Building Healthy Bones in Children

- Calcium requirements steadily increase based on age and peak during the adolescent growth spurt: 1-3 years: 500 mg/day, 4-8 years: 700 mg/day, 9-13 years: 1,000 – 1,300 mg/day, 14-18 years 1,300mg per day.
- Adequate vitamin D level is as critical in children as in adults. Regular and safe sunlight exposure is encouraged in line with ANZBMS / The Endocrine Society of Australia / Osteoporosis Australia published recommendations***. Children and adolescents with low levels of vitamin D may require supplementation.
- Specific exercises are encouraged. Schools are encouraged to include a variety of weight bearing activities, including participation in short periods (5 – 10 minutes) of daily, targeted, moderate-high impact activities such as jumping, skipping and hopping.

Building Healthy Bones in Healthy Adults

- Calcium intake recommended for adults is 1,000 mg per day. This increases to 1,300 mg per day for women over 50 and men over 70. This should be obtained from at least 3 serves of calcium rich foods. Dairy foods are considered a good source of calcium. People who dislike or can’t tolerate dairy products will need to incorporate more serves of other calcium containing foods (eg: specific vegetables, fish, nuts). For people who do not obtain adequate calcium through their diet a supplement of 500 mg – 600 mg may be required. There is no additional benefit of calcium intake being higher than recommended levels.
- Vitamin D levels in adults should be over 50 nmol/L at the end of winter or early spring, so may be higher during summer. Vitamin D deficiency can be corrected with vitamin D supplementation. Pregnant women should be tested for vitamin D. Regular and safe sunlight exposure is encouraged in line with ANZBMS / The Endocrine Society of Australia / Osteoporosis Australia published recommendations***
- Adults should be physically active and undertake regular weight bearing and/or muscle strengthening exercises. Participation in moderate-high impact weight bearing exercise, high impact training (eg: 50 – 100 jumps) or impact-loading sports for at least 30 minutes, 3 – 5 days per week is encouraged. Muscle strengthening exercises should be included on at least 2 days per week (and for maximum benefit the program should be at high intensity, become progressively more challenging over time and target major muscles around the spine and hip).

Building Healthy Bones in Older Adults and People with Osteopenia and Osteoporosis

- Adults with specific risk factors for low bone density or osteoporosis should seek medical advice. Calcium, vitamin D and exercise are important for this group but people with diagnosed osteoporosis also require drug treatment.
- Calcium requirement for people with osteoporosis or osteopoenia is 1,300 mg per day, the same for women over 50 and men over 70. Calcium intake from diet is preferred, and 3 serves of dairy per day is encouraged with one serve being calcium fortified. If dietary intake is not adequate a supplement limited to 500 -600mg per day may be required.
- Vitamin D level should be over 50 nmol/L at the end of winter or early spring. Vitamin D should only be tested in people with risk factors for low vitamin D. But doctors should also test vitamin D in people diagnosed with osteoporosis (by a bone density test), people who've had a fall and people with a ‘minimal trauma’ fracture at this stage of life. Vitamin D supplementation is then recommended for people with low or moderate-severe vitamin D deficiency, as determined by their doctor. Low vitamin D levels can lead to falls in older people.
- Exercise focus in this group is to slow bone loss and increase (or maintain) muscle mass and strength to then improve muscle function, mobility and gait and thereby reduce the risk of falls and fractures.
Participation in a supervised and varied exercise program that includes weight bearing activities and progressive resistance training and challenging balance activities is encouraged at least 3 times per week.

***Sun Exposure Recommendations for Vitamin D (based on skin type, season, location in Australia, area of skin exposed)
Moderately Fair Skin: 5 – 10 minutes in summer, with arms or equivalent exposed, at mid-morning or mid-afternoon. In winter 7 – 30 minutes at midday (depending on location). People with darker skin require 3 – 6 times longer exposure. Adapted from Nowson et al, Vitamin D and health in adults in Australia and New Zealand: a position statement. MJA, 2012; 196: 686-687