Back Pain Scenario:

A 62-year-old male has come in to urgent care with low back pain, where he has been seen in the urgent care several times for low back pain. The triage nurse states that it is the "same old" back pain for which the patient has been seen for in the past. The clinician should keep in mind that the phrase "same old" should always be taken into account with skepticism. Although some patients can have the same problem over and over again, labeling the problem as such without full evaluation can lead to misdiagnosis. This type of bias is called "triage cueing" where someone initially labels a diagnosis based upon a superficial evaluation, and the subsequent evaluation is impacted by the initial labelling.

Using the Epi-logical approach, what should be the probable diagnoses?

The clinician should consider all differentials on the clinical mind map, except uterine pathology. The patient is in the right age group for being at risk for low back pain arising from a variety of pathophysiologic processes.

How should a clinician address urgent/emergent situations?

The patient's vitals are BP 144/89, HR 68, T 98F, O2sat 98% and BMI 32, he appears to be in moderate distress due to pain, but he is not diaphoretic. When asked by the triage nurse about his pain scale, he says it is 8 out of 10.

According to the clinical mind map, the life-threatening conditions which the clinician should consider are spinal abscess, aortic aneurysm rupture, and cauda equine. By looking at the patient's vital signs, the clinician can determine that the likelihood of spinal abscess or ruptured aortic aneurysm is low since this patient does not have fever (for spinal abscess) or hemodynamic instability which presents as low blood pressure and relative tachycardia (for ruptured AAA). The clinician cannot determine if cauda equine is present or not and may feel quite awkward to ask the patient about bladder or bowel incontinence right away. The clinician should consider that patients who suffer from acute cauda equine syndrome will most likely either present with bowel or bladder incontinence as their chief complaint, or they will themselves mention it without any prompting. These are severe enough symptoms to seek attention, which most people will not ignore. So, the clinician can bypass these questions, and move on to the next step of the Epi-logical approach, while keeping in mind that an urgent/emergent situation may manifest itself as the clinician evaluates the patient.

Weighing and Removing Anchor Bias:

The Clinician's Questions	**The Patient's Responses**	**How does this information help with diagnostic reasoning?**
I am sorry to see that you have so much pain. When did this pain start?	It started all of a sudden yesterday morning when I was mowing my yard, and I can't take it anymore.	Acute causes of pain are more likely than chronic causes since not only is the pain of acute duration, but also it started with a sudden onset. The clinician does not need to ask about onset because the patient has already described what he was doing when the pain started. *This description*

		also undoes the effect of triage cueing which developed earlier.
OK, tell me where exactly does it hurt?	Right here, my low back (the patient points to the right lower lumbar region).	Unilateral causes of pain such as lumbar strain, somatic dysfunction, intervertebral disc herniation, and urolithiasis are more likely. Although SI joint dysfunction is also unilateral, it is not likely because the pain is very acute and sudden in onset.
Does the pain go down to any of your legs?	Yes, it is shooting into my right leg. Can I please get something for pain right away?	Lumbar strain and/or intervertebral lumbar disc herniation are highly likely. The *patient seems to be uncomfortable. So, the clinician can offer analgesia (oral or parenteral medication) and continue with* the *history.*
Because the clinician has strong evidence for lumbar disc herniation or lumbar strain (also called sciatica in layman's terms), the clinician might be tempted to end the diagnostic reasoning process at this point. However, the clinician must keep in mind that back pain is extremely common, and often can be caused by multiple etiologies, many of which are very common in the general population. This patient may have more than one pathology. The clinician already overcame "triage cueing." Next, in order to avoid the pitfall of anchor bias, the clinician should continue with the evaluation process, and ask additional medium yield questions.		
Do you have any pain with urination, or frequent urination?	Not really, but I have been going more at night, I guess it is my prostate.	Urolithiasis and Pyelonephritis are less likely. The patient might have enlarged prostate.
At this point, the clinician has asked questions about acute causes of low back pain, except that the clinician did not specifically ask questions about the possibility of a vertebral spinous fracture which might have caused acute pain. But based upon the fact that the pain started while the patient was working in his yard (a non-traumatic onset) and his BMI being above normal (puts him at a very low risk for osteoporosis), a vertebral fracture is very unlikely. Now the clinician can ask additional questions about chronic causes of pain.		
Have you had low back pain in the past?	My back is not the strongest part of my body, but I have never had it this bad.	Diagnoses in addition to lumbar disc/strain may be possible.
Tell me more about your chronic problems with your back? Is it pain? Where is it?	Like I said, it is in my low back on the right, and it started yesterday.	*The patient did not seem to understand the question, so the clinician* needs to *re-word the question.*

How long have you been feeling this?		
Yes, I know about this severe pain that started yesterday, but you were saying that you have been having problems with your back for a long time.	Oh yes. My back has been bothering me ever since I started my new job a year ago. The pain is usually dull, and although it is almost every other night, it does not nearly bother me as much as this pain which started yesterday. A couple of over the counter meds take care of it.	Degenerative (spondylosis, spondylolysis, spondylolisthesis, face joint arthritis, SI arthritis) and neurological causes (spinal stenosis) could be likely as secondary diagnoses. Ankylosing spondylitis is not very likely because the patient's pain and stiffness are usually felt in the morning in this condition.
Where exactly is this chronic pain located? Does it radiate anywhere or stay in the low back area?	It is usually my low back close to the tail bone, and unlike my new pain, it does not go anywhere.	Spinal stenosis is slightly less likely because patients usually complain about pain radiating to both legs.
Do you have any weakness, tingling, or numbness with your chronic pain?	Not really. But it is hard for me to do much exercise with this pain.	Spinal stenosis is unlikely.
You mentioned about your prostate giving you problems. How long have you been having trouble with nighttime urination?	I have been waking up several times every night for several months now.	A prostate pathology may be likely. Further questions need to be asked to evaluate for cancer.
Is there a history of prostate cancer in your family?	One of my uncles has prostate cancer, and he is only 15 years older than me.	Prostate cancer is possible, although the clinician does not think it is causing the patient's acute low back pain.
Have you lost any weight recently?	I don't think so.	Contrary to common beliefs, weight loss is often not present (present <50%) in patients with cancer, at least early on in the disease process. So, this lack of weight loss does not change the likelihood of prostate cancer or multiple myeloma.
You were saying that you do not exercise much. Is it because of your pain or because you are very tired?	Both I guess. My pain is usually at the end of the day, but I can't do much during the day either.	Malignancy is still possible. If fatigue is due to anemia, multiple myeloma could be a possibility.
Do you take any medications for your prostate?	I don't really take any medicines. 6 months ago, they gave me medicines for	Neutral. (*The patient's prostate problem may not be that severe)*

	my prostate and for blood pressure, but I never got around to fill these.	
At this point, the clinician has accumulated sufficient evidence to consider lumbar disc herniation/strain as the primary diagnosis, and a degenerative process such as spondylosis, spondylolysis, spondylolisthesis, or facet / SI joint pathology as the secondary diagnosis. In addition, there is a possibility of a malignant process. The clinician starts with a physical exam.		
General exam	Somewhat uncomfortable, but co-operative pale appearing middle age man.	Anemia is a possibility. (Note that this may not always be obvious especially in dark skin populations).
Musculoskeletal exam	A decreased range of motion at the lumbar spine. A positive straight leg raise on the right. No point tenderness at SI joints, but there is tenderness at spinal processes at the L3 and L4 level without any swelling or redness. Some bone tenderness is also appreciable in the lower extremities.	Lumbar disc herniation continues to be likely. SI and facet joint arthritis are less likely. Point tenderness at the lumbar level with some bone tenderness raises concerns for bone lesions or multiple myeloma.
Neurological exam	The knee jerk reflex is diminished on the right. The rest of the neurological exam is normal.	This finding is specific, but not sensitive (not always seen in case of L3/L4 involvement, but any presence greatly increases the likelihood of L3/L4 involvement.)
Prostate exam. *(This might not be a very practical thing to do at the moment if the patient is in severe pain)*	Slight, uniform enlargement of prostate without hard nodules.	Prostate cancer is less likely.

At this point, the clinician should order labs/imaging to confirm or rule out all those diagnoses that the clinician is considering strongly. The complete blood count shows normocytic anemia with a hemoglobin of 10.2. The Basic Metabolic panel shows hypercalcemia. The X-ray of the lumbar spine shows lytic lesions in the pelvis and spine consistent with multiple myeloma. The MRI confirms lumbar disc herniation at the L3-L4 level and lytic lesions in the lumbar spine consistent with multiple myeloma. The prostate panel, including prostate specific antigen, is normal.

Additional lab findings to look for are plasma and urine protein electrophoresis, urine for Bence-Jones proteins, serum calcium, and albumin to globulin ratio. A bone marrow biopsy will confirm the diagnosis.

In summary, this patient had low back pain due to acute lumbar disc herniation in addition to chronic back pain related to his more serious underlying pathology of multiple

myeloma. The clinician could have stopped the diagnostic evaluation process at an early stage when the clinician had sufficient evidence for acute lumbar disc herniation/strain, but by being cognizant of the possibility that patients can have more than one diagnosis, sometime arising from multiple systems, the clinician was able to avoid triage cueing, remove anchor bias, and achieve diagnostic success.