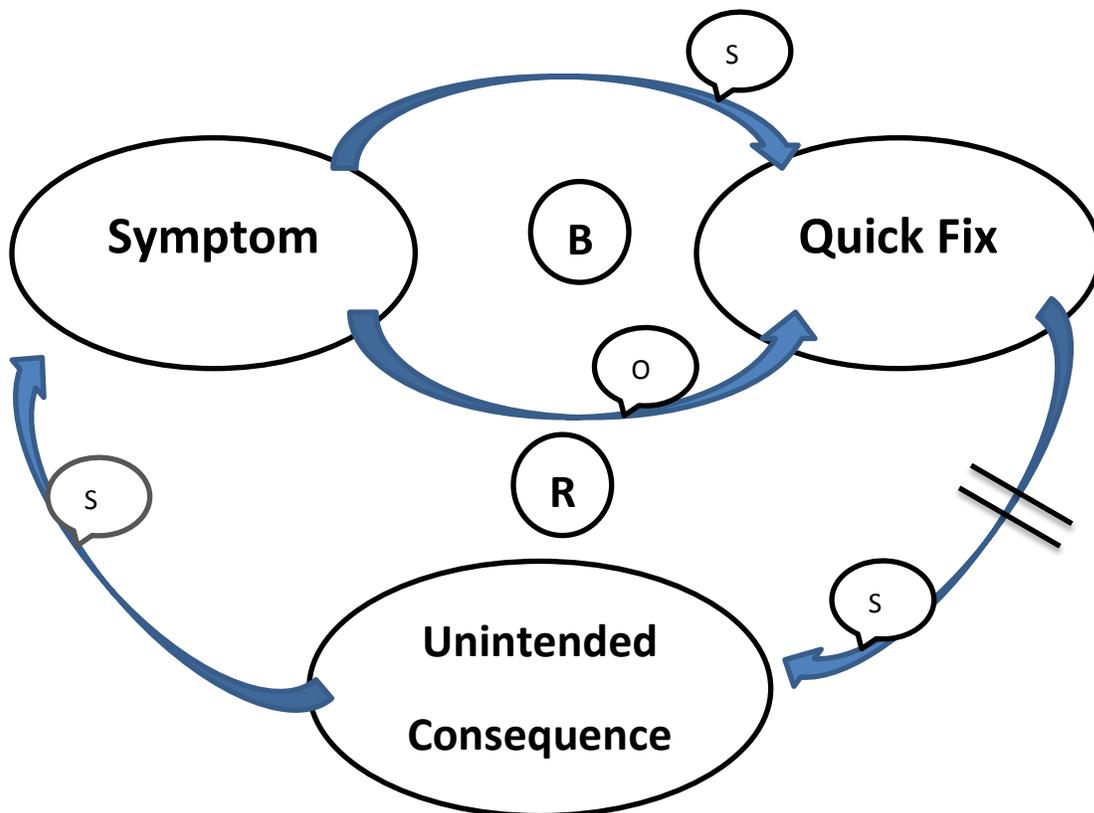


## *Practicing with Fixes that Fail*

1. The more times we put out small forest fires, the more likely we are to have a big forest fire.
2. The more pesticides we use to kill insect pests, the more likely we are to experience insects resistant to the pesticides.
3. There were too many accidents on a winding highway along the coast, so the state widened the road and there were more accidents.
4. A repressed minority protests against their lack of opportunity and the protests turn violent. Many people are arrested and the violence increases.
5. A U.S. foreign policy to remove an “uncooperative” dictator, which exposes underlying tensions based on scarcity of resources that erupts into violence.
6. Policies that drive food prices down designed to alleviate poverty result in a widening gap between the “haves” and the “have nots.”

NOTE: the solution is always found FIRST in acknowledging the easy fix is treating a symptom and isn't working. Then look for root cause(s) of the problem using the iceberg. A full systems analysis is needed BEFORE you try to fix a complex problem.



## *Practicing with Causal Loops*

1. Listen to the story once
2. Listen to the story again, watching for “*what goes up and what goes down*”
3. Write a list of the key variables (quantifiable change)
4. Listen to the story again, watching for relationships between key variables
5. Draw the variables in bubbles
6. Label the direction of change (s = same direction; o = opposite direction)

### *Superbugs – A fix that fails*

“In the microbial world, where only the fittest survive, some bacteria inevitably stumble upon genetic mutations that protect them from antibiotics. When exposed to antibiotics, most bacteria die quickly but invariably leave a small percentage of weakened but living bacteria. These begin to grow and proliferate and continue to mutate. When the surviving bacteria are exposed to antibiotics many die but more survive and continue to proliferate. The more antibiotics are used (especially in low doses as is commonly practices in factory farms) the more antibiotic resistant bacteria survive and proliferate.

