新生兒轉送團隊與轉送作業流程

馬偕兒童醫院新生兒科主任
張弘洋醫師

Mode of Transport

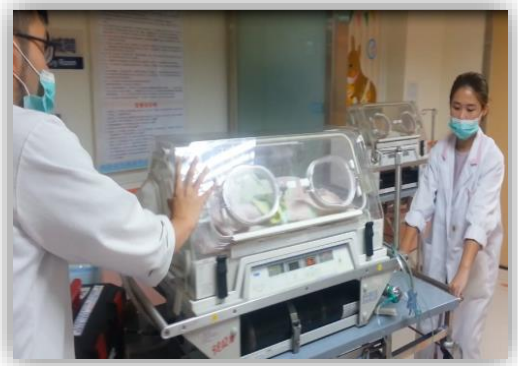
Intrauterine (maternal) **transport**

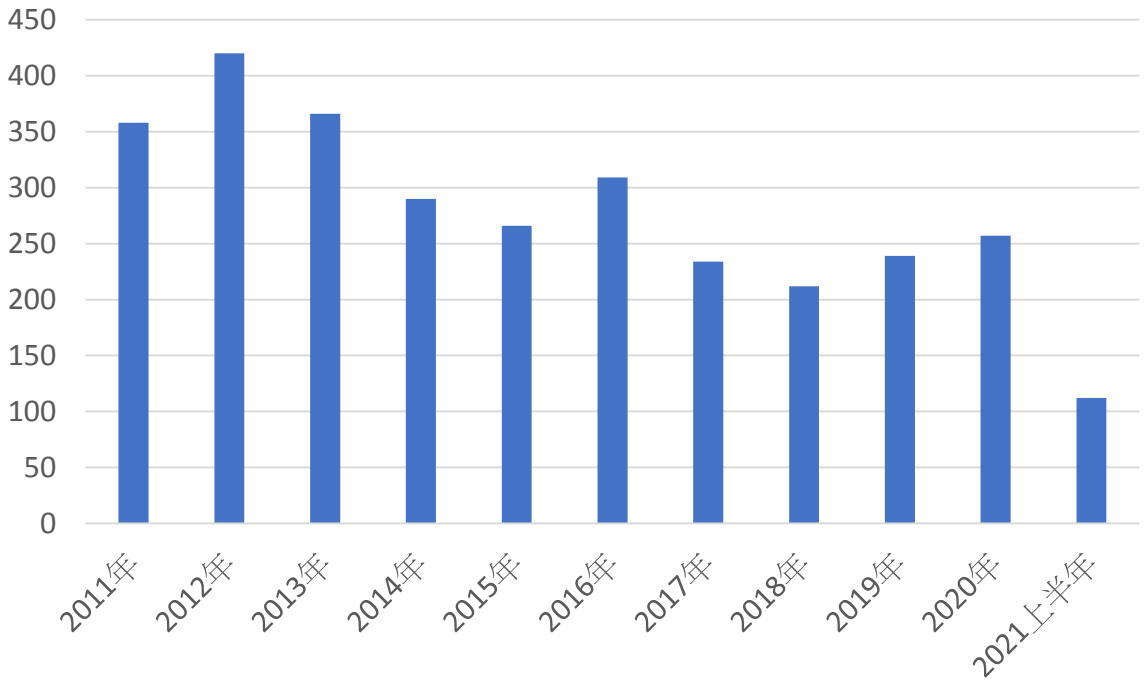
Neonatal transport

Return (back) **transport**

馬偕兒童醫院
高危險新生兒外接轉送服務

- 黃富源教授於1976年設立全台首間「新生兒加護病房」
- 1981年首創全天候外接轉診服務，每年服務量約200-300人次





新生兒轉送團隊
Transport Team

人員組成

裝備

Transport System

Unit based team

- **NICU**

Dedicated team

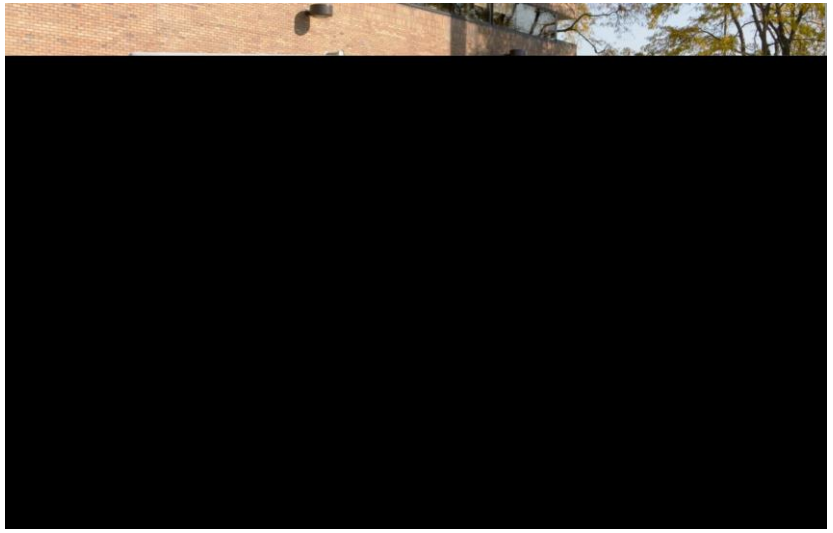
- **Centralized process → communications center**

operates **24 hours a day, 7 days a week**

Transport Team Composition

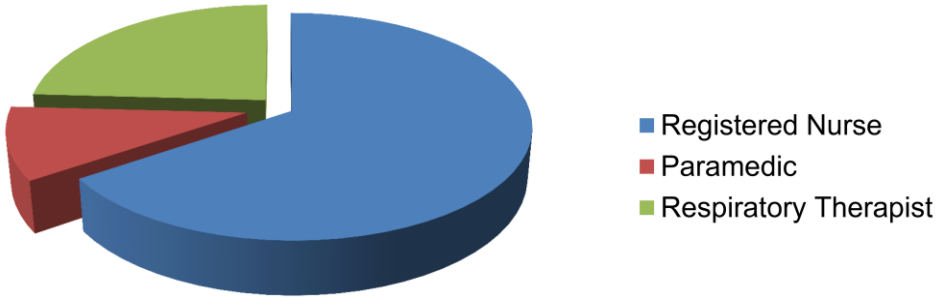
- **Program director**/transport team **medical director**
- Transport team coordinator
- **Medical control physician**
- **Physician (neonatologist, pediatrician, fellow, resident)**
- **Nurse (nurse practitioner, nurse)**
- Respiratory therapist
- **Paramedics (driver..)**
- Emergency medical technicians (EMTs)

- **Team: 2 clinicians and a driver**
- **Assign team leader**



Transport Team Composition

- **USA National data**:
  - **RN-RT 40~50%**
  - RN-RN 11%
  - **Physician 8~9%**



Payment?

Insurance?

Transport Personnel	Advantages	Disadvantages
Specialty-trained attending physician	Expertise; public relations; critical care training and skills	High salary cost; limited availability for full-time coverage; care and supervision limited to 1 patient at a time
Non–intensive care-, non–neonatology-, or non–emergency medicine-trained attending physician	Expertise; public relations	High salary cost; limited availability for full-time coverage; care and supervision limited to 1 patient at a time; critical care skill acquisition as needed
Fellow	Expertise; valuable training experience	Transport demands might overburden training availability; availability might be limited by ACGME work rules
Resident	Valuable training experience; salary cost may be built into the training program	Demands of transport compete with other aspects of training and education; limited clinical experience; availability might be limited by ACGME work rules
Advanced practice neonatal or pediatric nurse practitioner	Expertise; consistent quality of care, public relations, knowledge of ICU staff	High salary costs; usually limited to discipline for which they are trained (eg, neonatal nurse practitioner vs pediatric nurse practitioner); acceptance as specialized provider by referring care team can be an issue if community expectations are for physician-led team
Critical care nurse, physician assistant	Availability; expertise with appropriate training; uniform quality of care, continuity of care in ICU	Initial acceptance by referring care team can be an issue; requires intensive training to function independently in the transport environment
Respiratory therapist	Focused respiratory assessments; knowledge of respiratory equipment; advanced airway and ventilatory expertise	Focused airway training and experience; requires intensive training to expand to more global patient care
Paramedic or emergency medical technicians	Expertise in prehospital setting; availability; less costly than other team members	Lesser formal medical and pediatric training and perhaps experience; requires intensive training to assist with other areas of patient care

The Required Competencies

Diverse Talents

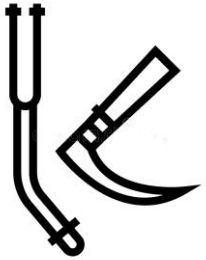
- Theoretical knowledge
- Clinical
  - Patient assessment
  - Analysis of data
  - Medical management
  - Procedure skills
- Coordination and communication
- **Keep calm and carry on**

Knowledge and skills

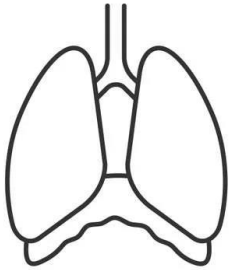
- **Theoretical knowledge**
  - Foundations and essential components of **teamwork**
  - **Operating** incubators, ventilators, monitors, infusion pumps, available electronic medical devices
  - Disease **severity scores and normal vital signs** for gestational age
  - Diagnosis and treatment of the **most frequent neonatal diseases**
  - Clinical signs of **respiratory, hemodynamic and neurologic impairment**
  - **Critical care medication**
  - Recording **quality indicators**
  - Most frequent **serious complications** during transport (**extubation, loss of IV access, car accident**)

Procedures

IV/IO placement



Endotracheal intubation/airway management



Chest tube insertion/needle decompression

Umbilical catheter placement

轉送裝備
Equipment

Transport Vehicles

Ground transport

- Road ambulance (distance <100km)

Air transport

- Rotary aircraft (helicopter) ambulance (100~250km)
- Fixed wing aircraft (plane) ambulance (>250km)

Road Ambulance

- **Seats** for at least 3 providers/family members; at least 45cm distance between seats and incubator
- a certified **restraint system**: safety of the patient and the crew
- **power and air/oxygen supply** to medical equipment in the vehicle
- **Light** for diagnosis

Some transport teams have **their own dedicated vehicles**

Transport Incubator

- a certified **fixation system**
- clear sections that allow **observation of the infant**
- allow **medical intervention** in transit
- system to **load and unload** the incubator without lifting

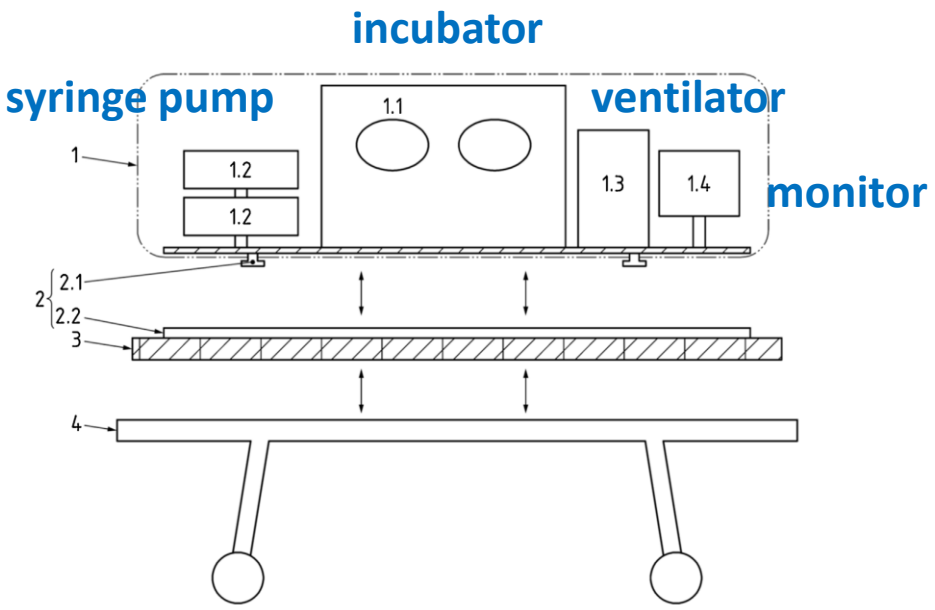


Figure 1 Transport incubator system fixed to the frame of the vehicle (UNE-EN 13976-1). Components of the transport incubator system (TIS): 1.1: incubator; 1.2: syringe pump; 1.3: ventilator; 1.4: monitor. Fixation system: 2.1: track studs; 2.2: track rails; 3: Interface to be used if track rails cannot be fixed directly to the stretcher system. If the interface is to be attached to undercarriage, original fixation points on the undercarriage should be used; 4: Stretcher system (stretcher/undercarriage/stretcher support, etc).

Anales de Pediatría 2021;94: 420.e1-11

Standards of Equipment

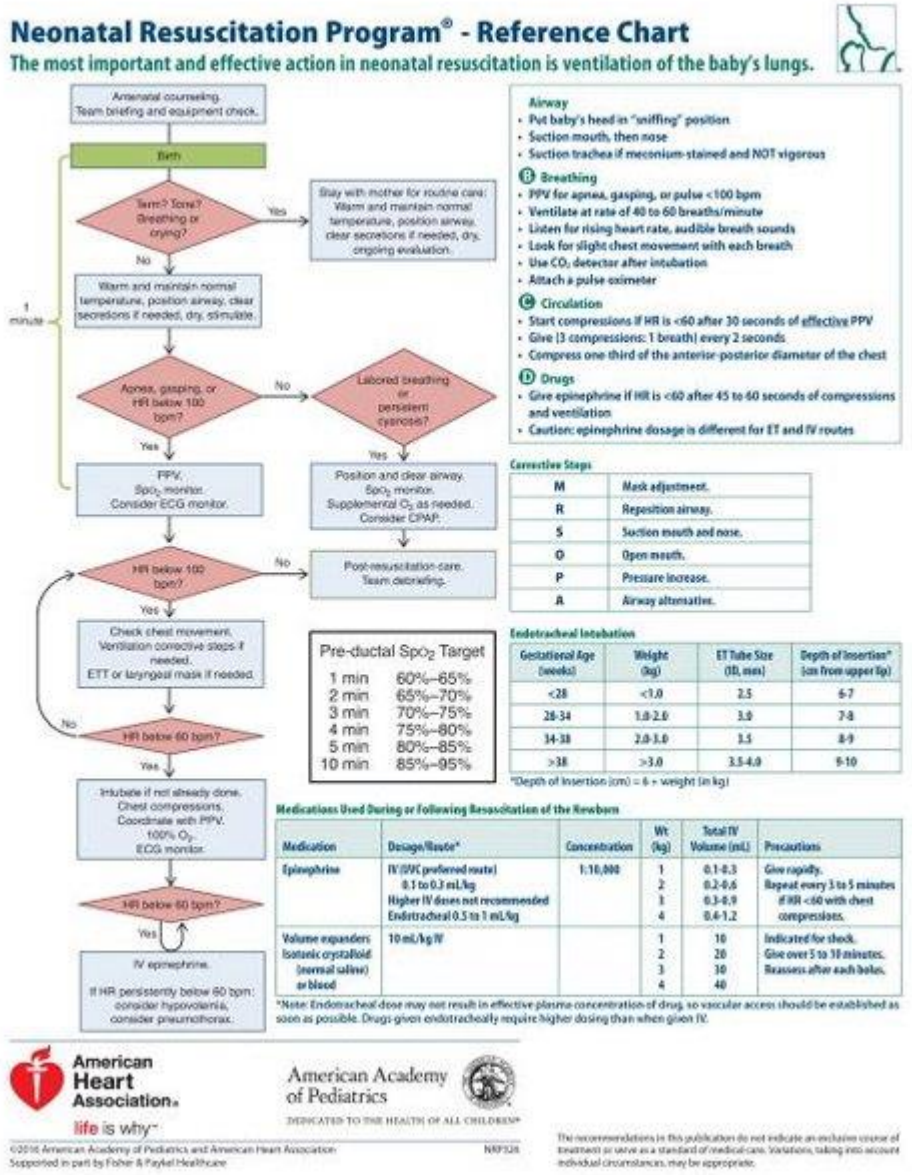
- **Portable oxygen cylinder:** at least 400 ml (sufficient supply to cover double the longest expected duration)
- **Vital signs monitor**: HR, RR, ECG, BP, SpO2, body temperature, capnography
- **Respiratory support:** neonatal self-inflating bag, transport ventilator (invasive or noninvasive)
- **Vascular access** and intravenous infusion, necessary drugs and fluids; infusion pumps
- **Portable first aid kit** (containing emergency medicine, endotracheal tube, intubation equipment, umbilical vein catheter, chest tube)

Additional Equipment

- Advanced respiratory support: HFOV, iNO
- EtCO2 or PtCO2
- Defibrillator
- Portable suction system
- Point-of-care blood testing and glucose meter
- Refrigerator for drugs, human milk, supplies for enteral nutrition
- Point-of-care ultrasound system

NRP Quick Equipment Checklist

Warm	• Preheated warmer
	• Warm towels or blankets
	• Temperature sensor and sensor cover for prolonged resuscitation
	• Hat
	• Plastic bag or plastic wrap (<32 weeks' gestation)
	• Thermal mattress (<32 weeks' gestation)
Clear airway	• Bulb syringe
	• 10F or 12F suction catheter attached to wall suction, set at 80 to 100 mm Hg
	• Meconium aspirator
Auscultate	• Stethoscope
Ventilate	• Flowmeter set to 10 L/min
	• Oxygen blender set to 21% *(21%-30% if <35 weeks' gestation)*
	• Positive-pressure ventilation (PPV) device
	• Term- and preterm-sized masks
	• 8F feeding tube and large syringe
Oxygenate	• Equipment to give free-flow oxygen
	• Pulse oximeter with sensor and cover
	• Target oxygen saturation table
Intubate	• Laryngoscope with size-0 and size-1 straight blades (size 00, optional)
	• Stylet (optional)
	• Endotracheal tubes (sizes 2.5, 3.0, 3.5)
	• Carbon dioxide (CO_2) detector
	• Measuring tape and/or endotracheal tube insertion depth table
	• Waterproof tape or tube-securing device
	• Scissors
	• Laryngeal mask (size 1) and 5-mL syringe



Drug List

Neonatal Transfer Service Drug Calculation Sheet

(This form does not replace a drug formulary)

Drug	Dose Calculation	Amount to be given
Morphine Bolus (100mcg/KG)	Wt (KG)_____ X 100 =	_____ micrograms by slow iv push
Suxamethonium 2mg/KG **Note: the administration of suxamethonium may cause profound bradycardia requiring atropine administration**	Wt (KG)_____ X 2 =	_____ mgs by slow iv push
Atropine	Wt (KG)_____ X 10=	_____ micrograms by slow iv push
Curosurf 200 mgs/KG 1st Dose	Wt (KG)_____ X 200=	_____ mgs
100 mgs/KG 2nd Dose	Wt (KG)_____ X 100=	_____ mgs

Cardiac Drugs		
Infusions		
Dopamine **The usual dose of dopamine is 5-20micrograms/KG/min**	Wt (KG)_____ X 30=	_____ mgs added to 50 mls of 0.9% Sodium Chloride or 5% Dextrose. 1ml/hr will deliver 10 micrograms/KG/minute
Dobutamine **The usual dose of dobutamine is 5-20micrograms/KG/min**	Wt (KG)_____ X 30= (max concentration 250mg in	_____ mgs added to 50 mls of 0.9% Sodium Chloride or 5% Dextrose 1ml/hr will deliver 10 micrograms/KG/minute
Adrenaline **The usual dose of adrenaline is 50-500 nanograms/KG/min**	Wt (KG)_____ X 3=	_____ mgs added to 50 mls of 0.9% saline or 10% Dextrose. NB. NB. 0.1ml/hr will deliver 100nanograms/KG/minute
Noradrenaline **The usual dose of adrenaline is 50-500 nanograms/KG/min**	Wt (KG)_____ X 3=	_____ mgs added to 50 mls of 0.9% Sodium Chloride or 5% Dextrose. NB. NB. 0.1ml/hr will deliver 100nanograms/KG/min
Dinoprostone (Prostaglandin E2) (Prostin® E2) **The usual dose of Prostin is 5-10 nanograms/KG/min though higher does may be used in consultation with cardiology.**	Wt (KG)_____ X 15=	_____ micrograms added to 50 mls of 0.9% Sodium Chloride or 5% Dextrose. 1ml/hr will deliver 5 nanograms/KG/min

Prescriptions

Ref No 3 0 _ _ _ _ _

Patient		DOB	____ / ____ / 20_____		Working Weight	
NHS No					Allergies	

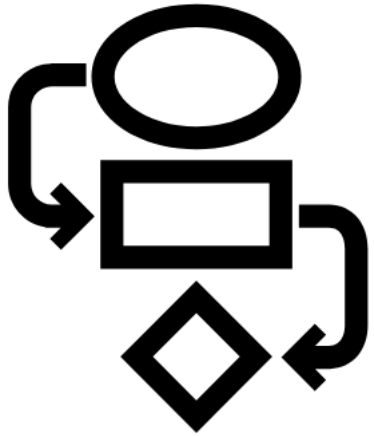
Date	Time	Drug (approved name)and dose form	Dose	Dose per kg	Route	Route/Site given	Prescriber Signature	Given by	Checked by	Print initial & surname	Dose Discarded
		FENTANYL (to be preferably used for intubation)		5mcg/kg	iv						
		MORPHINE (effective as intubation drug only after 20-30 minutes)		100 mcg/kg	iv						
		Morphine bolus 10mg/ml must be diluted to 1mg/ml for bolus dose. Take 0.1ml morphine and add to 0.9ml Nacl to make 1000mcg/ml									
		SUXAMETHONIUM (may cause bradycardia requiring atropine)		2 to 4mg/kg	iv						
		ATROPINE		10 to 20 mcg/kg	iv						
		VECURONIUM (for short duration of action)		100 mcg/kg	iv						
		PANCURONIUM (for longer duration of action)		100 mcg/kg	iv						
		CUROSURF (1st dose200mg/Kg) (2nd dose100mg/Kg)			tracheal						
		0.9% Sodium chloride bolus (over 20-30 min)		10 ml/kg	iv						
		PHENOBARBITONE (loading in slow iv push)		20 mg/kg	iv						
		PHENYTOIN (loading over 30 min, ECG monitoring)		18 mg/kg	iv						
		CLONAZEPAM		50 mcg/kg	iv						
		DIAZEPAM (iv injection over 5 min)		300 mcg/Kg	iv						

Resuscitation Drug Doses				Prescriber Signature	Given by	Checked by
Adrenaline 1:10 000	0.1 ml/ kg = _____ ml	**iv**	For emergency resuscitation			
Adrenaline 1:10 000	0.3 ml/ kg = _____ ml	**iv**	In case no response to first dose			
Sodium bicarbonate 4.2% (or dilute 8.4% with equal volume of water for injection)	2 ml/kg = _____ ml	**iv**	For emergency resuscitation			
Dextrose 10%	2.5ml/kg = _____ml	**iv**	For hypoglycaemia / resuscitation			

設立團隊建立之前的評估

- 設定所能服務範圍及其他支援醫療機構
- 足夠的人力
- 足夠的知識技能
- 出勤時原本工作調度
- 足夠的裝備
- 完整的各項紀錄表單
- 設立標準作業流程

轉送作業流程
Patient Transfer Process Flowchart



Indications for Neonatal Transfer

新生兒中重度病房住院之條件

〈指足月出生四個月內或早於 35 週出生之早產兒出生後矯正年齡五個月內之嬰兒(正常新生兒除外)因疾病而需特別觀察治療者，或因早產需要特別養育者。〉

1. 新生兒出生體重小於等於 2300 公克，不符合加護病房住院條件者。
2. 新生兒出生懷孕週數小於等於 35 週，不符合加護病房住院條件者。
3. 有呼吸窘迫臨床症狀但不需使用經鼻正壓呼吸或呼吸器者。
4. 過重兒(LGA)，過輕兒(SGA)，母親有妊娠糖尿病(GDM)疑有併發症需進一步檢測者。
5. 疑有胎兒吸入胎便症候者。
6. 疑有菌血症或腦膜炎者。
7. 新生兒手術後需生理監測者。
8. 新生兒有心率不整或呼吸暫停需生理監測者。
9. 需靜脈營養或有電解質不平衡者。
10. 有重度貧血或多血症需輸血或部份換血治療者。
11. 其它疾病可能使生理指標於 24 小時內變化會危及生命者。
12. 新生兒黃疸，需照光治療及進一步檢測黃疸原因者。
13. 新生兒腹瀉。
14. 新生兒發燒需進一步檢測原因者。
15. 母親有疾病需進一步檢查新生兒者 (例如母親有梅毒等)。
16. 有先天性畸形需進一步作檢查者。
17. 有嬰兒膿皮症需隔離治療者。
18. 出生 Apgar 5 分指標小於 6 需觀查者。
19. 餵食困難者。

新生兒加護病房住院之條件

1. 新生兒體重小於等於 1500 公克・
2. 新生兒出生週數小於等於 32 週・
3. 有呼吸窘迫臨床症狀，需使用經鼻正壓呼吸或呼吸器者・
4. 敗血症或腦膜炎・
5. 新生兒痙攣・
6. 新生兒低血壓或高血壓，休克・
7. 新生兒持續性低血糖・
8. 需緊急手術之先天性異常・
9. 伴發心衰竭及缺氧之先天性心臟病・
10. 瀕臨換血治療的新生兒黃疸・
11. 新生兒腎衰竭・
12. 其他新生兒疾病需隨時監測生理指標及即時處理以維護生理穩定者(如高血氨症，先天性氣管軟化症等)・
13. 手術前後需監測生理指標之新生兒。

台灣新生兒科醫學會

http://www.tsn-neonatology.com/upload/files/14.pdf

Flowchart: To initiate the transport process

Referral Institutions: A transport request

Referring clinicians call the NICU or physician directly

Communication with the medical control physician in receiving hospital

history, the most updated vital signs, laboratory values, and therapies;
critical or not ? standby or not ?

Decides whether transfer is appropriate: clinical condition, availability of beds, team composition, equipment..

Flowchart: Pre-referral

Referral Institutions

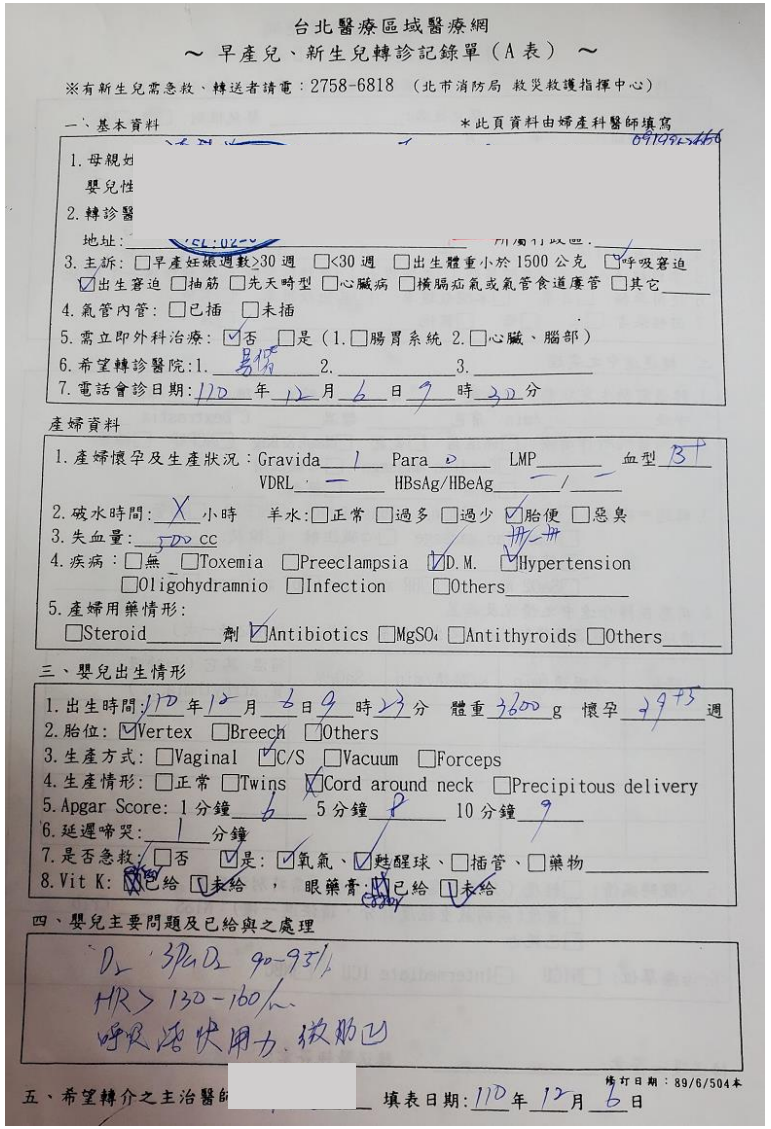
Inform the family the need to transfer

Copies of **medical records and images**;
maternal blood sample, placenta, and colostrum

Prepare **referral document, name band**

Pre-referral stable

轉介表單: 轉出院所



台北醫療區域醫療網

～ 早產兒、新生兒轉診記錄單（A 表） ～

※有新生兒需急救、轉送者請電：2758-6818 （北市消防局 救災救護指揮中心）

一、基本資料 ＊此頁資料由婦產科醫師填寫

1. 母親姓
   嬰兒性
2. 轉診醫
   地址：
3. 主訴：☐早產妊娠週數>30 週 ☐<30 週 ☐出生體重小於 1500 公克 ☐呼吸窘迫
   ☑出生窒迫 ☐抽筋 ☐先天畸型 ☐心臟病 ☐橫膈疝氣或氣管食道廔管 ☐其它
4. 氣管內管：☐已插 ☐未插
5. 需立即外科治療：☑否 ☐是（1.☐腸胃系統 2.☐心臟、腦部）
6. 希望轉診醫院：1. 易婷 2. 3.
7. 電話會診日期：110 年 12 月 6 日 9 時 30 分

產婦資料

1. 產婦懷孕及生產狀況：Gravida 1 Para 0 LMP 血型 B+
   VDRL — HBsAg/HBeAg —/—
2. 破水時間：X 小時 羊水：☐正常 ☐過多 ☐過少 ☑胎便 ☐惡臭
3. 失血量：500 cc
4. 疾病：☐無 ☐Toxemia ☐Preeclampsia ☑D.M. ☑Hypertension
   ☐Oligohydramnio ☐Infection ☐Others
5. 產婦用藥情形：
   ☐Steroid 劑 ☑Antibiotics ☐MgSO4 ☐Antithyroids ☐Others

三、嬰兒出生情形

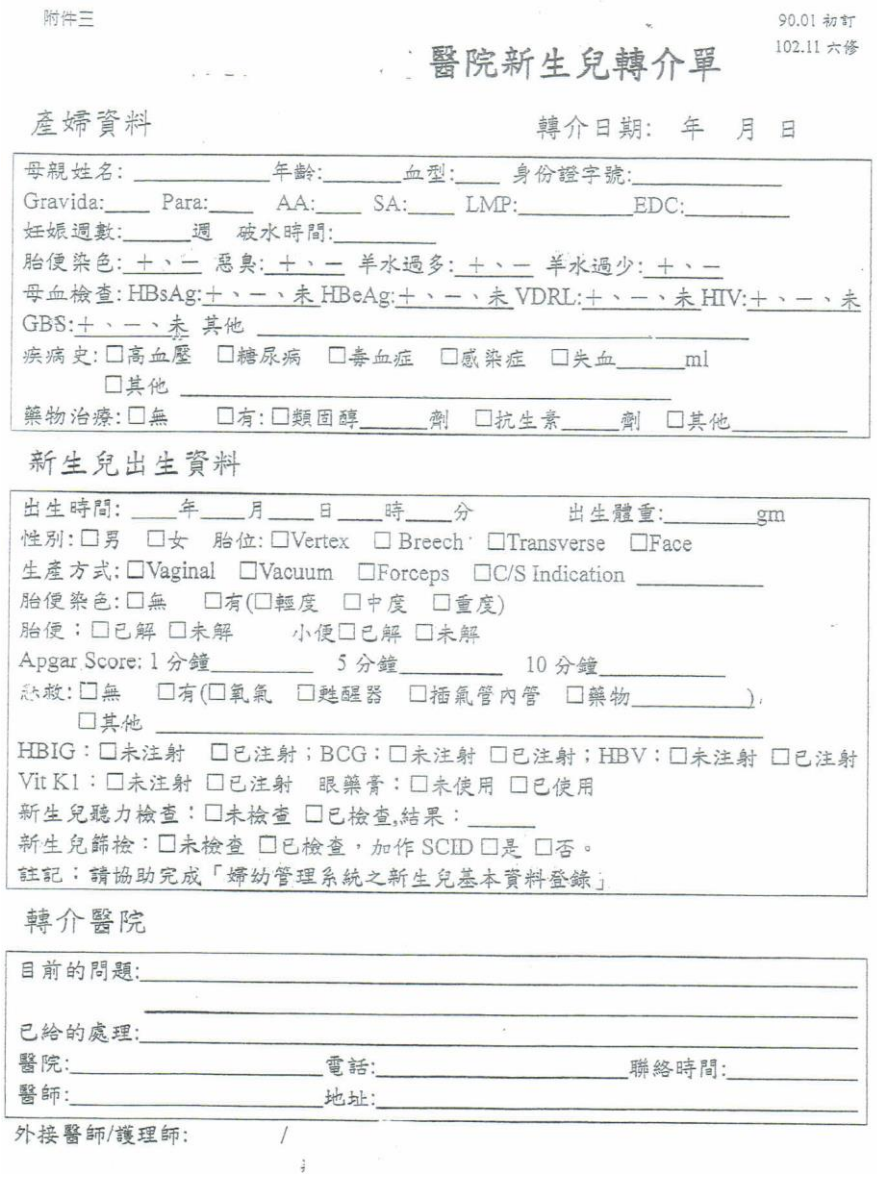
1. 出生時間：110 年 12 月 6 日 9 時 23 分 體重 3600 g 懷孕 39+5 週
2. 胎位：☑Vertex ☐Breech ☐Others
3. 生產方式：☐Vaginal ☑C/S ☐Vacuum ☐Forceps
4. 生產情形：☐正常 ☐Twins ☑Cord around neck ☐Precipitous delivery
5. Apgar Score：1 分鐘 6 5 分鐘 8 10 分鐘 9
6. 延遲啼哭：1 分鐘
7. 是否急救：☐否 ☑是：☑氧氣、☑甦醒球、☐插管、☐藥物
8. Vit K：☑已給 ☐未給 ， 眼藥膏：☑已給 ☐未給

四、嬰兒主要問題及已給與之處理

D5 3/4D2 90-93%
HR> 130-160/m
呼吸急促用力，拔肋凹

五、希望轉介之主治醫師 填表日期：110 年 12 月 6 日

修訂日期：89/6/504本



附件三 90.01 初訂 102.11 六修

醫院新生兒轉介單

產婦資料 轉介日期： 年 月 日

母親姓名：＿＿＿＿＿＿年齡：＿＿＿＿血型：＿＿ 身份證字號：＿＿＿＿＿＿
Gravida:＿＿ Para:＿＿ AA:＿＿ SA:＿＿ LMP:＿＿＿＿＿＿EDC:＿＿＿＿＿＿
妊娠週數:＿＿＿＿週 破水時間:＿＿＿＿＿＿
胎便染色:＋、－ 惡臭:＋、－ 羊水過多:＋、－ 羊水過少:＋、－
母血檢查:HBsAg:＋、－、未 HBeAg:＋、－、未 VDRL:＋、－、未 HIV:＋、－、未
GBS:＋、－、未 其他 ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
疾病史:☐高血壓 ☐糖尿病 ☐毒血症 ☐感染症 ☐失血＿＿＿＿ml
☐其他 ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
藥物治療:☐無 ☐有:☐類固醇＿＿＿＿劑 ☐抗生素＿＿＿＿劑 ☐其他＿＿＿＿＿＿

新生兒出生資料

出生時間:＿＿年＿＿月＿＿日＿＿時＿＿分 出生體重:＿＿＿＿gm
性別:☐男 ☐女 胎位:☐Vertex ☐Breech ☐Transverse ☐Face
生產方式:☐Vaginal ☐Vacuum ☐Forceps ☐C/S Indication ＿＿＿＿＿＿
胎便染色:☐無 ☐有(☐輕度 ☐中度 ☐重度)
胎便:☐已解 ☐未解 小便☐已解 ☐未解
Apgar Score: 1 分鐘＿＿＿＿＿＿ 5 分鐘＿＿＿＿＿＿ 10 分鐘＿＿＿＿＿＿
急救:☐無 ☐有(☐氧氣 ☐甦醒器 ☐插氣管內管 ☐藥物＿＿＿＿＿＿)
☐其他 ＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
HBIG:☐未注射 ☐已注射;BCG:☐未注射 ☐已注射;HBV:☐未注射 ☐已注射
Vit K1:☐未注射 ☐已注射 眼藥膏:☐未使用 ☐已使用
新生兒聽力檢查:☐未檢查 ☐已檢查,結果:＿＿＿＿
新生兒篩檢:☐未檢查 ☐已檢查，加作 SCID ☐是 ☐否。
註記:請協助完成「婦幼管理系統之新生兒基本資料登錄」

轉介醫院

目前的問題:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
已給的處理:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿
醫院:＿＿＿＿＿＿＿＿＿＿電話:＿＿＿＿＿＿＿＿＿＿聯絡時間:＿＿＿＿＿＿
醫師:＿＿＿＿＿＿＿＿＿＿地址:＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

外接醫師/護理師: /

轉介表單: 轉出院所

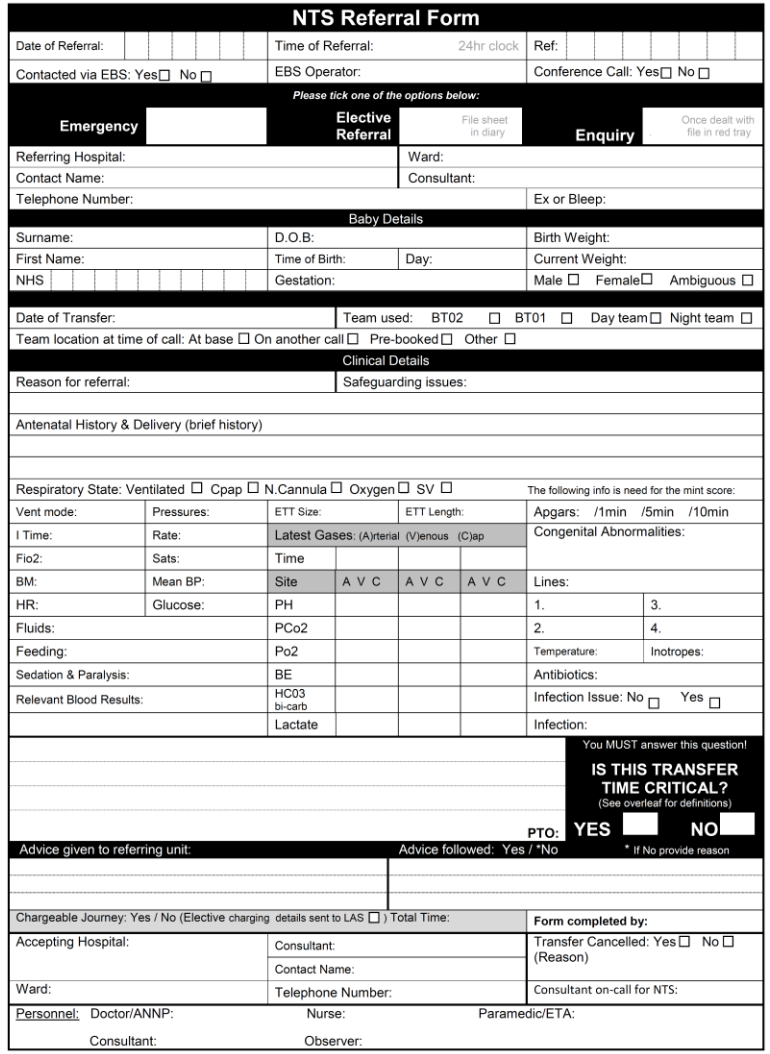
NHS

Neonatal
Transfer
Service
London

NTS
Information
Pack

Preparing for NTS Transfer:

- **Use NTS referral form as guide for telephone referrals**
- **Prompt verbal handover on NTS arrival**
- **Infusions in 50 ml syringes**
- **Time saver: NTS infusion formulae used—see overleaf**
- **2 copies of neonatal summary**
- **Copy of nursing & drug charts**
- **Copy of blood results**
- **Guthrie**
- **2 name bands**
- **Parents updated**



NTS Referral Form

Date of Referral:		Time of Referral: 24hr clock		Ref:	
Contacted via EBS: Yes☐ No☐		EBS Operator:		Conference Call: Yes☐ No☐	
Please tick one of the options below:					
Emergency		**Elective Referral**	File sheet in diary	**Enquiry**	Once dealt with file in red tray
Referring Hospital:				Ward:	
Contact Name:				Consultant:	
Telephone Number:				Ex or Bleep:	
Baby Details					
Surname:		D.O.B:		Birth Weight:	
First Name:		Time of Birth:	Day:	Current Weight:	
NHS		Gestation:		Male☐ Female☐ Ambiguous☐	
Date of Transfer:		Team used: BT02☐ BT01☐ Day team☐ Night team☐			
Team location at time of call: At base☐ On another call☐ Pre-booked☐ Other☐					
Clinical Details					
Reason for referral:		Safeguarding issues:			
Antenatal History & Delivery (brief history)					
Respiratory State: Ventilated☐ Cpap☐ N.Cannula☐ Oxygen☐ SV☐				The following info is need for the mint score:	
Vent mode:	Pressures:	ETT Size:	ETT Length:	Apgars: /1min /5min /10min	
I Time:	Rate:	Latest Gases: (A)rterial (V)enous (C)ap		Congenital Abnormalities:	
Fio2:	Sats:	Time			
BM:	Mean BP:	Site A V C	A V C	A V C	Lines:
HR:	Glucose:	PH			1. 3.
Fluids:		PCo2			2. 4.
Feeding:		Po2			Temperature: Inotropes:
Sedation & Paralysis:		BE			Antibiotics:
Relevant Blood Results:		HC03 bi-carb			Infection Issue: No☐ Yes☐
		Lactate			Infection:
				You MUST answer this question! **IS THIS TRANSFER TIME CRITICAL?** (See overleaf for definitions) PTO: YES NO	
Advice given to referring unit:				Advice followed: Yes / *No * If No provide reason	
Chargeable Journey: Yes / No (Elective charging details sent to LAS ☐) Total Time:				**Form completed by:**	
Accepting Hospital:		Consultant:		Transfer Cancelled: Yes☐ No☐ (Reason)	
		Contact Name:			
Ward:		Telephone Number:		Consultant on-call for NTS:	
Personnel: Doctor/ANNP:		Nurse:		Paramedic/ETA:	
Consultant:		Observer:			

https://london-nts.nhs.uk/

Flowchart: Pre-referral

Receiving Hospital

The medical control physician

Authorizes a transport team, briefing:

allocating human resources (leader), call ambulance

Discusses with the transport team and referring clinician:

medical direction and advice to the stabilizing patient

Flowchart: Preparing

check transport equipment, preparing documents

Response time

<30 minutes

Inform sending institutions the mobilization of transport team

外接表單: 轉出院所

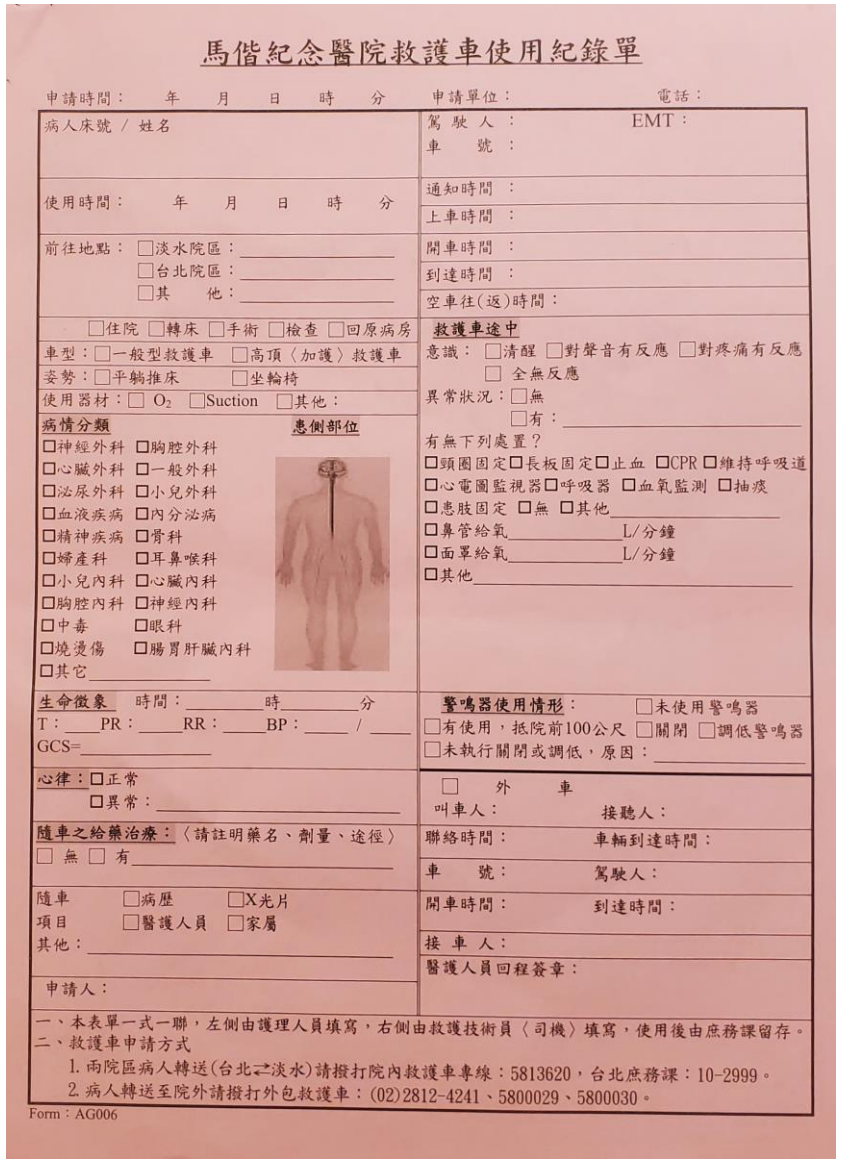
馬偕兒童醫院

新生兒轉診外接救護車使用派車單

單位: 申請人:	車號: 駕駛人:
申請時間: 年 月 日 時 分	到達醫院時間:
使用時間: 年 月 日 時 分	醫護人願上車時間:
前往地點:	出發時間:
救護車公司電話接聽人:	到達目的地時間:
車輛到達時間:	回程開車時間:
隨車醫護人員簽章:	返回醫院時間:
備註:	

此單由使用單位確實填寫後交給外車司機填寫並由外包公司收執後按月交庶務課統計

馬偕兒童醫院
MacKay Children's Hospital



馬偕紀念醫院救護車使用紀錄單

申請時間： 年 月 日 時 分　申請單位：　電話：

病人床號 / 姓名

使用時間： 年 月 日 時 分

前往地點： □淡水院區：_____ □台北院區：_____ □其 他：_____

□住院 □轉床 □手術 □檢查 □回原病房

車型：□一般型救護車 □高頂〈加護〉救護車

姿勢：□平躺推床 □坐輪椅

使用器材：□ O_2 □Suction □其他：

病情分類

□神經外科 □胸腔外科
□心臟外科 □一般外科
□泌尿外科 □小兒外科
□血液疾病 □內分泌病
□精神疾病 □骨科
□婦產科 □耳鼻喉科
□小兒內科 □心臟內科
□胸腔內科 □神經內科
□中毒 □眼科
□燒燙傷 □腸胃肝臟內科
□其它_____

患側部位

生命徵象 時間：_____時_____分
T：____PR：____RR：____BP：____ / ____
GCS=_____

心律：□正常 □異常：_____

隨車之給藥治療：〈請註明藥名、劑量、途徑〉
□ 無 □ 有_____

隨車項目 □病歷 □X光片 □醫護人員 □家屬
其他：_____

申請人：

駕 駛 人： EMT：
車 號：

通知時間：
上車時間：
開車時間：
到達時間：
空車往(返)時間：

救護車途中

意識：□清醒 □對聲音有反應 □對疼痛有反應 □ 全無反應
異常狀況：□無 □有：_____
有無下列處置？
□頭圈固定□長板固定□止血 □CPR □維持呼吸道
□心電圖監視器□呼吸器 □血氧監測 □抽痰
□患肢固定 □無 □其他_____
□鼻管給氧_____L/分鐘
□面罩給氧_____L/分鐘
□其他_____

警鳴器使用情形： □未使用警鳴器
□有使用，抵院前100公尺 □關閉 □調低警鳴器
□未執行關閉或調低，原因：_____

□ 外 車
叫車人： 接聽人：
聯絡時間： 車輛到達時間：
車 號： 駕駛人：
開車時間： 到達時間：
接 車 人：
醫護人員回程簽章：

一、本表單一式一聯，左側由護理人員填寫，右側由救護技術員〈司機〉填寫，使用後由庶務課留存。
二、救護車申請方式
1. 兩院區病人轉送(台北⇄淡水)請撥打院內救護車專線：5813620，台北庶務課：10-2999。
2. 病人轉送至院外請撥打外包救護車：(02)2812-4241、5800029、5800030。

Form：AG006

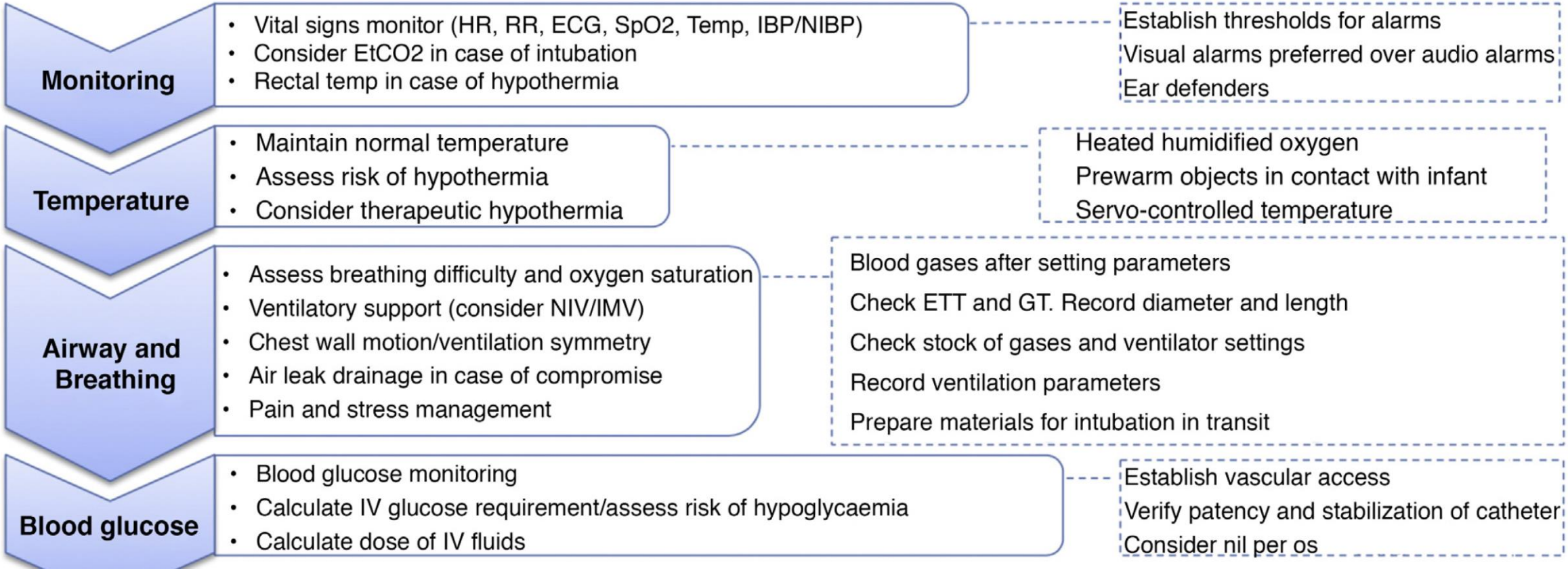
Flowchart: Mobilization

Transfer team **arrives** at the **referral institution**

Pre-transport stabilization

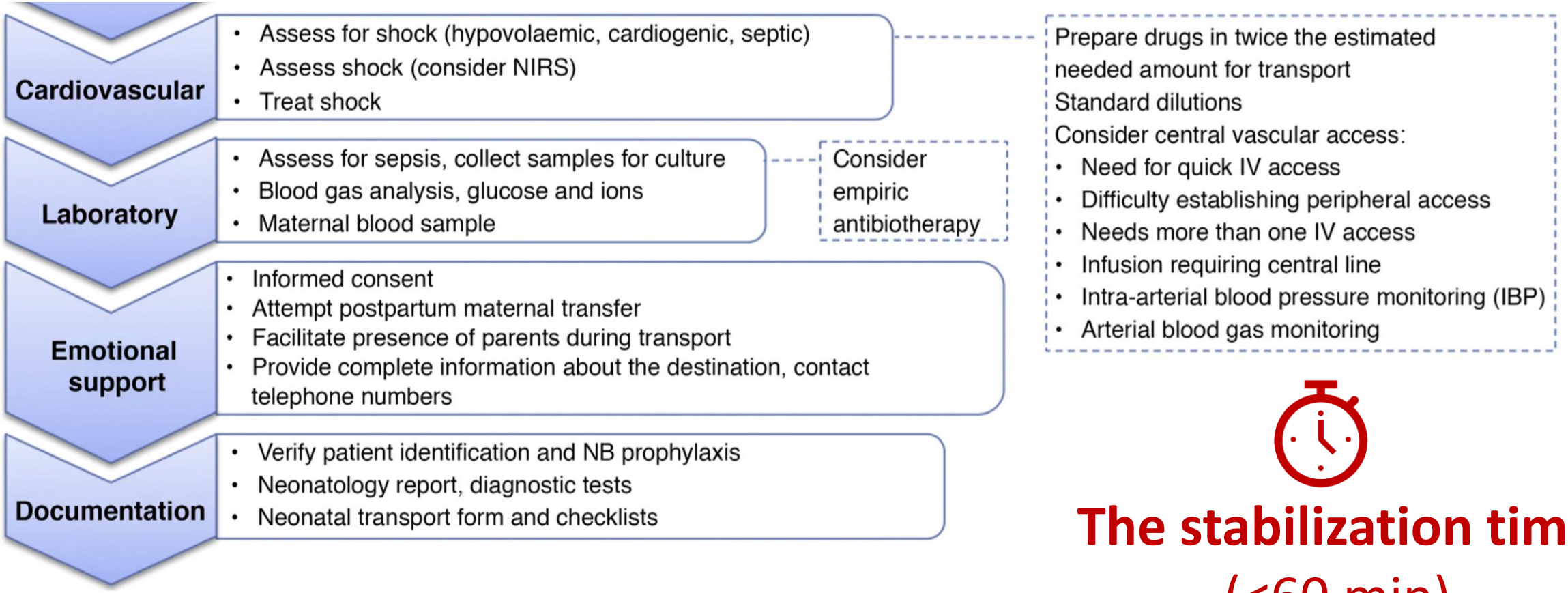
(time-limited or not)

Pre-transport Stabilization



An Pediatr (Engl Ed). 2021 Jun;94(6):420.e1-420.e11.

Pre-transport Stabilization



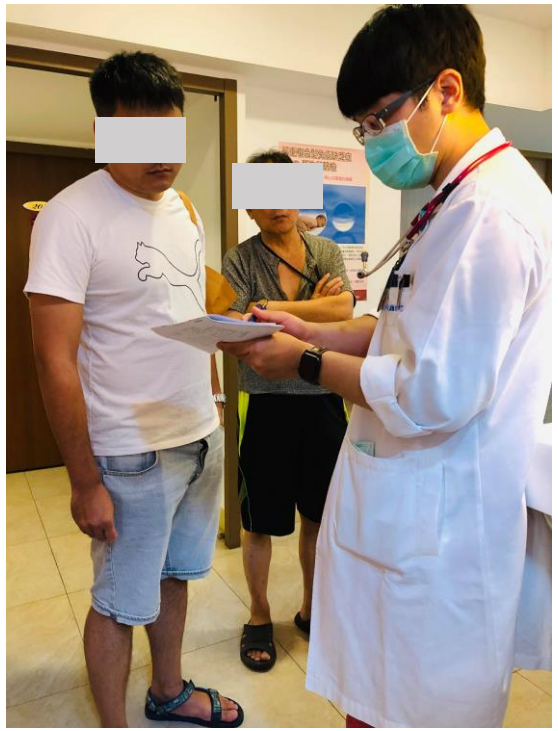
The stabilization time
(<60 min)

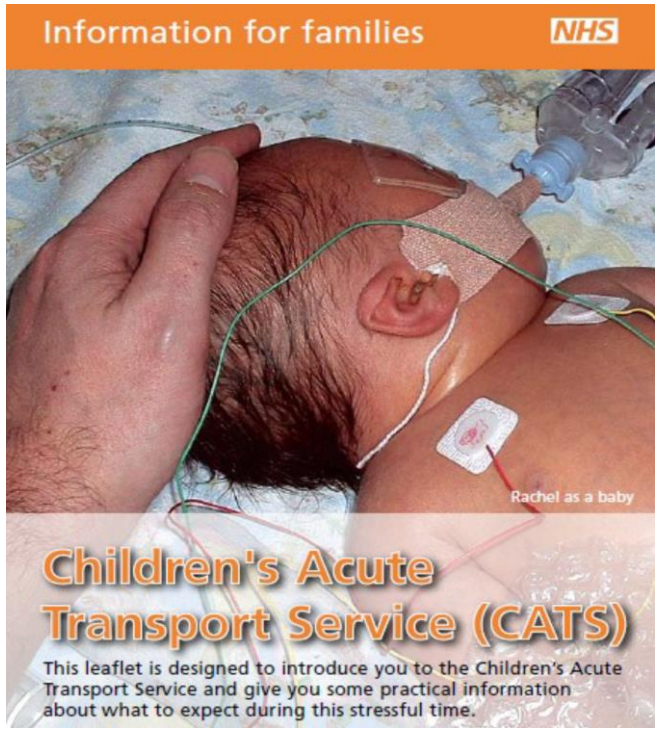
An Pediatr (Engl Ed). 2021 Jun;94(6):420.e1-420.e11.

Flowchart: Inform

Parents are verbally informed by transfer physician about the transport of their Infant

- **ensure accurate identification** of the patient before the transfer
- **informs the parents** about the infant's condition and transport procedure
- at least **one of the parents** should be allowed to **accompany**





Flowchart: transport

Parents are verbally informed by transfer physician about the transport of their Infant

Call the receiving institution to prepare for the requirements of support

Transfer the patient and **record all vital signs** during transport

Monitoring during transport

- **Safety**
- **HR, ECG, RR, SpO2**
- BP
- EtCO2
- Peripheral or central vascular access
- Blood: ABG, glucose, electrolytes

Return to Receiving Hospital

Transport team

- **makes briefings** to the receiving pediatrician
- **Records all indicators**
- **Reorganizes equipment**

轉診前流程

• 轉出醫療院所

- 醫師確認病嬰需轉診
- 與父母溝通後送事宜
- 醫護人員聯絡外接醫院

• 外接後送醫院

負責醫師
- 詢問病情
- 確認有床位及外接團隊
- 回覆轉出醫療單位可外接

(無法外接，提供其他醫院選項)

- 雙方醫療人員交接詳細病史、病況、檢查及處置
- 討論初步穩定措施及處置

- 告知病嬰父母確定轉診
- 拷貝病歷資料、影像等
- 填寫轉診文件
- 穩定病人

- 指派外接團隊成員及交接病情
- 聯絡救護車公司
- 外接團隊檢查裝備及文件
- 外接團隊出發並通知轉出院所

轉診流程

• 轉出醫療院所

- 引導外接團隊
- 交接轉診病歷及文件
- 與家長解釋病情及後送事宜
- 協助病嬰運送至救護車

到達轉出院所

• 外接後送醫院

- 評估新生兒及穩定病情
- 交接轉診病歷及文件
- 與家長解釋病情及後送事宜
- 與護理站訂床

返回後送醫院

- 路程中持續監測生命徵象及穩定病情
- 到院後與照護團隊交接病況
- 家屬辦理住院
- 完成紀錄表單
- 清點清理裝備

後續

- 連絡詢問後續病情並告知家長
- 檢討及改善

- 連絡原院所告知病情
- 檢討及改善
- 持續教育及訓練

品質改善
Quality Improvement

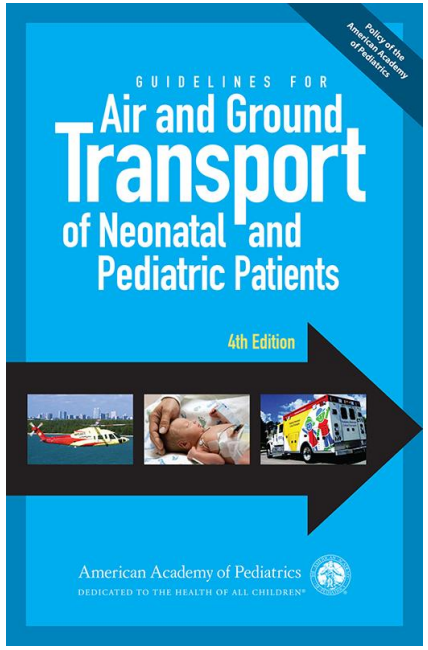
Protocol Development

Develops **standards: patient care and safety** in the transport

All care is determined by protocol:

- Collaborative approach
- Evidence review
- Feedback and observation
- Revision at least annually
- Sign off by program/medical director

Guideline



美國兒科醫學會

TENNESSEE PERINATAL CARE SYSTEM

GUIDELINES FOR TRANSPORTATION

(Sixth Edition)

2014

Tennessee Department of Health
Division of Family Health and Wellness

Bill Haslam
Governor

John Dreyzehner, M.D., M.P.H., F.A.C.O.E.M.
Commissioner

田納西州衛生局

LEVEL IV FACILITIES

Maternal Transport

Neonatal Transport

Anales de Pediatría 94 (2021) 420.e1–420.e11

anales de pediatría

www.analesdepediatria.org

西班牙兒科醫學會

SPANISH ASSOCIATION OF PAEDIATRICS

Recommendations on the skills profile and standards of the neonatal transport system in Spain☆

加拿大兒科醫學會

CPS Position Statement

The interfacility transport of critically ill newborns

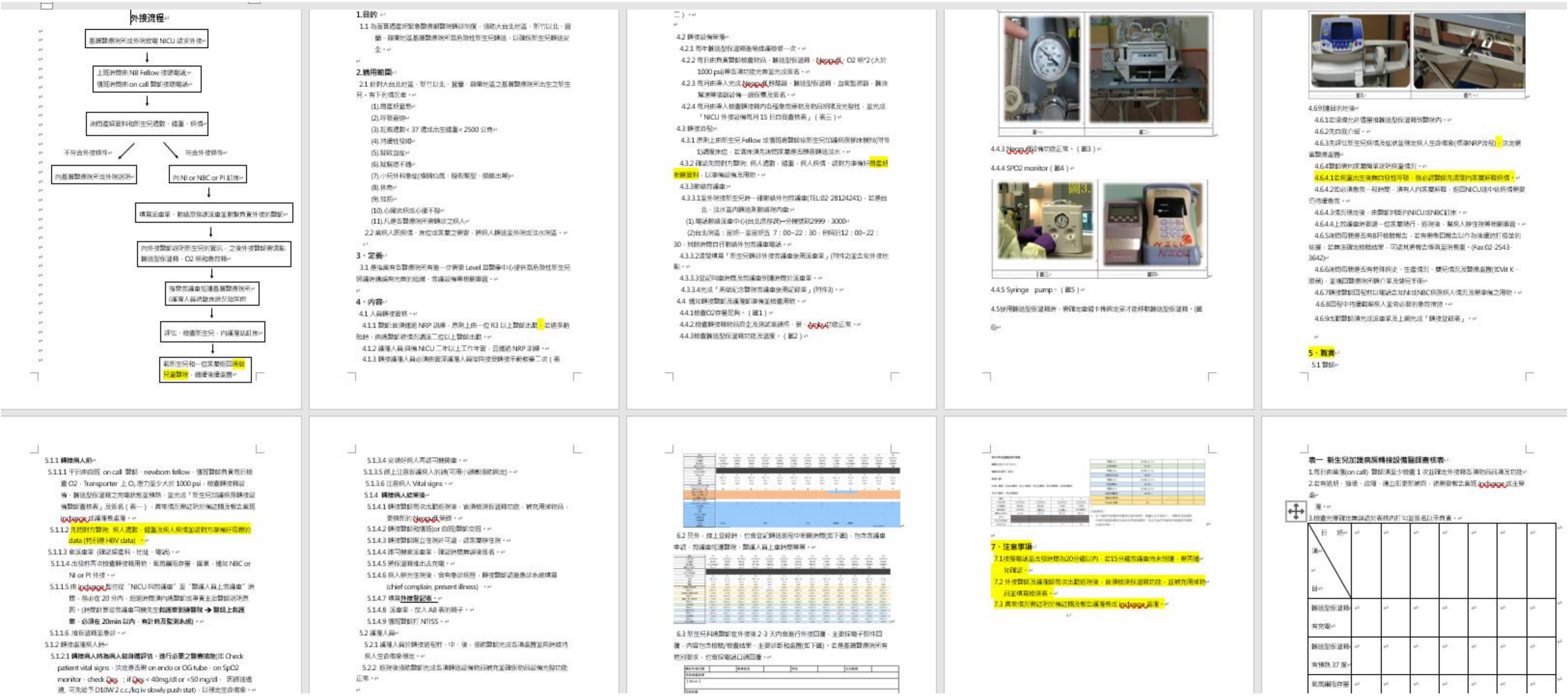
Hilary EA Whyte, Ann L Jefferies; Canadian Paediatric Society, Fetus and Newborn Committee

Canadian Paediatric Society

Français en page 270

HEA Whyte, AL Jefferies; Canadian Paediatric Society, Fetus and Newborn Committee. The interfacility transport of critically ill newborns. Paediatr Child Health 2015;20(5):265-275.

Le transport interhospitalier des nouveau-nés gravement malades



馬偕兒童醫院
MacKay Children's Hospital

Transport Quality Assurance

The response time

(<30min)

The transport time

The stabilization time

(<60 min)

- Should be tracked for **quality improvement and benchmarking**
  - **Minimize the length of time** is shown to improve outcomes
- Patient's **outcomes**

Feedback to referring unit

- **ensuring quality care**
- **outreach education**
  - joint mortality and morbidity rounds

提升外接轉送服務品質

- **即時回覆轉診狀況**

轉診外接日期		患者姓名		床位		主治醫師	
目前檢查結果							
【 Blood 】							
目前診斷							
治療計畫							
其他事項							

- **定期檢討改善外接**

新生兒科外接轉診檢討會議

時間 2020 年 9 月 9 日

地點福音樓第二講堂

參加人員

許瓊心醫師、張瑞幸醫師、張弘洋醫師、林佳瑩醫師、陳佳慧醫師、曾愷悌醫師、

吳佳玲醫師、蔡宜珊醫師

編號	1	2	3	4
外接日期	20200901	20200901	20200905	20200908
外接醫師	陳定遠	陳定遠	方華美	方華美
轉診醫院	四季和安	禾馨新生	汐止聲生	新莊樂寶兒
醫院所在縣市	台北市	台北市	新北市	新北市
姓名				
新生兒病歷號				
性別(F/M)	F	F	F	M

馬偕兒童醫院
MacKay Children's Hospital

Training & Education

Cross-training

schedule a structured series of sessions to ensure competency

- **NRP, DR/OR, NICU**
- **Procedures or skill (simulation)**
- **Safety and accident management in transport**


*Take
home message

TAKE HOME MESSAGE

- Neonates needing special or intensive care should preferably be transported by **a skilled transport team through an organized teamwork**

- Transport of neonates is a **high-acuity, high-risk endeavor**
- **Collaboration and team focus** are critical

TAKE HOME MESSAGE

- **Setting up guidelines**
- **Transport team**: work load, safety, insurance
- **Appropriate equipment and vehicles customized** for neonates
- **Adequate and timely communication** with the **team members**, **family, and referring hospital** is essential
- **Pre-transport stabilization** is the most vital step
- **Feedback** to referring unit
- Focus on **process and outcomes** for quality improvement

Thanks for listening

台灣新生兒科醫學會 TAIWAN SOCIETY OF NEONATOLOGY 1991

馬偕兒童醫院 MacKay Children's Hospital

新生兒科張弘洋主任