

SURAKSH

Digital Intrapartum Monitoring Application

Simple.. Safe.. Secure..

Design and Developed by



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Aim & Introduction

- Suraksh; a mobile application - focuses on intensive intrapartum monitoring
- Shedding light on the novel concept of 'distance monitoring'
- Incorporating the pressing need of the hour of complete digitalization
- Reducing alarming incidence of feto-maternal intrapartum morbidity
- Ensuring timely intervention
- Improving turn-over time for referrals
- To reduce burden on under resourced set ups
- Strengthening clinical database for retrospective & observational studies
- Suraksh was introduced in department of OBG at Sri Ramachandra Medical College, Chennai in October 2019
- Application is still in its pilot phase and has shown promising compliance amongst consultants, postgraduates, interns & nursing staff



WHY SURAKSH?

- Accessibility to an attending obstetrician at all times targets a long term goal of decreasing fetomaternal morbidity & mortality
- Overcome human error and technical difficulties by digitalizing patient identification, EDD & BMI calculation
- Partograph needs skilled workers in order to be used effectively to monitor labour. Auto-capturing eliminates probability of misinterpretation and untimely intervention



Multiplatform interoperability

- Developed for iOS and Android smart phones
- Accessible through web browser on desktops
- Available on Play store for tablets



Data Security

- All data is encrypted during transmission
- Every hospital has its own distinct database
- Server data is used only for syncing – not visible to any third party



Dashboard and user interface

Suraksh Dashboard

1. Menu
2. User & Hospital
3. Sync Light
4. Browse
5. Search
6. Upload CTG Images
7. Partogram

The annotated screenshot shows the Suraksh dashboard interface. It features a blue header with the 'Suraksh' logo, a search icon, and a sync light. Below the header are tabs for 'AT TERM', 'ADMITTED', and 'DELIVERED'. The main content area displays patient cards with details like name, ID, and risk factors. A bottom bar shows the user 'admin @ demo'.

Suraksh

AT TERM ADMITTED DELIVERED

Show All

Jegadeeswari (21002360) previous LSCS hypothyroidism foetal growth restriction BMI: 28.8 past due

Jayalakshmi (00827234) BMI: 37.5 past due

Sakitha Banu (21310009) BMI: 25.4 next week

Admitted patient details with risk factor

Deepika A (21471203) 2.4 Kg. 20 hours ago

Udhra Nisha Banu (20965238) 3.7 Kg. a day ago

Vanitha J (21484952) 2.6 Kg. a day ago

Grace Mary (21483405) 2.3 Kg. 2 days ago

Mrs Hemavathy R (21484087) 3.2 Kg. 2 days ago

Preethi D (21455956) 2.8 Kg. 2 days ago

Delivered patients with baby details and discharge summary

tanvi @ Sri Ramachandra Hospital

SRI RAMACHANDRA
INSTITUTE OF HIGHER EDUCATION AND RESEARCH

21 hours ago

Patient Identification & Demography

Basic demographic details

Auto-calculated BMI

Auto-capture of patient's picture for accurate identification

Highlighting risk factors

The screenshot shows a patient identification and demographic form for a pregnant patient. The patient's name is **Jegadeeswari** (Jegadeeswari). Her ID number is **21002360**. Her birth date is **1985-09-30**. Her contact number is **9600078648**. Her partner's name is **Kumar**. Her last menstrual period is **2019-11-26**, and her expected date of delivery is **2020-09-01**. Her height is **157 cm**, weight is **70.9 kg**, and her BMI is **28.8**. She is currently **4 months and 1 week** pregnant. Her obstetric score is **G4 P1 L1 A2**. Her blood group is **A+**. She has **no allergies**. Her risk factors include **previous LSCS**, **hypothyroidism**, and **foetal growth restriction**. The form also includes a section for "Enter Patient Details Below:" with a toggle for "Patient at term" and a date/time stamp of **August 30, 2020 3:30 PM**. A patient photo is captured and displayed.

The screenshot shows the **Pelvic Findings** section of the examination findings form. It includes a toggle for **New Pelvic Examination**. The form asks for **Effacement (cm)** (0, 0.5, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10), **Dilatation (cm)** (0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10), **Position** (LOA, OA, ROA, ROT, ROP, OP, LOP, LOT, Other), **Station** (-3, -2, -1, 0, +1, +2, +3), **Moulding** (0, +, ++, +++), and a checkbox for **Membranes Ruptured**. There is a **Drugs Administered** section with a plus sign for adding more information.

The screenshot shows the **Abdominal Findings** section of the examination findings form. It includes a toggle for **New Examination**. The form asks for **Fifths by abdomen** (5/5, 4/5, 3/5, 2/5, 1/5, 0/5), **Labour Type** (Spontaneous, Induction), **Contractions (over 10 mins)** (0, 1, 2, 3, 4, 5, 6), **Contraction duration (in secs)** (<20, 20-30, 30-40, >40), **Foetal heart rate** (visualized as a line graph), and **CTG Results** (Not Available, Reactive, Non reassuring, Early Deceleration, Variable Deceleration, Late Deceleration, Bradycardia).

The screenshot shows the **Vital Signs** section of the examination findings form. It includes a toggle for **New Vitals**. The form asks for **Temperature**, **Pulse**, **Respiratory Rate (per min)**, **BP (systolic/diastolic)**, and **Pain Score** (None, Moderate, Worst).

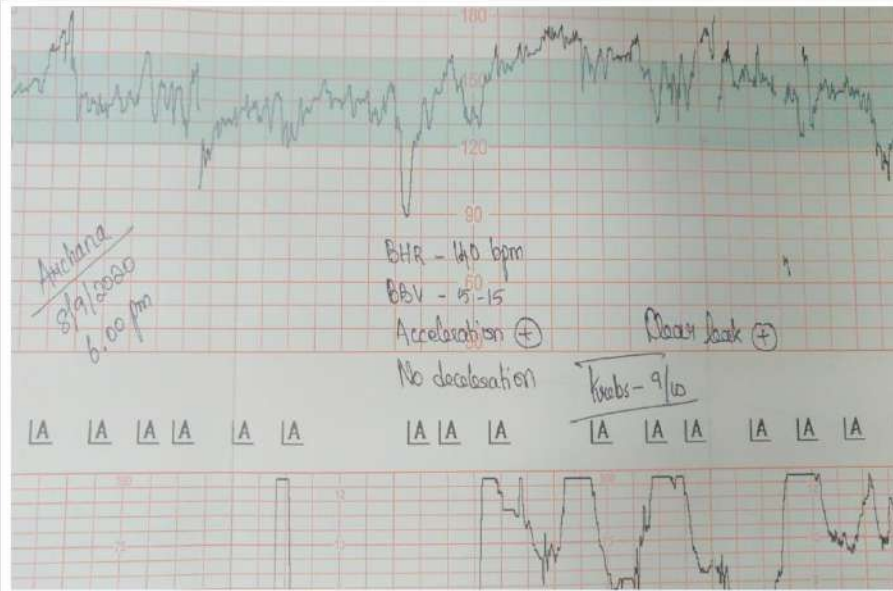
Examination Findings

1. Pelvic findings
2. Abdominal findings
3. Vital signs

UPLOADING CARDIOTOCOGRAPH

Sri Ramachandra Hospital Intra Partum Assessments	Name: Archana
	UHID: 20125730
	Doctor: Unit 4

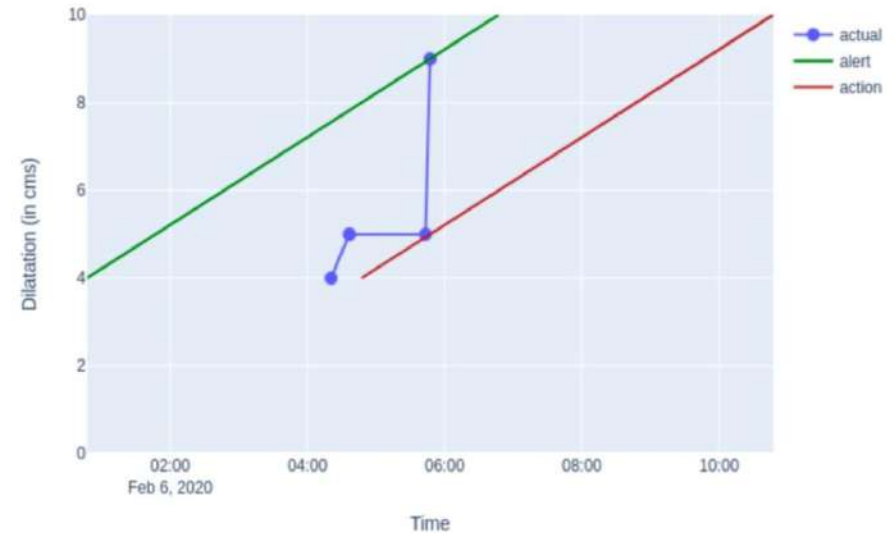
Post SRM trace



AUTO-CAPTURE OF CTG FROM MOBILE PHONE

AUTO-CAPTURE OF PARTOGRAPH

Partogram



- Any deviation from normal detected immediately
- Alert alarm sent to all members on delivery team
- Prevents misinterpretation of progress of labour
- Prevents un-indicated interventions
- Assists timely decision making

- Accurate interpretation by senior obstetrician
- Timely intervention can be advised by senior clinicians
- Permanent record of CTG for postpartum analysis
- An asset for future audits

INTRAPARTUM REPORT

Parturition details :

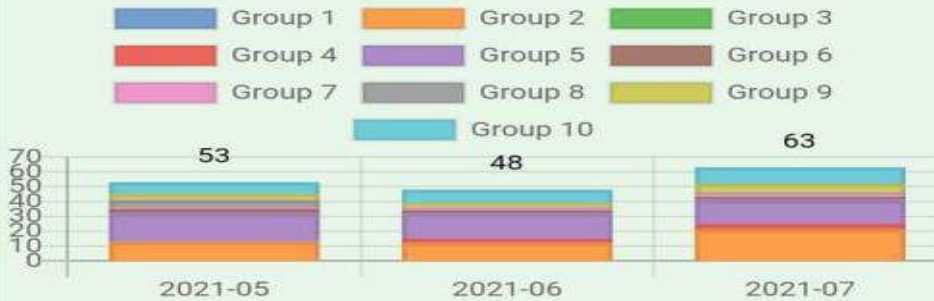
Baby details

Intrapartum complications

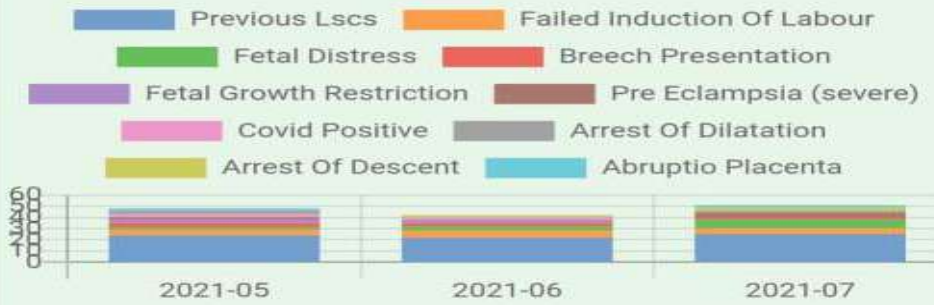
Postpartum vitals

Discharge checklist

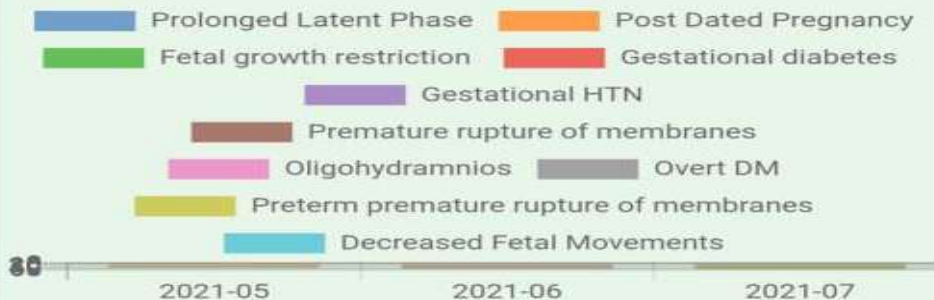
Robson Classification



Top LSCS Indications



Top Induction Indications



Parturition Details

Intra Partum Assessments

Name: [REDACTED]
UHID: [REDACTED]
Doctor: Unit 1

Onset of Labor: Induction
Induction Details: 2 Gel(s)
Augmentation: ARM, Oxytocin

Singleton

Delivery Mode: NVD
Delivery Time: 2020-08-26 08:38 AM
Gender: Girl
Weight (kg): 3.0
Apgar: 8, 9

Core blood taken: No
COVID-19 Status: Negative

Discharge Notes

normal diet plenty of oral fluids dbf breast and perineal care w/f increased bleeding p/v svp for obs

Post Delivery Assessment

Time	Pulse	BP	Uterus	Vaginal Bleeding
15 minutes	74	110/80	Contracted	Normal
30 minutes	74	110/70	Contracted	Normal
1 hour	80	120/80	Contracted	Normal
On Discharge	86	110/70	Contracted	Normal

Discharge Check List

Urine voided: ✓

Item	Count	Checked
Pads	14	✓
Suture/Needles	2	✓
Instruments	7	✓

Conducted By: DnM
Assisted By: DnB
Staff Nurse: MMS

Date/Time: 2020-08-26 10:30 AM

MY HOSPITAL

- Finer details, such as alarms and alerts can be tuned appropriate to resource settings
- Each hospital can have its individualized parameters

Basic Info

Full name of Hospital

Full name
Sri Ramachandra Hospital

Maximum time interval allowed between admitting patient and entering labour data. Use 0 to disable.
Alarm interval
2

Maximum time interval allowed between successive evaluations of each patient in active labour. Use 0 to disable.
Alarm interval
2

Maximum time interval allowed between successive evaluations of each patient for escalation. Use 0 to disable.
Alarm escalation
2

Maximum number of days to retain completed deliveries before archival
Delivery days
10


Maximum number of days to retain past due patients before archival
Past due days
15

Top padding
0

All pages on letterhead

Unit names
**Unit 1
Unit 2
Unit 3
Unit 4
Unit 5**

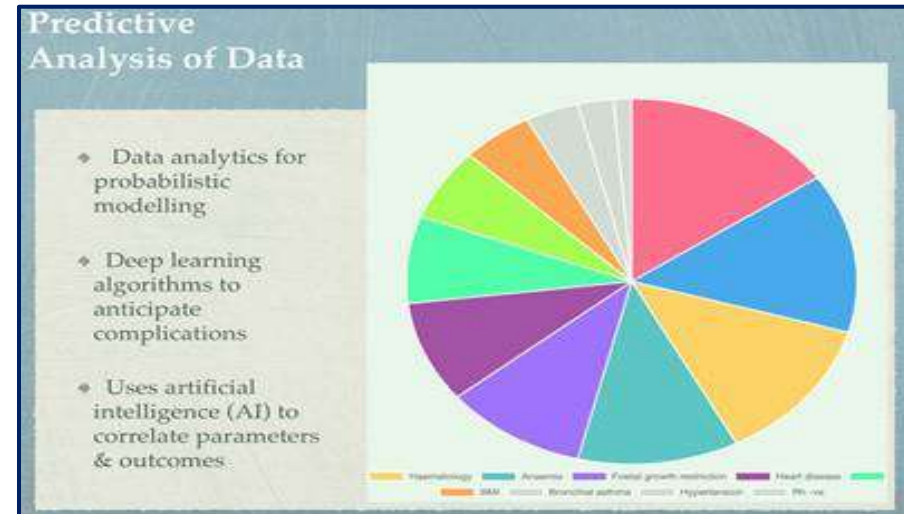
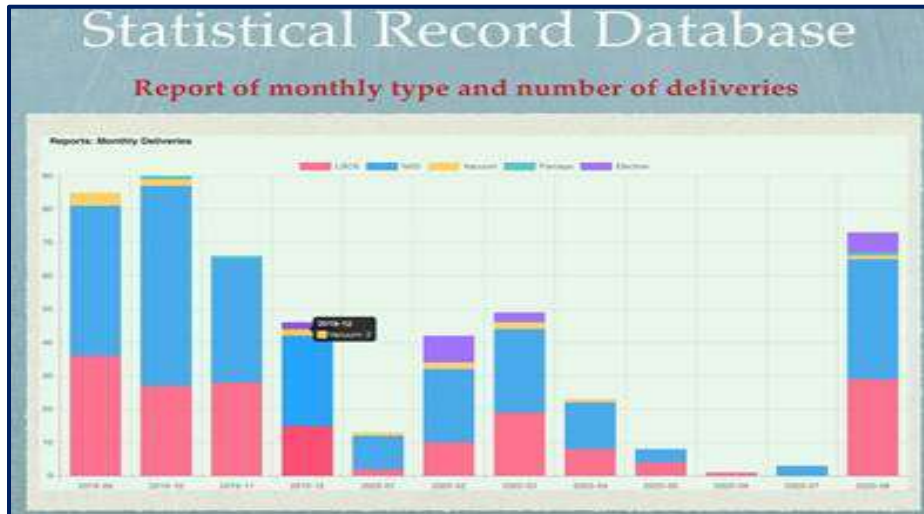
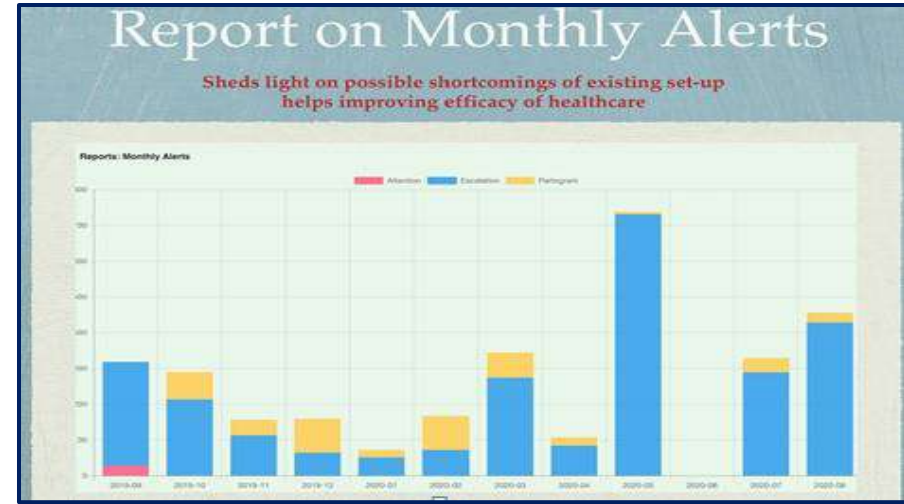
Hospital Logo for Reports



Logo Styling

Logo Maximum Width
100

RESET



CLINICAL SIGNIFICANCE

The latest available data suggests that in the most high-income and upper middle income countries, more than 90% of all births benefit from the presence of a trained midwife, doctor or nurse. However, fewer than half of all births in several low-income and lower middle income countries are assisted by such skilled health personnel. (4)

Addresses all tiers of healthcare setup in India

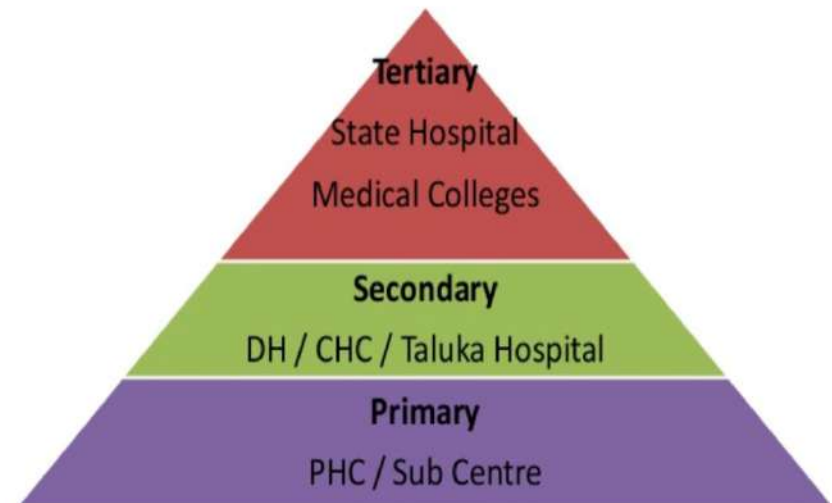
Urban : Corporate hospitals now function paperless. Teaching institutes & universities use it as a teaching tool.

Semi-urban : Timely referral to tertiary centers. Intensive monitoring of high risk patients.

Rural : Improved data collection and inputs from more skilled / experienced obstetricians maybe provided through distance monitoring.

Tier of health care in India

The health care services in India are organized at **three levels**, each level supported by the higher level, to which the patient is referred.



CLINICAL SIGNIFICANCE

Research & Retrospective studies

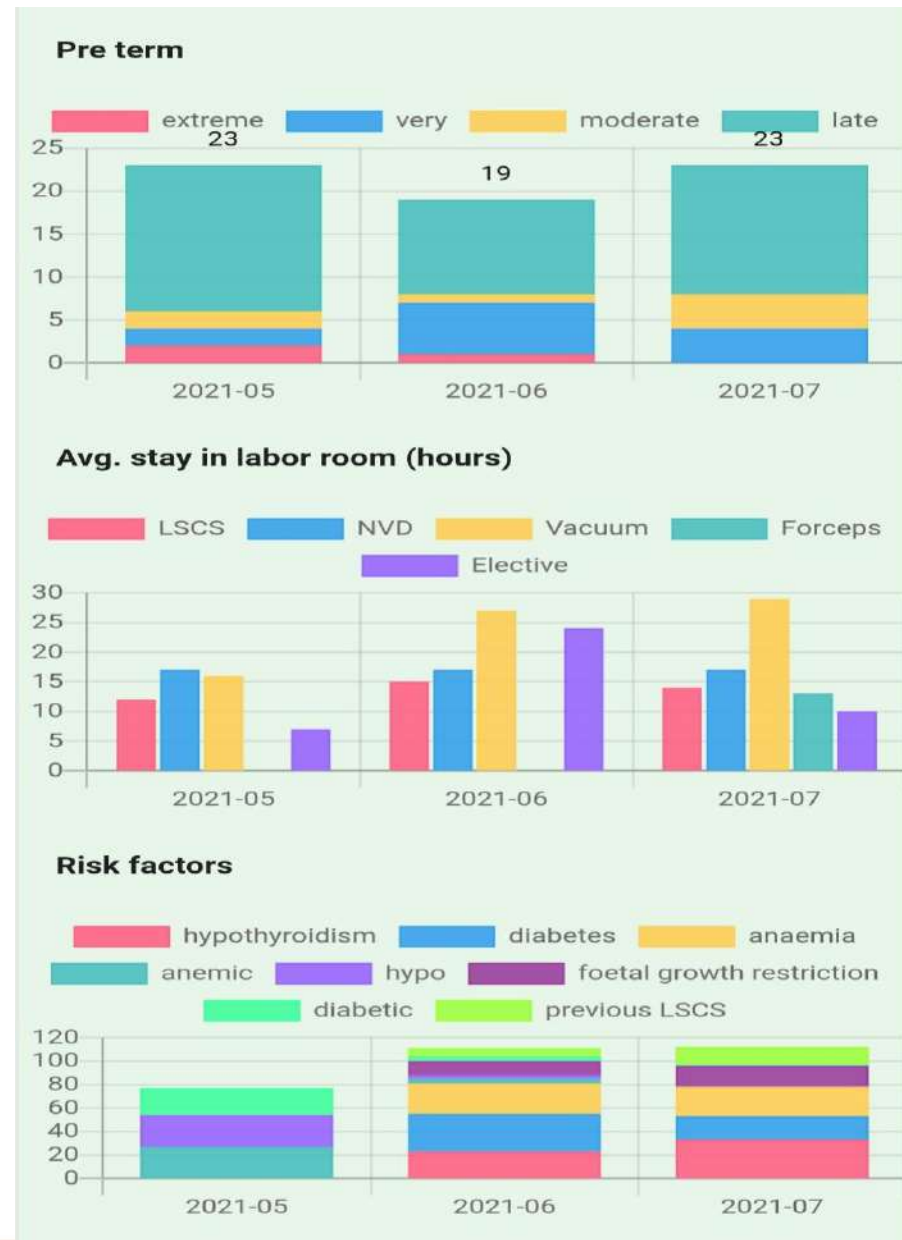
- Registry of patient details
- Maternal & fetal outcome analysis
- Data archival for statistical reporting
- Database for future audits

User Friendly

- Can be used across whole spectrum of labour & delivery team (doctors, nurses, midwives, interns)
- Doesn't need expertise of a specialized consultant
- Aids to trains postgraduates and interns according to hospital protocols
- Maintains standardized live communication across team - prevents miscommunication

Scalability & Sustainability

- Innovation comes with teething problems
- Acceptance & compliance curve can be steep
- At Sri Ramachandra Hospital we have used Suraksh to monitor over 900 deliveries
- Encourage large scale adoption for Suraksh to run the test of time!



Impact Analysis

So far, at our institute

- Significant drop in neonatal **morbidity with zero mortality rate**
- **Decrease in complications of 2nd stage of labour**
- **Reduced incidence of second stage caesarean sections**
- However total caesarean section rates remain unchanged
- Nil incidents pertaining to negligence. Eg. Pad/ Mop count

Conclusion

We believe digitalization along with distance monitoring is the route for ironing out the disparity in obstetric services in a populous country like India, where ratio of patient to health care workers and reach of services nationwide is always going to be a Herculean struggle..

