TABLE E-1 Patient Fracture Information According to Intervention Group

	Intervention Group*	
Variable	Pre-Intervention	Post-Intervention
Residence at time of fracture		
N value	276	359
Home	227 (82%)	317 (88%)
Assisted living	10 (4%)	13 (4%)
Skilled nursing facility	33 (12%)	27 (8%)
Homeless	0	0
Unknown	6 (2%)	2 (1%)
Patient hospitalized		
N value	271	356
Yes	241 (89%)	284 (80%)
No	30 (11%)	72 (20%)
Prior fragility fracture		
N value	275	357
Yes	53 (19%)	117 (33%)
No	153 (56%)	168 (47%)
Unknown	69 (25%)	72 (20%)
Site of current fracture†		
N value	276	358
Shoulder	4 (1%)	23 (6%)
Spine	15 (5%)	13 (4%)
Knee	9 (3%)	6 (2%)
Arm	6 (2%)	12 (3%)
Hand	1 (<1%)	2 (1%)
Leg	10 (4%)	12 (3%)
Elbow	4 (1%)	5 (1%)
Pelvis	14 (5%)	18 (5%)
Ankle	22 (8%)	31 (9%)
Forearm	4 (1%)	1 (<1%)
Hip	143 (52%)	189 (53%)
Foot	0	5 (1%)
Wrist	25 (9%)	44 (12%)
Femur	46 (17%)	23 (6%)

*The values are given as the number of patients, with the percentage in parentheses where appropriate.
†Fifty-three patients had more than one current fracture. The percentages are based on the number of patients in each intervention group.

TABLE E-2 Comorbidities Known to Impact Bone Health

	Intervention Group	
Variable	Pre-Intervention	Post-Intervention
Any Comorbidities		
N value	276	359
Yes	138 (50%)	163 (45%)
No	138 (50%)	196 (55%)
Comorbidities*		
N value	137	155
Congenital porphyria	0	0
Gastrectomy	3 (2%)	2 (1%)
Inflammatory bowel disease	3 (2%)	11 (7%)
Malabsorption syndromes	4 (3%)	4 (3%)
Severe liver disease	3 (2%)	4 (3%)
Sprue	0	0
Chronic obstructive pulmonary disease	23 (17%)	28 (18%)
Amyloidosis	0	0
Ankylosing spondylitis	0	0
Cushing syndrome	0	0
Multiple sclerosis	1 (1%)	2 (1%)
Rheumatoid arthritis	15 (11%)	4 (3%)
Lymphoma and leukemia	2 (1%)	2 (1%)
Multiple myeloma	0	2 (1%)
Tumor secretion of parathyroid hormone related peptide	0	0
Stroke (cerebrovascular accident)	29 (21%)	28 (18%)
Hemochromatosis	0	0
Hemophilia	0	2 (1%)
Pernicious anemia	3 (2%)	3 (2%)
Thalassemia	0	0
Eating disorder	0	1 (1%)
Female athlete triad	1 (1%)	0
Gaucher disease	0	1 (1%)
Hypophosphatasia	0	0
Idiopathic scoliosis	3 (2%)	1 (1%)
Inadequate diet	27 (20%)	55 (35%)
Spinal cord transsection	0	0
Weight loss	11 (8%)	9 (6%)
Hyperparathyroidism	7 (5%)	3 (2%)
Hypogonadism	2 (1%)	0
Insulin-dependent diabetes	21 (15%)	16 (10%)
Mastocytosis	0	0
Thyrotoxicosis	2 (1%)	3 (2%)
Unknown	8 (6%)	7 (5%)

*Numerous patients had more than one comorbidity. The percentages are based on the number of patients recording at least one comorbidity.

TABLE E-3 Concomitant Medications That Influence Bone Health

	Intervention Group	
Variable	Pre-Intervention	Post-Intervention
Any concomitant medications		
N value	276	359
Yes	52 (19%)	80 (22%)
No	224 (81%)	279 (78%)
Concomitant medications*		
N value	51	76
Aluminum-based antacids	5 (10%)	2 (3%)
Anticonvulsant drugs	9 (18%)	12 (16%)
Cytotoxic drugs	4 (8%)	9 (12%)
Glucocorticosteroids/adrenocorticotropin	10 (20%)	15 (20%)
Gonadotropin-releasing hormone agonists	0	2 (3%)
Immunosuppressants	5 (10%)	7 (9%)
Levothyroxine at supraphysiologic doses	12 (24%)	15 (20%)
Lithium	0	1 (1%)
Long-term heparin use	1 (2%)	10 (13%)
Progesterone, parenteral, long-acting	1 (2%)	2 (3%)
Tamoxifen (premenopausal use)	1 (2%)	2 (3%)
Total parenteral nutrition	1 (2%)	0
Unknown/not documented	7 (14%)	14 (18%)

*Numerous patients were taking more than one concomitant medication known to impact bone health. The percentages are based on the number of patients recording at least one concomitant medication.

TABLE E-4 Risk Factors for Fractures

	Intervention Group	
Variable	Pre-Intervention	Post-Intervention
Any risk factors		
N value	276	359
Yes	242 (88%)	324 (90%)
No	34 (12%)	35 (10%)
Risk factors*		
N value	184	229
Personal history of fracture as an adult	31 (17%)	69 (30%)
Low body weight	21 (11%)	42 (18%)
Use of oral corticosteroid therapy for >3 months	10 (5%)	6 (3%)
Estrogen deficiency at an early age (<45 years)	4 (2%)	8 (3%)
Poor health, frailty	46 (25%)	75 (33%)
Low calcium intake	17 (9%)	10 (4%)
Alcohol in amounts >2 drinks per day	13 (7%)	6 (3%)
History of fragility fracture in 1st-degree relative	3 (2%)	9 (4%)
Current smoking	21 (11%)	20 (9%)
Past smoking	34 (18%)	57 (25%)
Dementia	24 (13%)	22 (10%)
Recent falls	64 (35%)	50 (22%)
Low physical activity	38 (21%)	44 (19%)
Impaired vision	28 (15%)	34 (15%)

*Numerous patients had more than one risk factor. The percentages are based on the number of patients recording at least one risk factor category.

TABLE E-5 Osteoporosis Medications at Time of Injury

	Intervention Group	
Variable	Pre-Intervention	Post-Intervention
Any medications		
N value	276	359
Yes	94 (34%)	135 (38%)
No	182 (66%)	224 (62%)
Medications*		
N value	81	127
Calcium and vitamin D	53 (65%)	108 (85%)
Calcitonin	1 (1%)	2 (2%)
Raloxifene	4 (5%)	3 (2%)
Alendronate	27 (33%)	45 (35%)
Estrogen/hormone therapy	2 (2%)	3 (2%)
Risedronate	6 (7%)	11 (9%)
Parathyroid hormone	2 (2%)	0
Unknown/not documented	11 (14%)	8 (6%)

*Numerous patients were taking one of the listed medications at time of injury. The percentages are based on the number of patients taking at least one of the listed medications.

TABLE E-6 2007 Physician Quality Reporting Initiative (PQRI) Physician Quality Measures that Impact Osteoporosis and Fragility Fracture Care

Screening for future fall risk	Percentage of patients aged sixty-five years and older who were screened for future fall risk (patients are considered at risk for future falls if they have had two or more falls in the past year or any fall with injury in the past year) at least once within twelve months
Osteoporosis: communication with physician managing ongoing care post fracture	Percentage of patients aged fifty years and older treated for a hip, spine, or distal radial fracture with documentation of communication with the physician managing the patient's ongoing care that a fracture occurred and that a patient was or should be tested or treated for osteoporosis
Screening or therapy for osteoporosis for women aged sixty-five years and older	Percentage of female patients aged sixty-five years and older who have a central dual-energy x-ray absorptiometry measurement ordered or performed at least once since the age of sixty years or pharmacologic therapy prescribed within twelve months
Osteoporosis: management following fracture	Percentage of patients aged fifty years and older with fracture of the hip, spine, or distal radius who had a central dual-energy x-ray absorptiometry measurement ordered or performed or pharmacologic therapy prescribed
Osteoporosis: pharmacologic therapy	Percentage of patients aged fifty years or older with a diagnosis of osteoporosis who were prescribed pharmacologic therapy within twelve months
Osteoporosis: counseling for vitamin D, calcium intake, and exercise	Percentage of patients, regardless of age, with a diagnosis of osteoporosis who are either receiving both calcium and vitamin D or have been counseled regarding both calcium and vitamin D intake, and exercise at least once within twelve months

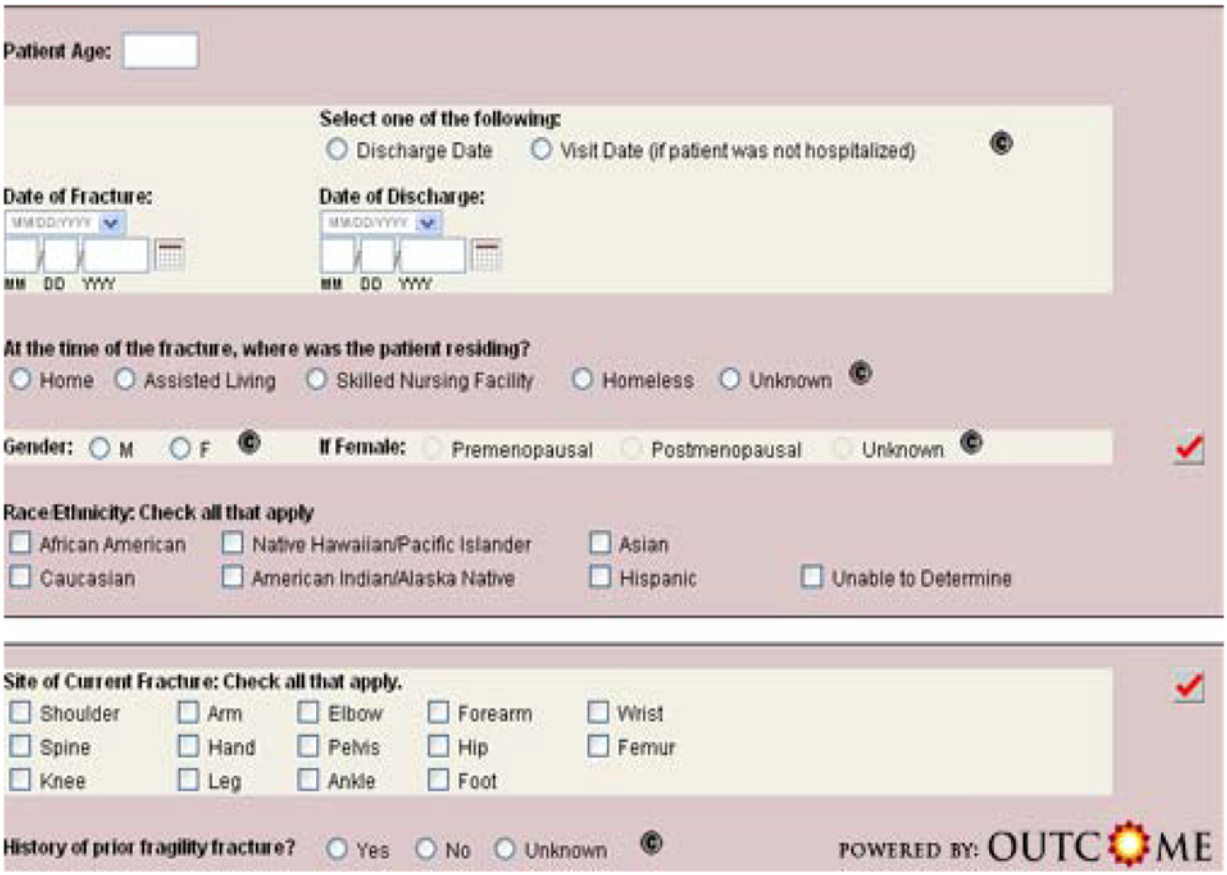

Fig. E-1

Sample screen from the Electronic Case Report Form.

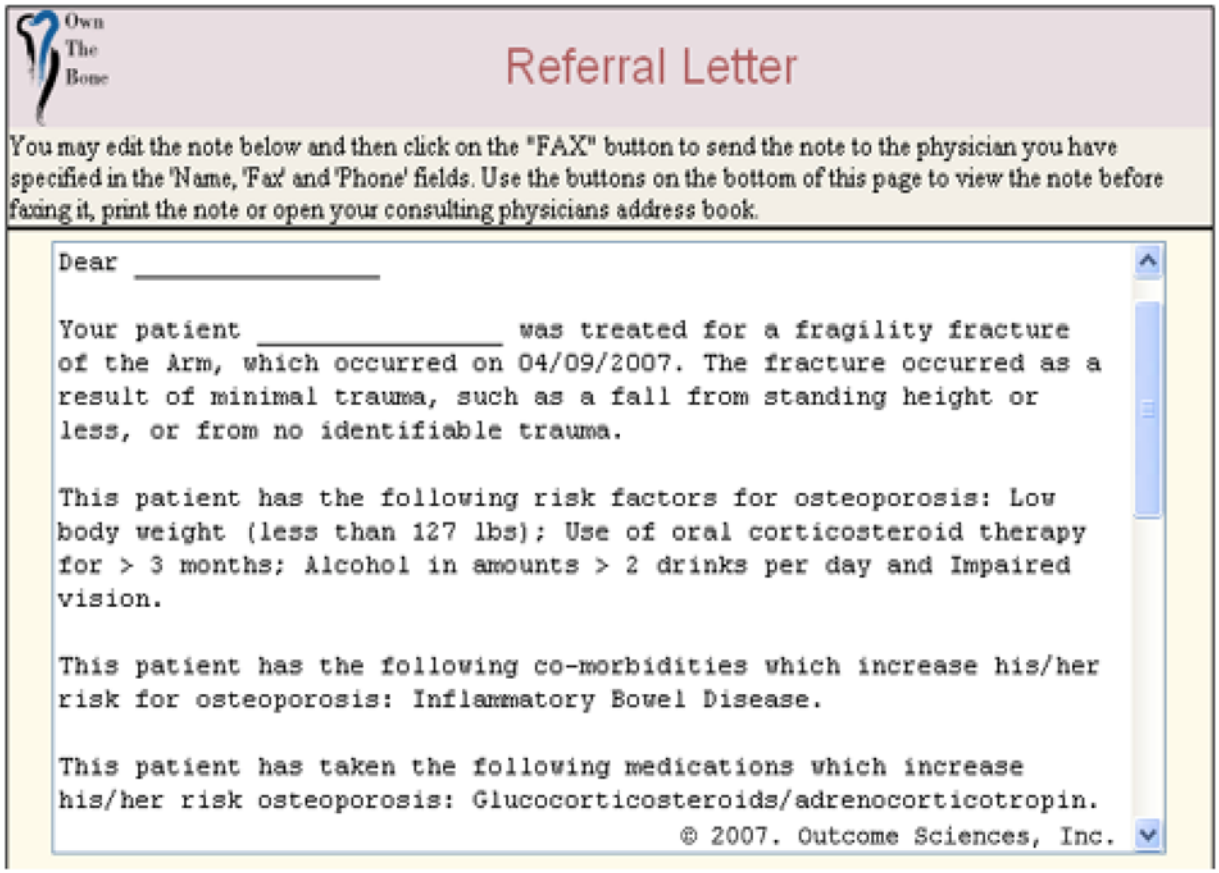

Fig. E-2

Letter to the primary-care physician, automatically generated from the Electronic Case Report Form data.

Own the Bone Library

This page is a compilation of helpful resources from the Own the Bone community. Please feel free to use these documents to generate ideas for enhancing and refining your own processes. If you have documents to submit please email the Outcome Help Desk.

Columbia Presbyterian Medical Center

- Case Study - A brief overview of the Columbia process.
- Fall Prevention Sticker - A copy of the fall prevention sticker placed by the bed of all at-risk patients
- English Patient Letter - Patient letter in English used at Columbia.
- Spanish Patient Letter - Patient letter in Spanish used at Columbia.

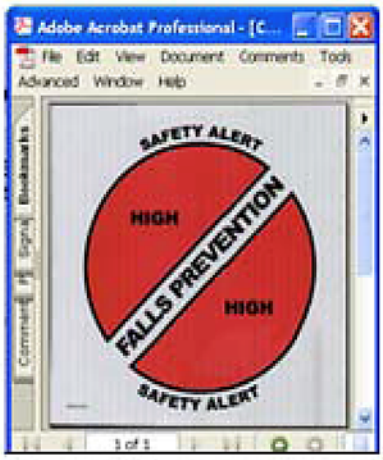

Fig. E-3

Shared resources collected from the participating sites made available for download from the web site.