

Cathay General Hospital

# Improving the quality of neonatal transport for critically ill newborns during the COVID-19 pandemic

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## Abstract

During the pandemic external referrals will be subject to epidemic prevention measures and PCR testing, resulting in increased total referral time and an increased probability of complications. We aim to maintain and improve the quality of neonatal emergency transport, providing safer, faster, professional, and reliable medical services.

During the period from 2nd January 2020 to 31st December 2021, the following modifications were made to improve the quality of neonatal transport for critically ill newborns during the COVID-19 pandemic (1)Equipment Updates, (2)Epidemic Prevention Standard Procedures,
(3)Team Resource Management (TRM) , (4)Educational Training, (5)Optimized Neonatal Ambulance Record Form, (6)Friendly Database Establishment.

After establishing the new strategies for neonatal transport:

1.The incidence rate of unexpected hypothermia decreased to 23.8%.

2.The incidence rate of unexpected hypoglycemia decreased to 4.9%.

3.The patients satisfaction rate was 96.9%, an improvement of 38.4%.

Neonatal transport carries inherent risks, especially during the COVID-19 pandemic. We have established a new neonatal emergency transport system, enhancing the safety of the transfers.

## CONTACT

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## INTRODUCTION

According to foreign research, during the pandemic, external referrals will be subject to epidemic prevention measures and PCR testing, resulting in increased total referral time and an increased probability of complications. Due to the impact of the pandemic, our hospital observed abnormal situations in external referrals from January to March 2020, including:

- Unstable vital signs: Unexpectedly low body temperature up to 35%; unexpectedly low blood sugar up to 7%.
- Adverse event rates: Equipment malfunction at 13.7%; system malfunction at 5.8%.
- Increased total referral time for newborns to 320 minutes.
- Only 32% completion rate for referral forms.
- Inter-hospital collaboration satisfaction rate is only 70%.

Therefore, maintaining the quality of emergency transfers for critically ill newborns during the pandemic and shortening the golden time of transfers are crucial.

## METHODS AND MATERIALS

During the period from 2nd January 2020 to 31st December 2021, the following modifications were made to improve the quality of neonatal transport for critically ill newborns during the COVID-19 pandemic:

**Equipment Updates:**
•Updated neonatal transport incubators, ventilators, and physiologic monitors.
•Replaced the first aid kit backpack and establish a standard for spare part inventory.
•Purchased a rapid PCR machine to shorten the time for release from isolation.

**Epidemic Prevention Standard Procedures:**
•Establishing the standardized epidemic prevention process for neonatal transport.
•Use of individual protective equipment for physicians and nurses.
•Establishment of epidemic prevention traffic flow and isolation rooms.
•Verification of travel history, occupation, contact history cluster, along with covid-19 PCR testing for the baby's parents.
•Coordination with hospital guards and disinfection personnel for traffic flow control
•Implementation of well-defined shift handover procedures and infection control strategies.

**Team Resource Management (TRM) Form:**
•Revision of the transport form to enhance information communication among personnel and improve supply accuracy.

**Educational Training:**
•Organized the S.T.A.B.L.E. Learner Course to enhance medical staff training and assessment abilities.

**Optimized Neonatal Ambulance Record Form:**
•Improved the form's applicability and increased the integrity of inter-hospital referral handovers.

**Friendly Database Establishment:**
•Conducted regular satisfaction surveys and inter-hospital conferences.

## RESULTS

After establishing the new strategies of neonatal transport for critically ill newborns from 2nd January, 2020 to 31th December, 2021.

1.The incidence rate of unexpected hypothermia decreased from 35% to 23.8%, improvement percentage was 32.2%.

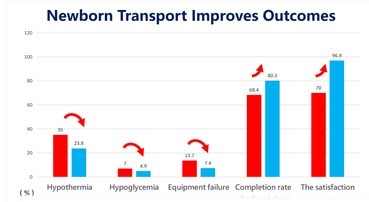
2.The incidence rate of unexpected hypoglycemia decreased from 7% to 4.9%, improvement percentage was 30%.

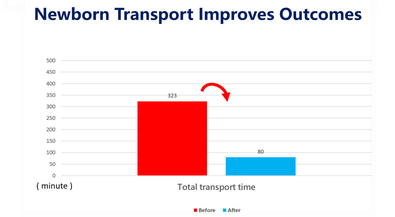
3.The incidence rate of equipment failure rate decreased from 13.7% to 7.4%, improvement percentage was 47.1%.

4.The completion rate of referral sheet increased from 68.4% to 80.3%, improvement percentage was 17.4%.

5.The total transport time reduced by 207 minutes, improvement percentage was 64.1%.

6.The satisfaction rate was 96.9%, improvement percentage was 38.4%.



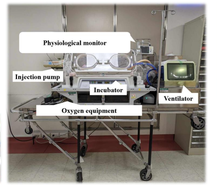
















## CONCLUSIONS

The COVID-19 pandemic has had a significant impact on medical, social, and economic globally. It also had potential risk on neonatal transport.

We established a new neonatal emergency transport system during COVID-19 pandemic, including adequate educational training, updated the equipment, and traffic flow control.

We provide the “Convenient and fast access to medical treatment”, “Safe and friendly medical environment”.

It has had a significant improvement in total transport time, incidence of complication and equipment failure rate.

At the same time, it improved the safety of the transfer personnel, and have a good relationship with the cooperative clinic.

## REFERENCES

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