To instantiate the assurance case pattern for the Generic Patient-Controlled Analgesia (GPCA) system, we must replace the placeholders with the specific information provided in the domain description and follow the hierarchical structure provided by the `SupportedBy` and `IncontextOf` predicates. We will also avoid using the undeveloped elements as per your instructions to create a complete and developed assurance case.

Here is the instantiated hierarchical tree for the GPCA system assurance case:

- \*\*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 by FDA standards, Expert opinions, and Previous knowledge")\*\*

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

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

- \*\*Context (C2, "Operational hazards are overinfusion and underinfusion")\*\*

- \*\*Goal (G3, "Overinfusion is mitigated")\*\*

- \*\*Strategy (S4, "Argument over the applied scenarios of overinfusion")\*\*

- \*\*Context (C3, "All related scenarios are overinfusion related incidents")\*\*

- \*\*Goal (G4, "Overinfusion is mitigated under programmed rate too high scenario")\*\*

- \*\*Strategy (S5, "Argument over all specs related to programmed rate scenarios")\*\*

- \*\*Context (C4, "All related specs are given by FDA standard and expert recommendation")\*\*

- \*\*Goal (G5, "Flow rate sensor spec is appropriate for high rate scenarios")\*\*

- \*\*Strategy (S6, "Argument the appropriateness of flow rate sensor spec over properties")\*\*

- \*\*Context (C5, "Properties are given by flow rate sensor specifications")\*\*

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

- \*\*Strategy (S7, "Argument over the source of the flow rate property definition")\*\*

- \*\*Context (C6, "Source is given by FDA standard and expert recommendation")\*\*

- \*\*Goal (G7, "FDA standard is appropriate and trustworthy for flow rate")\*\*

- \*\*Solution (Sn1, "FDA standard documentation")\*\*

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

- \*\*Solution (Sn2, "Flow rate technical specification")\*\*

In the instantiation, placeholders such as `{system}`, `{operational hazard}`, `{scenario}`, `{spec}`, `{property}`, and `{Source}` were replaced with specific GPCA and related hazard, scenario, and specification information. In this structure, unrevealed nested levels correspond to other hazards such as underinfusion, following a similar pattern of argumentation to what was just developed for overinfusion.