Here's the instantiated safety case for the Generic Patient-Controlled Analgesia (GPCA) system based on the provided pattern and domain information:

@Assurance\_case

- G1: Operational safety is verified in Generic Patient-Controlled Analgesia (GPCA) system

- C1: All specs are given by GPCA system

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

- C3: All related scenarios are given by operational hazard

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

- Strategy (S2): Argument over reliability in all suitable levels of 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 operational hazard

- 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 scenario.spec.allinstances()

- G5: SR1.1 is appropriate for "Flow rate does not match the programmed rate"

- S6: Argument the appropriateness of SR1.1 over properties

- C5: Properties are given by spec.property.allinstances()

- G6: "Flow rate sensor is equipped" is appropriate for SR1.1

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

- C6: Source is given by property.source

- G7: Source (FDA standard) is appropriate and trustworthy

- Sn1: FDA standard

- G8: "Flow rate sensor is equipped" definition is sufficient

- Sn2: Flow rate sensor is equipped

- G3: "Underinfusion" is mitigated

- S4: Argument over the applied scenarios of "Underinfusion"

- C3: All related scenarios are given by operational hazard

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

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

- C4: All related specs are given by scenario.spec.allinstances()

- G5: SR6.1.4 is appropriate for "Flow rate is less than 90% of the programmed rate setting"

- S6: Argument the appropriateness of SR6.1.4 over properties

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

- G6: "Period (to trigger the underinfusion alarm) is 15 minutes" is appropriate for SR6.1.4

- S7: Argument over the source of the "Period (to trigger the underinfusion alarm) is 15 minutes" definition

- C6: Source is given by property.source

- G7: Source (Expertise opinion) is appropriate and trustworthy

- Sn1: Expertise opinion

- G8: "Period (to trigger the underinfusion alarm) is 15 minutes" definition is sufficient

- Sn2: Period (to trigger the underinfusion alarm) is 15 minutes

@End\_Assurance\_case

This safety case follows the structure of the provided pattern and fills in placeholders with specific information about the GPCA system. The tree structure is displayed using dashes to denote different levels, indicating the hierarchical relationships among the GSN elements.