Based on the domain information provided for the Generic Patient-Controlled Analgesia (GPCA) system, we need to instantiate the placeholders and remove pattern decorators to form a concrete safety case. The instantiated assurance case for the GPCA system based on the given pattern with operational hazards "Overinfusion" and "Underinfusion" and the corresponding safety requirements and properties would be as follows:

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- G1: Operational safety is verified in GPCA system

- C1: All specs are given by spec.allInstances()

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

- Undeveloped

- G2: All operational hazards are mitigated

- S3: Argument over operational hazards

- C2: Operational hazards are given by operational hazard.allInstances()

- G3: Overinfusion is mitigated

- S4: Argument over the applied scenarios of Overinfusion

- C3: All related scenarios are given by Overinfusion

- G4: Overinfusion is mitigated under Flow rate does not match the programmed rate

- S5: Argument over all specs related to Flow rate does not match the programmed rate

- C4: All related specs are given by Flow rate does not match the programmed rate.spec.allinstances()

- G5: Flow rate sensor is appropriate for Flow rate does not match the programmed rate

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

- C5: Properties are given by Flow rate sensor.property.allinstances()

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

- S7: Argument over the source of the Flow rate is less than 90% of the programmed rate setting definition

- C6: Source is given by Flow rate is less than 90% of the programmed rate setting.source

- G7: FDA standard is appropriate and trustworthy

- Sn1: FDA standard

- G8: Flow rate is less than 90% of the programmed rate setting definition is sufficient

- Sn2: Flow rate is less than 90% of the programmed rate setting

- G4: Overinfusion is mitigated under Dose limit exceeded due to excessive bolus requests

- Undeveloped

- G4: Overinfusion is mitigated under Bolus volume/concentration too high

- Undeveloped

- G3: Underinfusion is mitigated

- S4: Argument over the applied scenarios of Underinfusion

- C3: All related scenarios are given by Underinfusion

- G4: Underinfusion is mitigated under Programmed rate too low

- S5: Argument over all specs related to Programmed rate too low

- C4: All related specs are given by Programmed rate too low.spec.allinstances()

- G5: Dose limit is appropriate for Programmed rate too low

- Undeveloped

- G4: Underinfusion is mitigated under Flow rate does not match the programmed rate

- Undeveloped

```

### Explanation:

1. \*\*Instantiation & Context Information\*\*:

- \*\*Goal G1\*\*: The top-level goal verifies the operational safety of the GPCA system.

- \*\*Context C1\*\*: Specifies that all specifications are given by `spec.allInstances()` in GPCA system.

2. \*\*Decomposing the Goal G1\*\*:

- \*\*Strategy S1\*\*: Provides a strategy to argue satisfaction over all specifications in the GPCA system. Marked as undeveloped.

- \*\*Goal G2\*\*: Ensures all operational hazards of the GPCA system are mitigated.

- \*\*Strategy S3\*\*: Provides an argument over operational hazards.

3. \*\*Mitigating Operational Hazards\*\*:

- \*\*Goal G3\*\* (Overinfusion): The hazard of overinfusion is being mitigated.

- \*\*Strategy S4\*\*: Argument facilitated for scenarios and cases applicable to Overinfusion. Provides contextual details about related scenarios.

- \*\*Goal G4\*\* (specific to scenarios): Different specific scenarios relating to overinfusion being mitigated one by one.

- \*\*Example Goal G4\*\*: Overinfusion mitigated under scenario "Flow rate does not match the programmed rate".

- \*\*Strategy S5\*\*: Arguing over the specs related to this scenario.

- \*\*Goal G5\*\*: Example safety requirement "Flow rate sensor" is evaluated under the problem scenario.

- \*\*Strategy S6\*\*: Arguing the appropriateness of "Flow rate sensor" over its properties

- \*\*Goal G6\*\*: Specific property "Flow rate is less than 90% of the programmed rate setting" for the flow rate sensor is being evaluated.

- \*\*Strategy S7\*\*: Argument over the trustworthiness and appropriateness of the data source for this property.

- \*\*Goal G7\*\*: Ensuring "FDA standard" is appropriate and trustworthy. Supported by Solution Sn1, which is evidence of the FDA standard.

- \*\*Goal G8\*\*: Verifying sufficiency of the property "Flow rate is less than 90% of the programmed rate setting". Supported by Solution Sn2 (this flow rate evidence).

4. \*\*Remaining Scenarios\*\*:

- The same structure is followed for underinfusion and its specific scenarios (uninstantiated & undeveloped paths) require further elaboration.

This hierarchical tree serves as the instantiated safety case focusing on comprehensive hazard mitigation for the GPCA system. It spells out specific safety claims, supporting arguments, and evidences in structured format as per GSN elements and derivatives.