Canadian System for Transport of High Risk Infants and Children

Challenges & Barriers

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Purpose of Workshop

- The Canadian Paediatric Society recommends that “every hospital providing neonatal care should have access to an organized transport team trained in neonatal care, resuscitation and transport care with appropriate equipment available for the transfer of patients in each region. A system for managing transport requests around the clock must be clearly defined and easily accessible by medical teams at all regional units requesting transfer”
- BUT what about children?

Outline of workshop

- Challenges & barriers to interfacility transport in Canada both neonatal & paediatric
- Draw from experience with systems in Ontario & Alberta
- Comparisons with USA, UK, & Australia
- Discuss need for paediatric transport systems & potential solutions
- Define the model for maternal/newborn/paediatic transport in British Columbia – why it works best

Historical Perspective

- 1970's - Regionalized care for high risk mothers & newborns saves lives and reduces morbidity
- A transport system required to facilitate movement of patients to higher level of care
- EMS could move pregnant Moms but
- Specialized team required for the "fragile" newborns especially those < 32 weeks GA

Models of neonatal transport teams

- 1972: Ontario – Toronto SickKids opens helipad & RN/MD team demonstrates improved outcomes with “specialized team”
- Other “outborn” tertiary NICUs follow and team composition dictated by local infrastructure/ personnel
- Paramedic/EMT vs RN/RN vs RN/RT

  - no difference in outcomes
- Does a doctor make a difference?

  - not well studied but probably NOT

The Canadian Picture

Models of transport team –

- Hospital based vs off site – Provincial vs Regional
- Dedicated vs NICU based vs ad hoc
- Neonatal only +/- attends delivery
- Neonatal plus paediatric +/- high risk Moms
- Physician back up to team – dedicated vs NICU
- Staff physician involvement – level of expertise for advice and transport triage
- Availability of transport vehicles

NFL	< 3m (50-100)	RN/RT (11)	Staff call taker		> 50 % air	Cert.< 6 weeks	CME/skills
NS	Neo/Paed (50-100)	RN/RT (10-20)		Coordinator	**PTV- ded >50% air**	3-6 mths	CME/Skills
Quebec	Neo (100-500)	RN/RT (<10)	Staff call taker		30-40% air	None	None
Montreal	Neo (500-1000)	RN/RT (10-20)	TP/staff call taker	Coordinator	10-20% air	* 3-6 mths	CME/Skills
***Toronto**	Neo/< 2 yrs. Del (700)	**RN/RT (24)**	TP	Coordinator	25% air	* **18-24 mth**	70 hrs CME /skills *
***Hamilton**	Neo/Del (400)	**RN/RN (<10)**		Coordinator	PTV < 10% air	6-12 mths	CME / skills *
*London	Neo/Paed (250)	RN/RT (<10)	Staff call taker		PTV -< 10% air	??	40 hrs CME / skills *
Ottawa	Neo (250)	RN/RT (16)		Coordinator	< 10% air	6-12 mths	30 hrs CME /skills
Mannitoba	Neo (100-500)	**RN/MD (10-20)**	TP		> 50% air	None	< 10 hrs CME *
*Sask	Neo (150)	RN/RT (11)	Staff call taker		**Ded.land** > 50% air	3 mths	2 days biannual *
Edmonton	Neo (100-500)	RN/RT (10-20)			**Ded. land** 30% air	* 3-6mths	?? *
Calgary	Neo (100-500)	RN/RT (<10)	Staff call taker		**Ded.land** 20% air	3-6 mths	?? *
***B.C.**	**Mat/NB/Paeds (2500)**	**Paramedic(24)**	Staff call taker	Coordinator	**Dedicated** 60% air	***24 mths**	70 hrs CME

Benchmarking – USA & UK

Larger population -> more volume

Less Regionalized, more NICUs -> ↓ need

Shorter distances – mainly land based systems, hospital based, own ambulance

Different funding structure – often private transport service, land & rotary

Different ambulance regulations (air & land) eg need for paramedic in ambulance

Australia – more similarities

- Teams are MD/RN or MD/Paramedic
  - No advanced practice nurses or RTs
  - Rigorous training and CME
- Teams usually respond to neonates/paeds – enhances patient volumes/critical mass & flexibility
- Most are State wide service, may be based in a hospital
- All dedicated & funded
- All centrally coordinated- provide advice, triage, transport. Staffed by consultants & RN coordinator
- Central bed registry & availability consultants in tertiary care facility; neonatal, paediatric, high risk obstetrics, facilitating the maternal transfers
- Air ambulances are dedicated rotary or fixed wing from RFDS; all centrally dispatched. Teams seen as part of air ambulance “system”

Challenges in Canada

Staffing - skill mix, collaborative practice model

- Duration of training/certification/appraisal – competence vs confidence
- Maintenance of competency – CME/skills & critical mass – dedicated & patient volumes
- Hospital based – access to clinical practice/skills and education BUT
- Resource to NICUs – intramural vs extramural; down time
- Team schedules, Duty days (8-12 hrs), overtime, fatigue factor, need for flexibility
- Teaching constantly – residents, fellows (NICU, PEM), observers (China)

Barriers to best practice

Lack of funding

- Insufficient staff to operate dedicated team
- Most hospitals try to make do with NICU personnel so inconsistent availability
- Inconsistency in training & evaluation
- Inadequate CME/skills maintenance
- Variability in consultant engagement
- Inferior or ageing equipment
- NO VEHICLES

Barriers to best practice

Transport Teams with NO vehicles – reliance on other transport systems to move the team. Paramedic must accompany team

EMS ambulances provide ride for team

- Competition with 911 calls, scene response
- Weight of equipment/supplies- everything carried by team
- No lifts or hoists in regular EMS vehicles
- 2 crews required for “ transport deck” lift
- Increased mobilization & response times
- Teams are dumped when patient stabilized, referred or deferred no baby to bring back
- Increased transport times – overtime, fatigue

Barriers to best practice

Transport Teams with NO vehicles – reliance on other transport systems to move the team

EMS refusal to carry team with no patient

- Private transfer vehicles – not ambulance
- Lack of regulation
- Availability questionable
- Cost born by hospitals
- Increase in mobilization & response time
- Issues of weight & lack of power lifts

Challenges in air transport

- Distance generally dictates air vs land
- Distance, time & weather generally dictates fixed wing vs rotary (250 kms)
- Rotary best for mid distance, do not need runway; also best for on scene response
- Rotary cannot be pressurized and uses VFR
- Rotary cannot fly above 5000ft so more impacted by poor weather (storms, fog, ice)
- Aircraft expensive – often rely on charters

Barriers to air transport

- Air ambulance availability – not seen as part of their system in hospital based team
- Issues of equipment & weight especially since paramedic has to be in air ambulance – PCP on fixed wing, ACP/CCP on rotary wing so cannot lift off
- Refusal to drop paramedic(s) off rotary since do not stay with transport team; want to stay operational for trauma etc
- Aircraft configuration/electrics often incompatible with transport team “deck” – left stranded on Tarmac especially with chartered aircraft

Challenges in transport process

Need " one number to call" for transport & coordination anywhere in the Province

- Hospital based teams provide local response – advice & transport
- Problems when lack of team or bed locally
- Lack of integration of all hospital based teams
- Delays in finding beds or teams for deferrals resulting in lengthy transport or wait times
- Reliant on hospitals updating perinatal bed registry – definitions of " closed/restricted"

Barriers

CritiCall – "one number to call" for Province of Ontario for bed identification for maternal, Critical care paeds, and adult transfers; not clinical service

- Puts referral & receiving physicians in touch
- Relies on accuracy of bed registry
- May delay process of transport team dispatch if waiting for bed identification
- LACKS integration with transport teams & land and air ambulance systems
- LACKS integration with high risk obstetrics

Further challenges

In GTA Ontario, 34% of all high risk Moms deliver outside high risk setting because

- No system for high risk maternal transports
- Lack of coordination & triage & timely advice especially for obstetrics
- Refusal of high risk moms based on availability of tertiary NICU beds
- FAILURE to provide inutero transports –

  Ie. Best practice

Further challenges

- Paediatric transport system for acute, complex & critical care children is often lacking when neonatal transport team does not provide solution to both populations –
- Dr Allan DeCaen