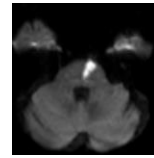


# Utility of DWI as a Problem-Solving Sequence in Brain MRI

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**Background:** Diffusion weighted imaging uses varying gradient strengths in order to dephase the imaged tissue resulting in decreased signal return. The further water moves (diffuses) the more it will be dephased. Therefore, water molecules that are trapped will have less exposure to the varying gradient strengths allowing them to maintain a relatively elevated signal. Different disease processes display different mechanisms responsible for restricted diffusion, including cytotoxic edema, hypercellularity, viscous fluid, demyelination, etc. While all these mechanisms can lead to restricted diffusion, there are characteristic patterns which can be invaluable when making a diagnosis.



DWI Positive

**Learning Point/Conclusion:** Although there is overlap, there are also specific patterns of restricted diffusion. Familiarity with these patterns along with the patient specific clinical information will aid in the formation of a focused differential.

**Bonus DWI tip:** Use the DWI to pick up subtle scalp/skull metastases easily missed on other sequences.

