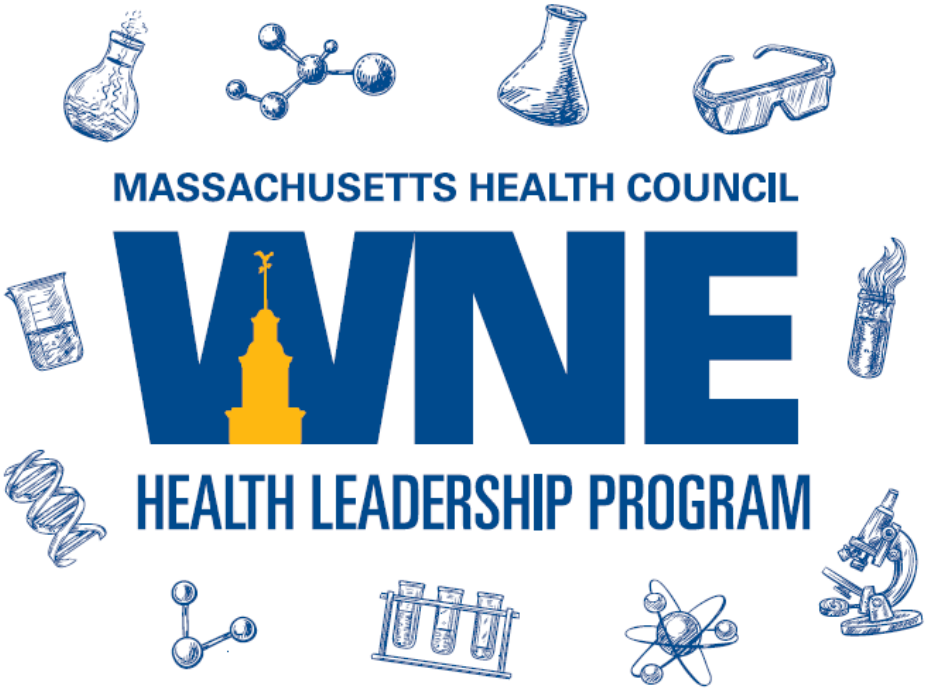


College of Pharmacy and Health Sciences

June 24th–28th, 2024

8:30am-4:30pm

Sponsored by the Massachusetts Health Council

Welcome to the Western New England University College of Pharmacy and Health Sciences Health Leaders Program! I hope you are excited about all the experiences that this fun-filled five-day program has to offer. By the end of the week, you will learn about different career paths in the field of healthcare and perform many hands-on activities with our distinguished faculty. Throughout the program, current graduate students in our college will be available for assistance and to discuss their experiences.

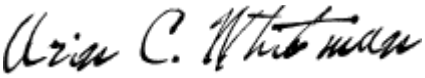
I ask that you arrive on time so we can start promptly every day. Please also be sure to attend every day to receive the certificate signed by Dean Pezzuto on the last day of the program. Many of the activities will require participation and engagement. Come excited to learn! The most important thing, besides safety of course, is to have fun. Faculty will provide instructions throughout hands-on activities. If you should need any learning or physical accommodations, please contact me in advance.

In this manual, you will find safety guidelines that must be followed throughout the program. No bullying or disrespect towards other students, faculty or staff will be tolerated. For all activities to run smoothly, all students in attendance will need to abide by the rules. The success of the activities can only be ensured if students follow directions and are actively engaged in the sessions.

If at any point you have questions during activities, please feel free to ask! We want you to have an enjoyable and safe experience.

Please do not hesitate to contact me with questions or concerns.

Looking forward to meeting all of you!



Arin C. Whitman-Jemison, PharmD, BCOP
arin.whitman@wne.edu

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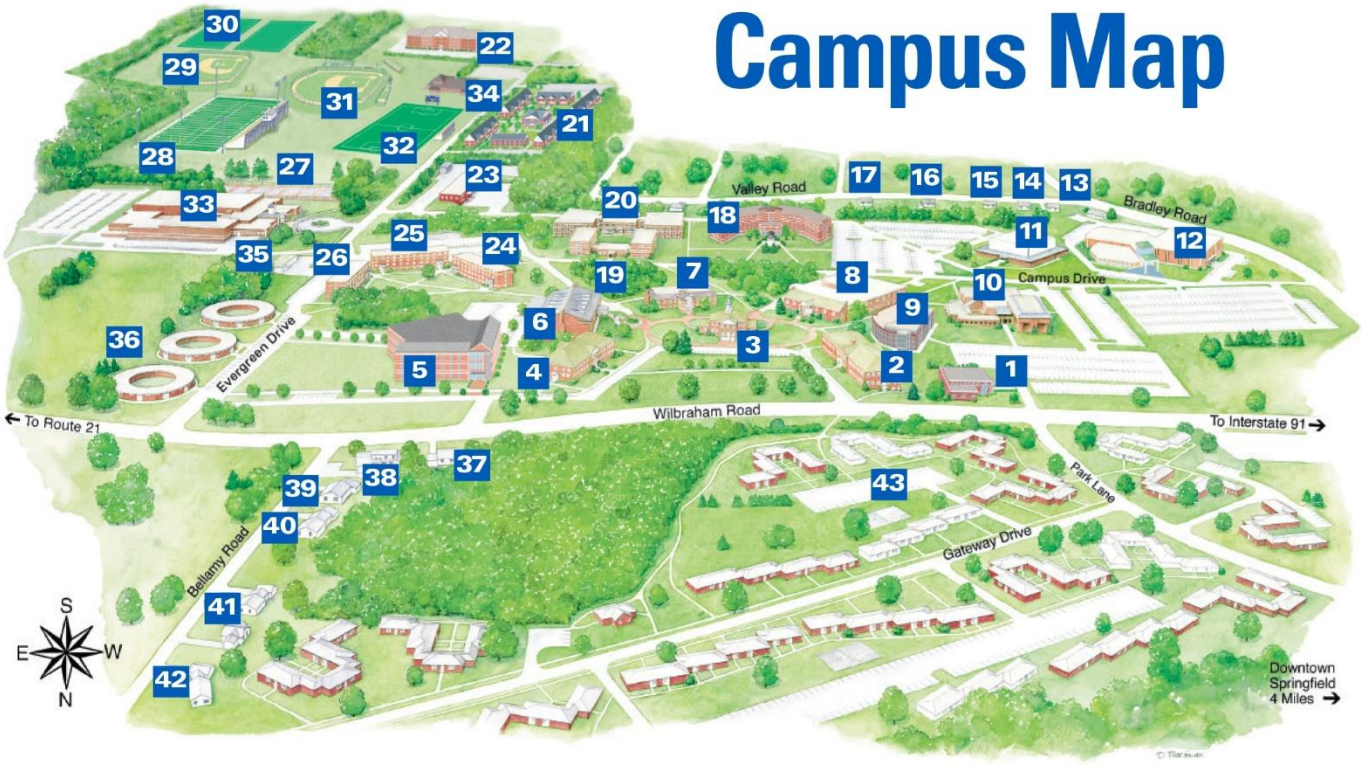
Campus Map



Important Places to Know

1. **5 – College of Pharmacy and Health Sciences (COPHS)**
2. **8 – Campus Center**
3. **12 – Blake Law Center**

Schedule

	Monday 6/24/24		Tuesday 6/25/24		Wednesday 6/26/24		Thursday 6/27/24	Friday 6/28/24
	Golden Bear Summer Camp; Group #1	**MHC-WNE Interns; Group #2**	**Golden Bear Summer Camp (Group #1)**	**MHC-WNE Interns (Group #2)**	**Golden Bear Summer Camp (Group #1)**	**MHC-WNE Interns (Group #2)**	**Golden Bear Summer Camp; (Group #1) & MHC-WNE Interns (Group #2)**	**Golden Bear Summer Camp; (Group #1) & MHC-WNE Interns (Group #2)**
Topic	**Neuroscience**	**Pharmacogenomics Sterile Comp.**	**Pharmacogenomics Pharmaceutics Med. Chem. Law/Ethics**	**Neuroscience Non-Sterile Comp.**	**Pharmacy (Clinical)**	**Big Y Pharmacy Experience**	**Occupational Therapy**	**College Prep**
Faculty	Dr. Jarvinen Dr. Tershner	Dr. Kinney Dr. Anderson Dr. WJ	Dr. Baker Dr. Ghoneim Dr. Gilzad-Kohan Dr. Kinney	Dr. Jarvinen Dr. Tershner Dr. Mattison	**Group A** Dr. Doyle-Campbell, Dr. Mattison **Group B** Dr. Anderson, Dr. Housman	Dr. Capoccia and Residents	Dr. Adams Dr. Wells	Dr. Ekong Dr. Ostendorf Ms. Humphreville
Coordinator	Ms. Kofsky	Ms. Bielecki-Wilken	Ms. Bielecki-Wilken	Ms. Kofsky	Ms. Bielecki-Wilken	-	Ms. Anderson	-
8:30-8:50am	Arrival		Arrival		Arrival		Arrival	Arrival
8:50-9:00am	Daily Overview		Daily Overview		Daily Overview		Daily Overview	Daily Overview
9-10:00am	**Learning to ask the right questions** CSP 111	**Professional Etiquette Topic** CSP 200	**PGx and DNA extraction** CSP 111	**Professional Etiquette Topic** CSP 200	**Group A** Community to Ambulatory Care Pharmacy Case (Diabetes) **Group B** EMT to Hospital Pharmacy Case (Infectious Disease)	**WNE Consultation and Wellness Center @ Big Y** 300 Cooley Street, Springfield, MA 01128	**Adaptive Equipment & Devices** H.S. - Group #1 M.S. – Group #2	**College Prep Lecture** CSP 200
10: 11:00am	**Brain sectioning** CSP 111	**Laboratory Skills Pharmacogenomics** CSP 200	**DNA extraction/Med Chem** CSP 111	**Laboratory Skills Neuroscience** CSP 200				**Online Vision Board Creation** H.S. - Computer Lab #1 M.S. – Computer Lab #2
11-12:00pm	**Quantifying mouse behavior** CSP 111		**Med Chem and TLC** CSP 111				**Pediatric OT** H.S. - Group #1 M.S. – Group #2	**College Essay Draft** H.S. - Computer Lab #1 M.S. – Computer Lab #2
12-1:00pm	LUNCH		LUNCH		LUNCH		LUNCH	LUNCH
1-2:00pm	**Nuclei staining, slide coverslipping** CSP 111	**Laboratory Skills Pharmacogenomics** CSP 200	**Compounding** CSP 111	**Laboratory Skills Neuroscience** CSP 200	**Group A** EMT to Hospital Pharmacy Case (Infectious Disease) **Group B** Community to Ambulatory Care Pharmacy Case (Diabetes)	**WNE Consultation and Wellness Center @ Big Y** 300 Cooley Street, Springfield, MA 01128	**Mental Health OT** H.S. - Group #1 M.S. – Group #2	**Review Final Essay** H.S. - Computer Lab #1 M.S. – Computer Lab #2
2-3:00pm	**Neuroimaging, microscopy, and analyses I** CSP 111	**Sterile Lab** Intro to Pharmacy Tech Training	**Compounding** CSP 111	**Mock Pharmacy** Intro to Pharmacy Tech Training			**Outpatient/Orthopedic OT** H.S. - Group #1 M.S. – Group #2	**Admissions Overview** CSP 200
3-4:00pm	**Neuroimaging, microscopy, and analyses II** CSP 111		**Law/Ethics** CSP 200				**Acute and Chronic Care OT** H.S. - Group #1 M.S. – Group #2	**Campus Tour**
4-4:30pm	Dismissal		Dismissal		Dismissal		Dismissal	Dismissal

***Golden Bear Summer Camp; Group #1 (35 H.S. Students)**
*** MHC-WNE Interns; Group #2 (10 M.S. Students)**

General Policies and Procedures

1. Exercise good judgement.
2. Do not leave the building without notifying a group leader or faculty member.
3. Follow the safety instructions provided by the group leader or faculty member.
4. Be aware of where the exits, fire extinguisher, and first aid supplies are located in the room.
5. Avoid leaving the work area when in the middle of an experiment.
6. Organize and clean workbenches after finishing the experiment.
7. NO eating or drinking in laboratory setting (Lab room and SIM man room).
8. Footwear must be clean and in good condition. Closed footwear must be worn in laboratories; open-toed shoes and bare feet are not acceptable nor permitted in the laboratory settings.
9. Communicate positively and constructively with your groups and instructors.
10. Participate in team activities and do your share of the work.
11. Let an instructor or group leader know immediately if you are having difficulties.
12. To ensure that an environment conducive to teaching and learning is established, the University expects that individuals within its walls will treat each other with courtesy and respect.
13. When differences arise, these should be resolved in a civil manner, please contact a faculty member if you need assistance.
14. Disruptive behavior, such as talking between students, leaving class while in session, ringing cell phones or texting on phones, as well as disrespectful, hostile, abusive and/or threatening behavior or language will not be tolerated.
15. Learners are expected to be on time for the sessions. If late, a learner shall enter from the rear of the room quietly, without creating a distraction.

Safety Guidelines

1. Leave all personal items (coats, non-essential books, etc.) in an unused portion of the laboratory.
2. Long hair, loose jewelry, and loose/baggy clothing should be secured.
3. **CLOSED TOED SHOES AND LONG PANTS** are required. Tank tops, shorts, and skirts are not allowed.
4. **Eating, drinking, or smoking is not allowed.** No food or beverages are allowed to be brought into the laboratory.
5. Be sure to wash hands when entering and leaving the laboratory.
6. At the beginning and end of each laboratory session, wipe bench tops with a disinfectant solution.
7. Keep your workspace clean at all times.
8. **NEVER** pipette by mouth.
9. Never remove equipment or reference materials from the laboratory.
10. Notify group leader or faculty member of broken glassware for proper disposal.
11. Speak quietly and avoid unnecessary movement around the laboratory to prevent distractions that may cause accidents.
12. No running in the laboratory.
13. On completion of the laboratory session, place all materials in the designated disposal areas.
14. Always wear safety glasses with side shields in the laboratory when chemicals are present or actively being used. Safety glasses must be worn over prescription eyeglasses.
15. Contact an instructor before leaving the laboratory.
16. **ALL ACCIDENTS IN THE LABORATORY MUST BE IMMEDIATELY REPORTED TO THE INSTRUCTOR.**

The specific precautions outlined above **MUST** be observed at all times when in the laboratory.

By signing this document, I confirm I have read and understand the laboratory safety principles summarized on this page and I recognize my responsibility to abide by these principles while in the lab.

Date:

Printed Name:_____ Signature:_____

Safety Equipment

Eye Protection

Eye/Face Wash Station

First Aid Kit

Emergency Shower

Laboratory Protocols

Genetics and Pharmacy: What's the Connection?

A person's genes can affect how one responds to the use of drugs.

Bitter Taste Test

****PLEASE NOTE:** If you have a **concern** about a **possible allergic reaction** to one of the chemicals used in the test strips, please **contact the instructor** and do not perform the activity.**

Background:

In humans, and many other species, certain chemicals in food stimulate taste cells on our tongue, which in turn send messages to a specific region of our brain. Your brain then interprets what these messages mean and determines the appropriate response (continue chewing OR spit it out). Chemoreceptors are a type of protein found in taste cells that detect the specific chemicals in our food. In humans, there are five different classes of these chemoreceptors: sour, salty, sweet, umami, and bitter. All 5 categories of receptors are found somewhere on the tongue. It was proven that there is only one type of receptor for sweet, sour, and umami but at least 30 different receptors for bitter explaining why individuals perceive foods differently.

One such bitter receptor is encoded by the gene TAS2R38. There are several known alleles (different forms) for the TAS2R38 gene, but 2 of these are most frequent in the human population outside of Africa. Considering that each person has two copies of any given gene, there are three phenotypes that are generally expressed. These include those who perceive PTC as extremely bitter, those who perceive it as bitter, and those who do not find PTC bitter. Generally, students who find PTC paper very bitter are considered tasters, while students who don't taste anything are considered non-tasters.

One study found people who can taste PTC are more likely to be non-smokers and to not be in the habit of drinking coffee or tea. People who are super-tasters are more likely to find green vegetables bitter. You will now determine if you have at least one copy of the allele that codes for a receptor that perceives PTC as bitter.

Materials:

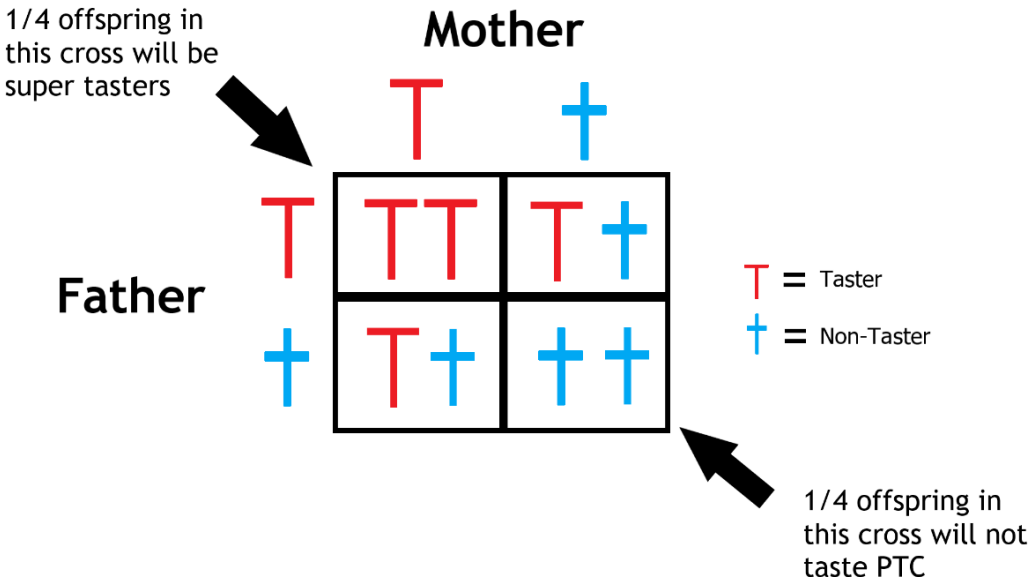
- PTC (phenylthiocarbamide) taste test paper

PTC taste test paper

Instructions:

- Remove a strip of PTC taste test paper from the vial
- Stick out your tongue, and place the strip on your tongue
- There are 2 basic results – taster or non-taster

Cross Between Heterozygous Parents



Basic (At-Home) Hand Washing
Glo Germ Activity

What are Germs?

- Tiny organisms that can cause disease in a plant or animal.
- Germs can easily move from one person to another or they can be carried from animals from person to person.

What is Glo Germ?

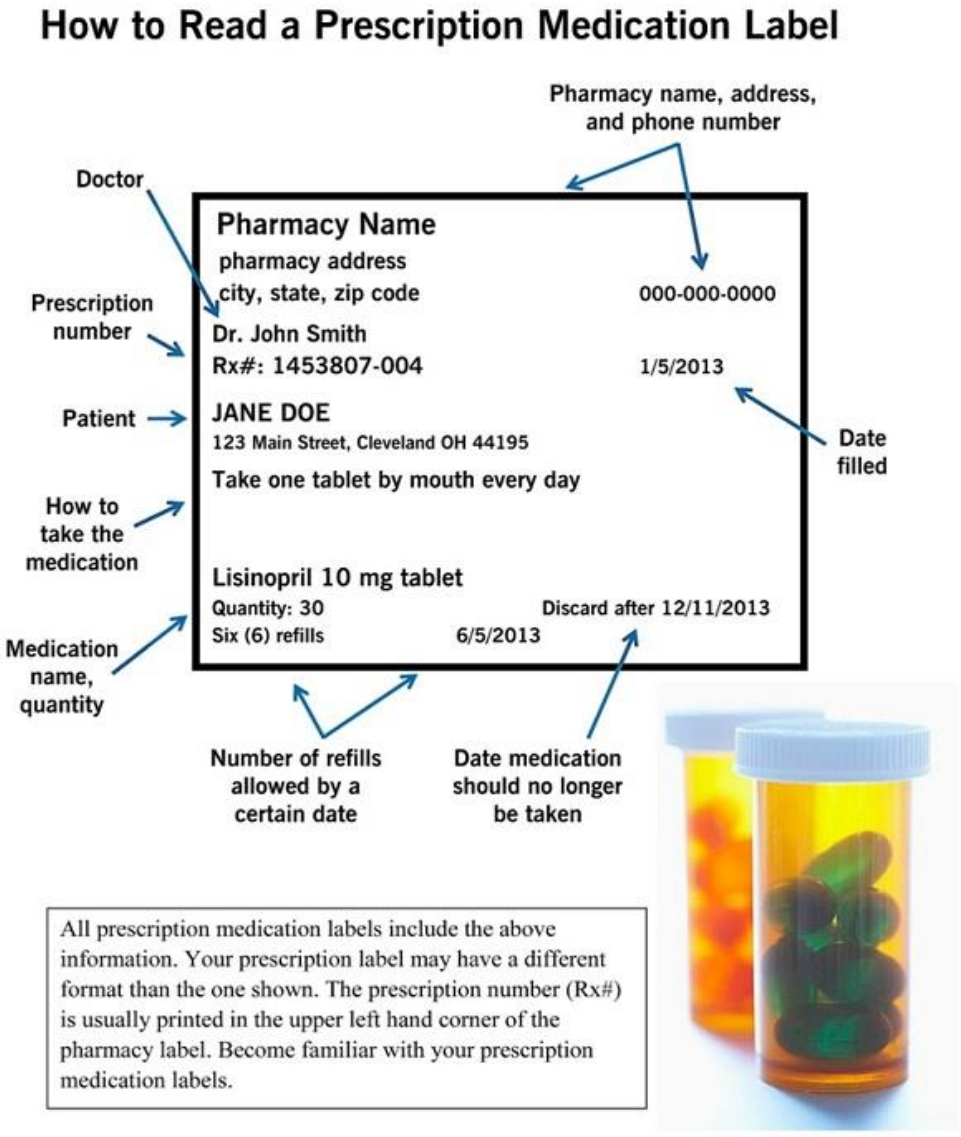
- Glo Germ is a gel that contains "germs" to help test effective handwashing
- The "germs" are only visible under UV light so, similar to normal germs, even though you may not see them, they are still present
- This activity will help to show you areas that need more attention when washing your hands

How to protect yourself from Germs? Hand Hygiene!

Handwashing Steps:

1) Wet your hands with clean, running water (warm or cold), turn off the tap, and apply soap.
2) Lather your hands by rubbing them together with the soap. Lather the backs of your hands, between your fingers, and under your nails.
3) Scrub your hands for at least 20 seconds. Need a timer? Hum the “Happy Birthday” song from beginning to end twice.
4) Rinse your hands well under clean, running water.
5) Dry your hands using a clean towel.

Model Pharmacy
Filling a Prescription



[Prescription Medication Labels: Parts & How To Read (clevelandclinic.org)]

Big Y pharmacy
Affordable, Healthy Snacks

What's on the Nutrition Facts Label?

In 2016, the U.S. Food and Drug Administration (FDA) updated requirements for the Nutrition Facts label on packaged foods and drinks. FDA required changes to the Nutrition Facts label based on updated scientific information, new nutrition research, and input from the public. This was the first major update to the label in over 20 years. The refreshed design and updated information make it easier for you to make informed food choices that contribute to lifelong healthy eating habits. So, what changed?

Original Label

Nutrition Facts
Serving Size 2/3 cup (55g)
Servings Per Container 8

Amount Per Serving	
Calories 230	Calories from Fat 72
	% Daily Value*
Total Fat 8g	**12%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**12%**
Dietary Fiber 4g	**16%**
Sugars 12g	
Protein 3g	
Vitamin A	10%
Vitamin C	8%
Calcium	20%
Iron	45%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily value may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Current Label

Nutrition Facts
8 servings per container
Serving size **2/3 cup (55g)**

Amount per serving	
Calories	**230**
	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 240mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

1. The serving size appears in large, bold font and some serving sizes were updated.
2. Calories are displayed in large, bold font.
3. Daily Values were updated.
4. Added sugars, vitamin D, and potassium are required on the label. Manufacturers must declare the amount in addition to percent Daily Value for vitamins and minerals.

Nutrition Facts Label
What's in it for you?

FDA

August 2023 — 1

[What's on the The Nutrition Facts Label (fda.gov)]

Clinical Skills Instructions

GET A CLUE!

Gain confidence

Evaluate and assess

Try to be verbal

Apply knowledge

Clinical skills and thinking

Laboratory Value assessment

Utilize all resources

Exert yourself through participation

Addressing and Assessing your Patient!

Sometimes it may be hard to find out why your patient is experiencing discomfort and it may be difficult for them to explain everything that's going on so following these quick steps can help to paint a full picture of the patient's illness: QUEST SCHOLAR-MAC

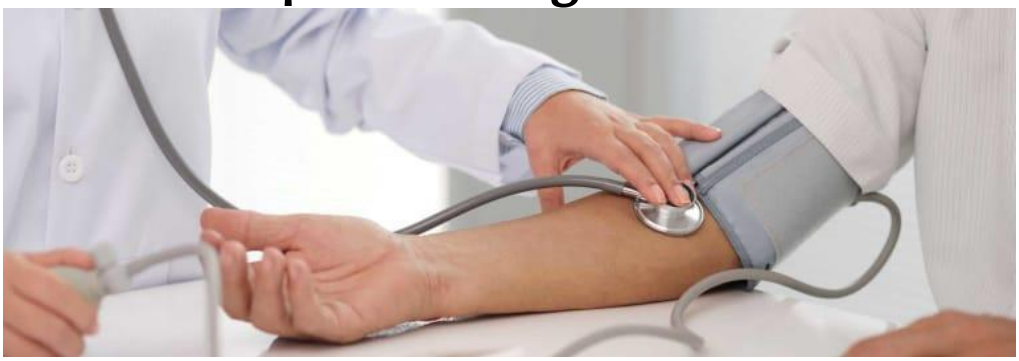
Quickly and Accurately Assess the Patient
Establish that the patient is an appropriate self-care candidate
Suggest appropriate self-care strategies
Talk with the patient

Symptoms:
What are the main symptoms of the problem?
Characteristics
What are the symptoms of the problem like?
History
What have you done so far to treat the problem? Has this problem happened before?
Onset
When did this particular problem start?
Location
Where are you feeling this problem?
Aggravating factors:
What makes the problem worse?
Remitting factors:
What makes this problem better?

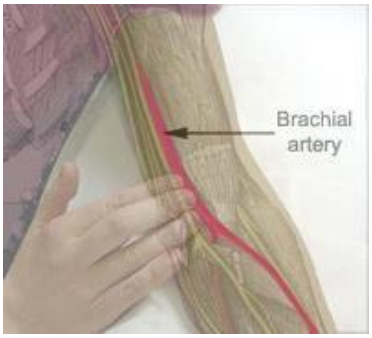
Medications:
Is the patient taking any prescription and non-prescription medications?

Allergies:
Is the patient allergic to any medications and if so what kind of reaction do they have when they take it?
Conditions: Does the patient have any other medical conditions?

Steps for Taking Blood Pressure in Adults



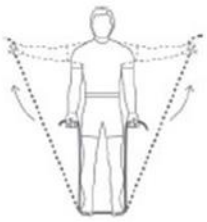
1. The patient should be seated with his/her arm bared, supported on a smooth surface and positioned at heart level. The patient should be relaxed and should not have smoked or ingested caffeine within 30 minutes prior to measurement. The measurement should begin after the patient has been at rest for 5 minutes.
2. Locate the brachial artery along the upper inner arm by feeling for the brachial pulse.



3. Measure the arm circumference and select the appropriate cuff size. Wrap the deflated cuff around the upper arm with the arrow on the cuff pointing to the area where the brachial pulse was felt.
4. Determine the level for maximal inflation by observing the pressure at which the radial pulse is no longer felt as the cuff is rapidly inflated and add 30 mm Hg. Then rapidly and steadily deflate the cuff. Wait at least 15 – 30 seconds before re-inflating.
5. Position the head of the stethoscope over the brachial artery below the cuff. The stethoscope should be applied with light pressure, ensuring skin contact at all points. Use of the bell head may enhance sound detection.
6. Rapidly and steadily inflate the cuff
7. Release the air in the cuff so that the pressure falls at a rate of 2 to 3 mm per second.
8. Listen and note the systolic pressure at the onset of at least two consecutive beats.

Blood pressure levels should be recorded in even numbers and read to the nearest 2 mm Hg mark on the manometer.

9. Listen and note the diastolic pressure at the point you can no longer hear the sounds of beating. Listen for 10 to 20 mm Hg below the last sound heard to confirm disappearance. Then, deflate the cuff and remove it from the patients arm completely.
10. Announce/record the blood pressure reading.



Lateral Raise
- Stand on elastic.
- Hold elastic in both hands.
- Begin with arms at sides.
- Position palms forward.
- Keep elbows straight and lift arms to shoulder level.
- Slowly lower and repeat.

Front Raise*
- Secure elastic at waist level as shown.
- Grasp elastic and pull arm backwards keeping elbow straight.
- Slowly return to start position.

Overhead Press*
- Stand on elastic.
- Grasp elastic in hands, arms at side, elbows bent, as shown.
- Push arms up and overhead.
- Slowly return to start position and repeat.

Shoulder Diagonal D1 Flexion*
- Secure elastic to secure object at floor level.
- Sit or stand, arm at side.
- Grasp elastic in hand, palm forward.
- Lift arm upward and across body to opposite shoulder, bending elbow, ending with palm inward.
- Slowly return to start position and repeat.

**Caution: User must wear suitable eye protection such as safety goggles during this exercise to protect against possibility of eye injury as a result of the band or tube snapping towards the face if grip is lost or if the band or tube breaks.*

Thera-Band Instruction Manual

Shoulder Diagonal D2 Flexion*
- Attach elastic to secure object at floor level.
- Begin with arm crossed over trunk, holding elastic, palm inward, at opposite hip.
- Raise arm up and diagonally across, ending with palm facing forward.
- Slowly return to start position and repeat.

Shoulder Diagonal D1 Extension*
- Attach elastic to secure object as shown.
- Grasp elastic with hand at opposite shoulder, palm inward.
- Pull arm down and across body, ending in palm outward.
- Slowly return to start position and repeat.

Shoulder Diagonal D2 Extension*
- Attach elastic to secure object above head level.
- Begin with arm up and out from side as shown.
- Grasp elastic, palm forward and pull down and across.
- End with hand at opposite hip, palm inward.
- Slowly return to start position and repeat.

**Caution: User must wear suitable eye protection such as safety goggles during this exercise to protect against possibility of eye injury as a result of the band or tube snapping towards the face if grip is lost or if the band or tube breaks.*

Thera-Putty Exercises

Repeat these exercises	times for	times a day.

These exercises will strengthen the muscles of your fingers, hand and forearm.

Finger Hook

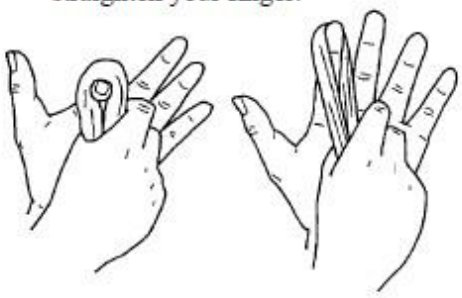
Make a hook with your fingers as you press into the putty.

Full Grip

Squeeze your fingers into the putty like your are making a fist.

Finger Extension

Loop the putty over the end of the finger while it is bent. Try to straighten your finger.

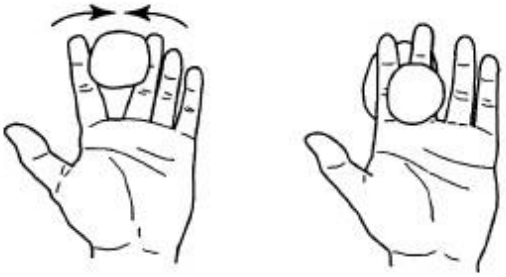


Finger Spread

Spread the putty like a pancake over your fingers and thumb. Try to spread them apart.

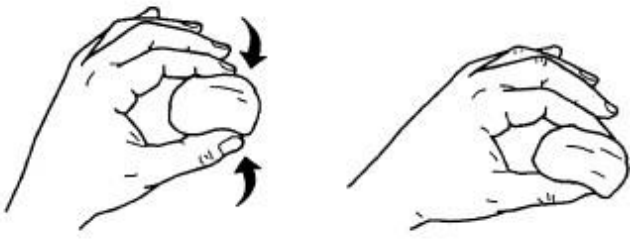
Finger Scissor

Place a 1 inch thick piece of putty between each pari of fingers and squeeze together.



Finger Pinch

Pinch the putty between each finger and the thumb.



Let's Make A SNAKE !

Step 1: Roll your putty into a looooooooong snake body

Step 2: Rip a small section off the back of the snake's body and roll in into small balls

Step 3: Place them on the snake's head for eyes

Step 4: Rip another small section off and roll it into a small, thin piece

Step 5: Place it near the snake's mouth for a tongue

Step 6: Pinch along the snake's body to add scales

You Did It!

Additional Information

Careers in Pharmacy

Career Pathway	Activities from Summer Camp
Community Pharmacist	• Fill prescriptions • Counsel patients about medications and proper use • Answer questions from patients and other healthcare providers
Hospital Pharmacist	• Can work to compound medications • Makes sure medication orders are verified • Can specialize in different areas- Emergency, Cancer, General Medicine, Pediatrics, etc.
Ambulatory Care Pharmacist	• Uses clinical skills needed to evaluate patients in a clinic setting • Takes blood pressure and evaluates results • Can also specialize in different areas- Diabetes, Asthma, Nutrition, etc.

Pharmaceutics	• Development of pharmaceutical products
	  ○ basic creams
	  ○ lip balms
	  ○ syrups
	  ○ tablets and capsules
	• Works for drug companies

Pharmacogenomics and Pharmacogenetics	• Perform DNA extractions on Strawberries
	• Bitter taste test
	• Studying genes and how drugs impact on the body
	  ○ Dominant and recessive genes
	  ○ Some genes can cause drugs to become ineffective

Many other careers in pharmacy exist! These are just a few examples of how the activities you participated in throughout the week translate into the real world.

Admissions Information

WNE 0-6 Pharmacy Program (6 years)

Western New England University's Pharmacy program is an ideal place for future pharmacists to excel. Through our 0-6 Doctor of Pharmacy (PharmD) program model, qualifying high school seniors applying to the Pharmacy program are guaranteed a seat in our four-year PharmD program, provided they meet academic milestones during their first two years of preprofessional studies. Qualifying students are eligible to receive a **bachelor's degree in Pharmacy Studies** after four years of study and the PharmD degree after six years.

More information can be found at https://wne.edu/pharmacy-and-health-sciences/academics/pharmd/index.cfm

EXPERIENTIAL
TRAINING

ANY SCIENCE REQUIREMENTS WITHIN THE PROGRAM.

WESTERN NEW ENGLAND UNIVERSITY | WNE

COLLEGE of PHARMACY and HEALTH SCIENCES

Pre-professional Course Requirements

All learners must complete the pre-professional course requirements, earning a grade of 'C-' or higher in each course, at an accredited college or university prior to matriculation into the professional PharmD program at the College of Pharmacy and Health Sciences.

Course	Credit Hours (semester)
Science requirements[1]	
General biology with lab	8
Human anatomy and physiology with lab	8
General chemistry with lab	8
Organic chemistry with lab	8
Microbiology with lab	3
Physics with lab	4
Math requirements	
Calculus	3
Statistics	3
Social science requirements	
English composition	6
Economics	3
Psychology	3
Social science elective[2] OR public/population-based health	3
Total	60

[1] Science Courses must be designated for science majors

[2] May be satisfied with a course in history, sociology, political science, or law and society

WNE, Occupational Therapy,

3+3 Pre-OT/Health Studies/OTD Program

Two degrees of preparation—in just six years, not seven. That's the advantage of earning both a BS and an OTD degree jointly at Western New England. You will save time, tuition, and be positioned to command the salary afforded those with the highest practice degree in the field. When you commit as a first-year student to this early admissions program, you'll spend your first three years in the Health Studies program focusing on prerequisite OT coursework. After successful completion of five semesters, you will apply to the OTD program during the spring of your junior year. Those accepted into the program will transition into the OTD program at the College of Pharmacy and Health Sciences for their fourth year, traditionally the senior year of study at WNE. After four years, you will join with your undergraduate classmates in receiving your Bachelor of Science degree. Then (with the option to continue to live on campus) it is on to the final two years of doctoral study in the OTD program (including summers) to prepare you for licensure and to work in practice, administration of a department, or academic work in higher education.

More information can be found at https://wne.edu/pharmacy-and-health-sciences/academics/otd/index.cfm

Admissions Criteria for the Health Studies/Pre-OT Program

To be considered for admissions to the Pre-OT program, an applicant must;

- SAT: ≥ 1100 (math, critical reading)
- ACT: ≥ 24
- Biology, Chemistry, US or American History, 3 years Math up to Algebra 2 (Pre-calculus is recommended) and 4 years English, Physics also preferred.
- AP credits accepted depending on score. 3+ test score on individual basis. 4 or 5 needed to satisfy any science requirements within the program.

Contact Information

Health Services

The Center for the Sciences and Pharmacy, Suite 235 413-782-1211

Public Safety on WNE Campus

For Emergencies: 413-782-1411 | For Non-Emergencies: 413-782-1300 On WNE phones dial 1207 or email: police@wne.edu

To see more information on our college:

SCAN ME

To contact faculty/staff:

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