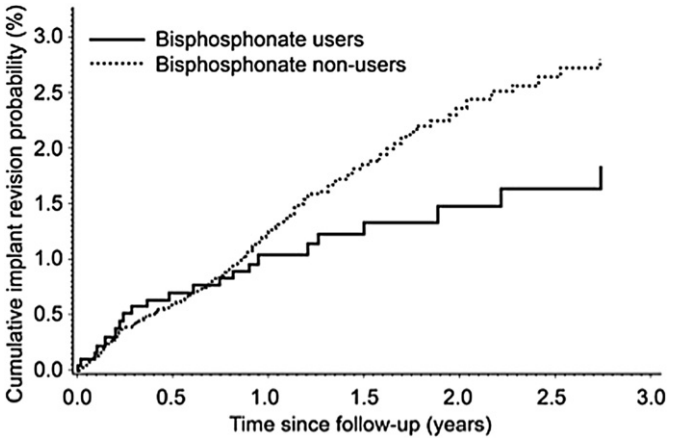
between BP use and age, sex, joint replaced (hip/knee), and prior fracture on outcome by introducing multiplicative terms in the equation.
Results: 80,342/95,392 (84.2%) subjects were eligible. We identified 1,950 (2.4%) BPU, and 1,911 (98.0%) of them were matched to 10,755 BPNU. In total, 226/12,666 (1.78%) of the participants (22/1,911 BPU and 204/10,755 matched BPNU) underwent revision surgery during study follow-up (median 1.11 years, inter-quartile range 0.43-2.29 years).
Cox regression models showed reduced revision risk in BP users (propensity-matched HR 0.59; 95% Confidence Interval (CI) [0.37-0.94]) [Figure], which remained significant after multivariable adjustment for unbalanced covariates (adjusted HR 0.59; 95% CI [0.37-0.93]). This protective effect was only seen in BPU who initiated treatment post-operatively (adjusted HR 0.36 ; 95% CI [0.15-0.84]) and not in those starting pre-op (adjusted HR 0.77; 95% CI [0.44-1.35]), and who remained on treatment for at least one year: adjusted HR 0.50; 95% CI [0.27-1.00] for those treated for 1-2 years compared to adjusted HR 1.29; 95% CI (0.80-2.08) in those treated for 6-12 months. Patients with the highest adherence benefited the most (adjusted HR 0.53; 95% CI (0.30-0.95)) in BPU with MPR>0.8).
The effect of BPU on implant survival was not modified by age, gender, fracture history or joint replaced (all p for interactions>0.2).
Conclusions: BPU are at 40% reduced risk of revision compared to matched BPNU. These results are similar to previous findings using similar retrospective data from the UK [Prieto-Alhambra D et al. BMJ 2011]. Confirmation of these beneficial effects in formal randomized controlled trials is urgently needed.



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ASSOCIATION OF BIOMARKERS WITH OSTEOARTHRITIS PROGRESSION BASED ON MRI: RESULTS FROM THE VANCOUVER KNEE OSTEOARTHRITIS PROGRESSION (KOAP) STUDY

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Purpose: To determine the association of biomarkers with progression of osteoarthritis (OA), based on MRI, in a population-based cohort of predominantly pre-radiographic disease.
Methods: Population-based longitudinal cohort study of subjects, age 40 to 79, with knee pain. Subjects were evaluated at baseline and follow-up (FU) using detailed clinical assessments, knee x-ray, MRI (1.5T) and biomarkers. MRI of cartilage (MRC) was scored 0-4 on six joint surfaces. Progression was defined on MRI as an increase in MRC score of $\geq$1 grade on at least 2 cartilage surfaces or an increase of MRC score of $\geq$2 grades on at least 1 cartilage surface. Urine biomarkers included C-telopeptide of type II collagen (uCTX-II) (Nordic Bioscience), type II and type I and II collagen cleavage neoepitopes (uC2C, uC1,2C) (Ibex), N-telopeptide of type I collagen (uNTX-I) (Ostex). Serum biomarkers included sC1,2C, sC2C, c-propeptide of type II procollagen (sCPII), 846 epitope (sCS846) (Ibex), cartilage oligomeric matrix protein (sCOMP) (AnaMar) and hyaluronic acid (sHA) (Corgenix). Ratios of type II collagen degradation with synthesis markers were also evaluated. Biomarker data were log transformed. Exponential regression analysis was used to determine the association of each biomarker with OA progression, adjusted for age, gender, BMI and joint count. All analyses utilized longitudinal stratum sampling weights to ensure generalizability of results.
Results: Of 255 subjects seen at baseline, 163 (63.9%) were assessed at a median FU of 3.2 years (range 2.5-5.1). Of these, 60.6% had KL grade <2, mean age was 57.6 years. MRI progression was present in 15.5% of subjects. Biomarkers significantly associated with OA progression included uCTX-II (HR 2.28; 95% CI 1.00, 5.16), sCPII (HR 0.58; 95% CI 0.34, 0.99), as well as ratios of uCTX-II/sCPII (HR 1.78; 95% CI 1.17, 2.72), uC1,2C/sCPII (HR 1.52; 95% CI 1.08, 2.16) and sC2C/sCPII (HR 2.15; 95% CI 1.05, 4.39) (Table 1).

Table 1

Biomarkers	Hazard Ratio (95% CI)
uNTX-I	**1.80 (0.83, 3.90**
uCTX-II	2.28 (1.00, 5.16)
uC2C	1.06 (0.57, 1.97)
uC1,2C	1.29 (0.88, 1.89)
sHA	1.44 (0.79, 2.63)
sCS846	**1.32 (0.49, 3.56)**
sCPII	0.58 (0.34, 0.99)
sCOMP	2.58 (0.48, 13.90)
sC2C	0.53 (0.15, 1.87)
sC1,2C	**1.61 (0.52, 4.94)**
uCTX-II/sCPII	1.78 (1.17, 2.72)
uC2C/sCPII	**1.44 (0.93, 2.21)**
uC1,2C/sCPII	**1.52 (1.08, 2.16)**
sC2C/sCPII	2.15 (1.05, 4.39)

Conclusions: In this population-based cohort of predominantly pre-radiographic knee OA, uCTX-II and sCPII were both significantly associated with OA progression. As well, ratios of uCTX-II/sCPII, uC1,2C/sCPII and sC2C/sCPII were significantly associated with OA progression with similar strengths of association. These biomarkers may be useful in future studies aimed at evaluating OA disease progression in epidemiologic studies and clinical trials.

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SIMPLIFIED CLINICAL PREDICTION MODEL FOR OSTEOARTHRITIS PROGRESSION BASED ON MRI: RESULTS FROM THE VANCOUVER KNEE OSTEOARTHRITIS PROGRESSION (KOAP) STUDY

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Purpose: To determine the clinical predictors of osteoarthritis (OA) progression based on cartilage damage on MRI in a population-based cohort of predominantly pre-radiographic knee OA and to develop a simplified model to identify those at risk of progression with high specificity for practical application in clinical trials.
Methods: Population-based longitudinal cohort study of subjects, age 40 to 79, with knee pain. Subjects were evaluated at baseline and follow-up (FU) using detailed clinical assessments, standardized knee examination, fixed-flexion knee x-ray and MRI (1.5T). X-rays were read for Kellgren-Lawrence (KL) 0-4 grade. MRI of cartilage (MRC) was scored 0-4 on six joint surfaces by a blinded reader. OA progression was defined on MRI as an increase in MRC score of $\geq$1 grade on at least 2 cartilage surfaces or an increase in MRC score of $\geq$2 grades on at least 1 cartilage surface. Exponential regression analysis was used to develop a prediction model for OA progression. The model was evaluated based on prediction accuracy, Akaike's Information Criterion (AIC) and C-index, where a 1.0 score indicates a perfect model fit. The model was then simplified by removing variables and evaluating the impact on the model accuracy and C-index. All analyses utilized longitudinal stratum sampling weights to maintain generalizability.
Results: Of 255 subjects seen at baseline, 163 (63.9%) were assessed at a median FU of 3.2 years (range 2.5-5.1). Of these, 60.6% had KL grade