### Summary of Deep Heat Modalities

<table>
<thead>
<tr>
<th>Deep Heat Modalities</th>
<th>Transfer Method</th>
<th>Physiologic Effects</th>
<th>Indications</th>
<th>Contraindications</th>
</tr>
</thead>
</table>
| Ultrasound (US)      | Conversion via piezoelectric effect (electrical to acoustic energy) | 1. **Thermal:** Same as superficial heat. 2. **Non-thermal:** Improved tissue repair, inflammatory response | - Same as superficial heat  
- Soft tissue Disorders i.e., Bursitis, Tendinitis  
- Musculoskeletal Pains  
- Degenerative arthritis  
- Contractures  
- Promote Wound Healing | - Same as superficial heat  
- Eyes  
- Pregnant uterus  
- Heart, Brain, Spine  
- Epiphyseal growth plate of children  
- Pacemakers  
- Laminectomy sites  
- Any metal components |
| Phonophoresis (Sonophoresis) | Conversion (same as US) and chemical (drug) | Thermal and Non-Thermal effects                                                    | - Same as US                                                              | - Same as US  
- Medication or drug allergy |
| Shortwave Diathermy (SWD) | Conversion via highly energized electromagnetics to thermal energy | Thermal effects                                                                   | Same as superficial heat except penetrates to:  
- Deep Tissues (Wide areas)  
- Large Joints (hip, knee, ankle)  
- Bones | - Same as superficial heat  
- Any metal components  
- Contact lenses  
- Uterus (gravid, menstruating)  
- Skeletal immaturity |
| Microwave Diathermy (MWD) | Conversion via highly energized electromagnetics to thermal energy | Thermal effects                                                                   | Same as superficial heat except penetrates to:  
- superficial muscles  
- shallow joints | - Same as SWD  
- Caution for Pregnant (increases miscarriage; both patient and operator) |