ERAS® Society and Asia

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ERAS and ASIA

Asia is the world's most populous continent in the world and is rapidly developing. Such rapid growth is associated with economic gains but also puts a huge strain on limited resources. Most of the countries in Asia are low- and middle-income countries (LMICs). According to the landmark report of The Lancet Commission on Global Surgery, Global Surgery 2030, access to safe and affordable surgical and anesthesia care is severely neglected in LMIC countries, with South Asia, Southeast Asia, and East Asia accounting for more than half of the unmet surgical needs. One of the recommendations made by the commission to overcome this problem is to scale up surgical and anesthesia services to meet current population needs while maintaining focus on quality, safety, and equity [1].

The emergence of ERAS in Asia is well timed to meet this challenge. ERAS programs are designed to improve outcomes and have been shown to reduce healthcare costs [2]. Although the adoption of ERAS practices in Asia was initially sluggish, momentum has picked up in the last few years with several scattered initatives in different countries including The Peoples Republic of China, Japan and other countries. Not surprisingly, this coincided with the designation of the first two ERAS® Centers of Excellence (CoEs) in Asia: The Medical City (TMC) in the Philippines and Tan Tock Seng Hospital (TTSH) in Singapore in 2016. The objective of this Chapter is to describe the development of the initiatives by the ERAS® Society in Asia (Fig. 63.1).

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Development of ERAS in the Philippines

The Philippines is an archipelagic country in Southeast Asia comprising 7641 islands. It has a population of 110 million, making it the second most populous nation in Southeast Asia. As a middle-income economy, it ranks as the third largest in Southeast Asia [3]. However, the Philippines' healthcare expenditure is at a moderately low 4.5% of gross domestic product (GDP), and out-of-pocket expenditure still accounts for 54.2% of total health expenditure [4. Access to and lack of manpower in healthcare are two of the biggest issues facing the country. Given these challenges, there is certainly a need for quality- and value-based surgical initiatives in the Philippines.

The growth of ERAS in the Philippines began in 2014 with small, uncoordinated steps. First, two former Presidents of the Philippine Society of Colon and Rectal Surgeons (PSCRS), namely, Dr. Manuel Francisco T. Roxas and Dr. Hermogenes Monroy, attended the second World ERAS Congress held in Valencia, Spain. They then started trying to incorporate ERAS into the colorectal programs of two large government hospitals, namely, the Philippine General Hospital and the Jose R. Reyes Memorial Hospital, with only limited success. Fortuitously, Professor Olle Ljungqvist, ERAS® Society President, was invited to deliver a lecture before the Philippine Society of Parenteral and Enteral Nutrition (PhilSPEN) during its annual convention in October of that year. Within that same time frame, and through the efforts of PhilSPEN President Marianna Sioson, Professor Ljungqvist was also able to deliver a lecture on ERAS in TMC, one of the largest tertiary private hospitals in the country, on October 9, 2014. This was a significant event because it enabled Dr. Roxas, director of the Colorectal Surgery Program at TMC at that time, to convince upper management on the value of formally enrolling in the ERAS Implementation Program (EIP).

Hence, 2015 became the landmark year for ERAS development in the Philippines. In May, just before the World Congress of ERAS and Perioperative Medicine held in

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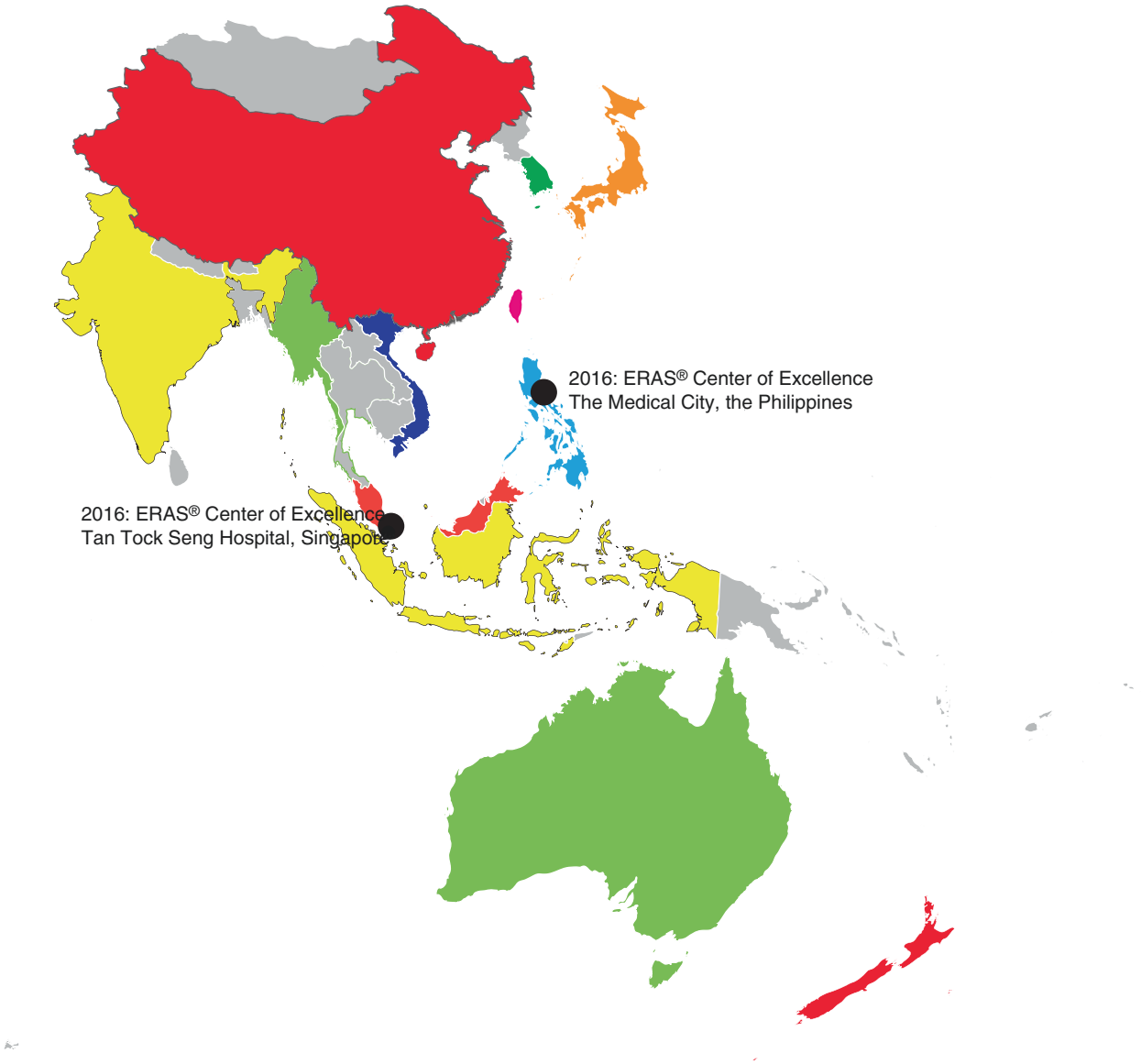

Fig. 63.1 The first two ERAS® Centers of Excellence (CoEs) were established in Asia in 2016: The Medical City (TMC) in the Philippines and Tan Tock Seng Hospital (TTSH) in Singapore (represented as black dots). Interest in ERAS continues to spread across Asia (shown with color on the map)

Washington, D.C., an official contingent from TMC enrolled in the ERAS Implementation Program. Online training and initiation to the ERAS Audit System soon followed. From December 2015 until April 2016, a series of workshops among multinational teams (from the Philippines, Singapore, New Zealand, and South Africa) were held, with Singapore playing host. Local team development and educational activities, as well as team huddles, were also conducted within the hospital. By the end of the EIP, ERAS pathways, patient guidebooks, and patient communication tools had been developed and implemented.

With the implementation of the ERAS program for colorectal surgery in TMC, compliance now hovers at 70% and hospital stay at 4 days, and complications have been significantly reduced. The program won first prize in the 2016 Quality Improvement Awards at TMC and the 2017 Asian Hospital Management Excellence Award. A paper on diabetes and ERAS was presented during the 2018 6th ERAS World Congress in Stockholm. Currently, the TMC program is now being extended to include ERAS in pancreatic, liver, gynecologic, head and neck, and orthopedic surgeries.

These early efforts by the Philippines ERAS Chapter and TMC are the first giant, historic steps toward achieving our common goal of spreading ERAS throughout the Philippines. The Philippine General Hospital is soon poised to be the second ERAS® Center of Excellence in the Philippines, while active recruitment of other hospitals continues.

Development of ERAS in Singapore

Singapore has a population of 5.6 million people and is the third most densely populated country worldwide [5]. Although Singapore is considered one of the most expensive cities to live in, it has consistently maintained low healthcare spending at 2.2% of its GDP [6] while maintaining excellent healthcare outcomes, coming in second in the Bloomberg Healthcare Efficiency Index 2018 [7]. However, similar to what many other countries are experiencing worldwide, healthcare spending is on the rise, and the health ministry is focusing its efforts on improving value in healthcare.

Prior to 2016, the adoption of ERAS practices in Singapore, like in many places worldwide, was fragmented and sluggish. Efforts were mostly based on individual clinicians' preferences and not systematically implemented. Back then, besides TTSH, two other public hospitals—National University Hospital and Khoo Teck Puat Hospital—were known to have included some ERAS components in their colorectal care pathways. However, no formal, consistent audits were done.

In May 2016, TTSH became the first hospital in Singapore to fully implement and integrate ERAS® Society guideline-based protocols and audit—through the ERAS® Interactive Audit System (EIAS)—into its perioperative workflow. In 2013, the hepatobiliary surgical team initiated a Clinical Practice Improvement Program Project that introduced preoperative ERAS elements into the pancreaticoduodenectomy surgery clinical pathway. This project reduced length of stay by 3 days and brought ERAS protocols to the attention of senior management. Following that, in 2015, the colorectal surgery team performed a retrospective internal audit of existing ERAS practices in the colorectal clinical pathway. The audit found that only 16 of the 20 ERAS recommendations for colon surgery were being practiced, and compliance to these practices was only 39%.

In September 2014, Professor Ljungqvist was invited to TTSH by Dr. Doris Ng, then President of the Society of Parenteral and Enteral Nutrition (Singapore) (SingSPEN), to share his expertise and experience in ERAS while he was in Singapore for a European Society for Clinical Nutrition and Metabolism (ESPEN) Life Long Learning (LLL) workshop. The meeting came at an opportune time, as Tan Tock Seng Hospital was evaluating other value-based healthcare systems around the world. ERAS provided an alternative evidence-based model that could provide a method for reducing unwanted variations in clinical practice and ensuring a consistent delivery of optimal outcomes. The discussion soon developed into a real possibility of TTSH joining the ERAS® Society as a trained unit in Asia. This prompted a colorectal surgeon, Dr. Kwang Yeong How, and an anesthetist, Dr. Jonathan Tan, to form an ERAS workgroup consisting of multidisciplinary stakeholders to lead the systematic implementation of ERAS for colorectal surgery in TTSH.

In order to increase awareness and obtain buy-in and acceptance of ERAS practices among the different specialty groups, numerous road shows were conducted by members of the workgroup at all the relevant departments and care areas. It was important that any doubts were addressed before full implementation could take place. Multiple presentations were made to the Hospital Medical Board to garner support and funding to proceed with the EIP. While the hospital's senior management supported the ERAS initiative and saw the value proposition, there was no budget for the EIP nor the EIAS subscription. It was only through the award of a grant from the Ng Teng Fong Healthcare Innovation Programme that the team from TTSH was able to join the EIP in December 2015, along with teams from the Philippines, New Zealand, and South Africa.

In May 2016, the ERAS program in TTSH was officially launched. Together with TMC in the Philippines, TTSH became one of the first two Centers of Excellence in Asia. One year after the full implementation of ERAS protocol in colorectal surgery, the hospital length of stay for colorectal surgery was reduced by a median of 2 days from 7 to 5 days, and readmission rates fell from 11% to 4.6%. A comparison of costs of hospitalization between the pre-ERAS and post-ERAS time periods also showed an average reduction of $1070 per hospital stay [8].

Within TTSH, ERAS protocols were gradually implemented for liver, pancreas, bariatric surgery, gastrectomy, and radical cystectomy by the end of 2017. As more surgical subspecialties became included, there was a palpable shift in attitudes and work practices that could be seen in all parts of the perioperative process. ERAS became a common language among the members of the perioperative team. Surgeons who were previously skeptical started to adopt ERAS recommendations into their practice. Anesthetic practices for the initial ERAS surgeries were being implemented for more and more "non-ERAS" patients as these were recognized as the new standard of care. Spin-off projects that encouraged early mobilization and perioperative nutrition were initiated independently from the ERAS workgroup. Nursing work processes and nursing work redesigns that were driven by ERAS were now being adopted as

new standard work in the wards. This was the paradigm shift in action, a subtle yet undeniable change—a process that some of us coined as the "ERAS Creep."

The hospital leadership also recognized that this was a system that not only consolidated the best evidenced-based perioperative practices but also incorporated a comprehensive method of monitoring outcomes and compliance to process measures that determine those outcomes. The TTSH and regional healthcare senior leadership were convinced that the ERAS methodology and principles can be a good perioperative framework upon which more quality improvement initiatives can be leveraged. This has come in a very timely manner, as the healthcare system in Singapore was undergoing a major shift in its policies, with an increasing focus on value-driven outcomes.

The efforts put in by the team and the good results did not go unrecognized. In 2016, the team won gold and bronze awards at the Singapore Health and Biomedical Congress. In 2017, the ERAS team was awarded the silver award during the National Healthcare Group Team Recognition Award Ceremony.

TTSH is also determined to contribute and play an active role at the international level. In 2017, at the 5th ERAS World Congress in Lyon, TTSH presented four posters. This increased to ten posters and two oral presentations at the 6th ERAS World Congress in Stockholm in 2018.

Lessons Learned from the Singapore Journey

Redesigning "Established" Workflow

Through the EIP, our team identified weaknesses, deficiencies in the old perioperative process, and put in place a revised and improved workflow. The ERAS protocols and compliance points were used to set up new micro processes that would enable the patient's journey through the ERAS process with the highest compliance. One of the lessons learned during the EIP was that many things perceived to be functioning optimally and taken for granted previously were actually far from ideal. For example, the allocation of timeslots at preoperative assessment clinics to accommodate separate anesthetist, dietician, and physiotherapist assessments in a single visit, or the logistics of making oral nutritional supplements easily available for patients in the wards, all involved a significant amount of planning, problem-solving, and thinking out of the box, as well as work redesign.

Resources provided by ERAS® Society and Encare, including ERAS patient education material and patient diaries, were adapted to the Singapore context and put into practice. This was most apparent in the language situation in Singapore. Even though English is the primary language used for communication, many of the elderly Singaporeans still speak and understand their native languages of Chinese, Malay, Tamil, and other dialects. This meant that we had to have the ERAS patient guidebook in English and also translated into Chinese, Malay, and Tamil.

The "Deconstructed" ERAS Nurse

Another major challenge we faced was the difficulty in having a dedicated ERAS nurse, a role that seemed to be crucial to the success of the ERAS program. The nursing leadership of our hospital was moving away from training more specialty nurses; thus the request for a dedicated ERAS nurse was declined. There were also no funds to employ any extra nurses. To circumvent this problem, the role of the ERAS nurse was therefore dissected into the preoperative, intraoperative, and postoperative roles, and a "deconstructed" ERAS nurse model was born. In order for this model to work, besides knowing and performing their own roles very well, nursing leads in each of these perioperative phases also need to have a comprehensive understanding of what their counterparts do in the rest of the ERAS patient journey. Communication between the nursing leads is also of vital importance for the process to be smooth. Here, ERAS compliance sheets are used to facilitate handovers between nurses. A hospital-level ERAS nursing committee was also set up to facilitate implementation of ERAS practices throughout all care areas, wards, and nursing services.

This model of care was a major change in the way ERAS was implemented effectively in the published literature. An unintended benefit of this model was that more nurses were trained to understand and perform the role of the ERAS nurse throughout the perioperative workflow. In the long run, there is less reliance on a single individual, making this a more sustainable model for ERAS nursing, as nursing staff turnover is traditionally high. This "deconstructed" nursing model with multiple linkages is perhaps a model of care that other resource-limited units, especially in Asia, may adopt successfully.

Sustaining ERAS in Tan Tock Seng Hospital

One of the common problems that ERAS units face is the sustainability of the program after successful implementation. In TTSH, we observed that even as the ERAS program continues to mature and ERAS processes become part of standard daily workflow, expansion to other subspecialties meant that more practitioners became involved and processes became more complex. Issues with consistency and compliance started to surface.

To deal with these problems, our team continues to meet fortnightly to review results, make improvements, and set directions for the program. Stakeholders from other subspecialties teams are actively engaged and refresher EIPs are conducted for them. Making use of technology, ERAS compliance and audit measures have been incorporated into the TTSH electronic medical records so that data audit becomes more reliable and consistent. An ERAS-centered perioperative mobile app is also being developed to help the team individualize the patient's perioperative journey, incorporating

pop-up reminders, gamification to encourage and motivate early postoperative mobilization with the use of step trackers, and food diaries to record calorie intake.

Scaling ERAS in Tan Tock Seng Hospital

While other surgical subspecialties have started to adopt ERAS protocols, the challenge has been to replicate the same enthusiasm, commitment, and passion to adhere to and audit the true ERAS elements. Moving forward, the ability to scale ERAS to other subspecialties in TTSH needs to take on a different approach from the initial ground up model of the pioneering colorectal ERAS team. Hospital leadership has made ERAS implementation and spread a top priority and now needs to help drive that vision and provide help and resources in the form of protected time, finances and manpower, so that teams on the ground face less obstacles and resistance in implementing ERAS in their subspecialty practices. The core ERAS workgroup needs to continue to support the other teams by providing repeated training and setting up the infrastructure for all subspecialties; facilitating discussions and conversations between the hospital administrators and other subspecialty teams; reviewing outcomes and results regularly with all the teams; and using the EIAS data to encourage improved compliance.

Spreading ERAS in the Region by Tan Tock Seng Hospital and the Medical City

In the Philippines, the principles and practice of ERAS have not permeated into the mainstream of surgery practice; thus, its benefits have yet to reach a majority of Filipino patients. In Singapore, most public hospitals are incorporating some practices of ERAS to perioperative care. However, it is unclear what the outcomes and compliance levels are in these programs, as each hospital monitors outcomes separately and has different approaches to implementation. It is also not known the extent to which ERAS protocols have been implemented in each hospital. This also means that it is difficult for the hospitals to combine their data and results to make meaningful interpretations at a national level.

In September 2016, TTSH, TMC, and the ERAS® Society organized the first National ERAS Symposiums of Singapore and Philippines. This collaboration and sharing of resources has continued with the second and third National ERAS Symposiums in 2017 and 2018 (Fig. 63.2). As ERAS® Society President, Professor Ljungqvist has been a constant fixture in all three symposiums in both countries. Other speakers include Professors Anders Thorell, Dileep Lobo, Michael Scott, and Bernhard Riedel.

Interest in ERAS on national levels has increased significantly since the first National ERAS Symposiums in 2016. As national ERAS Centers of Excellence, TTSH and TMC have actively engaged the ERAS teams of different local hospitals and facilitated discussions with the ERAS® Society. The Philippines ERAS Chapter was officially launched on August 28, 2015, and the Singapore ERAS Chapter was inaugurated at the third Singapore ERAS Symposium on September 22, 2018, to increase inter-hospital and institutional collaborations. The aim is to have more hospitals in Singapore and the Philippines join the ERAS® Society network and be on the same platform for implementation and audit of results.

Fig. 63.2 The 2nd Singapore ERAS Symposium in 2017

On a regional level, both Asian ERAS® CoEs have been actively promoting the ERAS philosophy and practice in the region. The team members have been invited to various countries in Asia, including Malaysia, Indonesia, Thailand, Vietnam, Taiwan, and China to share their experiences on the implementation of ERAS. TTSH also hosted several groups of doctors from Indonesia, Thailand, Vietnam, Hong Kong, and Taiwan to experiential workshops of the ERAS patient journey between 2016 and 2018. These included introductory lectures and real patient encounters in the preoperative clinics, operating theaters and postoperative wards, as well as small group discussions. One of these groups was from Vinmec Times City Hospital, which subsequently underwent an EIP conducted by the TTSH Team in March 2018—the first to be conducted by an Asian CoE.

Future of ERAS in Asia

Current Status and Challenges of ERAS Implementation in Asia

ERAS development in Asia is still very much a work in progress. There is a huge variation in the awareness and practice of ERAS across Asia. Some hospitals in major developed cities are already applying ERAS practices well, while at the other extreme, there are places where the knowledge is still

significantly lacking. Lack of outcome audit and compliance data of any sort is common.

Many of the LMIC countries in Asia do not have basic standards of care, which developed healthcare systems take for granted. Nutrition optimization perioperatively is a luxury where malnutrition may be common in the community and scientific oral nutritional feeds are simply not available. Basic patient physiological monitors and anesthetic and surgical instruments limit implementation of current standards of care. It is precisely in these areas of need that the patients will benefit from a systematic, evidenced-based, protocol-guided enhanced recovery perioperative program.

As a start, ERAS® Society guidelines can form the backbone from which clinical improvement projects may be implemented to introduce some ERAS practices—perhaps starting with what is most easily implementable with the biggest outcome effects. These "ERAS" program efforts must then be audited with a modified ERAS audit system where the positive results can then be used to drive the healthcare system to implement more ERAS elements, with the ultimate aim of implementing and auditing all the elements on the same yardstick as all other ERAS centers around the world. Collection of standardized outcome and process measure indicators will allow countries to monitor progress over time, as well as benchmark their performance against that of other countries at similar levels of development. The EIAS may be a truly cost-effective solution to help developing countries focus on improving surgical outcomes by tracking process measures while enabling benchmarking across the world on common definitions.

Roles of ERAS® Society and Centers of Excellence in Asia

TTSH in Singapore and TMC in Manila are currently the only two Centers of Excellence in Asia. Vinmec Times City Hospital, part of a private group of hospitals in Vietnam, is only the third ERAS unit in Asia to undergo an EIP, which was due to be completed in early 2019.

Challenges and limitations will vary between countries and may be unique within Asia. The ERAS® Society can play a pivotal role in improving perioperative care standards in this part of the world by introducing and standardizing ERAS practices here.

TTSH and TMC, as Centers of Excellence in Asia, are the most well positioned to help our neighbors overcome similar obstacles. Building up the Asian ERAS network of hospitals and linking up with the ERAS world community will help centers in Asia and LMICs build successful ERAS programs for better patient outcomes.

As part of our ongoing efforts to promote ERAS in Asia, the ERAS® Society, TTSH, and TMC collaborated to hold the 1st Asian ERAS Congress in 2019. The establishment of Asia ERAS Congress serves to bring the best of the ERAS World Congress, adding focus to what is most relevant in Asia, and make the congress more accessible to our region. This is a small but significant step toward establishing a wider network of ERAS-trained units in Asia. The vision is that Asia ERAS will be an annual or biennial event, hosted by an Asian ERAS Chapter consisting of leading ERAS centers from all over Asia and supported by the ERAS® Society.

At the time of writing, it is encouraging that discussions are taking place between the ERAS® Society, the two Asian CoEs, and several hospitals in Singapore, the Philippines, Malaysia, Taiwan, Hong Kong, Thailand, and South Korea on training these hospitals to become lead hospitals in their countries.

Conclusion

Besides continued efforts by the ERAS® Society to reach out within Asia, the impetus for change also has to come from clinicians on the ground, as well as administrators and policy makers. International healthcare agencies, charitable organizations, and industry partners can also play a bigger role in supporting the EIPs for hospitals, where resources may be obstacles to implementation. This multipronged approach would set up a conducive climate for a multilaterally beneficial collaboration for all parties.

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