

EVALUATION OF NATURAL HEALTH PRODUCTS (NHPs) IN CLINICAL ONCOLOGY PRACTICE

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I have no real or potential conflicts
to disclose! 😊



Provincial Health Services Authority

LEARNING OBJECTIVES

- Discuss prevalence, benefits & risks of NHP
- Describe approach to address NHP use
- Provide examples of how to evaluate NHP
- Discuss common pitfalls & red flags

NATURAL HEALTH PRODUCTS (NHPs)

- Vitamins/Minerals
- Homeopathy
- Herbal/Plant Remedies
- Traditional Medicine
- Amino Acids/Essential Fatty Acids
- Probiotics

COMMON NHP EXAMPLES IN CANCER

- Garlic
- Ginkgo
- Green Tea
- Fish Oil
- Tea Tree Oil
- Co-Enzyme Q10
- Black Cohosh
- Probiotics
- Flax Seed
- Ginger
- St. John's Wort
- Saw Palmetto

PREVALENCE

- NHP use continues to climb
- Up to 80% of Canadians with cancer may use NHPs at some point in their journey

POTENTIAL BENEFITS

- Some NHPs (e.g., Ganoderma Lucidum, a form of mushroom) may have immuno-modulating effects
- Some NHPs (e.g., Curcumin) may improve anti-cancer effects of chemotherapy (e.g., methotrexate)

POTENTIAL BENEFITS

- Some NHPs (e.g., Astragalus) may improve anti-cancer therapy (e.g., platinum) through their anti-inflammatory effects
- Some NHPs (e.g., Melatonin) may reduce side effects of cancer therapy

POTENTIAL BENEFITS

- Some NHPs (e.g., Rasayana) may reduce oxidative damage of cancer therapy
- Some NHPs (e.g., Huachansu: dried toad extract) may improve patients' quality of life during cancer therapy

POTENTIAL HARMS

- Drug/NHP Enzyme Interactions, e.g.:
 - Cytochrome P450 enzyme interactions
 - P-glycoprotein enzyme interactions
- Extent of interactions depend on dose, frequency & timing of NHPs
- NHPs may contain different ingredients with antioxidant properties

POTENTIAL HARMS

- Many cancer treatments (e.g., radiation therapy and chemotherapy) use reactive oxygen species (ROS) for their anti-cancer effects
- Antioxidants (e.g., vitamin A, B, C, E, melatonin, zinc, etc.) may interfere with ROS
- Published literature: inconsistent

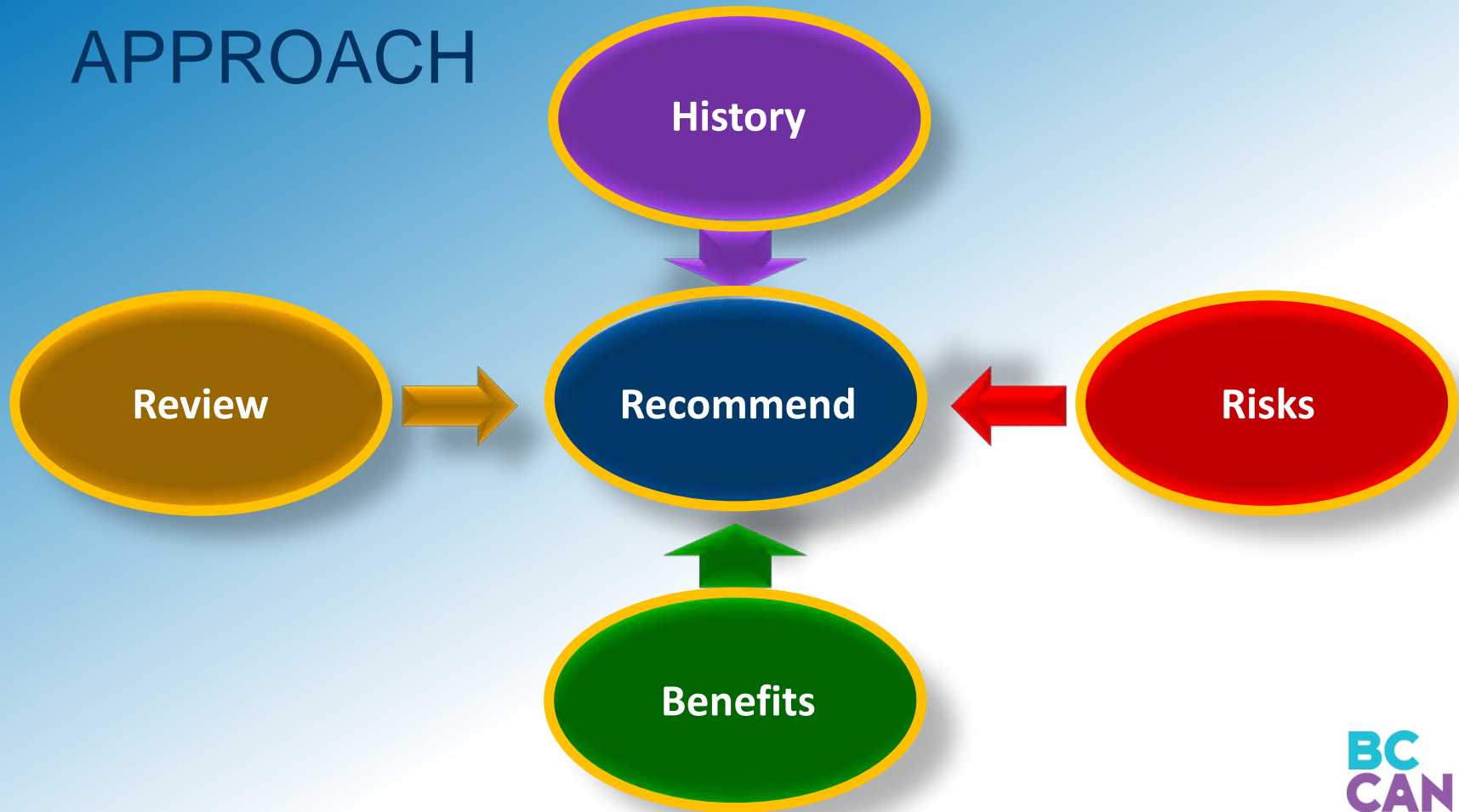
THERAPEUTIC INDEX & TIMING

- Many cancer treatments have narrow therapeutic indices, which means that anything that increases or decreases their concentration may lead to detrimental effects for the patient
- It is important to separate interacting NHPs from cancer therapy by 4-5 half-lives

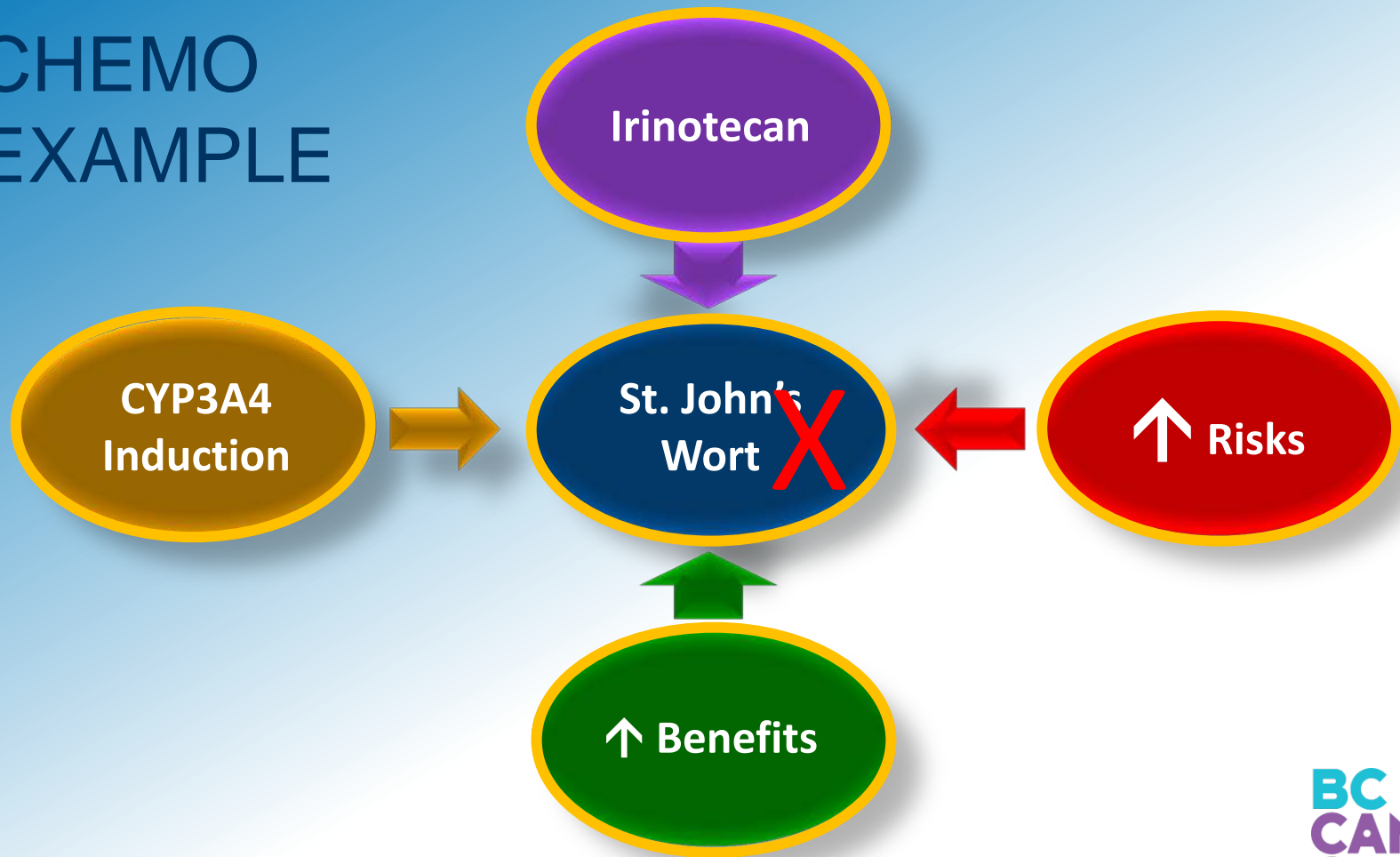
HEAD & NECK CANCER

- Randomized controlled trials have shown Vitamin E supplementation can increase cancer recurrence rate and reduce survival in patients with stage I or II head & neck cancers, who are treated with radiation therapy
- Vitamin E & beta carotene supplementation may increase cancer recurrence and mortality in smokers with head & neck cancer, undergoing radiation therapy

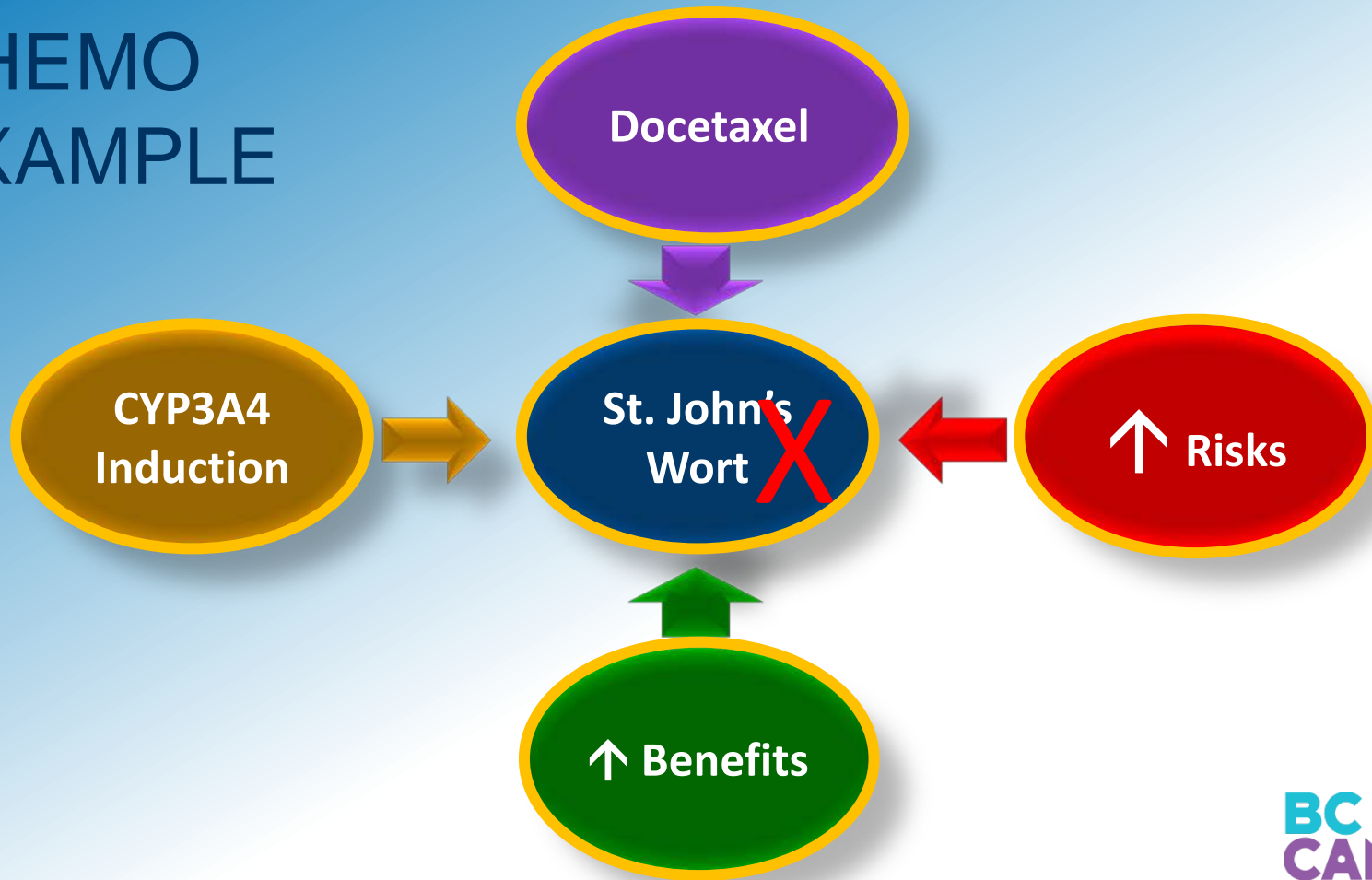
APPROACH



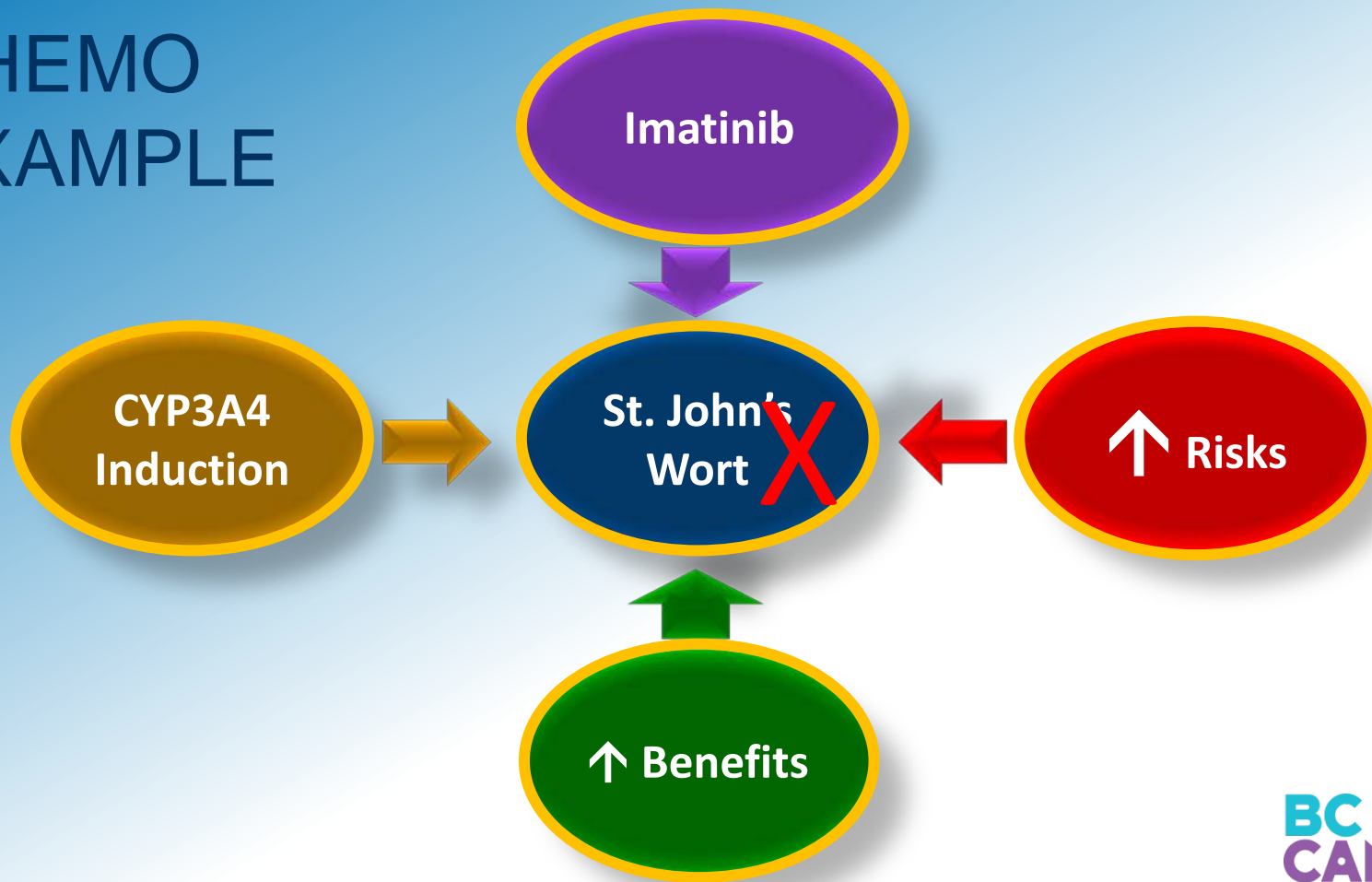
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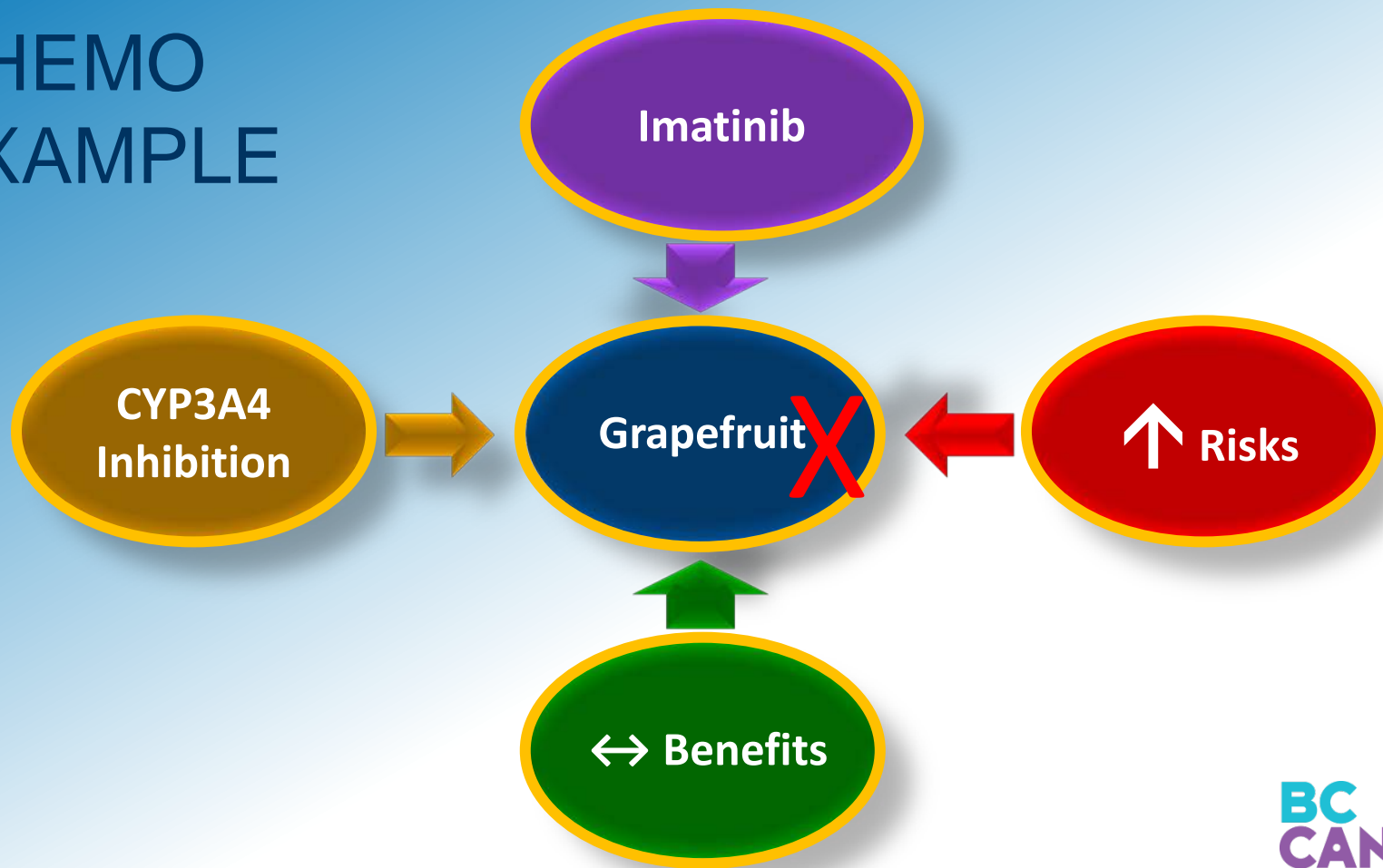
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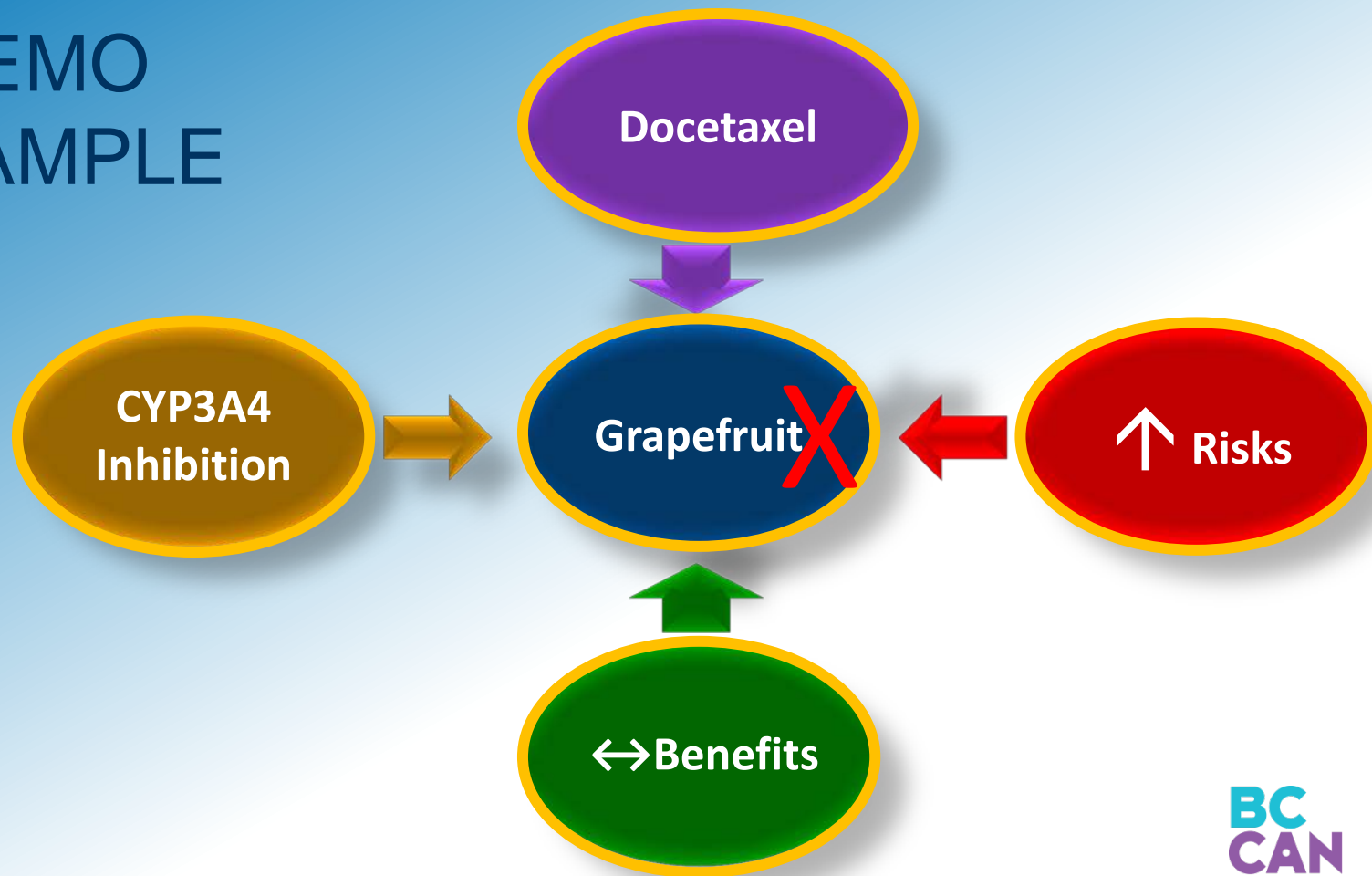
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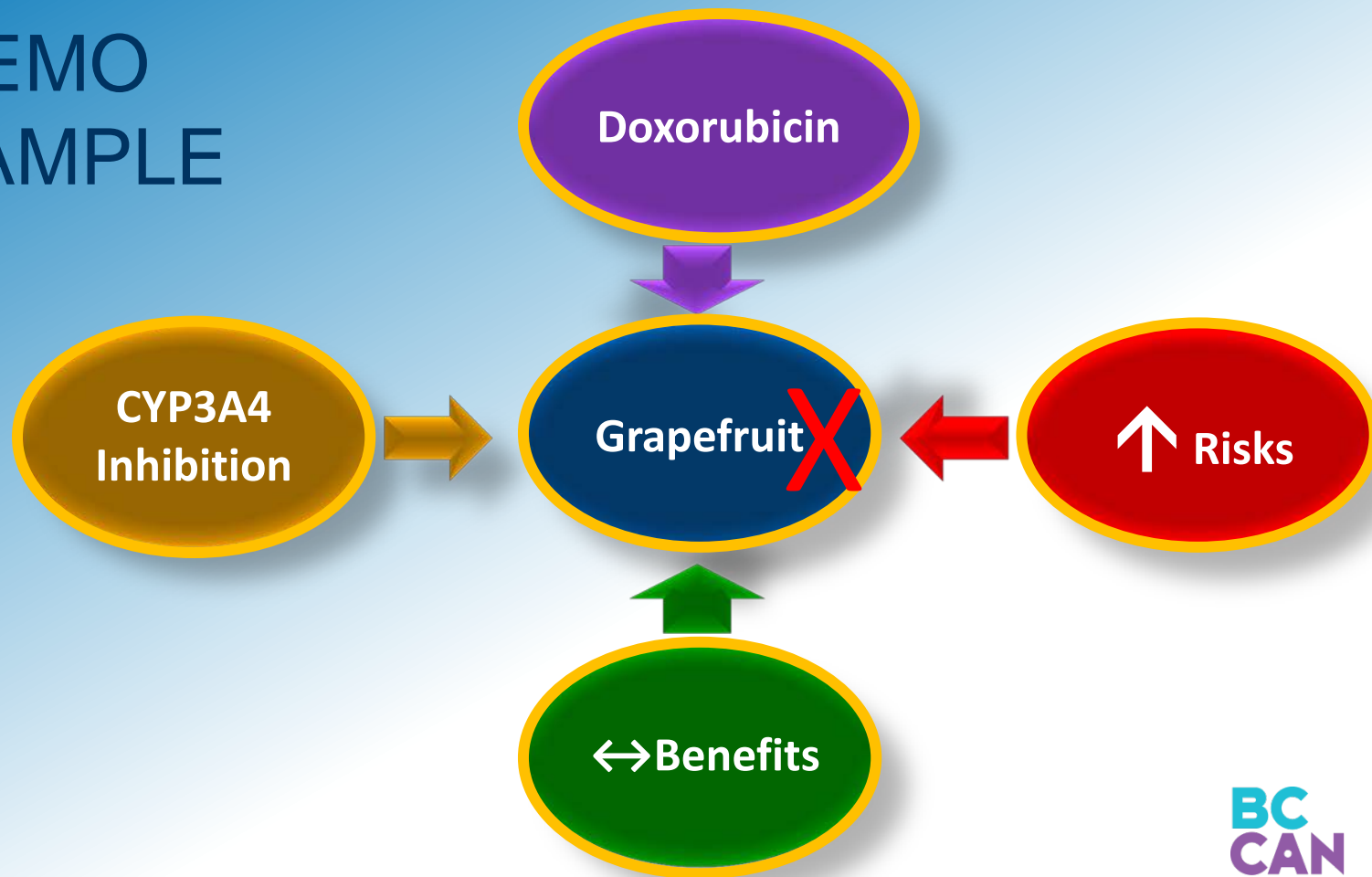
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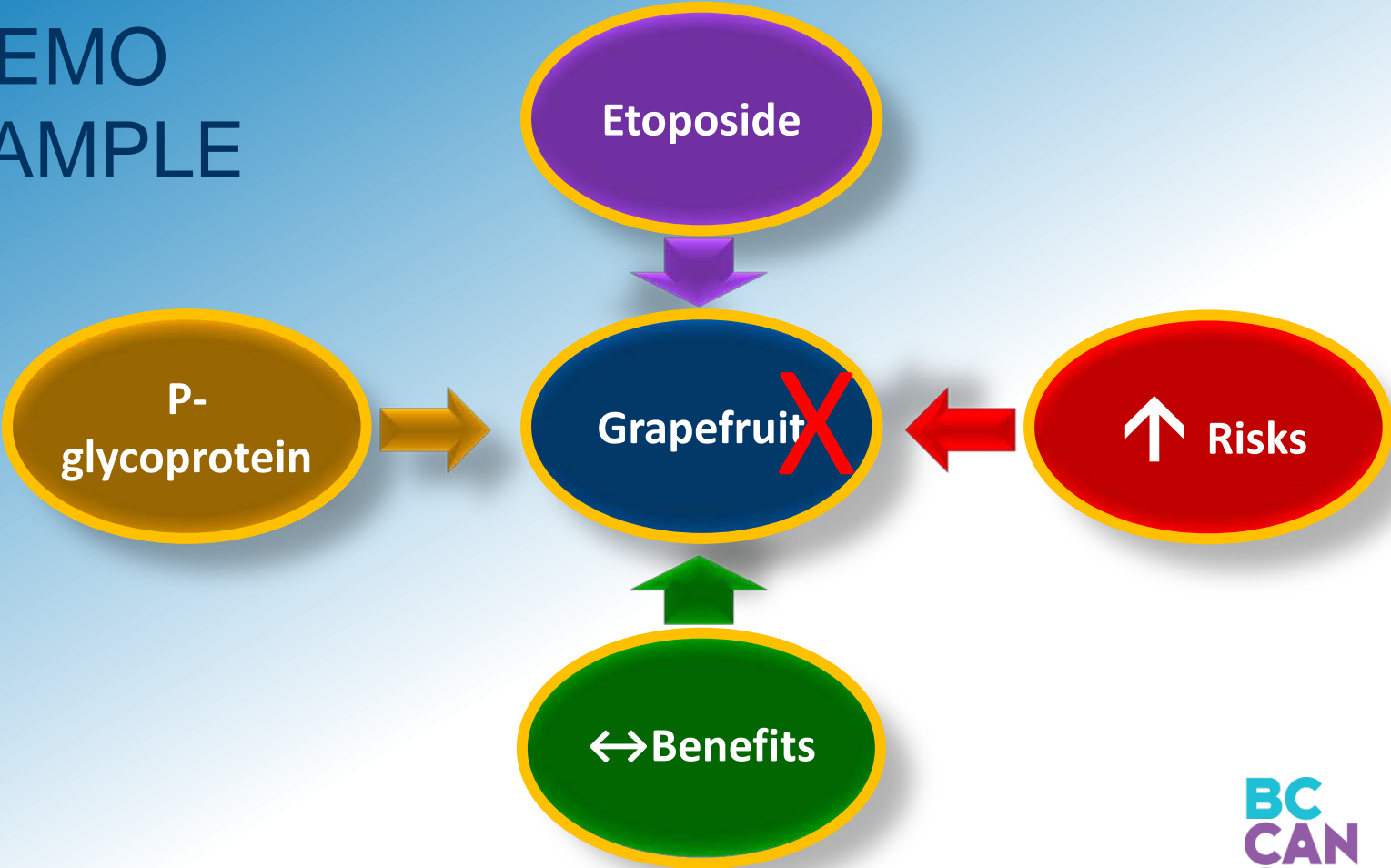
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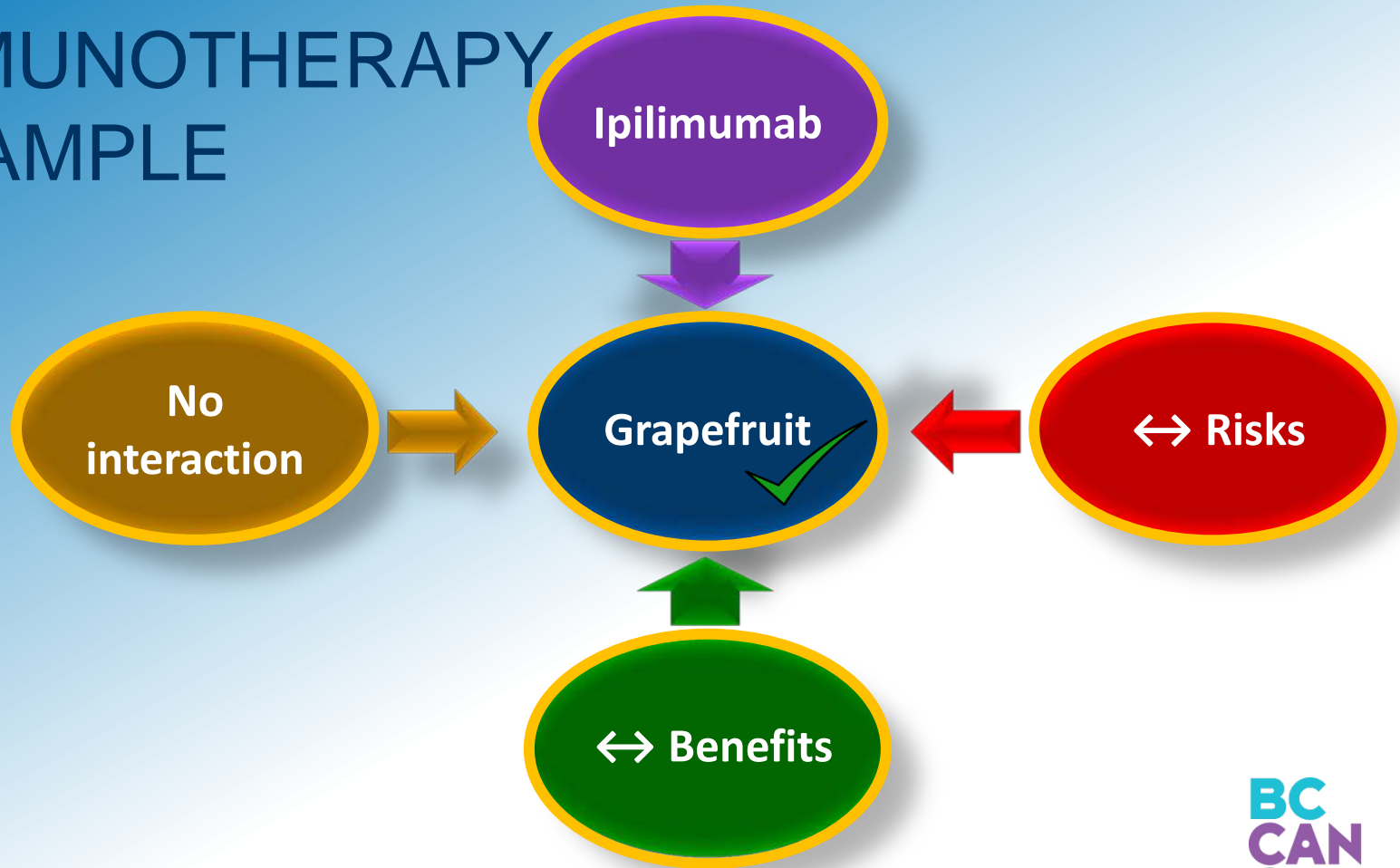
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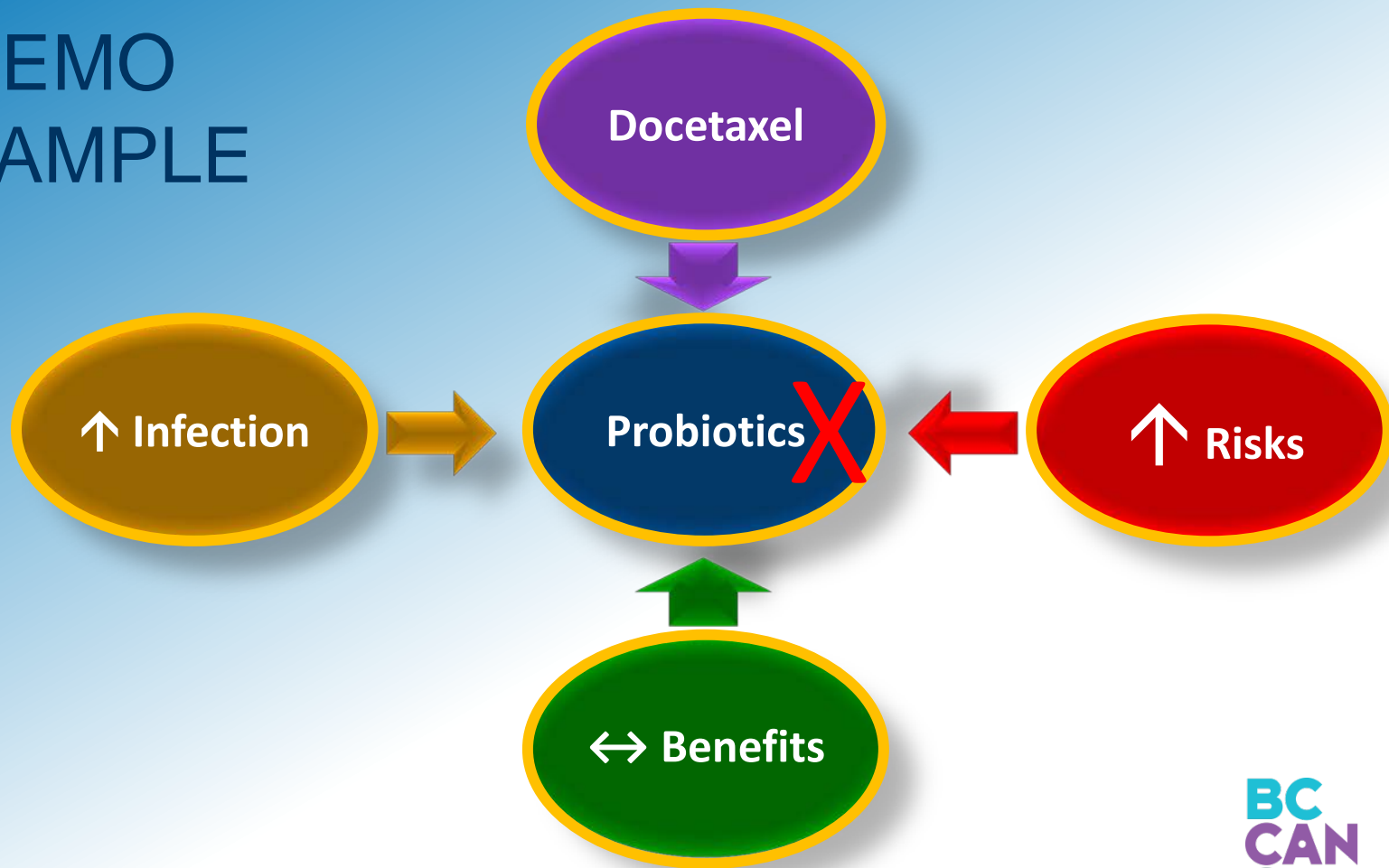
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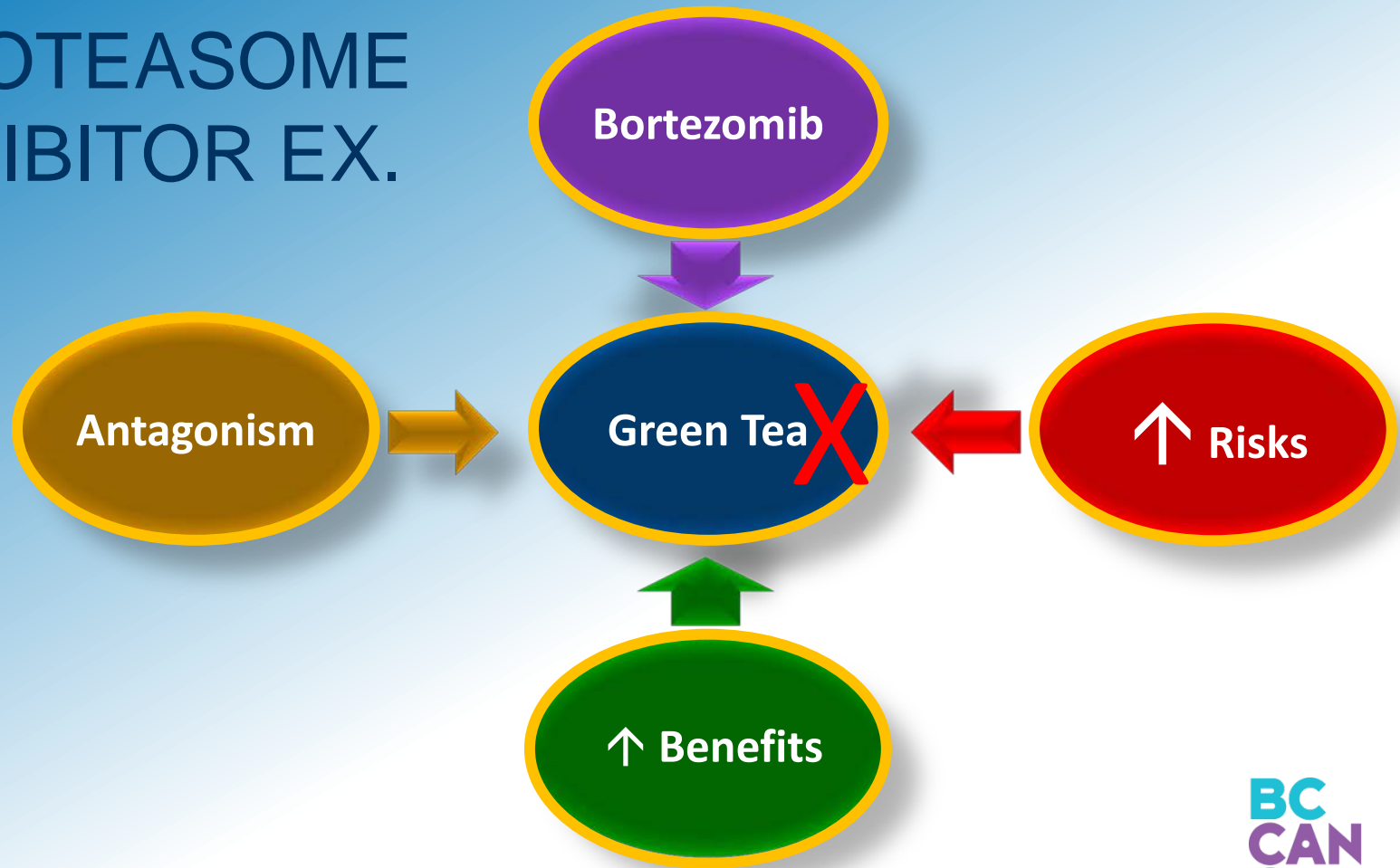
IMMUNOTHERAPY EXAMPLE



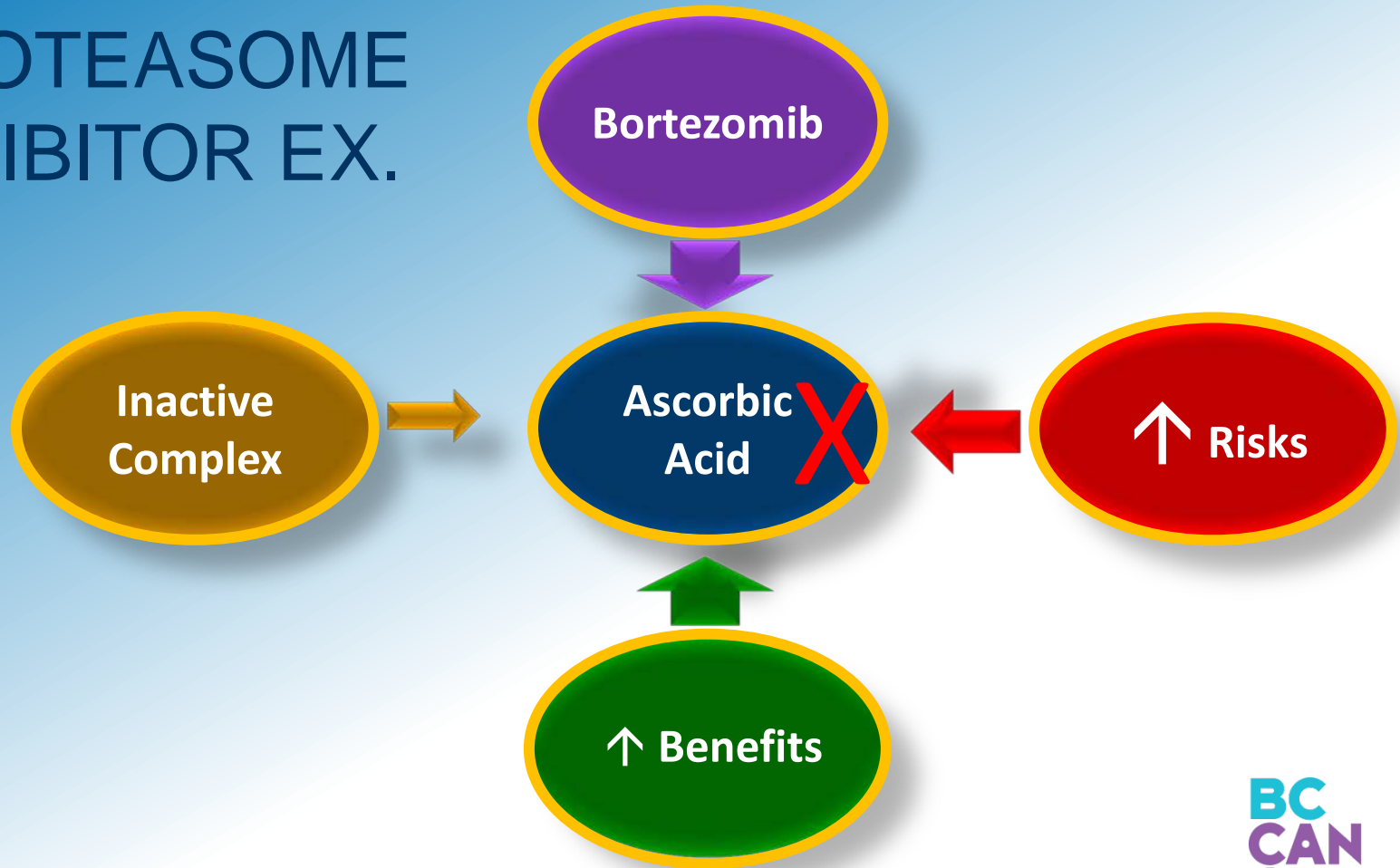
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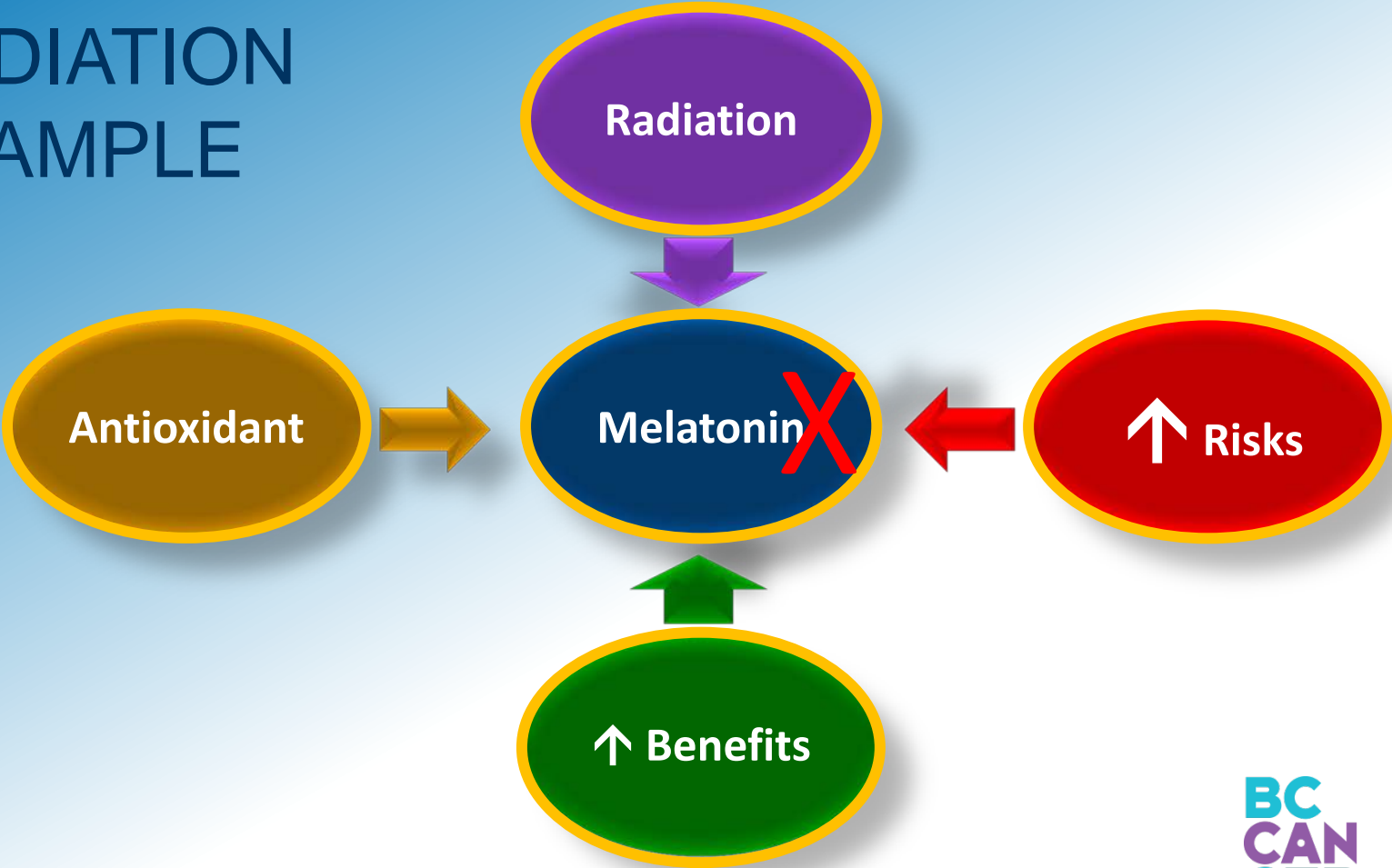
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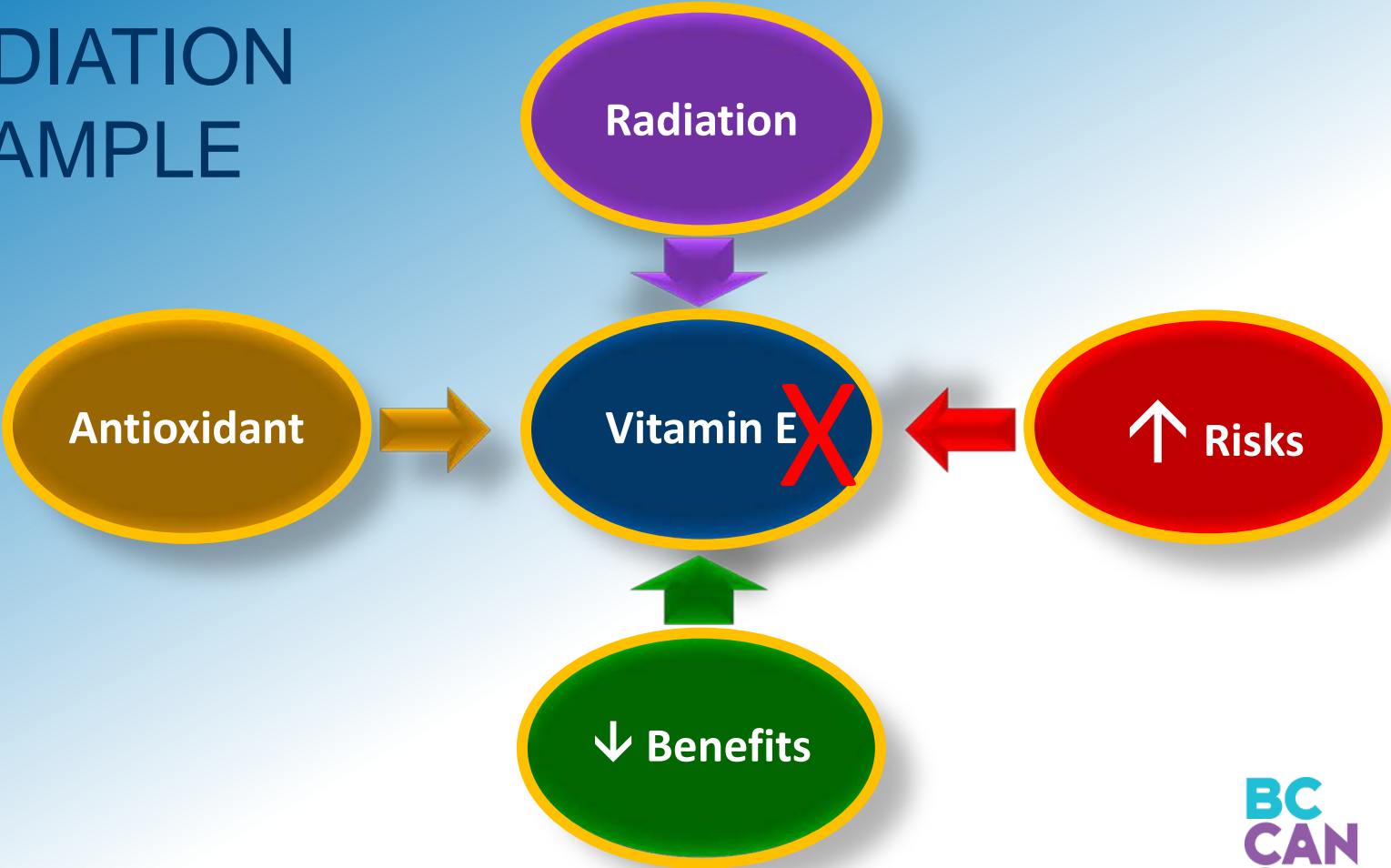
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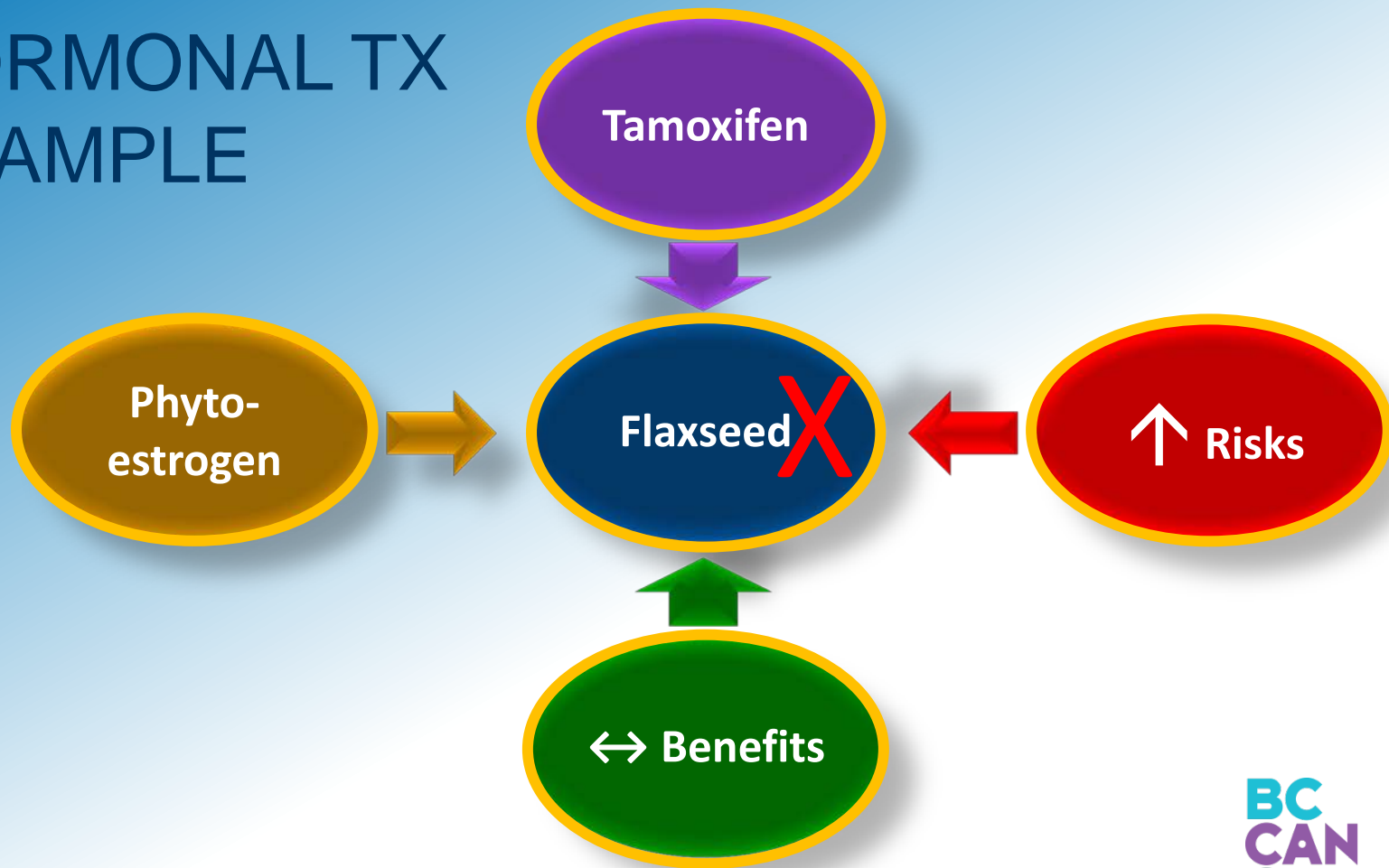
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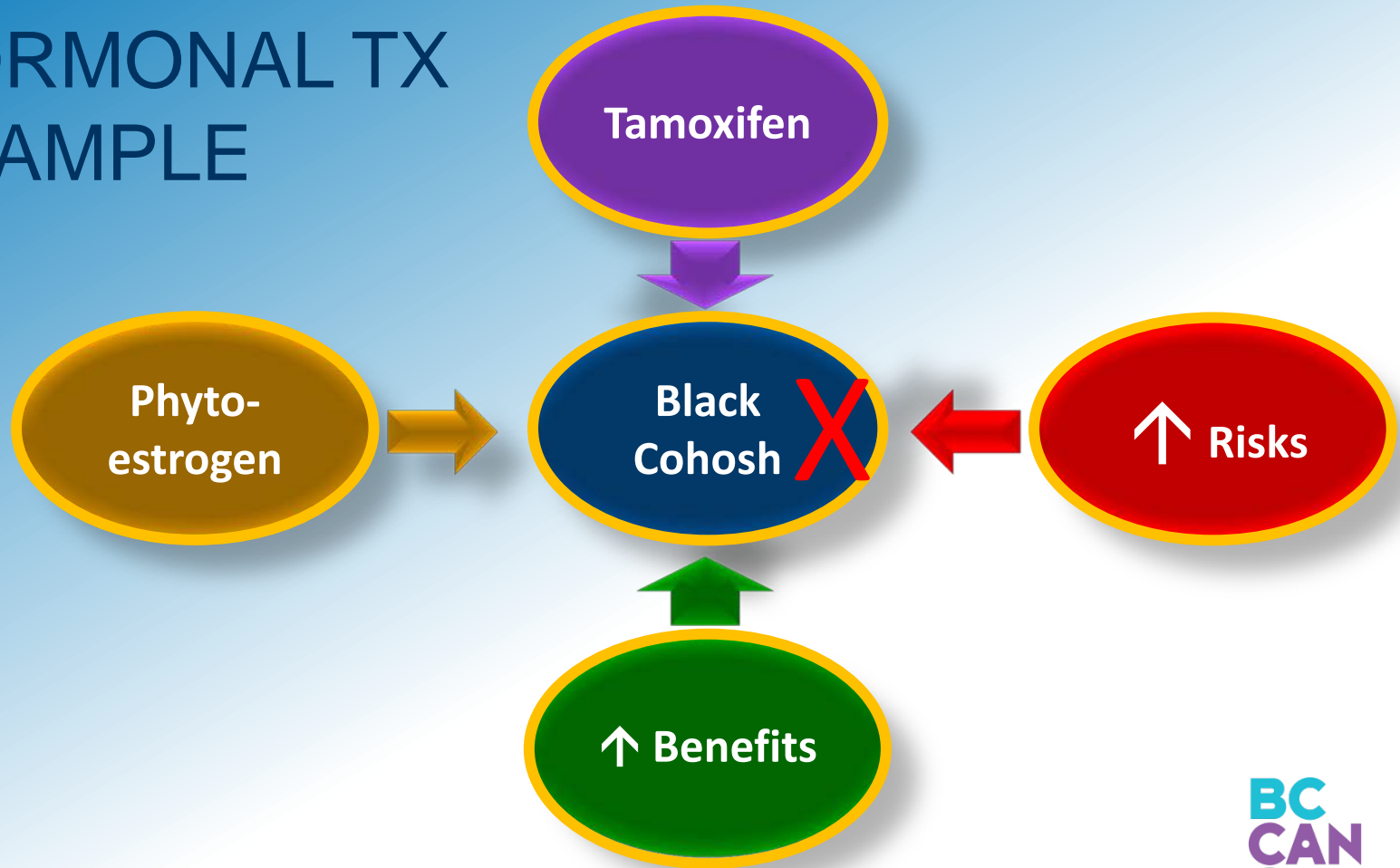
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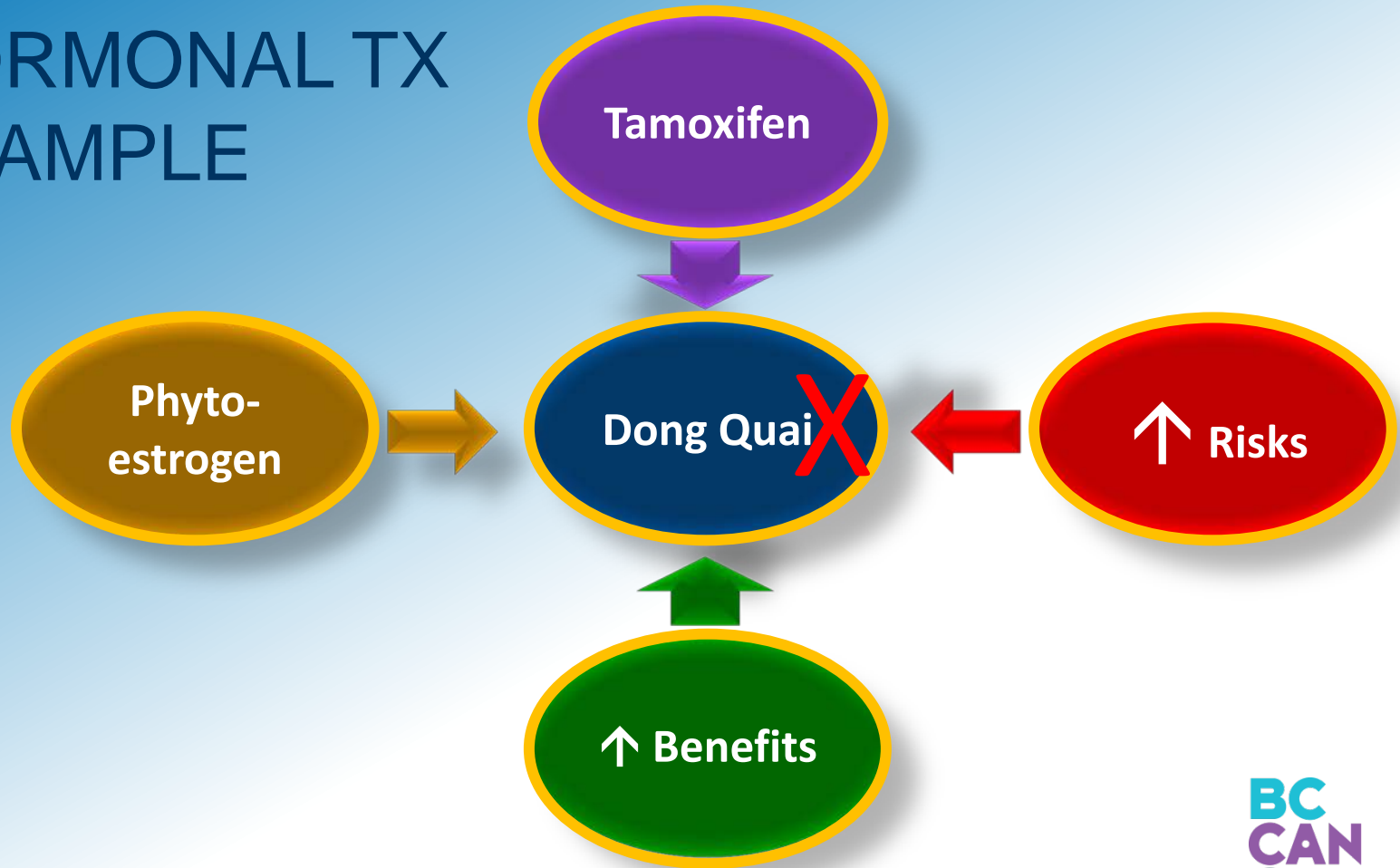
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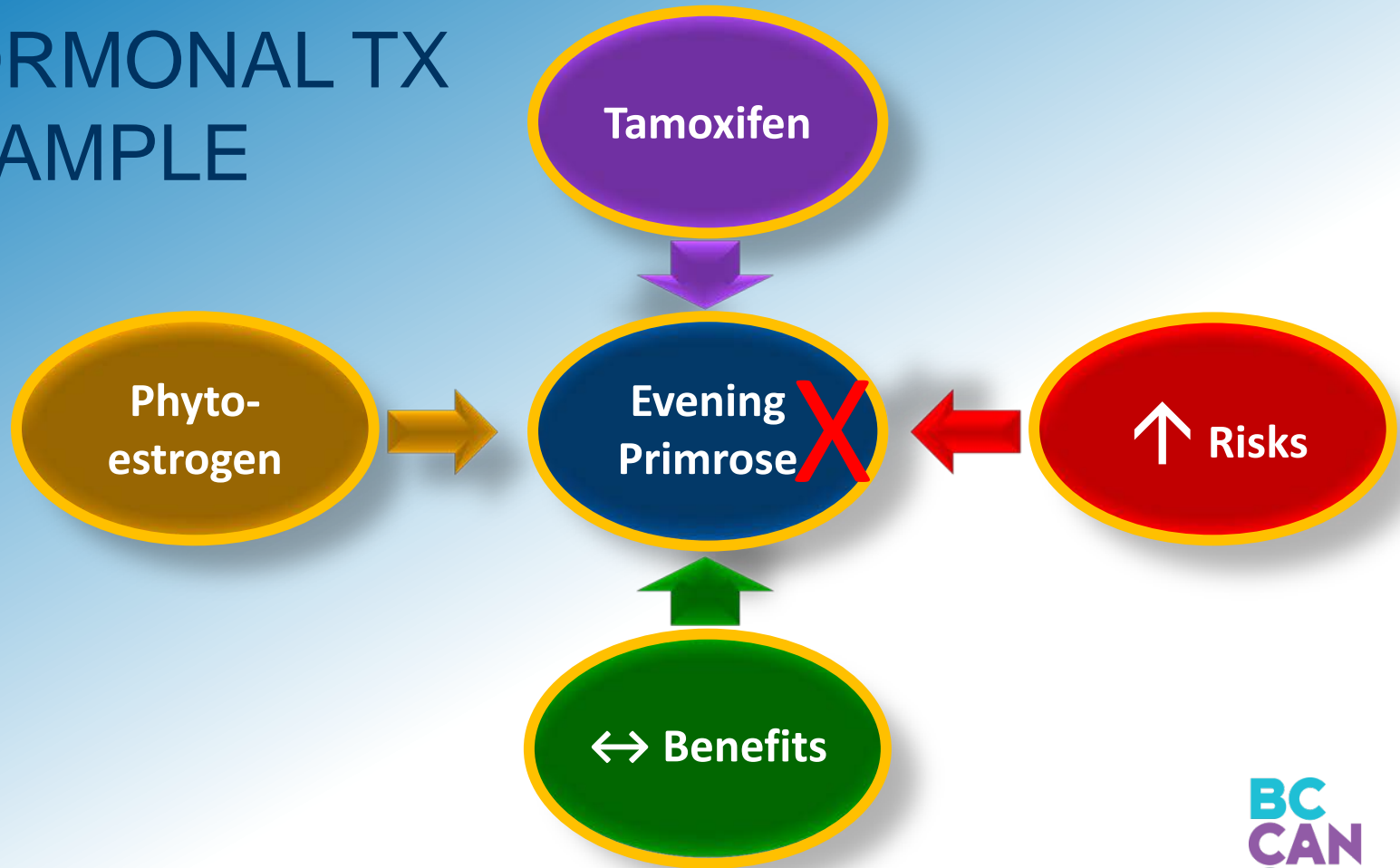
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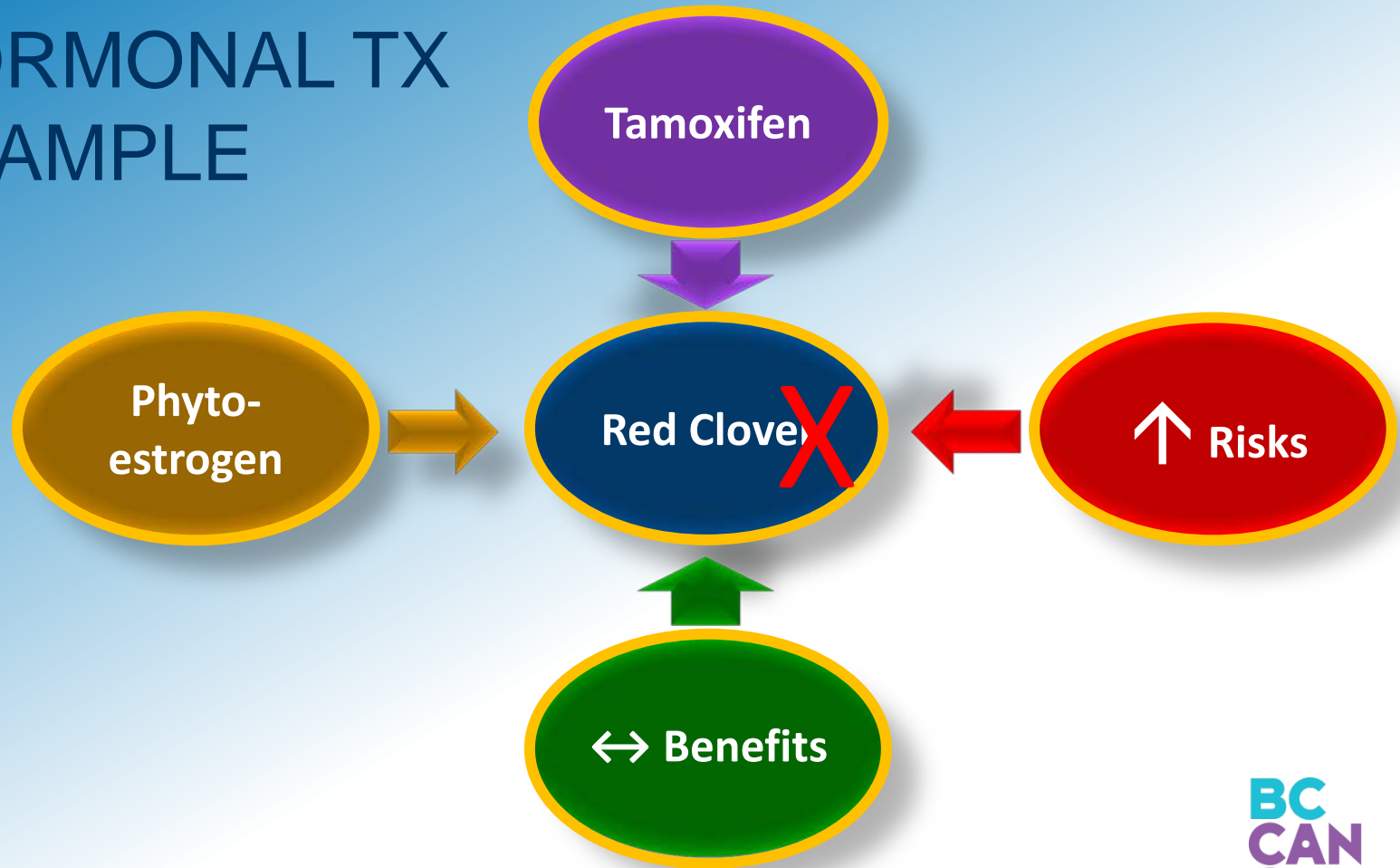
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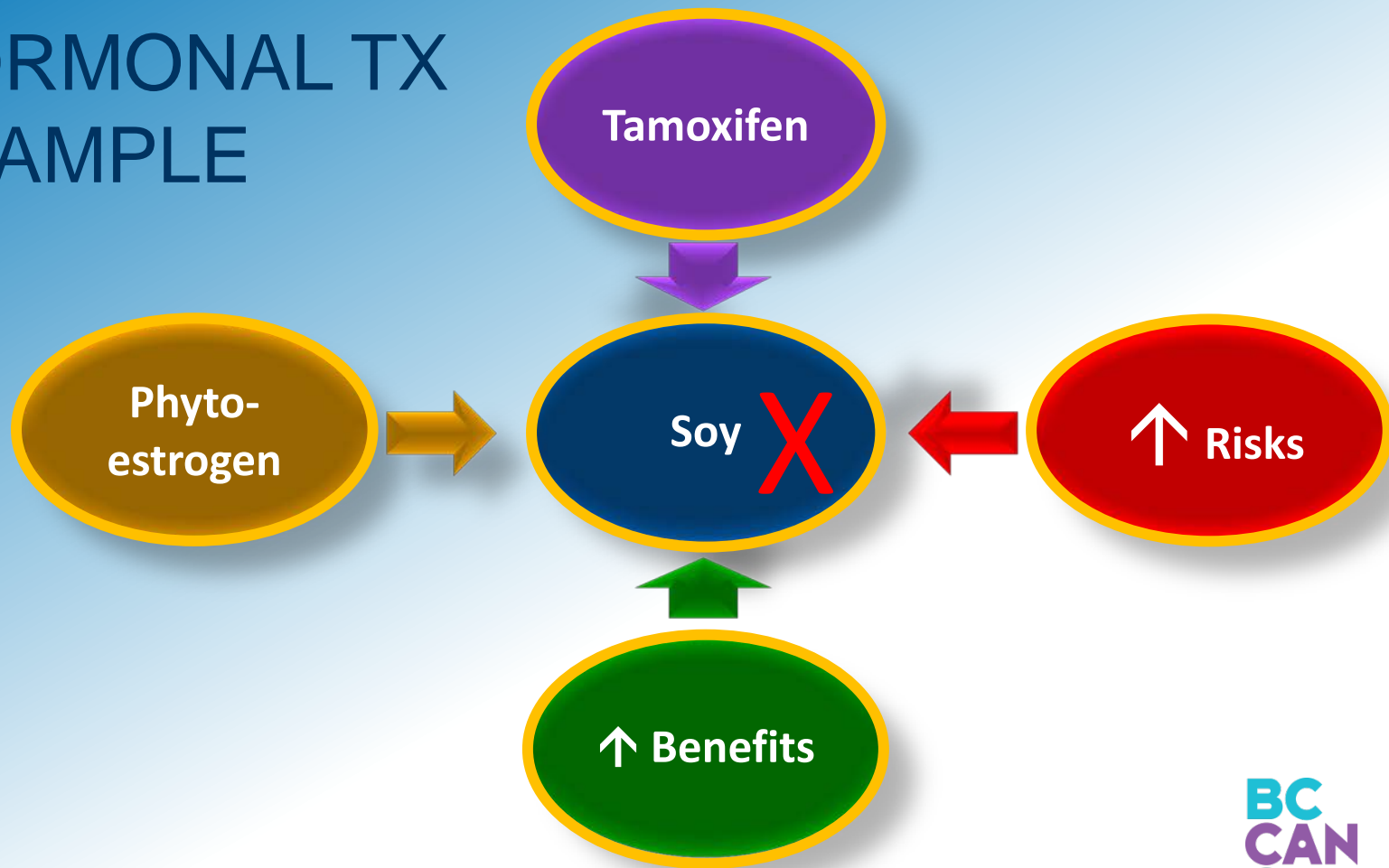
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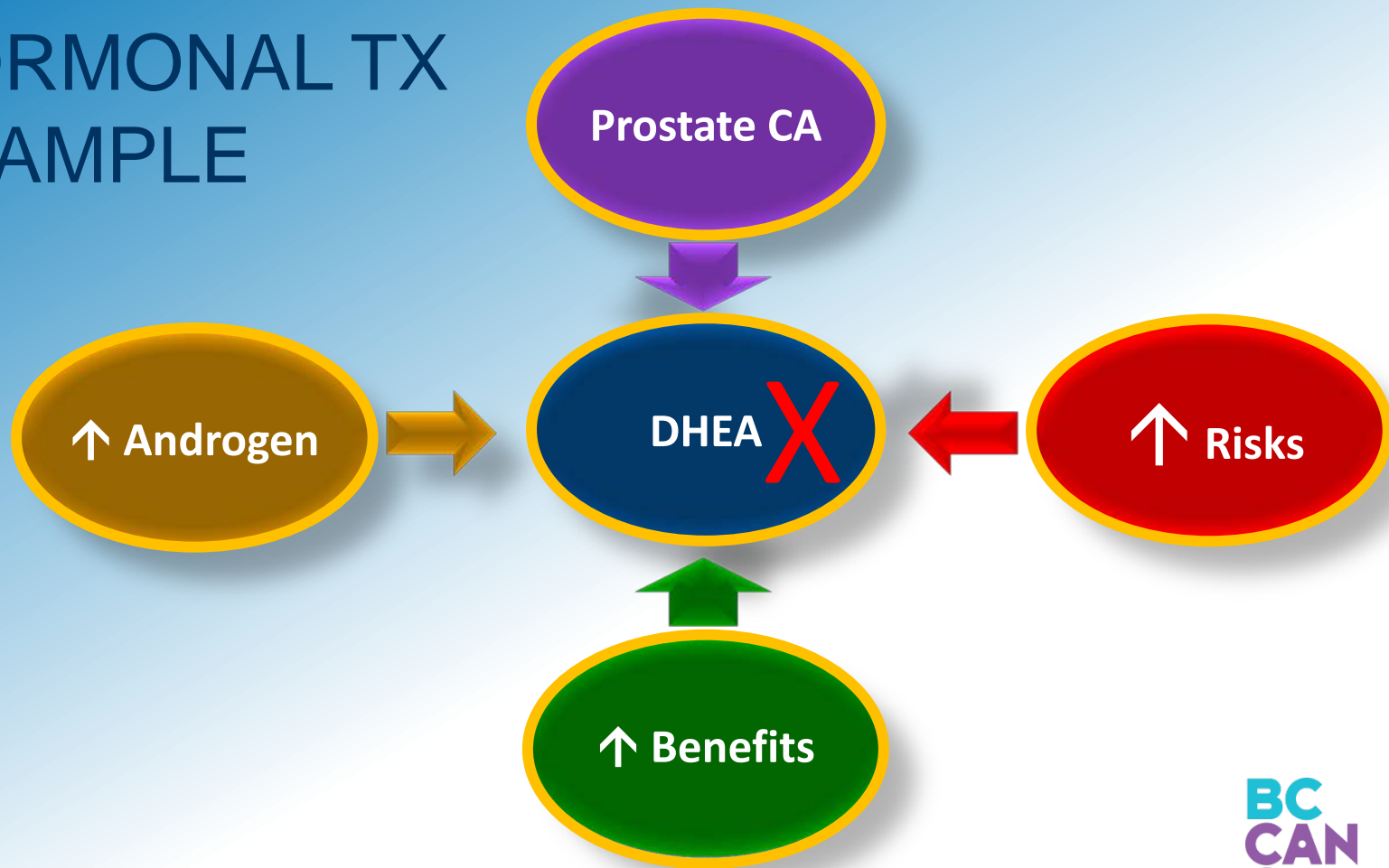
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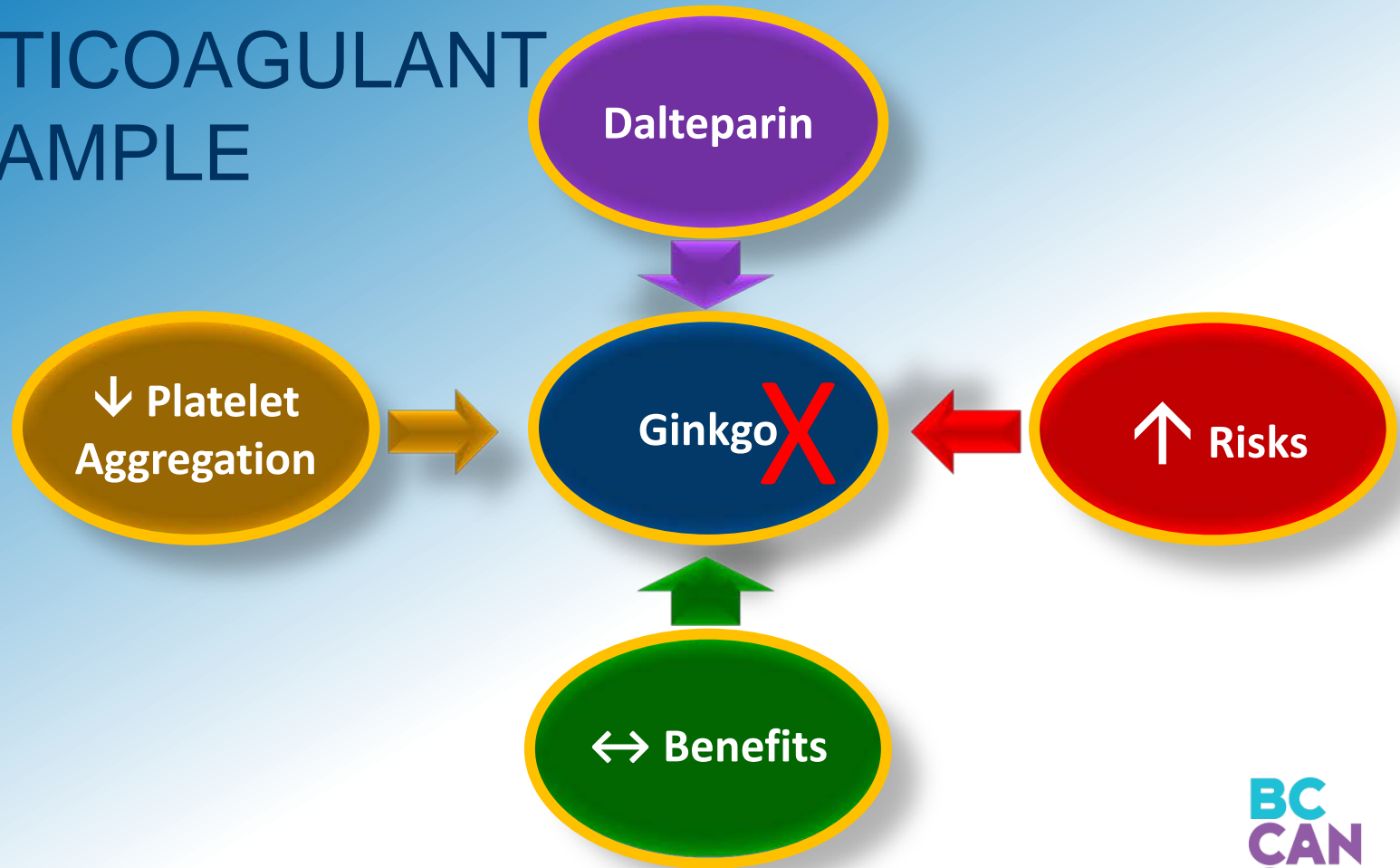
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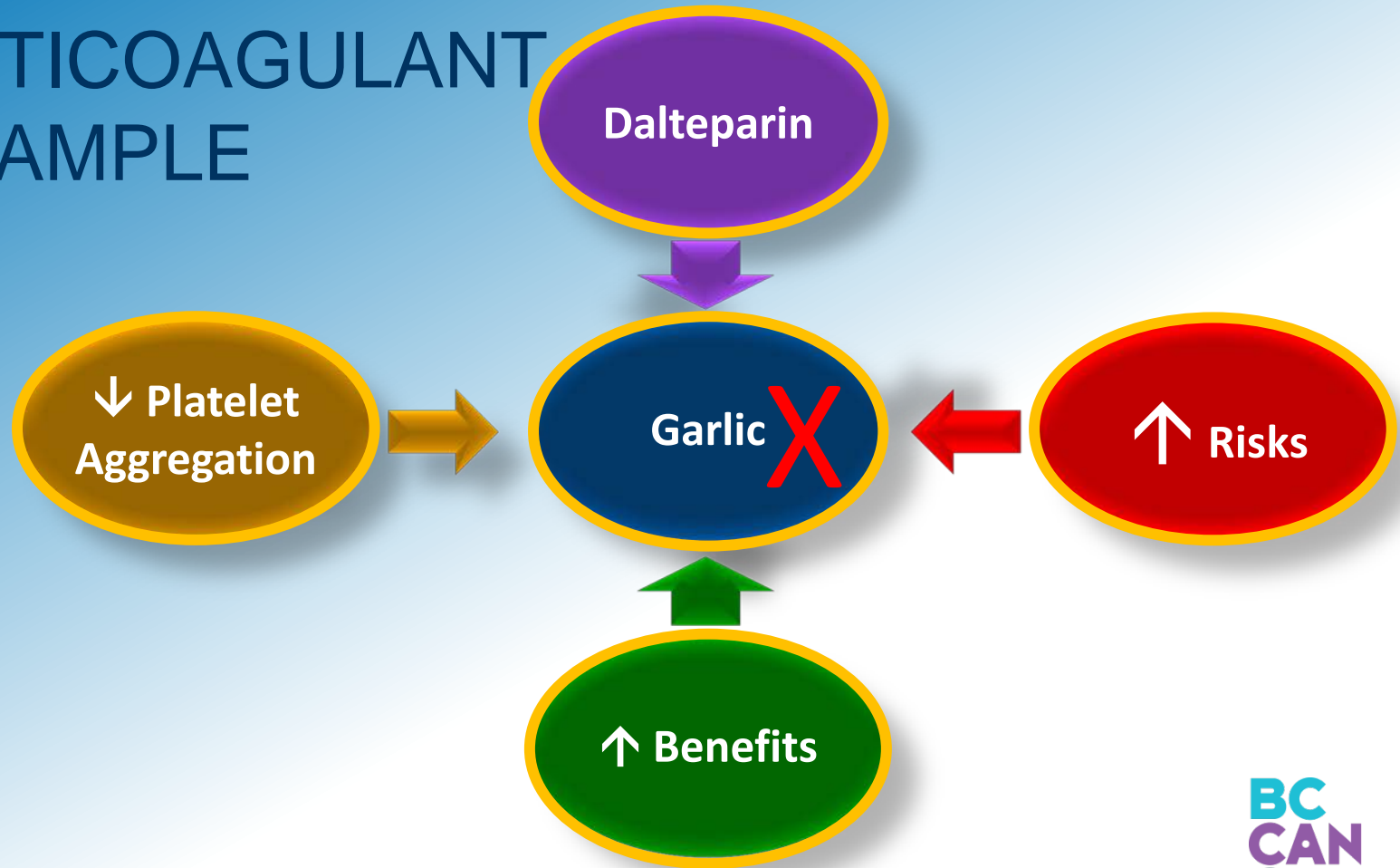
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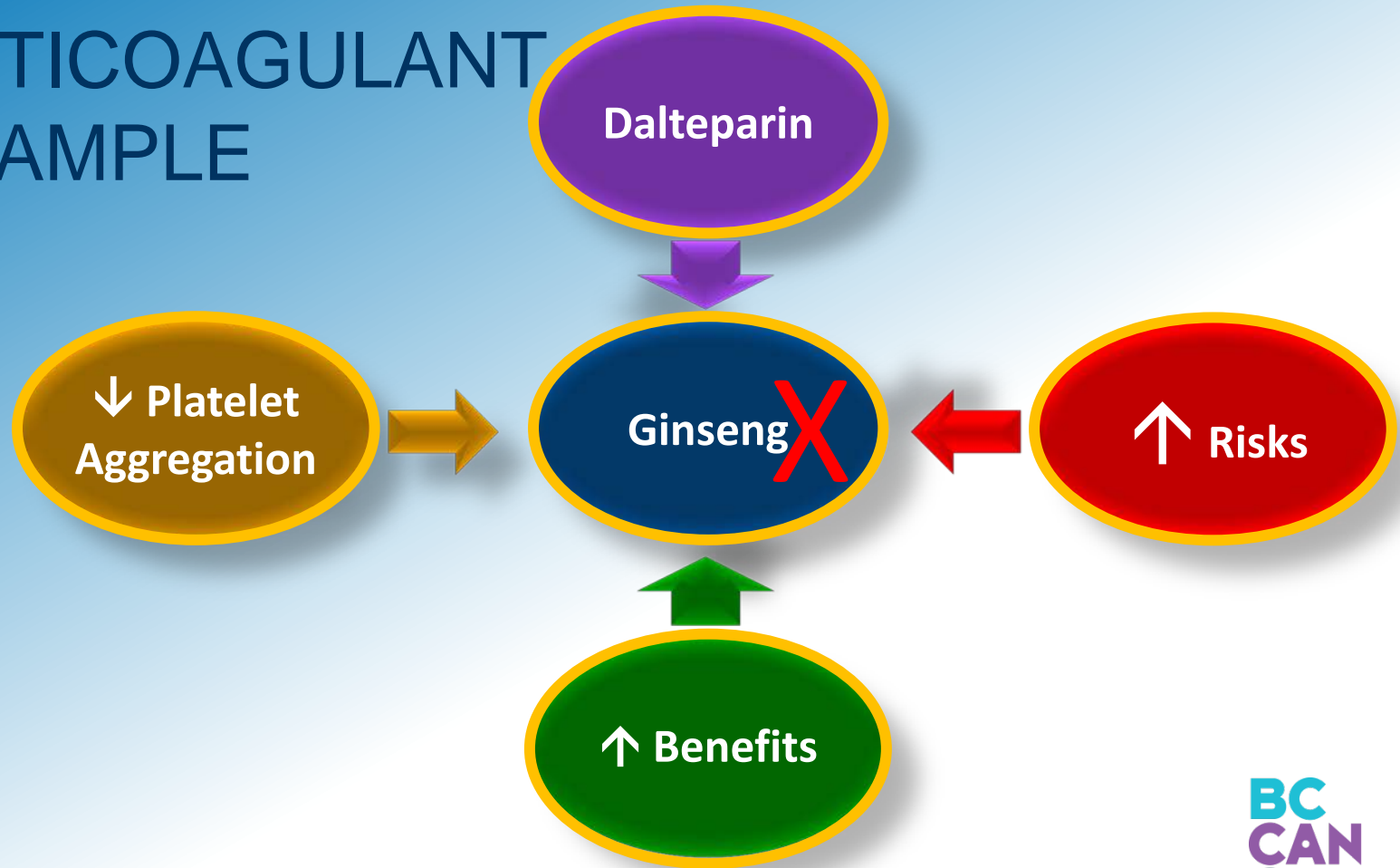
ANTICOAGULANT EXAMPLE



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ANTICOAGULANT EXAMPLE



CANNABIS



- Active Ingredients:
 - Tetrahydrocannabinol (THC): psychoactive
 - Cannabidiol (CBD): therapeutic for nausea, pain, etc.
- Common Natural Sources:
 - Cannabis sativa (higher THC level): produces a “high”
 - Cannabis indica (higher CBD level): produces a “relaxed” feeling

CANNABIS



- Potential Benefits:
 - ↓ Chemotherapy-induced nausea & vomiting
 - ↓ Neuropathic pain
 - ↓ Muscle stiffness or spasms
- Potential Harms:
 - Cognitive impairment
 - ↑ Manic symptoms
 - ↑ Depression

CANNABIS DRUG INTERACTIONS



- THC:
 - Metabolized by CYP2C9 & CYP3A4
- CBD:
 - Metabolized by CYP3A4 & CYP2C19
- Marijuana joint smoking:
 - May induce CYP1A2 enzyme

CANNABIS DRUG INTERACTIONS



- Sympathomimetics: ↑ HR, ↑ BP
- CNS Depressants: ↑ drowsiness, ↑ ataxia
- Anticholinergics: ↑ HR, ↑ drowsiness
- Anticoagulants/antiplatelets: ↑ bleeding
- Protease Inhibitors (PIs): ↓ effectiveness of PIs
- SSRIs: ↑ risk of mania

PITFALLS & RED FLAGS

- Low quality evidence
- Lack of effective regulation for NHPs:
<http://www.cbc.ca/news/health/health-canada-licensing-of-natural-remedies-a-joke-doctor-says-1.2992414>
- Drug-NHP interactions

RESOURCES

- Natural Medicines: <https://naturalmedicines.therapeuticresearch.com/>
- Micromedex: <https://www.micromedexsolutions.com/>
- Lexicomp: <https://online.lexi.com/>
- UpToDate: <https://www.uptodate.com/>
- BC Cancer (Cancer Drug Manual & Drug Information Pharmacists):
<http://www.bccancer.bc.ca/>
- Memorial Sloan Kettering Cancer Center: <https://www.mskcc.org/>
- National Center for Complementary & Integrative Health:
<https://nccih.nih.gov/>
- National Cancer Institute: <https://cam.cancer.gov/>

SUMMARY

- Use a systematic approach
- Access reliable resources
- Reflect on the patient's perspective & goals
- Make evidence-based recommendations
- Err on the side of caution

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THANK YOU! 😊