



The JAK/STAT Signaling Pathway and its Role in Immune-mediated Inflammatory Disease: Impact on the Treatment of RA

Final Outcomes Report

Gilead Sciences ID: #02668

Series Overview

The educational intervention is comprised of two learning paths focusing on updates in treatment of immune-mediated inflammatory disease and application of emerging JAK/STAT therapies. The education was delivered via a series of regional meetings.

Learning Paths:

- Gastroenterology
- Rheumatology

Outcomes within this report are reflective of the **Rheumatology** meetings.

Of the 30 regional meetings that occurred for this educational series, 14 were focused on the Rheumatology learning path.

Overview

Activity Description: One-hour live educational visiting professorship programs (VPPs) implemented in community hospitals throughout the country that offer an update on the latest developments in emerging treatments for IBD. These meetings incorporate case presentations, didactic lectures, and/or clinical topic discussions.

Activities occurred: April 12, 2018 through December 20, 2018

Credit: 1.0 *AMA PRA Category 1 Credit™*

Sponsored by: The Academy for Continued Healthcare Learning (ACHL)

Supported by: An educational grant from Gilead Sciences, Inc.

Intended Audience: This activity is intended for gastroenterologists, and other clinicians interested in learning more about the JAK/STAT signaling pathway.

Outcomes Methodology: Activity-related changes in clinician knowledge and competence were evaluated by using evaluation assessments, and pre/post to compare baseline to post intervention/education. Self-attested changes to clinician performance was measured with a 30-day follow-up survey.

Program Information

INSTITUTION NAME	LOCATION	PROGRAM DATE	TOTAL LEARNERS	FACULTY
Norwegian American Hospital	Chicago, IL	4/12/18	51	William F.C. Rigby, MD
East Orange General Hospital	East Orange, NJ	4/17/18	31	Allan Gibofsky, MD, JD, MACR, FACP, FCLM
Our Lady of Lourdes Memorial Hospital	Binghamton, NY	5/17/18	28	William F.C. Rigby, MD
Richmond University Medical Center	Staten Island, NY	5/24/18	130	William F.C. Rigby, MD
Indiana Regional Medical Center	Indiana, PA	7/10/18	6	Allan Gibofsky, MD, JD, MACR, FACP, FCLM
Community Hospital	Grand Junction, CO	8/10/18	4	Jonathan Jones, MD
Mount Sinai Hospital	Chicago, IL	9/13/18	32	William F.C. Rigby, MD

Program Information (cont.)

INSTITUTION NAME	LOCATION	PROGRAM DATE	TOTAL LEARNERS	FACULTY
Holy Cross Hospital	Chicago, IL	9/14/18	20	William F.C. Rigby, MD
Park Plaza Hospital	Houston, TX	9/26/18	15	William F.C. Rigby, MD
St. Joseph's University Medical Center	Paterson, NJ	10/03/18	47	Allan Gibofsky, MD, JD, MACR, FACP, FCLM
Interfaith Medical Center	Brooklyn, NY	10/4/18	50	Allan Gibofsky, MD, JD, MACR, FACP, FCLM
The Brooklyn Hospital Center	Brooklyn, NY	12/11/18	59	William F.C. Rigby, MD
St. Rose Hospital	Hayward, CA	12/17/18	12	Mark Genovese, MD
East Jefferson General Hospital	Metairie, LA	12/18/18	22	Madeleine Feldman, MD

Faculty Information



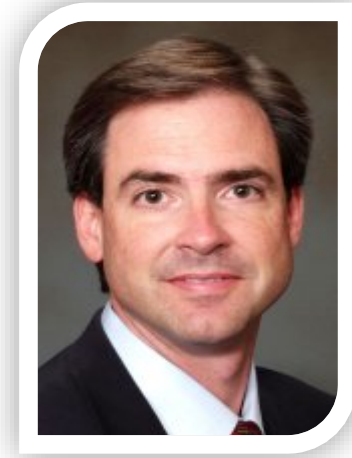
William Rigby, MD (Chair)

Professor of Medicine, Microbiology and
Immunology
Division of Rheumatology
Vice Chairman, Academic Affairs
Department of Medicine
Dartmouth Medical School
Dartmouth-Hitchcock Medical Center
Lebanon, NH



Madelaine Feldman, MD

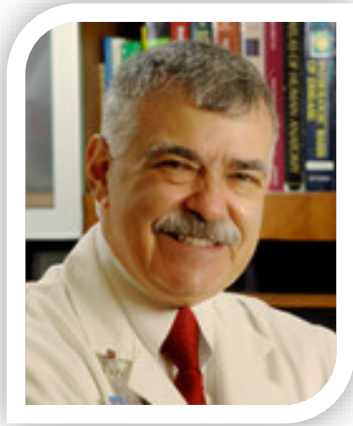
Coalition of State Rheumatology
Organizations (President)
Alliance for Safe Biologic Medicines
The Rheumatology Group
New Orleans, LA



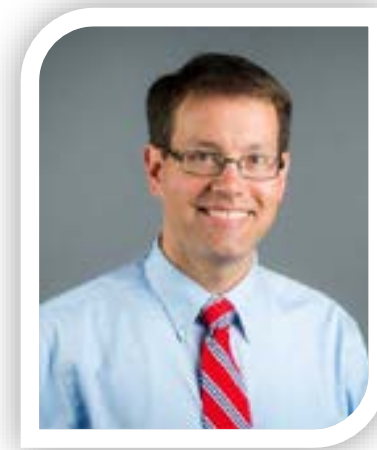
Mark Genovese, MD

James W Raitt Professor of Medicine
Division of Immunology and Rheumatology
Stanford University
Palo Alto, CA

Faculty Information (cont.)



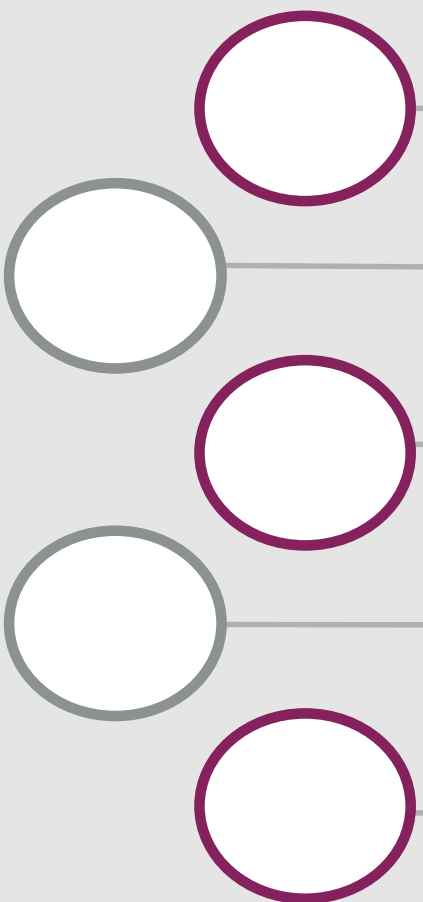
Allan Gibofsky, MD, JD, MACR, FACP, FCLM
Professor of Medicine, Healthcare Policy and Research
Weill Medical College of Cornell University
Attending Rheumatologist
Hospital for Special Surgery
New York, NY



Jonathan Jones, MD
Rheumatologist
Samaritan Rheumatology
Corvallis, OR



Executive Summary



Participation*

507 Clinical Participants; 185 Certificates Issued

Practicing Type

94% Physicians, 1% Physician Assistants, 2% NP/RNs, 3% Others

Objectivity & Balance

Objectivity and balance rated as good/excellent by 99% of learners

Learning Objectives

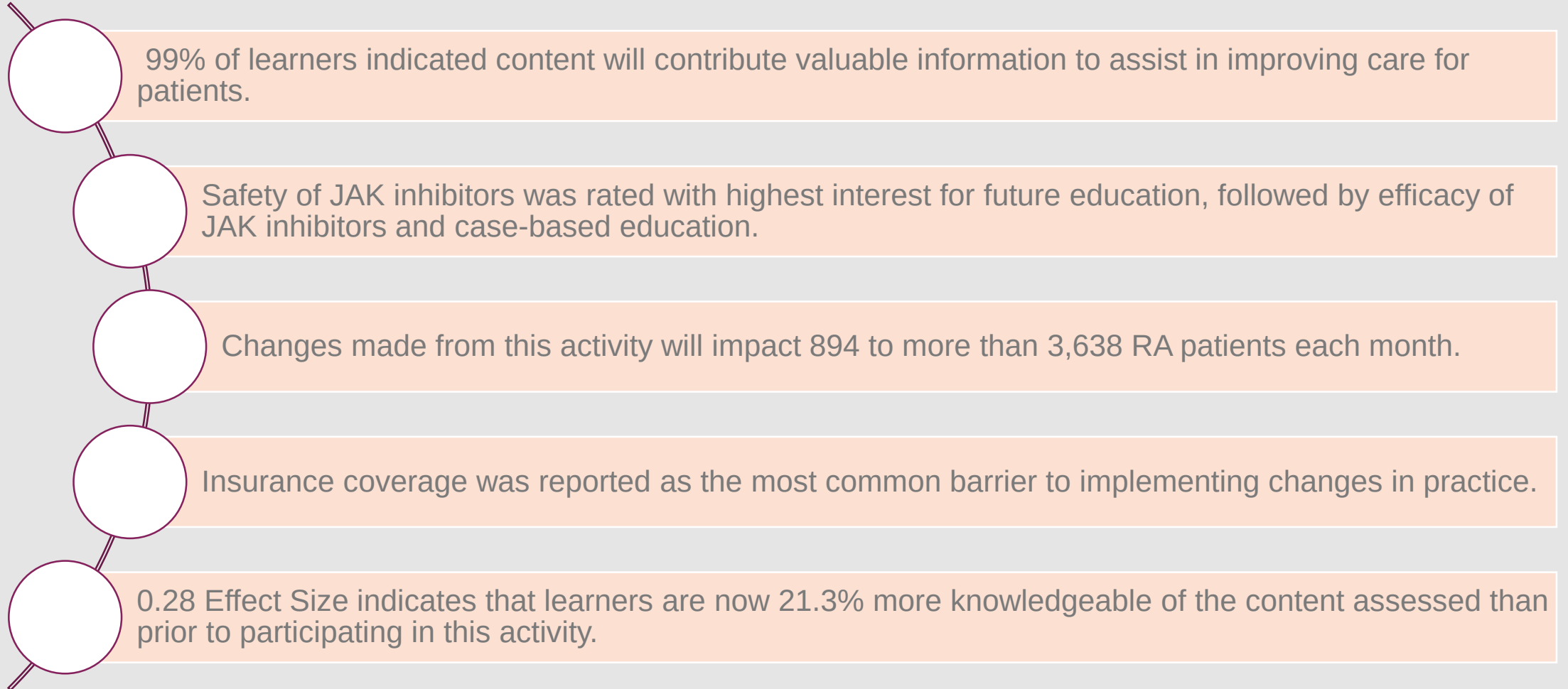
100% of learners strongly agree or agree that all learning objectives were met, with an average rating of 3.66/4.0

Faculty

Drs. Rigby, Gibofsky, Jones, Genovese, and Feldman were highly rated 3.89/4.0

**917 total learners and 360 certificates across both learning paths*

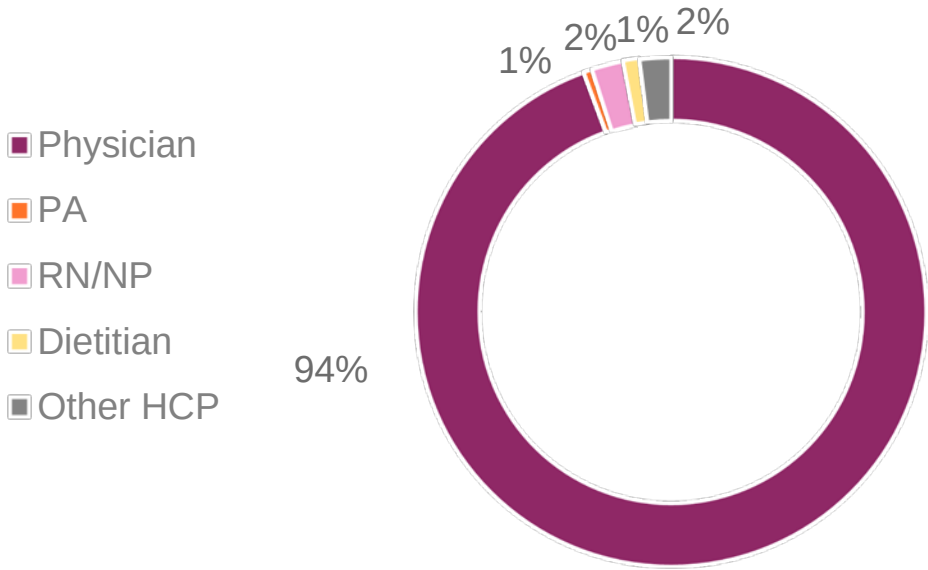
Executive Summary (cont.)



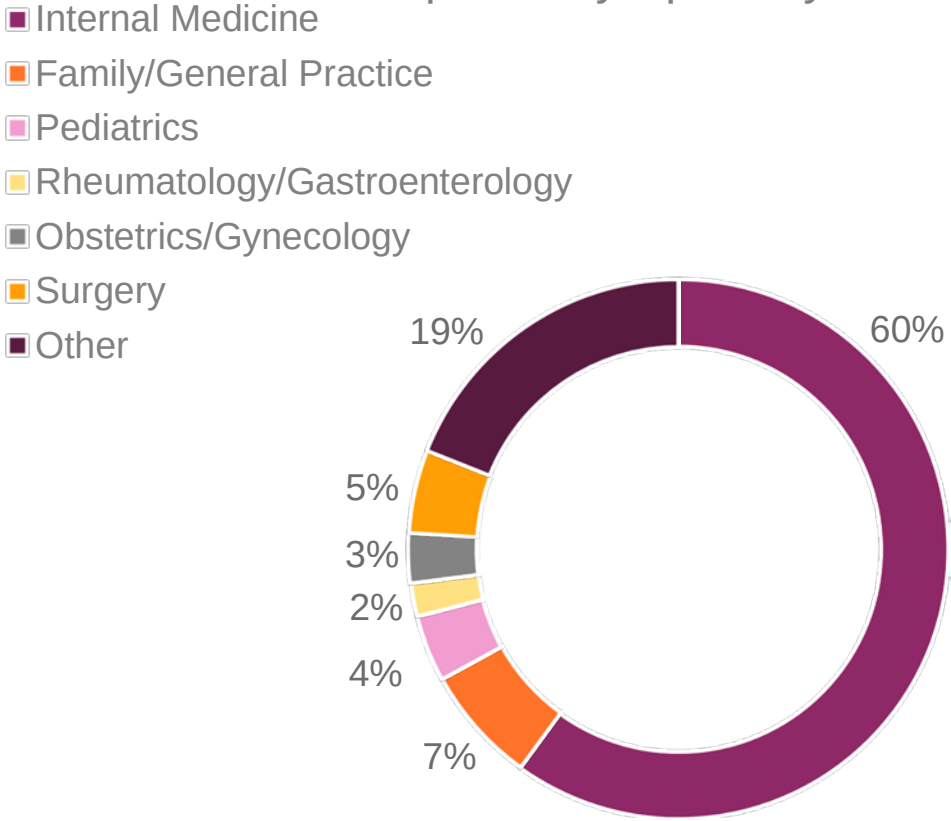
Level 1: Participation

Participants	Certificates
507	185

Participation by Clinician Type



Participation by Specialty



Level 2: Learning Objectives

Please rate the following objectives to indicate if you are better able to:	Analysis of Respondents Rating scale: 4=Strongly Agree; 1=Strongly Disagree
Outline the role of the JAK/STAT signaling pathway in the inflammation and disease progression of immune-mediated inflammatory diseases such as RA	3.71
Discuss unmet clinical needs and the need for novel targets in RA	3.60
Evaluate the use of JAK inhibitors in RA, including efficacy and safety data of available and emerging therapies	3.66

100% of learners strongly agree or agree that all learning objectives were met, with an average rating of 3.66/4.0.

97% of learners would recommend this activity to a colleague!

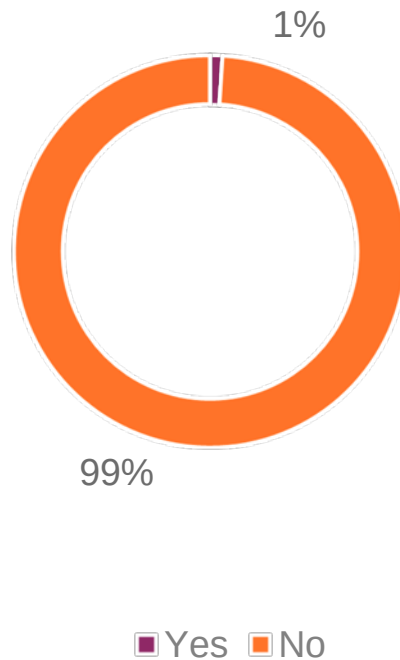
Level 2: Faculty Evaluation

Please rate the faculty on the criteria listed Rating scale: 4=Excellent; 1=Poor	Ability to effectively convey the subject matter	Expertise on the subject matter
William F.C. Rigby, MD	3.89	3.91
Allan Gibofsky, MD, JD, MACR, FACP, FCLM	3.90	3.90
Jonathan Jones, MD	4.0	4.0
Mark Genovese, MD	3.75	3.75
Madeleine Feldman, MD	3.86	3.86

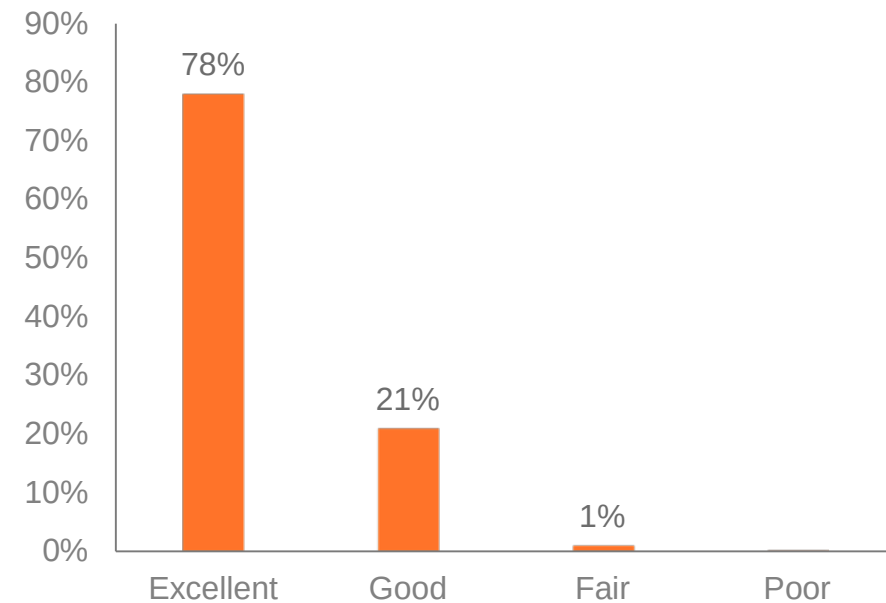
The faculty were rated good or excellent across all areas by 99% of learners, with an average rating of 3.89.

Objectivity & Balance

Did you perceive any bias?



Rating of objectivity & balance

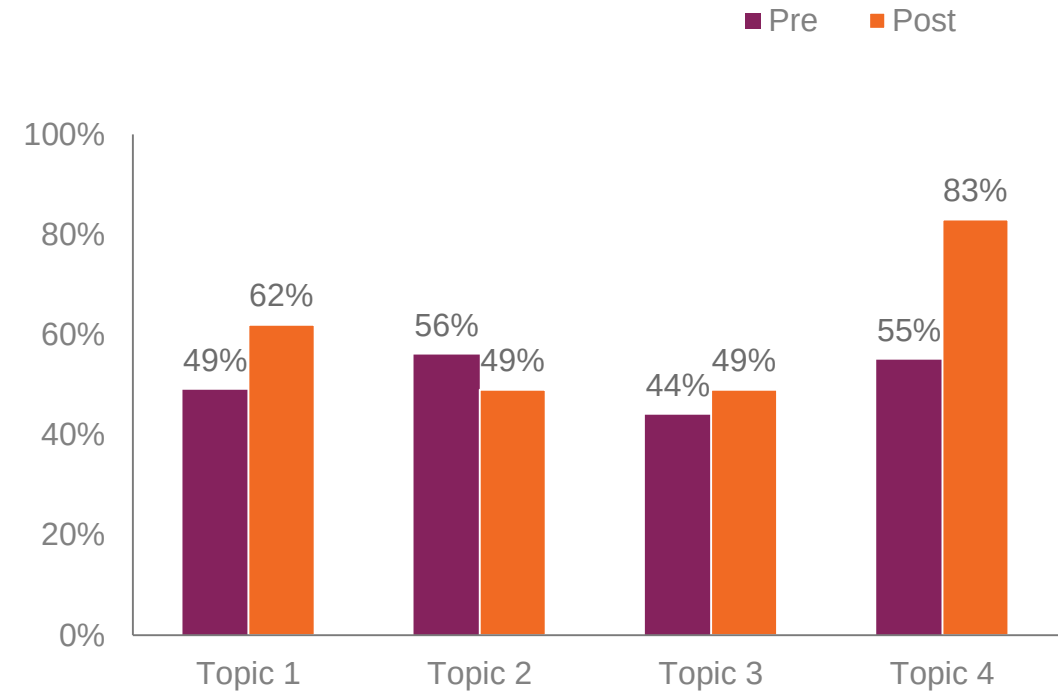


Activity was perceived as objective, balanced and non-biased.

N=180

Levels 3-4: Pretest vs. Posttest

Overview of Correct Responses	
Topic	% Change
Available and emerging JAK inhibitors	↑ 27%
Guideline recommendations	↓ - 13%
Onset of efficacy with JAK inhibitors	↑ 11%
Safety of JAK inhibitors	↑ 51%



Participants demonstrated improved knowledge and competence on three of four pre/posttest questions.

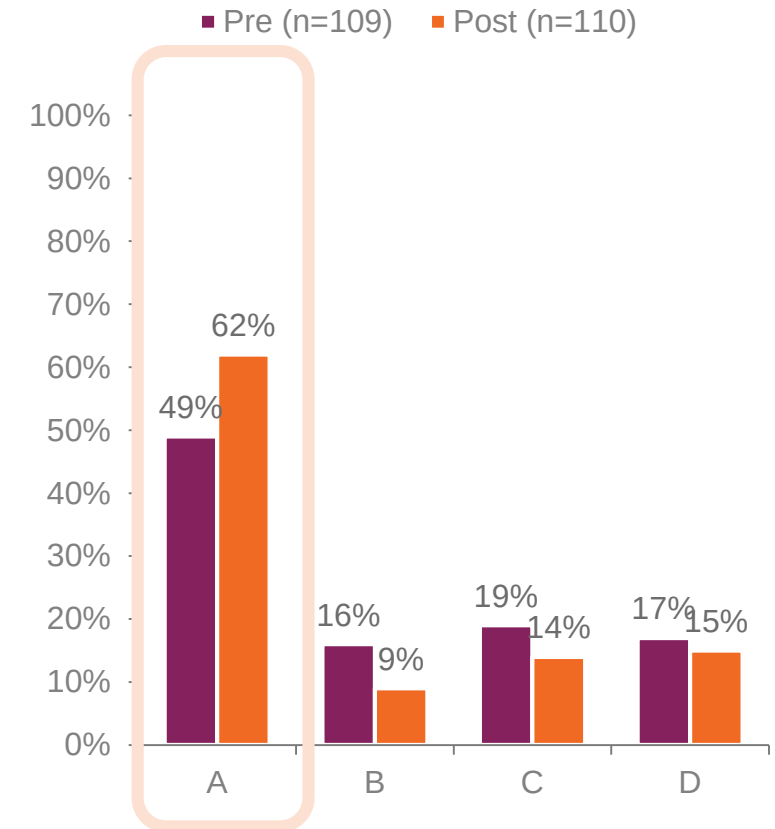
Levels 3-4: Pretest vs. Posttest

Available and emerging JAK inhibitors

The available and emerging JAK inhibitors inhibit different members of the JAK family. The investigational agent filgotinib works by inhibiting which of the following?

- A. JAK1
- B. JAK1/2
- C. JAK1/3
- D. JAK1/2/3 and Tyk2

Although learners demonstrated increased knowledge of the mechanism of action of filgotinib after their participation, these data suggest some confusion surrounding this class of agents, translating to a need for additional education.



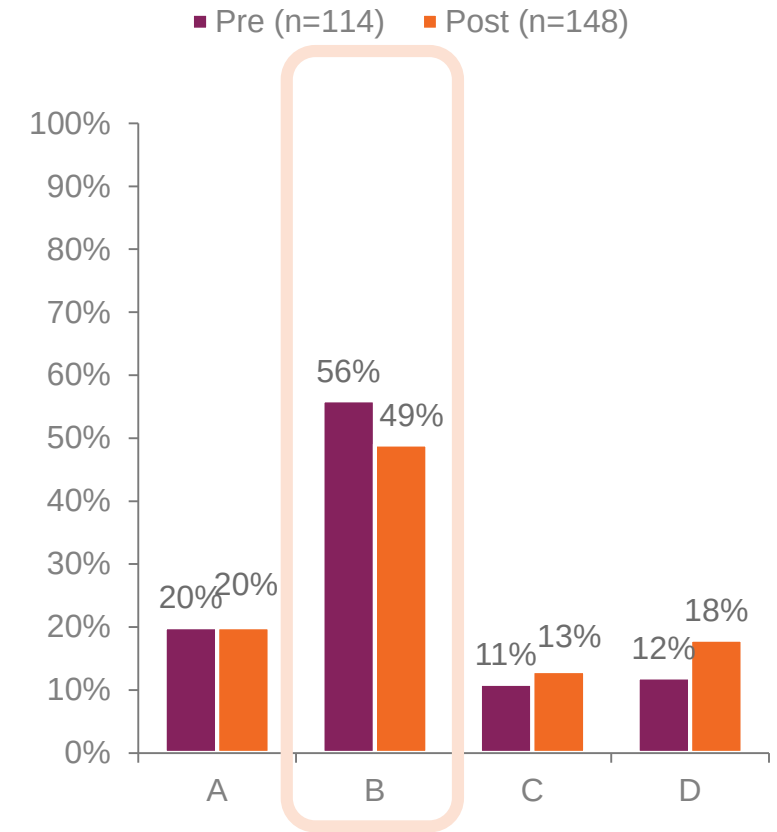
Levels 3-4: Pretest vs. Posttest

ACR guideline recommendations

The 2015 American College of Rheumatology (ACR) guidelines recommend the use of tofacitinib:

- A. After patients have an inadequate response to at least two TNF inhibitors
- B. In patients who fail MTX monotherapy or conventional DMARDs**
- C. As monotherapy in patients with early or established RA
- D. In combination with a biologic DMARD for established RA

The percentage of learners accurately identifying the ACR guideline on the use of tofacitinib decreased slightly overall. These data suggest uncertainty over the place of tofacitinib (and recently approved JAK inhibitors) in current treatment paradigms. Future education should highlight the patient populations of JAK inhibitor trials (ie, biologic-naïve vs. treatment-experienced) and include analysis of data that may inform treatment selection.



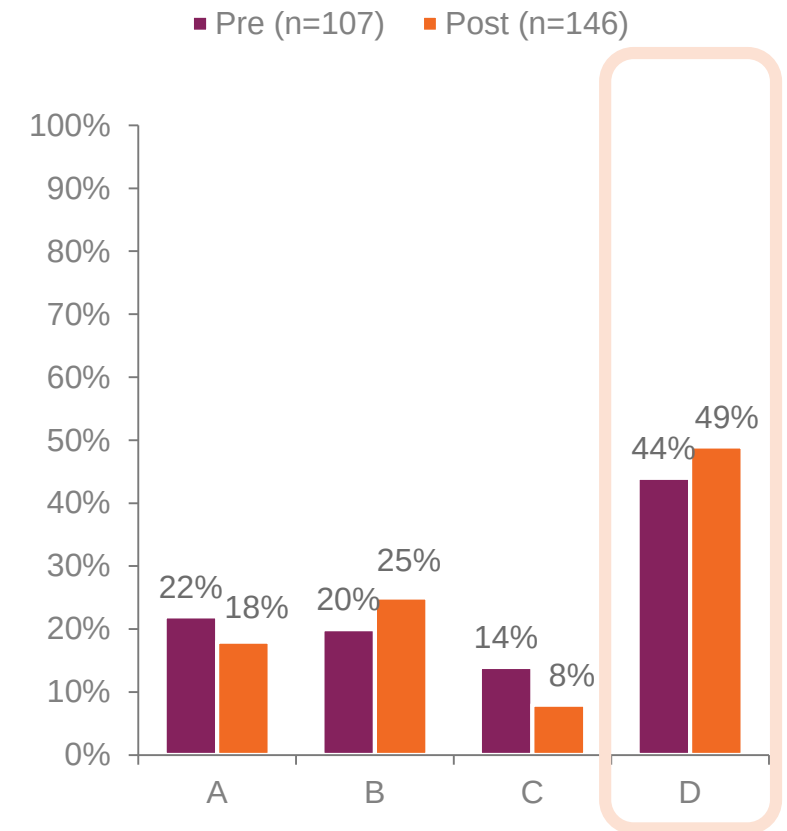
Levels 3-4: Pretest vs. Posttest

[Clinical Case Question] Onset of efficacy with JAK inhibitors

LG, a 61-year old woman with a 1-year history of RA is considering her next step in therapy after experiencing work-limiting symptoms with methotrexate. How would you counsel her on the time to onset of efficacy with the JAK inhibitors compared with the biologic agents based on randomized clinical trial data?

- A. The two classes of agents have a comparable time to onset of efficacy
- B. The time to onset of efficacy varies across the different JAK inhibitors
- C. The time to onset of efficacy with the JAK inhibitors is longer
- D. The JAK inhibitors have a faster time to onset of efficacy**

The lack of demonstrated change in knowledge and competence on this question indicates a need for education on clinical trial efficacy endpoints in future educational endeavors.



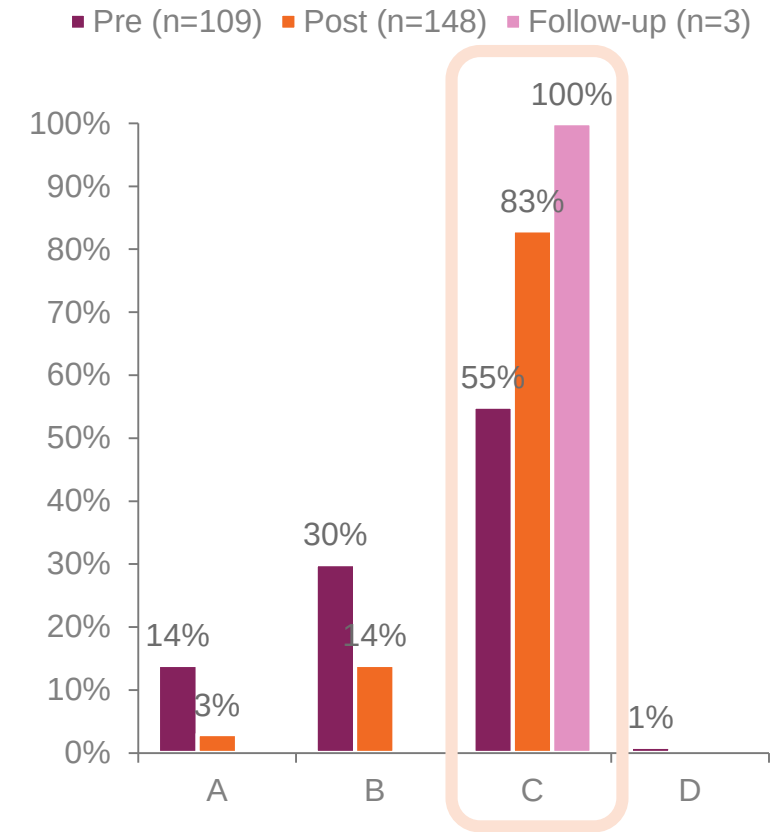
Levels 3-5: Pretest vs. Posttest

[Clinical Case Question] Safety of JAK inhibitors

AM, a 45-year old woman who is considering initiation of a JAK inhibitor asks about the potential risk of developing cancer given her knowledge of the biologic therapies. Based on a long-term analysis of the safety of tofacitinib for the treatment of RA, which of the following would you highlight as having the highest incidence rate during your discussion with AM?

- A. Malignancies
- B. Serious infections
- C. Herpes zoster infection**
- D. GI perforations

The proportion of learners correctly answering this question increased by 51% post-activity, suggesting increased knowledge of the accumulating safety data with the JAK inhibitors and how they differ from the biologics. In a 30-day follow-up survey, 100% of respondents correctly identified herpes zoster infection as having the highest incidence rate associated with the use tofacitinib to treat RA.



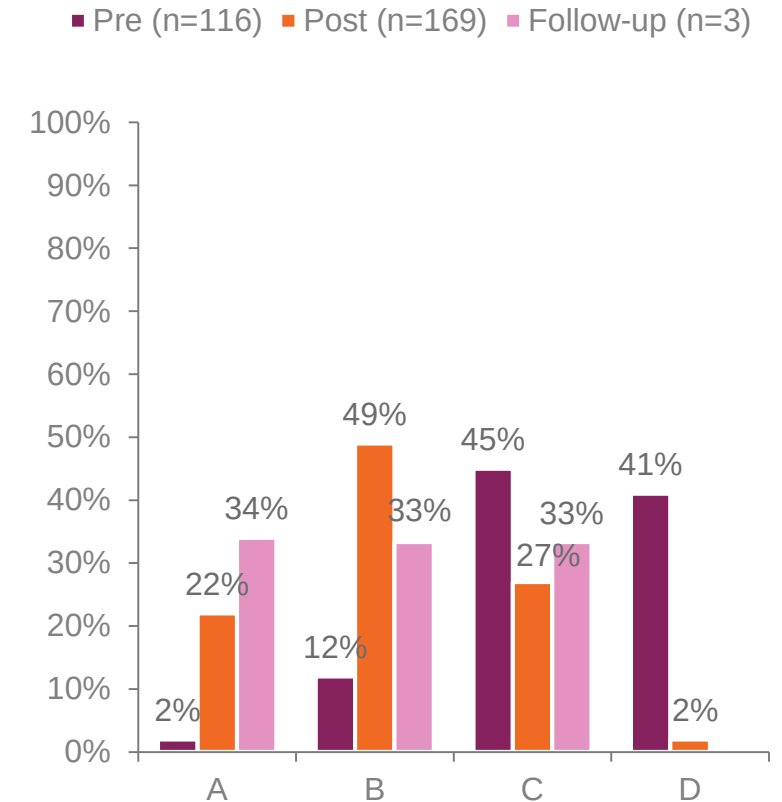
Prescribing Behavior Confidence

Confidence in prescribing JAK inhibitors for patients with RA

How confident are you in prescribing available JAK inhibitors for your patients with RA?

- A. Very confident
- B. Somewhat confident
- C. Not confident
- D. Not at all confident

Learner confidence in prescribing the available JAK inhibitors increased as a result of this educational intervention from 14% pre-activity to 71% post-activity. A 30-day follow-up showed some slippage with 66% indicating confidence prescribing JAK inhibitors.



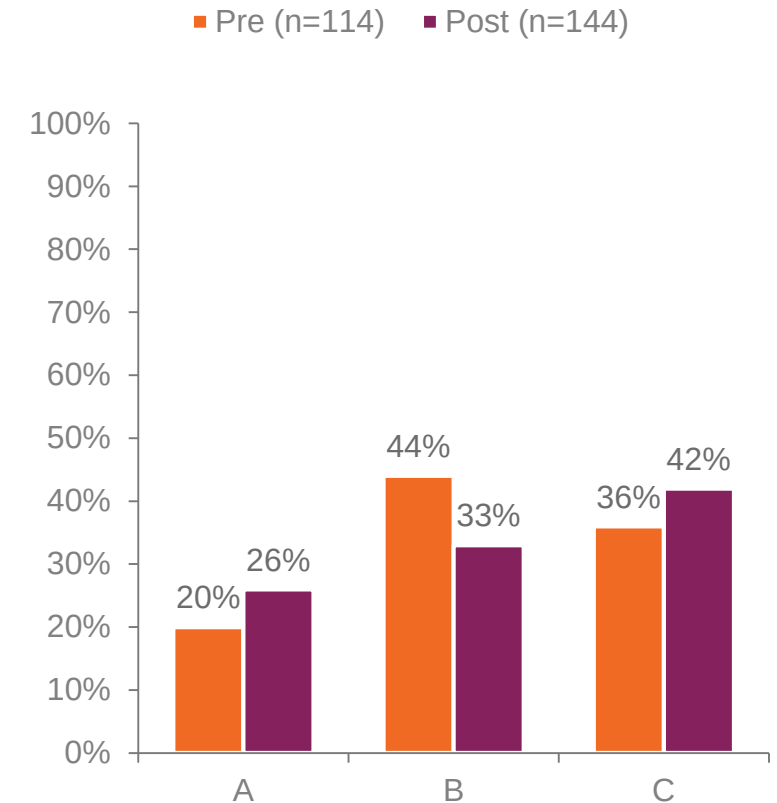
Practice Behavior

Availability of JAK inhibitors and application in clinical practice

As new JAK inhibitors become available, how will you apply them in clinical practice?

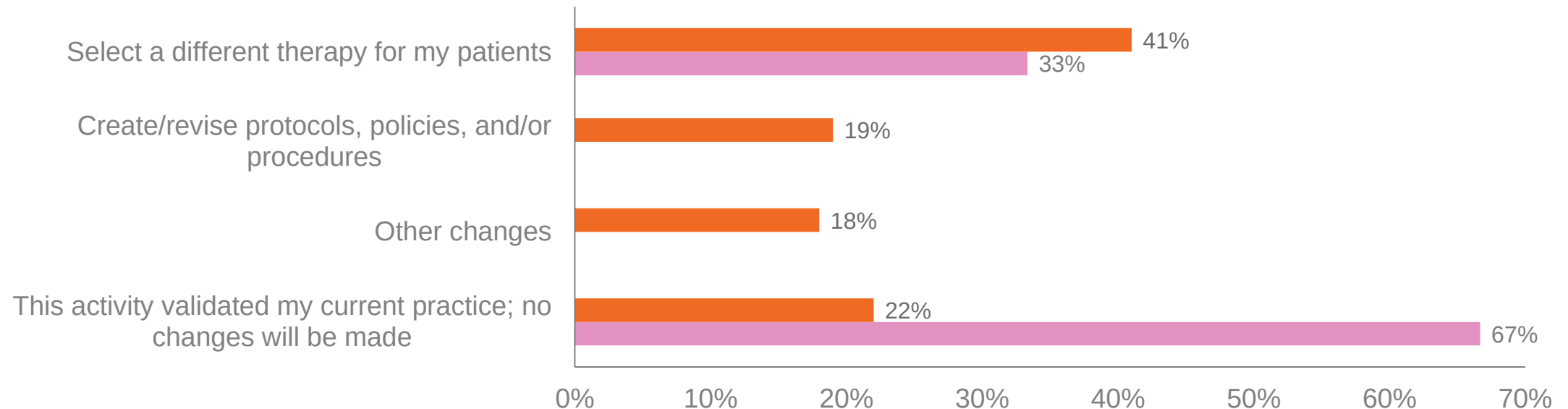
- A. I will offer them to patients as soon as they are available
- B. I will wait to hear of experiences from my colleagues
- C. I will wait until additional safety data are available

Approximately one-quarter of learners indicate an intent to use new JAK inhibitors as they become available. However, these data indicate a hesitation to apply new therapies, likely a result of other JAK inhibitors that are already available to treat RA. Ongoing education on the efficacy and safety of new agents should address these hesitations.



Levels 4-5: Practice Change

How do you plan to address the topics of inhibitor selection and need for novel targets in RA patients along with safety and efficacy and/or related issues with your patients?

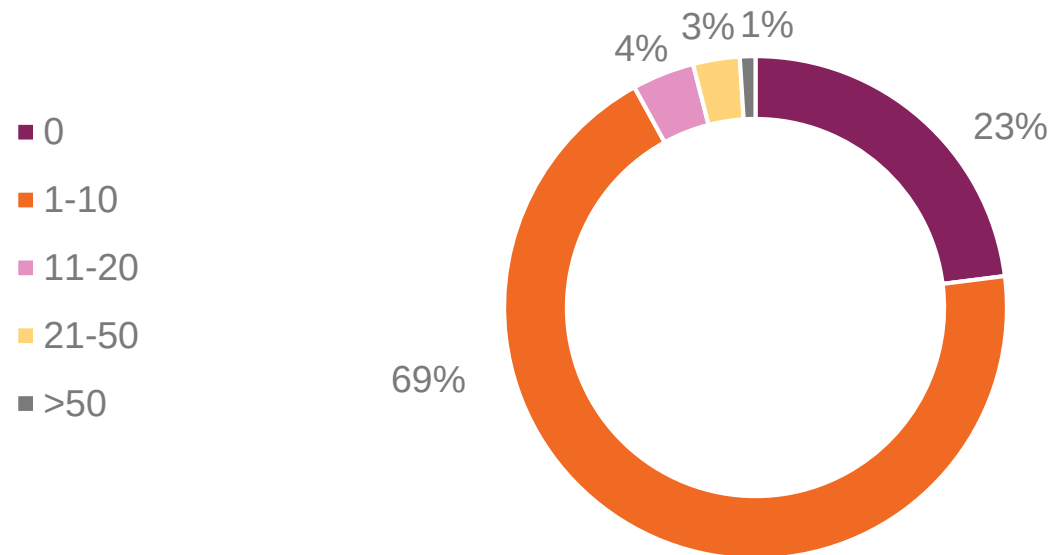


78% of learners plan to change their practice with 41% indicating they will select a different therapy for their patients! In a 30-day follow-up survey, two-thirds of respondents indicated no change was made to their practice; however these results are likely due to the timing of the survey and clinicians' inability to implement a therapy not yet available.

N=106; multiple responses allowed

Patient Care Impact

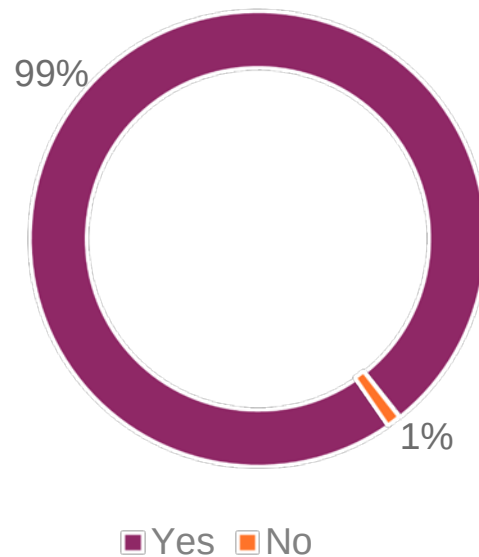
Number of patients affected by these changes each month:



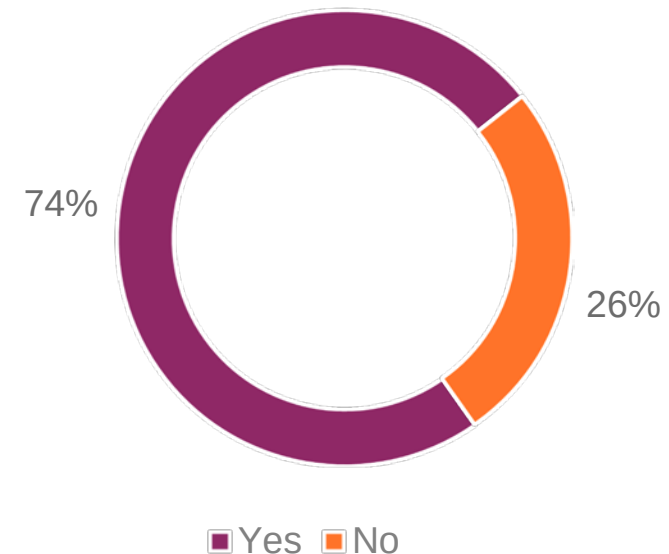
Changes will impact 894 to more than 3,638 patients each month. This assumes data in chart above is representative of all healthcare professionals in attendance (507), who indicated they would change their practice as a result of their participation in this activity (78%).

Improving Quality of Care

Does the content contribute valuable information that will assist in improving quality of care for patients?



Was the content relevant to your practice?



99% of participants indicated that the activity content is essential to improving care quality of RA patients who would benefit from a JAK inhibitor, indicating highly effective educational content that stressed the critical importance of quality care for these patients.

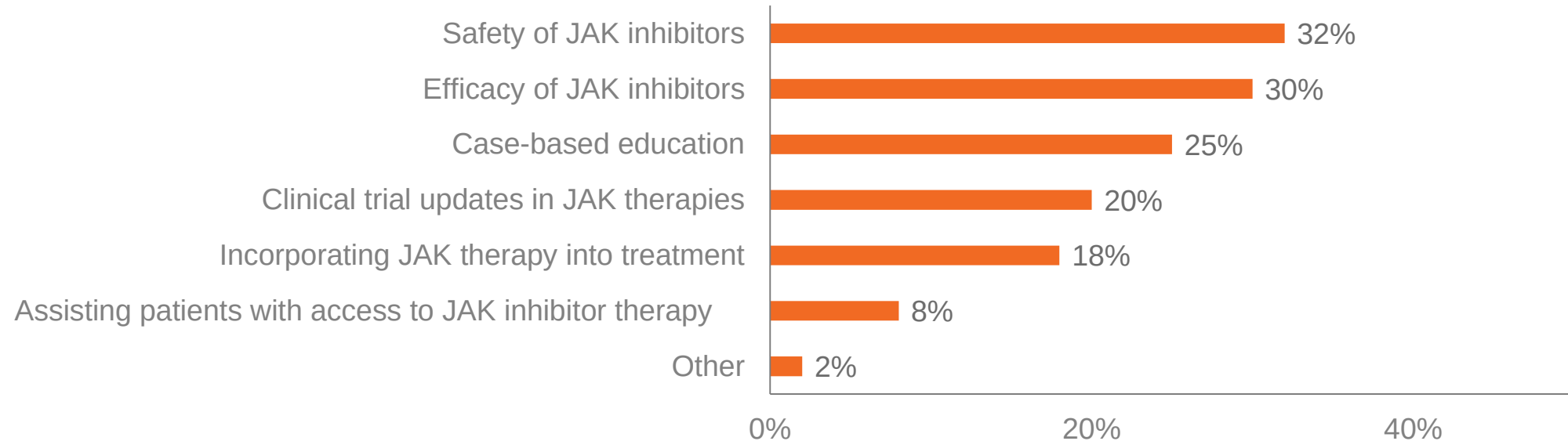
Barriers to Planned Change

The following barriers were noted by learners as impeding their ability to make changes to their practice:

- Cost
- Availability
- Insurance (3)
- Prior authorization
- Patient trust and hesitancy and approval
- Lack of experience prescribing JAK inhibitors (2)

Participants indicated insurance coverage as most common barrier to implementing changes in their practice.

Topics of Interest



Safety of JAK inhibitors (32%) was rated with highest interest for future education. This correlates with results from the practice behavior question on slide 21, translating into a need for increased clinician confidence with the safety of JAK inhibitors.

N=127; multiple responses allowed

Level 4: Activity Impact

Take-away pearls as a result of attending:

- Void reactivation DVT and PE
- Better history, start rxt
- More eval etiology; eval different therapy RT
- Facilitate referrals to Rheumatologist
- Get new shingles vaccine for patients
- Methotrexate works only for 20% of rheumatoid arthritis patients
- The magic effect of the JAK inhibitor over steroid and NSAID
- I am learning about the combination of uncontrolled AR with tofacitinib and methotrexate
- Knowledge on how to treat patients with RA. Not a practicing physician but a CDI it helps quality of patients if treated correctly
- Efficacy of JAK's
- Herpes Zoster Risk and Mental Health Effect
- Shingles risk, Zoster vaccine
- Efficacy and safety of JAK stat therapy
- Escalation of biologics alternative
- JAK/STAT inhibitor efficacy and used in combination with other therapy
- Consider JAK inhibitor for failed RA regimen, courses on Zoster vaccine
- Encourage failure patients with RA, Watch MTX patients for adherence
- JAK Inhibitors are generally well tolerated oral medication with high efficacy when treated in patients with RA
- Minimal side effects and Newer JAK Inhibitors
- Teaching and improving patient care by explaining there are alternatives are available for treatment of R.A.
- Consider newer agents to help the patient, increase compliance by decreasing the number of medications
- I will recommend this therapy and I now know the ongoing trials
- Introduction to JAK2 inhibitors efficacy and use in RA
- Will to start JAK inhibitors if patient is eligible
- Educate patients on availability of these drugs 2. Biological agents-body may develop antibodies
- JAK Inhibitors are safe but require dose monitoring
- Consider the medication
- Read more on JAK inhibitors
- Alert physician staff to availability of these agents
- Awareness
- Difficult to treat as there are so many different variations

Faculty Insights

The comment that comes to mind has been reiterated several times in various forms.

“ You have made me think that this is what it must have felt like when cortisone first was discovered and realized for its potency. I came away so excited about the potential for this class of drugs”

- William Rigby, MD

The curriculum was comprehensive and yet designed to be educate health care providers of all backgrounds and level of sophistication. The learning objectives were clearly defined and realized. The program was well-received. The logistics of implementation at the site were flawless!

- Allan Gibofsky MD, JD, MACR, FACP, FCLM



Contact Information

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