



DEFINING MED

MCI (P) 009/09/2023

Sport & Exercise Medicine

Paediatric ACL Injuries: Pearls for the GP

Multifaceted Benefits of Exercise for Holistic Health

How Sports Physiotherapy Improves Outcomes



PLUS

Management of Breast Cancer Survivors in Primary Care

Sudden Sensorineural Hearing Loss: Management and Referral

How to Manage Envenomation, Bites and Stings in Primary Care

Proton Therapy: An Innovative Radiotherapy Treatment



PATIENTS. AT THE HEART OF ALL WE DO.®

Stay on the pulse of care with

MEDADVANCE,

our e-newsletter developed specially for GPs.



Get timely online updates as a supplement to our print publication



Latest CMEs & Events



Clinical Updates with Primary Care Focus



New Services & Programmes



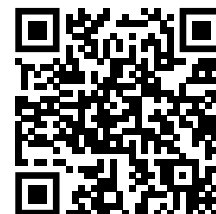
Key Medical Team Updates



Subscribe today!

It's easy

Scan the QR code to fill in a quick form



or

Email your name and clinic name to medadvance@singhealth.com.sg



DEFININGMED is our comprehensive quarterly print publication.

Thank you for supporting this publication.

If you would like to opt out of receiving future print issues, please email us at marcom@singhealth.com.sg.

Paediatric ACL Injuries: Pearls for the GP

**Dr Mohammad Ashik
bin Zainuddin**

Site Chief, SSMC@KKH, SingHealth Duke-NUS Sport & Exercise Medicine Centre;
Head & Senior Consultant, Department of Orthopaedic Surgery,
KK Women's and Children's Hospital

With the increasing number of anterior cruciate ligament injuries seen in children, general practitioners have a crucial role to play in initial assessment and patient education to reduce and manage such occurrences. The SingHealth Duke-NUS Sport & Exercise Medicine Centre shares what to look out for in primary care, along with key takeaways regarding treatment options and preventive measures.

INTRODUCTION TO PAEDIATRIC ACL INJURIES

Anterior cruciate ligament (ACL) injuries have long been associated with adult athletes, but recent years have seen a rise in the occurrence of paediatric ACL injuries. This is due in part to the intensification of youth sports participation and specialised training at younger ages.

This trend has sparked concerns among parents, coaches and healthcare professionals alike.

This article aims to shed light on paediatric ACL injuries and their causes, treatment options and preventive measures.



CAUSES AND RISK FACTORS

These injuries often happen in **sports that involve cutting, pivoting and sudden changes in direction**, such as soccer, basketball, netball, gymnastics and skiing.

Studies show that ACL injuries account for about 30% of all knee injuries amongst soccer players aged between 5 and 18 years old.¹ The incidence of ACL injuries in the preadolescent age group can be as high as 47% amongst those presenting with acute knee hemarthrosis.²

The causes of paediatric ACL injuries are attributed to a combination of **biomechanical, anatomical and hormonal factors**. The rapid growth during puberty can result in imbalances between muscle strength and joint stability, making the ACL more vulnerable to injury.

1. Biomechanical factors

Children often exhibit landing and cutting techniques that place excessive strain on the knee joint. Incorrect landing from a jump, sudden direction changes and pivoting motions can contribute to ACL injuries.

Poor neuromuscular control, balance and muscle coordination will further increase the risk.

2. Anatomical factors

Differences in bone and joint development between children and adults can impact the risk of ACL injuries.

Paediatric ACL injuries are more likely to involve an avulsion fracture. This is due to the relative weakness of the immature bones in comparison to the strength of the developing ligaments.

On the other hand, a mid-substance ACL tear can occur in higher-energy pivoting injuries.

3. Hormonal factors

Hormonal changes during puberty, such as oestrogen fluctuations, might play a role in ligament laxity, potentially increasing the risk of ACL injuries.

However, further research is needed to establish a direct link between hormonal changes and ACL injury risk.



TREATMENT OPTIONS

When a paediatric ACL injury occurs, prompt and appropriate treatment is crucial to ensure successful recovery and prevent long-term complications.

Two treatment options can help the child with an ACL injury achieve these goals: high-quality rehabilitation alone (nonsurgical treatment), and ACL reconstruction plus high-quality rehabilitation.

1. High-quality rehabilitation alone

Paediatric rehabilitation must be performed in close collaboration with the child's parents.

Exercises and functional goals must be modified from the adult-oriented rehabilitation protocols, because they cannot perform unsupervised training independently with good technique.

Qualified rehabilitation clinicians must supervise rehabilitation for the child with an ACL injury. It is also recommended that they wear a protective brace even during strenuous physical activities.³

2. Surgical intervention with postoperative high-quality rehabilitation

Consideration of the physis

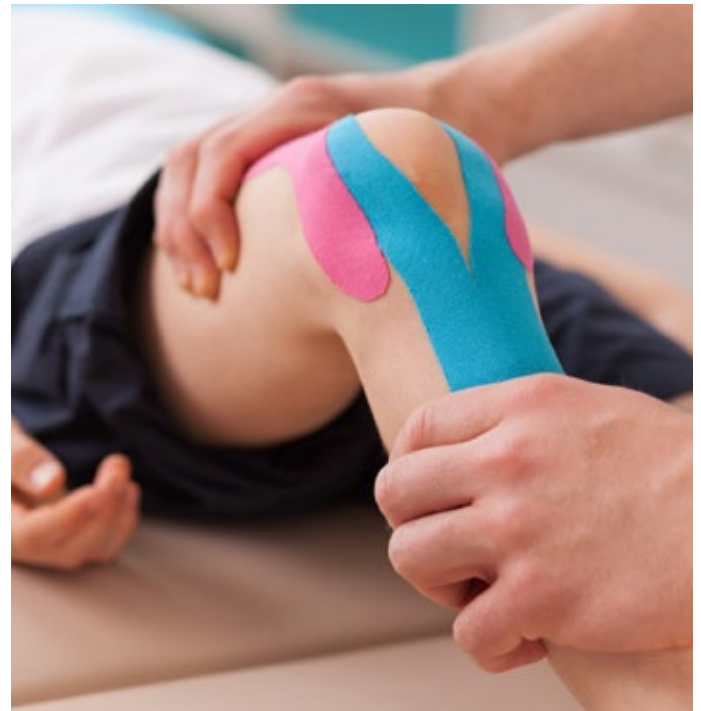
The general principles of ACL reconstruction in adults apply to the paediatric patient with one major difference – that is, consideration of the physis.

While several 'physeal-friendly' techniques of ACL reconstruction exist, the risk of physeal disturbance, although low (2-10%), is ever-present.⁴ Physeal disturbances can arise from growth arrest, growth stimulation or under-growth, leading to limb length discrepancies and angular deformities around the knee.

Current lack of evidence

To date, there is still no high-quality evidence with regard to the adaptation of the ACL reconstruction grafts and bone tunnels as the child grows.

There is also a lack of high-quality prospective studies investigating the outcomes of surgical and nonsurgical treatment for paediatric ACL tears.⁵



Timing of surgery

High-quality rehabilitation can be considered for an ACL-injured patient, with the option to delay reconstruction closer to skeletal maturity.

However, early surgery is advocated for patients with recurrent instability despite rehabilitation, with the aim of preventing concomitant meniscus and chondral injuries associated with multiple instability episodes.

There should be consensus among all parties when arriving at a treatment decision. This consensus should be based on realistic assessments of risks and benefits, and proper consideration of the goals of the child and parent.

PREVENTIVE MEASURES

ACL injury prevention is important since it helps to reduce the risk of a reinjury, and even injury to the contralateral knee. The paediatric athlete's biomechanical movement patterns are a key modifiable risk factor for injury.

Preventing paediatric ACL injuries involves a combination of education, proper training techniques and injury prevention programmes.

1. Neuromuscular training

Incorporating neuromuscular training programmes can help improve landing and cutting techniques, enhance muscle coordination and reduce the risk of ACL injuries. These programmes focus on developing proper movement patterns and muscle activation strategies.

2. Strength and conditioning

A well-rounded strength and conditioning programme can help the young athlete develop balanced muscle strength, stability and flexibility, hence reducing the strain on the ACL during sports activities. FIFA 11+ Kids is an example of a well-established injury prevention programme for soccer players, which reduces football-related lower extremity injuries by over 50%.⁶

3. Warm-up and cool-down

Proper warm-up and cool-down routines are essential to prepare the body for physical activity and aid in recovery. Dynamic stretching before exercise can help improve joint mobility and reduce the risk of injury.

4. Education and awareness

Coaches, parents and athletes should be educated about the risks of ACL injuries and the importance of adhering to proper techniques and training guidelines.

THE GP'S ROLE IN CARE

The general practitioner (GP) plays an important role in the initial assessment of the paediatric patient with a suspected ACL injury.

- In the history-taking, the mechanism of injury is usually a twisting injury to the knee from poor landing, sudden change in direction or an awkward tackle.
- Look for signs of limited knee range of movement associated with a moderate-sized effusion due to hemarthrosis.
- In the acute setting, the assessment of the ligaments may be difficult due to discomfort and swelling.
- An MRI is very useful to evaluate any bony, cartilage and soft tissue abnormalities in the paediatric knee.



CONCLUSION

Paediatric ACL injuries are a growing concern in the realm of paediatric sports. While the causes of these injuries are multifactorial, understanding the biomechanical, anatomical and hormonal factors contributing to ACL injuries is essential.

Through a combination of conservative management, surgical intervention when necessary and preventive measures, the occurrence of paediatric ACL injuries can be reduced. By prioritising strength and conditioning, proper training techniques and education, we can ensure the safety and well-being of young athletes as they pursue their passion for sports.



REFERENCES

1. Shea KG, Pfeiffer R, Wang JH, Curtin M, Apel PJ. Anterior cruciate ligament injury in pediatric and adolescent soccer players: An analysis of insurance data. *J Pediatr Orthop* 2004; 24(6): 623-8.
2. Stanitski CL, Harvell JC, Fu F. Observations on acute knee hemarthrosis in children and adolescents. *J Pediatr Orthop* 1993; 13(4): 506-10.
3. Moksnes H, Engebretsen L, Seil R. The ESSKA paediatric anterior cruciate ligament monitoring initiative. *Knee Surg Sports Traumatol Arthrosc.* 2016;24:680-687.
4. Frosch KH, Stengel D, Brodhun T, et al. Outcomes and risks of operative treatment of rupture of the anterior cruciate ligament in children and adolescents. *Arthroscopy.* 2010;26:1539-1550.
5. Rössler R, Junge A, Bizzini M, et al. A multinational cluster randomised controlled trial to assess the efficacy of '11+ Kids': a warm-up programme to prevent injuries in children's football. *Sports Med* 2017.

To view all references, please refer to the online version of *Defining Med* by scanning the QR code on the cover page.



Dr Mohammad Ashik bin Zainuddin

Site Chief, SSMC@KKH,
SingHealth Duke-NUS Sport & Exercise Medicine Centre;
Head & Senior Consultant, Department of Orthopaedic Surgery,
KK Women's and Children's Hospital

Dr Mohammad Ashik bin Zainuddin is the Head and Senior Consultant at the Department of Orthopaedic Surgery in KK Women's and Children's Hospital (KKH). He concurrently holds the appointment of Head of Service for the Singapore Sport and Exercise Medicine Centre (SSMC) at KKH. He received his fellowship training in sports traumatology and paediatric orthopaedics in Germany and Austria. His clinical and research interests are in the fields of arthroscopy, paediatric anterior cruciate ligament, sports medicine and cartilage preservation.



GPs can call the **SingHealth Duke-NUS Sport & Exercise Medicine Centre** for appointments at the following hotlines, or scan the QR code for more information:

**Singapore
General Hospital**
6326 6060

**Changi
General Hospital**
6788 3003

**Sengkang
General Hospital**
6930 6000

**KK Women's and
Children's Hospital**
6692 2984



Unveiling Vitality: Exploring the Multifaceted Benefits of Exercise for Holistic Health

Dr Fadzil Hamzah | Director, Community, SingHealth Duke-NUS Sport & Exercise Medicine Centre;
Senior Staff Physician, Department of Sport & Exercise Medicine, Changi General Hospital

Exercise not only benefits physical health, but also one's mental and emotional well-being. As such, a holistic approach to health centred around regular exercise is the key to building a healthier society.

Find out how general practitioners can get involved in the growing 'Exercise Is Medicine' movement, and be a champion for healthy living through effective exercise prescription.

EXERCISE: A UNIVERSAL PRESCRIPTION

Exercise is the cornerstone of a healthy lifestyle. It is a universal prescription that transcends age, gender, all abilities and environmental circumstances.

It is a low-cost, low-tech and generally safe non-drug intervention that offers a plethora of benefits that will prevent, slow, stop and reverse the progression of chronic diseases.



THE MULTIFACETED BENEFITS OF EXERCISE

The importance of exercise cannot be overstated as it offers an array of **physical, mental and emotional benefits** that positively impact individuals' lives. Whether young or old, male or female, able-bodied or differently abled, and regardless of the challenges posed by one's existing health conditions – integrating regular exercise into daily routines can significantly contribute to enhanced well-being and the effective prevention and management of many chronic health conditions.

Years of scientific research have shown that individuals who maintain an active and fit way of life live longer, healthier and happier lives than those who do not.

1. Physical benefits

- Regular exercise plays a pivotal role in **reducing the risk of chronic medical conditions** such as cardiovascular diseases, type 2 diabetes and obesity. Physical activity helps maintain healthy body weight, regulate blood pressure and improve blood sugar control, all of which contribute to a decreased likelihood of developing these cardiovascular and metabolic conditions.
- Recent studies have also highlighted the role of regular exercise in **improving the immune system**, as well as the **prevention and management of cancers**.
- For individuals already living with chronic medical conditions, exercise is a boon. It can **alleviate symptoms, enhance quality of life, and potentially slow disease progression**.
 - Conditions like arthritis benefit from improved joint flexibility and strength.
 - Respiratory conditions can see improvements in lung capacity through aerobic exercises.
 - With regular exercise, diabetics see improvement in their blood sugar control, thus reducing the burden of polypharmacy and preventing the onset of diabetes-related macrovascular and microvascular complications.
- Exercise promotes strong bones and muscles, **reducing the risk of fractures and osteoporosis**, which is especially crucial as individuals age.
- Weight-bearing exercises and strength training stimulate bone density and muscle mass, **promoting overall mobility and independence**.

2. Mental and emotional benefits

The positive impact of exercise is not limited to physical health; it extends to mental and emotional well-being as well.

- Regular physical activity stimulates the release of endorphins, often referred to as the 'feel-good' hormones.

These neurotransmitters **alleviate stress, anxiety and depression**, fostering better mental health. This aspect is particularly important in today's fast-paced and stressful world, where mental health concerns are on the rise.

- Additionally, studies have shown that physical activity is linked to **better cognitive function and a reduced risk of neurodegenerative diseases** like Alzheimer's and dementia.

3. Meeting diverse needs

Furthermore, exercise is an equaliser, accessible to all, regardless of demographics and physical abilities.

Tailored exercise routines can be designed for individuals with diverse needs, ensuring that everyone can partake in the benefits.

- For seniors, exercise improves balance and flexibility, reducing the risk of falls and fractures.
- Pregnant women can benefit from appropriate prenatal exercises that enhance strength and overall comfort during pregnancy.
- Even individuals with disabilities can find exercises that suit their capabilities, contributing to enhanced quality of life.

THE GLOBAL 'EXERCISE IS MEDICINE' INITIATIVE

In a world where healthcare strategies continue to evolve, the convergence of medicine and physical activity has emerged as a powerful paradigm shift.

What is the EIM initiative?

At the forefront of this movement stands the **Exercise is Medicine (EIM)** initiative, a global movement pioneered by the American College of Sports Medicine (ACSM).

This visionary initiative transcends traditional healthcare approaches, recognising exercise as a potent prescription for a healthier society and transforming the way we perceive and integrate physical activity within the realm of healthcare.

EIM strives to establish the assessment and promotion of physical activity as a fundamental aspect of clinical care, bridging the gap between healthcare and evidence-supported physical activity resources for individuals of diverse abilities and from all walks of life.

It advocates for healthcare professionals, including physicians, to incorporate physical activity into their treatment plans and to refer patients to evidence-based exercise programmes and certified exercise specialists in the community.

What is the EIM solution?

The EIM solution outlines the method to kickstart this effort by fostering collaborations between local healthcare systems and medical facilities, and community fitness resources – thus constructing a solid foundation of trust to facilitate coordinated healthcare.

When healthcare systems and community fitness organisations collaborate, establishing seamless referral and communication channels, patients are more likely to receive exercise advice and recommendations, and will also actively participate and adhere to the prescribed physical activity programmes.

What does the EIM solution involve?

The EIM solution requires the dedication of healthcare and community leaders and advocates. This can be accomplished through the following actions:

- Evaluating the physical activity levels of each patient during every clinic consultation
- Briefly counselling patients regarding physical activity, or providing them with a personalised exercise plan tailored to their specific medical conditions and health goals
- Referring patients to suitable physical activity resources, such as evidence-supported exercise programmes facilitated by qualified fitness professionals in the community



Fostering Wellness: The Integral Role of EIM Singapore in Healthier SG

WHAT IS EXERCISE IS MEDICINE SINGAPORE?

Exercise Is Medicine Singapore (EIMS) is the local chapter of the EIM global initiative.

Rooted in the belief that physical activity is not only essential for individual well-being but also holds the key to building a healthier society, EIMS has positioned itself at the forefront of Singapore's healthcare landscape.

Established in 2012 and hosted by Changi General Hospital, this pioneering movement, aligned with the broader Healthier SG initiative, showcases the profound impact that a holistic approach to health, centred around regular exercise, can have on the lives of individuals and the entire nation.

The EIMS mission

Through the EIM solution, EIMS hopes to catalyse positive change, empower individuals, and contribute to the overarching goal of creating a healthier and more vibrant Singapore as part of the Healthier SG strategy.



WHAT ARE EIMS' FOCUS AREAS?

1. Healthcare systems and providers

EIMS conducts regular certification courses to **upskill healthcare providers** including physicians, nurses and allied health professionals in:

- Physical activity levels assessment
- Exercise counselling
- Exercise pre-participation screening
- Exercise prescription

These skills are essential for their role in Healthier SG to discuss and prescribe lifestyle intervention plans (health plans) to their patients.

Additionally, EIMS plays an integral role in the **development of various care protocols** that will support and guide healthcare providers in the Healthier SG ecosystem.

2. Physical activity resources

(places, programmes and professionals)

Community partners can potentially function as an extension of the healthcare team by leveraging the expertise of certified exercise and fitness professionals, along with evidence-based programmes.

EIMS conducts parallel courses to **upskill professionals in the fitness industry**, so that they can interpret the exercise prescriptions from the healthcare team and provide exercise guidance as well as supervision to clients with clinical conditions.

In addition, EIMS works closely with various national organisations, healthcare institutions and community partners to **develop evidence-based physical activity intervention programmes and design physical activity spaces** in the community.

3. Digital health technology

Singapore's healthcare system boasts a diverse range of technologies capable of incorporating healthy lifestyle interventions seamlessly. EIMS harnesses these technologies to achieve the following objectives:

- Embedding physical activity as a fundamental health indicator and establishing clear referral pathways
- Identifying patients who would gain from lifestyle interventions
- Monitoring and facilitating the exchange of patient information

On the community/fitness side, EIMS works closely with community partners to provide input for the **development of digital platforms, devices and applications** such as Healthy 365 that will facilitate activity tracking, promote participant engagement and monitor outcomes.



A Patient's Journey with Exercise and Physical Activity

“ To be diagnosed with high blood pressure and related issues at the age of 28 is not fun at all; it is a spoiler to life. Luckily for me, I had the presence of mind to evaluate my situation and make important changes.

From someone who used to be active in all sports up to the age of 23, life cannot, logically, take a turn in five years. I knew my faults, my weaknesses – the cigarettes and lack of exercise.



Mr Mohandas Kandiah

Giving up the cigarette was difficult. I tried all known tricks, from switching to cigars, to Nicorette, to acupuncture and to other ideas – none worked, until I made a promise to give up smoking. I could not break a promise.

Doctors recommended jogging as part of the exercise prescription given, and I started to go back to slow jogging and keeping a log of all my runs. In the log book, I used to record my daily runs, recording the timings and how I felt during and after the runs (recovery). This became a basis for me to compare today's run with yesterday's, and last week's, and even last month's. I used to go to the East Coast Parkway for my daily 10 km runs and 21 km runs on weekends. Seeing improved results was in itself an instrument of motivation.

I started looking for variations to my exercise programme. Instead of taking the lift to my office on the 12th floor, I would walk up the stairs, sometimes with dead weights attached to my ankle. I also ventured into the world of Kango-aerobics – doing cardioaerobics in shoes that are made for jumping.

Each day got better, and seeing improved results was in itself such a positive motivation. If I had been on the conventional course of treatment, I would quite possibly have become a 'drug-dependent junkie'. Luckily for me, daily exercises have made me overcome my medical conditions, and have taken me to a different playing field – a world of marathons and ultramarathons – a phase of my life which otherwise may not have been possible. ”

THE EXERCISE PRESCRIPTION COURSE FOR PRIMARY CARE PHYSICIANS

The 'Exercise Prescription Course for Primary Care Physicians' **aims to equip physicians with the competence to prescribe exercise safely, effectively and confidently for their patients**, taking into consideration the time constraints that every busy healthcare provider encounters.


The curriculum is structured on the fundamental premise that regular physical activity is essential for the prevention and management of many chronic medical conditions, and as such, should be routinely evaluated as an integral component of all medical care.

The course covers the basics of exercise prescription for healthy individuals as well as those with chronic medical conditions.


The **two-day workshop** includes lectures, practicum and case discussions, culminating in a written assessment.


The course content is largely based on clinical evidence established by contemporary research work and the EIM chapter of the ACSM.

Doctors who successfully complete the course will be given a certificate that is valid for three years.




Scan for more information and upcoming course dates





Scan to register today





Dr Fadzil Hamzah

Director, Community, SingHealth Duke-NUS Sport & Exercise Medicine Centre; Senior Staff Physician, Department of Sport & Exercise Medicine, Changi General Hospital

Dr Fadzil Hamzah practices in the Department of Sport & Exercise Medicine at Changi General Hospital and is the Operational Lead at the SingHealth Duke-NUS Sport & Exercise Medicine Centre's clinical site at Singapore General Hospital. He also looks after the health of our national athletes in Team Singapore and is a visiting clinician at the Singapore Sport Institute. Additionally, he is the Director of Community Programmes for Exercise is Medicine Singapore, as well the Community Director at the SingHealth Duke-NUS Sport & Exercise Medicine Centre.

Recently, he was appointed as the Deputy Director for Health Promotion and Disease Prevention at the SingHealth Office of Regional Health. Dr Fadzil is very passionate in promoting fitness, health and physical activity, as well as supporting citizen-centric and last-mile service delivery for the underserved and underprivileged in the community.



GPs can call the **SingHealth Duke-NUS Sport & Exercise Medicine Centre** for appointments at the following hotlines, or scan the QR code for more information:

Singapore General Hospital
6326 6060

Changi General Hospital
6788 3003

Sengkang General Hospital
6930 6000

KK Women's and Children's Hospital
6692 2984



How Sports Physiotherapy Improves Patient Outcomes

Ms Lim Fen Ru Josephine

Senior Physiotherapist, Department of Physiotherapy, Singapore General Hospital

Adj Asst Prof Philip Cheong

Director of Research, SingHealth Duke-NUS Sport & Exercise Medicine Centre; Senior Principal Physiotherapist, Department of Physiotherapy, Singapore General Hospital

Sports physiotherapy not only helps in the management of sports injuries, but is also a pivotal tool for injury prevention and performance enhancement. Often the first point of contact for many patients, general practitioners can play an active role in initial injury treatment and referral to a sports physiotherapist where beneficial.

WHAT IS SPORTS PHYSIOTHERAPY?

Sports physiotherapy is a specialised field of physiotherapy that focuses on the **prevention and management of injuries** related to participation in sports and exercise.

Sports physiotherapists treat and rehabilitate athletes who have been injured, and help them to return to their sports as quickly and safely as possible. They provide evidence-based advice on safe participation in sporting activities for individuals of all ages and levels of ability, as well as play a pivotal role in helping athletes enhance their performance.

INCREASING SPORTING PARTICIPATION AND INJURIES

In Singapore, there is a growing number of residents participating in sporting activities.

Based on a national survey conducted by Sport Singapore, regular participation in sporting activities reached an all-time high of 74% in 2022, with more people taking part in walking, jogging and calisthenics.¹ The same survey also found that teens aged 13 to 19 were participating in higher-intensity sports such as basketball, football and badminton.¹

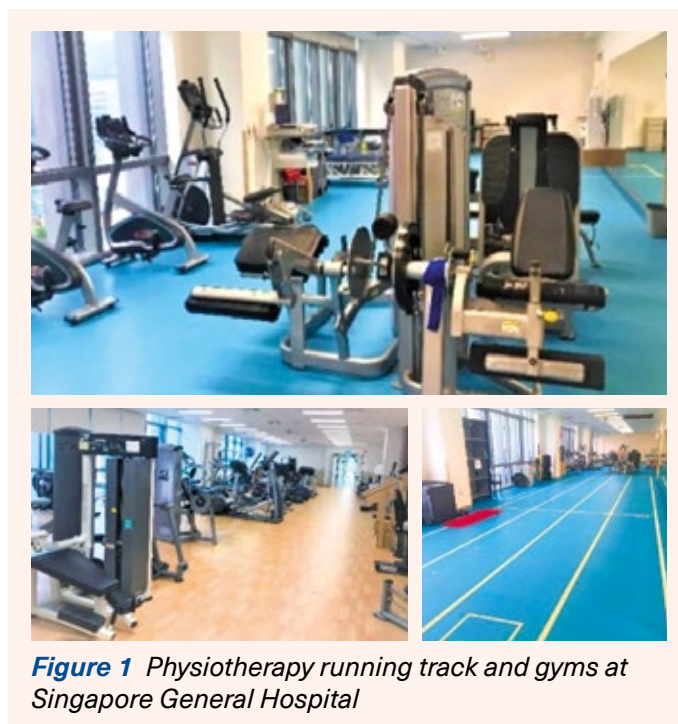


Figure 1 Physiotherapy running track and gyms at Singapore General Hospital

Correspondingly, there was an increasing number of people with sports- and recreational-related injuries ranging from fractures and dislocations, to other upper and lower limb musculoskeletal injuries such as sprains and strains.²

MANAGEMENT APPROACH FOR SPORTS INJURIES

Following an injury, a **multidisciplinary team approach** is often needed to provide high quality care to the injured athlete. This team usually consists of a sports physician, sports physiotherapist and other healthcare professionals such as a sports surgeon, podiatrist, exercise physiologist, dietitian or sports psychologist.

The GP's role

General practitioners (GPs) have an important role as they are often the first point of contact for people seeking medical advice for their sport- or exercise-related injury.

GPs can provide the initial injury management before referring patients onwards to the appropriate multidisciplinary team member.



The sports physiotherapist's role

Sports physiotherapists perform **comprehensive assessments** to determine the root cause (and likely contributing factors) of how the injury occurred and the anatomical structures that have been damaged.

Following which, they, with their wide range of treatment approaches, will formulate an **individualised rehabilitation programme** to facilitate patients in their recovery process and return back to sports.

Phases of sports rehabilitation

Initial rehabilitation phase

Sports rehabilitation during the acute phase aims to protect the injured tissues while allowing the healing process to take place. Rehabilitation at this phase will consist of maintaining or improving mobility, flexibility, strength and balance.

Correcting muscle imbalance and doing modified physical activities while managing the pain and swelling may also be required. Rehabilitation programmes at this stage can include taping and strapping, cryotherapy, ultrasound therapy, massage therapy and a home exercise programme.

Alternative training

The sports physiotherapist may also recommend alternative training for athletes who are injured. This would mean adopting a different type of training method to condition the body while not stressing the injured region. For example, a runner with knee pain can try deep-water running in a pool or swimming to maintain aerobic fitness.

Careful progression

The injured athlete should be progressed carefully from one phase to the other. Thus, the criteria or milestones for progression to the next phase must be determined based on function rather than time.

The sports physiotherapist will carry out a **sports-specific functional assessment** to determine if the injured athlete can be progressed to the subsequent rehabilitation phase and eventually towards full participation in sports.

Proprioceptive training

A comprehensive rehabilitation programme must also include proprioceptive training.

After an injury, particularly for joint injuries, the athlete may have impaired coordination in the joint. If the coordination is not recovered, the athlete may be predisposed to reinjury. Thus, progressive rehabilitation exercises such as balance drills, running drills and plyometrics drills are important to recondition any proprioception impairments.

SPORTS INJURY PREVENTION

The sports physiotherapist will advise patients on ways to prevent injury or reinjury. This would include **advice on further strength and conditioning** – to ensure that the athlete has the capacity to meet the demands required in sports, in order to prevent injury.

For example, a soccer player recovering from a hamstring strain would need to continue to strengthen and improve the flexibility of his injured

hamstring, as well as other muscle groups required for soccer activities.

Injury prevention will also include **training load management** with an emphasis on not over-training. Furthermore, the sports physiotherapist will have to work together with the coaches and trainers to help the athlete back to full fitness and performance.

PRE-PARTICIPATION SCREENING

Pre-participation screening in sports or physical activity is very important. The goal is to identify any potential risk factors for injury or death, so that they can be addressed before the individual starts participating in sporting activity.

The GP's role

The screening may consist of medical examinations and subjective history taking by GPs to **identify potential risk factors for medical conditions** such as cardiovascular conditions or asthma.

The sports physiotherapist's role

The role of the sports physiotherapist in pre-participation screening is to **identify any abnormalities in movement patterns or function that may predispose the individual to musculoskeletal injuries**.

The aim of the musculoskeletal screening is to assess recovery from any previous injury, and assess the presence of suspected risk factors for future injury. This can also help to facilitate optimal musculoskeletal health and optimise performance.

For example, a screening of a basketball player with a history of recurrent ankle sprains and poor ankle function would mean that the player may require additional rehabilitation – to prevent further injury before returning to full activities or sports.



GP REFERRALS TO SPORTS PHYSIOTHERAPY



All in all, sports physiotherapy can improve the outcomes of an injury or condition through preventative, restorative and rehabilitative means for individuals of all ages and levels of ability.

A multidisciplinary team approach is also needed to rehabilitate the individual as a whole.

GPs can consider referring patients to a sports physiotherapist for treatment and management of injuries.

Shared decision-making and realistic goal-setting with patients are also important to ensure satisfaction, and that they are safe to return to their sports and activities.

REFERENCES

1. Survey, N.S.P., Singapore is more active than ever! Insights from the National Sport Participation Survey conducted annually between 2018 and 2022. 2022.
2. Seah, P.Z., et al., Risk Stratification of Paediatric Sports Injuries Seen at a Tertiary Hospital. Ann Acad Med Singap, 2020. 49(12): p. 955-962.



Ms Lim Fen Ru Josephine

Senior Physiotherapist, Department of Physiotherapy, Singapore General Hospital

Ms Lim Fen Ru Josephine is a Senior Physiotherapist with the Department of Physiotherapy in Singapore General Hospital (SGH). She has worked in the area of musculoskeletal and sports physiotherapy and has vast clinical experience across a wide range of musculoskeletal conditions. Ms Lim is the leader of the Physiotherapy Sports Service at SGH. She is also an educator in the SGH Musculoskeletal Physiotherapy Residency Programme and has been involved in training other physiotherapists to better prevent and manage sporting injuries.



Adj Asst Prof Philip Cheong

Director of Research, SingHealth Duke-NUS Sport & Exercise Medicine Centre;
Senior Principal Physiotherapist, Department of Physiotherapy, Singapore General Hospital

Adjunct Assistant Professor Philip Cheong is a Senior Principal Physiotherapist at Singapore General Hospital. Prof Cheong also concurrently holds the appointment of Director of Research at the SingHealth Duke-NUS Sport & Exercise Medicine Centre. He is a high-performing healthcare leader and experienced physiotherapist with over 20 years of experience in the healthcare industry. His professional interests encompass musculoskeletal sciences, sports physiotherapy, risk-stratified care management, chronic pain management and the integration of technology in healthcare delivery.



GPs can call the **SingHealth Duke-NUS Sport & Exercise Medicine Centre** for appointments at the following hotlines, or scan the QR code for more information:

Singapore General Hospital
6326 6060

Changi General Hospital
6788 3003

Sengkang General Hospital
6930 6000

KK Women's and Children's Hospital
6692 2984



How to Manage Breast Cancer Survivors in Remission in Primary Care

**Clin Assoc Prof
Lim Geok Hoon**

Service Chief & Senior Consultant, SingHealth Duke-NUS Breast Centre;
Head & Senior Consultant, KK Breast Department,
KK Women's and Children's Hospital

**Asst Prof Ng
Chee Hui Raymond**

Senior Consultant, Division of Medical Oncology, National Cancer Centre Singapore;
Visiting Consultant, KK Breast Department, KK Women's and Children's Hospital

**Clin Assoc Prof
Rukshini
Puvanendran**

Head & Senior Consultant, Family Medicine Service;
Co-Lead, KK Menopause Centre, KK Women's and Children's Hospital

**Clin Asst Prof
Lim Wei Tching
Faye Lynnette**

Senior Consultant, Division of Radiation Oncology,
National Cancer Centre Singapore

With improved breast cancer survival rates, general practitioners (GPs) are likely to see such patients in remission, and are in prime position to care for their unique needs. The SingHealth Duke-NUS Breast Centre shares how GPs can help manage not just these patients' physical health, but also lifestyle considerations, sexual issues and fertility issues.

INTRODUCTION

Breast cancer is the commonest cancer among women in Singapore.

With improvements in treatment, breast cancer patients now have better survival rates and can live longer. As such, GPs may encounter these patients in the primary care setting, and it is paramount for them to know how to manage this group.

In this article, we highlight some of the pertinent issues that breast cancer survivors could potentially face five years and beyond following their diagnosis and treatment, and how to manage them.

How GPs Can Care for Breast Cancer Patients in Remission for the past five years or longer

The care of this group of patients can be categorised using the acronym '**PALS**':

1. **Physical health**
2. **Attention to mental health**
3. **Lifestyle changes**
4. **Sexual/fertility issues**

1. Physical health

Surveillance for recurrence

The 10-year recurrence rate was reported as 20.5%, with the majority of recurrences being systemic metastasis.¹ It can occur anytime and even years after treatment.

As a result, breast cancer patients undergo **lifelong follow-up** and are advised to perform monthly breast self-examination. At five years of remission and beyond, these patients are followed up with an annual clinical exam and mammogram.

Recurrence can be systemic and/or locoregional, thus **GPs should look out for symptoms suggestive of systemic metastasis and any recent abnormal changes** of the ipsilateral breast or chest wall (if a mastectomy without reconstruction was performed), axillary, neck lumps, etc.

In such cases and in cases with abnormal mammogram, patients should be referred to their breast specialist for further evaluation.

Second cancer in contralateral breast

This risk is increased now that breast cancer patients are surviving longer. Should this happen, patients should be referred to their breast specialist for further evaluation.

Side effects

From surgery

This could include ipsilateral arm lymphoedema, chronic breast pain, and so on. The risk of arm lymphoedema is increased after axillary lymph node dissection and/or axillary radiotherapy.

Hence, in this group of patients and in patients with a previous or current history of arm lymphoedema, avoid procedures on the affected arm if possible.

For arm lymphoedema of recent onset, they should be referred to their breast specialist for further evaluation.

From radiotherapy

Most side effects are rare. These may include:

- Skin changes with permanent pigmentation and telangiectasia
- Fibrosis of the breast causing contraction and firmness
- Rib fractures
- Nerve damage around the treatment area, resulting in numbness, pain and weakness

Radiation pneumonitis, which can manifest as cough and/or breathlessness, is uncommon. It is diagnosed on CT and requires treatment with steroids.

Other rare but serious side effects include cardiac toxicity manifesting as cardiac failure, if the radiotherapy was given to the left breast and secondary cancers in the treated area.

From chemotherapy

The majority of these side effects tend to be short-term, with most patients likely to recover shortly upon completion of treatment.

However, there are some side effects that can be long-lasting. These may include peripheral neuropathy in the fingers and/or toes from the use of taxane chemotherapy, causing chronic numbness.

Unfortunately, there are not many effective pharmacological treatments available, though medications such as gabapentin may help in those with neuropathic pain.

Vitamin B supplementation is commonly used by many doctors for chemotherapy-induced peripheral neuropathy, but evidence supporting its efficacy is limited.

1. Physical health (Continued)

From endocrine therapy

These drugs include tamoxifen or aromatase inhibitors (such as letrozole, anastrozole or exemestane) and are typically given for five to 10 years.

Tamoxifen

Its side effects may include menopausal symptoms such as hot flushes, weight gain as well as small risks of thromboembolism and endometrial cancer.

Therefore, patients on tamoxifen with abnormal vaginal bleeding should be referred to a gynaecologist for assessment. Avoid selective serotonin reuptake inhibitors (SSRIs) for treatment of depression or hot flushes as they can have drug interactions with tamoxifen.

Aromatase inhibitors

These are commonly associated with arthralgia, especially in the small finger joints, as well as an increased risk of bone loss and osteoporosis.

When on aromatase inhibitors, patients should be on calcium and vitamin D supplementation and regular bone health monitoring with a bone mineral density (BMD) test at one-to-two-year intervals, depending on the patient's previous BMD result.

If there is decreasing bone mass, the patient can be started on bisphosphonates and given osteoporosis prevention advice. If bisphosphonates are started for the first time, they should be referred for dental clearance first, to minimise the risk of osteonecrosis of the jaw as a side effect.

2. Attention to mental health

Long-term survivors may still face psychological challenges such as **anxiety**, **depression** as well as **body image issues**.² Hence, do check on the mental well-being of the patient.

Breast cancer support groups and counsellors can help with psychological support. Refer to a psychiatrist if there is concern about the patient's mental health.



3. Lifestyle changes

Leading a healthy lifestyle

To reduce the risk of recurrence or second breast cancer, and also for the patient's own health and well-being, patients are advised to lead a healthy lifestyle which includes:

- No smoking
- Regular exercise of moderate intensity of at least 150 minutes per week
- Keeping their body mass index (BMI) in the healthy range of 18.5 to 22.9 kg/m²
- No alcohol, or limiting alcohol intake to a glass or less per day
- Having a healthy balanced diet

3. Lifestyle changes (Continued)

Managing and screening for chronic conditions

Breast cancer survivors are at risk of diseases like hyperlipidaemia, hypertension, diabetes, ischaemic heart disease and stroke.³ This could be due to multiple factors, including baseline factors like obesity as well as factors related to therapy, such as deconditioning and weight gain.



Patients with known medical conditions should be managed accordingly. For patients with no known medical conditions and who are above 40 years old, they should be screened for these chronic medical conditions in line with the national screening guidelines.

For a holistic approach, colorectal cancer screening is recommended in patients aged 50 years and above, whereas cervical cancer screening is recommended for women aged 25 to 69 years who have had sexual intercourse.

4. Sexual/fertility issues

Breast cancer survivors with prior chemotherapy may experience early menopause with decreased sexual desire, and symptoms of vaginal atrophy such as vaginal dryness.

Vaginal atrophy

In patients with troubling vaginal atrophy symptoms, vaginal moisturisers and vaginal lubricants could be used during sexual intercourse. Such non-oestrogen-based topicals should be explored first, though vaginal oestrogen-based cream is generally considered safe but should be used sparingly.

Systemic hormone replacement therapy is strictly contraindicated. Patients with no improvement of

symptoms can be referred to a gynaecologist for further management.

Fertility issues

Fertility could be affected by chemotherapy. This issue would usually have been addressed prior to the start of chemotherapy, particularly in patients of child-bearing potential.

Having a prior diagnosis of breast cancer is not a contraindication to pregnancy, provided the patient is no longer on endocrine therapy. However, it is crucial that any decision on cessation of endocrine therapy and timing of pregnancy be discussed with the oncologist.

CONCLUSION

In conclusion, while breast cancer patients could now live longer with advances in treatment, it is paramount that they also retain their quality of life. This group of patients has unique needs, and a holistic approach using the acronym 'PALS' could be used in their management.

REFERENCES

1. van Maaren MC, de Munck L, Strobbe LJA et al. Ten-year recurrence rates for breast cancer subtypes in the Netherlands: A large population-based study. *Int J Cancer*. 2019;144:263-272.
2. Carreira H, Williams R, Müller M et al. Associations Between Breast Cancer Survivorship and Adverse Mental Health Outcomes: A Systematic Review. *J Natl Cancer Inst*. 2018;110:1311-1327.
3. Bradshaw PT, Stevens J, Khankari N et al. Cardiovascular Disease Mortality Among Breast Cancer Survivors. *Epidemiology*. 2016;27:6-13.



**Clin Assoc Prof
Lim Geok Hoon**

Service Chief & Senior Consultant,
SingHealth Duke-NUS Breast Centre;
Head & Senior Consultant, KK Breast Department,
KK Women's and Children's Hospital

Clinical Associate Professor Lim Geok Hoon is the Head of the KK Breast Department at KK Women's and Children's Hospital. She pioneered the minimal scar mastectomy technique suited for Asian women and developed the first virtual simulator for teaching oncoplastic surgery. She firmly believes in providing holistic care for breast cancer survivors.



**Asst Prof Ng Chee
Hui Raymond**

Senior Consultant, Division of Medical Oncology,
National Cancer Centre Singapore;
Visiting Consultant, KK Breast Department,
KK Women's and Children's Hospital

Assistant Professor Ng Chee Hui Raymond is a Senior Consultant with the breast oncology team at the National Cancer Centre Singapore. He completed a Master's in Public Health from the National University of Singapore in 2010. Prof Ng is passionate about medical education and spends part of his time every week lecturing and mentoring medical students at the university.



**Clin Assoc Prof
Rukshini
Puvanendran**

Head & Senior Consultant, Family Medicine Service;
Co-Lead, KK Menopause Centre,
KK Women's and Children's Hospital

Clinical Associate Professor Rukshini Puvanendran is the Head and Senior Consultant in the Family Medicine Service at KK Women's and Children's Hospital. Her interests are in mid-life women's health and women's cancer survivorship.



**Clin Asst Prof
Lim Wei Tching
Faye Lynnette**

Senior Consultant, Division of Radiation Oncology,
National Cancer Centre Singapore

Clinical Assistant Professor Lim Wei Tching Faye Lynnette is a senior radiation oncologist practicing at the National Cancer Centre Singapore. She has a special interest in the treatment of young women with breast cancer, as well as proton therapy and its utility in advanced breast cancer. She has extensive experience in the treatment of complex breast cancers.



GPs can call the **SingHealth Duke-NUS Breast Centre** for appointments at the following hotlines, or scan the QR code for more information:

**Singapore
General
Hospital**
6326 6060

**Changi
General
Hospital**
6788 3003

**Sengkang
General
Hospital**
6930 6000

**KK Women's
and Children's
Hospital**
6692 2984

**National
Cancer Centre
Singapore**
6322 9399



Proton Therapy: An Innovative Radiotherapy Treatment Offered at the National Cancer Centre Singapore

Dr Ng Wee Loon | Senior Consultant, Division of Radiation Oncology, National Cancer Centre Singapore; Visiting Consultant, NCCS Oncology Clinic @ CGH, Changi General Hospital

Introducing proton therapy – an advanced type of radiotherapy suitable for cancers located close to vital organs and for some childhood cancers and tumours. Discover the key indications and benefits for its use.

THE ROLE OF RADIOTHERAPY IN CANCER TREATMENT

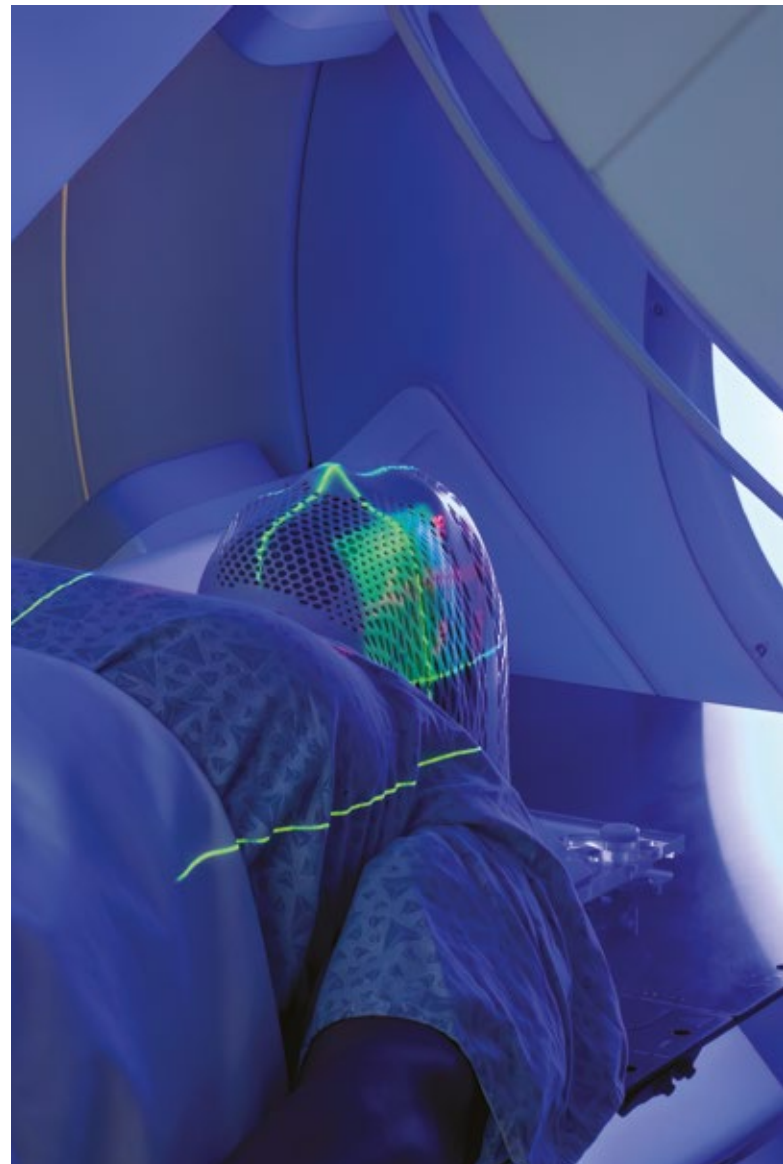
Radiation therapy, also known as radiotherapy, plays a crucial role in cancer treatment as a targeted approach to destroying cancer. It utilises high-energy radiation, either delivered externally (external beam radiation therapy) or internally (brachytherapy), to destroy cancer cell DNA and inhibit their growth and division.

The primary goals of radiotherapy are to:

- Cure localised early-stage cancers
- Reduce the risk of recurrence after surgery (adjuvant treatment)
- Shrink tumours before surgery (neoadjuvant treatment)
- Palliate symptoms in advanced cases

With careful treatment planning, radiotherapy maximises the destruction of cancer cells while sparing surrounding healthy tissues, with the aim to **improve patients' survival rates, alleviate symptoms and enhance their quality of life.**

It is estimated that approximately 50% of cancer patients may receive radiotherapy as part of their treatment.



WHAT IS PROTON THERAPY?

Proton therapy is a type of advanced radiation treatment that targets cancer cells using positively charged subatomic particles called protons. The unique physical properties of protons enable tumours to be targeted more precisely.

This potentially results in less damage to nearby healthy tissues and organs, and therefore less treatment-related side effects.

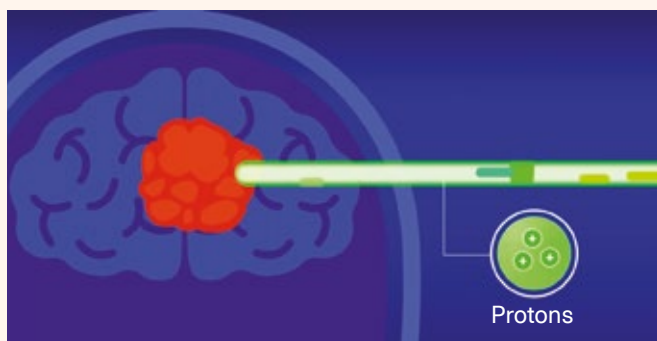


Figure 1 Proton therapy precisely targets the tumour and stops at a limited depth, resulting in lesser damage to nearby healthy tissues and organs, and fewer side effects.



Figure 2 The proton beam is delivered in very small 'spots' layer by layer, to treat complex-shaped tumours and reduce radiation to nearby normal tissues.

KEY BENEFITS OF PROTON THERAPY

1. Precise targeting

Firstly, precise targeting can reduce radiation to nearby healthy organs, potentially reducing treatment-related side effects. This is particularly beneficial when treating tumours located near sensitive areas, such as the brain, spinal cord, eyes and other critical organs.

This also lends itself well to re-irradiation – when patients who have had a prior course of radiotherapy require a second course in recurrent cancers.

2. Dose escalation

Secondly, in certain situations, a higher dose may be delivered with protons compared to X-rays. This is known as dose escalation and has the potential for better tumour control.

Certain tumours, known as radioresistant tumours, are less responsive to conventional radiotherapy. Proton therapy has the potential to treat radioresistant tumours due to its unique properties.

It is important to note that before treating any patient with proton therapy, they must be reviewed by a multidisciplinary team comprising radiation oncologists, surgical oncologists, medical oncologists, etc., to ensure that all possible treatment options (including chemotherapy, surgery and radiotherapy) have been considered and evaluated and the most appropriate type of treatment is recommended based on their condition and post-treatment care plan.

Conventional radiotherapy is an effective and safe treatment modality that remains the gold standard for treating most solid cancers.

POSSIBLE SIDE EFFECTS OF PROTON THERAPY

The side effects of radiation treatment depend on the area that is treated. For example, patients undergoing head and neck treatments may experience loss of taste, mucositis and radiation dermatitis, whereas patients undergoing radiation to the pelvis may experience diarrhoea and lower urinary tract symptoms.

TYPES OF CANCER THAT CAN BE TREATED WITH PROTON THERAPY

Proton therapy can be recommended for a list of indications approved by the Ministry of Health (MOH).

This includes most paediatric solid tumours, some adult brain cancers, head and neck cancers and prostate cancers as these patients will benefit the most from receiving proton therapy.

Scan the QR code to view the full list of MOH-approved indications for use of proton therapy in treatment.



Currently, the **Goh Cheng Liang Proton Therapy Centre** at the National Cancer Centre Singapore (NCCS) is the only facility offering proton therapy in the public sector in Singapore.

BENEFITS OF PROTON THERAPY IN CHILDREN

A major concern when treating childhood cancer with radiotherapy are the late side effects it can cause, which may occur months or even years after treatment.

Children are at an increased risk of these late toxicities compared to adults, due to the increased sensitivity of developing tissues and organs to radiotherapy. In addition, children have more at-risk years for the development of late side effects.

Proton therapy helps to mitigate the risk of late side effects as it allows for an overall lower exposure of the body to radiation.



The Goh Cheng Liang Proton Therapy Centre at the National Cancer Centre Singapore

The **Goh Cheng Liang Proton Therapy Centre (GCLPTC)** at NCCS, an advanced radiotherapy facility that offers proton therapy, started operations in June 2023.

Supported by a S\$50 million gift from the Goh Foundation, the GCLPTC is the only such facility in the public sector in Singapore and one of few proton therapy centres in Southeast Asia.



WHAT TYPE OF PROTON BEAM DOES NCCS HAVE?

The GCLPTC has installed a state-of-the-art **synchrotron equipped with pencil beam scanning technology (PBS)**. PBS is a more precise and advanced technique of delivering proton beams.

This allows radiation oncologists to treat a tumour by adjusting the intensity of the beam to achieve the treatment dose using spot-scanning technology.

HOW IS PROTON THERAPY PLANNED AND DELIVERED?

Planning

The planning and delivery of proton therapy is similar to conventional radiotherapy. As part of the planning process, patients undergo immobilisation with customised devices, and a CT simulation scan is done to measure the patient's body and precisely mark the treatment areas.

If the proton plan is assessed to be a suitable treatment option for the patient, proton treatment will be recommended.

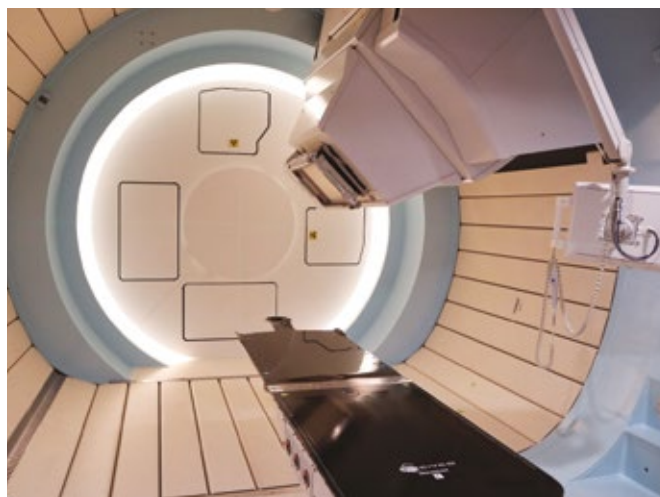
Delivery

The GCLPTC, located at the basement 3 level of NCCS, has four treatment rooms, each equipped with a gantry system to deliver proton beams.

At the backend, the treatment gantry has an internal diameter of five metres and weighs about 220 tonnes.

By rotating the nozzle around the patient, along with a high-precision robotic couch, the beam can be delivered from any angle to target tumours with pinpoint accuracy. A high degree of accuracy can be achieved as the beam can deliver a spot size as small as one millimetre in diameter.

The treatment rooms are also equipped with imaging systems to precisely position the patient for accurate beam delivery.



HOW CAN PATIENTS BE REFERRED FOR PROTON THERAPY?

NCCS is committed to providing high quality, accessible cancer care to the population.

The GCLPTC is available to all patients, and has a referral process and pathway for doctors to refer patients who need proton therapy treatment.

Patients receiving care at NCCS can speak to their doctors about whether proton therapy is suitable for them. They will be reviewed by a team of radiation oncologists to determine the most appropriate type of radiation treatment for their condition.



For GP referrals, please contact NCCS at **6436 8288** or email to gpnetwork@nccs.com.sg.



Dr Ng Wee Loon

Senior Consultant, Division of Radiation Oncology,
National Cancer Centre Singapore;
Visiting Consultant, NCCS Oncology Clinic @ CGH,
Changi General Hospital

Dr Ng Wee Loon graduated from the National University of Singapore in 2005, and completed his basic and advanced specialist training in radiation oncology at the National Cancer Centre Singapore. He also did a fellowship in clinical oncology at the Clatterbridge Cancer Centre in the United Kingdom from 2013 to 2014, where he was involved in the treatment of ocular tumours using proton therapy.

He is a member of the Royal College of Radiologists (United Kingdom) and the Singapore Radiological Society. Dr Ng's clinical areas of interest include thoracic, brain and ocular tumours. His current research focus is on organ motion in radiotherapy, and overcoming challenges in treatment planning of patients with prostheses. He is actively involved in the coaching of residents and junior doctors.



GP Appointment Hotline: **6436 8288**

GPs can scan the QR code for more information on proton therapy or the GCLPTC.



How to Manage Sudden Sensorineural Hearing Loss in Primary Care

**Dr Vanessa Tan
Yee Jueen**

Director, Centre for Hearing and Ear Implants, Singapore General Hospital;
Consultant, Department of Otorhinolaryngology – Head & Neck Surgery,
Singapore General Hospital;
Division of Surgery & Surgical Oncology, National Cancer Centre Singapore

When faced with sudden sensorineural hearing loss, patients often first present to their general practitioner (GP). As treatment is only effective if started early, prompt management and timely referral is crucial. Singapore General Hospital shares key pointers for GPs in the management of these cases.

INTRODUCTION

What it is

Sudden sensorineural hearing loss (SSNHL) is a **rapid decline of hearing** over a period of less than three days, of more than 30 dB over three contiguous frequencies.

Prevalence

The prevalence of SSNHL is estimated to be five to 20 cases per 100,000 individuals annually. With our population of six million in Singapore, that would equate to 300 to 1,200 cases per year.

These patients often present to the GP or emergency department. It is important to treat SSNHL promptly as treatment is only effective when administered early.

DIAGNOSIS

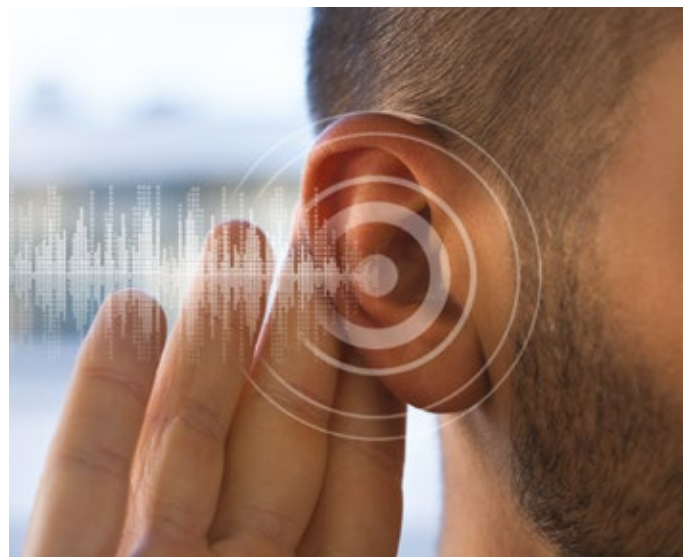
At times, patients may not complain of hearing loss, but may instead complain of sudden tinnitus or a blocked ear sensation. Hence, it is vital to do a tuning fork examination to establish sensorineural hearing loss.

In the **Weber test**, a 512 Hz tuning fork is placed on a central bony prominence such as the forehead or

occiput. In SSNHL, the sound will lateralise away from the affected ear.

In the **Rinne test**, the air conduction will be louder than bone conduction for the affected ear, but the reverse may also be possible due to the sound transmitting to the good ear.

Otoscopy examination is normal in SSNHL, and an **audiogram** is needed to confirm the diagnosis of SSNHL.



WHAT THE GP SHOULD DO

- **Start oral prednisolone immediately** when they suspect SSNHL if the duration of hearing loss is less than two weeks
- **Fast-track the patient to see ENT** within two weeks of symptom onset

RED FLAGS OF A STROKE

Patients with SSNHL may also experience vertigo. The vertigo is usually severe and can be associated with nausea and vomiting. Head movements worsen the vertigo.

A **differential diagnosis** of SSNHL with vertigo is an anterior inferior cerebellar artery (AICA) territory stroke. The AICA supplies the cerebellum and inner ear.

The red flags of a stroke would be:

- Nystagmus that is not reduced with visual fixation
- Nystagmus that is multidirectional or vertical
- Skew deviation of the eyes
- A normal head impulse test
- Focal neurological symptoms or signs such as headache, diplopia, dysarthria, focal weakness or numbness



INVESTIGATIONS

More than 90% of SSNHL cases are **idiopathic**. There may be a triggering event such as an upper respiratory tract infection. Various pathophysiologies of idiopathic SSNHL (iSSNHL) have been postulated, namely viral infection, vascular insufficiency or transient immune process.

Primary SSNHL

The only investigation needed for primary SSNHL is **MRI of the internal auditory meatus**.¹ Studies looking at inner ear and central nervous system pathology presenting with SSNHL have reported abnormal MRI findings ranging from 10.7 to 47.5%.²

Abnormal findings include cerebellopontine angle tumours, labyrinthine haemorrhage and demyelinating process. 10 to 20% of vestibular schwannomas can present with SSNHL.

Bilateral, fluctuating or recurrent SSNHL

In cases of bilateral, fluctuating or recurrent SSNHL, causes such as Meniere's disease, autoimmune inner ear disease, syphilis and risk factors for vasculopathy need to be ruled out and **blood investigations** are necessary.

Blood investigations include:

- Diabetic screen
- Lipid panel
- Thyroid function test
- Erythrocyte sedimentation rate
- Syphilis screen
- Autoimmune markers
- Full blood count
- Renal panel

A recent systematic review looked at the association of SSNHL with hypercholesterolaemia, diabetes and hypertension.³ Pooled analysis showed that hypertriglyceridaemia and high total cholesterol significantly increased the risk of SSNHL with odds ratio (OR) 1.54, 95% confidence interval (CI) 1.18-2.02 and OR 2.09, 95% CI 1.52-2.87 respectively.

The blood tests can be done at the primary health-care setting or by ENT.

TREATMENT

One-third to two-thirds of patients with SSNHL may recover some of their hearing within two weeks.

Poor prognostic factors include:

- Profound hearing loss
- Presence of vertigo
- Old age
- Comorbidities such as diabetes

Watchful waiting

As patients may recover their hearing spontaneously, there is the option of watchful waiting.

Active treatment with steroids

Active treatment involves giving **oral prednisolone** at 1 mg/kg body weight in a single dose – maximum start dose of 60 mg for one week, with a taper the following one week by 10 mg every two days.

Active treatment with oral prednisolone should be **immediate, within two weeks of symptom onset**. There is little benefit with treatment after four weeks.

If oral prednisolone is given, it is important not to underdose.

The equivalent dose of 60 mg of prednisolone is 10 mg of dexamethasone. While other steroid regimes have been reported, there is limited data comparing various regimes.

Caution should be taken in giving steroids to patients with poorly controlled diabetes, peptic ulcer disease, liver disease or psychiatric conditions.

A shared decision should be made with regard to the risks and benefits, as there is still a lack of clear evidence to support systemic steroids in SSNHL and there are potential adverse treatment effects in this group of patients.

Managing vertigo

Vertigo in SSNHL may be managed with **vestibular suppressants and antiemetics** such as ondansetron, Maxolon, Stemetil and cinnarizine.

As these vestibular suppressants prevent central compensation, they should only be taken for a few days. Betahistine can be given on a longer basis to relieve vertigo.⁴ Patients can be taught vestibular exercises to aid central compensation.

There is no role of antivirals, thrombolytics, vasodilators, antioxidants and ginkgo in treating SSNHL.

Patient education and addressing fears

Patients can be taught sound-masking strategies to drown out the tinnitus. Strategies include focusing on background sounds such as a desk fan or listening to a podcast or soft music.

They can also learn relaxation techniques such as breathing exercises, jaw relaxation exercises or meditation.

It is also crucial to address patients' fears and anxiety in SSNHL. They should be reassured that their normal ear is at low risk of SSNHL.

Other treatment options

Upon seeing ENT, these patients will be counselled about other treatment options including intratympanic steroids, hyperbaric oxygen therapy (HBOT) and hearing rehabilitation.

KEY TAKEAWAYS FOR GPs



- ★ SSNHL is a medical emergency
- ★ Use a 512 Hz tuning fork test to confirm SSNHL
- ★ Steroids need to be given within two weeks of symptom onset:
 - Oral prednisolone 1 mg/kg/day (single dose for seven consecutive days) and taper over the following seven days
- ★ Refer to the ENT department within two weeks of symptom onset

CONCLUSION

In conclusion, SSSNHL is an emergency. The tuning fork test is vital to aid the diagnosis and oral steroids should be started immediately.

Patients must see ENT within two weeks of symptom onset for an audiogram and to discuss the other

treatment options of intratympanic steroids and HBOT. These treatments should be given within two to four weeks of symptom onset.

Continued follow-up with ENT will allow the patients' hearing to be monitored and facilitate hearing rehabilitation options.

REFERENCES

1. Chandrasekhar SS, Tsai Do BS, Schwartz SR, et al. Clinical Practice Guideline: Sudden Hearing Loss (Update). *Otolaryngol Head Neck Surg.* 2019;161(1 suppl):S1-s45.
2. Chau JK, Lin JR, Atashband S, Irvine RA, Westerberg BD. Systematic review of the evidence for the etiology of adult sudden sensorineural hearing loss. *Laryngoscope.* 2010;120(5):1011-1021.
3. Simões J, Vlamincok S, Seica RMF, Acke F, Miguéis ACE. Cardiovascular Risk and Sudden Sensorineural Hearing Loss: A Systematic Review and Meta-Analysis. *Laryngoscope.* 2023;133(1):15-24.
4. Murdin L, Hussain K, Schilder AG. Betahistine for symptoms of vertigo. *Cochrane Database Syst Rev.* 2016;2016(6):Cd010696.

Acknowledgements:

Dr Kaymond Yang for his invaluable advice on how to make this article relevant to primary healthcare.



**Dr Vanessa Tan
Yee Jueen**

Director, Centre for Hearing and Ear Implants,
Singapore General Hospital;
Consultant, Department of Otorhinolaryngology –
Head & Neck Surgery, Singapore General Hospital;
Division of Surgery & Surgical Oncology,
National Cancer Centre Singapore

Dr Vanessa Tan is the Director of the Centre for Hearing and Ear Implants at Singapore General Hospital. She completed her fellowship in Otology and Neuro-otology with the Royal Victorian Eye and Ear Hospital and Royal Melbourne Hospital in 2021.

She has a keen interest in educating the next generation and holds the following educator posts: Core Faculty of the SingHealth ENT Residency Programme, and Clinical Assistant Professor at Duke-NUS Medical School and the Yong Loo Lin School of Medicine.

Her clinical interests include hearing implants and skull base tumours such as acoustic neuromas. Her research interests include preventing ototoxicity from nasopharyngeal cancer treatment and single-sided deafness.



GP Appointment Hotline: **6326 6060**

GPs can scan the QR code for more information about the department.



Envenomation, Bites and Stings: How to Manage in Primary Care

Dr Ng Mingwei | Consultant, Department of Emergency Medicine, Singapore General Hospital
Dr Jeevan Raaj | Consultant, Department of Emergency Medicine, Singapore General Hospital

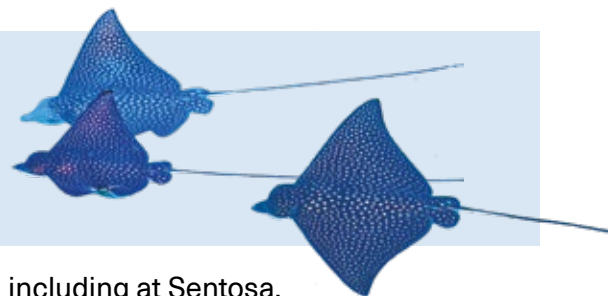
Patients often present to the primary care clinic when faced with envenomation, bites and stings. In many cases, prompt action is of the essence when it comes to long-term patient outcomes. Singapore General Hospital outlines the key points for general practitioners to note in the management of potential wounds inflicted by local sea and land creatures.

INTRODUCTION

Though envenomation, bites and stings are frequently encountered in the emergency department setting, patients may first choose to visit a nearby neighbourhood clinic.

Hence, it is important for general practitioners (GPs) to get to know some of the common creatures found in Singapore's ecosystem, and what to do when a patient who has crossed paths with them requires medical attention.

Managing Envenomation, Bites and Stings by Sea Creatures



The sea creatures listed below can be found at our local beaches, including at Sentosa.

When presented with envenomation, bites or stings by these creatures, the general principles would be to **pour vinegar over the affected site** followed by **warm water immersion at 40 to 45°C**. Ensure that the water temperature is not too hot, or the patient might end up getting scalded.

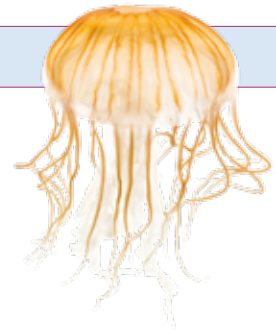
Read on for more tips on primary care management of envenomation, bites or stings by sea creatures.

Jellyfish

- Pour vinegar on the wound
 - This inactivates undischarged nematocysts, also known as barb used for prey capture, defence and locomotion
- Remove embedded tentacular material with forceps
- Warm water immersion afterwards
- Consider analgesia, antihistamines or hydrocortisone

Jellyfish (Continued)

- Update tetanus immunisation status if not already done
- Consider antibiotics if the wound appears macerated or grossly contaminated
 - Cover for vibrio species or aeromonas (i.e., doxycycline)
- If an anaphylactic reaction occurs, treat with adrenaline
- Evacuate immediately if there is severe toxicity (systemic signs and symptoms)
- There is no role for urine
- Symptoms can recur intermittently over days (e.g., Morbakka species causing Irukandji syndrome)



Tips for patients

- Notify authorities (National Parks Board [NParks] or beach patrol officers if in Sentosa)
- Locations with box jellyfish sightings:
 - Palawan Beach (Sentosa)
 - ONE°15 Marina Sentosa Cove
 - Lazarus Island
 - Pulau Seringat
 - Tuas
 - East Coast Park

Stonefish / Stingrays

- Warm water immersion
 - 40 to 45°C water x 20 minutes x 3 cycles (with 10 minutes rest)
 - Consider soaking both the affected and unaffected limbs as well so that the patient can gauge if the temperature of the warm water immersion is tolerable
 - Analgesia must not cause sedation or mask the patient's perception of pain to avoid scalding
 - Serious iatrogenic thermal injuries have been sustained from warm water immersion therapy, some even requiring plastic reconstructive surgery



Sea urchins

- Remove as many spines as possible (use a magnifying glass)
- Warm water immersion
- Consider vinegar to dissolve spines (calcium carbonate)
- Update tetanus immunisation status
- Monitor for infection or foreign body granuloma reaction
- May require referral to Orthopaedic Surgery for punch biopsy or surgical debridement if there are prolonged symptoms from retained spines



Managing Envenomation, Bites and Stings by Land Creatures



This section will cover a broad range of animals and creatures, some more commonly encountered than others.

It will also explore when it is necessary to consider wound management and rabies treatment. An interesting point to note is that while all dogs and cats (including strays) in Singapore have been declared rabies-free by the National Environment Agency, bats are an exception.

For wounds, do note to avoid primary closure.

Bees

- Consider antihistamines and update tetanus immunisation status
- Treat anaphylaxis with intramuscular adrenaline
 - Toxic dose: 4-8 stings per kg of body weight
 - A patient can experience anaphylaxis and/or death with only one sting
- Scrape off stingers with the edge of a card (e.g., credit card)
 - Do not use fingers, as this may squeeze the venom or break the venom sac
 - Beware of stingers hidden in the hairline
- Evacuate (immediately to the nearest hospital facility) if there are multiple stings or systemic toxicity



Tips for patients

- Gently brush off the bee or move the body part where it lands
 - Bees like to land on skin to drink sweat
 - Do not swat – this may cause the bee to sting or release alarm pheromones
- Cover the face and run straight, against the wind
- Do not flail arms or swat bees
- Do not submerge in water

Spiders

- Painful, venomous but not lethal
- Tarantulas have urticating hairs
 - Can be embedded in the cornea causing ‘tarantula keratitis’

Tips for patients

- Wear an eye shield for your own protection in the clinic
- Avoid too close proximity to tarantulas if rearing these as pets



Scorpions



- Painful, venomous but not lethal

Snakes

- If the bitten limb has not been immobilised, consider splinting to immobilise the limb and instructing the patient not to walk on the bitten limb
- Monitor for signs of envenomation requiring antivenom:
 - Local – mark out edges of swelling, monitor for compartment syndrome
 - Neurological – ptosis, bulbar palsy, dysarthria, dysphagia
 - Cardiovascular – monitor pulses, blood pressure and heart rate
 - Haematological – ecchymoses, bruising
 - Rhabdomyolysis
- Evacuate to the hospital with antivenom if necessary or if high suspicion
- Antivenom
 - Polyvalent antivenom – risk of anaphylaxis due to higher protein load
 - Choice between antivenom for haematotoxin vs neurotoxin



Tips for patients

- Maintain safety
 - Call NParks at **1800-476-1600** as per the advisories on www.nparks.gov.sg, or the ACRES Wildlife Rescue hotline at **9783 7782**
- Identify the snake safely with photos
 - Patterns – Download the SG Snakes app by Wildlife Reserves Singapore from <https://appadvice.com/app/sg-snakes/669392463.amp>

Commonly encountered snakes		
Non-venomous	Venomous	
<ul style="list-style-type: none"> • Common wolf snake • Reticulated python 	<ul style="list-style-type: none"> • Black equatorial spitting cobra (most venomous; aims for eyes and face to cause maximum pain) • King cobra • Oriental whip snake (mildly venomous) 	<ul style="list-style-type: none"> • Banded krait • Mangrove pit viper • Wagler's pit viper • Malayan blue coral snake • Paradise tree snake (mildly venomous)

- Immobilise, splint, and do not walk on the bitten limb
 - Keep the bitten limb below the level of the heart
 - Do not tourniquet, apply suction or ice, or debride

Otters

- Wound care – avoid primary closure (unless on the face, though there is a high risk of infection)
- Antimicrobial prophylaxis
 - Augmentin (ciprofloxacin and clindamycin if there is a penicillin allergy)
 - Tetanus
 - Consider referral to the Emergency Department or an infectious diseases physician for consideration of rabies treatment (although NParks conducts regular rabies screening for large otter families, such as those in Bishan and Marina Bay)

Macaques (monkeys)

- Acyclovir 800 mg orally 5 times a day, or valacyclovir every 8 hours for 14 days for B virus prophylaxis
- Rabies vaccination or immunoglobulin per *Table 1*
- Update tetanus immunisation status
- Consider antibiotics



Bats

- Clean wound with copious water and soap
 - Bat scratches are 'better felt than seen' as they are not always obvious
 - They may not bleed or have obvious signs
- Rabies risk (*refer to Table 1*)
 - Uniformly fatal if symptoms develop
 - The infected animal may not show rabid symptoms
 - Post-exposure prophylaxis:
 - **For individuals who have been previously vaccinated**
 - Rabies vaccine at days 0 and 3
 - The deltoid region should be used
 - Avoid the gluteal area as immune response may be reduced
 - **For individuals with no previous vaccination**
 - Full dose of human rabies immunoglobulin (HRIG) infiltrated around wound if anatomically feasible
 - Important to avoid the gluteal area due to risk of sciatic nerve damage
 - Give in anterolateral thigh
 - Do not administer rabies vaccine and immunoglobulin at the same site or in the same syringe
 - Immunisation schedule
 - ◆ Immunocompetent patients: days 0, 3, 7 and 14
 - ◆ Immunocompromised patients: days 0, 3, 7, 14 and 28



When wound care or rabies treatment is needed			
	Wound care	Rabies vaccine	Rabies immunoglobulin (HRIG)
<ul style="list-style-type: none"> • Touching or feeding animals • Licks on intact skin 	✓	✗	✗
<ul style="list-style-type: none"> • Nibbling of uncovered skin • Licks on broken skin • Minor scratch/abrasion without bleeding 	✓	✓	✗
<ul style="list-style-type: none"> • Exposure to bat bites or scratches • Licks on mucous membranes • Transdermal bites or scratches 	✓	✓	✓

Table 1

CONCLUSION

In summary, while bites and stings from wild animals and creatures are not very commonly encountered in the GP setting, it is important to have knowledge of what creatures exist that can cause potential harm and the treatments to be instituted, as this can change long-term patient outcomes.

There are many resources available to assist medical providers in the event of such encounters, such as the NParks hotline and website, ACRES Wildlife Rescue hotline and SG Snakes identification app.



Dr Ng Mingwei | Consultant, Department of Emergency Medicine, Singapore General Hospital

Dr Ng Mingwei graduated from the Yong Loo Lin School of Medicine, National University of Singapore (NUS) and completed his training in Emergency Medicine in 2021. He is currently pursuing his sub-specialty interest in toxicology as a Fellow with the SingHealth Toxicology Service and recently completed his post-graduate diploma in Medical Toxicology with Cardiff University.



Dr Jeevan Raaj | Consultant, Department of Emergency Medicine, Singapore General Hospital

Dr Jeevan Raaj graduated from the National University of Singapore Yong Loo Lin School of Medicine in 2012 and subsequently completed his training in Emergency Medicine in 2020. His areas of interest are in emergency observational medicine, emergency critical care as well as medical education.



GP Appointment Hotline: **6326 6060**
 GPs can scan the QR code for more information about the department.



A Multidisciplinary Centre for Sport and Exercise Medicine Care

The SingHealth Duke-NUS Sport & Exercise Medicine Centre

ABOUT THE CENTRE

The SingHealth Duke-NUS Sport & Exercise Medicine Centre (SDSC) provides integrated, multidisciplinary and seamless sport and exercise medicine (SEM) care while pushing the frontiers of clinical services, research and education in SEM.

SEM benefits not only elite and competitive athletes, but also sedentary individuals looking to start an active and healthy lifestyle, the very young

to the very old, and those looking to use exercise as an effective intervention to manage chronic diseases.

The SDSC has the largest headcount among SEM providers in Singapore – with 14 full-time physicians practicing SEM, and the largest number of accredited supervisors and training positions for Advanced Specialist Training in SEM.

INCREASING ACCESSIBILITY TO SEM SERVICES

The SDSC was formed in 2018 to leverage on Changi General Hospital's (CGH) leadership in SEM to better serve patients and respond to evolving healthcare needs.

It has since established clinical sites at Singapore General Hospital, Sengkang General Hospital and KK Women's and Children's Hospital, in addition to existing sites at CGH, SSMC@SSI (Singapore Sport Institute) and SSMC@Novena. This has significantly enhanced patients' accessibility to a comprehensive range of SEM services.

CLINICAL EXCELLENCE AND SUPPORT

The SDSC is committed to supporting our athletes both on and off the field, including providing national athletes with medical support at major games such as at the 2020 Tokyo Olympics and the 31st South East Asian Games in Hanoi, both postponed due to the COVID-19 pandemic.

It also provided medical expertise at the Singapore Tennis Open, an ATP 250 event held in February 2021, and medical screening support for participants at the Special Olympics World Games Berlin 2023.

RESEARCH AND INNOVATION

The SDSC clinical services registries will be instrumental in providing value-driven care (VDC) by utilising a data-driven approach in analysing patient outcomes. VDC is in line with SingHealth's objectives of improving clinical outcomes and optimising costs within our healthcare ecosystem.

The registries are also in line with the Healthier SG national initiative's goals of preventive health, preventing the onset of chronic diseases and providing strong support for patients to lead healthier lifestyles.

COMMUNITY OUTREACH

Outside of clinical settings, the SDSC supports various community efforts to promote physical activity and healthy living. This is in line with the Ministry of Health's 'Beyond Healthcare 2020' key thrust of moving 'Beyond Healthcare to Health', where SEM can play a vital role.



Our Services

Our extensive range of integrated SEM services include:

- Sports Injury Treatment & Injury Prevention
- Weight Management
- Athlete Pre-participation Screening
- Diagnostic & Treatment Modalities
- Sports Nutrition
- Sports Podiatry
- Sports Psychology
- Clinical Exercise Physiology
- Performance Enhancement & Exercise Testing
- Exercise Prescription for Managing Chronic Diseases

For GP referrals, please contact the SingHealth Duke-NUS Sport & Exercise Medicine Centre:

**Singapore
General Hospital**
6326 6060

**Changi
General Hospital**
6788 3003

**Sengkang
General Hospital**
6930 6000

**KK Women's and
Children's Hospital**
6692 2984

Website: www.singhealth.com.sg/sport-and-exercise-medicine-centre

Our Doctors

Head & Senior Consultant

Adj Assoc Benedict Tan Chi'-Loong

Senior Consultant,
Dept of Sport & Exercise Medicine, CGH

Senior Consultants,

Dept of Sport & Exercise Medicine, CGH

Adj Asst Prof Ivy Lim

Adj Assoc Prof Kelvin Chew Tai Loon

Adj Assoc Prof Roger Tian Ho Heng

Consultants,

Dept of Sport & Exercise Medicine, CGH

Adj Asst Prof Lim Ang Tee

Dr Mandy Zhang Jiajia

Associate Consultants,

Dept of Sport & Exercise Medicine, CGH

Dr Victor Tan Aik Khien

Dr Joshua Li Zhongyi

Dr Lim Baoying

Dr Scott Xu Cunzhi

SSMC@SSI: A Hub for Elevated Athlete Care

INTRODUCING SSMC@SSI

In the realm of medicine, elite athletes represent a unique cohort of patients with distinct demands.

The convergence of high training and competition volumes, coupled with the need for rapid recovery, creates a complex healthcare landscape that necessitates specialised care.

Supported by Changi General Hospital, the **Singapore Sport & Exercise Medicine Centre @ Singapore Sport Institute (SSMC@SSI)** is a hub where the art and science of sport medicine converge to optimise the health and performance of national athletes.

Here, we shed light on the medical services provided at the Centre.

THE UNIQUE MEDICAL NEEDS OF ATHLETES

Athletes, with their remarkable feats and unwavering commitment, stand as paragons of physical and mental prowess. Yet, beneath their exceptional exterior lies a unique set of medical considerations.

The rigorous training regimens, coupled with the pursuit of peak performance, create an environment where the margin for medical error is significantly reduced. Athletes must navigate the challenges of injury prevention, rapid recovery and overall well-being, all while striving to excel in their chosen disciplines.

As sport and exercise medicine physicians, it is crucial to recognise these distinctive needs and collaborate with the multidisciplinary team of allied health professionals and sport scientists to provide the highest level of care.

COMPREHENSIVE MEDICAL SCREENING

An Underpinning for Optimal Athlete Health and Performance

At the heart of SSMC@SSI's medical services lies a comprehensive medical screening programme tailored for national athletes. This programme underscores the principle that proactive healthcare plays a pivotal role in enhancing athlete well-being and optimising performance.

Screening protocol

The screening protocol encompasses clinical evaluations, laboratory tests and electrocardiograms, with a **dual focus on physical and mental health**.

By delving into athletes' medical history, assessing their current health status and identifying potential risk factors, SSMC@SSI ensures that each athlete receives **personalised care that aligns with their unique requirements**.

Mental well-being integration

The integration of mental well-being in the screening process attests to the holistic approach that SSMC@SSI champions.

Athlete mental health is acknowledged as an intrinsic component of overall performance. By recognising the interplay between psychological and physiological factors, SSMC@SSI ensures that athletes receive the multidimensional care they deserve.



ENHANCED MEDICAL SERVICES AT MAJOR GAMES COMPETITIONS

Supporting Team Singapore's Triumphs

Major games competitions mark the pinnacle of an athlete's journey, demanding medical services that are swift, efficient and responsive. SSMC@SSI's approach to medical care during such events is characterised by **innovation** and **precision**.

Innovation

The **amalgamation of telemedicine and in-person consultations** emerges as a hallmark of SSMC@SSI's approach.

In the fast-paced world of sports, athletes often require immediate healthcare attention, irrespective of their geographical location. Through telemedicine, SSMC@SSI provides real-time consultations, enabling athletes and officials to access expert medical guidance promptly even when training or competing overseas.

According to SSMC@SSI Medical Director Adjunct Associate Professor Kelvin Chew, "Telemedicine empowers us to address athletes' medical needs swiftly and efficiently, regardless of their physical location. This enables us to offer comprehensive care, contributing to their performance excellence."



Precision

Precision in medical diagnosis is paramount for athletes.

SSMC@SSI leverages **portable diagnostic musculoskeletal ultrasound** as an adjunctive tool for on-the-spot accurate diagnoses. This technology enables immediate visualisation of soft tissues, joints and musculoskeletal structures, empowering medical experts to make informed decisions about injuries.

By incorporating this tool into its arsenal, SSMC@SSI **shortens diagnostic timelines** and **facilitates athlete engagement in their recovery journey**.



HOLISTIC ATHLETE CARE THROUGH COLLABORATION OF SPORTS MEDICINE AND SPORTS SCIENCE

The well-being and performance of athletes are best optimised through a holistic approach that encompasses both medical and scientific aspects. SSMC@SSI stands as a testament to this synergy.

Sports medicine

Physiotherapy, exercise rehabilitation and massage therapy form a core component of athlete recovery and rehabilitation.

SSMC@SSI's physiotherapy and exercise rehabilitation programmes are meticulously designed to accelerate recovery, restore functionality and prevent recurrence of injuries. The integration of massage therapy further fosters muscle recovery, aiding athletes in their pursuit of peak performance.

Ms Suelyn Chan, Senior Principal Physiotherapist at Changi General Hospital and Physiotherapy Lead at SSMC@SSI underlines, "Our integrated approach to physiotherapy and exercise rehabilitation is tailored to each athlete's needs. By combining advanced techniques and individualised attention, we ensure that their recovery journey is optimised."

Sports science

SSMC@SSI recognises that comprehensive athlete care extends beyond medical treatments. This is where sports sciences come into play. Biomechanics, nutrition, psychology, strength and conditioning, and physiology collectively contribute to enhancing athletes' performance, resilience and overall well-being.



The Head of SSMC@SSI, Dr Marcus Lee, asserts, "Sports science complements sports medicine to complete the holistic care picture. By delving into the nuances of athletes' biomechanics, psychology and nutrition, we create a roadmap to elevate their performance while fostering their well-being."

SSMC@SSI'S COMMITMENT TO ATHLETE CARE

SSMC@SSI's commitment to elevating athlete care stands as a shining light in the realm of sports medicine. The intricate fusion of comprehensive medical screening, innovative medical services at

major games, and the synergy between sports medicine and sports science create a platform where athletes receive personalised, multidimensional care that is tailored to their unique needs.

Written by

Dr Scott Xu Cunzhi, Associate Consultant, Department of Sport & Exercise Medicine, Changi General Hospital

Engaging and Empowering GPs Towards Better Child Health and Care in the Community



ABOUT THE PAEDSENGAGE PROGRAMME

PaedsENGAGE is a new pilot programme led by KK Women's and Children's Hospital (KKH) and National University Hospital Singapore (NUH), with funding by the Ministry of Health.

This initiative aims to **build a robust general practitioner (GP) support and referral network** by upskilling their competency to manage non-emergency paediatric conditions, and to anchor care for such cases within the community instead of at acute hospitals.

To develop and strengthen intermediate and long-term paediatric services in the community, the team is building partnerships with GPs to **right-site care for children with mild-to-moderate acute conditions within the primary care setting**.

Since April 2023, more than 300 GPs have been trained and certified as **PaedsENGAGE GP Partners**.



HOW TO BECOME A CERTIFIED PAEDSENGAGE GP PARTNER

GPs will become a certified PaedsENGAGE GP Partner upon registration and completion of the online e-learning modules.

Following certification, GPs can refer patients to the KKH or NUH Children's Emergency (CE) via the PaedsENGAGE programme, and continue the blended learning journey.

Interested GPs can enrol into PaedsENGAGE by scanning the QR code.



For more programme details, please visit www.kkh.com.sg/paedsengage-gpinfo.





BENEFITS OF PAEDSENGAGE

For General Practitioners

1. GPs who join PaedsENGAGE will benefit from a training programme focused on nurturing:

- The ability to provide appropriate management of common paediatric medical conditions within the community, such as:

Fever	Diarrhoea	Minor injuries
Breathlessness	Common eye, ear, nose and throat conditions	Common infections and antibiotic use
Vomiting		

- The ability to identify early warning signs and enhance timely referral for those needing tertiary paediatric care

2. PaedsENGAGE GPs benefit from a blended learning curriculum comprising:

- Online e-learning modules taken at the GP's own time and pace (to be completed within two months)
- Team-based learning sessions and educational forums conducted every three to four months, focusing on case scenarios and interactive discussions
- Hands-off clinical observation attachments within the KKH or NUH CE – to learn about acute management and follow-up care of common illnesses in children, and observe the management of resuscitation cases and clinical procedures



For Parents and Caregivers

As PaedsENGAGE GPs are equipped with the skills to assess and manage paediatric conditions and prescribe timely, appropriate treatment, parents are strongly encouraged to visit these GPs for their children's non-emergency illnesses and conditions.

Should a child require referral to the CE following an initial assessment by the PaedsENGAGE GP, **families can benefit from a \$50 subsidy on prevailing CE fees, along with a shorter waiting time.**

For Hospitals

As PaedsENGAGE GPs get equipped with skills and knowledge to manage non-emergency conditions within the community, hospitals can gradually focus on the acute care of children with illnesses requiring more urgent and critical medical attention and treatment.

Specialist Promotions & Appointments



Singapore
General Hospital
SingHealth

Appointments: 6326 6060 | Email: gpnetwork@sgh.com.sg

New Appointments



Dr Francesca Lorraine Lim
*Senior Consultant,
Haematology;*
**Head, SingHealth
Duke-NUS Cell Therapy
Centre (SDCTC)**



Dr Chen Robert
*Head &
Senior Consultant*
Dept
Neuroradiology



Prof Ng Heng Joo
*Senior Consultant,
Haematology;*
**Clinical Director,
Governance and
Quality**



Dr Kang Mei Ling
*Senior Consultant,
Internal Medicine;*
**Clinical Director,
Clinical Risk
Management (CRM)**



**Assoc Prof Cheow
Peng Chung**
*Senior Consultant,
Hepato-pancreato-biliary
& Transplant Surgery;*
**Clinical Director,
Clinical Events
Management (CEM)**

Appointed as Senior Consultant



Dr Lam Wee Leon
Senior Consultant
Dept
**Hand & Reconstructive
Microsurgery**

Appointed as Consultant



**Dr Wong Peng Yong,
Andrew**
Consultant
Dept
**Family Medicine &
Continuing Care**

Appointed as Associate Consultants



**Dr Muruganath
Nithyananthan**
Associate Consultant
Dept
Anaesthesiology



Dr Ong Siyu, Jocelyn
Associate Consultant
Dept
Anaesthesiology



Dr Pang Sing Ying
Associate Consultant
Dept
Anaesthesiology

Specialist Promotions & Appointments



Singapore
General Hospital
SingHealth

Appointments: 6326 6060 | Email: gpnetwork@sgh.com.sg

Appointed as Associate Consultants



Dr Guo Shuyi
Associate Consultant
Dept
Diagnostic Radiology



Dr Emma Lee Choon Hwee
Associate Consultant
Dept
Diagnostic Radiology



Dr Lee Zhu Yi Rebekah
Associate Consultant
Dept
Diagnostic Radiology



Dr Edmond Lim Yang Shan
Associate Consultant
Dept
Diagnostic Radiology



Dr Lim Yi Shan May
Associate Consultant
Dept
Diagnostic Radiology



Dr Elizabeth Tan Ming Jing
Associate Consultant
Dept
Emergency Medicine



Dr Arjun Thompson
Associate Consultant
Dept
Emergency Medicine



Dr Kristy Tian Jia Yi
Associate Consultant
Dept
Endocrinology



Dr Chen Kaina
Associate Consultant
Dept
Gastroenterology & Hepatology



Dr Pei Yiyi
Associate Consultant
Dept
Gastroenterology & Hepatology



Dr R Rajesh
Associate Consultant
Dept
Gastroenterology & Hepatology



Dr Tan Yi Yuan
Associate Consultant
Dept
Gastroenterology & Hepatology



Dr Angela Frances Yap Hui Wen
Associate Consultant
Dept
Geriatric Medicine



Dr Cherie Gan Le Si
Associate Consultant
Dept
Infectious Diseases



Dr Tan Seine Xuan Sophie
Associate Consultant
Dept
Infectious Diseases



Dr Wang Xiaohui
Associate Consultant
Dept
Internal Medicine



Dr Wong Wan Yu, Yvonne
Associate Consultant
Dept
Obstetrics & Gynaecology



Dr Christian Heng Hwee Yee
Associate Consultant
Dept
Orthopaedic Surgery



Appointed as Associate Consultants



Dr Png Lu Hui
Associate Consultant
Dept
**Otorhinolaryngology -
Head & Neck Surgery**




Dr Tay Kaijun
Associate Consultant
Dept
**Otorhinolaryngology -
Head & Neck Surgery**



**Dr Sangita
Kuparasundram**
Associate Consultant
Dept
**Rehabilitation
Medicine**




**Dr Chua Lee Wei
Brian**
Associate Consultant
Dept
**Respiratory & Critical
Care Medicine**



**Dr Toh Weiquan
Timothy**
Associate Consultant
Dept
**Respiratory & Critical
Care Medicine**



**Dr Wang Tze May,
Charmaine**
Associate Consultant
Dept
**Rheumatology &
Immunology**




Dr Lee Weiyong
Associate Consultant
Dept
**Vascular &
Interventional
Radiology**

Appointed as Senior Consultant



**Dr Fong Kenneth
Leopold**
Senior Consultant
**Singapore Changi
Aeromedical Centre**

Appointed as Associate Consultants



Dr Seah Zeyen
Associate Consultant
Dept
Accident & Emergency



**Dr Gregory Tan Boon
Leong**
Associate Consultant
Dept
Accident & Emergency



Dr Joanne Luo Huiyi
Associate Consultant
Dept
**Anaesthesia &
Surgical Intensive
Care**

Specialist Promotions & Appointments



Changi
General Hospital
SingHealth

Appointments: 6788 3003

Appointed as Associate Consultants



Dr Rachel Seet Huiqi
Associate Consultant
Dept
**Anaesthesia &
Surgical Intensive
Care**



Dr Wong Annie
Associate Consultant
Dept
**Anaesthesia &
Surgical Intensive
Care**



Dr Zeng Yanzhi
Associate Consultant
Dept
**Anaesthesia &
Surgical Intensive
Care**



Dr Ling Xiao Shuang
Associate Consultant
**Division of Breast
Surgery**



**Dr Kentson Lee Jing
Xin**
Associate Consultant
Dept
Diagnostic Radiology



Dr Lee Si Min
Associate Consultant
Dept
Endocrinology



**Dr Andrew Tan Xia
Huang**
Associate Consultant
Dept
**Gastroenterology &
Hepatology**



**Dr Trishpal Kaur
Dhalwal**
Associate Consultant
Dept
Geriatric Medicine



Dr Koh Wenjia, Pearly
Associate Consultant
Dept
**Respiratory & Critical
Care Medicine**



Dr Woo Jia Hao, Alvin
Associate Consultant
**Singapore Changi
Aeromedical Centre**



Sengkang
General Hospital
SingHealth

Appointments: 6930 6000 | Email: appointments@skh.com.sg

New Appointments



Dr Phoon Yee Wei
Head & Consultant
Dermatology Service



**Dr Clarence Kwan Kah
Wai**
Head & Consultant
**Gastroenterology &
Hepatology Services**



Dr Jade Soh Xiao Jue
Head & Consultant
**Infectious Diseases
Service**



New Appointments



**Dr Dominic Chen
Enhan**
Head & Consultant
**Rehabilitation
Medicine Service**

Appointed as Senior Consultants



Dr Aydin Hakan
Senior Consultant
Dept
Pathology



**Dr Uppaluri Srinivas
Anandswaroop**
Senior Consultant
Dept
Radiology

Appointed as Associate Consultants



**Dr Kang Junhui
Garrett**
Associate Consultant,
Gastroenterology &
Hepatology
Dept
General Medicine



Dr Kong Soo Ting
Associate Consultant,
Rehabilitation
Medicine
Dept
General Medicine



**Dr Fong Min Yi,
Grace**
Associate Consultant
Dept
Internal Medicine



Dr That Khaing Zin
Associate Consultant
Dept
Internal Medicine



Dr Tan Mei Ling
Associate Consultant
Dept
**Occupational
Medicine**



Dr Liew Siew Fai
Associate Consultant
Dept
Psychiatry



**Dr Goh Guang Wei
Adriel**
Associate Consultant
Dept
Radiology



Dr Yee Sze Ying
Associate Consultant
Dept
Radiology



**Dr Nathanelle Ann
Khoo Xiaolian**
Associate Consultant
Dept
Surgery

Specialist Promotions & Appointments



KK Women's and
Children's Hospital
SingHealth

Appointments: 6692 2984 | Email: centralappt@kkh.com.sg

New Appointments



Clin Assoc Prof Chan Yoke Hwee
*Chairman,
Medical Board;
Senior Consultant*
Division of Medicine



Clin Assoc Prof Thoon Koh Cheng
*Chairman,
Division of Medicine;
Senior Consultant*
Infectious Disease Service



Dr Mohammad Ashik bin Zainuddin
*Head &
Senior Consultant*
Dept
Orthopaedic Surgery



Dr Liu Shuling
*Director, KKIVF Centre;
Senior Consultant*
Dept
Reproductive Medicine



Dr Singaraselvan Nagarajan
*Deputy Head &
Senior Consultant*
Dept
Women's Anaesthesia

Promoted to Senior Consultants



Dr Teng Sung Shin
Senior Consultant
Dept
Emergency Medicine



Dr Wang Junjie
Senior Consultant
Dept
Gynaecological Oncology



Dr Tan Qing Ting
Senior Consultant
Dept
KK Breast



Dr Yan Zhiyan
Senior Consultant
Dept
KK Breast



Dr Sharon Low Yin Yee
Senior Consultant
Neurosurgical Service



Dr Merchant Khurshid Zarsis
Senior Consultant
Dept
Pathology and Laboratory Medicine



Dr Savitha Ramachandran
Senior Consultant
Dept
Plastic, Reconstructive and Aesthetic Surgery



Dr Cheng Shang-Ming
Senior Consultant
Dept
Women's Anaesthesia



Promoted to Consultants



Dr Loh Sin Wee
Consultant
Children's Intensive
Care Unit



**Dr Chan Wei Keong
Daniel**
Consultant
Endocrinology Service



**Dr Farah Safdar
Husain**
Consultant
Family Medicine
Service



**Dr Lee Shu-Yi,
Gabrielle**
Consultant
General Paediatrics
Service



**Dr Goh Lay Kuan
Jeannette**
Consultant
Genetics Service



Dr Ng Qiu Ju
Consultant
Dept
Gynaecological
Oncology



Dr Tong Wing Yee
Consultant
Dept
Neonatology



**Dr Muhammad Fairuz
Bin Abdul Rahman**
Consultant
Dept
Obstetrics and
Gynaecology



**Dr Loh Jia Min
Michelle**
Consultant
Dept
Reproductive
Medicine



Dr Li Xinyi
Consultant
Dept
Urogynaecology



**Dr Chia Xian Qing,
Pamela**
Consultant
Dept
Women's Anaesthesia

Appointed as Senior Consultants



Dr Teo Tzu Li Sylvia
Senior Consultant
Family Medicine
Service



Dr Loh Ne-Ron
Senior Consultant
Neurology Service

Appointed as Consultants



Dr Koh Yun Pei
Consultant
Dept
Dermatology



Dr Yeo Li Wen, Mildrid
Consultant
Genetics Service

Specialist Promotions & Appointments



KK Women's and
Children's Hospital
SingHealth

Appointments: 6692 2984 | Email: centralappt@kkh.com.sg

Appointed as Associate Consultants



Dr Ngiam Xin Ying
Associate Consultant
Dept
Child Development



Dr Teoh Mei Lin
Associate Consultant
Family Medicine
Service



Dr Wang Wanxuan
Associate Consultant
Dept
Obstetrics and
Gynaecology



Dr Woo Chin Yee
Associate Consultant
Dept
Orthopaedic Surgery



**Dr Chiam Yu Xi,
Leonora (Zhan Yuxi)**
Associate Consultant
Dept
Psychological
Medicine



National Heart
Centre Singapore
SingHealth

Appointments: 6704 2222 | Email: central.appt@nhcs.com.sg

New Appointments



**Assoc Prof Yeo Khung
Keong**
Chief Executive Officer
& Senior Consultant
Dept
Cardiology
Sub-specialties
Interventional
Cardiology, Structural
Heart Disease



**Assoc Prof Jack Tan
Wei Chieh**
Deputy CEO (Cluster
Cardiac Care Network)
& Senior Consultant
Dept
Cardiology
Sub-specialty
Interventional
Cardiology



**Assoc Prof David Sim
Kheng Leng**
Head &
Senior Consultant
Dept
Cardiology
Sub-specialty
Heart Failure

Promoted to Senior Consultants



**Asst Prof Chua Kim
Chai**
Senior Consultant
Dept
Cardiothoracic Surgery
Sub-specialty
Minimally Invasive
Cardiac Surgery




**Asst Prof Soo Ing
Xiang**
Senior Consultant
Dept
Cardiothoracic Surgery
Sub-specialties
Thoracic Surgery,
Thoracic Oncology




National Heart
Centre Singapore
SingHealth

Appointments: 6704 2222 | **Email:** central.appt@nhcs.com.sg


Promoted to Consultants



**Dr Chew Yun Chi
Kenneth Michael**
Consultant
Dept
Cardiology
Sub-specialties
**Heart Failure,
Echocardiography**



**Dr Kui Swee Leng
(Michelle)**
Consultant
Dept
Cardiology
Sub-specialties
**Cardiac Magnetic
Resonance Imaging,
Echocardiography**



Dr Tan Weixian Alex
Consultant
Dept
Cardiology
Sub-specialties
**Echocardiography,
Heart Failure**



Dr Yap Kok Hooi
Consultant
Dept
Cardiothoracic Surgery



National
Neuroscience Institute
SingHealth


Appointments:
(SGH Campus) 6326 6060
(TTSH Campus) 6330 6363

Email:
gpnetwork@sgh.com.sg
appointments@nni.com.sg


New Appointments



Dr Tan Yee-Leng
*Head, Ambulatory
Services &
Senior Consultant*
Dept
Neurology
(TTSH Campus)



Dr Jai Prashanth Rao
*Head, Neurosurgery
(SGH Campus) &
Senior Consultant*
Dept
Neurosurgery
(SGH Campus)



Dr Ng Yew Poh Vincent
*Head, Neurosurgery
(TTSH Campus) &
Senior Consultant*
Dept
Neurosurgery
(TTSH Campus)


Appointed as Associate Consultants



Dr Nijanth M Raj
Associate Consultant
Dept
Neurology
(SGH Campus)



Dr Tan Zhibin
Associate Consultant
Dept
Neurology
(SGH Campus)



Dr Poh Yen Yeong
Associate Consultant
Dept
Neurology
(TTSH Campus)



Dr Lim Jia Xu
Associate Consultant
Dept
Neurosurgery
(SGH Campus)



Dr Cheong Tien Meng
Associate Consultant
Dept
Neurosurgery
(TTSH Campus)



Dr Mak Siu Kei David
Associate Consultant
Dept
Neurosurgery
(TTSH Campus)

Embark on a Life-Changing Journey with a Career at SingHealth

If you are a qualified doctor, a challenging career awaits you at SingHealth. We seek suitably qualified candidates to join us as:

- SENIOR CONSULTANTS/CONSULTANTS/ASSOCIATE CONSULTANTS
- RESIDENT PHYSICIANS
- STAFF REGISTRARS/SERVICE REGISTRARS

Interested applicants are to email your CV with full personal particulars, educational and professional qualifications (including housemanship details), career history, present and expected salary, names of at least two professional references, contact numbers and email address together with a non-returnable photograph.

Please email your CV to the respective institutions' email addresses/online career portals with the Reference Number DM2310.



The SingHealth Duke-NUS Academic Medical Centre draws on the collective strengths of SingHealth and Duke-NUS Medical School to drive the transformation of healthcare and provide affordable, accessible, quality healthcare.

With 42 clinical specialties, a network of 4 Hospitals, 5 National Specialty Centres, 8 Polyclinics and 3 Community Hospitals, it delivers comprehensive, multidisciplinary and integrated care.

■ Singapore General Hospital

Departments seeking:

Resident Physicians and Staff Registrars

- Anaesthesiology
- Breast Surgery
- Colorectal Surgery
- Diagnostic Radiology
- Emergency Medicine
- ENT- Head & Neck Surgery
- Family Medicine & Continuing Care (FMCC)
- Gastroenterology & Hepatology
- General Surgery
- Haematology
- Hand & Reconstructive Microsurgery
- Infectious Diseases
- Orthopaedic Surgery (Sport & Exercise Medicine Centre)
- Plastic, Reconstructive & Aesthetic Surgery
- Rehabilitation Medicine
- Renal Medicine
- Rheumatology & Immunology
- SPRinT (Sarcoma, Peritoneal & Rare Tumours)
- Staff Clinic
- Vascular Surgery
- Urology

Associate Consultant/Consultant/ Senior Consultant

- Anatomical Pathology
- Occupational & Environmental Medicine
- SPRinT (Sarcoma, Peritoneal & Rare Tumours)
- Clinical Epidemiologist
- Microbiology (Diagnostic Bacteriology Section)

Website: www.sgh.com.sg

Career Portal: www.sgh.com.sg/careers

Email: careers.medical@sgh.com.sg

■ Changi General Hospital

Departments seeking:

Resident Physicians and Staff Registrars

- Accident & Emergency
- Anaesthesia & Surgical Intensive Care
- Aviation Medicine
- Breast Surgery
- Dermatology
- Diagnostic Radiology
- Endocrinology
- Geriatric Medicine
- Home Medical Services
- Medicine
- Neurosurgery
- Ophthalmology
- Orthopaedic Surgery
- Otorhinolaryngology - Head & Neck Surgery
- Psychological Medicine
- Rehabilitation Medicine
- Surgery
- Urology

Associate Consultants

- Anaesthesia & Surgical Intensive Care
- Aviation Medicine
- Cardiology
- Dermatology
- Diagnostic Radiology / Interventional Radiology
- Infectious Diseases
- Orthopaedic Surgery
- Otorhinolaryngology - Head & Neck Surgery
- Rheumatology
- Surgery
- Urology

Dental Surgeon

- Oral & Maxillofacial

Website: www.cgh.com.sg

Email: medical_hr@cgh.com.sg

■ Sengkang General Hospital

Departments seeking:

Resident Physicians and Staff Registrars

- Anaesthesiology
- Breast Surgery Service
- Cardiology
- Emergency Medicine
- Surgery
- General Medicine
- Intensive Care Medicine
- Orthopaedic Surgery (with interest in Hand Surgery and Orthopaedic Surgery)
- Otorhinolaryngology - Head & Neck Surgery
- Plastic, Reconstructive & Aesthetic Surgery Service
- Psychiatry
- Radiology
- Urology
- Vascular Surgery Service

Senior Consultant, Consultant, Associate Consultant

- Emergency Medicine
- Otorhinolaryngology - Head & Neck Surgery
- Pathology
- Radiology

Website: www.skh.com.sg

Career Portal: www.skh.com.sg/careers/Pages/careers.aspx

Email: careers@skh.com.sg

■ KK Women's and Children's Hospital

Departments seeking:

Associate Consultants/Consultants/ Senior Consultants

- Pathology & Laboratory Medicine (Gynaecologic & Breast Pathologist, Microbiologist and Chemical Pathologist)
- Diagnostic & Interventional Imaging

Consultants

- Psychological Medicine
- Women's Anaesthesia

Staff Registrars

- Child Development
- Diagnostic & Interventional Imaging
- Neurology Service
- Paediatric Surgery

Family Physician

- Family Medicine

Resident Physicians

- Diagnostic & Interventional Imaging
- Emergency Medicine
- Obstetrics & Gynaecology
- Ophthalmology Service
- Orthopaedic Surgery
- Otolaryngology
- Paediatric Medicine
- Paediatric Surgery
- Psychological Medicine
- Women's Anaesthesia

Website: www.kkh.com.sg

Email: medical.hr@kkh.com.sg

■ National Cancer Centre Singapore

Departments seeking Resident Physicians:

- Radiation Oncology
- Supportive & Palliative Care

Website: www.nccs.com.sg

Email: HR-Clinical@nccs.com.sg

■ National Dental Centre Singapore

Departments seeking:

- Consultant, Geriatric Special Dentistry Care
- Dental Surgeon, Oral & Maxillofacial Surgery
- Dental Officer, Dental Officers Advanced Practice Programme

Website: www.ndcs.com.sg

Career Portal: www.ndcs.com.sg/careers/dentists

Email: chen.si.fan@ndcs.com.sg

■ National Heart Centre Singapore

Departments seeking:

Consultant (Electrophysiology & Pacing)

- Cardiology

Resident Physicians and Staff Registrars

- Cardiology
- Cardiothoracic Surgery

Website: www.nhcs.com.sg

Email: goh.bing.xue@nhcs.com.sg / felicia.lim.s.h@nhcs.com.sg

■ National Neuroscience Institute

Departments seeking:

Resident Physicians and Service Registrars

- Neurology
- Neuroradiology
- Neurosurgery

Associate Consultant, Consultant, Senior Consultant

- Neurology
- Neuroradiology
- Neurosurgery

Website: www.nni.com.sg

Email: nni_hr@nni.com.sg

■ Singapore National Eye Centre

Departments seeking

- Clinical Associate
- Resident Physician, Ophthalmology
- Staff Registrar, Ophthalmology

Senior Consultant, Consultant, Associate Consultant

- Oculoplastic
- Ocular Inflammation and Immunology

For more information, please visit the Career Opportunities section on the Singapore National Eye Centre website.

Website: www.shec.com.sg

Email: recruitment@shec.com.sg

■ SingHealth Community Hospitals (Sengkang Community Hospital and Outram Community Hospital)

Department seeking:

Staff Registrars, Resident Physicians

- Family Medicine

Website: www.singhealth.com.sg/sch

Career Portal: www.singhealth.com.sg/sch/careers

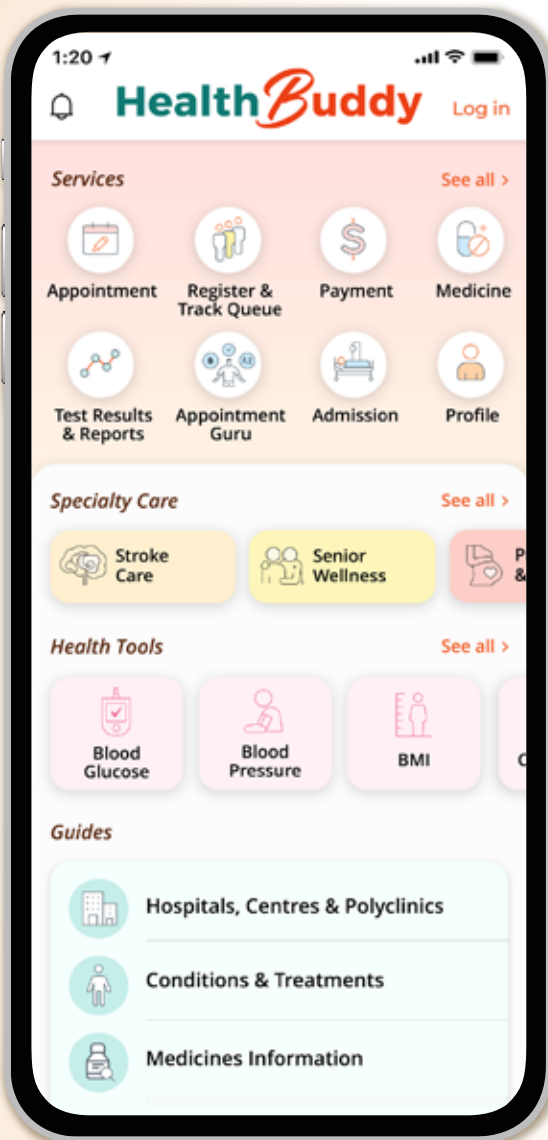
Email: schrecruitment@singhealthch.com.sg



Health Buddy



The most useful health app for all your needs!



APPOINTMENT

View and reschedule your appointments with ease!



PAYMENT

Pay anywhere, after consultation or treatment.



ORDER MEDICINE

Arrange for FREE delivery of your medicines!



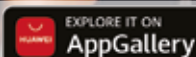
TEST RESULTS & REPORTS

See all your test results here!



HEALTH TOOLS

Track your blood glucose, blood pressure, weight and more!



CMEs & Courses

SGH Lunchtime GP Q+A Session



Meet our specialists as they address your questions on the latest updates in their specialty area, patient care and the referral process.

Date 8 November 2023 (Wednesday)	Time 1pm to 2pm	
Hosted via Zoom Webinar	Free admission	1 CME point will be awarded

Session

1 1pm to 1.30pm
Department of Hepato-pancreato-biliary and Transplant Surgery
Dr Tan Hwee Leong
Associate Consultant

Session

2 1.30pm to 2pm
Department of Nuclear Medicine and Molecular Imaging
Dr Tham Wei Ying
Consultant



Scan the QR code to register.

For enquiries and to submit questions, please email to gpnetwork@sgh.com.sg.



HOTLINES



GP Fast Track Appointment Hotlines

Singapore General Hospital 6326 6060	KK Women's and Children's Hospital 6692 2984	National Heart Centre Singapore 6704 2222
Changi General Hospital 6788 3003	National Cancer Centre Singapore 6436 8288	National Neuroscience Institute 6330 6363
Sengkang General Hospital 6930 6000	National Dental Centre Singapore 6324 8798	Singapore National Eye Centre 6322 9399

www.singhealth.com.sg

Reg. No. 200002698Z