Technology & Innovation in Pediatric ICUs: A Dynamic Look at Asia

SPEAKERS
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Arun Bansal
So good day, everybody. Welcome to this podcast from Asia and beyond. I'm Dr Arun Bansal. I'm Professor of Pediatrics in the Postgraduate Institute of Medical Education and Research in Chandigarh from India, and I'm honored to moderate this session. We welcome you all to this special Asian panel of World PICU Awareness Week. And today we explore a question that sits at the intersection of necessity and ingenuity, that is, how far will technology achieve innovation from prehospital to pediatric ICU in settings ranging from remote villages to tertiary care centers, clinicians are harnessing both sophisticated digital tools and simple frugal devices to recognize transport and treat critical ill Children more effectively than ever before. Across Asia, countries are embracing technological solutions ranging from frugal innovations to digital transformation to enhance the delivery of pediatric critical care. Over the next 30 to 40 minutes, we will hear how these innovations are shaping care in Bangladesh, India and Indonesia and what the future holds for pediatric critical care in low and

middle-income countries. Today, for this, we are joined by three outstanding leaders from our region, each representing unique challenges and remarkable progress in pediatric critical care. So, it's my privilege to introduce our distinguished panelists. It's Dr Mohammed Chisti, who is a Professor of Pediatrics at the ICDDR from Bangladesh. It's a diarrheal disease research center which is renowned for pioneering low-cost respiratory support technologies like bubble CPAP. The other panelist is Professor Dr Jayshree Muralidharan. She is head of pediatrics at pediatric critical care at the Post Graduate Institute in Chandigarh, India, and she has done a lot of work on TelePICU and referral apps from remote to tertiary care centers. Then we are joined by Dr Gaddafi, who is Chief of Pediatric Emergency Services at Indonesia. He is an expert on remote and inter-facility pediatric transport across the Indonesian archipelago. We'll have three rounds. Each will focus on the patient pathway. In each round, I will pose one question to each panelist in turn. The first round will focus on the early recognition and prehospital response. And my question is to Dr Chishti. Dr Chishti, in rural and underprivileged settings, what technologies are proving most effective in the early recognition and triage of critical children before they reach the hospital? Thank you.

Mohammod Jobayer Chisti
Actually, in research settings, as in Bangladesh, we know that pulse oximeter is one of the important innovations and technologies that need to be implemented in hospital settings. Additionally, machine learning tools and bubble CPAP as low-cost respiratory support are other important technologies. But I will try to emphasize on pulse oximeter,

which is a very low cost, as well as it can very easily early identify the patient with needs of oxygen. You know that hypoxemia kills most of the patients from respiratory problem, so pulse oximeter is an important technology that can be implemented, especially in secondary hospitals in Bangladesh as well as other low- and middle-income countries, which can save lives. Other important technology is the digital tool using artificial intelligence that we are now using in Bangladesh. A biosensor patch is attached in the sternum of the chest, which relentlessly provides the pulse rate, respiratory rate, heart rate with its variability and temperature and also the ECG. We are doing this study for the last two years and now we are in the third phase and initial two phases are already completed. What we have done, we have validated this biosensor patch compared with the manual diagnosis of pediatric sepsis. What we have found that in pediatric sepsis, it can early identify the deteriorating features of sepsis, 2.5 hours earlier than our clinicians, which gives a very important opportunity for our future endeavor, and we have already performed the feasibility and acceptability study in district level hospitals, and we have found that it is feasible. Now we are in the third phase to go for the further validation. Hopefully it will be a very important steps to identify the deteriorating, septic patient where the death rate is enormously high.

Arun Bansal
Yeah. Thank you. Dr Chisti, that sounds very interesting about the low-cost innovations which you have carried out to help the children from rural areas and how they get transported. So, we'll move on to Dr Jayshree from India. Dr Jayshree, how are the digital platforms of the

application-enabled systems supporting the pre-referral pediatric assessment at primary or district-level facilities in India?

Jayashree Muralidharan

Thank you. Dr Arun and thank you to OPEN Pediatrics for this opportunity. Just to put it in right perspective, the healthcare in India is divided into three tiers, the primary, the secondary and the tertiary. It's a pyramid with the primary at the base and the tertiary at the top. So the flow of referrals usually will be from the lower healthcare to the tertiary care. But however, because of an unstructured referral service and sometimes patients getting directly shifted to tertiary care without being stabilized at primary care, there may be problems of overloading and overcrowding at the tertiary care. So we work in one such tertiary care, which is a very high volume unit, and often times we have huge number of referrals coming from in and around the region. So in critically ill patients, we all know that the golden hour is very important, and stabilization during the golden hour is directly related to a good outcome. So therefore, it is important, and probably paramount, to bring all the lower levels of healthcare much closer to the tertiary care. This can easily be done by leveraging digital platforms. And one such digital initiative that has been put in place by the government of India is what is called the eSanjeevani platform. It's a national digital initiative through which remote areas, doctors, nurses, as well as patients, can access medical healthcare through tele consultation services. So in our unit, we run a remote PICU, or what we call as a tele PICU facility. Through tele consultative services, we hand hold peripheral PICU and use the digital platforms to bring the lower levels of healthcare much closer to our

tertiary level care. The second area where we have used digital platform to kind of streamline the referrals which come from the lower levels of healthcare, is creating a web based or an application based referral process. So this was a short temporary project that we did for about a year where we used a web based platform, gave it to doctors sitting in peripheral health cares and asked them to refer the patients through this particular platform. This improved the communication. We were able to get more comprehensive referrals with more documentation and the center to which the patient is referred like ours, we had a preliminary communication saying that so and so patient can come so in places, especially in low middle income countries where there is a demand versus supply mismatch, especially with respect to resources like a ventilator, it actually prepares the referred facility for taking care of the resources so that we can receive the patient. So this was, however, a temporary project, but needs to be better explored in the form of a mobile application. So these are some of the digital ventures that we have done to bring the lower levels of healthcare much closer to the tertiary Care.

Arun Bansal
Thank you, madam. I think these sound very interesting: the E-Sanjivani and the referral app, and the TelePICU. So that's very low cost and innovative and could be useful in low and middle-income countries. Now, Indonesia has its challenges because it consists of multiple islands and can be having its problems providing healthcare to remote island areas. So, Dr Gaddafi, how has Indonesia leveraged telemedicine or app-based tools to assist healthcare workers or frontline

providers in remote islands when faced with pediatric emergencies?
Thank You

Kurniawan Kadafi
Thank you very much, Doctor Arun and thank you open pediatric for the opportunity. Before development of the telemedicine in Indonesia, my country had already established an integrated referral system. The government through the Minister of Health has developed an online individual healthcare referral system. We called integrated referral system as SISRUTE. The implementation of the SISRUTE application is based referrals that align with the competency of healthcare facilities, the specialist doctor, sub specialist doctor, tailored to the medical needs of the patient. Integrated referral system application was developed with the aim of serving as a communication and information platform for individual healthcare referrals, leveraging internet based features, dashboard and interoperability facilities. This allows it to interact with other referral system applications that have been previously developed. The healthcare service referral system is the healthcare delivery mechanism that manages the delegation of tasks and responsibilities in healthcare service, both vertically and horizontally. Emergency cases are the situations that can lead to the high morbidity and mortality rates and the management of The emergency patient require rapid and accurate interventions. So from the integrated referral system, we hope this system can be helpful for the patient.
The problem in Indonesia is that it is an Archipelagic Country. We have many island in Indonesia, and this situation, we need access to healthcare services. While some Islands have comprehensive

healthcare facilities, but the other have limited resources. Additionally, the referral process between Islands often involves sea ambulances, which are not always available or adequate. Furthermore, unpredictable weather condition like high waves can inhibit their referral process and delay transfer. This is the problem…so Telemedicine emerge as one of the most effective alternative solutions that can be implemented. Actually, in Indonesia, telemedicine began to develop during the COVID 19 pandemic. So this application has since started to the expand. When obstacles occurred during the referral process, physician at the facilities with the limited resources, will intensive communication with the doctor in the hospital that have the complete facilities. They're the hospital that have the complete facilities, including specialists and sub specialists. And the integrated referral system in Indonesia, currently being developed and combining by the telemedicine. The situation before referring a patient, the referral hospital sent a video for analysis by the medical team at the referral hospital. They also received the treatment suggestion prior to the patient's transfer. Additionally, Indonesia Pediatric Society already has health application that is familiar to the patient or to the Indonesian community. Some subspecialists such as the pediatric cardiology have also used this application for communication with the general pediatrician who have received echocardiography training. so the doctor, so pediatrician, that have capability echocardiography based pediatric training will make the validity to the pediatric cardiology by this application. We currently working to implementation similar practice in the other areas, especially in emergency, inspired by the approaches used pediatric cardiology. So now in Indonesia, especially in emergency field, we follow the

government system by the SISRUTE and the expand with the telemedicines by the communication with the video. But actually in Indonesian Pediatric Society already have the application, but we will start to join this application. Thank you.

Arun Bansal
Thank you, Doctor Gaddafi. It's very interesting how you have connected different islands through communication and how pre-hospital stabilization is being done. That is great. Now we will move to Dr Chishti, and we would like to learn from him about how the digital transformation and innovation have happened inside the PICU. Dr Chishti how can the frugal innovations be integrated into high dependency or PICU settings to scale the impact without high cost? How can we use low-cost equipment in the PICU to improve patient care?

Mohammod Jobayer Chisti
In the PICU and high dependency unit, most of the patient populations admit with severe form of pneumonia and also sepsis and malnutrition. And if you look at mortality in these resource limited settings, it is enormously high. And what we know that WHO recommends a low flow oxygen for the treatment of hypoxemia. Since 1990 WHO advocates oxygen should be considered as one of the drugs, not only the supplementary therapy. Since then, there are a lot of efforts that have been made to improve the easy access to medical oxygen and it has been found that with the WHO standard oxygen, there were 35% reduction of mortality from pneumonia. But if you see the mortality from

pneumonia back from 1990 to 2024 you can see that the deaths dropped down from 2.3 million to 0.7 million. There is no doubt, there is huge reduction of deaths from pneumonia, and there are a lot of issues contributed here, but the oxygen is one of the paramount important factors for the reduction of these deaths. Still even with WHO standard oxygen and other routine care in many hospitals, pneumonia related deaths remain still enormously high. And then we thought that what might be the issue here? We found that even with WHO standard oxygen therapy, in many hospitals of Bangladesh, India, Pakistan and Sub Saharan Africa, the risk of death from pneumonia having hypoxemia is 5 times more compared to those who do not have hypoxemia. In a recent systematic review in Bangladesh, it is found that the global evidence of hypoxemia among the hospitalized children with pneumonia is 31% and in Bangladesh it is 41%. That does mean that if we can manage hypoxemia properly, then we can reduce these deaths from pneumonia. Recently, we introduced improvised bubble CPAP, which is locally made, and it has been found that it is associated with 75% reduction of mortality compared to standard therapy and the beauty of this innovation is that it is low cost. We have analyzed further data in our hospital after 5 years of introduction of bubble CPAP as the part of the standard of care, and it is revealed that it is not only associated with the reduction of mortality, also associated with the reduction of the total oxygen consumption cost from $30,000 per year to $6,000 per year by reducing the indication of mechanical ventilation from 35% to 7%. So this is now going to be used in other secondary hospitals in Bangladesh. You know that in tertiary hospitals we have some supports of other ventilatory care, but in secondary level

hospitals, where most of the patients with severe pneumonia and hypoxemia referred from primary care hospitals, and they are treated there, and mortality is very high there from pneumonia. So, if we can implement this life saving therapy in those settings, then it will be a low cost solution to reduce this mortality. Thank you.

Arun Bansal
Thank you, Dr Chisti, it sounds amazing to hear how the low-cost machines have rationalized the usage of oxygen, and how the bubble CPAP has improved mortality. So that's something everybody should learn. We'll move to Dr Jayashree. What are the digital technologies that are transforming clinical decision-making inside the Indian PICUs and high dependency units?

Jayashree Muralidharan
I would divide this particular question into two parts, just for the ease of understanding. So the digital technology can help improve the care within one's own PICU, and also it can help connect with two or three more PICU's. During COVID, I think COVID probably has been instrumental in bringing technology to healthcare in a great way, and probably also made all the healthcare providers adapt and adopt this technology with open arms. So here again, the government of India initiative during the COVID pandemic was a hub and spoke model where the government of India created several centers of excellence, or what we call as the hub PICUs. And each hub, PICU was asked to connect with multiple spoke PICU's. So this is a great form in which the PICU care can be kind of connected to another PICU, which can be

either of the same level or maybe it can be of a slightly lower level. So we have one such hub and spoke model that we operate and with the help of this hub and spoke model, we have been able to kind of create a reasonably good level two to level three PICU in a nearby hospital, which can almost take care of many things, including non invasive ventilation of all kinds, and including invasive ventilation also. And when they are not able to manage beyond invasive ventilation, is the time that they refer to our center. So it's a win-win situation for both the units. We are able to kind of help ourselves by not getting overcrowded. The other thing is that when we find that children admitted within our PICU get well and just need few more, maybe days of PICU care, we back refer these children to our spoke PICU. So this is a win situation. So this is a great way of leveraging technology, by creating this hub and spoke model. The second thing that we have done is that, about a decade and a half back, or maybe more than that, we shifted to a digital database. This was a database which was kind of created for our PICU alone. And this digital database helped us in several ways. I think the most important thing was that such a system enhanced the documentation and data accuracy of our patients. It improved accessibility. Initially there was problems of entering the data, but soon people got used to this data entry, and then work efficiency slowly started improving. It also minimizes errors, and if we use it for medication and patient management, it definitely improves the patient safety, enhances patient safety, and there is a lot of cost saving which is attached to this, because this is going to be environmental friendly, and lot of paper free from this model that we created about one and a half to two decades back, small digital database which was very relevant to our PICU. We

are now shifting to a larger scale, paperless ICU, where not just patient data, but medication, all management, all ventilation, all details which are related to patients will go into this particular digital database. So this is going to definitely enhance the data security, the compliance, and it's going to be environmental friendly and definitely a cost saving initiative in the long run, and will also help us in data retrieval, research and so many other things collaborative Research and other things that tertiary level PICU can aim for. And the third thing, uh, which we still haven't started, we are still on board and marker, is different alerts, which are sepsis alerts, um, healthcare associated infection alerts.

Critical incident, uh, alerts and alerts for device utilization. But I think this is a huge area which we need to explore as a tertiary PICU for creating digital dashboards in PICU for the same thing that we are doing on a white board with a markup pen. This easily can be Transported onto a digital database or a dashboard, which will help us in making this a more, um, uh, futuristic kind of, uh, um project. And similarly, we can also add alerts for antibiotic de-escalation. So this will also help us in antibiotic stewardship because anti-microbial resistance is also a huge problem in low middle income countries. So I think, three initiatives where we can easily leverage digital, uh, platforms to kind of improve the care delivery in PICU.

Connect to the spoke PICU, go completely paperless and digital database, which will definitely improve the data accuracy as well as efficiency in the long run. So we are, we are, uh, kind of a step into tele PICU. We are a step into the digital database, which definitely needs to be improved upon. And the area where we need to work on is the digital dashboards.

So I think these are some three areas which I feel, uh, could be good areas to work on as far as digital platforms are concerned.

Arun Bansal
Thank you. Uh, madam, I think all three, which you have highlighted, can be replicated with low cost in our kind of setup in Asian countries and can improve the patient care and also help connect with each other. Dr. Kadafi, as you are having the remote islands and there are remote ICUs or remote hospitals are there, so what PICU technologies are useful in these kind of settings where the resources are scars.

Kurniawan Kadafi
Before we discussing about the technologies that are beneficial in remote hospitals to reduce child mortality and morbidity, maybe we must also address the issue of the preventing delays in the referral process. Because sometimes we look the high mortality in PICU only about the technology how we give the treatment for the patient. But we forgot that there was another problem, that the patient before go to the hospital, maybe they are a delay during referral process.
The parents delay in bringing their children to the hospital. So technology should be utilized not only at the PICU level, but also starting from the family level. In Indonesia, many parents are still unaware of the sign of the critical illness in children, which often lead to late recognition of emergency and delayed transportation to the hospital.
As a result, children are brought in a terminal stage, significantly increasing the risk of the death and significantly increasing of the

mortality and morbidity. Therefore, education about the pediatric emergencies at the family and community levels is extremely important. I think it is very important the use of the technology such as telemedicine, especially in villages where parents already have a good awareness of the health issue that can greatly help in preventing child death caused by delay in transport to hospital care.

I remember today, artificial intelligence very famous. Artificial intelligence will, in the future, play a crucial role in addressing this problem.

I imagined a scenario where a mother, upon seeing her child unwell. She will record a video of the child's condition and inputs it into artificial intelligence system designed as a tool for recognized emergencies, such as the pediatric assessment angle. And this way the mother can immediately understand about the severity of her child’s condition.

The utilization of technology in the form of telemedicine or teleconsultation can also applied during the patient transportation. Healthcare workers or referring doctor can maintenance continuous communication with the subspecialist doctor at the referral hospital regarding treatment plans before and during transfer, ensuring that patient condition remains stable and secure.

Furthermore, technologies can be developed in PICUs, especially at the smaller hospitals staffed that only have general pediatrician, without pediatric intensivists, including establishing communication with the central hospital using media such as Zoom, Google meeting, and another media providing periodic video reports of the patient’s condition and receiving treatment suggestions from the central hospital that have the complete facility and expert.

This also includes guiding the referral process if the patient condition does not improve. in addition several pediatric intensities in Indonesia have developed innovation solution such as total parental nutrition application on smartphone, and research into interface innovations for NIV (non-invasive ventilation)
We are also conducting research on non-invasive hemodynamic monitoring using a suprasystolic oscillometer, a type of tensiometer. If the result are promising, non-invasive hemodynamic monitoring could not only be implemented in PICU, but also at the primary healthcare facilities that refer patients, due to ease use for the doctor.
This will enable appropriate hemodynamic management to be provided to the patient across different level care. And the results of the patient condition is more stable and we can decrease mortality and morbidity in emergency situation. And if the, this patient still needed refer to the PICU, so we can make the high quality of live for this patient.
Arun Bansal
Thank you. Thank you. That was very helpful information. Dr. Chisti, if you have to look at the future, what are the low cost pediatric critical care innovation, you think should be scaled and used globally, and what could be the reason and why it should be used?
Mohammod Jobayer Chisti
So I actually want to emphasize on oxygen issue because I still feel that this is the
most important thing that we have the opportunity, to scale up, in order to reduce the global childhood mortality. And for that, you know, that we need to improve the access to medical oxygen by improving oxygen security, which can be done by strengthening local health system. And it

can also be done by introducing community based oxygen therapy algorithm and, and these innovations should be inclusive, accessible, and affordable, especially by making the access to the functioning pulse oximeter, which has the paramount
importance to reduce the abuse of oxygen and to understand what kind of oxygen we need to have the support for them. And we also need to confirm the better oxygen support to reduce oxygen related mortality. And among them, I still believe that bubble CPAP needs to be scaled up globally because of the fact that what I have said already, it is not only cost effective, but also it reduces treatment failure by identifying the deteriorating patients earlier.
And if you see the series of evidences in Bangladesh. back from 2011 to 2013, the initial efficacy trial showed that there is 75% reduction of mortality compared to WHO standard therapy, which was published in The Lancet in 2015. After that, from the feasibility trial in secondary hospitals, where most of the pneumonia related deaths occur, we found that the clinical use of our improvised bubble CPAP is feasible, if we can address some challenges. And what are the challenges? Both in Asia and Africa, representative country in Bangladesh, Ethiopia, what we have found that, if we can afford oxygen from a reliable source like oxygen concentrator, and pulse oximeter and
if we can educate the mother, bubble CPAP device can be handled very easily, and the implementation will be more successful. In Ethiopian general hospitals with the supervision of the doctors and nurses during daily clinical round bubble CPAP oxygen therapy was found to be associated with almost 75% reduction of treatment failure and 86% reduction of mortality. So, from the efficacy trial we went to the feasibility

studies and ended up with the effectiveness study in the real life scenario in Ethiopia, which showed the results consistent with Bangladesh trial.

It is important to note that this improvised bubble CPAP oxygen therapy has already been passed through a series of studies (including RCTs) in Bangladesh and Ethiopia and on the basis of the beneficial results (reduction of treatment failure and mortality) of this innovative therapy, it is now going to be scaled-up through implementation research in 37 hospitals in Ethiopia, Nigeria and Malawi. So we are now intending to scale this up globally. I think that it'll have a huge impact. It might have an impact, that WHO might change their policy.

And if it can be scaled up by the next four or five years globally, it might have an impact to reduce the global pneumonia related deaths and might have potential to attain the sustainable development goal-3. So I think that it has a huge impact for not only the reduction of the cost, but also for the reduction of mortality.

It has the proof to be easily accessible, and simultaneously affordable and sustainable.

Arun Bansal

Yeah. thank you Dr. Chisti. I agree with you that, low cost oxygen, low cost bubble CPA and saturation monitors can go a long way in reducing the cost. And so less mortality in pneumonia children in LMIC countries. Dr. Kadafi, if you have to tell you, uh, tell us your vision for about the tech-enabled equitable, ecosystem in Indonesia by 2035. What will it be? what, what is your idea of it?

Kurniawan Kadafi

Okay. Thank you. Dr. Arun, maybe, I would like mention small statement about my vision. I have a vision to improve patient outcomes in PICU and to prevent mortality and morbidity among pediatric patients.
As a pediatric intensivist, my focus is not only on delivering optimal therapy within the PICU, but also on addressing the broader community context. Why? Because My Country is very wide, maybe like in India, but we have very lot of the island that if we talk about the healthcare facility, I think we do not yet have very well facilities in every places. One area have the high resources facility, but the other area have the limited resources or facilities.
So My vision not only about the PICU treatment, but we have to come back to the community context to minimally mortality, we recognize about the emergency situation. This includes providing input to the government and assisting in effort to be more proactive in educating parents about the signs of critically ill in children. Late transport during referral process, we can prevent it. It also involves urging the government to enhance facilities at the primary healthcare centers, especially those related to the pediatric emergencies and to ensure the availability of the referral facility such as Sea ambulance, or air ambulance and
standard ambulance that we have. Additionally, I advocate for the development of the referral system that is already based on technology. Furthermore, I want to advance the PICU through various innovations that can maximize patient outcomes

Arun Bansal
Thank you. We'll also like to hear from Dr. Jayashree

Advanced technologies usually are costly. And how can we ensure that these advanced technologies like AI and digital health do not cause a gap between the haves and do not haves, and especially in pediatric critical care settings, how can we take care of these inequities? Uh, so technology has been very advantageous.

Jayashree Muralidharan
Uh, with respect to PICU, it has brought the global PICU community closer, uh, especially with respect to knowledge sharing, which has been very fast, seamless, and much easier. On the contrary, when we look at PICU care delivery or the care processes, um, I personally feel the. divide or the disparity has widened, especially because the PICU care is completely technology driven.
It's hugely technology driven. Therefore, if we need to narrow this gap of how the care is delivered, for example, ventilation, for example, extra corporeal therapies, for example, uh, renal replacement therapies, it's very important that whatever technology we adapt, has to be contextual. I think that's probably the key for all low middle income countries.
It's important that there has to be technology. There is no going away from it. There has to be digital platform, but we have to contextualize whatever technology, whether it is digital based technology, whether it's AI based technology, whether it's in terms of equipment. It has to be contextualized to the kind of patient and epidemiology of diseases that we see.
Definitely it has to be accessible to the population to which it serves….., the language barriers have to be minimized. This is very, very important and the most important thing is also cost. Anything which is cost

prohibitive is going to be something that cannot take off, cannot sustain. So I think, um, the most important thing for all of us who work, uh, with the PICU care delivery systems is to probably ….the three important words will be contextualize, uh, sustain
and low cost. I think these are probably the three things which probably will help us in reducing the gaps, narrowing the gaps between the high income as well as the low income countries in terms of PICU technology.

Arun Bansal
Thank you so much, ma'am. So in the end, I would like to ask each one of you, if in one sentence or word, if you have to give a message. Which you have to share with the global PICU community about executable innovation in technology, what it would be. I'll start with Dr. Chisti. Just one word or one sentence.

Mohammod Jobayer Chisti
So, our scientific community and our pediatric critical care physicians need to work more closely to create more insights, to use technology-based, treatment that are transformable as well as affordable and sustainable. Otherwise we cannot make it happen for our low and middle income countries.

Arun Bansal
Thank you. Thank you, Dr. Jayashree.

Jayashree Muralidharan

Um, I would say look global and adapt locally.

Arun Bansal
That's great. And Dr. Kadafi,

Kurniawan Kadafi
I think PICU without following technology, we only be able to make our patient live. But the quality may not necessarily to be optimal. It is the point. Thank you.

Arun Bansal
Thank you so much, uh, Dr. Chisti, Dr. Jayashree and Dr. Kadafi for sharing your incredible insights and experiences from frugal oxygen technologies to National Drought System, from remote island, access to, technology driven ICUs. So this panel has shown us that innovation in Asia is vibrant.
Impactful and deeply rooted in local needs. As we look into the future, let's continue working across borders to ensure these innovations reach every child no matter where they are born. Thank you again to all of you for joining us in this special session during World Awareness Week. Stay connected, stay inspired, and continue advocating for children everywhere.
Thank you so much.