Figure 1. the photo of the multimodal PA/US imaging system

Figure 2. an example of the PA/US imaging

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THU0545

THE ASSOCIATION OF RHEUMATOID ARTHRITIS WITH HEALTH CARE COSTS FROM THE PAYERS PERSPECTIVE FROM 2001-2015

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Background: Costing studies require long-term follow-up data ideally within a homogenous payment structure without multiple potential insurers. We examined trends in associated costs of rheumatoid arthritis from the public payer's perspective over time.

Objectives: The purpose of this study was to measure the population RA associated direct and indirect health care costs using statistical attribution methods among a population with identical health care coverage.

Methods: The study was matched longitudinal study of patients with algorithm defined RA residing in Ontario Canada with an RA diagnosis from 2001-2016 (n=104,933). Cases were matched 1:1 during the year of first diagnosis to 2 distinct control groups without RA. Control group 1 were matched on year of birth, and sex (underlying costs). Control group 2 were matched on year of birth, sex, and medical history. Medical history was measured using The John Hopkins Expanded Diagnostic Clusters, a tool that categorizes people with similar conditions based upon their use of healthcare services (physician visits, hospitalizations, emergency department visits, ambulatory care). After matching, healthcare costs were reported in 2015 Canadian Dollars (CAD) overall and by cost sub-category by exposure group and calendar year before versus after RA diagnosis. RA-associated costs were measured as the difference in costs among RA patients and their corresponding matched comparators.

Results: At the year of diagnosis, RA cases were predominantly female (70%, n=72,873), mean year of birth 1950, (SD=17.7, Range=1910-2000), with mean year of diagnosis 2006, (SD=6.3, Range=2001-2016). RA patients experienced increased indirect cost acquisition compared to the direct costs of RA alone. The health care costs of RA patients were identical to age/sex/medical history matched controls yet rising up until 2 years before RA diagnosis where they diverged from age/sex/disease matched controls \$3,585/ptyr compared to \$3,352/ptyr. The costs of RA patients were highest \$8,468 CAD/ptyr (\$888,572,644 total) in the year of diagnosis declining to a steady state by 2 years post diagnosis \$7,867/ptyr with a slight increase in costs by 8 years post diagnosis \$8,035/ptyr in (Figure 1). Differences age/sex matched controls were detectable throughout the study time period even up to 19-years pre-diagnosis. In the year of diagnosis, the direct costs of RA were \$4046/ptyr (8468-4422), while the indirect costs of RA were \$1254/ptyr (\$4422-\$3168) and the underlying age-sex specific costs were \$3,168/ptyr. Our analysis suggest that both the direct and inflammatory costs of RA are growing over time compared to matched controls (Figure 1) by year 8 the direct joint-related costs of RA were 2528 (8035-5507) the indirect costs were 1,144 (5507-4363) and the age/sex underlying costs were 4,363.

Figure 1. Annual Per-Patient Total Health Care Costs Over Time Grouped by Exposure Before and After Rheumatoid Arthritis Diagnosis

Conclusion: The costs of RA have grown over time with medications representing a smaller than expected portion of total costs but a large increase in costs relative to matched controls. These results indicate that the direct costs of RA are decreasing over time compared to matched controls at 8 years post diagnosis

and that over time, the indirect associated portion of costs remains almost constant, showing that over time the costs of indirectly related issues are becoming a larger proportion of total costs. Methodological advancements in costing attribution over time could contribute to understanding the patterns in health care resource usage among populations with chronic diseases.

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THU0546 HEALTHCARE COSTS OF NOT ACHIEVING REMISSION IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Guidelines recommend sustained remission as a treatment goal for patients with rheumatoid arthritis (RA). However, only one-third of patients are known to achieve this goal with current treatments. A few studies have evaluated the impact of remission in a real-world setting, but evidence is limited to the elderly population.

Objectives: To understand the impact of remission on healthcare costs by comparing overall and RA-related direct healthcare costs and resource use in patients with RA who maintain vs those who do not maintain remission using a real-world database.

Methods: Data for this retrospective cohort study were derived from Optum electronic health records linked to claims from commercial and Medicare Advantage health plans in the United States. Patients with ≥ 2 diagnoses for RA, ≥ 1 Disease Activity Score 28 (DAS28-CRP/ESR) or Routine Assessment of Patient Index Data 3 (RAPID3) measurement, and continuous medical and pharmacy coverage 6 months before and 1 year after the index date were included. Two cohorts were created: remission and non-remission. Remission was defined as DAS28 < 2.6 or RAPID3 ≤ 3.0 . In the remission cohort, the index date was defined as the first date remission was achieved. In the non-remission cohort, the index date was defined as the first date of DAS28 or RAPID3 measurement. Outcomes were all-cause and RA-related total, medical, and prescription costs; healthcare resource use (number of inpatient, emergency department [ED], outpatient, and other visits); and number of prescriptions within 1 year of index date. A weighted generalized linear model and binomial regression were used to estimate adjusted annual direct costs and healthcare resource use, respectively. Confounding between cohorts due to age, sex, race and comorbidities using the Elixhauser index was controlled for in the models.

Results: A total of 335 patients with RA (remission cohort: 125; non-remission cohort: 210) met the study inclusion criteria. Annual all-cause total direct costs in the remission cohort were significantly less than in the non-remission cohort (\$30,427 vs \$38,645, respectively; cost ratio (CR)=0.79; 95% CI: 0.63, 0.99). All-cause medical costs were significantly lower in the remission cohort than in the non-remission cohort (Figure 1); furthermore, among all-cause medical costs, outpatient visit costs were significantly lower in the remission than in the non-remission cohort. All-cause resource use (mean number of visits) was less in the remission vs non-remission cohort: inpatient (0.23 vs 0.63; visit ratio (VR)=0.36; 95% CI: 0.19, 0.70), ED (0.36 vs 0.77; VR=0.47; 95% CI: 0.30, 0.74), and outpatient visits (20.7 vs 28.5; VR=0.73; 95% CI: 0.62, 0.86). Annual RA-related total direct costs were similar in both cohorts (Figure 2); however, RA-related medical costs were numerically lower in the remission vs non-remission cohort (\$8,594 vs \$10,002, respectively; CR=0.86; 95% CI: 0.59, 1.25). RA-related resource use (mean number of visits) was less in the remission vs non-remission cohort: inpatient (0.15 vs 0.22; VR=0.67; 95% CI: 0.35, 1.30), ED (0.04 vs 0.13; VR=0.31; 95% CI: 0.10, 0.95), and outpatient visits (5.4 vs 7.4; VR=0.72; 95% CI: 0.58, 0.91).

Conclusion: Significant economic burden was associated with patients who did not maintain remission compared with those who maintained remission. Although outpatient visits were the driver of medical costs in both groups studied in this analysis, the contribution of outpatient visits was greater among those who did not maintain remission.

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THU0547 ESTIMATION OF THE IMPACT OF A STRATEGY TO OPTIMIZE COSTS ON NATIONAL HEALTH-CARE SYSTEM IN PATIENTS WITH RHEUMATOID ARTHRITIS: A DIRECT COST ANALYSIS

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Background: Rheumatoid arthritis (RA) is a disease associated with a high and increasing direct cost to the health-care resources. It is estimated that about 250,000 persons may have RA in Colombia. The characteristic joint damage and disability associated to RA increase slowly over many years (10–20 years).

Objectives: To assess the development of RA in Colombian-population over the next five-years and to estimate the impact of a strategy to reduce direct-costs on the national health-care system.