

# Walter Reed National Military Medical Center 8<sup>th</sup> Annual National Capital Region Research Competitions

## Robert A. Phillips (RAP) Application Guide

### History:

This award honors the legacy of Captain Robert Allan Phillips (1906–1976) who established effective, evidence-based rehydration methods for the treatment of cholera. As a Navy Lieutenant at the Rockefeller Institute for Medical Research (New York, New York) during World War II, Phillips developed a field method for the rapid assessment of fluid loss in wounded servicemen. After the war, he championed the establishment of United States Naval Medical Research Unit (NAMRU)-3 (Cairo; 1946) and NAMRU-2 (Taipei; 1955), serving at the helm of both units. Phillips embarked on cholera studies during the 1947 Egyptian cholera epidemic and brought them to maturity at NAMRU-2 (1958–1965), elucidating the pathophysiologic derangements induced by cholera and developing highly efficacious methods of intravenous rehydration. His conception of a simpler cholera treatment was realized in the late 1960s with the development of glucose-based oral rehydration therapy, a monumental breakthrough to which many other investigators made vital contributions. Today, these simple advances have been integrated into everyday medical practice across the globe, saving millions of lives annually.

Winners of the WRNMMC RAP Awards move on to compete in the Navy-wide Research competition.

### Eligibility Requirements:

- Any active duty military personnel or federal employees training or working at the Walter Reed National Military Medical Center.
- Contractors may participate so long as their contract permits such activities.
- Applicants may either be nominated by his/her program director or self-nominate

### Participation Event List

- Abstract Submission Deadline: **07FEB2016**

The abstract submission package will be submitted to the Department of Research Programs Research and Innovation Month's Email Group: **"DHA NSA Bethesda WRNMMC Mailbox ResearchAndInnovationMonth."** You will receive an email confirming that the package was received and a notification if any of your material is missing. You will have until the end of 14FEB2016 to have your package submitted with all of the required material.

**Please complete and submit the following forms in your submission package to qualify for a review:**

- Nomination Form (Page 4 – 5)
- Abstract Submission Form (Page 6)
- Abstract (Page 7)

## **Walter Reed National Military Medical Center 8<sup>th</sup> Annual National Capital Region Research Competitions**

- **Poster Display Week: You are required to display a research poster for Poster Display Week**

To notify the public about the amount of research conducted at the WRNMMC, all competition participants are required to display their research poster at Poster Display Week. Though it will not impact the participants' competition standing, **RAP applicants are required to display their research posters at this event.** More details will come delineating its sections. The Medical Graphic Arts Department is able to create your research poster for free. Please submit a work order form and your poster to them by **01 March 2016.**

- **Research Symposium I and II:**

If you are notified that you are a competition category finalist in March – April, you will conduct a slide presentation of your submission at Research Symposium I and II. Each speaker will be given 15 minute time slots. Slide presentation will be 7-9 minutes, followed by a question-and-answer session. Awards will be given at the conclusion of Research Symposium II.

- **Navy-Wide Academic Research Competition**

If you are chosen as the competition category winner, you will participate in the Navy-Wide Academic Research Competition that will be held at the Naval Medical Center – San Diego between May and June. This competition will be conducted the same way as in Research Symposium I and II: speakers will present a 7-9 minute slide presentation, followed by a question-and-answer session. Awards will be given at the conclusion of the event. More details to follow.

**\*\*\*All forms and documents can be found in the 8<sup>th</sup> Annual Research Competitions folder located on the intranet (SharePoint), in the Education Training & Research Directorate, Department of Research Programs, in the Research Education Services under “2016 Research and Innovation Month.”**

**Walter Reed National Military Medical Center**  
**8<sup>th</sup> Annual National Capital Region Research Competitions**

**Robert A Phillips (RAP) Awards**  
**Task Checklist**

- ❑ Applicant starts on research project during his/her training period.
  - ❑ Applicant completes the requested paperwork, below, for the RAP award.
  - ❑ **First Submission:** Applicant submits abstract submission material to the Department of Research Programs Research and Innovation Month's email group at [dha.bethesda.wrmmmc.mbx.researchandinnovationmonth@mail.mil](mailto:dha.bethesda.wrmmmc.mbx.researchandinnovationmonth@mail.mil) with the subject line "Last Name, First Name (Category-Training Status-Category Type)" – Example: [White, Ben (RAP-Intern-Laboratory)] consisting of the following (Deadline: No later than **07FEB2016**):
    - RAP Nomination Form (Page 4-5)
    - Abstract Submission Form (Page 6)
    - Abstract (Page 7)
  - ❑ Applicant receives the completion status of their abstract submission package.
    - If the submission package is incomplete, the applicant may submit the missing material directly to the Research and Innovation Month's email group with the same subject line before 14FEB2016.
  - ❑ **Second Submission:** Submit a poster draft, Medical Graphic Arts Department (MGAD) work order form, BUMED Instructions for Permission form and a HIPAA Privacy Release form to MGAD for its production. MGAD points of contact are Mary-Ann Ayrandjian ([mary-ann.ayrandjian.civ@mail.mil](mailto:mary-ann.ayrandjian.civ@mail.mil)) and Shane Stiefel ([shane.m.stiefel.civ@mail.mil](mailto:shane.m.stiefel.civ@mail.mil)). (Deadline: **01 March 2016**).
- NOTE: Please provide permissions for images/brands and any copyright information in poster submissions.**
- ❑ Receive notification of whether applicant is a finalist for the RAP award category by email (March–April 2016) and start preparing a slide presentation for the Research Symposium I and II.
  - ❑ Create and submit slide presentation, based on the research abstract, for Research Symposium I and II (Deadline: **01 May 2016**)
  - ❑ Pick up poster from MGAD upon email announcement.
  - ❑ Display research poster at Poster Display Week. (**09-13 May 2016**)
  - ❑ Prepare formal uniform to present at Research Symposium I and II based on time slot assigned. (**18 & 19 May 2016**)
    - Army: Class A Uniforms
    - Navy: Dress Blue Uniforms
    - Air Force: Dress Service
    - Federal Employees/Contractors: Formal Business Attire
  - ❑ Present for award distribution at Research Symposium II. (**19 May 2016**)
  - ❑ Prepare to present for the Navy-Wide Academic Research Competition, hosted by the Naval Medical Center – San Diego (TBD)

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**Robert A Phillips (RAP) Awards  
NOMINATION FORM**

**Robert A Phillips Award** applicants may be nominated by their Program Director, Department Chief, or may Self-Nominated

**FROM:** Applicant, Program Director, or Department Chief  
Name, Rank and Title  
Name of Program  
Department

**TO:** Chief, Department of Research Programs (WRNMMC)

**SUBJECT:** Nomination for the 8<sup>th</sup> Joint National Capital Region Research Competition

**DATE:**

I request that ("I" or nominee)  
be considered for the 8<sup>th</sup> Joint National Capital Region Research Competition in the category of  
**Robert A. Phillips Award.**

(Please highlight one)

Staff/Fellow      or      Resident

(Please highlight one)

Clinical              or      Laboratory

Nominee Information:

Name, Title

Company (USAE: Alpha Co, Bravo Co, or HHQ Co)

OR

Navy/AF

Project IRBNet number (if applicable)

Project time period

Duty assignment

Year of training

Email addresses

Primary (Military Issued Email Address)

Secondary

Phone numbers

**Walter Reed National Military Medical Center  
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Daytime/Evening  
Pager Number/Cell

**Please check that the following documents are included in this new package (incomplete packages will delay selection process).**

The Research Project abstract is attached  
Abstract Submission Form is attached (see below, pages 3 and 4)

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SIGNATURE  
DEPARTMENT CHIEF/PROGRAM DIRECTOR

OR

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SIGNATURE  
SELF-NOMINEE

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**Robert A Phillips (RAP) Awards  
ABSTRACT SUBMISSION FORM**

**IRBNet #** (N/A if meta-analysis): \_\_\_\_\_

**Project Title** \_\_\_\_\_

**Author(s)**

\_\_\_\_\_  
Name, Title, Department

**Robert A Phillips Award** applicants may be nominated by their Program Director, Department Chief, OR may Self-Nominate.

Please highlight which sub-categories you will participate in:

Staff/Fellow                      or                      Resident/Intern

AND

Clinical                              or                              Laboratory

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Please attach **ABSTRACT** (One-page, Times New Roman, 12-point font), including:

**OBJECTIVES**

**METHODS**

**RESULTS**

**CONCLUSIONS**

# Walter Reed National Military Medical Center 8<sup>th</sup> Annual National Capital Region Research Competitions

Robert A. Phillips

## Laboratory Abstract Submission Example

The following is an abstract submitted by the 2015 RAP Laboratory Winner.

### Novel Anterior Chamber Tube Shunt with Tissue Autograft

Packer K<sup>1,2</sup>; Chen S<sup>2</sup>; Andreo L<sup>2</sup>; Lowry J<sup>2</sup>; Zumbun S<sup>2</sup>

<sup>1</sup>Walter Reed National Military Medical Center, Bethesda, MD 20889

<sup>2</sup>Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA 30905

**PURPOSE:** Anterior chamber tube shunts are a common surgical intervention to lower intraocular pressure in patients with glaucoma; however, their function is limited by several complications including scarring caused by a persistent inflammatory response to synthetic materials. This project is designed to explore a new design of tube shunt construction using a tissue autograft.

**DESIGN:** Prospective cohort animal therapy model.

**METHODS:** We included two cohorts in this study, the first arm includes autograft vs the control fellow eye (6 rabbits). We harvested saphenous venous grafts attached to a block of capillary-perfused tissue to serve as a functional reservoir in a tube shunt system. The venous graft was secured to the end of a standard silicone tube shunt (Ahmed model TE) and implanted beneath the conjunctiva following the standard method aqueous drainage device insertion. The second arm includes commercially available Ahmed pediatric glaucoma valves (model FP8) implanted via standard methods vs the control fellow eye (6 rabbits). The rabbits were housed in an IACUC approved facility for 60 days postoperatively and received a standard postop medication regimen of flurbiprofen daily for 14 days, PredForte twice daily for 14 days then once daily for 14 days, and ciprofloxacin twice daily for 14 days then once daily for 14 days. 30 minutes prior to sacrifice, the rabbits were sedated with ketamine and xylazine and 1cc of cationic ferritin tracer was injected in the operated eye via intracameral method. The operated eye was enucleated and half of the graft site was excised and flash frozen in liquid nitrogen for ELISA analysis. The remainder of the graft site was tagged with a 6.0 nylon suture and placed in formalin fixative for 24h prior to pathologic sectioning.

**SETTING:** IACUC approved animal research laboratory Fort Gordon, GA.

**STUDY POPULATION:** Twelve adult male New Zealand White rabbits.

**MAIN OUTCOME MEASURES:** (1) Intraocular pressure on operated eye vs. the control fellow eye. (2) Patency of tube shunt apparatus at 2 months evaluated histologically with cationic ferritin tracer and Prussian Blue stain. (3) Histologic evidence of inflammation and fibrosis in and around the apparatus at 2 months with H&E stain. (4) Immunologic assay for late inflammatory markers in the draining aqueous humor (TNF alpha, TGFb-2, IL-6).

**RESULTS/CONCLUSION:** Initial results on six rabbits with Ahmed implants and three rabbits with autografts demonstrate a significant difference in intraocular pressure between Ahmed (mean 14.5mmHg) and autograft eyes (12.87mmHg) with p<0.0001. Histologic samples are in process. Initial ELISA of aqueous humor TNFalpha measurements shows no significant difference between Ahmed or autograft eyes. Histologic analysis of tissue samples is pending. Three autograft rabbits have not completed the protocol. Our hypothesis is that inflammation and fibrosis will be decreased in this design compared to standard designs as the immune system will recognize the graft as 'self' and not as a foreign body. With decreased fibrosis, the flow of aqueous humor can be maintained over a longer time period providing an improved functional outcome compared to standard surgical therapy.

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Robert A. Phillips

## Clinical Abstract Submission Example

The following is an abstract submitted from last year's RAP Clinical Winner:

### **Autism Spectrum Disorder Increases the Risk of Obesity and Metabolic Comorbidities**

Katherine Shedlock, MD<sup>1</sup>, Apyl Susi, MS<sup>2</sup>, Gregory Gorman, MD<sup>2</sup>, Elizabeth Hisle-Gorman, PhD, Christine Erdie-Lalena, MD and Cade Nylund, MD<sup>2</sup>. <sup>1</sup>Pediatrics, Walter Reed National Military Medical Center, Bethesda, MD <sup>2</sup>Pediatrics, Uniformed Services University of the Health Sciences, Bethesda, MD.

**Background:** Children with Autism Spectrum Disorder (ASD) often have an overly selective, energy-dense diet that may lead to obesity. The rate of obesity and its complications are unknown in children with ASD.

**Objective:** We sought to determine and compare the rate of obesity, diabetes mellitus type II (T2DM), hypertension, hyperlipidemia, and non-alcoholic fatty liver disease/steatohepatitis (NAFLD/NASH) between children with ASD and controls.

**Design/Methods:** A retrospective case-cohort study was performed over the time period of Oct 2000-Sept 2013 using the Military Health System database. This database is comprised of billing data for outpatient visits, inpatient admissions, and prescriptions of all military members and their family members treated in both military and civilian medical facilities. Children with two or more encounters with ICD-9 diagnostic codes for ASD were matched 1:5 with controls by age, gender, and enrollment timeframe. For both groups, ICD-9 diagnostic codes for obesity, T2DM, hypertension, hyperlipidemia, NAFLD/NASH, and prescriptions were obtained. Conditional logistic regression determined the odds ratio [OR]. For children with ASD, we evaluated the risk of obesity associated with psychotropic medication use.

**Results:** There were 48,762 individuals with ASD and 243,810 controls. The percentage of children with ASD and obesity was 8% compared to 5% of controls [table 1]. Children with ASD had higher odds of having T2DM, hypertension, hyperlipidemia, and NAFLD/NASH [table 1], and they were more likely to be treated with a medication when they had these comorbidities (OR, 2.78; 95% CI, 2.63-2.95). In children with ASD, anti-psychotics, SSRIs, antiepileptics, and mood stabilizers were associated with obesity ( $P < 0.001$ ).

**Conclusions:** Children with ASD have an increased risk of obesity and metabolic complications, and they are more likely to be prescribed medications to treat these complications. There was a significant association between the use of ASD-directed pharmacotherapy (anti-psychotics, SSRIs, etc.) and a diagnosis of obesity, suggesting that obesity may be partially iatrogenic.

	ASD (n=48,762)	Control (n=243,810)	OR (95% CI)
Obesity	4,004 (8.2%)	11,402 (4.7%)	1.84 (1.78-1.92)
Diabetes Mellitus Type II	515 (1.1%)	970 (0.4%)	2.68 (2.41-2.99)
HTN	497 (1.0%)	1,227 (0.5%)	2.04 (1.84-2.27)
Hyperlipidemia	1,606 (3.3%)	4,085 (1.7%)	2.01 (1.90-2.13)
NAFLD/NASH	73 (0.2%)	133 (0.1%)	2.74 (2.06-3.65)

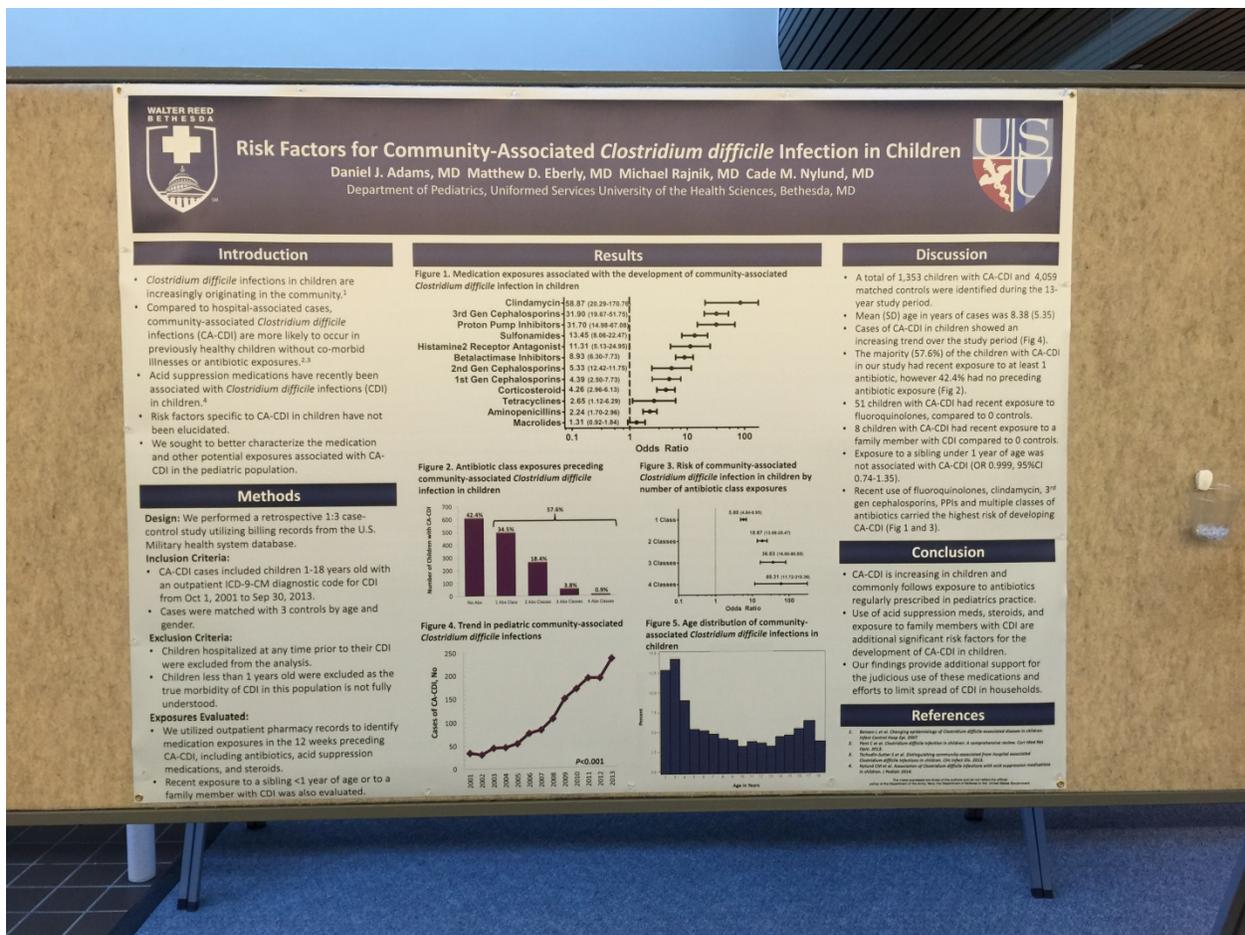
# Walter Reed National Military Medical Center 8<sup>th</sup> Annual National Capital Region Research Competitions

## Robert A. Phillips Award Poster Guide:

While RAP applicants are given freedom to choose the content and arrangement of their posters, research posters should have the following topics clearly shown:

- Title
- Introduction
- Objectives
- Methods
- Data/Results
- Discussion
- Conclusion

The picture below is an example of a poster submitted from the 2015 Poster Display Week.



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## Robert A. Phillips Award Slide Presentation:

Slide presentation should be presented in a manner similar to how the research poster was presented. Slides should follow the same presentation order as the research posters. However, applicants may decide the content shown and in what manner for each presentation. Text should be legible for the audience to read.

The slide presentation consists of 28 numbered slides:

- Slide 1:** Title slide: "Autism Spectrum Disorder Increases the Risk of Obesity and Metabolic Comorbidities". Author: Katherine Shafiq, MD, Captain, United States Air Force, Resident of Pediatrics, Walter Reed National Military Medical Center.
- Slide 2:** Disclosure: "I have no financial relationships to disclose or conflicts of interest to resolve. The views expressed here are those of the authors and do not reflect the official policy of the United States Air Force, the Department of Defense, or the U.S. Government."
- Slide 3:** Background: "Autism Spectrum Disorder (ASD) - Spectrum of neurodevelopmental conditions - Deficits in communication and social interactions - Restricted behaviors - Affects 1 in 8 Children"
- Slide 4:** Background: "Children with ASD may: - Non-Intuitive Being - New Sensory Physical Ability - Be Perceived with Physical Health - Be Present of Indicators that can Cause Visual Scan"
- Slide 5:** Hypothesis: "Children with Autism Spectrum Disorder are more likely to have a diagnosis of obesity and other metabolic comorbidities, such as, Diabetes Mellitus Type 1 (T1DM), Hypertension (HTN), Hyperlipidemia, and NAFLD/NASH."
- Slide 6:** Study Design: "Design: Retrospective case-cohort study. Setting: U.S. Military Health System (MHS). Population: Children 2-18 years old with ASD and controls enrolled in MHS from Oct 2000-Sept 2013."
- Slide 7:** Military Health System Database: "Health information for all Military Members and Dependents, Outpatient and Inpatient Encounters, Military and Civilian Facilities, Prescriptions"
- Slide 8:** Methods: "ASD identified by ≥ 2 visits with ICD-9 code. Children with ASD matched 1:5 with controls for age, gender, and enrollment timeframe. Inpatient and outpatient diagnoses, prescription data, and lab data extracted for each subject."
- Slide 9:** Methods: Flowchart showing "Military Health Database" leading to "Study Population" (ASD n=1,103 and Matched Control n=5,515).
- Slide 10:** Methods: Table showing "Study Population" characteristics: Obesity (n=1,103-9), T1DM (n=1,103-9), HTN (n=1,103-9), Hyperlipidemia (n=1,103-9), NAFLD/NASH (n=1,103-9).
- Slide 11:** Subgroup for Validation: "135,110 Children; 27,785 with ASD. Heights and weights obtained for the same visit. Children with BMI ≥ 95<sup>th</sup> Percentile Identified."
- Slide 12:** Analysis: "Conditional Logistic Regression. Primary Analysis: ICD-9 codes, Pharmacy/Injection, Comorbidities, Psychotropic Medications, Subgroup Analysis, Sex, Year/Year. Results: Obesity (OR 1.47, 95% CI 1.42-1.51), T1DM (OR 1.42, 95% CI 1.37-1.47), HTN (OR 1.38, 95% CI 1.33-1.43), Hyperlipidemia (OR 1.35, 95% CI 1.30-1.40), NAFLD/NASH (OR 1.32, 95% CI 1.27-1.37)."
- Slide 13:** Disease Rates for ASD and Controls: Bar chart comparing rates of Obesity, T1DM, HTN, Hyperlipidemia, and NAFLD/NASH between ASD and Controls.
- Slide 14:** Association of a Diagnosis of ASD with Obesity and Metabolic Comorbidity: Scatter plot showing the association between ASD diagnosis and various comorbidities.
- Slide 15:** Percentage of Patients with ASD and Controls Meeting Healthcare System (HTN, T1DM, HTN, and Hyperlipidemia): Bar chart showing the percentage of patients meeting these criteria.
- Slide 16:** Association of Psychotropic Medications with Obesity for Children with ASD: Scatter plot showing the association between psychotropic medications and obesity.
- Slide 17:** Subgroup Comparison for Validation: "Odds Ratio of Obesity as Measured by BMI for Children with ASD = 1.47 (95% CI 1.42-1.51)."
- Slide 18:** Limitations: "Misclassification Bias: Children with ASD may not meet the definition for obesity. Diagnostic: Medication identified by provider but not ICD-9. Ascertainment Bias: Children with ASD may have more medical visits and lab tests than children in the control group. Pediatric: May lack and through medication resistance."
- Slide 19:** Strengths: "Large, diverse population; Comprehensive Medical Records; Validation with more objective data as criteria for obesity."
- Slide 20:** Conclusions: "Children with ASD are more likely than children without ASD to be diagnosed with: Obesity, Diabetes Mellitus Type II, Hypertension, Hyperlipidemia, Metabolic Liver Disease."
- Slide 21:** Conclusions: "Children with ASD are more likely than children without ASD to require treatment for: Diabetes Mellitus Type II, Hypertension, Hyperlipidemia."
- Slide 22:** Conclusions: "For children with ASD, mood stabilizers, anti-psychotics, anti-epileptics, and SSRIs are associated with obesity. Psychotropic medications may be contributing to the overall increased risk of obesity in those with ASD."
- Slide 23:** Acknowledgements: "Dr. Cade Nylund, Ms. Amarysui, Dr. Gregory Gorman, Dr. Elizabeth Ryan-Gorman, Dr. Christine Erdle-Larena, Dr. Kim Jensen"
- Slide 24:** Autism Spectrum Disorder Increases the Risk of Obesity and Metabolic Comorbidities. Author: Katherine Shafiq, MD, Captain, United States Air Force, Resident of Pediatrics, Walter Reed National Military Medical Center.
- Slide 25:** Methods: Table showing "Study Population" characteristics: Obesity (n=1,103-9), T1DM (n=1,103-9), HTN (n=1,103-9), Hyperlipidemia (n=1,103-9), NAFLD/NASH (n=1,103-9).
- Slide 26:** Outcome Definitions: Table defining "Obesity", "T1DM", "HTN", "Hyperlipidemia", and "NAFLD/NASH".
- Slide 27:** Comparison of ORs for Primary Study and Subgroup: Table comparing Odds Ratios for Obesity, T1DM, HTN, Hyperlipidemia, and NAFLD/NASH between the primary study and subgroups.
- Slide 28:** Odds Ratios of Treatment for Metabolic Comorbidities for Children with ASD Compared to Controls: Table showing Odds Ratios for treatment of Obesity, T1DM, HTN, Hyperlipidemia, and NAFLD/NASH.