To create a safety case for the GPCA (Generic Patient-Controlled Analgesia) system from the given pattern, I will instantiate the placeholders with specific terms relevant to the system.

Here is the instantiated safety case in a hierarchical tree format:

```

G1: Operational safety is verified in GPCA system

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

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

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

- G2: All operational hazards are mitigated

- S3: Argument over operational hazards

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

- G3: Operational hazard (e.g., medication overdose) is mitigated

- S4: Argument over the applied scenarios of operational hazard

- C3: All related scenarios are given by operational\_hazard.scenario.allInstances()

- G4: Operational hazard (e.g., medication overdose) is mitigated under scenario (e.g., interruption of syringe infusion)

- S5: Argument over all specs related to scenario

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

- G5: Specification (e.g., maximum infusion rate) is appropriate for scenario (e.g., interruption of syringe infusion)

- S6: Argument the appropriateness of specification over properties

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

- G6: Property (e.g., calibration accuracy) is appropriate for specification (e.g., maximum infusion rate)

- S7: Argument over the source of the property definition

- C6: Source is given by property.source

- G7: Source (e.g., manufacturer's calibration report) is appropriate and trustworthy

- Sn1: source (e.g., calibration report)

- G8: Property definition is sufficient

- Sn2: property (e.g., accuracy data)

- S2: Argument over reliability in all suitable levels of GPCA system (undeveloped)

```

Below is the interpretation of the instantiated safety case predicates in a hierarchical tree format, adhering to the style used in GSN:

```

G1: Operational safety is verified in GPCA system

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

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

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

- G2: All operational hazards are mitigated

- S3: Argument over operational hazards

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

- G3: Operational hazard (e.g., medication overdose) is mitigated

- S4: Argument over the applied scenarios of operational hazard

- C3: All related scenarios are given by operational\_hazard.scenario.allInstances()

- G4: Operational hazard (e.g., medication overdose) is mitigated under scenario (e.g., interruption of syringe infusion)

- S5: Argument over all specs related to scenario

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

- G5: Specification (e.g., maximum infusion rate) is appropriate for scenario (e.g., interruption of syringe infusion)

- S6: Argument the appropriateness of specification over properties

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

- G6: Property (e.g., calibration accuracy) is appropriate for specification (e.g., maximum infusion rate)

- S7: Argument over the source of the property definition

- C6: Source is given by property.source

- G7: Source (e.g., manufacturer's calibration report) is appropriate and trustworthy

- Sn1: source (e.g., calibration report)

- G8: Property definition is sufficient

- Sn2: property (e.g., accuracy data)

- S2: Argument over reliability in all suitable levels of GPCA system (undeveloped)

```

In this safety case:

- We instantiated placeholders like `{system}`, `{operational hazard}`, `{scenario}`, `{spec}`, `{property}`, `{Source}` with specific terms relevant to the GPCA system.

- Hollow diamonds (declaration of being "undeveloped") for S1 and S2 denote areas requiring further development.