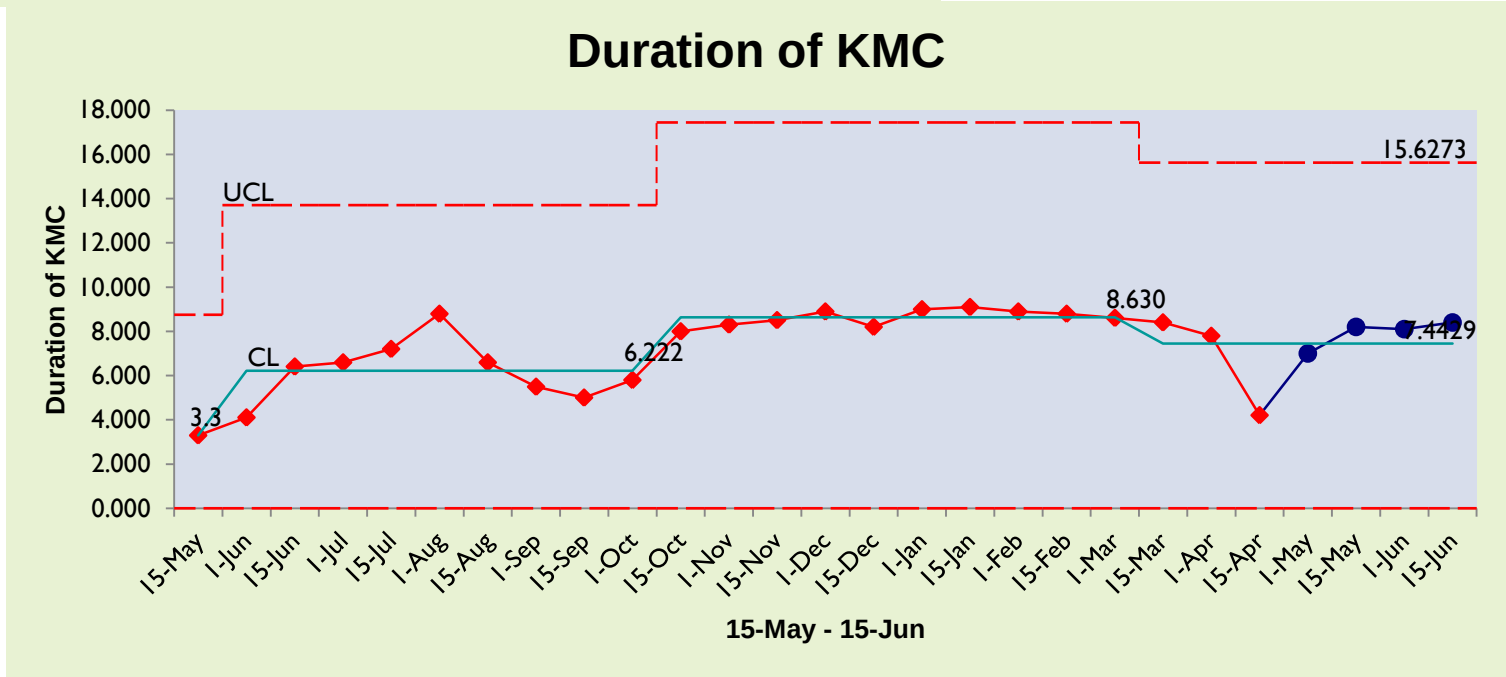


Antibiotics usage in SNCU



Pre-intervention phase	Multiple PDSA cycles done (IP)	Intervention phase	Sustenance phase	Post-intervention phase


Percentage of any feeds on PND 1
Percentage of any feeds on PND 1
140.000
120.000
100.000
80.000
60.000
40.000
20.000
0.000
UCL
CL
LCL
8.6
60.000
123.4160
92.100
94.2857
65.1555
15-May
1-Jun
15-Jun
1-Jul
15-Jul
1-Aug
15-Aug
1-Sep
15-Sep
1-Oct
15-Oct
1-Nov
15-Nov
1-Dec
15-Dec
1-Jan
15-Jan
1-Feb
15-Feb
1-Mar
15-Mar
1-Apr
15-Apr
1-May
15-May
1-Jun
15-Jun
15-May - 15-Jun


Duration of KMC
Duration of KMC
18.000
16.000
14.000
12.000
10.000
8.000
6.000
4.000
2.000
0.000
UCL
CL
3.3
6.222
8.630
15.6273
15-May
1-Jun
15-Jun
1-Jul
15-Jul
1-Aug
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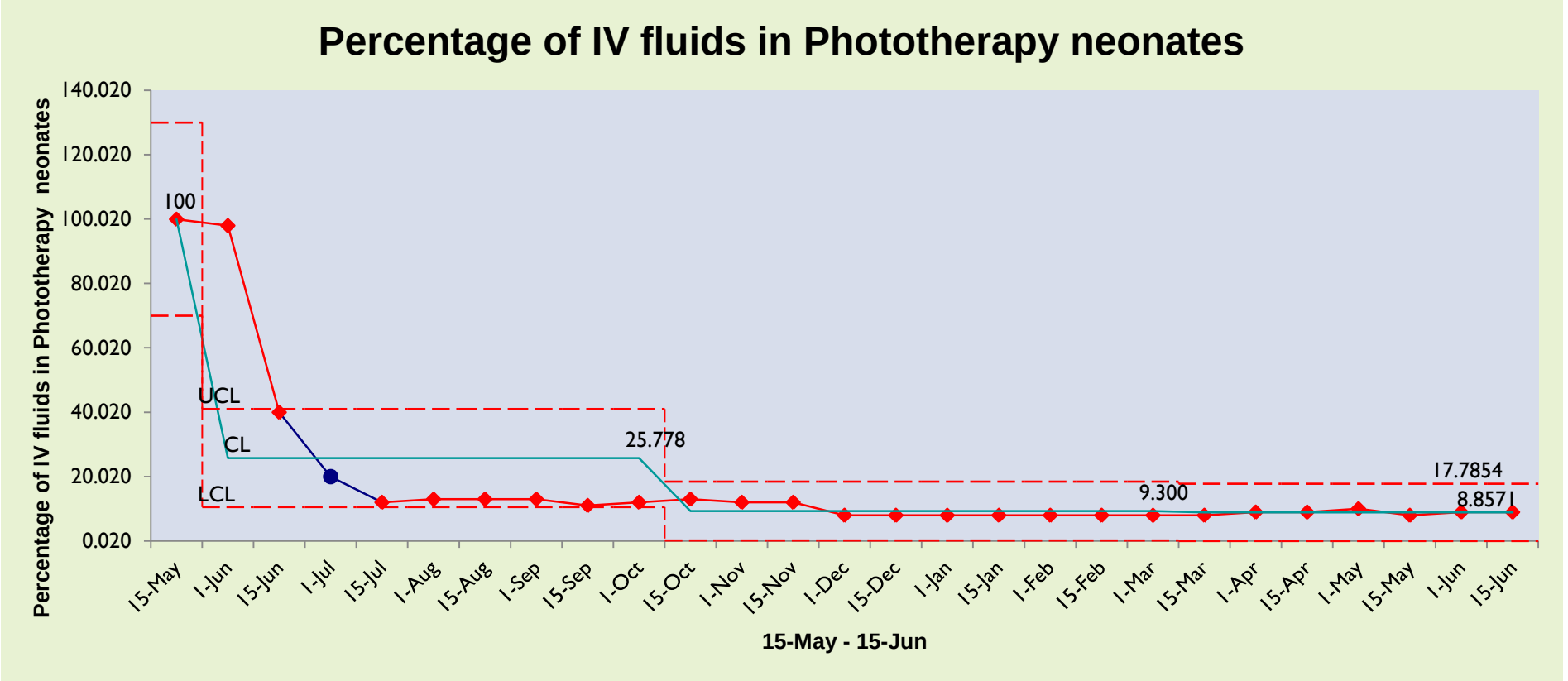
15-Jun
15-May - 15-Jun

PHOTOTHERAPY



Pre-intervention phase	Multiple PDSA cycles done	Intervention phase	Sustenance phase	Post-intervention phase

Prof. Ashok K Deorari
Professor and Head

Dr. Praveen Kumar
Professor and Head

Dr. Deepak Chawla
Associate Professor

Dr. Anu Thukral
Assistant Professor

Dr. Suman Rao
Professor and Head

Hard work of over 35 neonatologists, nursing professionals and supporting faculty

Dr. N Chandra Kumar

Dr. Mangala Bharathi.S

Dr. Rhishikesh Thakre
Consultant Neonatologist

Dr. Tejo Pratap Oleti

Dr. Nivedita Mondal

Dr. Srinivas Murki

Dr. Sindhu Sivanandan

Dr. Sandeep Kadam

Col K Venkatnarayan

Dr. Sushma Nangia

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Dr. M Jeeva Sankar
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Dr. Ramesh Aggarwal

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Supportive Care

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Thanks