


## Breath Support

**Campbell Children's School  
Grandview Children's Centre  
Oshawa, Ontario**

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**OACRS Conference 2009**



## Agenda


- Background information
- Goals of the group
- Outline of a typical session
- Video demonstration
- Supporting data and case studies
- Next steps
- Questions/comments



## Grandview Children's Centre


*"Leading the way to excellence in services for children and youth with special needs and their families in Durham Region."*

- Grandview provides a range of services for children from infancy to 21 years, with a wide variety of physical, developmental and communication disorders
- We offer Audiology, Physiotherapy, Occupational Therapy, Speech-Language Pathology, Medical Services, Family Support Services and Recreation and Leisure Services
- Campbell Children's School is the education partner of Grandview Children's Centre (Oshawa site)




## Campbell Children's School

- Section 68 school
- Typically 28 students per year
- Most students four to six years old
- Attend school five full days a week
- 16 admitted primarily for significant physical diagnosis
- 12 admitted primarily for severe speech production difficulties



## Why was this group developed?

- Breath Support Group was developed to combine the promotion of chest health and breathing for speech, in an interdisciplinary therapy group.



## Background/history

- Group has been offered for over 15 years
- Strong PT interest in chest physio and NDT
- Initially grouped similar clients to address specific needs
- Has evolved over time to include clients working at various levels on a spectrum of functional goals (utilizes peer motivation and friendly competition)
- Recently compiled retrospective data

## Breath Support Group is...



- A series of activities that facilitate chest wall movement with and without vocalizations in a variety of positions.
  - Rolling
  - Supine lying
  - Side lying
  - Sitting
  - Activity

## Goals



Individual goals are dependent on each client's functional level and may include the following:

- To improve speaking volume and voice quality
- To develop strategies for improving ease of initiation on cue
- Reduce blocking at level of vocal cords on attempted initiation of vocalizations
- To maximize independent anti-gravity positioning in sitting, kneeling and stance where appropriate
- To decrease tonal overflow during speech production
- To determine strategies for use in everyday speech
- To provide peer role models
- To promote socialization through communication and gross motor activities
- To develop strategies to promote chest health (i.e. for secretion management)
- To encourage vocalizations to gain attention
- To improve speech intelligibility in connected speech

## Typical Group



- 8 children of varying diagnoses
- All levels of GMFCS usually represented
- 8 adults to provide one to one support
- Adults include: PT, SLP, PTA, CDA, educational assistants, volunteers and students (high school co-op or university)

## GMFCS Levels



Level	6-12 months	12-18 months	18-24 months	24-36 months	36-48 months	48-60 months
Level I	Stands without holding on to anything	Stands without holding on to anything	Stands without holding on to anything	Stands without holding on to anything	Stands without holding on to anything	Stands without holding on to anything
Level II	Stands with one hand holding on to something	Stands with one hand holding on to something	Stands with one hand holding on to something	Stands with one hand holding on to something	Stands with one hand holding on to something	Stands with one hand holding on to something
Level III	Stands with two hands holding on to something	Stands with two hands holding on to something	Stands with two hands holding on to something	Stands with two hands holding on to something	Stands with two hands holding on to something	Stands with two hands holding on to something
Level IV	Stands with one hand holding on to something and one hand holding on to another person	Stands with one hand holding on to something and one hand holding on to another person	Stands with one hand holding on to something and one hand holding on to another person	Stands with one hand holding on to something and one hand holding on to another person	Stands with one hand holding on to something and one hand holding on to another person	Stands with one hand holding on to something and one hand holding on to another person
Level V	Stands with two hands holding on to something and one hand holding on to another person	Stands with two hands holding on to something and one hand holding on to another person	Stands with two hands holding on to something and one hand holding on to another person	Stands with two hands holding on to something and one hand holding on to another person	Stands with two hands holding on to something and one hand holding on to another person	Stands with two hands holding on to something and one hand holding on to another person

Descriptions of GMFCS Levels between 6th and 12th birthday; further details available at [www.fhs.mcmaster.ca/canchild](http://www.fhs.mcmaster.ca/canchild) (pictures courtesy of Kerr Graham)

## Breath Support - Rolling



- Begin with child lying on his/her back on a comfortable surface on the ground (e.g. carpet or padded mat)
- Bring child's right arm across his/her body to their left hip
- Help child roll to the left by lifting and rotating their right hip so that he/she completes a full roll (returns to back)
- Repeat 2-3 times
- Repeat in opposite direction
- OR
- Instruct child to roll 2-3 times in each direction
- Ensure that child is rolling in a straight line, not diagonally

## Breath Support - Supine



- Have child lie down on his/her back on a comfortable surface
- Place your hands on child's rib cage just below his/her armpits with thumbs pointed inwards
- Ask child to take a big breath in, then as he/she exhales apply pressure down and inwards on the ribs to determine ribcage movement
- Ask child to take a big breath in and then say "ah" (/a/) for as long as he/she can (using a controlled voice)
- While child is saying /a/, apply light pressure on ribs in a vibrating motion
- Repeat 2-3 times

## Breath Support - Side lying



- Have child lie down on his/her side with arms in front of their bodies and knees bent to their chest
- Place your hands on the side of child's ribcage just under his/her armpit with your thumbs meeting at midline
- Ask child to take a big breath in and then say "ah" (/a/) for as long as he/she can (using a controlled voice)
- While child is saying /a/, apply light pressure on their ribs in a vibrating motion
- Repeat 2-3 times on each side

## Breath Support - Sitting



- Assist child into a cross-legged sitting position
  - Sit behind child supporting him/her against your chest or by holding around his/her lower rib cage
  - Encourage/help child sit with a straight back, head up and shoulders in line with his/her ears
  - Prop child's arms against his/her thighs/floor
- OR
- Reach overhead, and turn child's thumbs towards the ceiling, straighten his/her elbows and maintain this position by bracing your forearms against his/her elbows

## Breath Support - Sitting (cont.)



Alternatively...

- Have child get into a cross legged sitting position with hands resting on legs
- Encourage child to sit with a straight back, head up and shoulders in line with his/her ears
- In sitting position, you can do an assortment of activities that requires the use of spontaneous and imitated vocalizations/speech (please see following slide)

## Total Communication Approach



- We strongly support and encourage functional communication
- The production of vocalizations/speech may be one component of a total communication system
- Other components may include:
  - Body language/facial expression/eye gaze
  - Signs/gestures
  - Picture communication
  - Speech generating devices
  - Clarification strategies
  - etc.

## Vocalizations/connected speech activities in sitting



- While completing the following activities, encourage child to:
    - Maintain posture/position (e.g. "hands on your knees, sit up tall")
    - Take a big breath in
    - Complete phrase in one breath
- OR
- Initiate a vocalization

## Activities in sitting (cont.)



- **Any games that require the use of spontaneous vocalizations are great!**
  - We like using a "magic bag" + any toy, game, or picture board
  - Put a variety of toys/objects/picture cards in a bag, have clients reach in and take one out
  - Client's task depends on goals and functional level:
    - a) Describe toy to the whole group (can be imitated or spontaneous)
- OR
- b) Call out to group to look over at the toy

## Activities in sitting (cont.)



- When modeling connected speech, always model with expected posture and timing of full breath
- Work to increase the length of phrase by 1-2 syllables beyond spontaneous breath group
- Can incorporate vocabulary/expressive language goals as appropriate
- Typically not providing feedback re: speech sound goals, although can model
- Primary goal for some clients during activity is to initiate voice (call out for a turn, call out to peers to look over, call to a peer who is not paying attention)
- Can incorporate use augmentative communication devices/boards to encourage ongoing participation, although vocalization is used to initiate interaction

## Video



## Supporting Data



- Data was collected during sessions and timing vocalizations/recording syllables has become part of routine (feedback/motivation)
- The following chart summarizes available first-year data from clients participating in Breath Support between 2005-2009
- Case studies describe changes over multiple years participating in group

	Supine (sec)	Side lying (sec)	Sitting (sec)	# Syllables/breath (imitated)	# Syllables/breath (spontaneous)
<b>Level 1 (6 children)</b>					
Average Baseline	5.23	6.59	6.78	4.25	3.00
Average Best Performance	14.40	13.97	14.60	8.25	9.00
<b>Average change</b>	<b>9.18</b>	<b>7.38</b>	<b>7.82</b>	<b>4.00</b>	<b>6.00</b>
<b>Level 2 (4 children)</b>					
Average Baseline	5.45	4.76	9.75	5.00	4.00
Average Best Performance	16.54	15.88	19.44	9.67	11.00
<b>Average change</b>	<b>11.09</b>	<b>11.12</b>	<b>9.69</b>	<b>4.67</b>	<b>7.00</b>
<b>Level 3 (9 children)</b>					
Average Baseline	6.16	6.45	6.97	5.50	6.00
Average Best Performance	13.68	14.00	14.20	9.67	11.00
<b>Average change</b>	<b>7.52</b>	<b>7.55</b>	<b>7.22</b>	<b>4.17</b>	<b>5.00</b>
<b>Level 4 (1 child)</b>					
Average Baseline	1.00	1.00	2.93	N/A	2.00
Average Best Performance	10.78	7.39	7.28	4.00	8.00
<b>Average change</b>	<b>9.78</b>	<b>6.39</b>	<b>4.35</b>	<b>N/A</b>	<b>6.00</b>
<b>Level 5 (6 children)</b>					
Average Baseline	1.43	1.87	1.58	2.00	2.50
Average Best Performance	5.07	4.44	3.94	2.50	4.50
<b>Average change</b>	<b>3.65</b>	<b>2.57</b>	<b>2.36</b>	<b>0.50</b>	<b>2.00</b>
<b>Other* (10 children)</b>					
Average Baseline	2.941	3.607	3.568	3.80	2.33
Average Best Performance	7.68	7.73	7.73	5.92	5.43
<b>Average change</b>	<b>4.74</b>	<b>4.12</b>	<b>4.16</b>	<b>2.12</b>	<b>3.10</b>

\*Other: neuromuscular, spinal muscular atrophy, spina bifida, various syndromes

Note: Vocalizations <1 sec rounded up to 1.00

## Functional Gains



- Intelligibility
- Volume
- Voice quality
- Confidence
- Social communication skills
- Ease of initiation
- Reduction of negative behaviours to gain attention


## Individual Case Studies



DF  
Level 2

	Supine (sec)	Side lying (sec)	Sitting (sec)	# Syllables/breath (imitated)	# Syllables/breath (spontaneous)
<b>Year 1 Baseline</b>	2.9	2.54	4.91	6	N/A
<b>Year 1 Best Performance</b>	20.28	16.17	15.63	10	12
<b>Year 2 Baseline</b>	14.34	13.51	18.78	N/A	9
<b>Year 2 Best Performance</b>	20.32	19.3	22.97	14	11


## Individual Case Studies



HW  
Level 3

	Supine (sec)	Side lying (sec)	Sitting (sec)	# Syllables/breath (initiated)	# Syllables/breath (spontaneous)
Year 1 Baseline	7.50	8.27	10.35	8	N/A
Year 1 Best Performance	12.35	14.06	13.40	N/A	12
Year 2 Baseline	12.78	15.66	12.16	N/A	8
Year 2 Best Performance	18.85	16.83	16.18	11	13


## Individual Case Studies



JN  
Level 4

	Supine (sec)	Side lying (sec)	Sitting (sec)	# Syllables/breath (initiated)	# Syllables/breath (spontaneous)
Year 1 Baseline	0.72	0.91	2.93	N/A	2
Year 1 Best Performance	10.78	7.39	7.28	4	8
Year 2 Baseline	2.84	5.96	5.06	2	2
Year 2 Best Performance	16.41	11.65	13.20	5	5


## Individual Case Studies



RL  
Level 5

	Supine (sec)	Side lying (sec)	Sitting (sec)	# Syllables/breath (initiated)	# Syllables/breath (spontaneous)
Year 1 Baseline	3.71	3.28	2.84	2	1
Year 1 Best Performance	7.00	8.13	4.82	4	4
Year 2 Baseline	1.09	2.86	3.06	4	N/A
Year 2 Best Performance	12.60	11.96	10.47	8	N/A
Year 3 Baseline	5.00	4.65	3.20	6	7
Year 3 Best Performance	15.62	13.35	13.78	15	11

## Next Steps




- Research timed vocalizations with competitive kindergarten students to gather more baseline data
- Practice using voice when positioned in their equipment (walkers, wheelchairs, standers) to improve carryover into daily activities
- Use travel to and from group to practice strategies in functional positions
- Add GMFCS level specific breathing exercises to improve control i.e. Level 2-3 clients:
  - Add to warm up: reach overhead on inhalation and down to floor for exhalation and progress to working on stability with trunk in mid-range
  - Hands behind head in sitting to improve inhalation
  - Anterior pelvic tilt to increase apical breath, posterior pelvic tilt to increase diaphragmatic breathing then middle ground for balanced breath
  - Inhalation vs. resistance

## Related Articles



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## Thank you



- To all the clients who agreed to be part of this presentation
- To all the volunteers, students and assistants who are integral to this program's success
- To Margaret Ettore and Melanie Workentin previous SLP partners at CCS



Questions?

Comments?

Suggestions?



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