To instantiate the given safety case pattern for the Generic Patient-Controlled Analgesia (GPCA) system and display it in a hierarchical tree format, we need to replace all placeholders with specific details provided in the domain information. The instantiated safety case structure will reflect the relationships and hierarchy defined in the pattern with concrete information:

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- G1: Operational safety is verified in GPCA system

- C1: All specs are given by FDA standards, Expertise opinion, Previous knowledge

- S1: Argument over the satisfaction of all specs over GPCA system

- G2: All operational hazards are mitigated

- S3: Argument over operational hazards

- G3: Overinfusion is mitigated

- S4: Argument over the applied scenarios of Overinfusion

- G4: Overinfusion is mitigated under Scenario A

- S5: Argument over all specs related to Scenario A

- G5: Flow rate sensor is appropriate for Scenario A

- S6: Argument the appropriateness of Flow rate sensor over properties

- G6: Period of 15 minutes is appropriate for Flow rate sensor

- S7: Argument over the source of the property definition

- G7: FDA standard is appropriate and trustworthy

- Sn1: (Evidence: FDA regulation document)

- G8: Definition of 15 minute period is sufficient

- Sn2: (Evidence: Research paper on flow rate control)

- G3: Underinfusion is mitigated

- S4: Argument over the applied scenarios of Underinfusion

- G4: Underinfusion is mitigated under Scenario B

- S5: Argument over all specs related to Scenario B

- G5: Flow rate sensor is appropriate for Scenario B

- S6: Argument the appropriateness of Flow rate sensor over properties

- G6: Flow rate less than 90% of programmed rate is appropriate for Flow rate sensor

- S7: Argument over the source of the property definition

- G7: Expert opinion is appropriate and trustworthy

- Sn1: (Evidence: Expert consultation document)

- G8: Definition of flow rate less than 90% is sufficient

- Sn2: (Evidence: Technical standards document)

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Explanation:

- Each goal (G) and strategy (S) from the pattern is associated with a counterpart in the instantiated GPCA safety case.

- Contexts (C) give specific information about the broader environment and conditions being considered.

- Solutions (Sn) link specific evidence sources supporting the safety claims made in goals G7 and G8.

- This tree structure is a reflection of the relationships outlined in the "SupportedBy" predicates, while the instantiation replaces generic placeholders with specific system components, scenarios, and trustworthy sources based on domain knowledge.

This instantiation ensures each safety requirement for operational hazards like overinfusion and underinfusion are thoroughly argued and supported by credible sources and evidence.