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# Mutaz M. Jaber

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Personal website: <https://mutaz94.github.io>  
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## Research interest

Pharmacometrics, Nonlinear mixed-effect approach, Absorption models, computational statistics, estimation algorithms, Circadian rhythm models, Congenital adrenal hyperplasia, Machine learning

## Education

Experimental and Clinical Pharmacology, PhD - University of Minnesota 2020-current  
Emphasis: **Pharmacometrics**  
Minor: **Statistics**  
Advisor: Richard C. Brundage, PharmD, PhD  
Co-advisor: Mahmoud Al-kofahi, DDS, PhD  
Overall GPA: 3.95

Doctor of Pharmacy, PharmD - Jordan University of Science and Technology 2012-2018  
Department of Clinical Pharmacy  
College of Pharmacy

## Research experience

Graduate research assistant - University of Minnesota 2020 - current  
Advisor: Richard C. Brundage, PharmD, PhD  
Project(s):

- Methodology research - Uncertainty in NLME approach, Machine learning
- Clinical research - Hydrocortisone Pump for congenital adrenal hyperplasia patients

Pharmacometrics GDD intern - Novartis June 2021 - Aug 2021  
Mentor: Matt Fidler, PhD  
Project: Simulation uncertainty in NLME approach

Postdoctoral Associate - University of Minnesota 2019-2020  
Supervisor: Richard C. Brundage, PharmD, PhD  
Project(s):

- Hydrocortisone pharmacokinetics/pharmacodynamics
- Mathematical modeling of circadian rhythms
- Tools development: HydroC-Precision
- Absorption models

Postgraduate researcher - Jordan University of Science and Technology 2018 - 2019  
Supervisor(s): Mera Ababneh, PharmD, PhD; Sayer AlAzzam, MSc, PharmD  
Project(s):

- Antimicrobial stewardship
- Pharmacostatistics models in pharmacoepidemiological research
- Seasonal Influenza vaccination in Jordan

Student research assistant - Jordan University of Science and Technology

2017 - 2018

Project(s):

- Autism, and ADHD pediatric research
- Protein chemical analysis

### **Clinical experience**

Pharmacy intern - Drug information center (KAUH)

May, 2018-July, 2018

Clinical pharmacy rotation - KAUH

Sep, 2017 - May, 2018

Pharmacy intern - KHCC

Jan 2017 - Mar 2017

### **Teaching experience**

- Graduate pharmacometrics summer series (2020, 2021): Population approach and NONMEM. Teaching introduction to population pharmacokinetic focusing on nonlinear mixed-effect approach. This course includes both theoretical and hands on session. The main objective of this course is to introduce the concept and teach student using NONMEM.  
No. of students: 15

### **Programming skills**

R, Python, shell, C/C++, Julia, FORTRAN, LaTeX

### **Awards**

- ACCP/ISoP Student abstract award

ACCP annual meeting 2020

### **Scientific software development**

- HydroC-Precision: Integrated hydrocortisone PKPD platform for children with CAH.
- NCA-ADAPT: Open-source program to conduct a pharmacokinetic non-compartmental analysis.
- ABS-NN: Program to classify absorption shapes using neural networks.

### **Ongoing projects/collaborations**

1- Subcutaneous Hydrocortisone Children With Congenital Adrenal Hyperplasia (NCT03718234) (2019-Current)

Role: PhD student: Develop PK/PD models to describe the dynamic of HPA axis (exogenous and endogenous components)

2- Office of Orphan Products Development of the US Food and Drug Administration award number R01FDR0006100. (2019-2020)

Role: Postdoctoral associate: Develop Oral Hydrocortisone PK/PD model

3- Describing methadone pharmacokinetics in opioid dependent population (2021-current)

Role: Develop PK/PD models

4- Simulating clinical trials with uncertainty - Novartis Pharmacometrics

Role: Investigating the use of different sampling distribution for simulation.

## Publications

- [1] **Jaber, Mutaz M.**, S. Cheng, and R. C. Brundage. "Evaluation of bias in weighted residual calculations when handling below the limit of quantification data using Beal's M3 method". en. In: (), p. 4.
- [2] H. Al-Rayess, O. Y. Addo, E. Palzer, **Jaber, Mutaz M.**, K. Fleissner, J. Hodges, R. Brundage, B. S. Miller, and K. Sarafoglou. "Bone Age Maturation and Growth Outcomes in Young Children with CAH Treated with Hydrocortisone Suspension". In: Journal of the Endocrine Society 6.2 (2022), bvab193.
- [3] **Jaber, Mutaz M.**, B. Yaman, K. Sarafoglou, and R. C. Brundage. "Application of Deep Neural Networks as a Prescreening Tool to Assign Individualized Absorption Models in Pharmacokinetic Analysis". en. In: (2021), p. 11.
- [4] M. Al Kofahi, M. A. Ahmed, **Jaber, Mutaz M.**, T. N. Tran, B. A. Willis, C. L. Zimmerman, M. T. Gonzalez Bolanos, R. C. Brundage, and K. Sarafoglou. "An integrated PK PD model for cortisol and the 17 hydroxyprogesterone and androstenedione biomarkers in children with congenital adrenal hyperplasia". en. In: Br J Clin Pharmacol 87.3 (Mar. 2021), pp. 1098–1110. ISSN: 0306-5251, 1365-2125. DOI: 10.1111/bcp.14470. URL: <https://onlinelibrary.wiley.com/doi/10.1111/bcp.14470> (visited on 05/02/2021).
- [5] H. Al-Rayess, O. Y. Addo, E. Palzer, **Mutaz Jaber**, K. Fleissner, J. Hodges, R. Brundage, B. S. Miller, and K. Sarafoglou. "Hydrocortisone Suspension Provides Similar Growth Outcomes as Hydrocortisone Tablets in Young Children With Congenital Adrenal Hyperplasia: A Cross Sectional Study". In: Journal of the Endocrine Society 5 (2021).
- [6] T. Takahashi, **Jaber, Mutaz M.**, A. R. Smith, P. A. Jacobson, J. Fisher, and M. N. Kirstein. "Predictive Value of C-Reactive Protein and Albumin for Temporal Within-Individual Pharmacokinetic Variability of Voriconazole in Pediatric Hematopoietic Cell Transplant Patients". In: The Journal of Clinical Pharmacology (2021).
- [7] T. Takahashi, M. A. Mohamud, A. R. Smith, P. A. Jacobson, **Jaber, Mutaz M.**, A. F. Alharbi, J. Fisher, and M. N. Kirstein. "CYP2C19 Phenotype and Body Weight-Guided Voriconazole Initial Dose in Infants and Children after Hematopoietic Cell Transplantation". en. In: Antimicrob Agents Chemother 65.9 (Aug. 2021). ISSN: 0066-4804, 1098-6596. DOI: 10.1128/AAC.00623-21. URL: <https://journals.asm.org/doi/10.1128/AAC.00623-21> (visited on 11/11/2021).
- [8] M. Ababneh, **Jaber, Mutaz**, A. Rababa'h, and F. Ababneh. "Seasonal influenza vaccination among older adults in Jordan: prevalence, knowledge, and attitudes". en. In: Human Vaccines & Immunotherapeutics 16.9 (Sept. 2020), pp. 2252–2256. ISSN: 2164-5515, 2164-554X. DOI: 10.1080/21645515.2020.1718438. URL: <https://www.tandfonline.com/doi/full/10.1080/21645515.2020.1718438> (visited on 05/02/2021).
- [9] M. A. Ababneh, **Jaber, Mutaz**, A. Rababa'h, and E. Alabweny. "Prevalence of antimicrobial use in a tertiary academic hospital: a venue for antimicrobial stewardship programs". en. In: Expert Review of Anti-infective Therapy (Dec. 2020), pp. 1–5. ISSN: 1478-7210, 1744-8336. DOI: 10.1080/14787210.2021.1863789. URL: <https://www.tandfonline.com/doi/full/10.1080/14787210.2021.1863789> (visited on 05/02/2021).
- [10] **Jaber, Mutaz M.**, M. Al Kofahi, K. Sarafoglou, and R. C. Brundage. "Individualized Absorption Models in Population Pharmacokinetic Analyses". en. In: CPT Pharmacometrics Syst. Pharmacol. 9.6 (June 2020), pp. 307–309. ISSN: 2163-8306, 2163-8306. DOI: 10.1002/psp4.12513. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/psp4.12513> (visited on 05/02/2021).
- [11] M. Al Kofahi, P. Jacobson, D. R. Boulware, A. Matas, R. Kandaswamy, **Jaber, Mutaz M.**, R. Rajasingham, J.-A. H. Young, and M. R. Nicol. "Finding the Dose for Hydroxychloroquine Prophylaxis for COVID 19: The Desperate Search for Effectiveness". en. In: Clin. Pharmacol. Ther. 108.4 (Oct. 2020), pp. 766–769. ISSN: 0009-9236, 1532-6535. DOI: 10.1002/cpt.1874. URL: <https://onlinelibrary.wiley.com/doi/10.1002/cpt.1874> (visited on 05/02/2021).

- [12] H. Al-Rayess, K. Fleissner, **Jaber, Mutaz**, R. C. Brundage, and K. Sarafoglou. "Manipulation of Hydrocortisone Tablets Leads to Iatrogenic Cushing Syndrome in a 6-Year-Old Girl With CAH". en. In: Journal of the Endocrine Society 4.8 (Aug. 2020), bvaa091. ISSN: 2472-1972. DOI: 10.1210/jendso/bvaa091. URL: <https://academic.oup.com/jes/article/doi/10.1210/jendso/bvaa091/5867523> (visited on 05/02/2021).
- [13] K. Sarafoglou, **Jaber, Mutaz M**, M. Al-Kofahi, and R. C. Brundage. "Hydrocortisone suspension formulations are not necessarily the same in the treatment of children with congenital adrenal hyperplasia". en. In: European Journal of Endocrinology 183.6 (Dec. 2020), pp. L27–L28. ISSN: 0804-4643, 1479-683X. DOI: 10.1530/EJE-20-0938. URL: <https://eje.bioscientifica.com/view/journals/eje/183/6/EJE-20-0938.xml> (visited on 05/02/2021).

## In preparation

- [14] B. EM, M. BS, A. OY, and J. M. M. S. K. "Sex Non-Specific Growth Charts and the Potential Clinical Implications in the Care of Transgender Youth". In: **Target**: JAMA pediatrics (2022).
- [15] **Jaber, MM**, T. Takahashi, M. Kirsten, P. Jacobson, and R. Brundage. "Population Pharmacokinetic Analysis of Phosphoramidate Mustard Following Cyclophosphamide Administration in Hematopoietic Cell Transplant Conditioning Therapy". In: **Target**: Clinical pharmacokinetics (2022).
- [16] **Jaber, Mutaz M.** and R. C. Brundage. "Estimation of the recorded sampling time measurement variability in a nonlinear mixed-effect approach". In: **Target**: Journal of Pharmacokinetics and Pharmacodynamic (2022).
- [17] **Jaber, Mutaz M.** and R. C. Brundage. "Investigating the contribution of residual unexplained variability components in a nonlinear-mixed effect approach". In: **Target**: Journal of Pharmacokinetics and Pharmacodynamic (2022).
- [18] **Jaber, Mutaz M.**, R. C. Brundage, and B. G. "Pharmacokinetic Analysis of Buprenorphine in Opioid-dependent Vietnamese in a Methadone Treatment Program". In: **Target**: Clinical pharmacokinetics (2022).
- [19] **Jaber, Mutaz M.**, R. C. Brundage, and B. G. "Simultaneous Analysis of S-/R-Methadone and their unbound concentration in Opioid-dependent Treatment Program". In: **Target**: Journal of Clinical Pharmacology (2022).
- [20] T. Takahashi, **Jaber, MM**, P. Jacobson, R. Brundage, and M. Kirsten. "Comparison of Dose Adjustment Strategies for Obesity in High-dose Cyclophosphamide Among Adult Hematopoietic Cell Transplantation Recipients". In: **Target**: Blood advances (2022).

## Posters & abstracts

- [21] S. Cheng, **Jaber, Mutaz M.**, D. R. Flora, T. S. Tracy, A. Rettie, and R. C. Brundage. "Model-based analysis of the CYP2C9 genotype impact on the fluconazole inhibition of the commonly prescribed drugs flurbiprofen, ketoprofen, and tolbutamide". In: 2021 Annual American College of Clinical Pharmacology meeting (2021).
- [22] **Jaber, Mutaz M.** and R. C. Brundage. "Investigating Components of Residual Unexplained Variability in Nonlinear Mixed-Effect Modeling". In: Population Approach Group Europe (2021). DOI: 10.13140/RG.2.2.26809.49765.
- [23] **Jaber, Mutaz M.**, T. Takahashi, M. N. Kirstein, P. Jacobson, and R. C. Brundage. "Population Pharmacokinetic Analysis of Phosphoramidate Mustard Following Cyclophosphamide Administration in Hematopoietic Cell Transplant Conditioning Therapy". In: 2021 Annual American College of Clinical Pharmacology meeting (2021). DOI: 10.13140/RG.2.2.23454.05445.
- [24] **Jaber, Mutaz M.**, K. Sarafoglou, M. Al-Kofahi, and R. C. Brundage. "Application of a Deep Learning Algorithm as a Prescreening Tool to Assign Individualized Absorption Models in a Population Pharmacokinetic Analysis". In: 11th American conference on Pharmacometrics (2020).

- [25] **Jaber, Mutaz M.**, K. Sarafoglou, M. Al-Kofahi, and R. C. Brundage. "HydroC-Precision: An Integrated Hydrocortisone Dosing and Biomarker Platform for Treating Children with Congenital Adrenal Hyperplasia". In: 2020 Annual American College of Clinical Pharmacology meeting (2020). DOI: 10.1002/cpdd.858.

## **Presentations & talks**

- Investigation the Contribution of Residual Unexplained Variability Components in NLME approach  
2021  
PAGE 2021 & ECP
- Simulation with Uncertainty in NLME approach  
Novartis 2021
- Application of Deep Learning in Pharmacokinetic Analysis  
ECP 2020
- HydroC-Precision: An Integrated Hydrocortisone Dosing and Biomarker Platform for Treating Children with Congenital Adrenal Hyperplasia  
ACCP 2020

## **Professional service**

- Minnesota Pharmacometrics Summer School 2020: Planning Committee Member
- International Society of Pharmacometrics: Student Committee Member
- Doctor of Pharmacy Toward Optimum Patient Care Campaign
- Cooperative Group of Medical Profession (CGMP)
- Jordan University of Science and Technology Student Union 2015-2016: Class representative to 12 batch

## **Professional society**

- American Society of Clinical Pharmacology
- International Society of Pharmacometrics
- Society for Industrial and Applied Mathematics
- American Statistical Association - Pharmacometrics