Below is the instantiated safety case for the Generic Patient-Controlled Analgesia (GPCA) system using the provided pattern. The instantiated placeholders and additional safety case pattern decorators have been removed, and system-specific information has been added based on the given domain information. The structure is presented using dashes (-) to denote different levels in the hierarchical tree format.

```

G1: Operational safety is verified in GPCA system

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

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

- G2: All operational hazards are mitigated

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

- S3: Argument over operational hazards

- 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 spec is appropriate for Flow rate does not match the programmed rate

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

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

- G6: Property Flow rate sensor is appropriate for Flow rate sensor spec

- S7: Argument over the source of the Flow rate sensor definition

- C6: Source is given by Flow rate sensor.source

- G7: Source FDA standard is appropriate and trustworthy

- Sn1: Source FDA standard

- G8: Property Flow rate sensor definition is sufficient

- Sn2: Property Flow rate sensor

- 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: Alarm period spec is appropriate for Programmed rate too low

- S6: Argument the appropriateness of Alarm period spec over properties

- C5: Properties are given by Alarm period.property.allInstances()

- G6: Property Alarm period is appropriate for Alarm period spec

- S7: Argument over the source of the Alarm period definition

- C6: Source is given by Alarm period.source

- G7: Source Expertise opinion is appropriate and trustworthy

- Sn1: Source Expertise opinion

- G8: Property Alarm period definition is sufficient

- Sn2: Property Alarm period

- G4: Underinfusion is mitigated under Flow rate less than 90% of the programmed rate setting

- S5: Argument over all specs related to Flow rate less than 90% of the programmed rate setting

- C4: All related specs are given by Flow rate less than 90% of the programmed rate setting.spec.allInstances()

- G5: Underinfusion alarm spec is appropriate for Flow rate less than 90% of the programmed rate setting

- S6: Argument the appropriateness of Underinfusion alarm spec over properties

- C5: Properties are given by Underinfusion alarm.property.allInstances()

- G6: Property Alarm threshold is appropriate for Underinfusion alarm spec

- S7: Argument over the source of the Alarm threshold definition

- C6: Source is given by Alarm threshold.source

- G7: Source Previous knowledge is appropriate and trustworthy

- Sn1: Source Previous knowledge

- G8: Property Alarm threshold definition is sufficient

- Sn2: Property Alarm threshold

- G3: Overinfusion is mitigated under Dose limit exceeded due to excessive bolus requests (undeveloped)

- G3: Underinfusion is mitigated under Bolus volume/concentration too high (undeveloped)

```

\*Note: Some portions of the safety case remain undeveloped as per the description and decorator given in the pattern. These parts would need further detail and development in subsequent steps.\*