



ABSTRACT INSTRUCTIONS AND REQUIREMENTS

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- **GENERAL INSTRUCTIONS AND THINGS TO REMEMBER:** [\[back to content navigation links\]](#)
 - Please carefully proofread your submission for accuracy, including names, and email addresses.
 - Carefully review and follow all instructions for formatting authors names, affiliations, abstract titles, and the abstract body.
 - All content is expected to be free of spelling and grammatical errors; use American English standards for spelling and punctuation.
 - If your abstract is accepted for presentation, the material that you submit will be distributed in Conference Schedules and Proceedings.
 - EMAIL ADDRESSES: We use email addresses to link abstract presenters to their registrations, and to link authors to all of their abstracts when preparing the proceedings. As such, please use exactly the same email address for individuals throughout the CRWAD submission and registration system. If you are entering information for another person, please keep this in mind and ensure that you are entering the same email address as others.

- The official language of CRWAD is English, and no translation of content to other languages will be available.
- All accepted abstracts will be presented onsite in Chicago.
- If you must secure a Visa to attend CRWAD 2024, you are strongly encouraged to meet the first abstract submission deadline (August 1, 2023) to maximize the time available to obtain required travel documents.

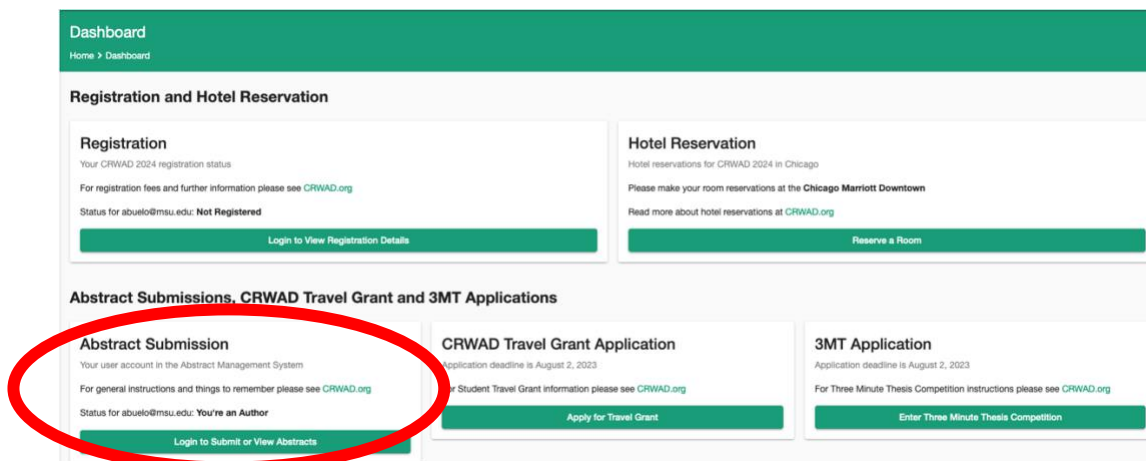
• **TERMS AND CONDITIONS FOR SUBMITTING AND PRESENTING ABSTRACTS AT CRWAD:**

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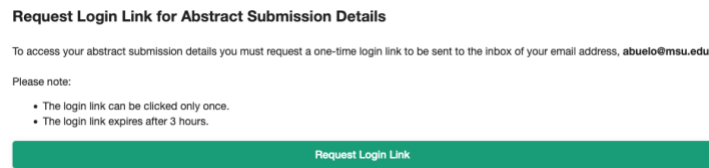
- By submitting an abstract, the presenter and all authors agree to the following terms and conditions for attendance and participation at CRWAD:
 - Authors must adhere to all requirements and guidelines for formatting CRWAD abstracts.
 - Promptly respond to all communication from CRWAD organizers.
 - Meet all requirements for uploading PPT presentations prior to CRWAD 2024.
 - Presenters agree to participate in the Conference as scheduled by the Conference program committee if abstracts are accepted. If you are not available to make this presentation, the presenter is responsible to schedule another person to present the accepted abstract as scheduled.
 - Promptly communicate with CRWAD organizers if any question or difficulty arises about the ability to present abstracts as scheduled.
 - Presenters must register for the Conference within 30 days abstracts are submitted.
 - Presenters are responsible for all expenses associated with creating and delivering your presentation at CRWAD, including securing travel arrangements, required travel Visas.
 - All presenters agree to review and abide by the [Conference Code of Conduct](#).
- **Failure to adhere to these requirements may result in CRWAD organizers withdrawing abstracts for the current year and potentially embargoing authors from presenting in future years.**

SUBMISSION INSTRUCTIONS: [\[back to content navigation links\]](#)

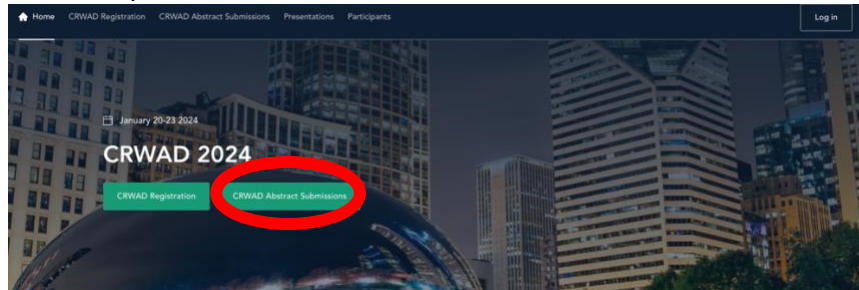
- Please first log into the [CRWAD Conference Dashboard](#). You will be asked to provide your e-mail address and receive via e-mail an unique link to access the secure dashboard. This link expires in 10 minutes.
- Once in the dashboard, under “Abstract Submission” in the left corner, select “Login to Submit or View Abstracts”.



- You will be asked to request a new login link to access the abstract submission portal



- You will be asked to request a new login link to access the abstract submission portal. Follow the link to the abstract submission portal and select “CRWAD Abstract Submission”.



- You can now fill the required submission fields to submit your abstract.

SUBMISSION FIELDS:

- **PREFERRED PRESENTATION FORMAT (ORAL vs. POSTER):** [\[back to content navigation links\]](#)
 - Your selection will be given priority consideration by CRWAD Organizers, but final assignment of presentation formats and scheduling for abstracts is determined by organizers as there is a limited number of oral presentation slots.
 - There are a limited number of oral presentation slots. As such, presenters may only submit and two abstracts for consideration as oral presentations.
 - There is no limit for the number of abstracts that other authors (non-presenters) can be included on.
 - There is no limit to the number of poster presentations that can be made by an author.
 - Only abstracts that describe completed work with distinct results and conclusions will be considered for oral presentations.
 - If there is any uncertainty about the ability of a presenter to be onsite in Chicago during the Conference, please choose Poster.
- **AVAILABILITY TO BECOME A SUBSTITUTE SPEAKER:** [\[back to content navigation links\]](#)
 - Oral presentations occasionally must be cancelled after they have been scheduled.
 - If you choose poster presentation as your preferred format, you can also choose to be considered filling such an opening in the oral presentation schedule if they arise.
- **U.S. VISA REQUIRED:** [\[back to content navigation links\]](#)
 - Please indicate if the presenter will require a visitor's Visa or other travel permit to make this presentation in Chicago. This allows the conference organizers to assist with letters of invitation, etc.
 - Note: It is the responsibility of speakers to secure travel documents required for attending CRWAD.
- **PRESENTER INFORMATION:** [\[back to content navigation links\]](#)

- This information is used for contact with the presenter. Author information for abstract proceedings is provided separately below.
- Name and Contact information
 - Please remember to use exactly the same email address as you do for registration, and when submitting other abstracts.
 - Preferred method of contacting Presenters onsite is required.
- Please select the most appropriate description of your position at the time of CRWAD 2024.
 - You must select student or post-doctoral researcher in this section if you wish to enter the abstract and presentation for competitions. Additional information about competition entries will be provided below.
- **ABSTRACT AND AUTHORS:** [\[back to content navigation links\]](#)
 - Carefully follow the CRWAD Abstract Submission Guidelines, including all formatting instructions.
 - Abstracts not conforming to the formatting instructions will be returned to the authors before being considered for acceptance.
 - **Add an Author:** [\[back to content navigation links\]](#)
 - Provide the First Name/Initial, Middle Name/Initial, Last Name, and Affiliation for ALL authors (including presenting author).
 - ◇ Do not use all capital letters.
 - ◇ A single author must be designated as the Presenter, and can be listed in any position in the list of authors.
 - In the "First Name" field, be sure to enter First AND Middle name/initials exactly as you want them printed in proceedings.
 - ◇ EXAMPLE, First Name: *R.E.* Last Name: *Franklin*
 - ◇ EXAMPLE, First Name: *James D.* Last Name: *Watson*
 - ◇ EXAMPLE, First Name: *F. Harry* Last Name: *Crick*
 - If authors will be listed on multiple abstracts, make sure that you use the same formatting for them all. Failure to do so can result in inappropriately attributing abstracts in the Author Index of the Proceedings. Examples from previous CRWAD proceedings can be reviewed here: <https://crwad.org/proceedings-archive/>
 - Adhere to formatting instructions when entering affiliations.
 - ◇ Author affiliations should be as succinct as possible.
 - ◇ If an author has more than one affiliation, separate using a semicolon.
 - ◇ If multiple authors have the same affiliation, you can select a previously entered affiliation by clicking on it.
 - ◇ Capitalize the first letter for each place name; do not use all capitals or all lower case for place names.
 - ◇ Do not use abbreviations or acronyms that will be unfamiliar to most readers. Abbreviations such as USDA are acceptable as these are widely recognized. Abbreviations such as UMN or TAMU are not widely recognized and should be avoided.
 - ◇ EXAMPLE: *"Dept. of Microbiology, Immunology and Pathology, Colorado State University, Fort Collins, CO"*.
 - **All Authors' Email Addresses:** [\[back to content navigation links\]](#)
 - Enter a list of email addresses for all authors including the presenter, separated by a comma.

- Please use exactly the same email address used for registration and when submitting other abstracts.
 - This list of addresses will allow us to communicate with all authors about the status of submitted abstracts, and also to help identify authors of multiple abstracts in the conference proceedings.
 - EXAMPLE: “*presenter@univ.edu, author2@univ.edu, author3@business.com*”.
- **Abstract Title:** [\[back to content navigation links\]](#)
- Titles should be succinct (115 characters maximum, including spaces – you can use a word processing program to help with this count), informative, and accurately reflect the content of your poster or oral presentation.
 - ◇ EXAMPLE: “Detecting multiple *Clostridium perfringens* toxin types from a single clinical specimen using multiplex qPCR”
 - It is not possible to include special formatting in titles (e.g., italics or underlining), special characters, superscripts, or subscripts.
 - Text should use sentence case, capitalizing only the first word, proper nouns and abbreviations.
 - Do not capitalize entire words unless they are accepted abbreviations.
 - ◇ EXAMPLE: it is acceptable to capitalize the abbreviation for DNA.
 - ◇ EXAMPLE: do not capitalize the word PROTEIN.
 - Use standard convention for capitalization of taxonomic names.
 - ◇ EXAMPLE: “*Salmonella enterica*” .
 - Do not use quotation marks in the title.
 - Do not add a period or space after the last word in the title as this will interfere with correct formatting of the proceedings.
 - The title should not contain any identifying information regarding the author(s) or organizational affiliation; this information is entered in the Author/Affiliation section.
- **Abstract Body:** [\[back to content navigation links\]](#)
- CRWAD requires a structured abstract using the following sections: **OBJECTIVE:**, **METHODS:**, **RESULTS:**, and **CONCLUSIONS:**
 - ◇ Start each section on a new line. Capitalize and bold the section names, and follow each with a colon (See example below).
 - The abstract body is limited to 500 words, including the section titles.
 - Special formatting is permitted in the Abstract Body, including italics, bold, special characters, superscripts, and subscripts.
 - Follow capitalization rules previously listed for abstract titles above.
 - Use capitalization and italics according to standard conventions for taxonomic names. Do not underline taxonomic names.
 - ◇ EXAMPLE: “*Salmonella enterica*”
 - It is acceptable to capitalize common virus names, but do not italicize or underline.
 - ◇ EXAMPLE: “Rabies Virus”.
 - Do not capitalize or italicize disease names.
 - ◇ EXAMPLE: “salmonellosis” should not be capitalized or italicized.
- **Formatting Example:**

OBJECTIVE: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

METHODS: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

RESULTS: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

CONCLUSIONS: Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

- **RESEARCH SPONSORSHIP:** [\[back to content navigation links\]](#)
 - Enter sponsorship acknowledgements exactly as you would like them to be printed in the proceedings. (40 word maximum).
 - It is important that research sponsors are fully recognized for their support.
 - STUDENTS - please make sure that you have checked with your project's Principal Investigator about the accuracy of this statement before your abstract is submitted.
 - Select appropriate responses regarding all sponsors of research in this abstract. This information will help CRWAD appropriately acknowledge these important contributions.
 - USDA - directly through a grant or indirectly through another entity (e.g., Hatch Formula Grants or Project Development Grants, etc).
 - Another U.S. Government Agency (e.g., NSF, NIH, NIAID, DOD, etc).
 - State Agencies in the U.S., including support from a state-affiliated University.
 - Any corporate or commercial entity.
- **INTERNATIONAL COLLABORATIONS:** [\[back to content navigation links\]](#)
 - Please indicate if research involved collaborations or funding from outside the U.S. (i.e., in addition to, or instead of participation from within the U.S.).
 - This information will help CRWAD more fully recognize and acknowledge these important international contributions to the meeting.
- **USDA PROJECT DIRECTOR REQUIREMENT:** [\[back to content navigation links\]](#)
 - Indicate whether this presentation being made in fulfillment of requirements for a Project Director of USDA-NIFA funded research. Contact the PI or research sponsor if you are unsure.
 - You will be asked to provide the USDA Award Number if you respond "Yes".
 - CRWAD partners with USDA to provide a venue for Project Directors to fulfill requirements for presentation of methods and results from USDA-NIFA funded research.
 - It is important that abstracts presented to fulfill this PD requirement are identified for Program Officers at the USDA.
- **TOPIC AREAS:** [\[back to content navigation links\]](#)
 - Select the theme, subthemes, species, and disease (if relevant) that best describe/match the focus of this abstract. [Check the table](#) at the end of this document for the different options available.
 - This information will be used to organize similar content for attendees, but is not listed in the proceedings. These selections do not guarantee that abstracts will be presented in program sections with these titles.

- **STUDENT & POST-DOCTORAL RESEARCHER AWARDS (OPTIONAL):** [\[back to content navigation links\]](#)
 - Options for entering competitions are only visible on this form if the presenter is identified as a student or post-doctoral researcher in the Presenter Information section above.
 - Please review the requirements and eligibility for research competitions at <https://crwad.org/student/>.
 - Students can submit more than one abstract for presentation at CRWAD, but only one abstract can be entered into one research competition per person.
 - Students entering these competitions may also submit entries for the [CRWAD 3MT[®] Competition](#) or for [CRWAD Travel Grants](#) through the [CRWAD Conference Dashboard](#).

- **You must agree to the following in order to submit and abstract for presentation at CRWAD:**
By submitting this abstract, I confirm that I will adhere to all terms and conditions for presenters and participants in CRWAD. [\[back to content navigation links\]](#)

TOPIC AREA OPTIONS: [\[back to content navigation links\]](#)

You will be asked to select the 1 theme, 1 or 2 sub-themes, the species, and, if relevant, the disease that best describe the content of the abstract. Below are the options provided:

THEME (Select 1)	SUB-THEMES (Select 1 or 2)
Antimicrobial Use	resistance, stewardship, surveillance, alternatives, social science, other.
Aquaculture	therapeutics, disease prevention, modeling, vaccinology, water quality, other.
Bacteriology	pathogenesis, diagnostics, emerging, zoonoses, immunology, therapeutics, other.
Biosecurity and infection control	diagnostic testing, surveillance, modeling, disinfectant assessment, education, other.
Diagnostic testing	diagnostic test development or assessment, diagnostic standards, modeling, statistics, other.
Disease Pathogenesis	immunology, pathology, host-pathogen interaction, other.
Economics & policy	cost of disease/prevention, production efficiency, other.
Epidemiology	livestock, companion animal, modeling, surveillance, statistics, other.
General health and physiology	production parameters (e.g., milk production, growth), testing baselines (e.g., CBC, chemistry panel), nutrition, behavior, other.
Immunology	mucosal, vaccine, adaptive immunity, innate immunity, disease pathogenesis, other.
Microbiome	resistance, stewardship, surveillance, alternatives, social science, other.
"Omics"	genomics, proteomics, transcriptomics, microbiome, systems biology, molecular biology, other.
One health/public health	food safety, ecology, zoonoses, foodborne pathogens, social science, other.
Parasitology	tick-borne diseases, pathogenesis, diagnostics, emerging, zoonoses, immunology, other.
Pharmacology/toxicology	stability, distribution, clearance, therapeutics, safety and efficacy, dose, social science, other.
Preventive medicine	nutrition, probiotics, therapeutics, modeling, statistics, other.
Vaccinology	immunology, formulation (e.g., antigen identification, adjuvant assessment), delivery/administration, animal modeling, other.
Virology	pathogenesis, diagnostics, emerging, zoonoses, immunology, therapeutics, other.

SPECIES (Select 1)	
aquaculture species	feline
bees/other insects/arachnids	humans
bison	lab animal
bovine - beef	poultry/avian
bovine - dairy	small ruminants
camelids	swine
canine	water buffalo
cell lines/tissue culture	wildlife
equine	zoo animals
exotic pets	

DISEASE if applicable (optional)	
African Swine Fever	mycoplasma
Bovine Respiratory Disease	pathogenic <i>E. coli</i>
brucellosis	PRRS
coronaviruses (other than COVID)	salmonella
fungal diseases	SARS-CoV-2
influenza	streptococcus
mastitis	tick-borne diseases
mycobacterium	

EXAMPLES OF CRWAD ABSTRACTS: [\[back to content navigation links\]](#)

The Examples below represent well-formatted good-quality abstracts accepted for presentation at previous CRWAD conferences. Abstracts are reproduced here with authors' permission. Previous CRWAD proceedings are available at <https://crwad.org/proceedings-archive/>.

EXAMPLE 1

Antimicrobial susceptibility of *E. coli* isolated from diagnostic canine specimens, 2010-2019

J. Ekakoro¹, K. Hendrix², L. Guptill³, A. Ruple¹.

¹Purdue University, ²Department of Comparative Pathobiology, Purdue University, ³Department of Veterinary Clinical Sciences, Purdue University. jekakoro@purdue.edu

OBJECTIVE: *Escherichia coli* is the most common gram-negative pathogen isolated in humans infections. Antimicrobial resistant (AMR) *Escherichia coli* originating from dogs may directly or indirectly cause disease in humans. Currently, we do not know the extent of AMR in *E. coli* causing disease in dogs in Indiana, and its implications for public health in the state. The objective of this study is to calculate the proportion of antimicrobial susceptible *E. coli* isolates identified in canine specimens submitted to the Indiana Animal Disease Diagnostic Laboratory and to identify temporal patterns of susceptibility among these isolates.

METHODS: Retrospective data of 2738 *Escherichia coli* isolates from dogs assessed for AMR from 2010 through 2019 were utilized in this study. Overall, 27 antimicrobials from 11 antimicrobial classes were examined. The Clinical and Laboratory Standards Institute (CLSI) guidelines were used in the analysis of the antimicrobial susceptibility test results. Proportions of isolates susceptible to the various antimicrobials were calculated using commercially available statistical software and the Cochran-Armitage trend test with mosaic plots were used to investigate the temporal trends in susceptibility.

RESULTS: Overall, 553/2738 (20.2%) of the isolates were susceptible to 17 of the 27 antimicrobials examined. Of the 2638 isolates examined for amikacin susceptibility, 2706 (97.5%) were susceptible, 2657/2673 (99.4%) isolates were susceptible to imipenem, and 2099/2670 (78.6%) were susceptible to marbofloxacin A significant downward (decreasing) trend in susceptibility was observed for amoxicillin-clavulanic acid ($P<0.0001$), ampicillin ($P<0.0001$), Cefazolin ($P<0.0001$), ceftazidime ($P=0.007$), chloramphenicol ($P<0.0001$), and orbifloxacin ($P=0.008$).

CONCLUSIONS: The decreasing trend in the proportion of isolates susceptible to several beta lactam antimicrobials suggests that resistance of *Escherichia coli* in dogs to beta lactam antimicrobials could be increasing in Indiana. The decreasing trend in susceptibility to these drugs could be due to selection pressure from over-use.

EXAMPLE 2

NRF2 agonists modulate RSV-induced pro-inflammatory cytokine expression in respiratory tract epithelial cells

M.K. Moore¹, F.E. Diaz¹, J.L. McGill¹

¹Department of Veterinary Microbiology and Preventive Medicine, Iowa State University.

mkmoore@iastate.edu

OBJECTIVE: Bovine respiratory disease (BRD) is a highly prevalent disease in the cattle industry that remains a leading cause of morbidity and mortality with BRSV being a major etiological agent. Widespread use of vaccines and antimicrobials has led to drug resistant pathogens, leading to the proposal of using immunomodulation strategies to reduce BRD severity and prevalence. The NRF2 pathway and one of its key products, itaconate, has a crucial role in the downregulation of inflammatory and the upregulation of antioxidant responses in respiratory viral infection, highlighting its potential as an immunomodulation target. Here we explored the effects of synthetic NRF2 agonists, 4-octyl-itaconate(4-OI) and dimethyl fumarate (DMF), in modulating immune response to bovine and human RSV infection in respiratory tract epithelial cells as a non-antibiotic strategy to prevent RSV infection.

METHODS: Bovine turbinates cells (BTs) and human lung epithelial cells (BEAS-2b) were stimulated with either 4-OI (100,200µM) or DMF (50, 100µM), then infected with BRSV (BTs) or hRSV (BEAS-2b), respectively. RNA was isolated from cells at 36h (hRSV) or 72 h (bRSV) post infection, and transcripts of pro-inflammatory cytokines, chemokines and antiviral mediators were determined by RT-PCR.

RESULTS: Our results indicate that DMF and 4-OI treatment inhibits transcription of IL-6, IL-1B, CCL5, IFN- β ($P<0.0001$) and CXCL8 ($P<0.001$) on BTs cells after BRSV infection at all doses tested. DMF treatment also upregulated transcripts of antioxidant enzyme Nqo1 ($P<0.0001$). In BEAS-2b cells, we observed downregulation of transcripts for TNF and IRF1 ($P<0.0001$) on all DMF and 4-OI treated cells. We also noted downregulation of transcripts for CCL5 ($P<0.001$) and IFN- β ($P<0.01$) on cells treated with 100 µM of DMF.

CONCLUSIONS: These results suggest DMF and 4-OI reduce the inflammatory and antiviral response to RSV in both human and bovine respiratory tract epithelial cells, and thus future in vitro and in vivo studies are warranted in order to explore NRF2 agonists as immunomodulators to prevent severe RSV infection and BRD.

ABSTRACT SELECTION CRITERIA: [\[back to content navigation links\]](#)

There are a limited number of spots available for oral presentations and posters.

- Abstracts must meet all formatting requirements or they will not be considered for presentation at CRWAD.
- If there is any uncertainty about the presenter's ability to attend CRWAD, e.g., because of need to secure a Visa or potential scheduling conflicts, you are strongly encouraged to submit your abstract for presentation as poster. It presents far fewer problems if you have to withdraw a poster presentation than if you are unable to present an oral presentation.
- Abstracts will be withdrawn from the schedule and abstract book if presenters do not adhere to requirements for formatting, revisions, and submission of required materials.

Content of abstracts will be evaluated considering the following criteria (all aspects are not required, *per se*, but these factors will be considered):

- Originality of idea and demonstrated innovation.
- Degree of practical knowledge transferability or practical implications: Abstract clearly demonstrates a high degree of applicability to research, practice, animal production, or policy.
- Evidence and objectivity: Abstract builds on existing knowledge base, is based on sound methodology, and/or has a clear evaluation component. Results can be generalized to a range of populations.
- Clarity and cohesiveness: Abstract reflects a sound argument and logical flow. The abstract thoroughly explains the study's elements, outcomes and importance. Key messages are clearly articulated. Information is clearly presented in a style that is appropriate for a broad audience. The abstract is free of spelling and grammatical errors.