Cornell Guided Notes

Genetics of Disease (Medical Interventions) | 2027-02-25

Name	Period	Date	Lesson
		2027-02-25	

Lesson focus

Resistance and stewardship

Key words and questions	Prepared details and student notes
Essential question **What is today's target?**	Explain how antibiotic resistance evolves and why stewardship slows it down. Big idea: How does antibiotic use create selection pressure that makes resistance inevitable without stewardship? **My notes, examples, and questions**
Key words **What vocabulary unlocks the lesson?**	- antibiotic - bacteriostatic - bactericidal - MIC - zone of inhibition - resistance - plasmid **My notes, examples, and questions**

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Cornell Notes - Continued

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Must-know ideas **What should I understand by the end?**	- Natural selection acts on bacterial populations: bacteria with random resistance mutations survive antibiotic treatment and reproduce, making resistance more common over time. - Stopping antibiotics early leaves a partially treated population of mostly resistant survivors, accelerating resistance emergence. - Stewardship actions (prescribing only when necessary, completing full courses, using narrow-spectrum drugs when possible) reduce selection pressure and slow resistance. **My notes, examples, and questions**
Process notes **What happens during class?**	- 0-12 min: Read the resistance evolution overview: rare resistant mutant survives, reproduces, population shifts - 12-28 min: Draw a before-and-after diagram: sensitive population before treatment, resistant-dominated population after incomplete treatment - 28-42 min: Explain in writing why completing the full prescribed course reduces resistance (removes more of the sensitive population that competes with resistant cells) - 42-55 min: Use Wednesday's zone data: which antibiotic had the smallest zone? That drug is most at risk of becoming ineffective first under resistance - 55-68 min: List two specific stewardship actions; explain the biological mechanism behind each - 68-80 min: Write the connection sentence linking Monday's debate to the biological reality of resistance **My notes, examples, and questions**

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Steps and evidence
What do I do and turn in?

- Read how a few resistant bacteria survive treatment and then multiply.
- Draw a before-and-after picture of a population becoming mostly resistant.
- Explain why finishing a prescribed course can reduce resistance.
- Connect your zone-of-inhibition data to which drug resistance would make useless first.
- List two stewardship actions that slow resistance.
- Write one sentence linking your Monday debate to the biology of resistance.

Evidence: Notebook check - Before-and-after resistance diagram, explanation of why completing a course helps, zone-data connection to resistance risk, two stewardship actions with biological rationale, and one connection sentence to Monday's debate.

My notes, examples, and questions

Checks for understanding
How do I know I got it?

- You will be able to explain how antibiotic resistance evolves.
- You will be able to connect lab data to resistance risk.
- You will be able to name stewardship actions that slow resistance.

My notes, examples, and questions

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Lab or safety notes
What must I handle carefully?

Supplies:
- Pre-poured agar plates (or simulation)
- Antibiotic disks
- Sterile forceps
- Ruler or calipers for zone measurement
- Inoculating loop
- Marker and tape for labeling

My notes, examples, and questions

Summary

Today's lesson focused on Resistance and stewardship. The main target was: Explain how antibiotic resistance evolves and why stewardship slows it down. The evidence of learning is Notebook check: Before-and-after resistance diagram, explanation of why completing a course helps, zone-data connection to resistance risk, two stewardship actions with biological rationale, and one connection sentence to Monday's debate.. In my own words, the most important idea from today is:

My summary

My final question or connection