Project Title:

Introduction of Video Otoscopy to Enhance Medical Students' Technical and Diagnostic Skills

Primary Investigator:

Marie Cavuoto Petrizzo MD (MS Ed candidate)

Assistant Professor, Zucker School of Medicine

Departments of Science Education and Pediatrics

Co-Investigators:

Janice John MD, MPH

Assistant Professor, Zucker School of Medicine

Departments of Science Education and Pediatrics

Doreen Olvet, PhD

Assistant Professor, Zucker School of Medicine

Department of Science Education

Roya Samuels MD

Assistant Professor, Zucker School of Medicine

Department of Pediatrics

Collaborators:

Melissa Pawelczak MD

Assistant Professor, Zucker School of Medicine

Departments of Science Education and Pediatrics

Shara Steiner DO, MACM

Associate Professor, Zucker School of Medicine

Specialized Programs in Education

Section of Focus:

UGME

Primary Contact:

Marie Cavuoto Petrizzo

Marie.C.Petrizzo@hofstra.edu / **(cell) 718.344.0123**

Proposal Abstract

Problem/Educational Issue: Effective teaching and assessment of otologic examinations are challenging in UGME. Mastery of otoscopy skills is typically assumed by graduation. However, studies show that few students feel confident in otoscopy and their diagnostic accuracy is largely inadequate. Current methods of teaching otoscopy using conventional otoscopes have significant limitations resulting in student difficulty performing the skills adequately, struggling to obtain satisfactory views, and misinterpreting findings. The compounding effects of ineffective training in otoscopy with the high prevalence of patient visits for otologic concerns set up students for failure during their education and beyond, ultimately hindering patient care.

Goal: Inclusion of video otoscopy clinical skills training to provide third year medical students a superior educational opportunity resulting in measurable student proficiency in otoscopy.

Approach: MS3 students will participate in a didactic and video otoscopy clinical skills session prior to their pediatric clerkship. Students will learn a set of specific microskills using the video otoscope with deliberate practice during their ambulatory clinical experience. Trained preceptors will provide real-time visual coaching. Objective measurement of students' skills with video otoscopy will be obtained through an end-of-clerkship otoscopy OSCE. All students will complete pre- and post-clerkship assessments to measure diagnostic accuracy of otoscopic images and their confidence with technical and diagnostic skills.

Predicted Outcomes: MS3s trained in video otoscopy in the clinical setting will increase 1. their self-reported confidence and competence in their technical and diagnostic otoscopic skills and 2. their diagnostic accuracy.

Anticipated Impact & Dissemination: Otoscopy training using a video otoscope meaningfully impacts student competency in this fundamentally important skill. Enhanced training in otoscopy will lead to improved patient outcomes including fewer misdiagnoses, less morbidity, less antibiotic use and decreased medical costs. Our findings will be submitted for publication and presentation with the expectation of motivating other schools to adopt video otoscopy as a standardized method of teaching otoscopy.

Proposal Narrative

Rational and Statement of the Problem: Competency in otoscopy prior to residency matriculation is important and advantageous. With approximately 40% of medical students entering a primary care residency, it is imperative that medical students have a strong foundation in otoscopy in order to diagnose and properly treat patients' otologic concerns.[1] The compounding effects of inadequate training in otoscopy and the high prevalence of primary care visits for otologic concerns can result in poor performance of this necessary skill and adverse patient experiences and outcomes. This is evidenced by current statistics: only 51% of US pediatricians and 46% of US general practioners were able to differentiate between acute otitis media, otitis media with effusion (serous otitis media), and a normal otoscopic exam.[2] On a societal level, unsuitable technique by the clinician and poor interpretation of findings results in misdiagnoses, patient morbidity, the overuse of antibiotics, and an overall increase in medical expenditures. [3,4] Medical students thus have the need for competency in otoscopy skills prior to providing patient care without direct supervision. However, only 5% of students completing their third year of medical school felt confident in performing an otoscopic exam.[5] Similarly, studies have shown that medical student diagnostic accuracy using otoscopy is low, ranging from 22%-62%. [1, 6-8]

Our goal is for MS3 students to achieve both technical and diagnostic skills competency by the conclusion of their pediatric clerkship. Otoscopy training using a video otoscope will provide opportunity for enhanced questioning, reflection-in-action, feedback, adjustment, and re-practicing, resulting in measurable student proficiency in otoscopy. We propose that if third-year medical students are trained in video otoscopy with opportunities for deliberate practice in the clinical setting, then: 1. their self-reported confidence and competence in their technical and diagnostic otoscopic skills will increase and 2. their diagnostic accuracy will improve.

Background and Theoretical Framework: Effective teaching and assessment of an ear examination are challenging in the medical school environment. [1,9] Mastery in otoscopic technical and diagnostic skills requires both hands-on experience with the otoscope device itself and the repetition of seeing, recognizing and evaluating pathologies discovered through otoscopy. [10] Practice and fine tuning of skills is expected during clinical clerkships. Unfortunately, translation of otoscopy skills from the classroom to the bedside is typically assumed and rarely objectively assessed because the current methods of teaching do not allow instructors and students to visualize inner ear anatomy simultaneously. [11] Thus, it is impossible for faculty to determine if the student can recognize abnormal structures and delineate pathology during a live examination. These limitations can result in a student having difficulty performing the skills adequately, struggling to obtain satisfactory views of the inner ear, or misinterpreting findings. Ultimately, this impedes the faculty's ability to provide high-quality feedback and coaching and ensure student competency.

An ideal approach to teaching otoscopy to medical students would include direct training by experienced physicians using a video otoscope rather than a conventional otoscope. Use of a video otoscope allows both student and physician-instructor to view the inner ear simultaneously. Students can learn by observing clinical faculty's performance, through real-time analysis of the images obtained via a video otoscope, and from direct observation with feedback from faculty during their own hands-on-practice. Additionally, because the video

otoscope uses a similar structural design to a conventional otoscope, students can refine their manual dexterity during patient examinations.

In line with social learning theory, role modeling, mentoring, and cooperative learning all will occur while training on a video otoscope. [12-14] Learners can role model the specific techniques demonstrated by faculty. The students are afforded opportunities to reproduce and deliberately practice[15] during the numerous patient clinical encounters during the outpatient component of the pediatric clerkship using the video otoscope. The expertise of the preceptors facilitates social learning as faculty can provide knowledge and guide the learner in live time during simultaneous visualization. Cognitive apprenticeship occurs through the modelling of skills, coaching in live time, and scaffolding of students.[13, 14] Faculty can articulate questions and stimulate responses as well as encourage the reflection-in-action and exploration to modify technical skills and interpretation of findings in live time. Also encompassed is the cognitive component in which students will be able to process the information they see when performing proper otoscopic exams and assign meaning (i.e., diagnosis) in a situated learning environment.[12,16]

Advanced otoscopy training methods for students reported in the literature include otoscopic simulators [7-9, 17,18] and use of a smart phone with an otoscope attached to the camera lens. [3] However, simulators are not equivalent to authentic patient examinations and use of smart phones with otoscopic lenses do not align with the proper manual skills needed when using a traditional otoscope. While use of a digital otoscope in a pediatric residency curriculum was discoverable, [19] there are no reports of any use of a digital video otoscope to train medical students in otoscopy. Implementation of video otoscope training during the M3 otoscopy curriculum will enable students to perfect technical skills through enhanced feedback by faculty and re-practicing of skills in real time. Additionally, use of the video otoscope during the outpatient pediatric clerkship experience affords students the ability to diagnose common ear findings through simultaneous visualization with faulty and the opportunity to ask and respond to questions with actual patients in real time.

Approach: Just prior to the 2021-2022 MS3 academic year, pediatric clerkship ambulatory preceptors will attend an instructional session led by the study PI to discuss the goals and objectives of this new otoscopy curriculum. Faculty will be trained to use a video otoscope which will be provided for use at their ambulatory site. Faculty will also be instructed on providing feedback and coaching of students when using the video otoscope. Directions on completing microskills checklists and global assessments for each student will also be reviewed.

Beginning in Trimester 1 of the 2021-2022 academic year, MS3 students will attend an otoscopy didactic and skills session during their clerkship orientation. During this session, they will be introduced to the JEDMED HORUS HD Video Otoscope. The JEDMED HORUS HD Video Otoscope (St Louis, Missouri, USA) is an all-in-one handheld digital otoscope with a liquid crystal display (LCD) viewfinder which provides an on-screen display of images for immediate review as well as capture and storage (https://cdn.shopify.com/s/files/1/0031/7032/files/Digitalotoscope.pdf?12569118750415215003). The otoscope can also connect to a computer and television to display live images and videos. Learner objectives of the orientation session include discussion and demonstration of standardized otoscopy microskills, visualization and identification of middle ear anatomy, and analysis of common otoscopic findings. Students will individually practice the otoscopy microskills on their peers using a video otoscope while being coached by trained faculty.

A microskills competency checklist (Appendix A) adapted from a published validated checklist [20] will be provided to students for use during the ambulatory week of the clerkship to formatively assess technique during actual patient examinations. Preceptors will observe students performing video otoscopy on patients and provide feedback and coaching based on the microskills checklist. Students will then have the opportunity to ask questions, adjust, and re-practice skills. A formative global assessment of skills adapted from Sawyer et. al [21] will be completed by preceptors when observing students and used to designate students as novice, advanced beginner, competent, proficient or expert. Students will use the completed checklists and global assessments to guide their deliberate practice during future otoscopic examinations.

An otoscopy confidence and diagnostic ability questionnaire will be administered to all MS3 students one week prior to beginning their clerkship (https://hofstra.co1.qualtrics.com/jfe/form/SV_5aTHYWfI8YUfj8x). The pre-clerkship questionnaire will measure student self-confidence in positioning a patient for otoscopy, placing the otoscope correctly in the ear, adjusting to visualize the tympanic membrane, identifying landmarks, and describing the tympanic membrane appearance. In addition, three questions are included to assess students' diagnostic ability when presented otoscopy images in clinical vignettes. A similar questionnaire will be administered to all students on the last day of the pediatric clerkship (https://hofstra.co1.qualtrics.com/jfe/form/SV_5c0zu2L7CbfXBvn). This post-clerkship questionnaire will again measure student self-confidence with the above mentioned technical skills, their diagnostic ability (based on the identical images and clinical vignettes from the pre-clerkship questionnaire), and will also query students' opinions on using the video otoscope to enhance skills learning and skills performance.

A potential barrier is the variability in coaching amongst the many pediatric preceptors to which students are assigned during the clerkship. To address this, pediatric preceptors will be asked to attend a faculty development session, mentioned above, which will reinforce the goals and objectives of video otoscopy training, review use of the video otoscope, and review the standardized microskills students need to demonstrate in order to be labeled competent in otoscopy. Faculty will be provided a "Just in Time Teaching" (JITT) infographic card, created by the PI and a co-PI, which illustrates a standardized method of teaching otoscopy to students.

Outcomes and Evaluation Plan: We anticipate that training on a video otoscope and having an opportunity for deliberate practice during clinical encounters will increase student self-reported confidence in the technical and diagnostic skills and improve diagnostic and technical competency during otoscopy.

The following outcome measures will be collected: 1) self-reported confidence questionnaire (pre- and post-pediatric clerkship): student confidence in skills required for performing a pediatric ear exam (e.g., positioning, otoscope placement, visualization of the tympanic membrane, and diagnosing otitis media) will be evaluated using a 5-point Likert scale ranging from strongly disagree to strongly agree and open ended-questions; 2) visual diagnosis questions (knowledge-based) will be included at the end of the pre and post pediatric clerkship confidence questionnaire; and 3) a global assessment scale will be used to evaluate student's otoscope skills by clinical faculty at the start of the ambulatory clerkship and at the end of clerkship. Scores on an otoscopy-based summative Objective Structured Clinical Exam (OSCE) encounter occurring at the end of the clerkship will also be analyzed.

We have preliminary data from a pilot study using a single otoscope that was purchased by the ZSOM. Figure 1 (Appendix B) shows that students who were given access to the otoscope (N=5) had a trend increase in confidence recognizing a light reflex (Z=-1.63, p=0.10), identifying a normal tympanic membrane (Z=-1.89, p=0.06), and diagnosing serous otitis media (Z=-1.84, p=0.07). Students commented that the otoscope "Helped me get better positioning. Definitely easier to use vs a regular otoscope" and "It was good to have a preceptor confirm what I'm seeing is correct."

All data in this study will be statistically evaluated using IBM SPSS Statistics (SPSS Inc., Chicago, Illinois, USA, Version 24.0). The Wilcoxon Signed Ranks test will be used to determine changes in confidence, knowledge and skills over time. For all tests, a p value ≤ 0.05 will be considered statistically significant. Open ended comments on student's confidence and experience with the video otoscope will be analyzed qualitatively using a thematic analysis.[22]

This project can easily be sustained once the medical equipment is initially purchased. No further expenses are anticipated.

Looking forward, our learners will be well prepared to enter residency programs in which otologic concerns are prevalent. These learners will feel confident evaluating patients without direct supervision and will be adept at making accurate clinical diagnoses. These future physicians will provide appropriate care to their patient's otologic concerns and their proficiency in otoscopy will result in less misdiagnoses, less excessive use of antibiotics and ultimately a decrease in medical expenditures.

Plan for Dissemination of Project Outcomes Regionally and Nationally: The AAMC has noted that generally accepted standards regarding clinical skills, such as otoscopy, do not exist and that medical schools vary widely in the degree to which competency is expected.[23] We anticipate that dissemination of this research will inspire and motivate other medical schools to adopt a video otoscopy curriculum and incorporate these technical and diagnostic skills standards for their graduates.

We intend to submit our findings for presentation at the Association of American Medical Colleges as well as for publication in a peer-reviewed medical journal such as Academic Pediatrics.

References

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6. Fishcer EW, Pfleiderer, A.G. Assessment of the otoscopic skills of general practioners and medical students: is there room for improvement? Br J Gen Pract. 1992;42:65-67.
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14. Stalmeijer RE, Dolmans DH, Wolfhagen IH, Scherpbier AJ. Cognitive apprenticeship in clinical practice: can it stimulate learning in the opinion of students? *Adv Health Sci Educ Theory Pract*. 2009;14(4):535-546. doi:10.1007/s10459-008-9136-0
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20. Paul CR, Keely MG, Rebella G, Frohna G. Standardization Checklist for Otoscopy Performance Evaluation; Validation Study of a Tool to Assess Pediatric Otoscopy Skills. MedEdPORTAL 2016; 12:10432
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23. The Association of American Medical Colleges, Recommendations for Clinical Skills Curricula for Undergraduate Medical Education Task Force on the Clinical Skills Education of Medical Students.2005

Appendices

Appendix A- Microskills Checklist

Otoscopy Skills Assessed	Not Done	Done, but in need of remediation	Done Correctly	Comment
Student explains to the patient that they will be performing an ear examination.				
Inspect pinna, post-auricular skin, entrance to the ear canal for deformities, lesions, scars, debris/discharge				
Ensure appropriate position for patient				
If needed, secure/stabilize head				
Manipulate pinna correctly to straighten ear canal and facilitate view				
Insert otoscope with dominant hand				
Stabilize otoscope by bracing finger or hand against patient's head				
Adjust position to view ear canal and tympanic membrane				
Identify light reflex				
Verbally describe color of tympanic membrane				
Verbally describe translucency of tympanic membrane				
Verbally describe position of tympanic membrane				

Appendix B – Figure 1: Pilot Preliminary Data

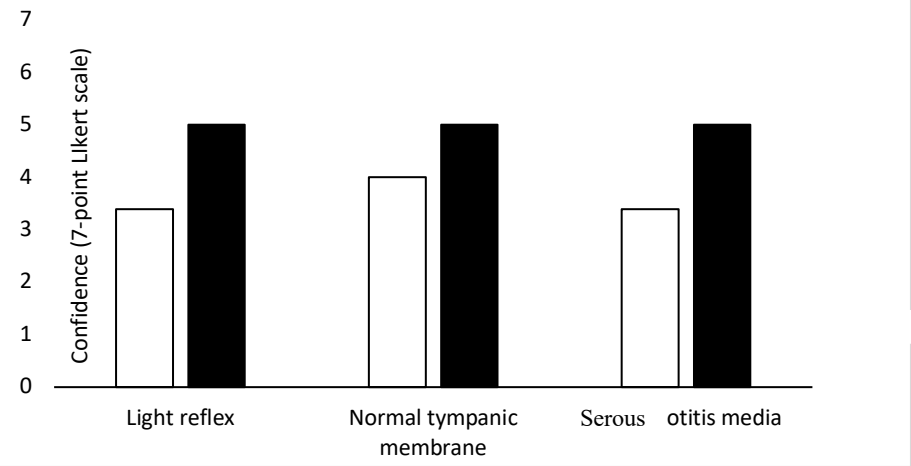

Figure 1: Students who were given access to the otoscope (N=5) had a trend increase in confidence recognizing a light reflex (Z=-1.63, p=0.10), identifying a normal tympanic membrane (Z=-1.89, p=0.06), and diagnosing serous otitis media

Projected Timeline

August 2020-February2021	•Pilot Study
Spring 2021	•Purchase of Video Otoscopes •Redesign any areas of curriculum based on student /faculty feedback and lessons learned
May 2021	•Faculty Development Session for Pediatric Preceptors
June- September 2021 Trimester 1	•Pediatric Clerkship Cycles 1 and 2 didactic and skills session •Student use of video otoscopes during ambulatory weeks in Pediatrics •Data collection via pre and post clerkship questionnaires
October 2021-January2022 Trimester 2	•Pediatric Clerkship Cycles 3 and 4 didactic and skills session •Student use of video otoscopes during ambulatory weeks in Pediatrics •Data collection via pre and post clerkship questionnaires
February - May 2022 Trimester 3	•Pediatric Clerkship Cycles 5 and 6 didactic and skills session •Student use of video otoscopes during ambulatory weeks in Pediatrics •Data collection via pre and post clerkship questionnaires
June -August 2022	•Data Analysis
August-December 2022	•Draft publication manuscript •Submit publication and disseminate findings nationally

Budget

Item	# of Items	Cost Per Item	Total
1. JedMed Horus Video Otoscope	**6**	**$ 795** (https://www.jedmed.com/collections/video-otoscopy/products/horus-hd-video-otoscope)	**$4770**
2. Preceptor Materials (including but not limited to the Production/Color Printing/Distribution of JITT rack cards		**$230**	**$230**
Total			**$5000**

Justification:

1. Pediatric clerkship students rotate through an ambulatory pediatric clinic for one week during each clerkship cycle. There are multiple sites and preceptors used for these outpatient experiences. In order to provide each student with the opportunity to be trained in video otoscopy, we are requesting six new video otoscopes. Several of the otoscopes will be designated for use at the ambulatory sites while others will remain at the school SOM and will be used to for teaching and demonstration during the FOW and SOW didactic and clinical skills sessions.

2. JITT material customized production, color printing and distribution.

IRB Approval: "Introduction of a Digital Otoscope to Enhance Otoscopy Training in Undergraduate Medical Education"
HUIRB Approval Ref#: 20200514-SOM-PET-1

Biographical Sketch

Marie Cavuoto Petrizzo MD

Assistant Professor Dept of Science Education, Assistant Professor Dept of Pediatrics
Zucker School of Medicine at Hofstra/Northwell

Education/Training

Institution/Program	Degree	Completion Date	Field
Hofstra University	M.S.Ed - candidate	Anticipated May 2021	Education
Fellowship – Allergy and Immunology North Shore- Long Island Jewish Health System		June 2004	Allergy and Immunology
Pediatric Internship and Residency Albany Medical College		June 2002	Pediatrics
Albany Medical College	MD	May 1999	Medicine
Union College	BS	June 1996	Biology-Sociology

Personal Statement

I am the primary investigator of the project "Introduction of Video Otoscopy to Ensure Competency in Medical Students' Technical and Diagnostic Skills." I am uniquely qualified to lead this project based on my training and personal clinical experience in pediatrics and allergology in addition to my years of teaching otoscopy to residents, fellows and medical students. I am highly proficient in otoscopy's technical and diagnostic skills as a result of my over 20 years of examining and treating patients with otologic concerns. As faculty at Northwell Health from 2004-2017 and 2020-present, I precept residents and fellows-in-training. I instruct them on physical exam techniques such as otoscopy and review their diagnostic skills when examining patients. In this capacity, I recognized that many trainees do not feel confident in their otoscopy skills and have difficulty making accurate diagnoses. I postulated that better training in medical school would better prepare trainees. My core faculty position at the Zucker School of Medicine has positioned me to actively reform and expand otoscopy training for students. I have worked with the Co-Director of Clinical Skills to provide additional, and more structured, instruction time for medical students in the First One Hundred Weeks to develop competency in otoscopy skills. This has included revision of the MS1 HEENT physical diagnosis session and well as introduction of an MS2 didactic and skills session which I developed and lead. I have also collaborated with the Co-Director of Clinical Skills and Pediatric ACE director to include otoscopy assessments during the OSCE exams in the MS2 and MS3 years. At my request, a single video otoscope was purchased last year by the ZSOM. I have used this otoscope to enhance instruction during the MS2 otoscopy session and this Fall, introduced its use during the MS3 pediatric ambulatory experience. I have received very supportive feedback on its use by students. As a student in Hofstra's M.S.Ed graduate program, I am well versed in adult learning educational theories and bring this knowledge to the development of this otoscopy project. I am presently running a small pilot study of a video otoscopy curriculum for the current MS3 class. In addition, I have published four peer-reviewed articles related to UME curricular innovations in the last three years and have presented medical education abstracts at national meetings. I also sit on the Advisory Committee for Student Research and now Curriculum Committee, and thus have a strong interest in medical education research and curricular innovation.

Positions Held

1/20-Present	Faculty, Division of Allergy and Immunology	Northwell Health
2019-Present	Co-Director Patient, Physician and Society	Zucker School of Medicine

2018-2019	Assistant Director, Patient, Physician and Society	Zucker School of Medicine
2018-Present	Assistant Professor (Science Ed & Pediatrics)	Zucker School of Medicine
2017-2018	Clinical Assistant Professor	Zucker School of Medicine
4/12-1/17	Voluntary Faculty	North Shore-LIJ
6/05-3/12	Attending Physician	North Shore -LIJ

Honors & Awards

2020 Fellow, American College Allergy, Asthma & Immunology

2020 Leadership Institute 2020 cohort, American Academy Allergy, Asthma and Immunology

(selected but not able to attend due to COVID-19 related conference cancellation)

2007 Fellow, American Academy Allergy, Asthma & Immunology

1999 R.J. Wharton Prize- greatest proficiency in pediatrics, Albany Medical College

Contribution to Medical Education

1. Just In Time Teaching (JITT) Infographic: "How to Teach Your Medical Student Otoscopy," 2020.
2. Invited to lead a break-out session at the January 2021 AAAAI Virtual Program Directors Assembly Winter Meeting: Novel Approaches to Virtual Teaching & Learning.
3. Cavuoto Petrizzo M, Block L, Olvet D, Sheridan E, Dougherty R, Whitson M, John J, Barilla-LaBarca ML, Peck S, Fornari A. Implementation of a Nutrition Workshop in a Pre-clinical Medical School Curriculum with an Inter-professional Faculty Team. AAMC Medical Education Meeting. (2020) ***Oral Presentation will occur virtually due to Covid-19***
4. Cavuoto Petrizzo M, Olvet D, Stern JNH. Contextualizing and Providing Relevance to Immunology Science in a Pre-clerkship Undergraduate Medical Education Curriculum. ACAAI Annual Meeting. (2020) ***Poster will be presented virtually due to Covid-19***
5. Cavuoto Petrizzo M, Barilla LaBarca ML, Jongco AM, Cassara M, Anglim J, Stern JNH. Preclinical Medical Students' Perceptions of the Utility of High-Fidelity Simulation to Learn the Mechanisms and Presentations of Hypersensitivity Reactions. Journal of Allergy and Clinical Immunology (2020): Volume 145, Issue 2, AB159 * ***Poster disseminated virtually*** *due to COVID 19*

Research Support and/or Scholastic Performance

1. **Cavuoto Petrizzo M,** Olvet DM, Stern JNH. Allergists/immunologists contextualize and provide relevance to immunology in a preclerkship undergraduate medical education curriculum. Ann Allergy Asthma Immunol. 2020 Oct;125(4):475-477. doi: 10.1016/j.anai.2020.07.031. Epub 2020 Aug 1. PMID: 32745611.
2. **Cavuoto Petrizzo M,** Block L, Olvet DM, et al. Implementation of an Interprofessional Nutrition Workshop to Integrate Nutrition Education into a Preclinical Medical School Curriculum. *J Am Coll Nutr*. 2020;1-8. doi:10.1080/07315724.2020.1737985
3. **Cavuoto Petrizzo, M**., Barilla-LaBarca, ML., Lim, Y.S. et al. Utilization of high-fidelity simulation to address challenges with the basic science immunology education of preclinical medical students. BMC Med Educ. 2019; 19: 352. https://doi.org/10.1186/s12909-019-1786-5
4. Barilla-LaBarca M-L, Rodriguez M, Connors K, Wanamaker T, **Cavuoto Petrizzo M.** Common variable immunodeficiency: a standardized patient case for second-year medical students. MedEdPORTAL. 2019;15:10837.https://doi.org/10.15766/mep_2374-8265.10837
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BIOGRAPHICAL SKETCH

NAME: Doreen M. Olvet, PhD

POSITION TITLE: Medical Education Research Project Manager, Assistant Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date MM/YYYY	FIELD OF STUDY
Manhattanville College, Purchase, NY	BA	01/2000	Psychology
Teachers College, Columbia University, NY, NY	MA	02/2004	Psychology
Stony Brook University, Stony Brook, NY	MA	08/2007	Psychology
Stony Brook University, Stony Brook, NY	PhD	05/2009	Biopsychology

A. Personal Statement

My experience as an independent researcher has laid the foundation for the knowledge and skills required to initiate, execute, and complete high quality research studies. Within my role as the Medical Education Research Project Manager, I work closely with faculty to enhance scholarly research in medical education. I am proficient in biostatistical and qualitative data analysis methods, therefore my role in this project will be to analyze and synthesize the data gathered. In particular, the selected peer-reviewed publications listed under Section E exemplify my ability to carry out complex statistical analyses and manage a diverse array of research projects. I have worked with Dr. Cavuoto Petrizzo on several previous research projects, resulting in two published manuscripts, therefore I anticipate that our continued collaboration will be successful.

B. Positions Held

2009-2012 Postdoctoral Research Fellow, Zucker Hillside Hospital, Dept. of Psychiatry Research

2012-2014 Research Assistant Professor, Stony Brook University, Department of Psychiatry

2015-2018 Research Project & Data Manager, Office of Academic & Faculty Affairs, Stony Brook School of Medicine

2018-pres. Medical Education Research Project Manager, Assistant Professor, Department of Science Education, Donald & Barbara Zucker School of Medicine at Hofstra/Northwell

C. Honors & Awards

2007	Travel Award, Research Society on Alcoholism Conference
2008	Alumni Graduate Summer Research Fellowship
2012-2014	American Foundation for Suicide Prevention (AFSP) Post-Doctoral Research Fellowship
2013	AFSP Researcher Travel Award for the IASR World Congress
2014	Nominee for the 2014 Regional Blavatnik Awards for Young Scientists

D. Contributions to Medical Education

1. Richman PS, **Olvet DM**, Ahmad S, & Chandran L (2019). Use of student feedback to drive quality improvement (QI) in a preclinical U.S. medical school course. *Medical Education Online*, 24.
2. Bird JB, **Olvet DM**, Willey JM, & Brenner J (2019). Patients don't come with multiple choice options: essay-based assessment in UME. *Medical Education Online*, 24.
3. **Olvet DM**, Wackett A, Crichlow S, & Baldelli P (2020). Analysis of a Near Peer Tutoring Program to Improve Medical students' Note Writing Skills. *Teaching & Learning in Medicine*, 1-9.
4. Cavuoto Petrizzo M, Block L, **Olvet DM**, Sheridan E, Dougherty R, Whitson M, John J, Barilla-Labarca ML, DiFiglia-Peck S, Fornari A (2020). Implementation of an interprofessional nutrition workshop to integrate nutrition education into a preclinical medical school curriculum. *Journal of the American College of Nutrition*, 1-8.
5. Cavuoto Petrizzo MC, **Olvet DM**, & Stern JN (2020). Allergists/immunologists contextualize and provide relevance to immunology in a preclerkship undergraduate medical education curriculum. *Annals of Allergy, Asthma & Immunology*, *125*(4), 475-477.

E. Additional Information: Research Support and/or Scholastic Performance

1. **Olvet, DM** & Hajcak, G (2009). The stability of error-related brain activity with increasing trials. *Psychophysiology,* 46, 957-961. PMID: 19558398
2. **Olvet, DM &** Hajcak, G (2009). Reliability of error-related brain activity. *Brain Research,* 1284, 89-99. PMID: 19501071
3. **Olvet DM***, Peruzzo D*, Thapa-Chhetry B, Sublette ME, Sullivan GM, Oquendo MA, Mann JJ, & Parsey RV (2014). A diffusion tensor imaging study of suicide attempters*. Journal of Psychiatric Research*, 51, 60-67.
4. **Olvet DM**, Carrion RE, Auther AM, & Cornblatt BA (2015). Self-awareness of functional impairment in individuals at clinical high-risk for psychosis. *Early Intervention in Psychiatry*, 9(2), 100-107.
5. **Olvet DM**, Delaparte L, Yeh F-C, DeLorenzo C, McGrath PJ, Weismman MM, Adams P, Fava M, Deckersbach T, McInnis MG, Carmody TJ, Cooper CM, Kurian BT, Lu H, Toups MS, Trivedi MH, Parsey RV (2016). A comprehensive examination of white matter tracts and connectometry in major depressive disorder. *Depression & Anxiety,* 33 (1), 56-65.

BIOGRAPHICAL SKETCH

NAME: Samuels, Roya

eRA COMMONS USER NAME (credential, e.g., agency login): rsamuels

POSITION TITLE: Assistant Professor of Pediatrics

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Columbia University	B.S	06/2000	Neuroscience
Albert Einstein College of Medicine	M.D	06/2005	Medicine

A. Personal Statement

I have the leadership skill, training, and motivation necessary to successfully carry out the proposed research project. My experience as director of the Advanced Clinical Experience for the third year Pediatrics clerkship has afforded me with the expertise to train students through this educational module. My career has been marked by dedication to the education of residents and medical students in their clinical training. This devotion to teaching, coupled with a clear commitment to bettering the welfare of my patients and community, makes me a prime candidate to be on this exciting and innovating project.

B. Positions and Honors

2016 – Zucker School of Medicine Pediatric ACE coordinator
2008 - Cohen Children's Medical Center of NY (nee Schneider Children's Hospital) Attending, Department of General Pediatrics
Board-Certified general pediatrician in outpatient department
Preceptor of CCMC residents and AECOM medical students in weekly continuity clinic
Contributor to development of web-based clinical case scenarios for medical student and resident education (AKESO)
Reach-out-and-Read Medical director (4/2010 -present)
2005 - Cohen Children's Medical Center of NY Pediatrics Intern and Resident

Other Experience and Professional Memberships

2010 Nassau Pediatric Society Member

2008 Fellow, American Academy of Pediatrics Honors

2019 – Zucker School of Medicine Second 100 Weeks Teacher of the Year
2009 - Distinguished Alumnae award at The Beren Academy, Houston TX
2008 - North Shore-LIJ Department of Pediatrics Philip Lipsitz Resident Teaching Award
2005 - Albert Einstein College of Medicine, Stanley Scholars

Research Fellowship award
2000 - Phi Beta Kappa Inductee
2000 - Summa Cum Laude graduate of Columbia University
1996-2005 - Teagle Foundation Scholarship Award
1996-2000 - Columbia University Deans' List

C. Contribution to Science

In the words of Dr. Oliver Sacks, "I am equally interested in disease and people, perhaps, too, that I am equally…drawn to the scientific and the romantic, and continually see both in the human condition…"
My experiences as a pediatric clinician have exposed me to the manifestation of human love at its greatest height. It remains my personal aspiration to connect the objectivity of science with warm-hearted healing intending to children. Melding professionalism with intimacy as an advocate for the pediatric population is my personal career goal. I have been fortunate enough to combine the *scientific* and the *romantic* in writing for and educating the public at large regarding important health topics. I have been interviewed by numerous reporters
and journalists for a variety of media sources such as Healthday and WEBMD. I have also served as reviewer to an extensive series of Aetna Intellihealth educational articles for parents. Aside from my passion for public education, I am also continually inspired by the medical students and residents with whom I am fortunate to work. It is a pleasure to watch another generation of future clinicians, bright-eyed and eager to learn, embark on the same journey of intellectual curiosity year after year. My experiences as lecturer at multiple morning report, noon conference and problem-based-learning sessions keeps me inspired to educate myself, my students and my patients.

Complete List of Published Work in My Bibliography:

1. **Samuels RR,** Sewarine M, Bernstein H. Influenza. Succinct Pediatrics Bk 2 Chapter 31. Elk Grove Village, IL: American Academy of Pediatrics; 2017.
2. **Samuels RR**, Sewnarine M, Bernstein H. Pediatric Influenza. Pediatric Evaluation and Therapy. 1st Edition. Elk Grove Village, IL: American Academy of Pediatrics; 2013.
3. **Samuels RR**, Bernstein HH. Pediatric Influenza. In McMillan, Barrett, Boney, and Jones (Editors). *Clinical Decision*
Support: PEDIATRICS [digital version]. Delaware: Decision Support in Medicine, LLC; 2011
4. **Samuels RR**. Neustein, S. (2009). Contemporary Pediatrics. *The Blue Wheezer.*
5. **Samuels RR**. (2008). Consultant for Pediatricians. *Infantile Botulism.*
6. **Samuels RR**. (2008). Contemporary Pediatrics. *Recurrent Digital Fibromatosis*
7. Degotardi PJ, Hugger L, **Samuels RR**, Gottlieb BS. "Group Treatment for Adolescent Females with Fibromyalgia"
Arthritis and Rheumatism. Sept. 2004

RADIO INTERVIEWS

1. June 2011. Sirius XM Dr. Radio NYU Langone Medical Center. Topic: Safety of Energy Drinks
2. November 2011. Sirius XM Dr. Radio NYU Langone Medical Center. Topic: Cardiovascular disease risk factor screening.

TELEVISION INTERVIEWS

Long Island News Channel 1: Sleep hygiene in children.
August 2012 Long Island News Channel 1: Influenza Vaccine Shortage.

BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Janice Thomas John	Assistant Professor, Science Education & Pediatrics

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Mo/Year	FIELD OF STUDY
Houston Baptist University	BS	06/2000	Biology and Communications
UNT-HSC Texas College of Osteopathic	DO	06/2006	Osteopathic Medicine
UNT-HSC Grad School of Biomedical	MS	06/2006	Clinical Research and Education
Stony Brook University Medical Center		06/2009	Pediatrics Residency
Stony Brook University Medical Center		06/2011	Academic General Pediatrics Fellowship
Stony Brook University School of Public Health	MPH	05/2011	Public Health

A. Personal Statement

I have the leadership, educational expertise, and mentoring skills to provide guidance and oversight for this Nurturing Experiences for Tomorrow's Community Leaders (NEXT) Award proposal. I have a deep commitment to equity in healthcare and education. My career in community health began as a high school teacher in the inner city recognizing educational disparities then. My professional trajectory is well supported by my masters in public health and experience creating and serving as medical director of a community health worker home visitation program at a large medical center. In my time at Zucker School of Medicine, I have created programs and mentored medical students in a multitude of service learning and community engagement opportunities, including the creation and supervision of the Medical Scholar Youth Program which is a mentorship program in its fourth year at Hempstead school district; Healthy Living Long Island, a public health community engagement program to address childhood obesity in Hempstead district elementary school, and a public health elective that equips students with the skills to create and evaluate community engagement programs. Most recently, I have join the team of faculty leading the ENHANCE track.

B. Positions and Honors.

Positions and Employment

2018-present	Medical Provider Dolan Family Health Center Greenlawn, NY
2017-present	Co-director of Clinical Skills, Zucker School of Medicine at Hofstra/Northwell
2017- present	Medical Director of Medical Scholar Youth Program
2014-present	Assistant Professor Science Education & Pediatrics Zucker SOM at Hofstra/Northwell Hempstead, NY
2013-2017	Medical Provider PM Pediatrics Syosset, NY
2010-2013	Medical Director of Keeping Families Healthy CHW home visitation program, Stony Brook University Medical Center Stony Brook, NY
2009-2013	Assistant Professor and Hospitalist Department of Pediatrics Stony Brook University Medical Center Stony Brook, NY
2009-2011	Academic General Pediatric Fellow Stony Brook University Medical Center Stony Brook, NY
2006-2009	Pediatric Resident Stony Brook University Medical Center Stony Brook, NY
2003-2006	OMM Predoctoral Fellow Texas College of Osteopathic Medicine Fort Worth, TX (in part funded by the NIH)
2001-2006	Dual Degree Student (D.O. and M.S.)
2000-2001	High School Speech Communications Teacher Madison HS Houston, TX
2000-2001	Speech and Debate Coach Madison HS Houston, TX

Other Experience and Professional Memberships

2016-present	Directors of Clinical Skills (DOCS)
2016-present	International Association for Medical Science Educators

2017	Society of Bedside Medicine
2011-2013	Pediatric Academic Society
2006- 2011	American Academy of Pediatrics
2006- 2011	Suffolk County Pediatric Society
2001- present	Christian Medical Association/ Christian Medical and Dental Association Co-President of UNTHSC Chapter 2002-2003

Editorial Activities

2014- present	JAMA Pediatrics Peer Reviewer

Other Experience and Professional Memberships

2020-current	Executive Committee member- Committee for Antiracism and Allyship- Zucker School of Medicine
2018-current	Membership and Mentorship Committee- Directors of Clinical Skills (DOCS) national organization
2018-current	Admissions Committee- Zucker School of Medicine
2016-current	Committee Member-First One Hundred Weeks Subcommittee- Zucker School of Medicine

Honors

2009-2013	Quality Scholar Representative-Stony Brook UMC Pediatric Joint Practice/Program of Distinction
2011-2103	TRO Clinical Research Award- Stony Brook University School of Medicine
2006- 2009	Pediatric Class Liaison – Stony Brook University Hospital-c/o 2009
2005	Research Fellowship Award, Student Osteopathic Medical Association
2004	D.O. Student of the Year- Texas College of Osteopathic Medicine
2003	American Osteopathic Association House of Delegates – Student Delegate
2001-2006	Sigma Sigma Phi – Osteopathic National Honor Fraternity
2001	Spirit of Competition Award –Houston Independent School District

C. Contributions to Science

Cavuoto Petrizzo M, Block L, Olvet DM, Sheridan EM, Dougherty R, Whitson M, **John JT**, Barilla-LaBarca ML, DiFiglia-Peck S, Fornari A. Implementation of an Interprofessional Nutrition Workshop to Integrate Nutrition Education into a Preclinical Medical School Curriculum. J Am Coll Nutr. 2020 Mar 30:1-8.

John JT, Block L, Stein A, Vasile E, Barilla-LaBarca ML. Caring for Patients With Physical Disabilities: Assessment of an Innovative Spinal Cord Injury Session That Addresses an Educational Gap. Am J Phys Med Rehabil. 2019 Nov;98(11):1031-1035.

Cataldo R, **John J**, Chandran L, Pati S, Shroyer AL. Impact of physical activity intervention programs on self-efficacy in youths: a systematic review. ISRN Obes. 2013 Feb 7;2013:586497.

John J, Chandran L. Arthritis in children and adolescents. Pediatr Rev. 2011 Nov;32 (11):470-9; quiz 480.

Published abstract: **John JT**. Immediate effects of osteopathic manipulative treatments on immune function in a healthy population: a pilot study. JAOA. 2006; 106(8): 472-473.

D. Additional Information: Research Support and/or Scholastic Performance

Completed Research Support

Training Research Opportunity 2010, Co-PI for Keeping Families Healthy (KFH) - KFH was initially funded by the Phase 6 of the Health Care Efficiency and Affordability Law for New Yorkers Capital Grant Program (HEAL 6) to Stony Brook University Medical Center (SB) to increase the delivery of high quality care by improving the use of health information technology and expanding service for underserved areas of Suffolk County. The program was created by myself and other pediatric primary care physicians at Stony Brook Children's Hospital (SBCH) in collaboration with the Federation of Organizations, Inc., a regional community-based social welfare organization with a longstanding history of operating programs that utilize peer support within a self-help model. I created the program with mentorship from the PI and served as the program's executive director and was supported by master-level program and research coordinators. Program funding was provided by New York State's Hospital-Medical Home Initiative.

Collaborators:

Dr. Melissa Pawelczak is the Assistant Dean for the Advanced Clinical Experience and Co-Directs the Pediatrics Clerkship. In these roles, Dr. Pawelczak has been instrumental in the design of the otoscopy curriculum, the scheduling of clerkship didactic sessions related to the otoscopy curriculum, and the creation, distribution and collection of surveys.

Dr. Shara Steiner is an Associate Professor at Hofstra University. She has functioned as process mentor and has been collaborating on this project since it's inception. She has helped to define the goals and objectives of the curriculum as well as provide feedback on the curricular logistics and curricular evaluation process. In addition, she will be a primary editor of the manuscript once drafted.

DONALD AND BARBARA
ZUCKER SCHOOL *of* MEDICINE
AT HOFSTRA/NORTHWELL

November 12, 2020

Dear Academy of Medical Educators Review Panel,

It is a pleasure to write this letter of support on behalf of Dr. Marie Cavuoto Petrizzo, Primary Investigator, and Co-Investigators, Dr. Janice John and Dr. Doreen Olvet, for their research proposal, "Introduction of Video Otoscopy to Enhance Medical Students' Technical and Diagnostic Skills" for the Dean's Fund for Innovation in Medical Education. This project, in collaboration with Dr. Melissa Pawelczak, Dr. Roya Samuels, and Dr. Shara Steiner, addresses a well-recognized gap in otoscopy skills training during undergraduate medical education. If funded, the project will enable the team to acquire multiple video otoscopes for use in medical students' skills training to advance proficiency with technical and diagnostic otoscopy.

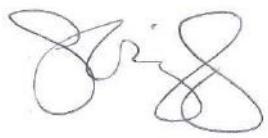
As an Associate Dean at the Zucker School of Medicine, I was able to secure funding for one video otoscope in 2018. Dr. Petrizzo and colleagues subsequently initiated a pilot study of video otoscopy during the MS3 Pediatric clerkship beginning September 2020. This pilot was very well received by students who reported that it significantly aided in their learning and confidence. If funded, this project will enable the purchase of additional video otoscopes, resulting in an enhanced educational experience for all students, rather than just a single cohort.

In addition to the merits of advancing student proficiency with otoscopy, this project will advance two important strategic aims of the Zucker School of Medicine: (1) students will demonstrate the ability to accurately detect abnormal physical examination findings and (2) faculty from the first and second 100 weeks of our curriculum will collaborate to advance our education mission. The potential benefits of this project extend far beyond just otoscopy skills. Success of this project will provide valuable insights that can be applied to future ZSOM efforts towards achieving these important strategic aims.

I have worked closely with Dr. Petrizzo, the PI on this project, during the past several years. Dr. Petrizzo is a rising leader in medical education. She is thoughtful, detail oriented, creative, follows through on all of her commitments, and consistently delivers the highest quality of excellence. I have the utmost confidence that any project Dr. Petrizzo spearheads will be a success. Dr. John leads and has transformed ZSOM's physical diagnosis curriculum. Her expertise in interactive medical education, creativity, and passion will be invaluable to this project. Dr. Olvet is ZSOM's Medical Education Research Project Manager and brings an outcomes driven approach, technical expertise, and guidance to the teams that are fortunate to work with her. They each have my full support to pursue this work.

This a dynamic, diverse, powerhouse team! Each individual has commendable strengths which collectively synergize to create something much larger than the sum of their parts. It would be a pleasure to see them have the opportunity to build on the great work achieved to date as well as provide proof of concept for ZSOM's strategic aims of demonstration of the ability to detect abnormal physical examination findings and a model for collaboration between first and second 100 weeks faculty. If I can provide any additional information that would help render a favorable decision, please don't hesitate to reach out to me.

Warm regards,



Samara Ginzburg, MD
Senior Associate Dean for Education
Associate Professor of Medicine and Science Education 516-463-7501
samara.ginzburg@hofstra.edu

Cohen Children's Medical Center
Northwell Health

DONALD AND BARBARA
ZUCKER SCHOOL of MEDICINE
AT HOFSTRA/NORTHWELL

Charles L. Schleien, MD, MBA
Senior Vice President of Cohen Children's Medical Center &
Pediatric Services
Philip Lanzkowsky Professor and Chair of Pediatrics
Zucker School of Medicine at Hofstra/Northwell

November 4, 2020

To Whom It May Concern,

It is my pleasure to write this letter of support for Dr. Roya Samuels' as a co-PI in a grant application for the Academy of Medical Educator's Dean's Fund for Innovation in Medical Education. Dr. Samuels is a passionate educator in her role as director of the Pediatric Advanced Clinical Experience at Zucker SOM at Hofstra/Northwell. She has a robust teaching portfolio of medical students and residents alike for the past 15 years at Cohen Children's Medical Center. In fact, Dr. Samuels was recently recognized for her teaching abilities with the Hofstra SOM Second Hundred Weeks Teacher of the Year Award in 2019.

Dr. Samuels has developed, implemented and evaluated multiple medical student curricula which have been presented at national conferences as innovative educational programming. Her work has focused on mentorship in the ambulatory setting, MS4 transitional training as well as telemedicine and virtual clerkship curricula. As a general pediatrician, Dr. Samuels is invested in constantly improving the teaching of medical students and residents in ambulatory pediatrics. Her current proposed curriculum, spearheaded by PI Dr Marie Petrizzo, has tremendous potential to effectively utilize video otoscopy training to improve proficiency in our third year medical students' examination skill proficiency.

I am in full support of Dr. Samuels' project as it promotes educational excellence within the Department of Pediatrics in the creation of an innovative curriculum aimed at effective teaching and assessment of otologic examinations among third year medical students. I am confident she will remain dedicated and committed to this project and wish her continued success.

Sincerely,

Charles L. Schleien, MD, MBA
Philip Lanzkowsky Professor and Chair of Pediatrics
Zucker School of Medicine at Hofstra/Northwell

269-01 76th Avenue, Administration Suite 172 | New Hyde Park, NY 11040 | Tel (718) 470-3198 | Fax (718) 470-9291 | cschleien@northwell.edu