

10 Years of Experience with Intrathecal Baclofen a review of safety and adverse events

Romain Briest¹, **Remo (Ray) Russo**^{1,2}, Felicity Baker¹, James Rice¹

1. Women's and Children's Health Network
2. Flinders University School of Medicine

Disclosure Information
AOCPRM/RMSANZ Auckland New Zealand

Dr Romain Briest, A/Prof. Remo Russo, Ms Felicity Baker, Dr James Rice.

Disclosure of Relevant Financial Relationships

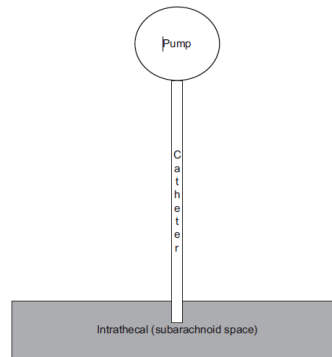
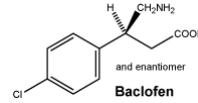
We have no financial relationships to disclose.

Disclosure of Off-Label and/or investigative uses:

We will not discuss off label use and/or investigational use in this presentation

Intrathecal Baclofen

- Derivative of gamma aminobutyric acid (GABA)
- Effective anti-spastic agent with a spinal site of action
- Inhibits the release of excitatory amino acids (glutamate and aspartate)
- Neuromuscular transmission is not affected by baclofen
- Beneficial action on reflex muscle contractions - marked relief from painful spasm
- Improves the patient's mobility; comfort



CP - GMFCS Levels 4 & 5

	<p>GMFCS Level I</p> <p>Walks with or without a cane, walker, and/or in the community. Walks are able to cross curbs and stairs without physical assistance or a device. They perform gross motor skills such as running and jumping but speech, balance and coordination are limited.</p>
	<p>GMFCS Level II</p> <p>Walks with or without a cane, walker, and/or in the community. Walks are able to cross curbs and stairs with physical assistance or a device. They may require a hand held mobility device to walk and may need holding or a sitting. Children and in the community youth may use a hand held mobility device for walking long distances.</p>
	<p>GMFCS Level III</p> <p>Walks on level or walking surface with hand held mobility device. Walks may have some holding onto a walking surface or wheelchair. At school they may use or require a hand held mobility device to walk and may need holding or a sitting. Children and in the community youth may use a hand held mobility device for walking long distances.</p>
	<p>GMFCS Level IV</p> <p>Walks on level or walking surface with hand held mobility device. Walks may have some holding onto a walking surface or wheelchair. At school they may use or require a hand held mobility device to walk and may need holding or a sitting. Children and in the community youth may use a hand held mobility device for walking long distances.</p>
	<p>GMFCS Level V</p> <p>Walks on level or walking surface with hand held mobility device. Walks may have some holding onto a walking surface or wheelchair. At school they may use or require a hand held mobility device to walk and may need holding or a sitting. Children and in the community youth may use a hand held mobility device for walking long distances.</p>



Indications:

1. Carer related issues – care needs
2. Pain and Quality of Life issues

Types of ITB Pump Events

1. Pump
 1. Mechanical failure
 2. Battery failure
2. Pump Site
 1. Wound infection
 2. Seroma
3. Catheter
 1. Migration
 2. Fracture/Kink/Occlusion
 3. Disconnection
4. Human Error
 1. Programming error
 2. Refill error



Audit

- Review of case records of all patients at WCHN in receipt of intrathecal baclofen
- 10 year period from 2008 to 2018
- Consecutive patients- all patients and events included
- Presence, type and number of clinical events related to pump
 - Primary endpoints- total number of events per patient, number of events per patient pump year (PPY)
 - Secondary endpoints- types of events, PPY by spastic vs dystonic

Results of findings - 1

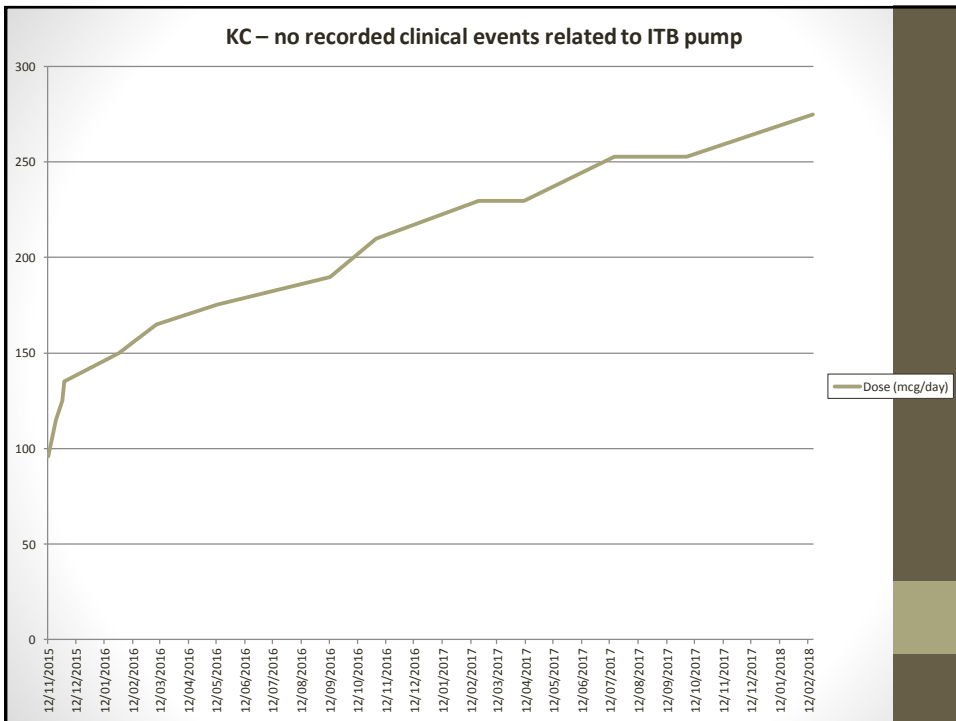
- GMFCS: IV- 4 (50%), V- 4 (50%)
- Age at implantation: range 2y10m to 16y10m; average 11y6m
- Condition:
 - cerebral palsy- 6 (75%)
 - transverse myelitis-1
 - metabolic - 1
- Involvement: quadriplegia 8 (100%)
- Pattern:
 - Spastic- 3 (37.5%)
 - Dystonic/Mixed - 4 (50%)
 - Choreoathetoid- 1 (12.5%)

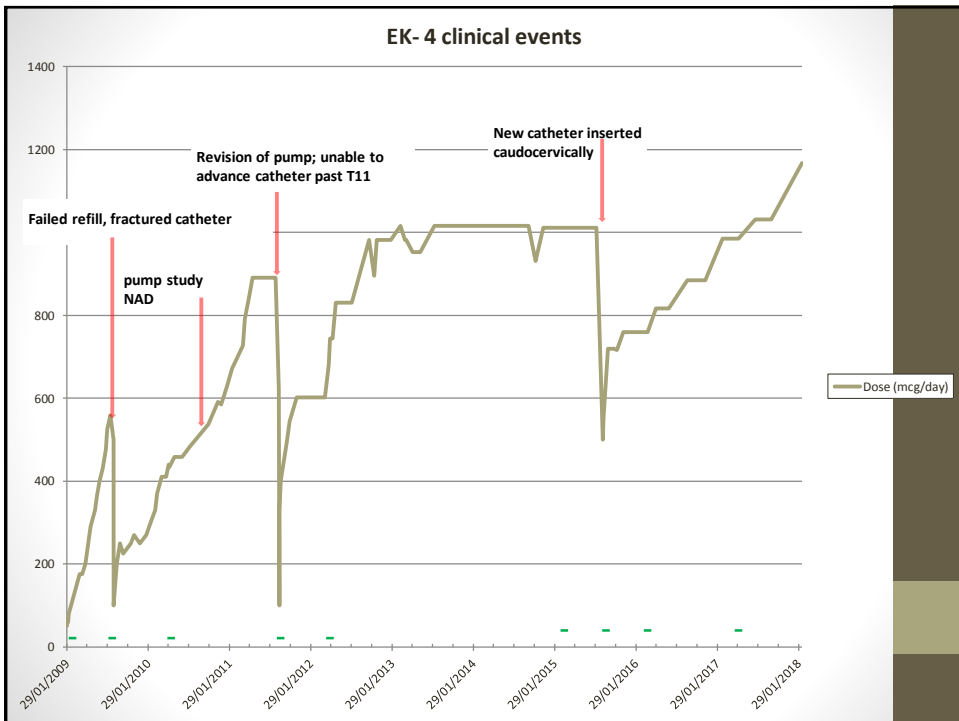
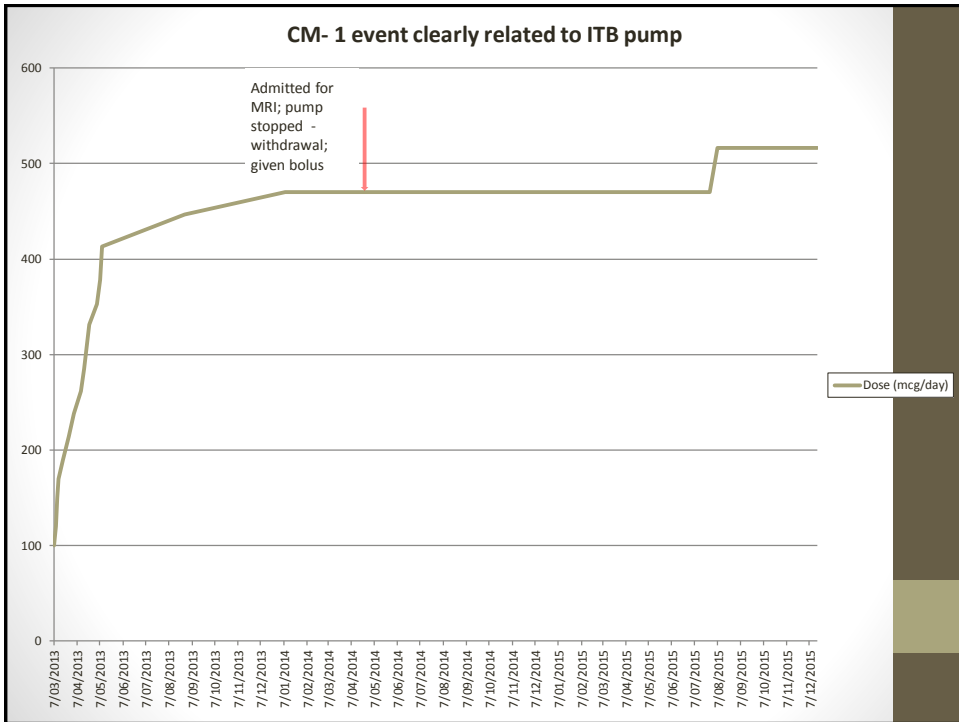
Results of findings - 2

- Total of 13 clinical events related to intrathecal baclofen pumps in patients over the past 10 years
- 6 patients had events (75%), 2 did not.
- Average events per patient 2.1, with patients with more than one event tending to have most.
- Types of events

• Fracture	– 2 (15%)
• Pump failure/dysfunction	– 3 (23%)
• Catheter migration	– 2 (15%)
• Catheter blockage	– 2 (15%)
• Infection	– 3 (23%)
• Arachnoid adhesions	– 1 (8%)

ID	Condition	Indication	Age	Pump time in Years	GMFCS	BAD (X/32)	Oral baclofen dose (TDD)	Clinical Event	Number of Events
1	Dystonic CP	Pain Care and comfort	14y6m	4.3	IV	24	20mg	Yes	1
2	Mixed spastic/dystonic CP	Care issues Painful muscle spasm	6y9m	9.2	IV	26	30mg	Yes	4
3	Mixed spastic dystonic CP	Variable spasticity and dystonia	13y11m	2.8	V	25	75mg	Yes	4
4	Choreoathetoid quadriplegic cerebral palsy	Spasticity and marked dystonia	12y6m	0.83	V	20	60mg	No	0
5	Spastic quadriplegic cerebral palsy	Pain and difficulty with ADLs	11y	2.4	IV	4	37.5mg	No	0
6	Transverse myelitis spastic quadriplegia	Pain and muscle spasm not controlled with oral baclofen	15y2m	2	IV	5	75mg	Yes	1
7	Ornithine transcarbamylase deficiency; spastic quadriplegic phenotype	Generalised increased tone from baseline	2y10m	0.08 (28 days)	V	--	27.5mg	Yes	1
8	Mixed spastic/dystonic quadriplegic cerebral palsy	Spasticity and marked dystonia	16y2m	3.6	V		40mg	Yes	2





Clinical Events- Literature

STUDY	OBS PERIOD (YEARS)	PATIENTS	COMPLICATIONS
Zdolsek et. al. 2011	6	18	17 events
Ghosh et. al. 2013	15	119	49 patients
Motta et. Al. 2014	14	430	137 events in 107 patients

Adverse events are not uncommon

Events per patient pump year

- Patient pump years- 25.92
- Events per patient pump year 0.50
 - Spastic:
 - 5.25 years with 0.38 events per year
 - Dystonic/mixed:
 - 20.67 years with 0.53 events per year

Study	Total rate	Spastic rate	Dystonic rate
WCHN 2018	0.50	0.38	0.53
Ward 2009	0.38	0.25	0.71
Campbell 2002	0.48	-	-

Discussion

- Expect adverse events related to ITB treatment
- Events are more common in patients with dystonia as compared to isolated spasticity
 - Small sample size
 - Complex patients with more than one event
 - Events appeared connected
- All patients severely affected and with quadriparetic involvement
 - This group may be more prone to complication
- Consider reporting events per patient pump years

Questions?

“I wish I had an answer to that because I’m tired of answering that question”

Yogi Berra