

## Respiratory Insufficiency

One of the most feared complications of acute paralytic polio was impaired respiratory function, which resulted in significant disability and, in many cases, death. As a result, the development of new respiratory problems in surviving post-polio individuals is of major concern to them.

New breathing difficulties have been reported by 27<sup>51</sup> to 58<sup>70</sup> percent of subjects in surveys of LEOP. In the Queensland cohort, 39 percent of subjects reported new breathing difficulties.<sup>74</sup>

Respiratory difficulties are more likely to occur in individuals who required respiratory support during the acute disease, contracted polio when older than 10 years of age,<sup>97</sup> or have had polio over 35 years ago.<sup>98</sup>

Signs and symptoms of respiratory dysfunction may include:<sup>99</sup>

- Dyspnoea on exertion and/or at rest;
- Poor clearance of respiratory secretions;
- Fatigue and daytime sleepiness;
- Impaired intellectual function (including poor concentration);
- Morning headaches;
- Speech difficulties - quite speech (with few words per breath) or difficulty speaking for extended periods;
- Snoring; and
- Anxiety.

Loss of vital capacity is directly related to respiratory muscle weakness. Post-polio individuals who develop late onset ventilatory insufficiency have been observed to lose vital capacity at a rate of 60-90 percent greater than the normal population. This vital capacity loss occurs as the result of the combination of several factors including ageing, fatigue, accelerated loss of remaining anterior horn cell collaterals, pulmonary compliance and function.<sup>96</sup> Other factors such as scoliosis, pulmonary disease, cardiac disease, obesity and history of smoking may also contribute to the problem.

Individuals with expiratory muscle weakness can also have difficulty clearing secretions, especially during respiratory tract infections, due to a decrease in peak cough expiratory flows (PCEF). This can lead to further complications including ventilation/perfusion imbalance, pneumonias and pulmonary scarring.<sup>96</sup> Other factors which may impede expiratory muscle function and further decrease PCEF include airway obstruction from laryngeal muscle incompetence, aspiration of airway secretions and food due to bulbar involvement (paralysis of lingual, laryngeal and pharyngeal structures) and vocal cord paralysis or tracheal stenosis due to previous endotracheal intubation.<sup>100</sup>