Date of Preparation: 7-12-2022

HARBIR SINGH ARORA, MD

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EDUCATION:

1) Graduation:

Bachelor of Medicine and Bachelor of Surgery (M.B;B.S), Sri Siddhartha Medical College, Tumkur, India. — Oct 2001- July 2007

2) Post Graduate Training:

Fellowship: Pediatric Infectious Diseases — Sep 2012 - Aug 2015
Children's Hospital of Michigan, Detroit, MI, USA

Residency: Pediatrics — Jun 2009 - Aug 2012
Children's Hospital of Michigan, Detroit, MI, USA

FACULTY APPOINTMENTS:

1) Associate Professor — July 2022 – Present
Community Educator
Department of Pediatrics
Central Michigan University College of Medicine
Mt. Pleasant, MI, USA

2) Assistant Professor — Sep 2019 – June 2022
Community Educator
Department of Pediatrics
Central Michigan University College of Medicine
Mt. Pleasant, MI, USA

3) Assistant Professor — April 2016 - Present
Clinical Educator
Department of Pediatrics
Wayne State University School of Medicine
Detroit, MI, USA

HOSPITAL APPOINTMENTS:

1) Staff Physician — April 2016 - Present
Division of Infectious Diseases
Children's Hospital of Michigan
Detroit, MI, USA

2) Staff Physician — Sep 2015 - April 2016
Division of General Pediatrics
Children's Hospital of Michigan
Detroit, MI, USA

MAJOR PROFESSIONAL SOCIETIES:

1) Pediatric Infectious Diseases Society (PIDS) — May 2011 - Present

2) Infectious Diseases Society of America (IDSA) — May 2011 - Present

3) American Academy of Pediatrics (AAP) — June 2009 - Present

AWARDS:

1) Faculty Teaching Award — October, 2020

Wayne State University School of Medicine
2019-2020 Academic Year

2) Excellence In Teaching Award — October, 2018
Wayne State University School of Medicine
2017-2018 Academic Year

SERVICE:

A) Hospital Committees:

1) Infection Control Committee — April 2016 - Present
Children's Hospital of Michigan, Detroit, Michigan
Role: Meet with other members monthly to review various issues related to different types hospital acquired acquired infections and participate in developing strategies to resolve these issues.

2) Antibiotic Stewardship Committee — April 2016 - Present
Children's Hospital of Michigan, Detroit, Michigan
Role: To discuss various issues related to improper antibiotic usage in the hospital and to plan the implementation of strategies to resolve such issues.

3) CLABSI Summit meetings: — June 2020 - Present
Children's Hospital of Michigan, Detroit, Michigan
Role: Infectious Disease Physician lead, responsible for developing clinical protocol for Central line lock solutions to reduce overall rates of central line infections

B) Scholarly Service:

1) Clinical Competence Committee — April 2016 - Present
Infectious Diseases Fellowship Program
Children's Hospital of Michigan, Detroit, Michigan.
Role: To discuss and performance of Infectious Disease fellows quarterly and to provide feedback to improve their overall growth in their clinical and academic learning

2) Scholarly Oversight Committee — April 2019 - Present
Pediatric Nephrology Fellowship Program
Children's Hospital of Michigan, Detroit, Michigan.
Role: To meet with Nephrology fellows twice a year to

review their scholarly progress; and provide feedback to help them resolve any challenges and improve their scholarly performance.

C) **Editorial Board:** Journal: BMC Pediatrics — Feb 2021 - Present

D) Clinical Service:

1) Consultant, Infectious Diseases — April 2016 - Present
Children's Hospital of Michigan
12 weeks per year

2) Attending Physician — April 2016 - Present
Infectious Diseases (In-patient unit)
Children's Hospital of Michigan
10 weeks per year

3) Outpatient Infectious Disease Clinic — April 2016 - Present
3 days per week.

4) Pre Transplant Consultations for — April 2016 - Present
Solid Organ Transplant (SOT) patients
Children's Hospital of Michigan.

5) Attending Physician — September 2015 - April 2016
General Pediatrics in-patient-Observation Unit
Children's Hospital of Michigan.

E) Teaching Service:

1) Inpatient-service (10 weeks per year): Teach and supervise 1st, 2nd and 3rd year Pediatric residents, Med-Peds residents (PGY 1-4); and rotating residents from other participating programs during their in-patient unit service in the division of Infectious Diseases. Teaching activities include bedside teaching, case based didactics, board review sessions. End of rotation feedback and written evaluation of residents is done. — April 2016 - Present

2) Consult-service (12 weeks per year): Teach and supervise the two infectious diseases fellows and pediatric residents (PGY 1-3) on their consultation rotation. Teaching activities includes bedside teaching, case based didactics, review of literature and didactics. End of rotation feedback and written — April 2016 - Present

evaluation of residents is done.

3) Clinical teaching of Pediatric Acute Care Nurse Practitioner Students (PNP Program) from Wayne State University College of Nursing at Children's Hospital of Michigan. Teaching activities include bedside teaching, case based didactics, board review sessions. — April 2016 - Present

4) Prepare monthly Board Review Questions for Infectious Diseases fellows. — April 2016 - Present

5) Participate and present in weekly (Tuesday) combined Med/Peds Infectious Diseases Grand Rounds. — April 2016 - Present

F) Administrative Service:

1) Prepare annual service schedule for all the faculty and fellows of the Division of Infectious Diseases — July 2016 - Present

2) Prepare didactic lecture schedule for the whole academic year for infectious diseases fellows. Activity includes coordination with speakers, selection of topics of lecture. — July 2020 - Present

3) Participating and conducting interviews for the selection of pediatric residents for Pediatric Residency Program — 2015 - Present

4) Participating and conducting interviews for the selection of pediatric residents for Pediatric Residency Program — 2016 - Present

MENTORSHIP:

Provide guidance to fellows in their selection of research projects, preparation of power point presentations, career guidance and job search.

1) Frank Zhu — 2015 - 2018

2) Edward Kim — 2016 - 2019

3) Haider Ailumerab — 2018 - 2019

4) Ahmed Shawaqfeh — 2019 - Present

5) Amr Omar — 2020 - Present

REVIEWER OF JOURNALS:

1)	Clinical and Experimental Obstetrics & Gynecology	2021 - Present
2)	JPGN reports	2021 - Present
3)	Journal of Pediatrics and Child health	2021 - Present
4)	Clinical Pediatrics	2020 - Present
5)	Global Pediatric Health	2019 - Present
6)	Progress in Pediatric Cardiology	2019 - Present
7)	BMC Pediatrics	2019 - Present

REVIEWER OF ABSTRACTS:

1) Meeting: QuESST 2021 Poster Competition, Detroit Medical Center
   Date of Review: 4-26-2021
   Number of Abstracts reviewed: 5

2) Meeting: Great Lakes Pediatrics Research Day, Michigan State University
   Date of Review: 4-1-2021
   Number of Abstracts reviewed: 3

3) Meeting: Great Lakes Pediatrics Research Day, Michigan State University
   Date of Review: 3-3-2022
   Number of Abstracts reviewed: 7

CLINICAL TRIAL ACTIVITIES:

1) Role: Co-Investigator. Multisystem Inflammatory Syndrome Therapies in Children (MISTIC) Trial. PI: Jocelyn Ang, MD. May 2022 - Present

2) Role: Co-Investigator. A Phase 2/3 Single-Arm, Open-Label Study to Evaluate the Safety, Tolerability, Pharmacokinetics, and Efficacy of Remdesivir (GS-5734™) in Participants from Birth to < 18 Years of Age with COVID-19. PI: Eric McGrath. 2021- Present

3) Role: Co-Investigator. Better Antibiotic Selection in Children. PI: Jacqueline A. Leja. 2021 - Present

4) Role: Co-Investigator. Detection of inflammation in urine of COVID-19 patients. PI: Dragana Komnenov. 2020 - Present

5) Role: Co-Investigator. A Phase 1, Non-comparative, Open-Label Study of Pharmacokinetics and Safety of a Single-Dose of ZTI-01 (Fosfomycin for Injection) in Pediatric Subjects (Less than 12 Years of Age) Receiving Standard of Care

Antibiotic Therapy for Proven or Suspected Infection or for Peri-operative Prophylaxis. PI: Jocelyn Ang, MD. 2019 - Present
Grant/Total Direct Costs: $83,180.2
Funding Source: Zavante Pharmaceuticals Inc.

6) Role: Co-Investigator. Kawasaki Disease Comparative Effectiveness (KIDCARE) Trial. PI: Jocelyn Ang, MD. 2018 – 2020
Grant/Total Direct Costs: $12,600 per year
Funding Source: Patient-Centered Outcomes Research Institute

7) Role: Co-Investigator. Children's Hospital of Michigan Integrative Pediatric Transplant Research Database and Bio-Bank Study. PI: Eric McGrath. 2017 – Present

8) Role: Co-Investigator. Title: A Phase 1, Single-Dose Safety and Pharmacokinetic Study of Oral and IV Tedizolid Phosphate (MK-1986) in Inpatients Under 2 Years Old. Merck Pharmaceuticals Inc. PI: Jocelyn Ang. 2018 - 2020
Total Direct Costs: $97,908.28
Funding Source: Merck Pharmaceuticals Inc.

9) Role: PI. Does polymerase chain reaction (PCR) improve the yield of detecting bacterial pathogens in the cerebral spinal fluid (CSF) of neonates who have been pretreated with antibiotics? 2014 - 2016

10) Role: Co-Investigator. A Multicenter, Randomized, Double-Blinded Comparative Study to Evaluate the Efficacy, Safety and Pharmacokinetics of Daptomycin versus Active Comparator in Pediatric Subjects Acute Hematogenous Osteomyelitis Due to Gram-Positive Organisms. Cubist Pharmaceuticals Inc. PI: Jocelyn Ang, MD. 2013 - 2017
Grant/Total Direct and Indirect Costs: $90,063.00
Funding Source: Source: Cubist Pharmaceuticals Inc.

11) Role: Co-Investigator. Coats, Ties and Stethoscopes as Potential Sources of Health Care Associated Infections. Children's Research Center of Michigan. $10000 and departmental fund. PI: N Abdel-Haq. 2010 - 2018

GRANTS:

1) The Ashok and Ingrid Sarnaik Endowment for Residents and Fellows Research at Children's Hospital of Michigan, Children's Research Center of Michigan.
Role: PI
Title: Does polymerase chain reaction (PCR) improve the yield of detecting bacterial pathogens in the cerebral spinal fluid (CSF) of neonates who have been pretreated with antibiotics?
June 2014 - August 2015
Total Direct Costs: $2500

2) BioFire® Diagnostics (Salt Lake City, UT)
Logistic Support Grant: Provided with PCR kits by the manufacturer.
Title: Does polymerase chain reaction (PCR) improve the yield of detecting bacterial pathogens in the cerebral spinal fluid (CSF) of neonates who have been pretreated with antibiotics?
June 2014 - August 2015
Grant: BioFire® Diagnostics Meningitis Encephalitis PCR panel Kits

PUBLICATIONS:

A) Original Articles:

1) **Harbir S. Arora,** Humera Khan, Haider Ailumerab, Girija Natarajan, Kathleen Meert, Hussein Salimnia, Rudolph Valentini, Ronald Thomas, Lynn Semproch, Basim I. Asmar, Eric J. McGrath. A tale of two intensive care units (ICUs): Baseline Staphylococcus aureus colonization and mupirocin susceptibility in neonatal and pediatric patients requiring intensive care. Infection Control & Hospital Epidemiology (2022), 1–6. doi:10.1017/ice.2022.96
Role: Manuscript writing

2) Jocelyn Ang, Nirupama Kannikeswaran, Katherine Parker, Eric McGrath, Nahed Abdel-Haq, **Harbir Arora**, Jorge Lua, Ronald Thomas, Hossein Salimnia, Teena Chopra, Tommy Tran, Basim Asmar. COVID-19 among Minority Children in Detroit, Michigan during the Early National Surge of the Pandemic. Global Pediatric Health. 2021; 8: 2333794X211022710. Published online 2021 May 31. PMID: 3410470
Role: Manuscript writing

3) Nahed Abdel-Haq, Basim I Asmar, Maria P Deza Leon, Eric J McGrath, **Harbir Arora**, Katherine Cashen, Bradley Tilford, Ahmad Charaf Eddine, Usha Sethuraman, Jocelyn Y Ang. SARS-CoV-2-associated multisystem inflammatory syndrome in children: clinical manifestations and the role of infliximab treatment. European Journal of Pediatrics. 2021 Jan, 1-11. PMID: 33452570
Role: Manuscript writing
Citations: 13

4) **Harbir Arora,** Deepak Kamat, Swati Choudhry S, Asmar BI, Abdel-Haq N. Are Stethoscopes, Coats, and Pagers Potential Sources of Healthcare Associated Infections? Global Pediatric Health. 2020 Oct 29; Volume 7, 1-7. PMID: 33195748
Role: Co-I and Manuscript writing.

5) **Harbir Arora,** Basim Asmar, Hossein Salimnia, Prashant Agarwal, Sanjay Chawla, Nahed Abdel-Haq N. Enhanced Identification of Group B Streptococcus and Escherichia coli in Young Infants with Meningitis Using the Biofire Filmarray Meningitis/Encephalitis Panel. Pediatric Infectious Disease Journal. 2017 Jul; 36(7):685-68. PMID: 28114152

Role: Principle investigator and Manuscript writing.
Citations: 45

B) Review Articles:

6) **Harbir Arora.** A to Z of Zika Virus. A comprehensive review for clinicians. Global Pediatric Health, Volume 7, 1-14, 2020. PMID: 32529004.
Role: Invited Review Article
Citations: 4

7) **Harbir Arora**. Sinusitis in children. Pediatric Annals. 2018 Oct 1; 47(10): e396-e401. PMID: 30308675
Role: Invited review article
Citations: 1

8) **Harbir Arora,** Leah Molloy, Shipra Gupta, Jesse Sutton and Nahed Abdel-Haq MD. Multiple Drug Resistant Organisms: Considerations in Antibiotic Selection and Administration. Journal of Pediatric Intensive Care. 2015 Jun; 4(2): 87–96. PMID: 31110857.
Role: Manuscript writing

9) **Harbir Arora,** Jocelyn Y Ang, Glenn Fennell, Mary L Windle, Martin Weisse MD, Daniel Rauch MD, FAAP. Fascioliasis: Review chapter: Medscape Reference. April 27, 2015.
Role: Invited Review Article

10) **Harbir Arora,** Jocelyn Y Ang, Glenn Fennelly, Mary L Windle, Martin Weisse, Daniel Rauch. Hymenolepiasis: Review Chapter: Medscape Reference. April 20, 2015.
Role: Invited Review Article

C) Case Reports:

11) Prashant Agarwal, **Harbir Arora**, Ibrahim Abdulhamid, Basim Asmar, Girija Natarajan and Sanjay Chawla. Pulmonary Hemorrhage in an Infant with Coronavirus Infection. J Neonatal Biol 2015, Volume 4, Issue 2. DOI: 10.4172/2167-0987.1000175
Role: Manuscript writing.
Citations: 4

12) **Harbir Arora**, Nahed Abdel-Haq. 14-Year-Old Boy with Swelling on His Forehead: Pediatric Annals. 2014 Dec; 43(12):479-81. PMID: 25486033
Role: Manuscript writing
Citations: 9

13) **Harbir Arora**, Shailender Madani, Larisa V. Debelenko, Eric J. McGrath, Ramakrishna Mutyala, Lokesh Guglani. Limited Granulomatosis with Polyangiitis in an adolescent with Crohn's Disease on Infliximab therapy: Cause or coincidence? Clin Respir J 2014. 2015 Oct; 9(4):506-11. PMID: 24865526
Role: Manuscript writing
Citations: 3

D) Letter to Editor:

14) Mary Paz Deza Leon, Ajla Redzepi, Eric McGrath, Nahed Abdel-Haq, Ahmed Shawaqfeh, Usha Sethuraman U, Bradley Tilford, Teena Chopra, **Harbir Arora**, Jocelyn Ang, Basim Asmar. COVID-19 Associated Pediatric Multi-System Inflammatory Syndrome. J Pediatric Infect Dis Soc. 2020 May 22, 2020. piaa061.PMID: 32441749 2020 May 22
Role: Manuscript writing
Citations: 121

15) **Harbir Arora**, Saurabh S Chiwane, Nahed Abdel-Haq, Kevin Valentine, Paul Lephart, Basim Asmar. Group B streptococcus sepsis in twins. Pediatric Infectious Disease Journal. 2015 May; 34(5):548-9.
Role: Manuscript writing
Citations: 3

E) Book Chapters:

16) **Harbir Arora MD**, Basim Asmar MD, Eric McGrath MD. Infective Endocarditis In: Cardiac Emergencies in Children: A Practical Approach to Diagnosis and Management. Editors: Ashok P. Sarnaik, Robert D. Ross, Steven E. Lipshultz and Henry L. Walters III. Chapter 18, Page 303-314. Role: Invited Book Chapter

ABSTRACTS:

1) **Harbir Arora, MD,** N. Abdel-Haq, MD, B. Asmar, MD, M. Fairfax, MD, PhD, P. Lephart, PhD, T. Burger MS, H. Salimnia, PhD
Title: Diagnosis of Bacterial Meningitis in infants with and without prior antibiotic exposure using the FilmArray® Meningitis/encephalitis panel.
Meeting: 9th World Congress on Pediatric Infectious Diseases, Rio De Janeiro, Brazil
Role: PI and Poster Review
Date: November 18-21, 2015

2) **Harbir Arora, MD**, Deepak Kamat, MD, PhD, Swati Choudhry, MD, Basim I. Asmar, MD, Kavan Desai and Nahed Abdel-Haq, MD.

Title: Are stethoscopes, coats and pagers potential sources of healthcare associated infections?
Meeting: Pediatric Academic Society (PAS), Sand Diego, CA
Role: Co-I, Poster Writing and Poster Presenter
Date: April 25, 2015.

3) **Harbir Arora MD,** Basim I. Asmar MD, Mara Rubenstein MD, Ravindranath Yaddanapudi MD, Nahed Abdel-Haq, MD.
Title: Breakthrough Pulmonary Mucormycosis in a teenager with leukemia successfully treated with Amphotericin B and Posaconazole without surgery.
Meeting: 27th Annual meeting of the American Society of Pediatric Hematology Oncology, Chicago, IL.
Role: Poster Writing and Poster Presenter
Date: May 15, 2014

4) **Harbir Arora, MD**, Saurabh Chiwane, MD, Nahed Abdel-Haq, MD, Kevin Valentine, MD, Paul Lephart, PhD, Basim Asmar, MD.
Title: Invasive late-onset group B streptococcus infection in twins manifesting as cellulitis-adenitis caused by the same strain.
Meeting: 43rd Critical Care Congress, Moscone Center South, San Francisco, CA
Role: Poster Writing
Date: January 9-13, 2014

PRESENTATIONS:

A) Invited Lectures:

1) Resident's Noon Lecture Series
Topic: Fungal infections
Audience: Pediatric residents of Children's Hospital of Michigan and Medical students from Wayne State University School of Medicine
(Virtual Online) Children Hospital of Michigan, Detroit, MI.
Date: September 8, 2021

2) 63rd Annual Clinic days Lecture Series
Topic: Parental Resistance to Childhood Immunizations.
Audience: General Community Pediatricians & Training residents across USA.
Location: (Virtual Online) Children Hospital of Michigan, Detroit, MI.
Date: October 9, 2020
Number of attendees: 110

3) Monthly Pediatric Emergency Conference
Topic: Tick Bites
Audience: Emergency room physicians and training fellows
Location: Children's Hospital of Michigan, Detroit, MI.

Date: Dec 18, 2019

4) Children Hospital of Michigan 60th Annual Clinic days Lecture Series
Topic: Sinusitis: An overview for Pediatricians.
Audience: General Community Pediatricians & Training Pediatric residents of MI
Location: Troy Marriot, Troy, MI.
Date: May 12, 2017

5) Monthly Pediatric Emergency Conference
Topic: Fever of Unknown Origin
Audience: Emergency room physicians and training fellows
Locations: Children's Hospital of Michigan Auditorium.
Date: March 30, 2016

6) Wayne State University, College of Nursing
Topic: Pediatric Infectious Diseases
Audience: Nursing students at Wayne State University school of Nursing
Location: Wayne State University, Detroit, MI.
Date: Apr 18, 2017

7) Resident's Noon Lecture Series
Topic: Public Health Considerations and Infections in Immunocompromised Hosts.
Audience: Pediatric residents of Children's Hospital of Michigan and Medical students from Wayne State University School of Medicine
Location: Auditorium, Children's Hospital of Michigan, Detroit, MI.
Date: March 10, 2017

8) 59th Annual Clinic days Lecture Series
Topic: Zika Virus: An Overview for Pediatricians
Audience: General Community Pediatricians & Training Pediatric residents of MI
Location: Troy Marriot, Troy, MI.
Date: Oct 22, 2016

B) Presentations at Regional Meetings

9) Michigan Infectious Disease Society Meeting 2015
Title: 6 months old infant with cough
Audience: Adult and Pediatric Infectious Disease Physicians of Michigan
Location: Four Points by Sheraton, Novi, MI.
Date: March 20, 2015

10) Michigan Infectious Disease Society Meeting 2013
Title: 13 year old boy with fever and cavity in left lung
Audience: Adult and Pediatric Infectious Disease Physicians of Michigan
Location: Four Points by Sheraton, Novi, MI.
Date: March 31, 2013