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# THE HONG KONG 香港醫訊 MEDICAL DIARY

VOL.26 NO.11 November 2021

## *Transport Medicine*

## Certificate Course on

# Communication and Swallowing Development and Disorders in Children 2021

(Video Lectures)



Jointly organised by



The Federation of  
Medical Societies of  
Hong Kong



The Hong Kong  
Association of Speech  
Therapists

**Objectives:** Upon completion of the course, participants will have a basic understanding towards the development of communication and swallowing in children, common communication and swallowing disorders, as well as basic components in assessing and treating communication and swallowing disorders. With the above knowledge, participants will be able to develop greater awareness in identifying children with suspected communication and swallowing disorders at their clinical practice or even in their own family.

Date	Topics	Speakers
9 November 2021	Early Language Development & Disorders	Dr. Anita Wong Associate Professor BSc (Speech and Hearing Sciences) Faculty of Education The University of Hong Kong
16 November 2021	Speech Sound Development & Disorders	Dr. Carol To Associate Professor Academic Unit of Human Communication, Development and Information Sciences Faculty of Education The University of Hong Kong
23 November 2021	Dyslexia	Dr. Dustin Lau Associate Professor Department of Chinese & Bilingual Studies Hong Kong Polytechnic University
30 November 2021	Bilingual Development in Children	Dr. Angel Chan Associate Professor Department of Chinese & Bilingual Studies Hong Kong Polytechnic University
7 December 2021	Understanding Developmental Stuttering in Children	Dr. Thomas Law Assistant Professor & Deputy Chief of Division Department of Otorhinolaryngology, Head and Neck Surgery The Chinese University of Hong Kong
14 December 2021	Aural Rehabilitation for Children with Hearing Impairment	Dr. Kathy Lee Associate Professor & Chief Division of Speech Therapy Department of Otorhinolaryngology, Head and Neck Surgery Faculty of Medicine The Chinese University of Hong Kong

**Date :** 9, 16, 23, 30 November & 7, 14 December 2021 (Every Tuesday)

**Duration of session:** 1.5 hours

**Time :** 7:00 pm – 8:30 pm

**Course Feature:** Video lectures (with Q&A platform for participants to post the questions)

**Quiz for doctors:** To tie in with the CME requirements for video lectures, DOCTORS are required to complete a quiz after the completion of each lecture

**Language Media :** Cantonese (Supplemented with English)

**Course Fee :** HK\$1,000 (6 sessions)

**Certificate :** Awarded to participants with a minimum attendance of 70% (4 out of 6 sessions)

**Enquiry :** The Secretariat of The Federation of Medical Societies of Hong Kong

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## The Cover Shot



### The Golden Pavilion

The Golden Pavilion, as shown in the photograph, is a key landmark of Kyoto. This photo was taken during a trip to Japan in 2017. Now, with the pandemic still ongoing, it is not so easy for us to travel abroad.

The photo was taken with Sony A99II and SAL-70300G2 at 100mm.



**Dr Total Wai-to CHAN**

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# Editorial

## Dr Chun-yin WONG

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Hong Kong College of Emergency Medicine

**Editor**

Dr Chun-yin WONG

Transport Medicine has played an increasingly important role in frontline clinical practice. As a result of various factors including increase in our population, increase in hospital or clinic attendance, re-organisation of specialty services in the public system and the establishment of new hospitals, inter-hospital transport is frequently practised and has become ever more challenging and complex to physicians. Indeed, apart from inter-hospital transfer, intra-hospital transport of seriously ill patients is a common clinical scenario that doctors from most specialties would encounter.

I will be taking the lead in this issue to review with our readers the Principles of Emergency Medicine Transport in general, which aims to ensure patient transport safety. Special considerations during the Coronavirus Disease Pandemic will then be discussed. Though the fourth wave of the COVID pandemic has subsided in Hong Kong, we still need to be vigilant against possible resurgence of community outbreak, as witnessed in many countries in their recent encounter with the Delta variant. Based on local and international literature, the pearls and pitfalls during transport would be highlighted to better protect our staff and patients.

In this issue, experienced Transport Team Leaders from various Emergency Departments have been invited to share their expertise on important topics. Dr TH CHAN will cover the conditions likely requiring secondary transfer to trauma centres, and his recommendations on preparation ahead and treatment during transport. Dr YY HUI will highlight the importance of safe inter-hospital maternal transport in optimising maternal and foetal outcomes. Besides, Dr HL CHEUNG has written on the specific challenges of transporting paediatric patients and ways to overcome these challenges.

Furthermore, Dr CW CHAU and Dr Wendy CHENG will introduce Air Medical Transport in Hong Kong. In particular, the Government Flying Service of Hong Kong and Long-Range Retrieval Service will be discussed. I am confident the topic would be interesting to everyone.

Finally, let us have some leisure topics. Dr WL TONG will share with us her fascinating experience of overseas touring by bicycle. I gather the article will bring back our happy memories of the overseas trips before the COVID pandemic.

I hope our readers will enjoy reading this issue, and the sharing from various experienced physicians can be helpful in the clinical practice of our colleagues.










# New Horizon in Cancer Management

Date: Thursday, 9 December 2021 | Time: 19:00 – 21:15 HKT

**Language: English**  
with Simultaneous  
Interpretation in Putonghua,  
Japanese and Korean  
普通話即時傳譯  
日本語同時通訳  
한국어로 동시통역

## Programme

19:00 - 19:10	<b>Welcome Speech</b>	 <b>Dr. Walton LI</b> Chief Executive Officer, HKSH Medical Group Medical Superintendent, Hong Kong Sanatorium & Hospital
19:10 - 19:35	<b>HKSH Experience of CAR-T Treating Relapsed Diffuse Large B Cell Lymphoma with CAR-T</b>	 <b>Dr. Raymond LIANG</b> Specialist in Haematology & Haematological Oncology Hong Kong Sanatorium & Hospital
	<b>Laboratory Monitoring for CAR-T Cell Persistence</b>	 <b>Dr. Edmond MA</b> Director, Clinical & Molecular Pathology Hong Kong Sanatorium & Hospital
19:35 - 19:40	<b>Q&amp;A</b>	
19:40 - 20:05	<b>Clinical Experience of MR-guided Radiotherapy for Gynecological Cancers and Future Perspectives</b>	 <b>Dr. Amy CHANG</b> Specialist in Clinical Oncology Hong Kong Sanatorium & Hospital
20:05 - 20:10	<b>Q&amp;A</b>	
20:10 - 20:35	<b>ClearRT</b>	 <b>Dr. Ben YU</b> Head, Medical Physics Department Hong Kong Sanatorium & Hospital
20:35 - 20:40	<b>Q&amp;A</b>	
20:40 - 21:05	<b>Breakthrough Roles of Molecular Tests in Cancer Treatment</b>	 <b>Dr. Edmond MA</b> Director, Clinical & Molecular Pathology Hong Kong Sanatorium & Hospital
21:05 - 21:10	<b>Q&amp;A</b>	
21:10 - 21:15	<b>Closing Remarks</b>	 <b>Mr. Wyman LI</b> Chief Operating Officer, HKSH Medical Group Manager (Administration), Hong Kong Sanatorium & Hospital
21:15	<b>End of Symposium</b>	

\* Content is subject to change without prior notice

## Chairpersons



**Dr. Raymond LIANG**  
Specialist in Haematology & Haematological Oncology  
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**Dr. K. Y CHEUNG**  
Chairman  
The Hong Kong Institution of Physicists in Medicine

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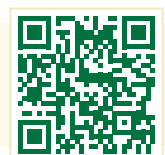
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# Principles of Emergency Medicine Transport and Practice in the Coronavirus Disease Pandemic

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Dr Chun-yin WONG

*This article has been selected by the Editorial Board of the Hong Kong Medical Diary for participants in the CME programme of the Medical Council of Hong Kong (MCHK) to complete the following self-assessment questions in order to be awarded 1 CME credit under the programme upon returning the completed answer sheet to the Federation Secretariat on or before 30 November 2021.*

## BACKGROUND

Critically ill patients presenting to the Emergency Department often have marginal or depleted physiological reserves. In the face of disease evolution or interaction with external factors, these patients are at risk of clinical deterioration, which at times can be life-threatening. In particular, ventilated or haemodynamically unstable patients are at risk of en route adverse events.<sup>1</sup>

Safe transport of the critically ill patient requires accurate assessment and optimisation of the patient before transport.<sup>2</sup> Meticulous planning, deployment of appropriately trained staff and of essential equipment, prompt response and effective communication among referring, transport and receiving teams are prerequisites for a smooth transport process.

Taking reference from international and local literature, this article will focus on inter-hospital and intra-hospital transport from an Emergency Medicine perspective. This article will further explore the international practice in Transport Medicine in response to the Coronavirus Disease 2019 (COVID-19) pandemic.

## TYPES OF TRANSPORT

### Interhospital Transport

Interhospital transport is indicated when the referring hospital lacks the necessary expertise, equipment, and/or diagnostic or therapeutic facilities, either immediately or in case of clinical deterioration in the patient.

### Intrahospital Transport

Intra-hospital transport refers to the transport of critically ill patients from one area to another within the hospital for diagnostic or therapeutic indications.

## PRE-TRANSPORT PREPARATION

### Evaluation on Appropriateness of Transport

The transport should be justifiable. The benefits of a planned intervention in the receiving unit should

outweigh the risks of transporting the critically ill patient from the referring unit<sup>3</sup>. Based on risk-benefit analysis of the individual patient, a qualified clinician should determine the appropriateness of the transport, the priority category of the patient and the transport team configuration.

## Communication before Transport

The referring doctor should promptly keep his/her nurses caring for the patient informed of the transport decision and the details of the transport arrangements. The receiving team should be informed ahead of the transport and be provided with sufficient information. The best route should be adopted, and a lift should be reserved before patient arrival. Transport should not be initiated until the receiving unit has made all necessary preparation to receive the patient, including but not limited to staff, equipment and facility. Last but not least, informed consent should be obtained from the patient or guardian regarding the planned transport.<sup>4</sup>

## STAFFING

Personnel engaging in the transportation of critically ill patients should be adequately trained. The transport team should be familiar with the equipment and be experienced with airway control, ventilation, resuscitation, and other anticipated emergency procedures.<sup>2</sup>

## Role Delineation of Transport Team Members

*The Team Leader should:*

- i) Ensure that the patient is optimised for the transport.
- ii) Ensure that the necessary equipment and drugs are available and functional.
- iii) Ensure proper setting and functioning of the portable ventilator including appropriate setting of the alarms for close monitoring.
- iv) Anticipate complications during transport and be prepared with a management plan accordingly.
- v) Monitor the patient and deliver the en route treatment(s) as indicated.





### The Team Member should:

- Prepare the necessary equipment and drugs.
- Ensure correct patient identification and documentation of the transport.
- Assist the team leader in optimising the condition of the patient.
- Collaborate with the team leader to check for any contraindications to the transport.
- Perform frequent pre-, intra- and post-transport assessments to monitor the patient's condition.
- Prepare and administer prescribed medications and assist in other necessary treatment during transport.
- Bring a mobile phone or dext phone for communication.

## EQUIPMENT

### Principles

Equipment should be adequate in amount for each transport, taking into account the duration of transport, the patient's condition and the level of necessary therapeutic intervention(s). For equipment selection, the following factors should be considered: size, weight, battery life, durability and suitability for operation under transport conditions, and oxygen consumption.

Equipment should be secured and functioning properly. Monitoring and infusion devices should be placed in areas visible to the escort personnel on the ambulance. Electrical and gas supply fittings of all equipment should be compatible with those of the ambulance.<sup>2</sup> Extra battery packs for electrically driven devices should be available. All equipment needs to be properly maintained and regularly checked.

All equipment used in the MRI suite, including ventilator, physiological monitor, infusion pump or syringe pump, should be MRI-compatible and properly secured.

Specialised equipment is indicated for neonatal and pediatric transport, as well as in patients requiring extracorporeal life support. Detailed discussion is beyond the scope of this article.

**Table 1. Common equipment required for transport**  
(Excerpted from *Guidelines for Transport of Critically Ill Patients*. Australasian College for Emergency Medicine, Australian and New Zealand College of Anaesthetists, College of Intensive Care Medicine of Australia and New Zealand. 2015.<sup>1</sup>)

Basic monitoring of pulse rate, blood pressure and oxygen saturation by pulse oximetry should be for all patients.
Cardiac monitoring should be used in intubated, ventilated patients, or patients with unstable haemodynamics or unstable cardiovascular conditions. (Fig. 1)
A bag-valve mask of appropriate size with a bacterial and viral filter should be available for all patients.
Equipment to secure the airway should be available.
A closed suction system should be considered for mechanically ventilated patients.
A portable ventilator with disconnect and high pressure alarms is recommended.
A properly secured portable oxygen cylinder with oxygen in excess of the estimated duration of the transport should be available for patients requiring oxygen therapy.
Infusion pumps with alarm function are highly recommended for accurate administration of drug infusions.
A defibrillator is preferred for all patients requiring cardiac monitoring.
A capnometer is highly recommended for monitoring patients on mechanical ventilation or sedation.



**Fig. 1** A patient with myocardial infarction on cardiac monitoring under doctor-led escort. (Excerpted from ACS in Action website, Hong Kong College of Cardiology.<sup>6</sup>)

## Therapeutic Agents

Supplies of oxygen and pharmacological agents should be in excess of that estimated for the maximum transport time. All drugs should be checked and clearly labelled prior to dispatch.

The range of drugs available should include as-needed drugs to manage a patient's specific clinical condition and anticipated medical emergencies in case of clinical deterioration. Table 2 lists the common medical emergencies during transport.

Insulator bags may be needed for drugs that require refrigeration to maintain effectiveness. Blood product transfusion should be initiated before transport in life-threatening cases of acute blood loss or anaemia, as long as the preparation of the blood product does not lead to an excessive delay to definitive treatment.

**Table 2. Common medical emergencies during transport**  
(Excerpted from *Guidelines for Transport of the Critically Ill*. The Hong Kong College of Anaesthesiologists. 2019.<sup>2</sup>)

Cardiac arrest
Hypotension
Hypertensive emergency
Cardiac arrhythmia
Anaphylaxis
Bronchospasm
Hyperglycaemia/ hypoglycaemia
Increased intracranial pressure
Uterine atony
Adrenal dysfunction
Narcotic depression
Convulsion
Agitation
Pain
Vomiting
Electrolyte disturbances
Need for sedation and neuromuscular paralysis

## PATIENT STABILISATION BEFORE TRANSPORT

Adequate preparation and calculated anticipation of possible clinical needs en route before patient transport are both essential.

The team leader should assess the patient immediately

before transport, especially after being placed on monitoring equipment and the transport ventilator (if indicated) using a structured approach as illustrated below:

- i) Airway
  - a) The airway (for intubated patients, the endotracheal tube) is secured and patent.
  - b) The position of the endotracheal tube should be assessed.
- ii) Breathing
  - a) Ventilation is adequate, and ventilator settings are appropriate.
  - b) The underwater seal drain is not clamped.
- iii) Circulation
  - a) The patient is haemodynamically optimised for transport.
  - b) Vital signs are displayed on transport monitors and are clearly visible to transport staff.
  - c) Venous access is adequate and patent.
  - d) Intravenous infusions and infusion pumps are functioning properly.
- iv) Drains
  - a) All drains (urinary, wound, or underwater seal) are functional and secured.
- v) Environment / Equipment
  - a) The patient is safely placed on the transport trolley/bed.
  - b) Appropriate infection control precautions according to the latest guidelines are exercised.
  - c) All equipment alarms are switched on.
  - d) No equipment should be placed on the patient.

## EN ROUTE AND ARRIVAL

The status of the patient should be monitored continuously. Any change in the patient's condition, unexpected event, or critical incident should be responded to immediately.

Upon arrival at the destination, the receiving team should check the monitor, ventilation, oxygen, suction, and power facilities. The patient should be reassessed when the new monitors, ventilators, oxygen, and power supplies are established in receiving unit.

A complete handover should be performed by the team leader to the receiving team. The transport team should continue patient care until the receiving team is fully ready to take over the care of the patient. All essential therapies, such as vasopressor infusion, should be continued during transport and handover. If the transport involves the patient's belongings, the prevailing guidelines for handling patient's belongings should be followed.

## DOCUMENTATION

The patient's clinical status and treatment received during transport should be documented in the record.

## Special Considerations in Infection Control against Coronavirus Disease 2019 (COVID-19)

(Note: The following discussion is extracted from local and international guideline recommendations or literature for peer reference; this discussion is not intended to be a formal guideline recommendation per se.)

Appropriate infection control measures should be applied to the patients, transport team and receiving destination as per latest guideline recommendations by local authorities.<sup>7</sup> The ambulance crew should be informed of the infectious risk for early preparation.<sup>8,9</sup>



*Fig. 2 Ambulance crew on personal protective equipment (PPE) during patient transport in the United Kingdom. (Excerpted from Ambulance Response to COVID-19. Association of Ambulance Chief Executives.<sup>9</sup>)*

For confirmed or highly suspected cases of COVID-19 infections, inter- and intra-hospital transfer should be limited to essential purpose only. Investigations or interventions requiring patient transport should be carefully evaluated; only those which can potentially alter clinical management should be performed. Mobile imaging modalities such as bedside ultrasound may be used as an alternative.<sup>10</sup> Imaging at Radiology suite may preferably be done as last case if possible, to allow for thorough disinfection and to minimise cross-contamination with co-patients.

Nevertheless, early recognition of COVID-19 patients at high risk of deterioration is important and immediate transport is imperative if intensive care unit admission is required.<sup>11</sup>

Non-intubated patients should wear a surgical mask if possible.<sup>12</sup> If necessary, endotracheal intubation should be performed before transport to reduce risk of airway compromise during patient transport.<sup>13</sup> A bacterial and viral filter should be used for intubated patients. Unnecessary breathing circuit disconnection should be avoided during transport.<sup>14</sup>

Appropriate personal protective equipment should be worn by all staff handling a suspected or confirmed COVID-19 patient.<sup>15</sup> The risk of en route deterioration necessitating an aerosol-generating intervention should be taken into consideration. Unless absolutely essential, aerosol-generating procedures should be avoided during transport.





The transport route in the hospital should be cordoned off to reduce the risk to personnel nearby. When patient transport is completed, the transport team should properly degown and perform hand hygiene in the receiving unit. Equipment disinfection and/or disposal should be performed in accordance with infection control guidelines. Caution should be exercised to avoid contamination of clinical documents.<sup>16</sup>

## CONCLUSION

The decision to transport a critically ill patient is based on an assessment of the potential benefits of transport weighed against the potential risks. For risk mitigation, the transport process should be organised, efficient and prompt. Safety during transport hinges on patient optimisation before transport; appropriate planning and effective communication; deployment of appropriately trained staff; availability of essential equipment and drugs; appropriate monitoring and management plan; appropriate infection control measures; and proper documentation.

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15. Infection Control Branch; Centre for Health Protection. Recommended Personal Protective Equipment (PPE) in hospitals/clinics under Serious/ Emergency Response Level Coronavirus disease (COVID-19) (Interim). Reviewed 27 January 2021.
16. World Health Organization. Regional Office for the Western Pacific. Infection prevention during transfer and transport of patients with suspected COVID-19 requiring hospital care. 2020.



## MCHK CME Programme Self-assessment Questions

Please read the article entitled "Principles of Emergency Medicine Transport and Practice in the Coronavirus Disease Pandemic" by Dr WONG Chun-yin and complete the following self-assessment questions. Participants in the MCHK CME Programme will be awarded CME credit under the Programme for returning completed answer sheets via fax (2865 0345) or by mail to the Federation Secretariat on or before 30 November 2021. Answers to questions will be provided in the next issue of The Hong Kong Medical Diary.

Questions 1-10: Please answer T (true) or F (false)

1. Transport of critically ill patients is always indicated as there is no associated risk.
2. Consent is optional if the physician decides for transporting the patient.
3. The escort team should perform frequent pre-, intra- and post-transport assessments to monitor the patient's condition.
4. The escort team should be able to communicate with the parent team during the transport process if the need arises.
5. The Team Leader should ensure that the patient is optimised for the transport.
6. Closed suction system should be considered for mechanically ventilated patients.
7. A capnometer is highly recommended for monitoring patients on mechanical ventilation or sedation.
8. Supplies of pharmacological agents should be just enough for the duration of transport to avoid wastage.
9. Unnecessary breathing circuit disconnection should be avoided during transport.
10. There is no risk associated with aerosol-generating procedures during transport.

## ANSWER SHEET FOR NOVEMBER 2021

Please return the completed answer sheet to the Federation Secretariat on or before 30 November 2021 for documentation. 1 CME point will be awarded for answering the MCHK CME programme (for non-specialists) self-assessment questions.

## Principles of Emergency Medicine Transport and Practice in the Coronavirus Disease Pandemic

**Dr Chun-yin WONG**

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Chairman, Transport Medicine Subcommittee, Hong Kong College of Emergency Medicine

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### Answers to October 2021 Issue

Primary Prevention of Osteoporosis in Hong Kong: A Brief Update

1. T 2. T 3. T 4. F 5. T 6. T 7. T 8. F 9. F 10. F

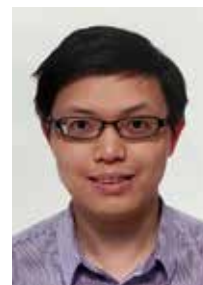


# Transport in Trauma Patients

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## INTRODUCTION

Trauma is one of the leading causes of mortality and morbidity in the world. An effective trauma management system and efficient transfer of major trauma patients to trauma centres with capabilities for definitive trauma care are important to improve the outcome of major trauma patients.

In Hong Kong, the Hospital Authority has designated five trauma centres, namely Prince of Wales Hospital (PWH), Princess Margaret Hospital (PMH), Queen Elizabeth Hospital (QEH), Queen Mary Hospital (QMH) and Tuen Mun Hospital (TMH). All five centres are equipped with a trauma call system, trauma facilities and clinical support.<sup>1</sup>

## PRIMARY TRAUMA DIVERSION

Primary trauma diversion is a major milestone for the trauma management system in Hong Kong<sup>1-4</sup>. In primary trauma diversion, the ambulance staff would directly transport the trauma patients from the scene to trauma centres if a patient fulfills the primary trauma diversion criteria, rather than transporting a trauma victim to the nearest hospital. The existing primary trauma diversion criteria consist of the following physiological and anatomical criteria:

### Physiological criteria

- Glasgow Coma Scale score  $\leq 13$
- Systolic blood pressure  $< 90$  mmHg
- Respiratory rate  $< 10$  or  $> 29$  per minute

### Anatomical criteria

- Flail chest
- Lower limb fractures involving two or more long bones (i.e. femurs or tibias)
- Amputation proximal to the wrist or ankle
- Penetrating trauma to head, neck or torso
- Limb paralysis
- Pelvic fracture
- Burn of second degree or above involving  $\geq 20\%$  body surface area

Besides, if intra-peritoneal free fluid is detected by ultrasound by paramedic personnel who are qualified to perform ultrasound assessment, the patient will be diverted to Trauma Centre. In the near future, selected

mechanism of injuries, including free fall from height, high-risk auto crash and gunshot injury, would be considered for primary trauma diversion.

With the implementation of primary trauma diversion, patients with major trauma fulfilling the diversion criteria would directly be transported to the nearest trauma centre with facilities for definitive care, thus preventing the need for further secondary inter-hospital transfer if the patients eventually need definitive care in trauma centres, as secondary transfer may lead to potential deterioration and delay<sup>5-8</sup>.

## DETERMINING THE NEED FOR SECONDARY TRANSFER

While the trauma patients fulfilling the criteria of primary trauma diversion would be diverted to the trauma centres, the other trauma patients not fulfilling the primary trauma diversion criteria would be transferred to the nearest local hospitals. It is important that the clinicians at the local hospitals should assess the capabilities of the local hospitals in managing trauma patients in order to achieve early differentiation of patients who can be safely cared for at the local hospitals from those who require secondary transfer to trauma centres for definitive care.

Table 1 has been adapted from the Advanced Trauma Life Support (ATLS) guidelines. The table can serve as a reference for consideration of the need for secondary transfer of trauma patients to trauma centres<sup>9</sup>. The list is by no means exhaustive; the decision-maker on whether there is a need for a secondary transfer should take into account the expertise and capabilities of the local hospitals.

## TIMELINESS OF TRANSFER

If the need for secondary transfer from local hospitals to trauma centres is recognised, prompt arrangement for transfer should be made. It is because the patient outcome is directly related to the time lapsed between the injuries and the reach for definitive trauma care<sup>5-8</sup>. According to ATLS guidelines, the principle is that the transfer should not be delayed for diagnostic procedures that do not change the plan of transfer/care. However, procedures that treat or stabilise an immediately life-threatening condition should be expediently carried out<sup>9</sup>.





**Table 1. Conditions that may require secondary transfer to trauma centres**  
(Adapted from *Advanced Trauma Life Support Student Course Manual, Tenth Edition, 2018*)

Primary survey	
Airway	Airway compromise
Breathing	Tension pneumothorax, haemothorax, open pneumothorax
Circulation	Hypotension, pelvic fracture, vascular injury, open fracture
Disability	GCS <13, intoxicated patients who cannot be evaluated, evidence of paralysis
Exposure	Severe hypothermia
Secondary survey	
Head and skull	A depressed skull fracture or penetrating injury
Maxillofacial	Eye injury, open fracture, complex laceration, ongoing nasopharyngeal bleeding
Neck	Haematoma, crepitus, midline tenderness or deformity
Chest	Multiple rib fractures, flail chest, pulmonary contusion, widened mediastinum, mediastinal air
Abdomen	Rebound tenderness, guarding
Neurologic	Neurological deficit
Musculoskeletal	Complex or multiple fractures or dislocation or bony spine injuries
Other factors	Age, multiple comorbidities, pregnancy, burn

## TREATMENT BEFORE TRANSFER

Attempts should be made to stabilise the trauma patients as far as possible at the local hospitals before secondary transfer. Essential procedures need to be performed before transfer for immediately life-threatening conditions or when risk of en route deterioration during transfer is anticipated. The following procedures may be necessary if clinically indicated.

### 1. Airway

- Insert an airway or endotracheal tube if the patient has GCS score of < 8 or if the care team holds any concern for potential deterioration with airway compromise.

### 2. Breathing

- Administer supplementary oxygen if necessary.
- Provide mechanical ventilation if the patient is intubated.
- Insert a chest tube if indicated for patients with pneumothorax.

### 3. Circulation

- Establish two large-bore intravenous lines.
- Restore blood volume losses using crystalloid fluid and blood if needed.
- Control external bleeding.
- Consider intravenous tranexamic acid if indicated.

### 4. Central nervous system

- Restrict spinal motion and immobilise patients by spinal board and neck collar in patients who are suspected of having spinal injuries.

### 5. Fractures

- Apply appropriate splinting and traction.

## COORDINATION AND COMMUNICATION BEFORE TRANSFER

Communication between the referring unit in the local hospital and the receiving unit in the trauma centre is important in order to achieve a smooth and uneventful transfer. The referring hospitals and trauma centres should establish mutually-agreed transfer protocols in order to provide standardised and consistent approach to patients' transfer between the hospitals.

Coordination with the receiving trauma centre should be made before the transfer in order to facilitate the immediate continuation of care of trauma patients upon their arrival at the receiving hospital. The trauma room at the Emergency Department of the receiving trauma centre should be prepared and ready for receiving the patient. The trauma team members should be alerted early and ready for stand-by.

ABC-SBAR is a commonly used handover tool to facilitate inter-hospital communication regarding the transfer<sup>9-11</sup>. (see Table 2)

**Table 2. ABC-SBAR as a communication tool to facilitate inter-hospital transfer**  
(Adapted from *Advanced Trauma Life Support Student Course Manual, Tenth Edition, 2018*)

	Meaning	Information to provide
A	Airway	All airway, breathing and circulation problems have been identified and interventions performed
B	Breathing	
C	Circulation	
S	Situation	The patient's name and age, referring facility, indication of transfer
B	Background	Event history, , medication given, IV fluid or blood product given, other interventions completed
A	Assessment	Vital signs, important physical examination findings, patient response to treatment
R	Recommendation	Further assessments and interventions required on arrival to receiving hospital

## MONITORING AND TREATMENT DURING TRANSPORT

The clinicians from the referring unit should anticipate potential deterioration and en route complications during the transfer, and a management plan for potential en route deterioration should have been prepared and written onto the transport form. Trained personnel familiar with trauma care and transport should preferably be planning and conducting the transfer. Medications should be prepared, pre-drawn and properly labelled.

During the transfer, vital signs of the patient should be regularly monitored. Continuous monitoring including pulse oximetry should be provided, and cardiac monitoring should be considered. Periodic



monitoring of blood pressure and pulse rate should be performed and documented. Continued balanced fluid resuscitation with intravenous crystalloid or blood products should be maintained if necessary. Good communication should be maintained among the transport personnel, referring unit and receiving unit, especially if there are en route deterioration and/or changes in the patient's condition during the transfer. Accurate records and documentation should be maintained during the transfer, in order to provide a clear and smooth handover to the receiving unit after the transfer.

## ACKNOWLEDGEMENT

I would like to extend my gratitude to Dr Kwok-leung TSUI, who reviewed and offered an expert opinion on the article.

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## Dermatology Quiz



## Dermatology Quiz

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Fig. 1: Erythematous plaque with an ulcer at postauricular region

This 70-year-old gentleman complained to have a non-healing wound for six months on the posterior aspect of the right ear. There was on and off bleeding and the size of the wound was gradually increasing. Otherwise, there were no other symptoms such as pain or itchiness. There was no injury before. Physical examination revealed a 4 cm irregular erythematous patch with a 2 cm large ulcer on the posterior aspect of the right auricle (Fig. 1).

## Questions

1. What are the differential diagnoses of his skin lesion?
2. What investigation(s) are you going to order?
3. How do you treat this patient?

(See P.29 for answers)

# Inter-facility Transport of Patients with Obstetric Emergencies

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## INTRODUCTION

Under the Hospital Authority, there are 18 public hospitals that provide Accident and Emergency services; but not all of these acute hospitals provide both inpatient obstetric and neonatal services. The expectant mother may present to any of the 18 Emergency Departments (EDs) for various reasons. Hence, all the staff in the EDs should be prepared to assess, treat and stabilise pregnant and postpartum patients, to manage unexpected deliveries and to handle newborns. For those acute hospitals without obstetric and neonatal services, these obstetric and neonatal patients would require transfer to tertiary care centre after initial assessment and stabilisation.

Ground transport via ambulance is provided by the Fire Services Department, while air transport via helicopter is provided by the Government Flying Service, the latter serving the patients in the outlying islands. Inter-hospital transportation within the Hong Kong territories, may take 15 to 45 minutes' time. Since a poorly and hastily conducted transfer could lead to adverse events, well coordinated and executed inter-hospital transportation is an integral part of providing safe and seamless care to both the mother, the foetus and/or the newborn.

## INDICATIONS FOR INTER-HOSPITAL TRANSFER

According to the Australian Commission on Safety and Quality in Healthcare, the most common scenario for inter-hospital transfer of obstetric patients is "a patient in labour or bleeding or hypertensive being identified as needing transfer to a higher level of care, sometimes in association with foetal immaturity"<sup>1</sup>. Other reviews suggest that the most common indication for maternal transfer is premature labour, followed by preterm premature rupture of membranes, hypertensive disease, and antepartum haemorrhage<sup>2</sup>. According to a retrospective study in China, massive obstetric haemorrhage and hypertensive disorders of pregnancy were the common causes of ICU admission in pregnancy or immediately postpartum<sup>3</sup>. Despite the number of maternities in Hong Kong dropped from 79,732 in 2009 to 59,638 in 2014 as a result of the implementation of the zero-quota policy for "double non-permanent resident pregnant women", the proportion of parturients at or above 35 years of age increased significantly to 42% in 2014. In parallel, the incidence of diabetes mellitus had nearly doubled from 2004 to 2014. The overall

incidence of hypertensive disorder in pregnancy also increased from 2.5% in 2004 to 3.8% in 2014<sup>4</sup>. All these changes imply that we may encounter more and more complicated pregnancies, especially in the emergency setting and during inter-facility transportation. Thus, structured training focused on those emergencies should be provided to medical personnel, and inter-facility transfer guidelines should be implemented in order to improve maternal and foetal outcomes.

Other than the pregnancy-related conditions, the pregnant women may require transfer to the tertiary centre owing to acute medical or surgical conditions, especially for those hospitals without corresponding acute care units such as North Lantau Hospital, St. John Hospital or Tin Shui Wai Hospital. Kaye et al. aimed to quantify and describe the obstetric caseload of retrieval services provided by The Greater Sydney Area Helicopter Emergency Medical Services from 2007-2010. They showed that half of the cases (33 / 66) had the primary obstetric conditions, while the other half were retrieved for incidental or related non-obstetric critical illness, such as asthma, trauma, or acute cardiac event<sup>5</sup>. Besides the knowledge on handling obstetric and neonatal emergencies, the importance of general critical care skills such as invasive mechanical ventilation, haemodynamic monitoring and support, as well as advanced cardiac life support are crucial to safeguard the whole care process.

## MATERNAL TRANSFER VS NEONATAL TRANSFER

A pregnant woman may present to the nearest ED because of sudden onset of labour, especially those in preterm labour. Emergency maternal transport of women in active labour often involves difficult decisions about whether to transport or to deliver in the ED. In general, transferring the foetus in utero is preferable to post-natal newborn transport. In utero transport results in reduced morbidity for infants of high-risk pregnancies. There is a 90% survival rate for infants transported in utero versus and an 81% survival rate for out-born infants transported after delivery, proving that in most cases, the mother is truly the best transport incubator. Timely transfer of the pregnant patient in labour to a facility with appropriate obstetric resources can reduce maternal and neonatal morbidity and mortality<sup>6,7,8</sup>. However, accurate assessment of the safety and risks of maternal transport versus delivery with post-delivery transport is a highly complex process.





Even though early maternal transport is preferred, we must look out for contraindications for inter-facility transfer, which include unstable maternal condition, unstable foetal condition, imminent birth, unavailable experienced attendants, or hazardous weather conditions for travel<sup>21</sup>.

## EN-ROUTE ADVERSE EVENTS

One of the greatest risks for maternal transport is the delivery of a compromised infant in an environment inadequate for resuscitation. Available data suggest that en-route delivery is not common. A retrospective study of 1,080 maternal means of transport including 54 women with cervical dilation greater than 7 cm at transport referral demonstrated that 49 of 54 were successfully transported (40 by helicopter, eight by fixed-wing aircraft, one by ground), none of whom delivered en route, and five were delivered at the referring facility<sup>9</sup>. Other studies report a 0-0.2% rate of deliveries during transport<sup>10,11,17</sup>. These studies noted that screening patients prior to transport is a critical step to minimising the chance of delivery, and the proper use of tocolytic treatment can reduce the chance of en-route delivery<sup>12</sup>.

Out-of-hospital delivery during inter-facility transport of patients is infrequent, but this is a potential complication that must be anticipated and planned for. Precipitous labour is defined as expulsion of a foetus within 3 hours of commencement of regular contractions<sup>13,14</sup>, which can happen in any circumstances. The risk factors for potential precipitous labour includes: placental abruption, fertility treatments, hypertensive disorders or low infant birth weight. These risk factors should be scrutinised before transferring the patient out<sup>15</sup>.

There is minimal existing data regarding clinical deterioration that occurs during the inter-facility transport of pregnant patient. Nawrocki et al. showed 4.8% of the ground, and 8.1% of air transport had the clinically significant events during transfer. The most frequent events were the exacerbation of hypertensive disease requiring interventions, followed by hypotension and altered mental status<sup>16</sup>. Other studies showed rather infrequent clinical deterioration during inter-facility transport<sup>17</sup>. Nonetheless, pregnant individuals represent a low volume but potentially high acuity, complex population that requires specialised care and knowledge.

## ENHANCING THE SAFETY OF INTER-HOSPITAL MATERNAL TRANSPORT

For inter-hospital transfer of the acutely ill obstetric patient, risk can be reduced by accurate pre-transport evaluation of the woman and her foetus, stabilisation to ensure patient safety during transport, transfer by skilled personnel with appropriate equipment and monitoring, and good handover to the receiving facility<sup>19</sup>. During the transport, necessary transport monitoring should be checked, including continuous cardiac rhythm and pulse oximetry monitoring, regular assessment of vital signs as well as foetal monitoring. Venous access must be established, and all existing lines

should be secured<sup>3</sup>. The patient should be lying on the left lateral position during transport<sup>20</sup>.

The Australian Commission on Safety and Quality in Healthcare has identified several risk factors associated with inter-hospital maternal transfer: incomplete information or poor communication on clinical handover, inadequacies on pre-transport management or delay in transfer<sup>1</sup>. In order to minimise the risk of maternal transport, various professional groups have published guidelines, such as the "Guidelines for Perinatal Care" published by the American Academy of Paediatrics and American College of Obstetricians and Gynaecologists, and "Management of Acute In-utero Transfers: Framework for Clinical Practice" from The British Association of Perinatal Medicine which outlines in detail the standards for inter-hospital care. The existence of standing protocols for handling those common obstetric emergencies, especially hypertensive disorder during pregnancy and imminent delivery, vastly improves the ability of transport personnel to respond appropriately to changes in a patient's condition<sup>18</sup>.

## CONCLUSION

Maternal transport refers to the process of transferring the pregnant woman under the supervision of medical personnel from the referring hospital to the receiving hospital. The reason for the inter-facility transfer of peripartum patients can be pregnancy-related or non-pregnancy related; the situation can be antepartum or postpartum, preterm or full-term, etc. This unique group of patients with their distinct anatomical as well as physiological features requiring special treatment considerations would pose a major challenge to the ED care team who is deciding, planning and executing the inter-facility transport. Ultimately, the patient outcome from the transport hinges heavily on a multitude of decisions and actions by the ED care team with regard to assessment, stabilisation and transport considerations.

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# Inter-facility Transport Medicine in Paediatric Patients

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## BACKGROUND

Paediatric service re-alignment is a worldwide trend as part and parcel of healthcare reform. In Hong Kong, while casualty-based regional hospitals are growing in number, such as the recently established Tin Shui Wai Hospital and North Lantau Hospital, on-site paediatric services may not be available in every one of these regional hospitals.

The Hong Kong Children's Hospital, on the other hand, provides highly specialised paediatric services and receives children with complex medical conditions from various hospitals in Hong Kong. More paediatric inter-facility transports (IFT) will be expected in the near future as a result of this service re-alignment. From the administrative point of view, such service implementation is important for future budget planning; hence transport medicine will be a cost-effective option for achieving the goal<sup>1</sup>. In the first six months in 2020, there were 85 cases of nurse-led or nurse-plus-doctor-led IFT in the Emergency Department in Alice Ho Miu Ling Nethersole Hospital. Eight of these cases were patients under the age of 18. Characteristics of patients might be different among hospitals because of differential degrees of on-site paediatric team support. Nevertheless, paediatric transport could be extremely risky and challenging, especially in children who require critical care<sup>2,3</sup>. The objective of paediatric IFT is to provide safe and high-quality care during transport from one medical facility to another.

## CHALLENGES

A big challenge for paediatric IFT is the huge variations in patients' age and size, as a result of the great diversity in the patients' maturity level and body build, ranging from pre-terms, small-sized infants to adult-sized adolescents.

Another challenge is the need to involve multiple specialties for their expertise and support. On top of the expertise in general paediatrics and neonatology, other expertise is often called for as the major problems in escorted patients could be trauma, or paediatric-surgical or toxicological conditions.

The third challenge is the vast variations in the clinical setting and journey time. Transportation could be initiated from General Practitioner's office to the hospital, from the Emergency Department to the Paediatric ward, from the Paediatric ward to tertiary medical centres, etc. Longer transportation time should

be expected in cross-border escorts; one should hence anticipate a higher chance of en-route deterioration during the planning phase.

With the Emergency Medicine community facing all these challenges, an outstanding, paediatrician-led organisation of the paediatric transport system becomes a cornerstone of success<sup>4</sup>. Various paediatric units in Hong Kong have established their escort programmes in order to maintain a high-quality patient transport process<sup>5</sup>. Knowledge on and training in general transport medicine and the understanding of specific features in paediatric transport are essential for better transport patient care<sup>6</sup>.

## GENERAL APPROACH IN PAEDIATRIC IFT IN PRIMARY OR SECONDARY CARE LEVEL SETTING

IFT process could be chronologically categorised into (1) preparation phase, (2) transportation phase and (3) handover. Generally speaking, preparation should not be overlooked because numerous en-route problems could be averted by better preparation and pre-transport stabilisation of the patient. In a case review, 47% en-route deteriorations could have been averted by better preparation<sup>7</sup>. Preparation might need be considered to take longer time in paediatric patients; median stabilisation time could be as long as 80 minutes for neonates and 45 minutes for children<sup>8</sup>.

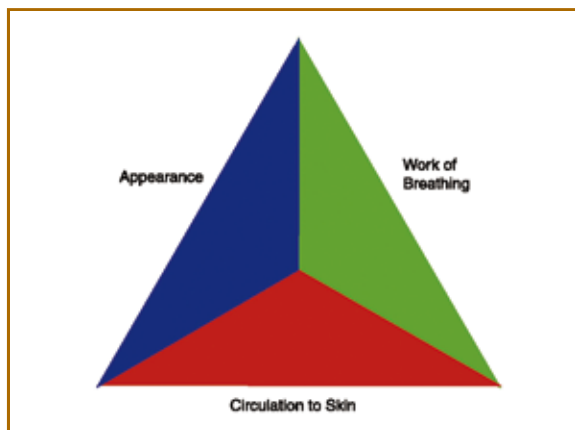
## PREPARATION BEFORE DISPATCH

The decision of patient transfer should be fully justifiable with due consideration given to transfer indications. Common indications include transfer for high-level definitive care, ward bed unavailability or parental preference for the treatment venue. The decision to transfer a patient is based on the assessment of the potential benefits weighed against potential risks since there is an increase in morbidity and mortality during the transfer<sup>9</sup>.

Escort planning is based on evaluating the risk of possible en-route deteriorations. The patient's age, pre-morbidities, nature of presenting illness and physiological parameters are important factors to be considered. Hypoglycaemia and hypothermia are common ongoing risks for premature neonates. Triage tools might be useful. Some evidence suggests the reliability of the paediatric Canadian Triage and Acuity



Scale (PedCTAS) and the Manchester Triage System (MTS)<sup>10</sup>. The paediatric assessment triangle (Fig. 1) is a very simple tool to identify unstable patients and can be easily performed in the primary care setting. Local IFT triage guideline is available in Emergency Departments; it helps to classify paediatric patients into Critical, Serious, Stable or Satisfactory grade. Based on these triage tools, proper escort personnel and anticipatory care can be planned.



*Fig. 1 Paediatric Assessment triangle gives simple assessment hints for healthcare workers to identify unstable paediatric patients. Excerpted from Dieckmann RA, Brownstein D, Gausche-hill M, eds. Pediatric Education for Prehospital Professionals: PEPP Textbook, Sudbury, MA: Jones & Bartlett Publishers;2000.*

The patient's clinical condition and physiological status should be stabilised before the transfer, as en-route physiological deteriorations could be minimised by proper stabilisation at the referring facility<sup>7</sup>. The extent of stabilisation should be based on the availability of clinical expertise and equipment. The patient's vital signs are stabilised in an ABCDE manner. The airway must be patent and secured, and definitive airway such as an endotracheal tube should be inserted in patients with a potentially compromised airway, since intubation in children inside an ambulance is a dreadful situation. Once the patient is intubated, we should ensure correct placement of the tube, and the tube should be secured by tapes or endotracheal tube holder. Hypoxaemia and hypoventilation should be managed; supplemental oxygen should be given and mechanical ventilation should be considered if the patient is suffering from respiratory failure. The patient's circulatory status is assessed; fluid should be given to hypoperfused patients intravenously or even intraosseously if venous access is difficult. Early intravenous antibiotics and vasopressor support should be given to patients in septic shock. If feasible, arterial and central line placements can provide precise measurements of a patient's circulatory status. Hypoglycaemia, seizures and hypothermia should be corrected before transport. Furthermore, some studies suggested the use of goal-directed therapy administered by a specialised paediatric team to critically ill children with systemic inflammatory response syndrome (SIRS). They found that goal-directed therapy during inter-facility transport would decrease hospital length of stay, prevent multiple organ dysfunction, and reduce subsequent ICU interventions<sup>11</sup>.

Suitable escort personnel should be assigned according to their clinical experience and patient's disease complexity. Usually nurse-led escorts are safe enough for stable patients. However, doctor-plus-nurse escorts might occasionally be needed for transporting unstable patients, especially when interventions are anticipated during the journey. Evidence showed that the involvement of a paediatric specialised transport team was associated with improved survival in critically ill patients<sup>12</sup> and with decreased en-route adverse events<sup>13</sup>. Nowadays Hong Kong Children's Hospital in Hospital Authority operates critical care transport team, which aims at providing high-quality transport care among various Paediatric Intensive Care Units in Hong Kong.

Parental preparation and participation are a must in paediatric transport. Families should be well informed of the indication for, and the risks and destination of the transport. A verbal consent is minimally required and ongoing mutual communication is encouraged. Parental accompaniment during transport is possible, but this should be considered case by case, especially if resuscitation is anticipated to be needed in the confined space in an ambulance. When the child and his/her family are separated due to the transport, it is critical to support the family to ensure the emotional and physical well-being of both the child and the parents. A family-centred care approach in neonatal transport is truly a multidisciplinary, multiunit and multisystem approach<sup>14</sup>.

Paediatric equipment is prepared specifically according to the patient's age and size. Firstly, the patient's weight can be estimated by Broselow Chart. Paediatric monitoring devices and ventilators should be checked routinely for any malfunction. Drugs possibly used in an ambulance could be pre-drawn and labelled after body weight calculation to avoid medication errors, especially in an unfamiliar environment in the ambulance. Paediatric transport kits (Fig. 3a & 3b) are available in regional Emergency departments; cannula and tubes of different sizes are kept in the transport kit bag. Stable and uneventful newborn babies could be given back to and carried by their mothers during travel. For newborn babies requiring medical interventions, they could be managed in neonatal transport incubators. Neonatal transport incubators (Fig. 2) can keep the optimal ambient temperature for neonates, while mobility and height adjustment are enabled. Medical records should be well documented throughout the whole transport process.

The receiving facility should be well informed before the transport. In Hong Kong, ground transportation by ambulance is the commonest mode of transport, except transportation from islands, where marine transport is utilised. Prior information to the ambulance crew is appreciated if a neonatal transport incubator is required.



**Fig. 2 Neonatal Transport Incubator provides an optimal environment for neonatal transport.** (Photos are taken with permission from Department of Accident and Emergency Department, Alice Ho Miu Ling Nethersole Hospital, Hong Kong.)



**Fig. 3a, 3b Paediatric escort kit bag stores resuscitation equipment, equipment and devices and are checked periodically.** (Photos are taken with permission from Department of Accident and Emergency Department, Alice Ho Miu Ling Nethersole Hospital, Hong Kong.)

## TRANSPORT PROCESS

Patient's vital signs (ABCDE) are monitored frequently, and enhanced monitoring could be implemented by using various monitoring devices. A randomised controlled trial compared critically ill patients who received close blood pressure monitoring versus conventional blood pressure measurement in transport, and concluded that the enhanced monitoring group had a shorter hospital stay and less organ dysfunction<sup>15</sup>. Therefore, arterial line and central line might be required occasionally for enhanced continuous monitoring in critically ill patients.

Adverse events were not uncommon, quoted as high as 22% in a recent prospective study<sup>16</sup>. Physiologic deterioration and/or equipment-related events could occur. Common issues involved circulatory problems causing hypotension and poor tissue perfusion; patients may require fluid resuscitation or inotropic administration during transport. Moreover, respiratory complications were also common in paediatric patients. Common causes in equipment-related adverse events were accidental extubation and endotracheal tube displacement. The mnemonic REST reminds us of the importance of early event recognition, evaluation of underlying causes, patient stabilisation and transport adjustment (to speed up travel or to change destination).

## HANDOVER

When the patient arrives at the destination, patient handover occurs at the bedside. The transfer of professional responsibility and accountability could be achieved by active communication among medical staff. ISBAR acronym could be employed for the format of communication (Identification-Situation-Background-Assessment-Recommendation). Parents are encouraged to participate in the handover process. Escort documentation should be completed and handed over to the receiving facility.

## CONCLUSION

Paediatric IFT will be increasingly common in the near future in Hong Kong. However, en-route deteriorations, including physiological and equipment problems, are potentially risky and challenging. Better preparation before transfer and enhanced monitoring are beneficial. Training in both Paediatric medicine and Transport medicine can improve the quality and safety of patient transfer.

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# Air Medical Transport in Hong Kong

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## INTRODUCTION

Civilian air medical transport has become a primary medical service around the world. Mode of air medical transport includes the use of the helicopter and fixed-wing aircraft. The helicopter is a rotorcraft that allows it to take off and land vertically, hover, and fly forward, backward and laterally. Its operating characteristics enable the helicopter to work in crowded cities. It is used as Air Ambulance for transport between medical facilities, for search and rescue when a ground ambulance cannot easily or quickly reach the scene. Its limitation is the lower speed and the less endurance when compared with fixed-wing aircraft. Fixed-wing aircraft are commonly used for long-range transport, such as Intra-facility transfer from the rural area to the tertiary centre in western countries and international transfer for sick or injured travellers to their homeland.

## FLIGHT PHYSIOLOGY AND ITS EFFECT

Let us go through some basic knowledge of flight physiology to appreciate the difference between patient transportation in air and land. The atmosphere is classified into three physiologic zones according to their distance from the sea level: the physiologic efficient zone, the physiologic deficient zone, and the space equivalent zone. The physiologic efficient zone ranged from sea level to about 12,000 feet above it. This zone is the most suitable for normal physiologic function; thus, most helicopters work in this zone. The physiologic deficient zone ranged from 12,000 to 50,000 feet with a significant drop in barometric pressure and temperature. For Fixed-wing aircraft flying in this zone at 30,000-38,000 feet, its cabin is pressurised with an altitude of approximately 5,000-8,000 feet to avoid physiologic deficiency. Lastly, the space equivalent zone, the highest among these zones, is very hostile and unfavourable to humans.

The pressure of the atmosphere changes with attitude. While ascending from sea level, atmospheric pressure drop and air density decreased, reducing the partial pressure of oxygen and leading to hypoxia. For example, Oxygen saturation will be reduced to 93% at an 8,000 feet pressurised cabin.

This condition is especially harmful in patients with pre-existing hypoxia or reduced oxygen-carrying capacities, such as respiratory, cardiac conditions or severe anaemia. Therefore, close monitoring with a

pulse oximeter and liberal use of supplemental oxygen is recommended for patients with medical conditions predisposing them to hypoxia.

According to Boyle's law, the volume of a gas is inversely proportional to the pressure, and gas expands when attitude increase. Gases containing cavities in the human body such as the middle ear, paranasal sinus and intestinal lumen will be affected when gas in these cavities expand and result in pain if the gas is trapped. Commonly seen condition such as Otitis barotrauma occurs when the Eustachian tube is blocked, especially when the patient or crew suffer from a respiratory tract infection. Conditions with pathological gas accumulation such as pneumothorax, surgical emphysema, pneumocranium, pneumoperitoneum and decompression sickness will be expected to get worse during ascent. The use of Pneumatic medical equipment on board such as air splint, the cuff of an endotracheal tube and plastic intravenous bottle should be cautious as well.

Other commonly encountered physiological changes included discomfort over the respiratory tract, being prone to dehydration due to decreased humidity, vulnerability to motion sickness and fatigue resulting from noise and vibration. Lastly, the G force encountered during acceleration and deceleration, especially during take-off and landing, will exert a transient haemodynamic effect on the brain and heart.

These physiological changes should be taken into account in inpatient transport planning.

## EMERGENCY AIR MEDICAL TRANSPORT IN HONG KONG

The Government Flying Service (GFS) is the only party dedicated to providing emergency aeromedical service to the people of Hong Kong. Seven Airbus EC175 helicopters (Fig. 1) are well prepared to provide 24/7 service; one is fully equipped as Air Ambulance among these seven fleets. This air ambulance is spacious to carry up to 2 stretchers and well equipped with a medical panel (Fig. 2) for immediate treatment of casualty, including a portable ventilator, a multi-functional physiological monitor, CPR equipment, syringe pump, suction and oxygen. All Air Crewmen Officers (ACMO) in the GFS are well trained to reach the level of paramedics, providing basic life support, Emergency Medical and Trauma care to the casualties. In addition, the Medical Unit of the GFS provides





Emergency Medical service onboard voluntarily from Friday to Monday and all public holidays. One of the significant responsibilities of the GFS lies with HKSAR operations. Although the area of responsibility covers most of the South China Sea up to 1,300 nautical miles south of Hong Kong, most of the search and rescue operations occur within 400 nautical miles of Hong Kong.



Fig. 1 Airbus EC175 helicopter (Personal collection)



Fig. 2 Medical panel on board (Personal collection)

Two primary air medical services provided by GFS are as follows:

## 1. CASEVAC (Casualty evacuation)

Transferring patients from remote health care facilities, including St John Hospital at Cheung Chau and clinics in Peng Chau, Hei Ling Chau e.t.c to appropriate medical facilities for further medical care is one of the GFS's primary services as Air Ambulance. On average, the helicopter flies approximately 1,500 casualties to the hospital per year. Hospital Authority established a CASEVAC guideline to categorise appropriate patient transferral, considering their representative clinical conditions, safety issues and proper transfer modes.

The 3 Categories are as follow:

Category	Definition	Landing Site	Examples
Casevac A+	Immediate life or limb-threatening with unstable vital signs	PYNEH rooftop	Post Cardiac arrest Signs of Airway obstruction Respiratory failure In shock Trauma patient with GCS 3-10 Status epilepticus or post-ictal state
Casevac A	Potentially life-threatening condition with borderline vital signs but with the potential risk of rapid deterioration	Wan Chai Helipad for onward transportation by road	Severe Respiratory distress Impending shock Unstable Angina Trauma patient with GCS 11-13 Ill-looking child In late labour
Casevac B	A major condition with the potential risk of deterioration but with relatively stable vital signs	Wan Chai Helipad for onward transportation by road	Cardiac arrhythmia with pulse >120 and <140 Abd pain with stable vital Irritable child Early labour Isolated major fracture

Optimal stabilisation of the patient's condition by the referring party is crucial to minimise the chance of offering treatment while the patient is on board. When medics service is unavailable during weekdays (Tuesday to Thursday), clinic nurses or EMA II ambulance crew from the Hong Kong Fire Service Department will escort unstable patients. Communication with the referring party for the patient's condition is a crucial part of preflight preparation, and essential information gathered enabled us to have better preparation of medications, types of equipment and backup plans in case of deterioration.

Patient assessment becomes difficult on board due to the unfavourable environment, which is noisy, limited working area and equipment on board. For example, e.g. auscultation of the chest may be impossible, monitoring devices may not function well due to vibration and intense ambient light. On the contrary, clinical assessment and continuous observation are more significant; assessing the breathing effort and pulse volume is fundamental but essential. Verbal communication with the patient is impossible due to the noisy environment and the wearing of earmuffs. At the same time, body language and handwriting will be an effective means for communication on board.

According to the patient's clinical condition, communication with the pilot for flight modification is essential; low flying in the transfer of patient suffering from pneumothorax, pneumoperitoneum, pneumocranium and a recent eye injury. Proper wearing of Personal protection equipment is vital when handling potentially infectious cases. Violent patients, either due to psychosis, emotional upset or under the influence of drugs or alcohol, should be prohibited to be transferred by helicopters unless they are put under sedation to ensure flight safety.

## 2. Search and Rescue (SAR)

With the increase in health awareness and interest in outdoor activities during these few years, SAR cases doubled up to more than 900 cases in 2020. Varieties of calls received included fatalities due to heart attack, drowning, heatstroke and multiple trauma resulting from fell from height. Wilderness medicine-related scenarios are expected, including heat exhaustion, medical-related illness, head injury, musculoskeletal injuries. It is not surprising that we received long-range SAR callouts for picking up casualties from cruises, container ships and even fish boats.

Rescuing the casualties was not an easy task in the past as the information received concerning the location and condition was fragmented and incomprehensive. However, with the advancement of technology, the causality or companion can communicate with the helicopter directly via mobile call and promptly share their location, enabling crews and medics to better plan for the rescue, including the retrieval plan, preparation of suitable equipment, and medications before and during the flight.

Providing pre-hospital care in the helicopter is much more complicated than what you can think of. Crewmen and medics approach the patient either by winching (Fig. 3) or landing at a distance from the patient. The site environment could be extremely hostile. For Trauma cases, the patient is managed according to the principle of Pre-hospital Trauma Life Support; Stopping exsanguination haemorrhage, maintaining airway and ventilation, managing shock, protecting the spine, and preventing hypothermia e.t.c. For non-trauma conditions, timely on-site management is lifesaving, including defibrillation for ventricular fibrillation, adrenaline for anaphylactic shock and cooling for heatstroke. The first responder must initiate this management on scene and continue en-route.



Fig. 3 Winching to approach a SAR patient

## LONG-RANGE MEDICAL RETRIEVAL

Transferring critically ill patients from overseas back to Hong Kong with fix-wing aircraft is not uncommon; this medical service is usually provided by commercial air ambulances with a well-designed configuration. A competent retrieval medical team is indispensable; patients are generally in critical condition and put on intensive care medical devices such as intra-aortic balloon pumps, extracorporeal membrane oxygenation devices, biventricular assist devices. Patients with special needs such as neonatal or extensive head injury also require medical transport service from a team of experienced medical experts.

Long-range medical retrieval involves three parties: the referring facility, retrieval team and receiving facility. Communication among the parties is essential. It is challenging to recognise, diagnose and treat a deteriorating patient on the aircraft. The referring facility should stabilise the patient before air medical transport to minimise the adverse effects of the physiological changes, stressors and environmental change of air transportation. Patients with borderline or worsening hypoxia should be intubated and put on a ventilator because deteriorating pulmonary status can be challenging to handle in flight. A cuff pressure monitor should be available to monitor the endotracheal tube cuff pressure. Drainage of the pneumothorax and decompression of the stomach and bladder are mandatory before boarding. The infusion rate may vary in high altitude; drug infusion should be given through a syringe pump. Venous thromboembolism prophylaxis is recommended for the indicated patient. All the documents, medical records and investigation results should be prepared to facilitate communication.

The retrieval team will bring along approved equipment and medications; medical equipment for use on the aircraft must have an aircraft type-approved certification to ensure compatibility with aircraft avionics, compatible electrical outlets are required for electrical equipment, preparation of adequate oxygen required for en route and an extra of 50–100% as a safety margin. Adequate sedation is essential for ventilated patients. Prepare and plan for transportation of the patient from hospital to airport and vice versa. Transfer of patients into and out of a fixed-wing aircraft is uneasy and involves a lot of technical skills, especially for critical patients connected with various equipment and monitors.

Upon arrival, the retrieval team will head to the referring centre as soon as possible to perform a complete bedside assessment of the patient to check for fitness for flight. A preflight checklist is essential; its use can decrease serious unexpected events by almost 50%. Check and secure all the tubes, lines and drains before transferral.

After being transferred into the cabin, the patient should be secured appropriately on the bed or seat; they will be assisted with position changes and provided with adequate padding and skincare while on board. Continuous monitoring of respiratory and haemodynamic status is mandatory during transport.



These aircraft typed approved equipment are equipped with visual alarms in addition to audible alarms to reinforce the eye-catching effect. Commonly used automated non-invasive blood pressure cuffs may be less accurate in a high-vibration environment. All crews should be familiar with contingency plans related to the use of medical equipment.

Pre-take-off flight planning according to the patient's clinical condition is essential. If the patient condition requires an altitude restriction, the cabin should be pressurised to sea level. But the drawback is the increased fuel consumption, decreased range, and increased probability of turbulence. For long-distance missions, an en-route stop may be indicated. Aircraft diversion due to mechanical failure or weather constraints may happen. A contingency plan should be well established before the flight.

## SUMMARY

Air medical transport is challenging due to its limited space and unfavourable working environment. Knowledge in flight physiology is vital for patient care planning. Optimal stabilisation of patients before the transfer is the key to a safe and smooth journey. A well-trained team can anticipate potential complications during flight and manage with suitable interventions accordingly. Lastly, patient and crew safety is the most critical factor to consider during air medical transport.

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## Overseas Touring by Bicycle

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Many of us like exploring the sceneries and cultures of other countries by travelling. Over the years of travelling, I find driving is too fast while walking is too slow.

Bicycle touring is fun and healthy; it helps to burn the extra calories and thus can enjoy the local delicacy with less guilty feelings. I started travelling by my own bike outside Hong Kong since 2010.(Fig. 1) Cycling tracks were left in Japan, Taiwan, England, Spain, Eastern Europe and South Korea. Well planning can make your bike trip smooth, fun and more memorable. I will share some factors I think that are essential for planning an overseas bike touring.



Fig. 1. Altes Rathaus Bamberg Germany

### COUNTRY

When choosing the country of interest, their cycling culture is always the first thing I will consider. Finding support in cycling-friendly country with well established cycling routes is always easier, especially for the less experienced. Japan, Taiwan and South Korea are popular Asian countries for cyclists and are still my favourite countries for bicycle touring.(Fig. 2) Cycling-friendly hotels or guesthouses provide secure bike storage. Easily accessible support such as bike shops for bike rentals and repair, convenience stores with parking outside and toilets inside is important.

Understand local bike culture and cycling regulations is important. For example, bicycles are considered vehicles under British law and it is illegal to ride a bike on a pavement which has not been designated as a cycleway. While some sidewalks are assigned by the National Police Agency to also allow bicycles in Japan.

Different countries will have a different policy for carrying a bike in public transport as well.



Fig. 2. Cycling from Seoul to Busan

### WEATHER

The weather of the target destination, length of vacation decides the theme of the trip. Round island cycling trips, peak-climbing, seasonal highlights (sakura in spring, red-leaves in autumn) make trip-planning a lot different.(Fig. 3) Purpose, weather and the length of the trip had to be decided before further planning. Planning for round island cycling and sakura hunting can be totally different. The weather of the destination will determine how much cycling can be done each day. Buffer and backup plans should be available for cycling in the rainy season and places with potentially extreme temperatures.(Fig. 4) My touring bike is foldable to allow cycling combined with driving or travelling by public transport as well.



Fig. 3. Sakura Japan



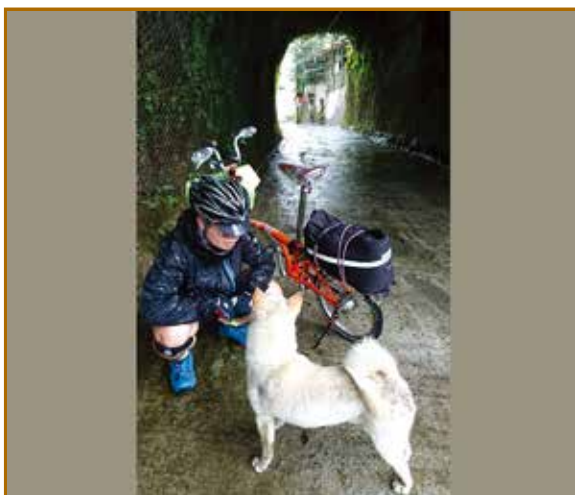


Fig. 4. Rainy day

## EQUIPMENT

Next is to decide to bring your own bike or go for bike rental. Bringing my own bike is always my preferred choice as I do not need to find a rental, adjust a new bike setting, bring extra tools to repair different types of bikes.(Fig. 5) However, the availability, the charge and regulations for the transportation of bicycles of the airline have to be checked well beforehand. The price can vary a lot in different airlines. If you go for bike rentals, I would advise you to hire a touring bike together with preferably waterproof bike bags, bike locks and phone mount. If you are planning a non-round-trip touring, make sure to check with the rental if they allow and how to return the bike to your planned destination. Some rentals can allow you to drop the bike in other shops without much additional charge.



Fig. 5. My bike

## TEAMMATES

TEAM means Together Each Achieve More. Good teammates bring you further and higher.(Fig. 6)

For bike touring, you need:

Route planner(s) - Although GPS tracks are readily available from the internet, a good route planner will bring the team to breathtaking attractions, famous restaurants, scenic countryside trails to avoid traffic.

Backup plans are mandatory for unexpected weather, the physical or mental condition of teammates. Time tables of buses, trains, ferries may save the day.

Bike technician - With one who is good at bike repair, there will be no worry to ride into cobblestone roads, unexpected off-road trails, and countries that you cannot speak the language.

The manager, sometimes known as the leader, oversees the whole plan. Cutting unrealistic spots, coordinating team supplies like tools and spare parts for bike repair, first aid kits.

Good teammates will prepare themselves physically and mentally for the trip. They will follow the decision of the team and will never act alone. They will adjust their speed in towns, listen to the briefing to avoid getting lost from the team, stay safe and take care of others within their capability.

Choosing the right teammates is very important. Argument and disappointment during the trip are not uncommon, even the team often cycling together in Hong Kong. Try to arrange at least a few bike-gathering, preferably whole day long-distance cycling before considering to team up. The cycling manners, physical fitness, communication skills, strength and weakness of your potential teammates, other useful skills such as bike repair, first aids skills, map reading can be discovered in these gatherings. Make sure the expectation of everyone is aligned and the travelling plan is agreed. Job segregation among teammates is also important and should be well delineated. A leader should be elected from the start of the planning. A decisive leader is very important, I had come across the need to change or to abort the trip due to sudden weather change or teammates was sick or injured.



Fig. 6. Teammates

## ACCOMMODATION

For the choice of hotel or guest house, I will prefer those with a bike storage facility.(Fig. 7) Some hotels may even allow you to bring the bike inside the room. The bike stealing rate income country is quite high. A laundry facility is also preferred, as you can reduce the number of clothing and the weight of luggage.



Fig. 7. Bike storing facility



Fig. 8. Backup transport

## ROUTE CHOOSING AND PLANNING

For bike touring route planning, it depends on the theme of the trip, the number of days planned for cycling, the number of attractions you want to visit, the local road condition, weather, availability of public transport and the physical fitness of teammates. Other factors such as the insolation duration, weather and availability of hotels and restaurants should also be taken into consideration.

## TIME MANAGEMENT

I would suggest a more relaxed daily cycling schedule. The length of the daily cycling depends on the insolation time, the expected weather, road condition, elevation and physical fitness of the team. You may have a no-cycling day in between as well, especially for a really long trip or major tourist attraction. Generally, I will start cycling as early as possible and reach the destination before sunset. Therefore, we will have time to enjoy dinner and shopping after I settle the bike and the laundry. I will try to arrange at least two breaks with a duration at least one hour each day, which may be a sightseeing spot or nice restaurant to rest our feet and butt for at least an hour. Start cycling early is advised to avoid traffic and people in rush hours. Make good use of daylight time, and smooth progress can allow more time for sightseeing. Unplanned but stunning scenery and attractions along the way are not uncommon. An unexpected situation such as bad weather, headwind, unfavourable road condition and bike breakdown will also slower the progress. Cycling in the dark is not easy, much slower and more dangerous and compared with daytime. Restaurants may close early and hotels may have limited check-in time, especially in low season and small towns.

## BACKUP PLANS

Check and plan for public transport on the route is another very important. I always try to set a railway station, town or tourist information centre in my daily route as plan B. Also please check the transportation timetable you may need, and be familiar with the rules of bringing your bike on board, such as the dimension or need of a bike cover.(Fig. 8)

## SKILLS AND EQUIPMENT

Try to learn some basic bike repairing skills beforehand. Gear problem, flat or tire puncture is quite common and local bike shops may be miles away even in cycling popular countries. So I will make sure there are two hand-held pumps, a small set of bike tools and a few spare tires in the team. Extra front and rear bike lamps should be available as well. I will turn at least two rear bike lamps if I have to cycle on the road at night, tunnels and the countryside to enhance the visibility.

## NAVIGATION

Navigation equipment for the bike is easily available nowadays. Therefore, I always try to arrange at least two bike GPS (Global Positioning System) devices in the team, all preloaded with the bike route to allow off-line navigation.

If you plan to use a map from the mobile phone, try to buy a SIM card from a different telecommunication company to widen the area of internet coverage. I would also download the offline map beforehand. Check the map system in the country you are going to. For example, the Naver map is preferred in South Korea. There is quite a discrepancy if you use Google map in some countries. Make sure you have a spare battery as power consumption is higher when navigation is in use.

## APPROPRIATE CLOTHING

For clothing, I will advise the “layering method”. First, a nice dri-fit type of base layer, followed by a cycling jersey, thin jacket, then a wind and rainproof jacket will be the way I dress. So that you can adjust the body temperature accordingly. I will avoid the cotton type of clothing as it traps sweat easily and is also difficult to dry.

Last but not least, check the local emergency service number, bring a first aid kit with you, purchase a suitable insurance plan and remember to follow the leave-no-trace principle and enjoy your trip!



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	<ul style="list-style-type: none"> <li>★ Zoom Lecture HKMA-HKSH CME Programme 2021-2022 Topic: Update on intra-arterial thrombolysis for acute ischaemic stroke (Online)</li> <li>★ Zoom Lecture Navigating Adverse Outcomes Workshop - Online</li> <li>★ Certificate Course in Cardiology 2021 (Video Lectures)</li> </ul>	<ul style="list-style-type: none"> <li>★ Certificate Course On Optometric Practice from Infants to the Elderly (Video Lectures)</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture Certificate Course for GPs 2021 - Prolapse and Incontinence Symptoms - Online</li> <li>★ Zoom Lecture Anal Pain and Bleeding? How to Handle Hemorrhoidal Disease with Effective Treatments? - Online</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture New Horizons In Atopic Dermatitis Management – An Overview Of Janus Kinase (JAK) Inhibitors - Online</li> </ul>	6
7	8	<ul style="list-style-type: none"> <li>★ Zoom Lecture Common Disease of Throat and Larynx: Review by ENT Surgeon - Online</li> <li>★ Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture Pertussis Prevention During Influenza Season - Online</li> <li>★ Certificate Course On Optometric Practice from Infants to the Elderly (Video Lectures)</li> <li>★ The Hong Kong Neurosurgical Society Monthly Academic Meeting</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture Updates in Rheumatic Diseases - Online</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture What a Family Doctor Should Know about CT Coronary Angiogram? - Online</li> </ul>	13
14	15	<ul style="list-style-type: none"> <li>★ Zoom Lecture HKMA Men's Health Community Network CME Live Lecture - Medical Management of LUTS and BPH</li> <li>★ Zoom Lecture HKMA Men's Health Community Network CME Live Lecture - Overview of New MISTs / Rezum</li> <li>★ Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</li> </ul>	<ul style="list-style-type: none"> <li>★ Certificate Course On Optometric Practice from Infants to the Elderly (Video Lectures)</li> </ul>			20
21	22	<ul style="list-style-type: none"> <li>★ Zoom Lecture Addressing Lipid Risk: Stepwise Approach In Attaining Guidelines Recommended LDL-C Goal In Clinical Setting - Online</li> </ul>		<ul style="list-style-type: none"> <li>★ Zoom Lecture Certificate Course for GPs 2021 - Dementia Management - Online</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture Common Posterior Ocular Segment Disorders which Cause Visual Impairment - Online</li> </ul>	27
28	29	<ul style="list-style-type: none"> <li>★ Zoom Lecture ESC Guidelines Update on the Management of Heart Failure - Online</li> </ul>	<ul style="list-style-type: none"> <li>★ Zoom Lecture The New Foundational Treatment for Heart Failure - SGLT2 Inhibitor (Online)</li> <li>★ Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</li> <li>★ Zoom Lecture Navigating Adverse Outcomes Workshop - Online</li> </ul>			
	30					



# FEBURIC® IS NON-INFERIOR TO ALLOPURINOL FOR CV ADVERSE EVENTS IN GOUT PATIENTS ≥60 YEARS WITH 1 CV RISK FACTOR¹

**Study Design:** The FAST trial was a prospective, randomised, open-label, non-inferiority trial investigating febuxostat versus allopurinol in patients with gout in the UK, Denmark and Sweden. A total of 6129 patients aged ≥60, already receiving allopurinol, and with at least one cardiovascular risk factor were randomly assigned 1:1 to continue allopurinol (n=3065) or start febuxostat at 80mg/day (n=3063), increasing to 120mg/day if necessary to achieve target serum urate concentration. The primary outcome was a composite of hospitalisation for non-fatal myocardial infarction or biomarker-positive acute coronary syndrome, non-fatal stroke, or cardiovascular death. Median follow-up time in the study was 1467 days, and median on-treatment follow-up period was 1324 days. In the primary on-treatment analysis, febuxostat was found non-inferior to allopurinol with regards to the primary endpoint (HR=0.85; 95% CI: 0.70-1.03; p<0.0001). Cardiovascular death occurred in 2.0% and 2.7% of febuxostat and allopurinol patients, respectively, and also showed non-inferiority (HR=0.91; 95% CI: 0.66-1.27; p=0.018).

**Reference:** 1. Mackenzie IS et al. The Lancet. 2020;396(10264):1745-1757.

## Abbreviated prescribing information of Feburic® film-coated tablets

**Version: 003. Composition:** Febuxostat **Indications:** FEBURIC is indicated for the treatment of chronic hyperuricaemia in conditions where urate deposition has already occurred (including a history, or presence of, tophus and/or gouty arthritis). FEBURIC 120 mg is also indicated for the prevention and treatment of hyperuricaemia in adult patients undergoing chemotherapy for haematological malignancies at intermediate to high risk of Tumor Lysis Syndrome (TLS). FEBURIC is indicated in adults. **Dosage:** Gout 50 mg once daily. TLS 120mg once daily; start 2 days before the beginning of cytotoxic therapy and continue for a minimum of 7 days. **Administration:** May be taken by mouth with regard to food. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. **Special warnings and precautions for use:** Cardio-vascular disorders **Treatment of chronic hyperuricaemia:** Treatment with febuxostat in patients with ischaemic heart disease or congestive heart failure is not recommended. A numerical greater incidence of investigator-reported cardiovascular APTC events (defined endpoints from the Anti-Platelet Trialists' Collaboration (APTC)) including cardiovascular death, non-fatal myocardial infarction, non-fatal stroke) was observed in the febuxostat total group compared to the allopurinol group in the APTC and FACT studies (1.3 vs. 0.3 events per 100 Patient Years (Py's)), but not in the CONFIRMS study. The incidence of investigator-reported cardiovascular APTC events in the combined Phase 3 studies (APEX, FACT and CONFIRMS studies) was 0.7 vs. 0.6 events per 100 Py's. In the long-term extension studies the incidences of investigator-reported APTC events were 1.2 and 0.6 events per 100 Py's for febuxostat and allopurinol, respectively. No statistically significant differences were found and no causal relationship with febuxostat was established. Identified risk factors among these patients were a medical history of atherosclerotic disease and/or myocardial infarction, or of congestive heart failure. **Prevention and treatment of hyperuricaemia in patients at risk of TLS:** Patients undergoing chemotherapy for haematological malignancies at intermediate to high risk of Tumor Lysis Syndrome treated with FEBURIC should be under cardiac monitoring as clinically appropriate. **Medicinal product allergy/hypersensitivity:** Rare reports of serious allergic/hypersensitivity reactions, including life-threatening Stevens-Johnson Syndrome, Toxic epidermal necrolysis and acute anaphylactic reaction/shock, have been collected in the post-marketing experience. In most cases, these reactions occurred during the first month of therapy with febuxostat. Some, but not all of these patients reported renal impairment and/or previous hypersensitivity to allopurinol. Severe hypersensitivity reactions, including Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) were associated with fever, haematological, renal or hepatic involvement in some cases. Patients should be advised of the signs and symptoms and monitored closely for symptoms of allergic/hypersensitivity reactions. Febuxostat treatment should be immediately stopped if serious allergic/hypersensitivity reactions, including Stevens-Johnson Syndrome, occur since early withdrawal is associated with a better prognosis. If patient has developed allergic/hypersensitivity reactions including Stevens-Johnson Syndrome and acute anaphylactic reaction/shock, febuxostat must not be re-started in this patient at any time. **Acute gout attacks (gout flare):** Febuxostat treatment should not be started until an acute attack of gout has completely subsided. Gout flares may occur during initiation of treatment due to changing serum uric acid levels resulting in mobilization of urate from tissue deposits. At treatment initiation with febuxostat flare prophylaxis for at least 6 months with an NSAID or colchicine is recommended. If a gout flare occurs during febuxostat treatment, it should not be discontinued. The gout flare should be managed concurrently as appropriate for the individual patient. Continuous treatment with febuxostat decreases frequency and intensity of gout flares. **Xanthine disposition:** Patients in whom the rate of urate formation is greatly increased (e.g. malignant disease) and its treatment, Lesch-Nyhan syndrome) the absolute concentration of xanthine in urine could, in rare cases, rise sufficiently to allow deposition in the urinary tract. This has not been observed in the pivotal clinical study with FEBURIC in the Tumor Lysis Syndrome. As there has been no experience with febuxostat, its use in patients with Lesch-Nyhan Syndrome is not recommended. **Mercaptopurine/azathioprine:** Febuxostat use is not recommended in patients concomitantly treated with mercaptopurine/azathioprine as inhibition of xanthine oxidase by febuxostat may cause increased plasma concentrations of mercaptopurine/azathioprine that could result in severe toxicity. No interaction studies have been performed in humans. Where the combination cannot be avoided, a reduction of the dose of mercaptopurine/azathioprine is recommended. Based on modelling and simulation analysis of data from a pre-clinical study in rats, when co-administered with febuxostat, the dose of mercaptopurine/azathioprine should be reduced to the 20% or less of the previously prescribed dose in order to avoid possible haematological effects. The patients should be closely monitored and the dose of mercaptopurine/azathioprine should be subsequently adjusted based on the evaluation of the therapeutic response and the onset of eventual toxic effects. **Organ transplant recipients:** There has been no experience in organ transplant recipients, the use of febuxostat in such patients is not recommended. **Theophylline Co-administration:** Febuxostat 80 mg and theophylline 400 mg single dose in healthy subjects showed absence of any pharmacokinetic interaction. Febuxostat 80 mg can be used in patients concomitantly treated with theophylline without risk of increasing theophylline plasma levels. No data is available for febuxostat 120 mg. **Liver disorders:** During the combined phase 3 clinical studies, mild liver function test abnormalities were observed in patients treated with febuxostat (5.0%). Liver function test is recommended prior to the initiation of therapy with febuxostat and periodically thereafter based on clinical judgment. **Thyroid disorders:** Increased TSH values (> 5.5 µU/mL) were observed in patients on long-term treatment with febuxostat (5.5%) in the long term open label extension studies. Caution is required when febuxostat is used in patients with alteration of thyroid function. Lactose Febuxostat tablets contain lactose. Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicine. **Undesirable effects:** Summary of the safety profile The most commonly reported adverse reactions in clinical trials (4,072 subjects treated at least with a dose from 10 mg to 300 mg) and post-marketing experience in gout patients are gout flares, liver function abnormalities, diarrhoea, nausea, headache, rash and oedema. These adverse reactions were mostly mild or moderate in severity. Rare serious hypersensitivity reactions to febuxostat, some of which were associated to systemic symptoms, have occurred in the post-marketing experience. List of adverse reactions Common (≥ 1/100 to < 1/10), uncommon (≥ 1/1,000 to < 1/100) and rare (≥ 1/10,000 to < 1/1,000) adverse reactions occurring in patients treated with febuxostat are listed below. The frequencies are based on studies and post-marketing experience in gout patients. Within each frequency grouping, adverse reactions are presented in order of decreasing seriousness. Adverse reactions in combined phase 3, long-term extension studies and post-marketing experience in gout patients. **Blood and lymphatic system disorders:** Rare: Pancytopenia, thrombocytopenia, agranulocytosis. **Immune system disorders:** Rare: Anaphylactic reaction\*, drug hypersensitivity\*. **Endocrine disorders:** Uncommon: Blood thyroid stimulating hormone increased. **Eye disorders:** Rare: Blurred vision. **Metabolism and nutrition disorders:** Common\*\*\*: Gout flares. Uncommon: Diabetes mellitus, hyperlipidaemia, decreased appetite, weight increase. Rare: Weight decrease, increased appetite, anorexia. **Psychiatric disorders:** Uncommon: Libido decreased, insomnia. Rare: Nervousness. **Nervous system disorders:** Common: Headache. Uncommon: Dizziness, paraesthesia, hemiparesis, somnolence, altered taste, hyposaesthesia, hypoaesthesia. **Ear and labyrinth disorders:** Rare: Tinnitus. **Cardiac disorders:** Uncommon: Atrial fibrillation, palpitations, ECG abnormal, left bundle branch block (see section Tumor Lysis Syndrome), sinus tachycardia (see section Tumor Lysis Syndrome). **Vascular disorders:** Uncommon: Hypertension, flushing, hot flush, haemorrhage (see section Tumor Lysis Syndrome). **Respiratory system disorders:** Uncommon: Dyspnoea, bronchitis, upper respiratory tract infection, cough. **Gastrointestinal disorders:** Common: Diarrhoea\*\*\*, nausea. Uncommon: Abdominal pain, abdominal distension, gastro-oesophageal reflux disease, vomiting, dry mouth, dyspepsia, constipation, frequent stools, flatulence, gastrointestinal discomfort. Rare: Pancreatitis, mouth ulceration. **Hepato-biliary disorders:** Common: Liver function abnormalities\*\*\*. Uncommon: Cholelithiasis. Rare: Hepatitis, jaundice\*, liver injury\*. **Skin and subcutaneous tissue disorders:** Common: Rash (including various types of rash reported with lower frequencies, see below). Uncommon: Dermatitis, urticaria, pruritus, skin discoloration, skin lesion, petechiae, rash macular, rash maculopapular, rash papular. Rare: Toxic epidermal necrolysis\*, Stevens-Johnson Syndrome\*, angioedema\*, drug reaction with eosinophilia and systemic symptoms\*, generalized rash (serious), erythema, exfoliative rash, rash follicular, rash vesicular, rash pustular, rash pruritic\*, rash erythematous, rash morbilliform, alopecia, hyperhidrosis. **Musculoskeletal and connective tissue disorders:** Uncommon: Arthralgia, arthritis, myalgia, musculoskeletal pain, muscle weakness, muscle spasm, muscle tightness, bursitis. Rare: Rhabdomyolysis\*, joint stiffness, musculoskeletal stiffness. **Renal and urinary disorders:** Uncommon: Renal failure, nephrolithiasis, haematuria, polakiuria, proteinuria. Rare: Tubulointerstitial nephritis\*, micturition urgency. **Reproductive system and breast disorder:** Uncommon: Erectile dysfunction. **General disorders and administration site conditions:** Common: Oedema. Uncommon: Fatigue, chest pain, chest discomfort. Rare: Thirst. **Investigations:** Uncommon: Blood amylase increase, platelet count decrease, WBC decrease, lymphocyte count decrease, blood creatinine increase, haemoglobin decrease, blood uric acid increase, blood triglycerides increase, blood cholesterol increase, haematuric decrease, blood lactate dehydrogenase increased, blood potassium increase. Rare: Blood glucose increase, activated partial thromboplastin time prolonged, red blood cell count decrease, blood alkaline phosphatase increase, blood creatine phosphokinase increase\*. **\*\*** Adverse reactions coming from post-marketing experience. **\*\*\*** Treatment-emergent non-infective diarrhoea and abnormal liver function tests in the combined Phase 3 studies are more frequent in patients concomitantly treated with colchicine. **\*\*\*** See full prescribing information for incidences of gout flares in the individual Phase 3 randomized controlled studies. Description of selected adverse reactions Rare serious hypersensitivity reactions to febuxostat, including Stevens-Johnson Syndrome, Toxic epidermal necrolysis and anaphylactic reaction/shock, have occurred in the post-marketing experience. Stevens-Johnson Syndrome and Toxic epidermal necrolysis are characterised by progressive skin rashes associated with blisters or mucosal lesions and eye irritation. Hypersensitivity reactions to febuxostat can be associated to the following symptoms: skin reactions characterised by infiltrated maculopapular eruption, generalised or exfoliative rashes, but also skin lesions, facial oedema, fever, haematological abnormalities such as thrombocytopenia and eosinophilia, and single or multiple organ involvement (liver and kidney including tubulointerstitial nephritis). Gout flares were commonly observed soon after the start of treatment and during the first months. Thereafter, the frequency of gout flare decreases in a time-dependent manner. Gout flare prophylaxis is recommended. **Tumor Lysis Syndrome:** Summary of the safety profile In the randomized, double-blind, Phase 3 pivotal FLORENCE (FLO-01) study comparing febuxostat with allopurinol (346 patients undergoing chemotherapy for haematological malignancies and at intermediate-to-high risk of TLS), only 22 (6.4%) patients overall experienced adverse reactions, namely 11 (6.4%) patients in each treatment group. The majority of adverse reactions were either mild or moderate. Overall, the FLORENCE trial did not highlight any particular safety concern in addition to the previous experience with FEBURIC in gout, with the exception of the following three adverse reactions. Cardiac disorders: Uncommon: Left bundle branch block, sinus tachycardia. Vascular disorders: Uncommon: haemorrhage.

**Full prescribing information is available upon request.**  
FEBURIC® is a registered trademark of Teijin Limited, Tokyo, Japan.





Date / Time	Function	Enquiry / Remarks
<b>2 TUE</b>	2:00 PM <b>Zoom Lecture</b> <b>HKMA-HKSH CME Programme 2021-2022</b> <b>Topic: Update on intra-arterial thrombectomy for acute ischaemic stroke (Online)</b> Organiser: Hong Kong Medical Association & Hong Kong Sanatorium & Hospital Speaker: Dr LEUNG Kar Ming	HKMA CME Dept. Tel: 2865 0943 1 CME Point
	6:00 PM <b>Zoom Lecture</b> <b>Navigating Adverse Outcomes Workshop - Online</b> Organiser: Hong Kong Medical Association & Medical Protection Society Speaker: Dr Justin CHENG & Dr Rajesh SINGH	HKMA CME Dept. Tel: 2865 0943 1 CME Point
	7:00 PM <b>Certificate Course in Cardiology 2021 (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & Hong Kong College of Cardiology Speaker: Dr YUNG Tak Cheung	Ms Vienna Lam Tel: 2527 8898
<b>3 WED</b>	7:00 PM <b>Certificate Course On Optometric Practice from Infants to the Elderly (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Society of Professional Optometrists Speaker: Dr NG Sheung Shun, Vincent	Ms Vienna Lam Tel: 2527 8898
<b>4 THU</b>	2:00 PM <b>Zoom Lecture</b> <b>Certificate Course for GPs 2021 - Prolapse and Incontinence Symptoms - Online</b> Organiser: HKMA-KLN East Community Network, HA-United Christian Hospital & HK College of Family Physicians Speaker: Dr Mandy YU Chung Hung	Ms Elise Haw Tel: 2660 7720 1 CME Point
	2:00 PM <b>Zoom Lecture</b> <b>Anal Pain and Bleeding? How to Handle Hemorrhoidal Disease with Effective Treatments? - Online</b> Organiser: HKMA-HK East Community Network Speaker: Dr CHAN Hoi Yee	Ms Candice Tong Tel: 2865 0943 1 CME Point
<b>5 FRI</b>	2:00 PM <b>Zoom Lecture</b> <b>New Horizons In Atopic Dermatitis Management – An Overview Of Janus Kinase (JAK) Inhibitors - Online</b> Organiser: Hong Kong Medical Association Speaker: Dr LAM Yuk Keung	HKMA CME Dept. Tel: 2865 0943 1 CME Point
<b>9 TUE</b>	2:00 PM <b>Zoom Lecture</b> <b>Common Disease of Throat and Larynx: Review by ENT Surgeon - Online</b> Organiser: HKMA-YTM Community Network Speaker: Dr HUI Yui Cheung	Ms Candice Tong Tel: 2865 0943 1 CME Point
	7:00 PM <b>Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Association of Speech Therapists Speaker: Dr Anita Wong	Ms Vienna Lam Tel: 2527 8898
<b>10 WED</b>	2:00 PM <b>Zoom Lecture</b> <b>Pertussis Prevention During Influenza Season - Online</b> Organiser: HKMA-Central, Western & Southern Community Network Speaker: Dr WONG Tin Yau, Andrew	Ms Antonia Lee Tel: 2865 0943 1 CME Point
	7:00 PM <b>Certificate Course On Optometric Practice from Infants to the Elderly (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Society of Professional Optometrists Speaker: Dr NG Sheung Shun, Vincent	Ms Vienna Lam Tel: 2527 8898
	<b>The Hong Kong Neurosurgical Society Monthly Academic Meeting</b> Organiser: Hong Kong Neurosurgical Society Speaker: Dr YUEN Pak To, Ryan Venue: Conference Room, F2, Department of Neurosurgery, Queen Elizabeth Hospital; or via Zoom meeting	Dr Calvin MAK Tel: 2595 6456
<b>11 THU</b>	2:00 PM <b>Zoom Lecture</b> <b>Updates in Rheumatic Diseases - Online</b> Organiser: HKMA-KLN East Community Network Speaker: Dr YU Ka Lung, Carrel	Ms Antonia Lee Tel: 2865 0943 1 CME Point
<b>12 FRI</b>	2:00 PM <b>Zoom Lecture</b> <b>What a Family Doctor Should Know about CT Coronary Angiogram? - Online</b> Organiser: HKMA-Shatin Community Network Speaker: Dr LAW Kwan Kin	Ms Candice Tong Tel: 2865 0943 1 CME Point
<b>16 TUE</b>	2:00 PM <b>Zoom Lecture</b> <b>HKMA Men's Health Community Network CME Live Lecture - Medical Management of LUTS and BPH</b> Organiser: HKMA-Men's Health Community Network Speaker: Dr LI Churk Fai, Trevor	Ms Candice Tong Tel: 2865 0943 1 CME Point
	2:00 PM <b>Zoom Lecture</b> <b>HKMA Men's Health Community Network CME Live Lecture - Overview of New MISTS / Rezum</b> Organiser: HKMA-Men's Health Community Network Speaker: Dr LAM Pei, Wayne	Ms Candice Tong Tel: 2865 0943 1 CME Point
	7:00 PM <b>Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Association of Speech Therapists Speaker: Dr Carol TO	Ms Vienna Lam Tel: 2527 8898



Date / Time	Function	Enquiry / Remarks
<b>17 WED</b> 7:00 PM	<b>Certificate Course On Optometric Practice from Infants to the Elderly (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Society of Professional Optometrists Speaker: Miss YEE Man Chi, Gigi	Ms Vienna Lam Tel: 2527 8898
<b>22 MON</b> 2:00 PM	<b>Zoom Lecture</b> <b>Addressing Lipid Risk: Stepwise Approach In Attaining Guidelines Recommended LDL-C Goal In Clinical Setting - Online</b> Organiser: Hong Kong Medical Association Speaker: Dr CHAN Wai Kwong	HKMA CME Dept. Tel: 2865 0943 1 CME Point
<b>23 TUE</b> 7:00 PM	<b>Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Association of Speech Therapists Speaker: Dr Dustin Lau	Ms Vienna Lam Tel: 2527 8898
<b>25 THU</b> 2:00 PM	<b>Zoom Lecture</b> <b>Certificate Course for GPs 2021 - Dementia Management - Online</b> Organiser: HKMA-KLN East Community Network, HA-United Christian Hospital & HK College of Family Physicians Speaker: Dr WAI Hok Man	Ms Elise Haw Tel: 2660 7720 1 CME Point
<b>26 FRI</b> 2:00 PM	<b>Zoom Lecture</b> <b>Common Posterior Ocular Segment Disorders which Cause Visual Impairment - Online</b> Organiser: HKMA-KLN City Community Network Speaker: Dr SIN Pui Yee, Helena	Ms Candice Tong Tel: 2865 0943 1 CME Point
<b>29 MON</b> 2:00 PM	<b>Zoom Lecture</b> <b>ESC Guidelines Update on the Management of Heart Failure - Online</b> Organiser: HKMA-New Territories West Community Network Speaker: Dr CHAN Kit, Jacky	Ms Antonia Lee Tel: 2865 0943 1 CME Point
<b>30 TUE</b>	2:00 PM <b>Zoom Lecture</b> <b>The New Foundational Treatment for Heart Failure – SGLT2 Inhibitor (Online)</b> Organiser: HKMA-KLN West Community Network Speaker: Dr CHEONG Yan Yue, Adrian Piers	Ms Antonia Lee 2865 0943 1 CME Point
	7:00 PM <b>Certificate Course on Communication and Swallowing Development and Disorders in Children 2021 (Video Lectures)</b> Organiser: The Federation of Medical Societies of Hong Kong & The Hong Kong Association of Speech Therapists Speaker: Dr Angel Chan	Ms Vienna Lam Tel: 2527 8898
	7:00 PM <b>Zoom Lecture</b> <b>Navigating Adverse Outcomes Workshop - Online</b> Organiser: Hong Kong Medical Association & Medical Protection Society Speaker: Dr Justin CHENG & Dr Rajesh SINGH	HKMA CME Dept. 2865 0943 2 CME Point



## Answers to Dermatology Quiz

### Answers:

1. Squamous cell carcinoma (SCC), Malignant amelanotic melanoma, Ulcerative basal cell carcinoma (BCC), and Secondary cutaneous metastasis can be the possible differential diagnoses. BCC has an impression of indolent, slow growth and non-aggressive. However, ulcerative BCC is more aggressive than conventional BCC regarding their local recurrences and distal metastasis. It is often from the basosquamous subtype of BCC.
2. These four differential diagnoses - Squamous cell carcinoma (SCC), Malignant amelanotic melanoma, Ulcerative basal cell carcinoma (BCC) and Secondary cutaneous metastasis, are very difficult to be differentiated based on the clinical examination and even dermoscopy. So skin biopsy is needed for this gentleman. The biopsy result showed features of BCC with foci of neoplastic squamous differentiation. The lesion had key features of BCC but the cellular morphology showed areas of large, pale squamoid cells lacking keratinisation. In other words, the lesion is mixed with features of both BCC and SCC. Therefore, this is basosquamous carcinoma - a subtype of BCC.
3. Surgical excision including wide local excision or Mohs surgery is mandatory. Sentinel lymph node biopsy is also considered for its rapid metastatic behaviour. Radiotherapy is an additional option in patients with a high risk of local recurrences such as positive excision margins, deep invasion, positive lymph node and perineural or intravascular spread. Some forms of topical treatments for conventional BCC, such as cryotherapy, photodynamic therapy, imiquimod cream and fluorouracil cream are not recommended because of the aggressive behaviour of this malignancy. Targeted therapy referring to the hedgehog signalling inhibitors may be considered in metastatic disease.

### Dr Chi-keung KWAN

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FHKCP, FHKAM(Medicine)  
*Specialist in Dermatology and Venereology*

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Patients with type 2 diabetes  
should expect more after metformin

# REALISE THE POTENTIAL



UP TO  
**80%**  
ACHIEVED ADA TARGET OF HbA<sub>1c</sub>  
**<7%**  
VS OTHER DIABETES  
TREATMENT<sup>1,2,7,8,9§</sup>

## OZEMPIC®

The only once-weekly treatment unifying superior efficacy and CV benefits<sup>1-5</sup>



**SUPERIOR  
GLYCAEMIC  
CONTROL<sup>1,2\*</sup>**

Up to 1.8% HbA<sub>1c</sub>  
reduction<sup>2</sup>



**SUPERIOR AND  
SUSTAINED  
WEIGHT LOSS<sup>1,3\*</sup>**

Up to 6.5kg weight  
reduction<sup>2</sup>



**PROVEN  
CV BENEFITS<sup>1,3\*</sup>**

26% CV risk  
reduction<sup>1,3§</sup>



For adults with type 2 diabetes with  
established ASCVD or indicators of high ASCVD risk  
**2019 ADA/EASD consensus report recommends  
a GLP-1 RA therapy with proven CV benefit<sup>6</sup>**

§ When added to SOC, which included oral antidiabetic treatment, insulin, antihypertensives, diuretics and lipid-lowering therapies.<sup>3</sup>

¶ Other diabetes treatments refer to sitagliptin, dulaglutide, exenatide ER, liraglutide, canagliflozin and glargine U100. Target refers to American Diabetes Association target of HbA<sub>1c</sub> <7%.

† In SUSTAIN 6, Ozempic® reduced CV risk (CV death, nonfatal myocardial infarction [MI] or nonfatal stroke) versus placebo in patients with type 2 diabetes at high CV risk treated with standard of care.<sup>1</sup>

\* Results apply to Ozempic® across SUSTAIN trials, which included placebo, DPP-4i, SGLT-2i, GLP-1 RA and basal insulin.<sup>1,2</sup>

CV=cardiovascular; CVD=cardiovascular disease; ADA=American Diabetes Association; EASD=European Association for the Study of Diabetes; GLP-1 RA=glucagon-like peptide-1 receptor agonist.

**Abbreviated prescribing information Ozempic® (semaglutide).** Ozempic, 0.25 mg solution for injection in pre-filled pen; Ozempic, 0.5 mg solution for injection in pre-filled pen; Ozempic, 1 mg solution for injection in pre-filled pen. **Consult Summary of Product Characteristics before prescribing.** **Presentation:** Ozempic, 0.25 mg, 0.5 mg solution for injection. Each pre-filled pen contains 2 mg semaglutide in 1.5 mL solution. Ozempic, 1 mg solution for injection: One pre-filled pen contains 4 mg semaglutide in 3.0 mL solution. **Dose:** Ozempic® is indicated for the treatment of adults with insufficiently controlled type 2 diabetes mellitus as an adjunct to diet and exercise as monotherapy, when metformin is considered inappropriate due to intolerance or contraindications. Combination therapy: In addition to other medicinal products for the treatment of diabetes. For study results with respect to combinations, effects on glycaemic control and cardiovascular events, and the populations studied, see the full Summary of Product Characteristics. **Dosage and administration:** The starting dose is 0.25 mg Ozempic® once weekly. After 4 weeks the dose should be increased to 0.5 mg once weekly. After at least 4 weeks with a dose of 0.5 mg once weekly, the dose can be increased to 1 mg once weekly to further improve glycaemic control. Ozempic® is to be administered once weekly at any time of the day, with or without meals. Ozempic® is to be injected subcutaneously in the abdomen, in the thigh or in the upper arm. Ozempic® should not be administered intravenously or intramuscularly. When Ozempic® is added to existing therapy of insulin, the current dose of metformin and/or thiazolidinedione can be continued unchanged. When Ozempic® is added to existing therapy of sulfonylurea or insulin, a reduction in the dose of sulfonylurea or insulin should be considered to reduce the risk of hypoglycaemia. **Elderly:** No dose adjustment is required based on age. **Therapeutic experience in patients aged ≥75 years of age is limited.** **Renal impairment:** No dose adjustment is required for patients with mild, moderate or severe renal impairment. Experience in patients with severe renal impairment is limited. Not recommended for use in patients with end-stage renal disease. **Hepatic impairment:** No dose adjustment is required for patients with hepatic impairment. Experience in patients with severe hepatic impairment is limited. Caution should be exercised when treating these patients with Ozempic®. **Paediatric population:** The safety and efficacy of Ozempic® in children and adolescents below 18 years have not yet been established. No data are available. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. **Special warnings and precautions for use:** Ozempic® should not be used in patients with type 1 diabetes mellitus or for the treatment of diabetic ketoacidosis. Ozempic® is not a substitute for insulin. There is no experience in patients with congestive heart failure NYHA class IV and Ozempic® is therefore not recommended in these patients. The possibility of gastrointestinal adverse reactions should be considered when treating patients with impaired renal function as nausea, vomiting and diarrhoea may cause dehydration, which could cause a deterioration of renal function. Patients should be informed of the characteristic symptoms of acute pancreatitis. If pancreatitis is suspected, Ozempic® should be discontinued; if confirmed, Ozempic® should not be restarted. Caution should be exercised in patients with a history of pancreatitis. Patients treated with Ozempic® in combination with a sulfonylurea or insulin may have an increased risk of hypoglycaemia. Consider reducing the dose of sulfonylurea or insulin when initiating treatment with Ozempic®. In patients with diabetic retinopathy treated with insulin and Ozempic®, an increased risk of developing diabetic retinopathy complications has been observed. Caution should be exercised when using Ozempic® in patients with diabetic retinopathy treated with insulin. These patients should be monitored closely and treated according to clinical guidelines. Rapid improvement in glucose control has been associated with a temporary worsening of diabetic retinopathy, but other mechanisms cannot be excluded. **Interactions:** Ozempic® delays gastric emptying and has the potential to impact the rate of absorption of concomitantly administered oral medicinal products. Ozempic® should be used with caution in patients receiving oral medicinal products that require rapid gastrointestinal absorption. No dose adjustment of paracetamol, oral contraceptives (ethinylestradiol and levonorgestrel), atorvastatin, warfarin, digoxin or metformin is necessary when administered with Ozempic®. For further details of these interaction studies, please see the Summary of Product Characteristics. **Pregnancy and lactation:** Ozempic® should not be used during pregnancy. If a patient wishes to become pregnant, or pregnancy occurs during treatment, Ozempic® should be discontinued. **Adverse reactions:** In clinical trials, the most frequently reported adverse reactions with Ozempic® were gastrointestinal disorders, including nausea, diarrhoea and vomiting. Adverse reactions by system organ class and absolute frequencies identified in all phase 3a trials listed here as Very common (≥1/100); Hypoglycaemia when used with insulin or sulfonylurea, nausea, diarrhoea; Common (≥1/100 to <1/100); Hypoglycaemia when used with other OADs, decreased appetite, dizziness, diabetic retinopathy complications, vomiting, abdominal pain, abdominal distension, constipation, dyspepsia, gastritis, gastro-oesophageal reflux disease, eructation, flatulence, cholelithiasis, fatigue, increased lipase, increased amylase, weight decreased; Uncommon (≥1/1,000 to <1/100): Dyspepsia, increased heart rate, injection site reactions; Rare (≥1/10,000 to <1/1,000): Anaphylactic reaction. **References:** 1. Ozempic® (semaglutide). 2. Phyllis RE, Arora VR, Lingvay I, et al. Semaglutide versus dulaglutide once weekly in patients with type 2 diabetes (SUSTAIN 7): a randomised, open-label, phase 3b trial. *Lancet Diabetes Endocrinol.* 2018;6(4):275-286. 3. 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