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AB1173

RHEUMATOLOGIST CARE IS ASSOCIATED WITH FEWER EMERGENCY ROOM VISITS BY PERSONS WITH GOUT

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Background: Gout is one of the most common inflammatory arthropathies. By searching a large administrative data base (Symphony Integrated Database), we found that persons with acute gout see a rheumatologist infrequently, whereas less than 50% of advanced gout patients are seen by a rheumatologist. Notably, however, gout patients seen by rheumatologists have more frequent urate measurements and are prescribed urate lowering therapy more frequently. This study sought to determine whether involvement of a rheumatologist in gout care had a positive impact on health outcomes

Objectives: To determine whether involvement of a rheumatologist had a positive impact on health outcomes of patients with gout.

Methods: We carried out a retrospective analysis to identify persons with gout over an approximately 3-year period from October 2015 to December 2018. This study used data from the Truven Marketscan® database, an administrative database covering over 190 million patients across the United States and based on fully adjudicated and paid insurance claims. Patients were identified as having gout if they were >18 years of age and had at least two medical claims for the diagnosis of gout on different days, separated by at least 3 months. Patients with acute gout were identified by ICD-10 code M10.*, chronic nontophaceous gout (M1A.***) and tophaceous gout (M1A.***) and uncontrolled gout (M10.*, M1A.*), the latter manifested by three gout codes (any) in the primary diagnosis position and three urate measurements within the same calendar year. Particular attention was placed on Emergency Room (ER) visits by individuals in each category and by individuals who had been evaluated by a rheumatologist.

Results: We identified 284,877 gout patients. The median age was 59.2 years and 79.0% were male. Of the 230,998 persons coded as acute gout, 10.7% were seen by a rheumatologist, whereas 26.9% of the 32,942 coded as chronic nontophaceous gout, 47.2% of the 7,723 coded as tophaceous gout and 43.6% of the 13,514 coded as uncontrolled gout were seen by a rheumatologist. In each gout category, the frequency of ER visits was significantly reduced in persons who had been seen by a rheumatologist (Table 1). In acute gout, the frequencies of ER visits in those with and without rheumatologist care were 5.6% vs 6.6% (p<0.001), respectively. In chronic nontophaceous gout it was 5.5% vs 6.7% (p=0.001); in tophaceous gout it was 10.3% vs 14.7% (p<0.001); and in uncontrolled gout it was 12.8% vs 19.0%, respectively. If the frequencies of rheumatologist-associated gout patient ER visits were applied to all gout subjects, there would have been 3,088 less ER visits in this cohort of gout patients.

Table 1.

Population	Overall N	Rheumatology Breakdown			Emergency Room Visits		
		W/ Rheumatology	Patients	%	With Gout ER Visit (%)	p-value (comparing %)	ER Visits* Per Patient
Acute Gout	230,698	Yes No	24,638 206,060	10.68% 89.32%	1373 (5.57%) 13632 (6.62%)	<0.001	1.47 1.53
Non-Tophaceous	32,942	Yes No	8,863 24,079	26.90% 73.10%	486 (5.48%) 1601 (6.65%)	<0.001	1.95 2.39
Chronic Tophaceous	7,723	Yes No	3,648 4,075	47.24% 52.76%	376 (10.31%) 597 (14.65%)	<0.001	2.78 2.89
Uncontrolled	13,514	Yes No	5,886 7,628	43.55% 56.45%	753 (12.79%) 1452 (19.04%)	<0.001	2.06 2.56

* ER Visits are only included in this analysis if the primary diagnosis code on the claim is a gout code (M10.X, M1A.X)

Conclusion: There appears to be a positive impact of rheumatologist involvement in the care of gout patients, manifested by a significant decrease in the frequency of ER visits. Considering the inconvenience and cost of ER visits, rheumatologist care may have a significant impact on the well-being of gout patients and on the overall cost of their care.

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AB1174

TRACKING THE EFFECTS ON A CLINICAL SERVICE OF INTRODUCING ULTRASOUND FOR DIAGNOSIS OF GIANT CELL ARTERITIS: DESIGN OF A SERVICE EVALUATION USING LEAN METHODOLOGY

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Background: In our large, multi-site hospital, patients with suspected GCA are started promptly on high-dose prednisolone but until 2019, patients waited for temporal artery biopsy (TAB) until the GCA diagnosis could be confirmed ("GCA") or refuted ("not-GCA"). Reports of the impact of introducing temporal and axillary artery ultrasound (TAUS) have mainly come from smaller hospitals. Agreement between TAUS and TAB has been reported by others with a Cohen's kappa of 0.35 [1] and 0.40 [2]. We used Lean methodology to identify metrics across 5 key domains: delivery, quality, service, morale and cost.

Objectives: To design metrics for a service evaluation to measure impact of introducing TAUS, and to test their feasibility of measurement within routine care.

Methods: Our primary driver was time from presenting to our service to diagnostic confirmation (lead time). Pathway mapping, value stream mapping and a driver diagram identified key ideas for improvement.

We chose to measure: Delivery (mean lead time for each month), Quality (proportion of patients with GCA and positive TAB/TAUS; total (cumulative) prednisolone dose in patients with not-GCA, Service (patient feedback), Morale (staff feedback) and Cost (number of patients; cost of tests per patient; overall costs). We plotted these by month on run charts and defined a significant shift as 6 consecutive monthly values below baseline median. Cohen's kappa was calculated using GraphPad QuickCalcs.

Results: Routine TAUS for suspected GCA was introduced from January 2019, alongside a multidisciplinary team monthly meeting. TAUS was done a median

of 2.5 days from referral. Agreement between TAB and TAUS results was good (Table 1). The run chart showed a significant shift in our Delivery (median lead time fell from 28.7 days to 21 days after introduction of ultrasound) and both Quality metrics (proportion of GCA with positive TAB/TAUS increased from 29% to 69%; total prednisolone dose for not-GCA fell from 1.335g to 0.846g).

Table 1. Concordance between temporal and axillary artery ultrasound (TAUS) and temporal artery biopsy (TAB) in scans performed through 2019. Cohen's weighted kappa 0.59 (including equivocal results as separate category).

	TAUS positive	TAUS negative	TAUS equivocal
TAB positive	14	1	1
TAB negative	5	27	5
TAB equivocal	0	3	0

Within Costs, average per-patient costs of TAB/TAUS declined from £1004/patient to £792/patient, but total referrals for TAB/TAUS increased from 6/month to 10/month, increasing overall costs. Staff and patient feedback (Service, Morale) revealed that further improvements to the care pathway were needed to manage the additional complexity.

Conclusion: Lean methodology identified multiple metrics for evaluating the impact of TAUS on our service. Introducing TAUS improved Delivery and Quality, but measuring Costs, Morale and Service helped identify unintended consequences. Concordance between TAUS and TAB was good. We plan to continue to improve and monitor the care pathway based on our multi-stakeholder feedback.

References:

- [1] Luqmani et al., HTA 2016
- [2] Mukhtyar et al., Clin Rheum 2019

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AB1175

BIOLOGICAL THERAPY DOSE OPTIMIZATION AND COST MINIMIZATION STUDY IN SPONDYLOARTHRITIS: UTILITY OF REDOSER TOOL

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Background:

Objectives: . To describe the percentage of spondyloarthritis patients on biological therapy (BT) optimization in clinical practice who would maintain remission or low disease activity (LDA) after 2 years of follow-up and to identify possible factors associated with relapse. To estimate the cost reduction between 2009-19

Methods: Design: A retrospective, observational longitudinal study under conditions of clinical practice. Patients: Spondyloarthritis in BT dose reduction. Inclusion criteria: Psoriatic arthritis (CASPAR criteria), and Axial Spondyloarthritis (ASAS criteria) which have been initiated BT dose reduction between 2009-2019. Patients with BT are followed prospectively by two rheumatologists in a monographic clinic of subcutaneous biological therapy every 6 months, and with their usual rheumatologist every 6 months, as well. In such, the patients are controlled and attended in clinics with a pre-established questionnaire every 3 months. Variables: **Maintained Reduction:** patients who maintained BT dose reduction since the beginning of the optimization until the index date (data collection). **Relapse at 3,6,12,24 months:** patient who had to return to usual BT dose. Other variables: demographic, time to diagnosis and evolution disease, clinical-analytical: Tender Joint Count (TJC), Swollen Joint Count (SJC), C-reactive Protein (CRP), Erythrocyte Sedimentation Rate (ESR), activity index: DAPSA, BASDAI, ASDAS and physical function: HAQ and BASFI. Previous treatment with bDMARD. Dose reduction adjustment according to REDOSER. **Cost reduction in euros** (absolute and per patient-year) of BT in patients who are in dose reduction compared to the standard care. Analysis: Descriptive, Bivariate analysis, Multivariate logistic regression (DV: relapse). The absolute cost reduction and per patient-year was calculated.

Results: 65 patients with spondyloarthritis in dose reduction were included. Table 1 main characteristics in study population. The average time since the beginning of the BT was 47.61 months (± 37.06). After 24 months of follow-up, 73.8% of patients (48) achieved a sustained reduction. All these patients accomplish remission or low disease according to different index activities [DAPSA and BASDAI median (p25-p75) = 2.3 (2.1- 2.9) and 1.5 (0.7- 2.6), respectively and ASDAS mean (SD) = 1.4 (0.54)] and a shorter time of disease evolution. The dose reduction of BT carried out from 2009 to 2019 meant a total cost savings of 584080.37€, with a patient/year cost savings of 6192.28€. We evaluated the optimization according to REDOSER and it was observed that in 53 patients (81.5%) the reduction would have been adequate and the rest was doubtful. In bivariate analysis between patients who had relapsed and those who had not, only differences were observed in the BT line used [2nd line: (5(29.4%) Vs 2(4.2%)), (p=0.025)] and a higher percentage of patients with a doubtful result of REDOSER [9(52.9%) Vs 3(6.3%), p<0.001] respectively. In multivariate analysis the only independent variable associated with relapse was a doubtful result of REDOSER [OR(IC95%), 3.46(1.18-10.17); p=0.024], R²= 40.2%

Figure 1:

Variable	Patients n=65
Sex, male, (%)	45 (69.2)
Age in year, median (p25-p75)	50.6 (41.6-57.5)
Time to diagnosis, months, median (p25-p75)	24.01 (12.0-48.1)
Disease evolution time, months, median (p25-p75)	171.4 (114.7-255.5)
Percentage of patients in dose reduction until index date, n (%)	48 (73.8%)
Clinical-analytical characteristics	
Diagnosis	
Psoriatic arthritis, n (%)	33 (50.8)
Ankylosing Spondylitis, n (%)	23 (35.4)
Non radiographic axial spondylitis n (%)	9 (13.85)
Type of affectation	
Peripheral, n (%)	27 (41.5)
Axial, n (%)	21 (32.3)
Mixed n (%)	17 (26.2)
HLA-B27 positive, n (%)	27 (41.5)
Cutaneous Psoriasis, n (%)	32 (49.2)
Uveitis, n (%)	7 (10.8)
Inflammatory Bowel Disease n (%)	2 (3.1)
sDMARD at BT dose reduction beginning	
Metotrexate, n (%)	21 (32.3)
Sulfasalazine, n (%)	4 (6.2)
Leflunomide, n (%)	3 (4.6)
bDMARD	
Enbrel, n (%)	24 (39.6)
Benepali, n (%)	7 (10.8)
Humira, n (%)	18 (27.7)
Golimumab, n (%)	11 (16.9)
Certolizumab, n (%)	0 (0)
Infliximab, n (%)	2 (3.1)
Secukinumab, n (%)	3 (4.6)
Time until dose reduction, months, mean (DE)	47.61 (37.06)
Clinical-analytical	
Basal DAPSA, median (p25-p75)	4.5 (2.2-8.2)
DAPSA 24 months, median (p25-p75)	2.3 (2.1- 2.9)
Basal ASDAS, mean (SD)	1.49 (0.73)
ASDAS 24m, mean (SD)	1.4 (0.54)
Basal BASFI, median (p25-p75)	1.1 (0.5- 2.8)
BASFI 24 months, median (p25-p75)	1.0 (0.0- 1.7)
Relapse	
Relapse at 3 months, n (%)	7 (12.1)
Relapse at 6 months n (%)	3 (6.7)
Relapse at 12 months n (%)	4 (9.5)
Relapse at 24 months n (%)	3 (8.6)
REDOSER (adequate reduction), n (%)	53 (81.5)

Conclusion: Biological therapy dose reduction in spondyloarthritis is possible in the majority of patients, maintaining remission/LDA at 24 months. This leads to a greater cost reduction and efficiency. The relapse was associated with a doubtful result in REDOSER before optimization and this tool can be very useful in the assessment of BT reduction.

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