To instantiate the safety case pattern for the Generic Patient-Controlled Analgesia (GPCA) system and represent it in a hierarchical tree format, we need to specify the placeholders with actual values from the domain information provided. Here, we substitute placeholders like `{system}`, `{operational hazard}`, `{scenario}`, `{spec}`, `{property}`, and `{source}` with actual values related to the GPCA system.

### Safety Case for GPCA: Operational Safety Verification

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- Goal (G1, "Operational safety is verified in GPCA system")

- Strategy (S1, "Argument over the satisfaction of all specs over GPCA system")

- Context (C1, "All specs are given")

- Goal (G2, "All operational hazards are mitigated")

- Strategy (S3, "Argument over operational hazards")

- Context (C2, "Operational hazards are given")

- Goal (G3, "Overinfusion is mitigated")

- Strategy (S4, "Argument over the applied scenarios of Overinfusion")

- Context (C3, "All related scenarios are given")

- Goal (G4, "Overinfusion is mitigated under all scenarios")

- Strategy (S5, "Argument over all specs related to the scenarios")

- Context (C4, "All related specs are given")

- Goal (G5, "Flow rate sensor spec is appropriate for scenario")

- Strategy (S6, "Argument the appropriateness of spec over properties")

- Context (C5, "Properties are given")

- Goal (G6, "Flow rate property is appropriate for flow rate sensor spec")

- Strategy (S7, "Argument over the source of the property definition")

- Context (C6, "Source is given")

- Goal (G7, "FDA standard is appropriate and trustworthy")

- Solution (Sn1, "FDA standard sourced")

- Goal (G8, "Flow rate property definition is sufficient")

- Solution (Sn2, "Property definition referenced")

- Strategy (S2, "Argument over reliability in all suitable levels of GPCA system")

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This instantiation addresses goals from verifying overall system safety down to validating specific properties of the system's operational aspects. Through this tree structure, we visualize the hierarchical relationships and supporting elements (strategies, contexts, and solutions) as defined by the predicates. Each goal is supported by strategies that in turn are informed by contexts, demonstrating a logical progression from system-wide assurances down to specific technical details. Each node in the tree aligns with derived and specified predicates, ensuring a systematic approach to safety assurance compliant with the outlined safety case pattern for the GPCA system.