How Antibiotic Resistance Moves Directly Germ to Germ

Any antibiotic use can lead to antibiotic resistance. Antibiotics kill germs like bacteria and fungi, but the resistant survivors remain.

Resistance traits can be inherited generation to generation. They can also pass directly from germ to germ by way of mobile genetic elements.

**Mobile Genetic Elements**

- **Plasmids**
  Circles of DNA that can move between cells.

- **Transposons**
  Small pieces of DNA that can go into and change the overall DNA of a cell. These can move from chromosomes (which carry all the genes essential for germ survival) to plasmids and back.

- **Phages**
  Viruses that attack germs and can carry DNA from germ to germ.

**How Mobile Genetic Elements Work**

- **Transduction**
  Resistance genes can be transferred from one germ to another via phages.

- **Conjugation**
  Resistance genes can be transferred between germs when they connect.

- **Transformation**
  Resistance genes released from nearby live or dead germs can be picked up directly by another germ.