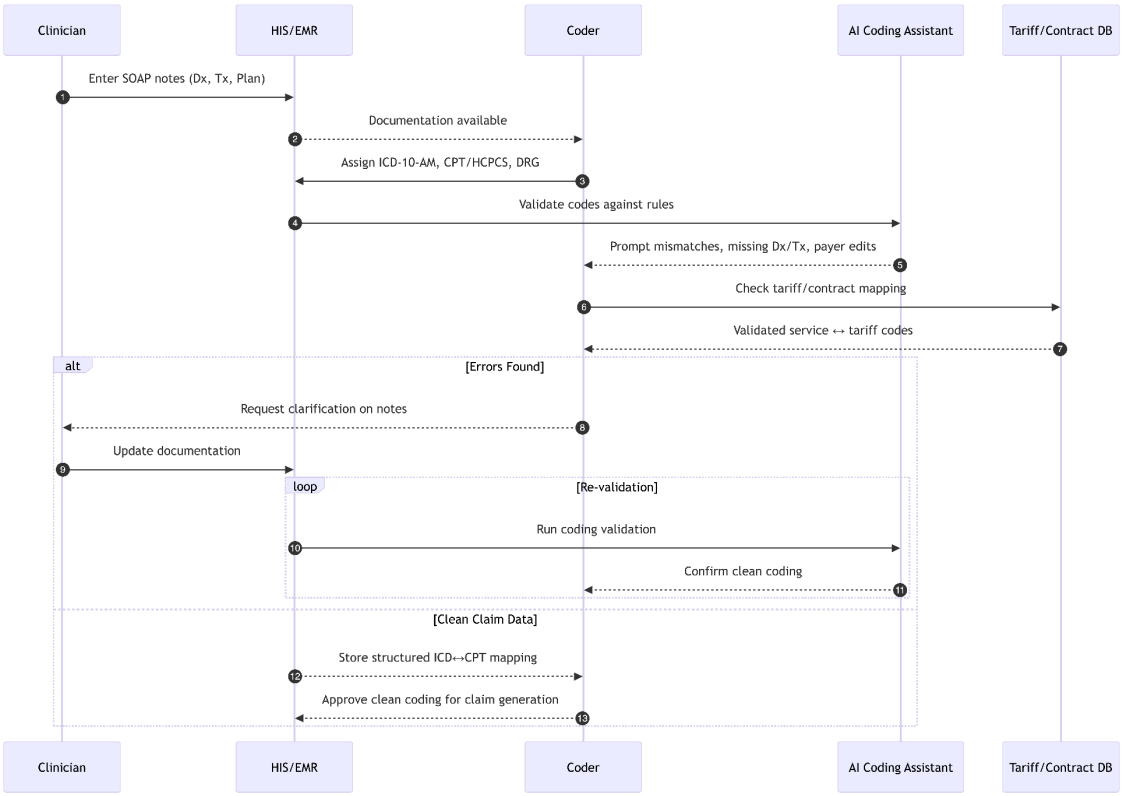
Use Case 1: Coding & Documentation



Use Case Name

Coding & Clinical Documentation Validation

Actors

- **Primary**: Clinician, Medical Coder
- **Supporting**: AI Coding Assistant, HIS/EMR

Description

This use case ensures that clinical documentation (SOAP notes) is correctly translated into diagnosis and procedure codes (ICD-10-AM, CPT/HCPCS, DRG). AI assists by validating

the mapping, flagging mismatches, and ensuring compliance with payer rules before the claim is generated.

Preconditions

- Patient encounter is completed.
- The clinician has entered SOAP notes in HIS/EMR.
- HIS is integrated with AI Coding Assistant and Tariff Contract DB.
- Clinical notes are converted to HL7 format.

Normal Flow

1. **Clinician Documentation**
    - Clinician records **Subjective, Objective, Assessment, and Plan (SOAP)** notes.
    - Notes include diagnosis, investigations, and treatment rendered.
2. **Coder Review & Coding**
    - Coder reviews documentation.
    - Assigns **ICD-10-AM** diagnosis codes, **CPT/HCPCS** procedure codes.
    - Applies **DRG grouping** if inpatient.
3. **AI Validation & Prompts**
    - AI engine validates code selections:
        - ICD↔CPT consistency (e.g., CPT “Knee Arthroscopy” requires Dx “Meniscal Tear”).
        - Medical necessity (payer-specific rules).
        - Coverage & tariff mapping validation.
    - Prompts users with corrections or missing codes.
4. **Coder Confirmation**

    - Coder accepts/rejects AI suggestions.
    - Updates final codes in HIS/EMR.
5. **Clean Claim Data Prepared**
    - Structured, validated coding data stored.
    - Ready for downstream claim generation.

Alternate/Exception Flows

- If SOAP note is incomplete → AI flags “Documentation Insufficient” → routed back to clinician.
- If non-covered CPT is entered → AI suggests alternatives or flags for self-pay.
- If multiple ICDs map ambiguously to CPTs → AI prompts coders for clarification.

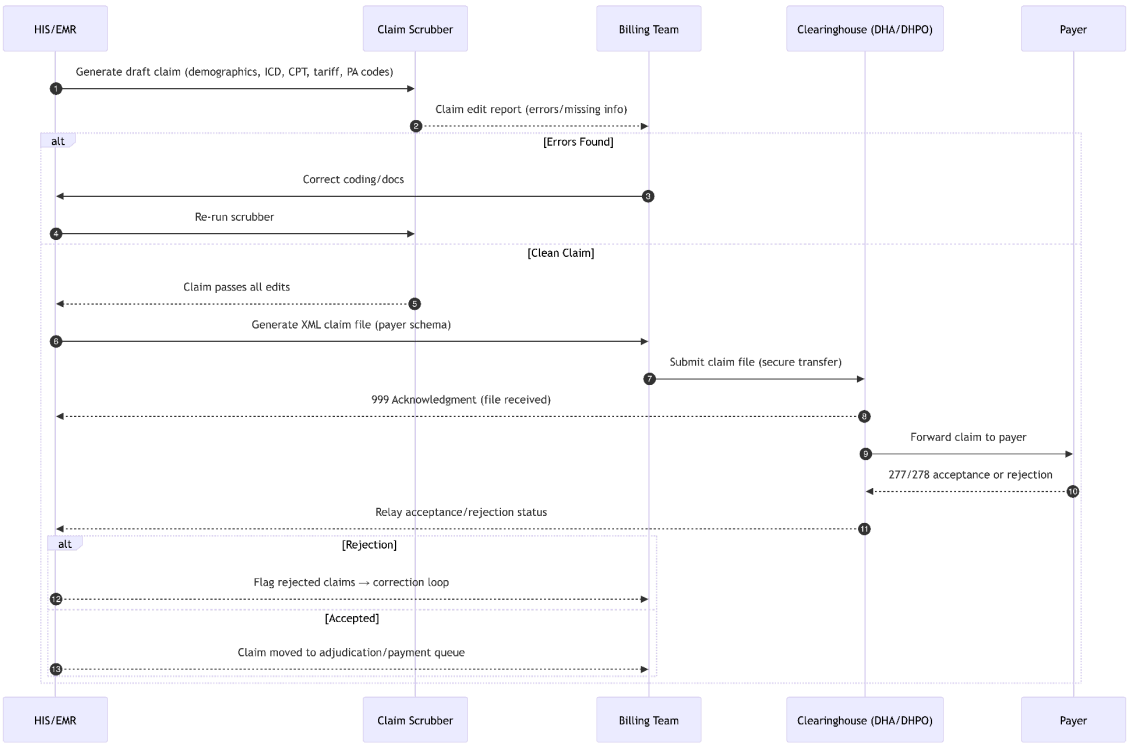
System Requirements

- ICD-10-AM, CPT/HCPCS, DRG libraries integrated.
- AI model trained on payer rules (DHA, DOH, MOH).
- HIS integration to store corrections and audit trails.

KPIs / Success Metrics

- % of coding errors prevented before submission.
- Reduction in **medical denials (MNEC/NCOV codes)**.
- Turnaround Time (TAT) for coding per encounter.
- Increase in **Clean Claim Ratio** attributable to coding validation.

Use Case 2: Claim Submission



Use Case Name

Automated Claim Scrubbing & Submission

Actors

- **Primary**: Billing Team
- **Supporting**: HIS/EMR, Claim Scrubber Engine, Clearinghouse (DHA/DHPO), Payer

Description

This use case covers the end-to-end generation and submission of claims to payers via DHA Claiming, DHPO (HAAD/DOH), or payer-specific portals. AI and rules-based scrubbers ensure the claim is error-free before submission, reducing rejections and accelerating reimbursements.

Preconditions

- Patient encounters are coded and validated.
- Tariff mapping and prior authorization are completed.
- Eligibility verification results stored.

Normal Flow

1. **Claim Compilation**
    - HIS pulls coded data, demographic info, insurance details.
    - Generates claim draft with line items.
2. **Claim Scrubbing**
    - Automated scrubber checks for:
        - Missing ICD/CPT codes.
        - Invalid modifiers.
        - Tariff mismatches.
        - Duplicate billing.
        - Timely filing limits.
    - AI engine runs payer-specific edit checks.
3. **Error Handling**
    - If errors found → claim routed back to coder/billing team.
    - AI suggests fixes (e.g., modifier correction, missing documentation).
4. **Claim File Generation**
    - On passing scrubber, HIS generates **XML file** in payer-required schema.
    - File digitally signed and encrypted.
5. **Claim Submission**
    - File transmitted via DHA Claiming, DHPO, or payer portal.
    - Clearinghouse validates schema.
6. **Acknowledgment Tracking**
    - **999 Acknowledgment**: Confirms file receipt.
    - **277/278 Response**: Indicates acceptance/rejection status.

    - Accepted claims forwarded to payer adjudication.

Alternate/Exception Flows

- **Schema error** → file rejected at clearinghouse → corrected and resubmitted.
- **Partial rejection** → flagged at line-item level → rerouted for correction.
- **Technical failure** (API downtime) → submission retried in queue.

System Requirements

- Claim scrubber engine with configurable payer edits.
- XML schema generator for DHA, DHPO, payer-specific formats.
- Integration with clearinghouse acknowledgment feeds.
- Audit trail logging for each claim lifecycle stage.

KPIs / Success Metrics

- **First-Pass Acceptance Rate (FPAR)**: % claims accepted without edits (>95%).
- **Claim Rejection Rate**: Target <3%.
- Average submission-to-acknowledge turnaround time.
- Reduction in **administrative denials (ELIG, AUTH, CODE, DUPL, PRCE, TIME)**.
- Improved **cash flow velocity** (shorter AR days).