

### CALCITONIN TREATMENT OF OSTEOPOROSIS IN PEDIATRIC LONG-TERM CARE: III.

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**Introduction** The beneficial effect of calcitonin on cerebral palsy disuse osteoporosis was first reported at the previous two annual AMDA meetings. This report extends our results to 24 cases.

**Methods** 24 individuals who had a fracture were identified (age range 9-33 y; mean 20 y; 10 females, 14 males). All had quadriplegic cerebral palsy, were wheelchair-bound, and 20 were fed by gastrostomy tube. All were receiving adequate amounts of calcium and vitamin D. None had received any steroid treatments. Each was treated with one calcitonin nasal spray (=200 units), 5 times per week, 3 months of treatment alternating with one month of no treatment. All underwent bone mineral density determinations using a Hologic QDR-1000 X-ray Bone Densitometer (DXA) before and after 1, 2 and 3 years of treatment. 14 were treated for 1 yr, 9 for 2 yrs and 1 for 3 yrs.

**Results** DXA results indicated severe osteoporosis in all cases. After calcitonin treatment, there was greater improvement in males, and in those less than 19 years of age. In the lumbar spine, 73% of males improved an average of 8% per year (55% of females improved 5% per year). For the total hip, 40% of males improved an average of 12% per year (40% of females improved an average of 3% per year). In the lumbar spine, the average improvement for those less than 19 was 8% per year, whereas that over 19 was 4% per year. For the total hip, the average improvement was 12% per year for those less than 19, and in those over 19, there was a decrease of 3% per year.

**Conclusion** These results indicate that calcitonin may be an effective treatment of cerebral palsy disuse osteoporosis and that better responses may occur in males and in younger individuals.

### SURVIVAL RATES OF CHILDREN WITH SEVERE NEUROLOGIC DISABILITIES IN PEDIATRIC SNF'S

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**Introduction** Accurate survival rates of children with neurologic disabilities is important when third party insurance payers are planning future medical expenses. This is of particular importance to pediatric skilled nursing facilities (SNF's) that depend on financial support from governmental sources. Eyman et al. (1993) published survival rates that were extremely pessimistic and not in keeping with our clinical impressions. This led to a thorough review of our survival rates, which were published (Plioplys et al. 1998). Our results were much better than those reported by Eyman. Since our study was published, a series of reports have appeared using Eyman's California database. This investigation was undertaken to compare our results with more recently published ones.

**Methods** A thorough review of references was undertaken using the National Library of Medicine services. All published articles dealing with this subject were obtained and thoroughly reviewed.

**Results** The survival rate data that we had obtained (Plioplys et al. 1998) were consistently better than more recent reports. For example, 10-year survival rates for the most disabled group 1, was reported by Eyman to be 32%, Strauss (1998) 45%, and our 73%. 8-year survival rates for group 1, was reported by Eyman to be 38%, Strauss (2000) 63%, and our 73%. The reasons for our better survival rates are multiple, including the fact that all of our patients were in SNF's where prompt medical care for acute illnesses was always provided (only 3% in California were in SNF's). There were also many methodologic and statistical errors contained in the California data, which will be fully reviewed.

**Conclusion** Our survival rates continue to be much more optimistic and accurate than those using the California database.

### PULMONARY VEST THERAPY IN PEDIATRIC LTC: II

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**Introduction** Pneumonias are common in children with quadriplegic cerebral palsy. Neuromuscular insufficiency produces inadequate clearance of pulmonary secretions. The Advanced Respiratory vest is approved to promote pulmonary clearance and is used extensively to treat cystic fibrosis. Vest therapy (VT) in cerebral palsy was first reported at last year's AMDA meeting. We have extended our observations to 7 cases.

**Methods** 7 individuals who had frequent pulmonary infections were identified (age range: 7-28 y; median age 19 y; 2 females, 5 males). All had severe quadriplegic cerebral palsy, were wheelchair bound, and were fed by gastrostomy tube. 5 had a tracheostomy and 3 an active seizure disorder. Clinical data was collected for 12 months prior to starting VT and during 12 months of VT. Each individual received one 20 minute VT daily, with additional treatments every 8 hours if needed.

**Results** During 12 months of VT, there were no significant side effects—in particular, there were no episodes of induced emesis, fractures, or worsening seizures. The total number of pneumonias that required antibiotics decreased from 36 prior to VT, to 18 during VT. The number of hospitalizations due to pneumonia decreased from 9 to 3. With VT, the frequency of effective suctioning of pulmonary secretions was significantly increased. With VT, the average monthly frequency of seizures decreased from 4 to 1, from 9 to 2, and from 10 to 1.

**Conclusion** These results indicate that VT increases the clearance of pulmonary secretions. VT also helps to prevent pneumonias, and hospitalizations from pneumonia. In 3 individuals with seizures, VT actually improved seizure control. There were no significant side effects from VT. Further clinical studies of VT are indicated.

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