

The POWER Program: Personalized Osteoporosis Care with Early Recognition, Incorporating Virtual Tools Into an Outpatient Fracture Liaison Service

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INTRODUCTION: Individuals experiencing a fragility fracture are 2- to 4-times more likely to have another fragility fracture in the future. The COVID-19 pandemic increased existing osteoporosis care gaps, likely due to reduced assessments, screening, and testing. Provincial treatment initiation declined for oral (43%) and intravenous (26%) bisphosphonates and denosumab (35%) from March to June 2020. Without early identification, investigation, and intervention (3i model), fragility fracture incidence will continue to increase globally. Our study evaluated the feasibility, effectiveness, and patient satisfaction regarding a multidisciplinary outpatient fracture liaison service (OFLS), utilizing virtual case conferences and follow-ups and a smartphone application (app). We hypothesized that participants of the OFLS would be accepting and satisfied with incorporating virtual tools into the OFLS.

METHODS: In August 2020, we introduced a 3i OFLS for participants with a non-hip fragility fracture at a single Level 1 trauma centre. Following institutional research ethics board approval, case finding identified patients over that age of 50 with a new wrist, shoulder, or pelvis fragility fracture. The nurse completed a bone health history for each patient, followed by case discussion with the lead physician. We provided education, ordered tests, and initiated pharmacotherapy as needed. Virtual multidisciplinary case conferences were held monthly to review complex patients (Figure 1). Individualized care plans were initiated within three months of enrollment. Participants were followed for 1-year prior to transfer of care to the primary care physician with a bone health care plan. Patient satisfaction surveys were completed serially and descriptive statistics are presented.

RESULTS: Within 12 months, 128 patients were enrolled (mean age=65 [SD=9.9]; 87.5% female), with mainly distal radius (62%) and proximal humerus (21%) fractures. Fifty-four patients were reviewed in multidisciplinary case conferences, with only six requiring referrals for in-person specialist assessment. The virtual conferences required less than 10 hours of specialist time and avoided over 48 in-person consultations for a minimum estimated direct cost-savings of \$12,720 annually. An estimated 270 fragility fractures could be prevented annually at a provincial level. Thirty-nine (30.5%) patients were started on new osteoporosis medication. All patient respondents (100%) felt that the OFLS was “good” or “excellent.” Incorporation of virtual tools, including a smartphone app (Figure 1) were well-received by participants and additional educational material has been added based on iterative participant feedback.

DISCUSSION: Given the aging global population, identification and intervention at the time of a sentinel fragility fracture is paramount for future fragility fracture prevention, cost savings, and improved clinical outcomes. Therefore, lessons learned from the COVID-19 pandemic restrictions and the resultant increase in osteoporosis care gaps were addressed in this novel outpatient fracture liaison service design that incorporated virtual tools, such as a smartphone app, as well as remote follow-up assessments and multi-disciplinary case conferences. The results of this study support the implementation of digital health solutions with an outpatient fracture liaison service setting to improve patient satisfaction and engagement. Given the substantial direct cost-savings with this health care delivery model, future directions include economic analysis that includes indirect cost savings as well.

SIGNIFICANCE/CLINICAL RELEVANCE: Our study utilized virtual tools to improve osteoporosis education, evaluation, and treatment, and demonstrated promising patient satisfaction, cost-savings, and feasibility. Future directions include broad implementation of a virtual OFLS to quantify economic impact and fracture prevention.

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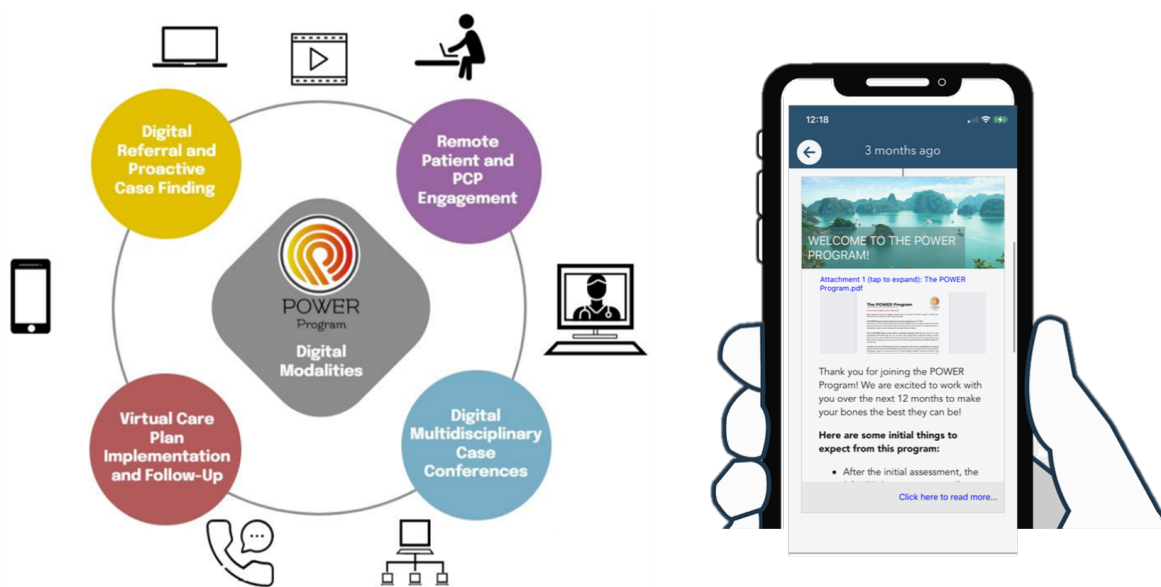


Figure 1: Summary of the digital modalities employed in the Personalized Osteoporosis Care with Early Recognition (POWER) outpatient fracture liaison service (left), including the personalized smartphone application (right).