

# Virtual care: how a global pandemic accelerated new ways of delivering care

We will be starting shortly

If you would like to ask a question or network with other attendees, please use the chat box.

**Please note this session is being recorded**



**Gillette  
Children's**

*Specialty Healthcare*

The experts at complex medical conditions,  
rare diseases and traumatic injuries



## Virtual Rehabilitation

A Virtual Success Story During Covid 19 Pandemic

Presented by:  
Thomas Harris,  
COO and EVP-Operations

Ankur Sharma  
VP-Integrated Care Services



## About Gillette Children's

- An independent, freestanding, nonprofit specialty children's hospital that focuses in treating children with rare, complex and traumatic conditions
- Founded over 124 years ago as the first hospital in the US dedicated to treating children with disabilities
- Consists of a 60-bed hospital and 11 clinic locations across Minnesota
- Serves over 25,000 patients per year, originating from rural and urban Minnesota, over 40 US states and over 12 countries
- The acuity of Gillette patients is one of the highest of all independent children's hospitals in America
- Recipient of several national and international accolades and awards

## Covid-19 Timeline

Jan 20,  
2020

- First confirmed Covid-19 case in the US

Mar 6,  
2020

- First confirmed Covid-19 case in the state of Minnesota

Mar 25,  
2020

- Minnesota Governor orders people to “stay at home” to curb the spread of the coronavirus.



# Adapting to the New Normal

Gillette followed the Center for Disease Control and Prevention (CDC) and Minnesota Department of Public Health (MDH) guidelines:

- **Wellness screening** requirement for all patients, visitors, employees, and medical staff
- Altered visitor policy, **limiting visitors to two** immediate family members or caregivers
- Mandated **masks** and employed **social distancing** practices
- Implemented **intensive sterilization protocols** through its Environmental Services Team
- Explored new safe ways of providing clinical care to patients, including **virtual visits** in multiple clinical areas, including Rehab Therapies



# Gillette Rehabilitation Therapies

- Rehabilitation Therapies help develop or regain strength, mobility and independence over time in patients
- Includes the areas of Physical Therapy, Occupational Therapy, Speech and Language Therapy, Aquatic Therapy, Audiology, and Nutrition and Feeding therapy
- Accredited by Commission on the Accreditation of Rehabilitation Facilities (CARF) for both its pediatric specialty and pediatric brain injury programs
- Rehab Therapies at Gillette maintains 120 staff and renders over 62,000 visits per year – approximately 25% of all Gillette volume
- Covid-19 crisis resulted in a 75% reduction in scheduled appointments and temporary staffing reductions



# Virtual Care as a Strategy

## Pre-pandemic

- Virtual care available for some medical appointments for over 10 years
- Initiated based on the needs for out of state patients and their post-acute care needs
- Very conservative set of rules for virtual care
  - state mandates, payment guidelines
- Challenged by provider and patient adoption
  - successful where provider buy-in existed

## Response to Covid-19

- Allowed clinical care provision to continue, thereby avoiding clinical regression of musculoskeletal form and function
- Negated patients need to travel, reducing infection risk
- Safe outlet for staff to provide patient care given limited clinical space and social distancing constraints
- Didn't need PPE, thus limited PPE could be directed to more acute needs

# Rehabilitative Care Transformation through Innovation

## Care Transformation

Virtual Rehab was a new concept

## Comprehensive infrastructure

Multidisciplinary Collaboration of over 200 staff





## Setting the Stage for Virtual Visits

Multidisciplinary evaluation for regulatory and infrastructure needs

- Reviewed state practice acts, payer guidelines, professional, ethical standards to ensure alignment with recommended telehealth practices
- Developed clinical resources (e.g., virtual care protocols)
- Authored a master training manual for rehabilitation clinicians for care delivery and documentation protocols
- Installed Cameras on laptops as needed
- Built templates for virtual visits
- Purchased patient education tools to enhance virtual care delivery and patient education needs
- Piloted first Virtual Rehab visit in April 2020



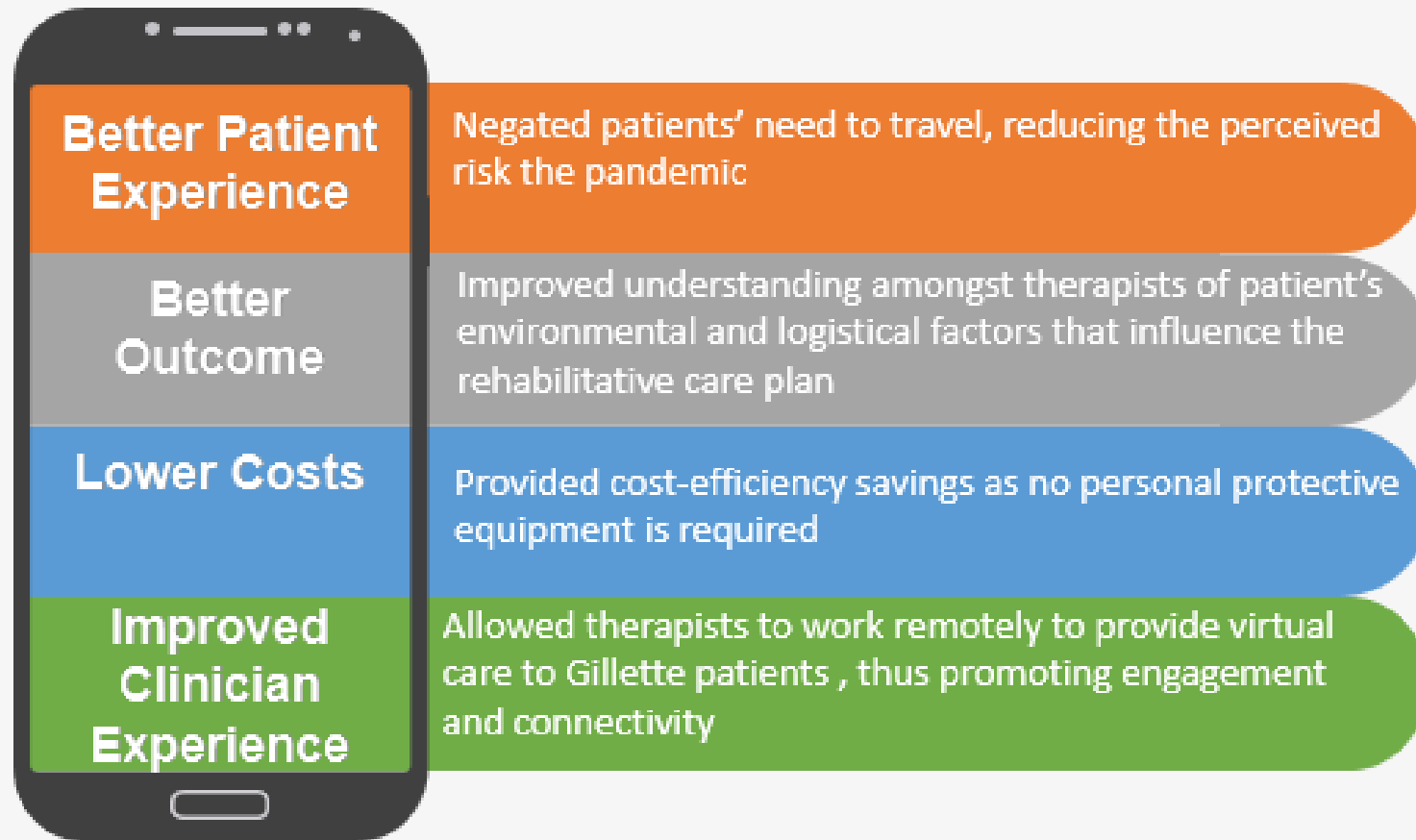
## Initial Impact: Access

- Over 13,500 medical virtual visits
- Over 12,500 rehabilitative virtual visits
  - 12% of total rehab visits

## Initial Impact: Experience



# Virtual Rehab delivers on the US Healthcare “Quadruple Aim”



To learn more about Institute of Healthcare Improvement Triple Aim and Quadruple Aim initiatives:  
[Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. \*Ann Fam Med\*. 2014;12\(6\):573-576. doi:10.1370/afm.1713](#)  
<http://www.ihl.org/Engage/Initiatives/TripleAim/Pages/default.aspx>

## Virtual Rehabilitative Therapies Future Plans

- Current assessment shows that this new delivery model of rehabilitative services is sustainable for the long term
- Strategic decision for program expansion at Regional, National and International level to:
  - Improve patient's access to rehabilitation services
  - Increase Gillette's reach and ability to influence care delivery in complex and rare diseases



## Additional Resources

- [Gillette's Virtual Rehab Therapies home page](#)
- Research brief "[Gillette Children's Specialty Healthcare In Minnesota: A Virtual Care Success Story During Covid-19 Pandemic](#)"
- [Institute of Healthcare Improvement Triple Aim initiatives](#)
- [Annals of Family Medicine Article on Quadruple Aim](#)

## Contact Information

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# Questions/Discussion

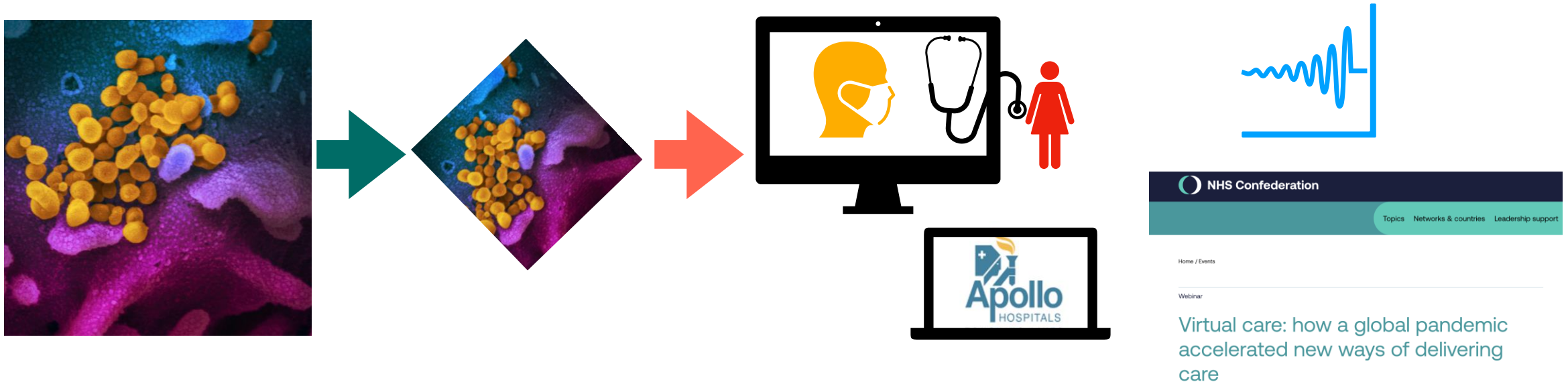


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# The Future of Remote Critical Care

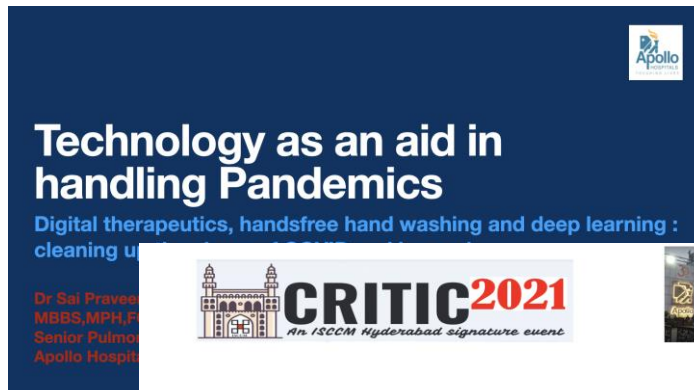
**An overview of current and future prospects for virtual critical care**

Dr Sai Praveen Haranath | MBBS,MPH,FCCP, American Board Certified in Internal Medicine,Pulmonary and Critical Care Medicine  
Senior Consultant, Pulmonary and Critical Care Medicine | Apollo Hospitals Jubilee Hills @ThinkMD



# eACCESS : Apollo Remote Critical Care

Nationwide, >7 years, COVID boosted work exponentially



**Technology as an aid in handling Pandemics**  
Digital therapeutics, handsfree hand washing and deep learning : cleaning u  
Dr Sai Praveen  
MBBS,MPH,FCCP  
Senior Pulmonologist  
Apollo Hospitals



## Artificial Intelligence in Critical Care

Making sense of the terminology and an overview of trends



Dr Sai Praveen Haranath |  
Senior Consultant, P

## TeleICU : Transforming Critical Care



## Summary of Panel Discussion

December 20, 2020

Dr Sai Praveen Haranath MBBS,MPH,FCCP,AB (Internal Medicine, Pulmonary and Critical Care Medicine)  
Senior Pulmonologist and Intensivist, Apollo Hospitals, Hyderabad  
Medical Director, Apollo eACCESS TeleICU Service



NOWFLOATS WEBINAR  
TELEMEDICINE:  
SAVING LIVES IN  
DIFFICULT TIMES  
3:00 PM - 4:30 PM  
FRIDAY, 26<sup>TH</sup> JUNE  
POWERED BY  
BOOST  
for doctors

Safe and Effective  
Mechanical  
Ventilation :  
Rapid Training  
for Beginners

WELCOME NOTE  
JASMINDER SINGH GULATI  
Co-Founder, NowFloats

VISITING DOCTOR



### Presented by:

Dr. Sai Praveen Haranath  
MBBS MPH FCCP  
American Board Certified in Internal Medicine,  
Pulmonary Medicine and Critical Care Medicine  
Senior Consultant  
Pulmonary and Critical Care Medicine  
Apollo Hospitals, Jubilee Hills , Hyderabad  
Telangana ,India





# Mrs Patel

- 50 y old housewife with chest pain for 30 minutes. COVID positive.
- Shortness of breath and has low BP of 80/50
- Taken to nearest hospital
- Emergency measures undertaken
- Keep/Shift/Other options



# Mrs Mason

- 50 y old housewife with chest pain for 30 minutes. COVID positive.
- Shortness of breath and has low BP of 80/50
- Taken to nearest hospital
- Emergency measures undertaken
- Keep/Shift/Other options

# Remote Care



## Monitoring, Video Communication and Triage

- Telemedicine Practice Guidelines
- Wearables and remote devices for capturing vital signs
- Video and phone communication to assess state of illness
- Triage to decide if oxygen or specific medications needed
- Safe transfer to higher level of care
- Education of patient and remote team

# STATE OF THE INDIAN ICU

Challenges. Opportunities

**Demand>>>  
Supply**

**Quality issues**

**Accessibility**

**Availability**

**ISCCM**

**Specialty ICU**

**All purpose ICU**

**Tropical diseases  
Seasonal diseases  
Disasters  
Epidemics**



# Apollo Remote Critical Care

Anywhere , Anytime for Everyone

People come first



Monitor the technological divide

Ensure Equity

Technology in any form is only a tool



# COVID 19

## Swimming despite the waves



- Communication
- Knowledge Transfer
- Remote Care for inpatients
- Home based diagnostics
- Home Care
- Remote surveillance

> 15060 COVID patients treated

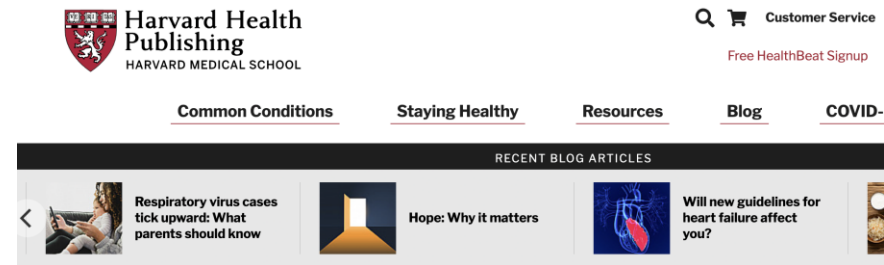
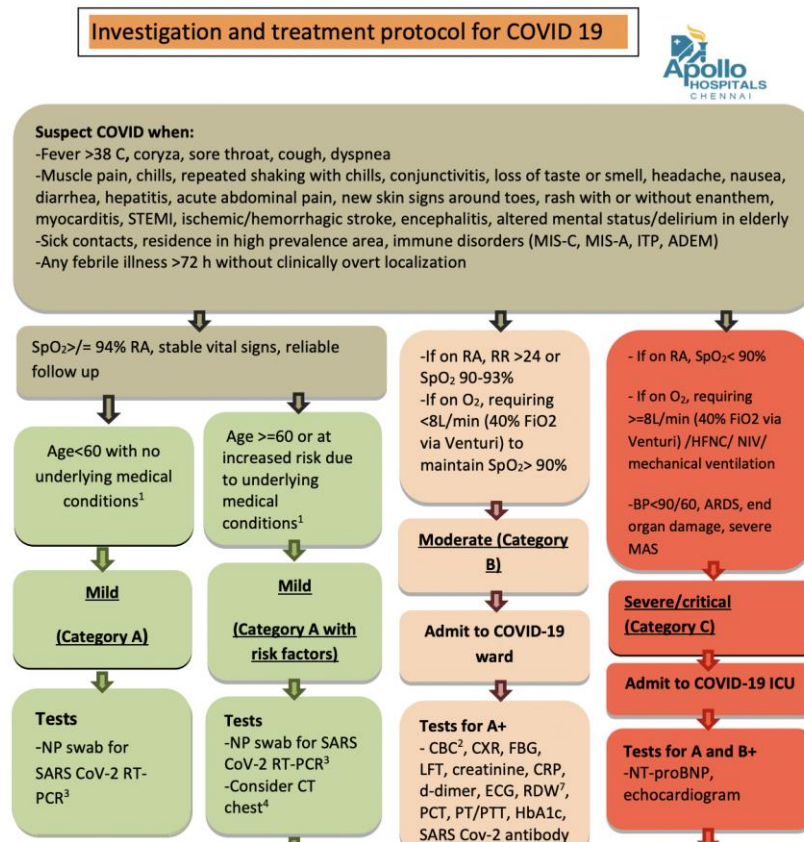
>5200 non COVID specialty consults

> 5 ECMO urgent tele consults

# Protocol Based Care

## Standardizing the approach : making sense of the data deluge

Version 43 (updated 22<sup>nd</sup> June 2021)



## Treatments for COVID-19

July 12, 2021

What helps, what doesn't, and what's in the pipeline



# 25,000+

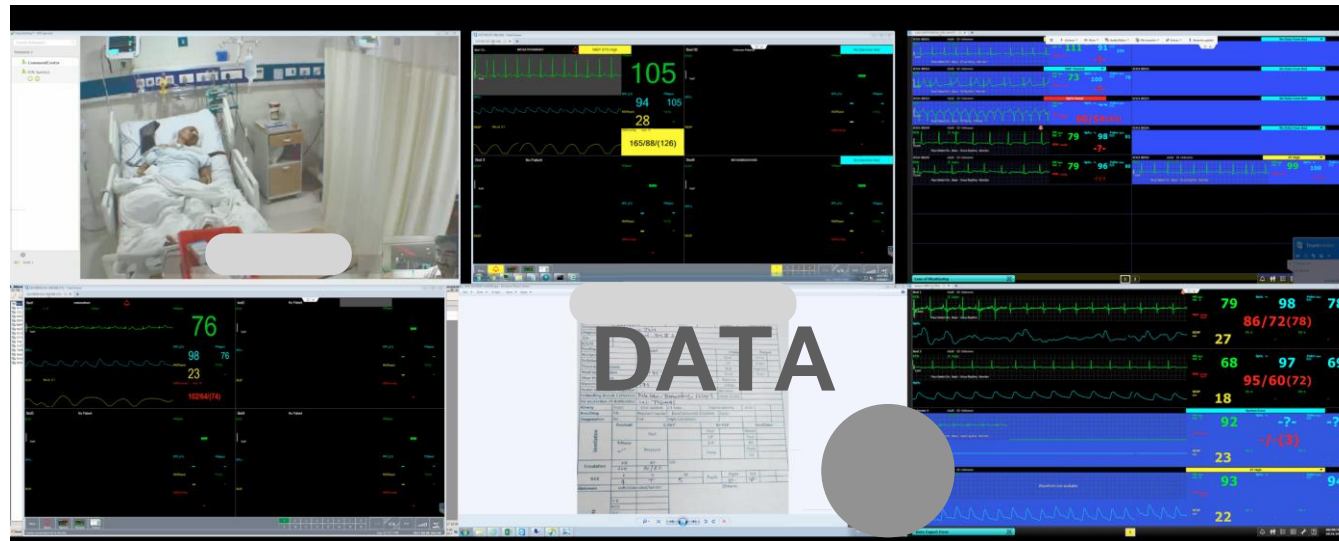
COVID Patients Treated @ Home

Our expert team has been working tirelessly to serve patients in these tough times.

## COVID Unit



Covid-19 Unit



# AI

## Detecting clinical patterns

Observational Study > [Sci Rep. 2021 Jun 17;11\(1\):12801. doi: 10.1038/s41598-021-92146-7.](#)

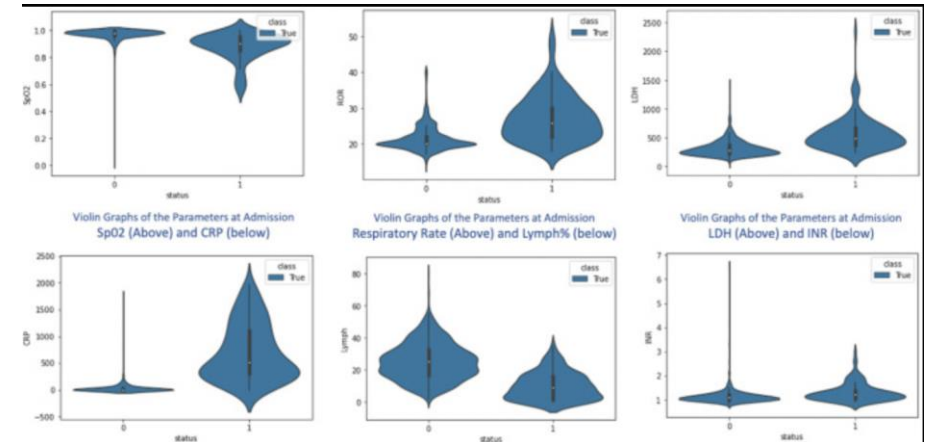
### Multivariable mortality risk prediction using machine learning for COVID-19 patients at admission (AICOVID)

Sujoy Kar<sup>1</sup>, Rajesh Chawla<sup>2</sup>, Sai Praveen Haranath<sup>3</sup>, Suresh Ramasubban<sup>4</sup>,  
Nagarajan Ramakrishnan<sup>5</sup>, Raju Vaishya<sup>2</sup>, Anupam Sibal<sup>2</sup>, Sangita Reddy<sup>3</sup>

Affiliations + expand

PMID: 34140592 PMCID: [PMC8211710](#) DOI: [10.1038/s41598-021-92146-7](#)

[Free PMC article](#)





## CORONAVIRUS COUGH & RISK SCAN

Hi! Here is a quick test to analyse your cough. Answer a few questions and record your cough pattern to find out your risk for COVID-19.

Please cough multiple times for up to 10 seconds



CLICK TO RECORD

# Innovations



## CORONAVIRUS COUGH & RISK RESULT

**LOW**  
RESPIRATORY ILLNESS



**Cough Pattern**  
Normal



### Cough Audiometric Parameters

Dry Cough Count: ② 2

Wet Cough Count: ① 0

Powered by **Swāsa**





World Health  
Organization

COVID-19  
Global literature on coronavirus disease

7	Local intensive care enhanced by remote technology : saving lives, money and time	Sai Praveen Haranath, Senior Consultant Pulmonologist & Critical Care Specialist, Apollo Health City, Hyderabad
8	Estimated saving of patient resources by teleICU usage	Sai Praveen Haranath, Senior Consultant Pulmonologist & Critical Care Specialist, Apollo Health City, Hyderabad

<https://www.transformhealth-it.org/eposters/>

## Apollo eaccess initiative: Tele-ICU during the COVID crisis

Ganti, S. R.; Haranath, S. P.; Subba, K.

*Indian Journal of Critical Care Medicine ; 25(SUPPL 1):S55-S56, 2021.*

Article in English | EMBASE | ID: covidwho-1200263

Main content 1 Search 2 Footer 3

Apollo eaccess initiative: Tele-ICU during the COVID crisis

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### ABSTRACT

#### Introduction:

The practice of Telemedicine is still in its infancy in our country. Lack of awareness, as well as acceptance both patients and professionals, has been cited as the principal reason behind the delay in its full-fledged development. Apollo Hospital backed "eACCESS" tele ICU service has been functional since 2013 and has remotely managed patients in the last 3 years in several hospitals in our country. Continuous round the clock monitoring of critical patients has been possible with the use of remote technology. The global COVID-19 pandemic has united all nations as a common enemy the novel coronavirus. In times like these where social distancing is the new norm, the timely Telemedicine Practice Guidelines by the Government of India has enabled healthcare professionals to evaluate and triage remotely. We have currently extended our monitoring services for COVID-19 patients at many remote locations in India like Dadri (UP), Bahr (Bihar), Kaniha (Odisha), Vindhyachal (MP), Korba (Chhattisgarh), and Ramagundam (Andhra Pradesh).

#### Materials and

#### methods:

Our workflow has evolved with time and we do a minimum of two interactions per remote site every day. Qualified intensive care physicians are monitoring patients in shifts along with specially trained critical care nurses. Guidelines issued by The Ministry of Health and Family Welfare for COVID-19 treatment are being followed. A conscious patient is also being done at these locations under supervision. We are also providing education to personnel at these remote sites regarding the monitoring of ICU patients, follow-up of investigations, basic nursing emergencies, and how to manage them. Interestingly the minimum distance of our remote connection is 100 maximum distance is 1,550 km.

WE WISH YOUR OPINION

# It Works !

Review Article

Access this article online

Quick Response Code:



Website:  
[www.neurologyindia.com](http://www.neurologyindia.com)

DOI:  
10.4103/0028-3886.314591

# eNeuroIntensive Care in India: The Need of the Hour

Sai P Haranath, Krishnan Ganapathy<sup>1</sup>, Subba R Kesavarapu, Swarna D Kuruvavala

[Downloaded free from <http://www.apollomedicine.org> on Monday, December 13, 2021, IP: 10.232.74.26]

**Abstract:**

**Background:** As ICU consultants in smaller hospitals may not be familiar with the current travel restrictions due to the COVID-19 pandemic, one needs to relook at how care can be provided.

**Objective:** This article reviews the authors' experience of providing remote neurointensive care in a non-specialist ICU over a 16-month period.

**Material and Methods:** 61 neuro consultations were provided for 56 patients admitted to five repeat consultations. Most teleconsultations were from three rural hospitals. The authors have monitored remote patients with neurological conditions, in 23 ICUs.

**Results and Conclusions:** Providing real-time virtual neuro intensive advice to ICUs without dedicated neuro-intensive units is feasible in India. eNeuroIntensive care is the current "New Normal" era.

**Key Words:**

eNeuroIntensive care, tele neurointensive care, telehealth and COVID 19, telemedicine

**Key Message:**

With telehealth being accepted by the medical community, providing remote neurointensive care in ICUs is essential.

Review Article

## Tele-Intensive Care Unit Networks: A Viable Means for Augmenting Critical Care Capacity in India for the COVID Pandemic and Beyond

Sai Praveen Haranath<sup>1</sup>, Jai Ganesh Udayasankaran<sup>2</sup>

<sup>1</sup>Apollo eACCESS, Department of Critical Care Medicine, Apollo Hospitals, Hyderabad, Telangana, <sup>2</sup>Healthcare Information Technology and Telehealth, Sri Sathya Sai Central Trust, Puttaparthi, Andhra Pradesh, India

Abstract

The COVID-19 pandemic has enormously stressed global healthcare systems compelling new approaches to care, especially by leveraging telehealth. In India, the timely release of the Telemedicine Practice Guidelines by the Government has enabled health providers to deliver essential medical evaluation, diagnosis, and triage remotely. Patients with COVID-19 present with a range of symptoms, and some need intensive care. The management of critically ill patients is resource-intensive and requires partnership between humans and machines. Monitoring vital physiology is key to effective critical care. In many countries, including India, the distribution of intensivists is skewed and tends to be predominantly based in urban tertiary care hospitals. Hospitals without on-site intensivists may benefit from tele-intensive care unit (ICU) services wherein electronic systems connect ICU patient data with intensivists at remote locations as part of a collaborative network. The tele-intensivists provide real-time data and audiovisual monitoring, diagnostic, and intervention services and work together with bedside teams bridging the critical care gap. This article is a practical guide for the logistics of telemedicine-based critical care in India for patients with COVID-19 and other conditions. In addition, this paper also suggests methods to expedite care. Information is provided for immediate use by physicians who have not practiced telemedicine in the ICU. As the number of patients affected increases around India rapid deployment of tele-ICU services will be essential to save lives. Caregiver stress can be minimized by remote care providers who can assist at any time.

**Keywords:** COVID-19, critical care, intensive care, telehealth, tele-intensive care unit, telemedicine



# Safety in the air

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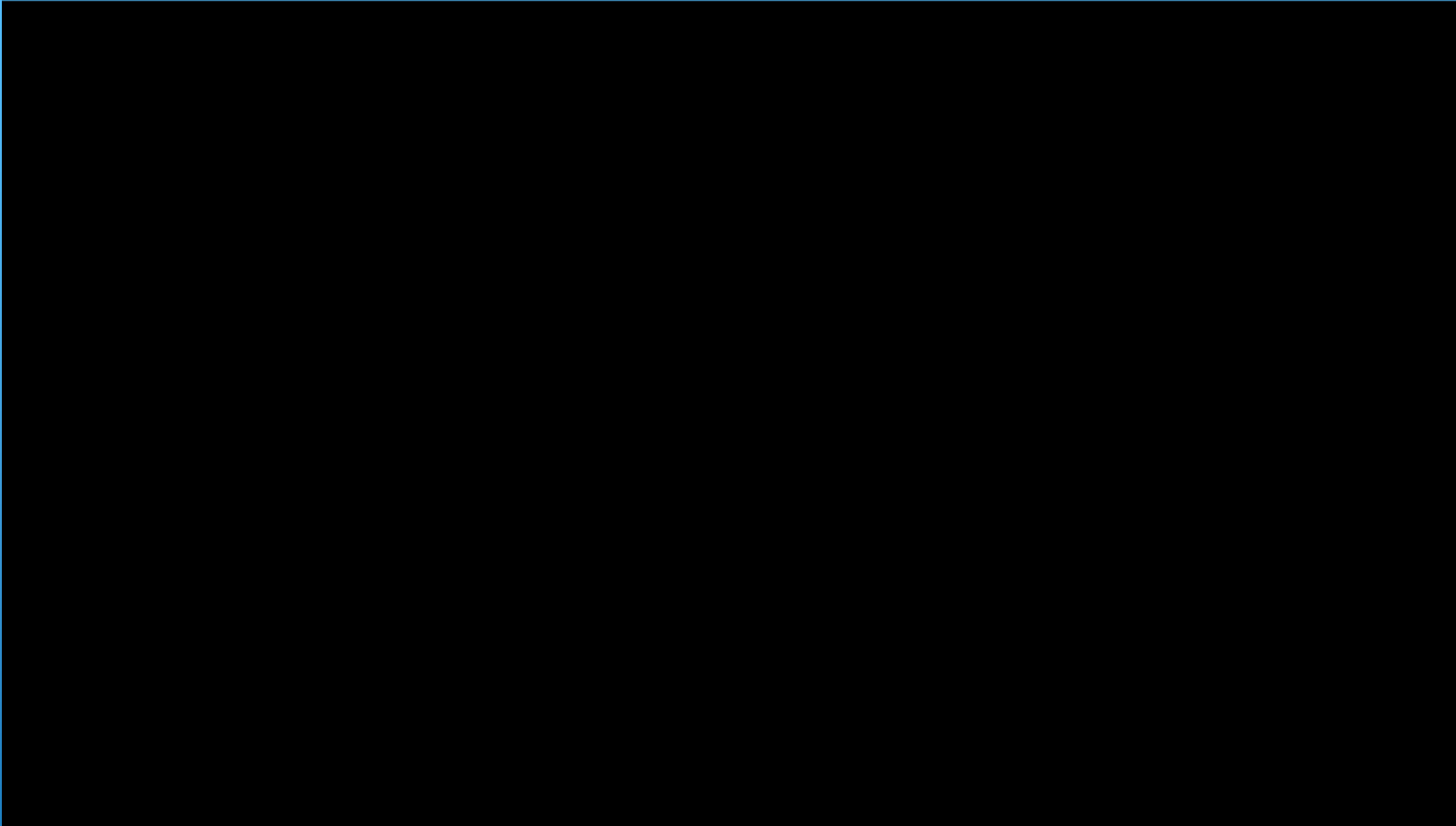


***“Geography is History”***











# Benefits of TeleICU

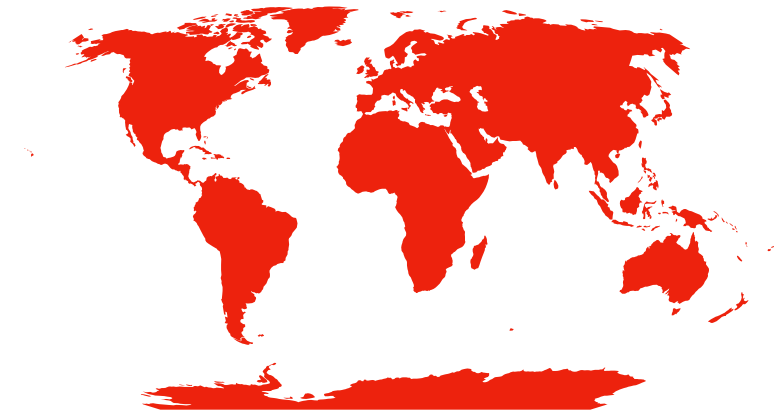
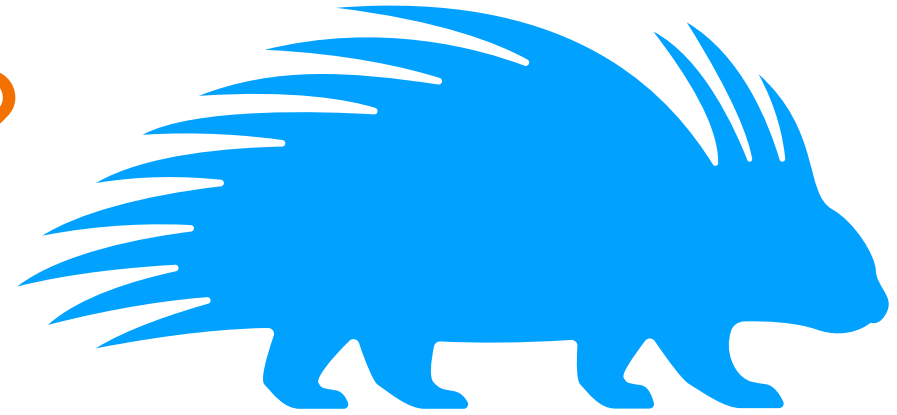
- Provide critical care expertise where not available
- Guide less trained health professionals by remote hand holding
- Take advantage of time differences
- Best practices adherence audit systematically & implemented instantly
- Provide respite for busy on call providers
- Increase nursing confidence in managing complex patients
- Improve knowledge base for all involved
- Educate, reassure and involve family in plan of care at any time
- Coordinate transfer of patients

What next ?



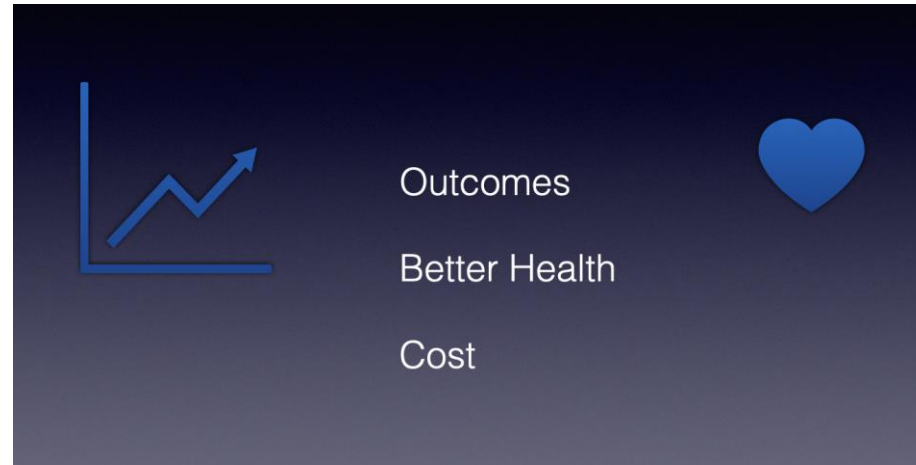
# Tough Questions ?

**Can the NHS adopt  
telecritical care ?**

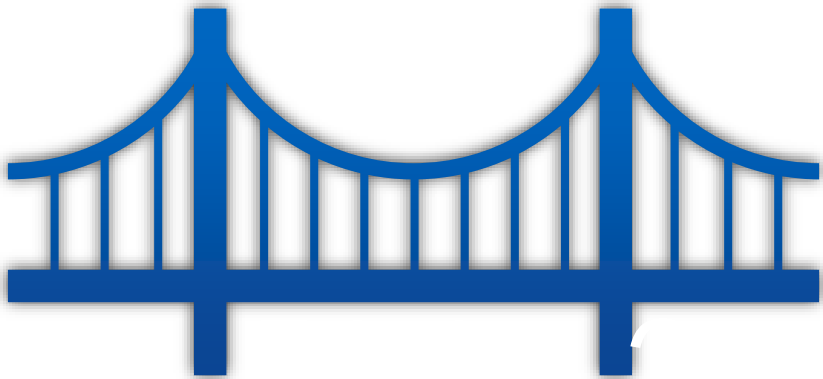


**Can the NHS adopt  
cross border  
telecritical care ?**

# Trust



## Barrier and Bridge







A view of the Earth's lights at night, acquired by the Suomi National Polar-orbiting Partnership (Suomi NPP) satellite.

NASA



© Sai Praveen Haranath 2020

THANK  
YOU





# DEVELOPING A TELENEONATOLOGY PROGRAM IN RESPONSE TO THE COVID-19 PANDEMIC

DR CHRIS DEWHURST

CLINICAL DIRECTOR

LIVERPOOL WOMEN'S HOSPITAL AND ALDER HEY CHILDREN'S HOSPITAL

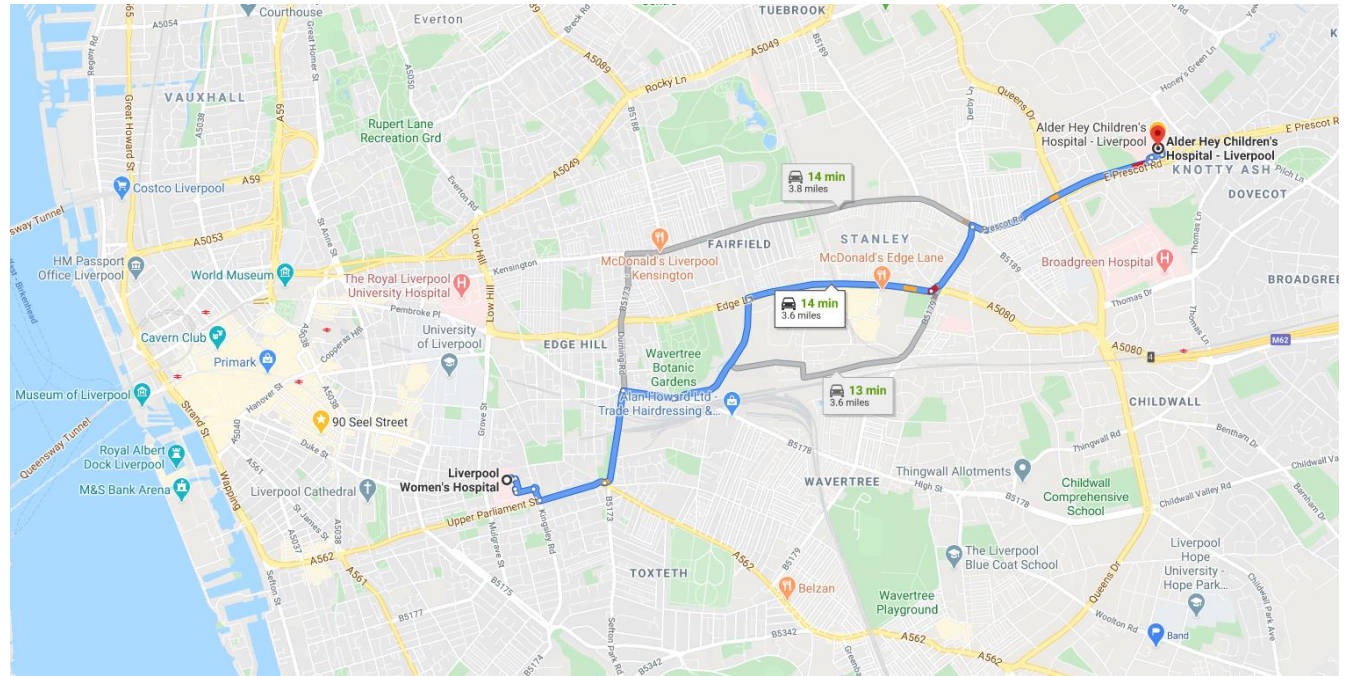
LIVERPOOL, UK





# LIVERPOOL NEONATAL CARE

- Two site model “Liverpool Neonatal Partnership”
- All modalities incl surgery, cardiac, fetal medicine
- LWH
  - c8,000 deliveries
  - 44 cot NICU
- AHCH
  - Largest children’s hospital in UK
  - 9 cot surgical HDU
  - PICU + ECMO



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**SPRING 2020**

Telehealth Symposium  
Dr Jennifer Fang, Mayo Clinic  
Tele-neonatology Programme  
Network support  
resuscitation/stabilisation

Monday 2<sup>nd</sup> March



## SPRING 2020

“Get the  
telemedicine  
system ....we are  
going to need it”



Friday 7<sup>th</sup> March

### **49 more people in Italy died**

**Local authorities reported** 49 new deaths on Friday, as well as 778 new infections. That brought the total number of deaths to 197, with 4,636 patients.

### **Second British death feared**

**There were concerns the virus had claimed its second victim** in the UK after a man died at Milton Keynes University hospital on Friday. The patient had tested positive to one of two tests that confirm the illness. A second test was due to be carried out.

### **UK cases see single largest day-on-day increase**

**Department of health and social care figures showed** 163 confirmed coronavirus cases in the UK; an increase of 47. That is the greatest nominal increase since the outbreak began. The department said more than 20,000 people had been tested for the virus.

The prime minister, Boris Johnson, said it looked like the UK would face substantial disruption and pledged a further £46m for research into a vaccine.

### **Two British Airways staff tested positive**

**The airline said the pair have been isolated and are recovering at home.** A temple in Watford, Hertfordshire, has closed after a member of the congregation tested positive with coronavirus, according to a statement on its website.

### **The US president claimed the virus would just go away**

Donald Trump, who has previously called the outbreak that has claimed more than a dozen US lives a “hoax”, **has said it will simply “go away”**. Trump said the US had relatively few cases and claimed that was because the nation had been “very strong at the borders”.



## UK LOCKDOWN AND IMPACT ON NEONATAL UNIT

- Usually very low level of consultant staff sickness
- Prior to lockdown = 3/14 consultants on long term leave
- Lockdown = 7/14 consultants sick/isolating/shielding
- Loss of c40% of clinical facing time
- Service = unsustainable

Monday 23<sup>rd</sup> March



- In-touch healthcare
- IT departments both sites
- IG approval
- How, where, when, why?!

Tuesday 24<sup>th</sup> March



I have the package 😂😂





# IMPLEMENTATION

- Training – all remotely
- Restructured work patterns = “Virtual Consultant”
- Shielding Neonatologists
  - Neonatologist ward round cover into AHCH surgical unit
  - Full support of SCBU
  - Ad hoc support into PNW and fetal medicine
- Surgeons – remote access ward rounds into LWH

Monday 6<sup>th</sup> April





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## IMPACT

- Neonatology
  - 66 hours/week replaced with 1x virtual consultant
  - 3 month period cira £99,795 savings in “additional payments”
  - CO<sub>2</sub> saving 0.4 tonnes

## RESPONSE

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Shielded neonatologists remain “part of the team” “contributing to service” “useful”. Otherwise.....?

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Easy to use (15 minutes training)

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Quickly became “the norm”

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Parents like the speedy reviews

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Quickly became “the norm”

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Parents accepted the technology quickly – prefer it if they have met the virtual doctor previously.

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Better than before

# FUTURE

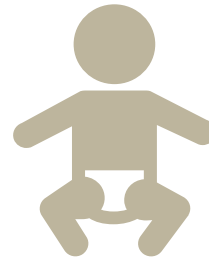


## Research

Implementation for healthcare workers

Parents experience

Accompanying research project comparing telemedicine outcomes with traditional care



## Going viral

Plastic surgeons, neurologists, cardiologists, specialist nurses – “new normal”

Fetal medicine

Maternal Medicine and Adult ITU

Wider neonatal network -22 neonatal units (UKs 2<sup>nd</sup> largest).



# TELE-NEONATOLOGY IN 5 WEEKS



# CONTACT

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