**Bone Health - Educational and Preventive Health Event**

**Participant Guide**

**Introduction**

Pharmacists are well-positioned to provide education and preventive health initiatives for the benefit of patients and the public.

This guide describes a Bone Health service that has been successfully prototyped by pharmacy students and pharmacists at the UBC Pharmacists Clinic. The clinical and procedural materials have been modified to enable any pharmacist to provide a similar service using equipment and materials routinely available in a community pharmacy.

The service includes the following components:

* Information on the structure and function of bones in the body
* Information on factors that affect bone health
* A bone fracture risk assessment
* Calculation of calcium and vitamin D intake and needs
* A personalized plan for optimal bone health

To ensure accountability and compliance with regulatory requirements, all health care services should be provided by licensed pharmacists, pharmacy students supervised by a licensed pharmacist or other regulated health care professionals.

NOTE - This guide does not cover logistic and business aspects of organizing a health event such as: advertising, where to hold the event, identifying participants, booking appointments, charging fees, liability issues, offering service to local businesses, etc.

**About the Pharmacists Clinic**

The Pharmacists Clinic, located at the UBC Faculty of Pharmaceutical Sciences, is a university-affiliated, licensed, pharmacist-led patient care clinic with a mandate to:

* Be a model of patient care best-practices
* Provide learning and skill development opportunities for health professionals and students
* Be a living lab that contributes service models, systems, processes, research and program evaluation for the health care community.

More information about the Clinic is available here: <https://pharmsci.ubc.ca/pharmacists-clinic>

**Service Approach**

Participants are typically scheduled at 15 minute intervals with the total appointment time being about 20 minutes, although this may vary.

Two options for service delivery are:

* Participants move from station to station and receive part of the service at each station
* Participants receive all services from one person
* If enough pharmacists/students are available, 2 or 3 participants can receive service at the same time in parallel service streams.

Participants receive a Bone Health Passport where information about their health is recorded and they will take home. NOTE – the pharmacy needs to also keep a record of service provided. This can be done using an excel spreadsheet, taking a copy of the completed passport or using an electronic record.

The order of service is at *your* discretion, however, experience has shown that the following step-wise approach provides a logical flow.

|  |  |  |
| --- | --- | --- |
| **Station\* (if used)** | **Step in Passport** | **Service Description**  |
| A |  | Register participant in pharmacy record and give passport |
|  | 1 | Complete the “About Me” section |
| B |  | Explain the structure and function of bones in the body |
|  | 1 | Measure height and weight |
|  | 2 | Complete the “My Health” section |
|  |  | Describe the role of physical activity in bone health |
|  | 3 | Complete the “My Physical Activity” section |
|  | 4 | Complete the “My Current Medications” section |
| C |  | Describe the role of calcium and Vitamin D in bone health  |
|  | 5 | Calculate current calcium intake |
|  | 6 | Calculate current Vitamin D intake |
| D | 7 | Calculate fracture risk |
|  | 8 | Interpret results and establish “My Plan” with the patient |
|  | 9 | Pharmacist signs the passport  |
|  |  | Copy of information in the passport is retained at the pharmacy and patient takes the passport. |

\*If service offered in stations, Station A can be manned by an administrative person. Stations B and C can be manned by pharmacy students with pharmacist supervision. Station D is for the licensed pharmacist.

**Materials**

In addition to this Guide, materials provided for use at a Bone Health event are:

* Bone Health Passport
* Clinical Resources (to have available at Stations C and D)
* Images (to print or load onto an iPad and have available at Station B)
* URL for Calcium Counter and FRAX-WHO Fracture Risk Assessment – Canada
* Recommended list of supplies to have on-hand

**Preparatory Readings**

Clinical people (pharmacists/students) who will be providing service in the Bone Health event are encouraged to read the following materials so they are familiar with the elements of fracture risk being measured and discussed:

1 – Bone Health – bone physiology, healthy bone, osteoporosis risk factors

Osteoporosis Overview (Lancet 2006:367:2010-18)

<https://docs.google.com/file/d/0B3KEs1SF6yovSk5JN05MekhoSEFFUllfSzNWTEtGZGpCVm9z/edit?pli=1>

Osteoporosis fast facts – (good information in lay language)

<https://osteoporosis.ca/about-the-disease/fast-facts/>

2 – World Health Organization fracture risk assessment tool (FRAX):

<http://www.shef.ac.uk/FRAX/tool.jsp>

3 – Nutrients and bone health – calcium and vitamin D

 Health Canada – Overview of Calcium and Vitamin D

<http://www.hc-sc.gc.ca/fn-an/nutrition/vitamin/vita-d-eng.php>

Osteoporosis Canada - Nutrition

<http://www.osteoporosis.ca/osteoporosis-and-you/nutrition/>

**Service Delivery - Step-by-Step**

**Station A**

*“Welcome to our Bone Health event. You will be receiving information about bones and your bone health. This information will be recorded in a passport for you to take with you. To start, we will record your name, year of birth, your gender and today’s date. Please proceed to the next station.”*

**Station B**

*“At this station, we will start by recording information about you, and then I will explain how bones function in the body. Do you have any questions before we start?”*

* + Measure height (in cm) and weight (in kg)

Discuss key messages:

(use images and pictures to facilitate discussion and provide context)

* Your bones serve a number of important purposes
* They support you and protect you from injury (e.g., skull protects the brain)
* Bones also store nutrients for use in the body (e.g., calcium)
* Your bone health is largely determined by how well you understand and look after your bones.
* Bones are always changing - continually breaking down and rebuilding
* Our bodies usually maintain a balance between bone formation and breakdown, peak bone mass achieved likely in a person’s 30’s
	+ This balance can be affected by genetic, environmental, hormonal differences
* Overview of bone physiology
* Building blocks (calcium and phosphate form a matrix that gives bone strength and rigidity)
* 3 types of cells in bone (you may choose to show patient an image of these cells)
	+ - Osteoclasts - cells that break down bone
		- Osteoblasts - cells that form bone matrix
		- Osteocytes - cells that live in bone
* Healthy vs. osteoporotic bone (show an illustrative diagram)
* Osteoporosis is more common than you may think – in both men and women
* Facts & Stats - Prevalence in Canada & BC

<https://osteoporosis.ca/about-the-disease/fast-facts/>

*“I’m going to ask you specific questions about risk factors that can change the balance of bone being formed and broken down”*

* + Review the list in “My Health” and circle Y if the patient indicates they have the indicated risk factor.

*“Physical activity is an important part of bone health as well as your overall health. What kinds of physical activities do you do in a typical week?”*

* Types of Activity – <https://osteoporosis.ca/bone-health-osteoporosis/exercises-for-healthy-bones/>
* Strength training (increases muscle mass) – dumbbells, weight machines, exercise bands, your own body weight
* Balance (strengthen the little “balance muscles”) – dancing, Tai Chi, shifting weight on the feet
* Weight-bearing aerobic (rhythmic and gets your heart rate up/makes you breathe harder than usual) – walking, running, jumping sports (swimming and cycling are not weight bearing)
* Posture – awareness of body alignment (hips, shoulders and ears aligned) and strengthening the back extensor muscles
* Indicate by circling Y in “My Physical Activity” which activities are at target levels.
* Note these are targets and most people will not likely be at these levels in all areas of physical activity

*“Do you currently take any medications – prescribed, bought over the counter without a prescription, supplements or natural health products?”*

* + Record responses in “My Current Medications”

*“You are ready to move on to the next station and talk about ways to optimize bone health.”*

**Station C**

*“At this station, we will talk about ways to keep your bones as healthy as possible and keep your risk of osteoporosis as low as possible as well. You already talked about physical activity and here we are going to talk about food choices. Do you have any questions before we start?”*

Discuss key messages:

* + - * + Getting enough nutrients to build and maintain strong bones is important.
* Calcium and vitamin D are the most important nutrients to talk about today.
* We get enough of the other nutrients that are important for bone health in a regular diet:
	+ Phosphorus: mineralizes the bone (along with calcium to form hydroxyapatite) to give bone strength/rigidity
	+ Magnesium: influences crystal size of minerals in bones and bone quality
	+ Vitamin K2: helps binding of bone material
	+ Protein: for collagen, which gives bone strength and flexibility
* Start with calcium
* Calcium is important for strong, healthy bones and teeth
	+ Getting enough calcium from our diet helps the bone remodelling process stay in balance and helps bones stay healthy
	+ Not enough calcium means bones are at risk of getting weak, porous, brittle and breaking (or fracturing)
	+ As we get older, our body absorbs nutrients like calcium less effectively, which is why the recommended intake of calcium goes up after age 50
* We get calcium from our diet or by taking calcium supplements
	+ Dietary calcium is preferred – use the BC Dairy BoneZone worksheet or on-line calcium counter to estimate current daily calcium intake.

<http://www.osteoporosis.ca/osteoporosis-canada-calcium-calculator/>

* Record daily calcium intake (from diet) in the passport “My Calcium Intake”
	+ Record daily calcium intake (from supplements) in the passport “My Calcium Intake”
	+ Calculate total daily calcium intake and extra calcium needed, and record this in the passport “My Calcium Intake”
* Review options for increasing calcium intake from dietary sources.
	+ <http://www.healthlinkbc.ca/healthfiles/pdf/hfile68e.pdf>
* Supplements are useful when daily calcium needs cannot be met through diet
* Vitamin D
	+ Vitamin D is also important for bone health
		- It increases the absorption of calcium from the gut into the body
		- It helps muscle function, which improves balance and reduces fall risk
	+ Vitamin D is produced when the sun’s rays interact with our skin. There are very few food sources of Vitamin D.
	+ Canadians don’t get enough sun to produce the Vitamin D we need
	+ As we get older, the skin’s ability to make Vitamin D decreases
	+ Many Canadians are low on Vitamin D, no matter how good their nutrition
	+ Do you take a Vitamin D supplement? Record intake from supplements in the passport “My Vitamin D Intake”
	+ **Osteoporosis Canada recommends routine vitamin D supplementation for all Canadian adults year round**

*“You are ready to move on to Station D where the pharmacist will calculate your risk of a bone fracture, go over all the information we’ve gathered, discuss your results and answer your questions.”*

**Station D**

*“At this station, we will calculate your risk of a bone fracture (a measure of bone health, review your other result, go over any questions you have and talk about what kind of plan you may want to make to ensure on-going bone health.”*

 *“To start, I will enter your information into the WHO (World Health Organization) Fracture Risk Assessment Tool for Canadians and calculate your FRAX Score”*

* Enter values in: <http://www.shef.ac.uk/FRAX/tool.aspx?country=19>
* NOTE - The model is for people between 40 and 90 years. If person is <40, the calculation will show estimated risk of fracture at age 40.
* NOTE - The Canadian Association of Radiologists and Osteoporosis Canada [[1]](#footnote-1) tool stratifies women and men over age 50 into three zones of risk for major osteoporotic fracture within 10 years as:
* low (< 10%), moderate (10%–20%) and high (> 20%)
* Document FRAX scores in passport “My Fracture Risk”

Discuss key messages:

* + - * + Getting enough physical activity and nutrients is important for bone health.
				+ With the information you now have about your own bone health, what, if anything do you want to do differently.
* See “Station D Practical Information”
* Document the plan in the passport “My Plan”
* If the participant has more questions, wants information on supplements or has issues for the pharmacist, suggest they follow-up at another time.
* If the participant has risk or issues that warrant a medical visit, ask them to follow-up with their family doctor or GP
* Moderate to high FRAX score (particularly for persons over age 50)
* Taking high risk drugs (Beers list, others)
* Presence of chronic conditions uncontrolled by current drug therapies

*“Thank you for participating in this event. We hope you found it useful. Do you have any feedback that we can use to make this event better in the future?“*

* Make note of the feedback
1. [http://www.cmaj.ca/content/early/2010/10/12/cmaj.100771.full.pdf+html?ijkey=edc6c6048e7d4acdc41368fe3f1e622bf5a2deac&keytype2=tf\_ipsecsha](http://www.cmaj.ca/content/early/2010/10/12/cmaj.100771.full.pdf%2Bhtml?ijkey=edc6c6048e7d4acdc41368fe3f1e622bf5a2deac&keytype2=tf_ipsecsha) [↑](#footnote-ref-1)