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Prevention of surgical site infection (SSI) risk to alleviate the financial burden during hospitalisation

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In conversation with Dr. Liau Kui Hin, Medical Director and Senior Consultant Surgeon of LIAU KH Specialist Clinic in Mount Elizabeth Novena Hospital

Surgical Site Infection (SSI) is one of the most common nosocomial concerns associated with surgeries which can lead to additional hospital stays, increased risk of readmissions and mortality. According to the Asia Pacific Society of Infection Control, the incidence of SSI in Southeast Asia (7.8%) is much higher than US, Europe and Australia (0.9-2.8%).**Dr. Liau Kui Hin, a general surgeon at Singapore's Mount Elizabeth Novena Hospital** and a founding chairperson and member of the *World Surgical Infection Society* elaborates on the vital role of "professional surgical site infection societies" in connecting various stakeholders to mitigating the prevalence of SSIs and to reduce expenses at care models.As a member of the *international surgical infections studies group* that reviews the practice guidelines for the management of surgical infections, he advocates global attention around SSI-related issues through knowledge sharing, collaborations, streamlining learning curves to elicit substantial advances in SSI management.

What are your recommendations to implement SSI prevention guidelines and surveillance methods across the Asia Pacific? How can APAC reduce the consequences of SSI morbidity rate?

When implementing surgical site infection (SSI) prevention guidelines and surveillance methods, policymakers and hospital management must first look at where SSI stands concerning the nation's healthcare agenda and priorities. This should help define and allocate resources in terms of funding, manpower, and education. In big countries like Indonesia, the distribution of resources and capacity looks different in big cities compared to rural areas.

We have a regional guideline for SSI, the Asia Pacific Society of Infection Control Guidelines for the Prevention of SSI. There are also national guidelines in countries in many countries, such as the Philippines and Thailand, and some developing countries may need help to achieve their goals. As such, cross-country collaboration is also critical to the success of preventing SSI and reducing the morbidity rate caused by SSI. This can take various forms, such as providing international aid or healthcare professional education, hands-on guidance, and exchange training programs.

How can we identify and mitigate the prevalence of SSIs underlying patient risk factors, disease risk factors, and intervention risk factors, and implement appropriate evidencebased interventions to reduce hospitalization duration?

Identifying SSI risk factors and mitigating the prevalence of SSIs require a robust process comprising a few crucial steps:

- The first step is to have a standard definition of SSI so that healthcare professionals and policymakers speak the same vocabulary. This is already available, thanks to the publication of global and regional guidelines.
- By doing so, we are paving the way for a successful surveillance program to effectively identify, analyze, and consolidate SSI cases. To ensure good data management, hospitals can tap into AI and use validated and semiautomated or automated surveillance methods. The use of these technological advancements can also reduce efforts in data collection and perhaps even drive efficiencies in data analysis.
- The next step is to constantly monitor the incoming data and to stratify patients with highrisk factors for SSI, enabling hospitals, healthcare professionals, and policymakers to deploy resources more efficiently to intervene and mitigate the prevalence of SSIs.

In an economy with limited resources, how can we reduce the mounting financial burden of SSIs in the wake of rapidly increasing medical costs? Is Asia Pacific committed to reducing the burden of SSIs and improving patient outcomes?

Rising medical costs are experienced globally, and it's a complex, multi-faceted health economic issue requiring a nationwide change in the healthcare system (not limited to the SSI burden). In Singapore, we are moving towards a values-based healthcare system, and one of the payment/funding models is Outcomes Based Funding.

NUHS shares data on quality and cost indicators of treatment outcomes with their healthcare professionals, allowing them to select the best treatment for their patients and save on waste. In SSI prevention, surgeons can help reduce patient stay in their hospital by choosing to use triclosan-coated sutures instead of non-coated alternatives.

As discussed above, the Asia Pacific region is diverse, so in some countries, SSI prevention is a higher priority than in others. Some countries may not have the capital or technical know-how to address the issue. Therefore, it is crucial for professional surgical site infection societies to bridge this gap by connecting various stakeholders to share knowledge, shorten the

learning curves, and influence change.

Which SSI-related issues are presently gaining global attention? How to address inconsistencies in the interpretation of recommendations across countries?

According to the World Health Organization (WHO), SSI-related issues that are receiving global attention include antibiotic resistance, antimicrobial resistance and sepsis. Currently, in the industry, there are modern suture innovations such as anti-microbial or triclosan-coated sutures to minimize SSI. There are concerns, for example, about the development of triclosan resistance in surgical sutures, but this has not been observed in studies. In fact, WHO noted that "the daily absorption of triclosan from consumer products (for example, commercially-available hand soap) is higher than a single triclosan suture. A multi-stakeholder effort, including patients, to address prevention can be deployed to optimize success in minimizing SSI.

To ensure consistency in interpreting recommendations of SSI prevention protocols or guidelines across countries, there must be systematic data collection and constant communication among healthcare professionals. Whether it's through panel discussions or exchange programs, healthcare professionals are encouraged to exchange best practices with one another. To resolve discrepancies and answer unresolved clinical questions, healthcare professionals must also conduct relevant studies to iron out teething questions and align their recommendations in consensus meetings.

How significant is capitalizing on emerging technologies to allow evidence-based antimicrobial prophylactics for advanced surgical management?

It is very important to capitalize on these technologies to make value-based practice a reality by ensuring things like patient data collection can be done faster, cheaper, and better. In the near future, I expect to see SSI prevalence to be on a downward trend with better technology enabling better data collection, sharing, and education. Generative AI, for example, can be used to explore clinical insights efficiently. We are also experiencing an explosion of medical information which has added unprecedented complexity in the interpretation of qualitative and quantitative data.

Technologies can also be used to drive innovation. The US, for example, has unveiled the 2020- 2025 National Action Plan for Combating Antibiotic-Resistant Bacteria to strengthen and expand their response to resistance threats, and one of the ways they are doing so is to accelerate R&D for new antibiotics, antifungals, therapeutics, and vaccines. With new antibiotics in the pipeline, it will change the way we use prophylactics. This will mean that the guidelines that we have in place (such as the one by WHO in 2018) will need to be regularly updated and revised.

How does Singapore handle SSI in its national infection control guidelines? Are there any recent upgraded national infection prevention and control guidelines or enhanced SSI bundles from Singapore's highly validated regulatory frameworks such as NIPC, ICAS and CDC?

Singapore's national infection control guidelines ride on the WHO global guidelines. Hospitals are free to adapt the guidelines with respect to SSI based on their needs, as long as they abide by HCSA (Healthcare Services Act), which the Ministry of Health regulates. Hospitals can extract the guidelines to issue their own SOP (standard operating procedures) where they see fit.

Singapore follows the WHO global guidelines. The Ministry of Health also conducts surveillance of NIPC (National Infection Prevention and Control) Indicators. Hospitals typically monitor SSI cases and investigate if an upward trend in cases is observed, to see if any process has been breached or if the patient profile has changed, which can result in changes to their own guidelines and SOPs.

Earlier in 2016, WHO recommended triclosan-coated sutures in surgery to reduce the incidence of SSIs. Are there similar precautionary measures that you would enlist for current SSI concerns as well?

Triclosan-coated sutures are still recommended under the latest guidelines on SSI, including the revised WHO guidelines published in 2018. Studies continue to emerge about the use of triclosan sutures, but the meta-analysis data we have so far supports its efficacy in reducing SSI risk and its safety profile. In the latest guidelines, WHO uses the GRADE (Grading of

Recommendations Assessment, Development and Evaluation) approach to assess the quality of scientific evidence. The evidence supporting triclosan sutures paved the way for WHO to conclude that “antimicrobial-coated sutures have significant benefits in reducing SSI rates in patients undergoing surgical procedures when compared to non-coated sutures”.

Triclosan-coated sutures are also recommended in some national guidelines in APAC, including Japan, China, India, Philippines, and Thailand.

How is the surgical community advocating to practically confront challenges and embrace effective evidence-based postoperative wound management?

A proactive and vigilant approach (rather than a reactive one) is required to confront these challenges and embrace effective evidence-based postoperative wound management. Hospitals are gradually adopting perioperative improvement practices by promoting peer review learning. This promotes agility and systemic thinking enabling healthcare professionals to proactively prevent SSI. Healthcare professionals should continuously improve processes to deliver better, value-based patient outcomes.

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