

Please Check Your Abstract One More Time.

Then scroll all the way down to the bottom of this page and click "Pay Submission Fee" to pay the fee and receive final confirmation for this abstract.

Click [here](#) to print this page now.

Do TNF Inhibitors Alter the Natural History of Ankylosing Spondylitis By Impacting the Incidence and Prevalence of Comorbidities and Extra-Articular Manifestations?

Program Book Publication:

Atul Deodhar, Oregon Health & Science University

Abstract Supplement and Online Publication:

These authors will be published in a supplement of the [Arthritis & Rheumatology](#) journal as well as the abstracts section of the ACR/ARHP Meeting Abstract website ([acrabstracts.org](#)).

Atul Deodhar¹, Kevin L. Winthrop¹, Benjamin Chan¹, Sarah A. R. Siegel¹, Lisa Pisent², Jeffrey Stark², Robert Y. Suruki², Rhonda L. Bohn², Huifeng Yun³, Lang Chen³ and Jeffrey R. Curtis³,
¹Oregon Health & Science University, ²UCB Pharma, ³University of Alabama at Birmingham

Abstract Text

Character count for abstract text: 2562 (188 Characters Remaining)

Background/Purpose: Treatment with TNF inhibitors (TNFi) has led to a reduction in signs and symptoms, and improvement in physical function and quality of life in patients with ankylosing spondylitis (AS). Whether TNFi impact the incidence of AS-related comorbidities and extra-articular manifestations (EAMs) is not known.

Methods: We conducted a retrospective cohort study using three commercial insurance claims databases (Multi-Payer Claims Database [MPCD; 2007–2010], Truven MarketScan[®] [2010–2014], and the US Medicare Fee-for-Service Claims data [2006–2014]) to evaluate EAMs (uveitis, psoriasis, inflammatory bowel disease) and comorbidities (cardiac, renal, pulmonary, neurologic) in AS patients diagnosed by a rheumatologist (index date), having 6 months baseline data prior to index date, and drug-specific exposures after AS diagnosis. Three mutually-exclusive hierarchical exposure groups were examined: (1) no therapy or prescription of non-steroidal anti-inflammatory drugs (NSAIDs), (2) conventional disease-modifying antirheumatic drugs (DMARDs), and (3) TNFi. Prevalence of comorbidities were ascertained in 12-month periods (6 months pre- and post-index date). Incidence of comorbidities and EAMs were ascertained during the period following treatment initiation and the earliest of death, loss of medical coverage, end of study, first outcome occurrence, treatment discontinuation, or initiation of therapy at a higher level in exposure hierarchy. Comparisons were made using the mid-p exact test ($\alpha=0.05$).

Results: Out of nearly 40 million beneficiaries, 63,052 patients were included. Table 1 shows the prevalence of comorbidities and EAMs of AS by treatment exposures, stratified by data source. Comorbidities were more common in Medicare AS patients compared to MPCD or MarketScan[®]. Table 2 shows the incidence rates of outcomes by treatment exposures, stratified by data source. Despite the possibility of patients with more severe disease receiving TNFi treatment, their crude incidence of certain cardiac, pulmonary and neurologic comorbidities was lower compared to those treated with NSAIDs or DMARDs alone, although they had higher incidence of some EAMs.

Conclusion: This was the largest investigation of the prevalence and incidence of comorbidities and EAMs of AS within the US, and suggests TNFi to be disease-modifying. In the absence of control for confounding, these findings should be considered preliminary.

Table 1: Prevalence of comorbidities and EAMs during 12 months (per 100 patient-years), stratified by data source

	MPCD			MarketScan®			Medicare		
	TNFi	DMARDs	NSAIDs/ no treatment	TNFi	DMARDs	NSAIDs/ no treatment	TNFi	DMARDs	NSAIDs/ no treatment
Demographics									
N	1,107	421	2,356	4,797	1,799	9,340	4,866	4,231	21,877
Age, mean (years)	41	42	49	43	46	47	55	61	65
% Female	38.1	44.4	39.9	46.7	54.0	44.4	44.6	55.1	41.8
Specific manifestation									
Aortic insufficiency	1.8	1.0	1.9	1.4	1.9	2.3	4.5	6.2	7.9
Conduction block	0.2	0	1.0	1.2	1.8	2.3	3.7	4.9	7.5
Myocardial infarction	0.3	0	0.5	0.2	0.1	0.7	0.5	0.9	1.7
Crohn's disease	5.9	4.0	3.4	6.1	4.1	3.1	8.9	7.0	4.4
Ulcerative colitis	3.1	2.5	1.9	4.3	3.3	2.5	4.8	4.6	2.8
Amyloidosis	0	0	0	0	0	0	0.1	0.1	0.1
IgA nephropathy	0.3	0.2	0.1	0.2	0.1	0.1	0.3	0.3	0.3
Nephrotic syndrome	0.2	0.2	0	0.1	0	0	0.2	0.3	0.2
Apical pulmonary fibrosis	0	0	0	0	0	0	0	0.1	0
Interstitial lung disease	0	0	0.1	0.1	0.1	0.1	0.1	0.4	0.1
Restrictive lung disease	0.7	0.4	1.7	2.3	3.1	3.6	7.3	10.5	10.7
Cauda equina syndrome	0	0	0.2	0	0.1	0.1	0.1	0	0.2
Spinal cord compression	0.2	0	0.3	0.3	0.5	0.6	0.6	0.8	1.5
Psoriasis	4.3	1.5	1.9	4.8	3.8	2.2	7.5	5.3	3.4
Psoriatic arthritis	6.5	5.4	2.4	8.1	7.3	2.9	11.7	9.2	3.5
Uveitis	8.4	7.3	6.2	10.3	9.0	9.8	9.5	6.5	5.0

Table 2: Crude incidence rates of comorbidities and EAMs per 100 patient-years by treatment exposures: (1) TNFi vs NSAIDs/no treatment, (2) TNFi vs DMARDs, stratified by data source

	MPCD			MarketScan®			Medicare		
	TNFi	NSAIDs/ no treatment or DMARDs	p value	TNFi	NSAIDs/ no treatment or DMARDs	p value	TNFi	NSAIDs/ no treatment or DMARDs	p value
Comparison of TNFi vs NSAIDs/no treatment									
Aortic insufficiency	1.3	1.9	NS	1.2	2.1	<0.001	3.2	6.0	<0.001
Conduction block	0.3	0.9	0.028	1.1	2.4	<0.001	2.9	5.9	<0.001
Myocardial infarction	0.3	0.6	NS	0.2	0.6	<0.001	0.7	1.5	<0.001
Restrictive lung disease	4.7	3.0	0.006	4.8	2.6	<0.001	3.9	2.5	<0.001
Spinal cord compression	2.5	1.6	0.050	3.1	2.1	<0.001	2.4	1.8	<0.001
Psoriasis	0.9	2.0	0.008	1.9	3.2	<0.001	5.9	8.7	<0.001
Crohn's disease	0.1	0.3	NS	0.3	0.5	0.013	0.4	0.8	<0.001
Ulcerative colitis	3.5	1.6	<0.001	3.8	1.8	<0.001	3.8	2.1	<0.001
Uveitis	5.0	4.9	NS	7.6	8.0	NS	5.0	3.0	<0.001
Comparison of TNFi vs DMARDs									
Aortic insufficiency	1.3	0.5	NS	1.2	1.5	NS	3.2	4.7	<0.001
Conduction block	0.3	0	NS	1.1	1.4	NS	2.9	4.2	<0.001
Myocardial infarction	0.3	0	NS	0.2	0.3	NS	0.7	1.2	<0.001
Restrictive lung disease	4.7	3.6	NS	4.8	4.1	NS	3.9	3.7	NS
Psoriasis	2.5	0.9	0.041	3.1	3.2	NS	2.4	2.6	NS
Ulcerative colitis	0.9	0	0.029	1.9	2.4	NS	5.9	7.7	<0.001
Uveitis	0.1	0	NS	0.3	0.4	NS	0.4	0.5	NS

Only significant data are shown. NS: Not significant.

Disclosure: A. Deodhar, Amgen, Eli Lilly, GSK, Janssen-Cilag, Novartis, UCB Pharma, 2; Eli Lilly, Janssen-Cilag, Novartis, UCB Pharma, 5; K. L. Winthrop, BMS, 2; UCB Pharma, Roche, Lilly, Pfizer, GSK, AbbVie, Galapagos, BMS, 5; B. Chan, None; S. A. R. Siegel, None; L. Pisenti, UCB Pharma, 3; J. Stark, UCB Pharma, 3; R. Y. Suruki, UCB Pharma, 3; R. L. Bohn, UCB Pharma, 3, Bohn Epidemiology LLC, 4; H. Yun, BMS, 2; L. Chen, None; J. R. Curtis, UCB Pharma, Janssen-Cilag, Amgen, Roche, Myriad Genetics, Lilly, Novartis, BMS, Pfizer, 2; UCB Pharma, Janssen-Cilag, Amgen, Roche, Myriad Genetics, Lilly, Novartis, BMS, Pfizer, 5.

Topic Selection:

Spondylarthropathies and Psoriatic Arthritis – Clinical Aspects and Treatment

Submitter's E-mail Address:

georgina.allen@costellomedical.com

Preferred Presentation Format:

No Preference

Study Sponsors:

- UCB Pharma: UCB Pharma funded this study and abstract. UCB Pharma reviewed only for scientific and legal accuracy.

Keywords:

ankylosing spondylitis (AS), anti-TNF therapy, comorbidity, epidemiologic methods and extraarticular manifestations

Additional Information:**Research Method:**

Observational

Trial Type:

Epidemiologic or Observational

We have agreed to the following statements:

- I. I affirm that I have read and agree to the ACR/ARHP Annual Meeting general guidelines and policies for abstract submission outlined in the [2017 Call for Abstracts guidelines](#).
- II. I affirm that any work with human or animal subjects reported in the abstract complies with the guiding principles for experimental procedures found in the Declaration of Helsinki of the World Medical Association.
- III. I understand that case reports and reviews of literature are not appropriate and will not be reviewed.
- IV. I understand that if the abstract reports the results of a clinical trial not yet approved by a regulatory agency, the trial phase must be indicated on the submission form.
- V. I understand that an abstract is ineligible for consideration if it reports work that has been accepted for publication as a manuscript prior to the ACR/ARHP submission deadline of Monday, June 19, 2017.
- VI. I understand that this abstract, if accepted, will be under embargo until 4:30 PM Eastern Time on Saturday, November 4, 2017.
- VII. I understand that abstracts submitted for the ARHP may not be dually submitted to the ACR and vice versa.
- VIII. I understand that, if accepted, the American College of Rheumatology has permission to publish this abstract in printed and/or electronic formats.
- IX. I understand that, if accepted for presentation, the presenting author or co-authors listed on the abstract must present the abstract during an oral and/or poster presentation.
- X. I affirm that this abstract title does not include a trial group name or acronym and understand that the ACR/ARHP will no longer publish them.

XI. I affirm that this abstract does not report results that have been previously presented at an ACR/ARHP Annual Meeting.

First Author

Presenting Author

Atul Deodhar, MD
Oregon Health & Science University
3181 SW Sam Jackson Park Rd
Division of Arthritis & Rheumatic Diseases OP09
Portland, OR 97239-3011
Phone Number: 503-494-8963
Alternate Phone: 503 577 3900
Email: deodhara@ohsu.edu -- Will not be published

* ACR Member
* Membership Number 29445

Biographical Sketch: Dr. Deodhar is a Professor of Medicine, and medical director of rheumatology clinics at Oregon Health & Science University, in Portland, Oregon.

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

Nature of Relationship	Commercial Interest Name(s)	Notes
------------------------	-----------------------------	-------

Research grants Amgen, Eli Lilly, GSK, Janssen-Cilag, Novartis, UCB Pharma
Consulting fees Eli Lilly, Janssen-Cilag, Novartis, UCB Pharma

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Second Author

Kevin L. Winthrop, MD, MPH

Oregon Health & Science University

Portland, OR

Email: winthrop@ohsu.edu -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Third Author

Benjamin Chan

Oregon Health & Science University

Portland, OR

Email: chanb@ohsu.edu -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g.,

speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Fourth Author

Sarah A. R. Siegel

Oregon Health & Science University

Portland, OR

Email: siegels@ohsu.edu -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to

conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Fifth Author

Lisa Piseni
UCB Pharma
Smyrna, GA

Email: Lisa.Piseni@ucb.com -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

Nature of Relationship	Commercial Interest Name(s)	Notes
------------------------	-----------------------------	-------

Employment UCB Pharma

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Author Classification: Not applicable (Non-Trainee)

Sixth Author

Jeffrey Stark

UCB Pharma

Smyrna, GA

Email: Jeffrey.Stark@ucb.com -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

Nature of Relationship	Commercial Interest Name(s)	Notes
------------------------	-----------------------------	-------

Employment UCB Pharma

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Seventh Author

Robert Y. Suruki

UCB Pharma

Raleigh, NC

Email: Robert.Suruki@ucb.com -- Will not be published[Click to view Conflict of Interest Disclosure](#)**Any relevant financial relationships?**

Nature of Relationship	Commercial Interest Name(s)	Notes
------------------------	-----------------------------	-------

Employment UCB Pharma

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Eighth Author

Rhonda L. Bohn

UCB Pharma

Raleigh, NC

Email: Rhonda.Bohn@ucb.com -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

Nature of Relationship	Commercial Interest Name(s)	Notes
------------------------	-----------------------------	-------

Employment UCB Pharma

Ownership or partnership Bohn Epidemiology LLC

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Ninth Author

Huifeng Yun
University of Alabama at Birmingham
Birmingham, AL
Phone Number: 205 975-8964
Email: yunn@uab.edu -- Will not be published

* ACR Member
* Membership Number 109747

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

Nature of Relationship	Commercial Interest Name(s)	Notes
------------------------	-----------------------------	-------

Research grants BMS

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Tenth Author

Lang Chen, PhD

University of Alabama at Birmingham

510 20th Street S

Birmingham, AL

Email: langchen@uabmc.edu -- Will not be published

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

Author Classification: Not applicable (Non-Trainee)

Eleventh Author

Jeffrey R. Curtis, MD, MS, MPH

University of Alabama at Birmingham

Birmingham, AL

Email: jrcurtis@uabmc.edu -- Will not be published

* Membership Number 74514

Biographical Sketch: n/a

[Click to view Conflict of Interest Disclosure](#)

Any relevant financial relationships?

Nature of Relationship	Commercial Interest Name(s)	Notes
Research grants	UCB Pharma, Janssen-Cilag, Amgen, Roche, Myriad Genetics, Lilly, Novartis, BMS, Pfizer	
Consulting fees	UCB Pharma, Janssen-Cilag, Amgen, Roche, Myriad Genetics, Lilly, Novartis, BMS, Pfizer	

Will you be referencing any products, services or information pertaining to your identified commercial relationships during your contribution to this activity?

I have disclosed to ACR all relevant financial relationships. If I am a presenter for a lecture/didactic session, I will also disclose these relationships to learners (verbally, through a slide, etc.), so they may form their own opinions as to possible bias. If I am a committee member, I have disclosed to the Chair.

I understand that incomplete or inaccurate disclosures or the refusal to disclose will preclude me from participating in the development/delivery of content of this CME activity.

I am aware that the ACR will disclose this information to learners and/or the planning committee chair through additional means and, where evaluation forms are used, ask participants to indicate their opinions regarding possible bias.

Should I be involved in CME topic or content development and/or presentation of information, my involvement will promote quality or improvements in healthcare and will not promote a specific proprietary business interest of a commercial interest. Content with which I am involved, including any presentation of therapeutic options, will be well-balanced, evidence-based and unbiased.

I am aware that ACR has implemented a mechanism for identifying and resolving conflicts of interest. As a result, I may be required to recuse myself from content planning/design/presentation on specific topics etc.

I will not accept honoraria, payments or reimbursements related to ACR CME activities, unless agreed upon directly with ACR.

I understand that ACR may request to review my presentation, content, and/or other contribution prior to the activity. I will provide educational content and resources in advance if requested.

I understand that participants may be asked to evaluate whether my contribution to a CME activity is educational, and not promotional, in nature.

If I am providing recommendations involving clinical medicine, they will be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.

If I am providing patient care recommendations, all supporting scientific research I use, report or to which I refer, will conform to the generally accepted standards of experimental design, data collection and analysis.

If I am discussing specific healthcare products or services, I will use generic names when applicable.

If I am discussing any product use that is off label, I will disclose that the use or indication in question is not currently approved by the FDA for labeling or advertising.

If I have been trained or used as a speaker by a commercial entity or its agent (e.g., speaker's bureau) for any commercial interest, the promotional aspects of that presentation will not be included in any way with this activity.

If I am presenting/providing content on research funded by a commercial company, the information presented will be based on generally accepted scientific principles and methods and will not promote the commercial interest of the funding company.

In consideration of HIPAA requirements, I understand and agree to take reasonable steps to protect confidential patient information by using only blinded and/or de-identified patient information. Where applicable, only the minimum information necessary to conduct CME education will be used and disclosed. It is understood that further disclosure of patient health information outside of the CME activity is not permitted.

FINAL STEPS

1. Check spelling and contact information.
2. Make necessary corrections:
 - Click any value in the Abstract Control Panel you want to change (e.g., Abstract Title, Track)
 - Edit the information and click the submit button.
3. Click [here](#) to print this page now.
4. Click "Pay Submission Fee" below to pay the fee and receive final confirmation for this abstract.

Pay Submission Fee