University of Chicago Clinical Research Center

Dietetic Internship Research Rotation

The University of Chicago Clinical Research Center (CRC) has an elective Dietetic Internship Research Rotation. This rotation is a 40-hour experience that is designed to develop the interns’ competencies in nutrition research.

Rotation Objectives:

• To familiarize the dietetic intern with the role of the Registered Dietitian in a clinical research setting and the application of nutrition in research.
• To understand the typical activities, educational background and skills of a Research Bionutritionist.
• To learn the various tools and methods to perform nutrition research.
• To understand how to conduct research projects using appropriate research methods, ethical procedures and statistical analysis.
• To describe a current research protocol from the perspective of the investigator, staff and research subject.

Day 1 (7 hours)

• Introduction to the CRC
• Tour of the CRC
• Shadow CRC Team
• Process of how a protocol gets reviewed by the IRB & CRC
• Discuss requirements for a study to get started in the CRC
• Break
• Video: The Science of Sleep (60 Minutes) to give overview of a research study from a research subject perspective
• Read and review a protocol that requires weighed research meals
• Read and review informed consent for that research study
• Review published article from a CRC study with a controlled nutrient diet

Day 2 (7 hours)

• Calculate macronutrient goals for a controlled nutrient diet for 3 kcal levels
• Discuss dietary intake methodology
• Review and analyze food records from sample subject in ESHA Food Processor and NDSR
• Compare and contract ESHA Food Processor and NDSR data entry and output
• Interview sample subject for food preferences to design an individualized research diet
• Determine kcal level for subject using food record analysis data and three different equations
Day 3 (7 hours)
• Learn how to do metabolic kitchen inventory for upcoming research studies
• Calculate and plan a palatable research menu for one day that meets study requirements
• Compare portioning techniques such as weighing and using pre-portioned foods
• Describe the impact food preparation and weighing procedures can have on the visual appearance of research meals
• Discuss the precision needed to accurately provide specific amounts of certain nutrients
• Discuss advantages and disadvantages of various types of research diets
• Understand how study requirements impact the design and provision of controlled nutrient research diets
• Identify situations when chemical analysis of a food or an entire diet is appropriate
• Explain the process of preparing a diet for laboratory analysis
• Discuss ways to reduce the variability of the nutrient content of a research diet
• Calculate and plan a palatable research menu for one day that meets study requirements for 2 kcal levels

Day 4 (7 hours)
• Continue planning a research menu for one day that meets study requirements
• Prepare one weighed research meal in metabolic kitchen
• Consume prepared weighed research meal and learn how to weigh back
• Discuss indirect calorimetry and how to measure resting metabolic rate
• Explain why indirect calorimetry is more accurate than using equations to determine caloric needs
• Conduct a 20-minute resting metabolic rate measurement on a volunteer
• Understand how to clean RMR data to get rid of outliers

Day 5 (7 hours)
• Calculate and plan a one mineral balance research meal for 2 kcal levels
• Discuss considerations for planning mineral balance meals
• Describe how to take anthropometric measurements
• Describe bioimpedance analysis (BIA) and when it is an appropriate choice or body composition
• Describe body components measured by Dual Energy X-Ray Absorptiometry (DEXA)
• Conduct a BIA and DEXA measurement on a volunteer

Day 6 (5 hours)
• Finish planning a mineral balance meal
• Review and discuss planned weighed research meals
• Professional presentation
• Complete exit survey
**Curriculum Map**

**Rotation Title:** UChicago Clinical Research Center (CRC) Research Rotation

The following competencies are met by completing this rotation:

<table>
<thead>
<tr>
<th>Core Competencies</th>
<th>Supervised Practice Experience Learning Activities</th>
<th>Date Completed</th>
<th>Person/Department Assigned</th>
<th>Meets Expectations/Needs Improvement/NA</th>
</tr>
</thead>
</table>
| **Domain 1.** Scientific and Evidence Base of Practice: Integration of scientific information and translation of research into practice. | * Review published article from a CRC study with a controlled nutrient diet  
* Calculate macronutrient goals for a controlled nutrient diet for 3 kcal levels  
* Calculate and plan a one mineral balance research meal for 2 kcal levels | | | |
| **CRDN 1.5** Conduct projects using appropriate research methods, ethical procedures and data analysis. | | | | |
| **CRDN 1.6** Incorporate critical-thinking skills in overall practice. | * Determine kcal level for subject using food record analysis data and three different equations  
* Discuss indirect calorimetry and how to measure resting metabolic rate  
* Explain why indirect calorimetry is more accurate than using equations to determine caloric needs  
* Understand how to clean RMR data to get rid of outliers | | | |
| **Domain 2.** Professional Practice Expectations: Beliefs, values, attitudes and behaviors for the professional dietitian nutritionist level of practice. | * Prepare one weighed research meal in metabolic kitchen  
* Consume prepared weighed research meal and learn how to weigh back | | | |
| **CRDN 2.4** Function as a member of interprofessional teams. | | | | |
| **CRDN 2.5** Assign duties to NDTRs and/or support personnel as appropriate. | * Learn how to do metabolic kitchen inventory for upcoming research studies  
* Compare portioning techniques such as weighing and using pre-portioned foods | | | |
| CRDN 2.10 | Demonstrate professional attributes in all areas of practice. | Maintain professional attitude and demeanor throughout entire rotation  
  - Professional presentation |
| CRDN 2.11 | Show cultural competence/sensitivity in interactions with clients, colleagues and staff. | Interview sample subject for food preferences to design an individualized research diet |
| CRDN 2.12 | Perform self-assessment and develop goals for self-improvement throughout the program. | |

**Domain 3. Clinical and Customer Services:** Development and delivery of information, products and services to individuals, groups and populations.

| CRDN 3.3 | Demonstrate effective communications skills for clinical and customer services in a variety of formats and settings. | Interview sample subject for food preferences to design an individualized research diet  
  - Conduct a 20-minute resting metabolic rate measurement on a volunteer  
  - Conduct a BIA and DEXA measurement on a volunteer |
| CRDN 3.9 | Coordinate procurement, production, distribution and service of goods and services, demonstrating and promoting responsible use of resources. | Explain the process of preparing a diet for laboratory analysis  
  - Identify situations when chemical analysis of a food or an entire diet is appropriate |
| CRDN 3.10 | Develop and evaluate recipes, formulas and menus for acceptability and affordability that accommodate the cultural diversity and health needs of various populations, groups and individuals. | Calculate and plan a palatable research menu for one day that meets study requirements  
  - Calculate and plan a one mineral balance research meal for 2 kcal levels |

**Domain 4. Practice Management and Use of Resources:** Strategic application of principles of management and systems in the provision of services to individuals and organizations.

| CRDN 4.2 | Perform management functions related to safety, security and sanitation that affect employees, customers, patients, facilities and food. | Learn how to do metabolic kitchen inventory for upcoming research studies  
  - Describe the impact food preparation and weighing procedures can have on the visual appearance of research meals  
  - Describe how the Metabolic Kitchen builds quality control checks into recipes and menus |
**CRC Research Rotation Specific Competencies.** The curriculum must include at least one program-defined concentration that builds on the core competencies and develops additional depth necessary for future proficiency in a particular area. The concentration must include at least two program specific competencies with associated learning activities.

<table>
<thead>
<tr>
<th>Task</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Perform comprehensive diet analysis using multiple types of dietary intake methodology and various diet analysis programs.</td>
<td>• Discuss dietary intake methodology</td>
</tr>
<tr>
<td></td>
<td>• Review and analyze food records from sample subject in ESHA Food Processor and NDSR</td>
</tr>
<tr>
<td></td>
<td>• Compare and contract ESHA Food Processor and NDSR data entry and output</td>
</tr>
<tr>
<td>• Demonstrate understanding of the various types of research diets and how these diets are planned based on study requirements.</td>
<td>• Discuss advantages and disadvantages of various types of research diets</td>
</tr>
<tr>
<td></td>
<td>• Understand how study requirements impact the design and provision of controlled nutrient research diets</td>
</tr>
<tr>
<td></td>
<td>• Discuss ways to reduce the variability of the nutrient content of a research diet</td>
</tr>
<tr>
<td></td>
<td>• Discuss considerations for planning mineral balance meals</td>
</tr>
</tbody>
</table>