

# FHIR R4 Mapping Guide — ZagaTech

Scope: Common clinical and administrative data elements mapped to FHIR R4 resources, with HL7 v2 message hints and coding systems.

Domain	Source Field / HL7 v2	FHIR Resource.element	Notes / Code Systems
Demographics	ADT^A01 PID-5 (Patient Name)	Patient.name	Use HumanName; prefer official; Unicode-safe
Demographics	PID-3 (MRN)	Patient.identifier	Identifier(system, value); add type code MR.
Encounter	PV1-2 (Patient Class)	Encounter.class	Inpatient/Outpatient codes; see v3-ActCode.
Encounter	PV1-44 (Admit Dt/Tm)	Encounter.period.start	
Allergies	AL1	AllergyIntolerance.code	Use SNOMED where available; record criticali
Medications	RXE/RXA	MedicationRequest.medication[x]	Use RxNorm; map status and intent.
MedHistory	—	MedicationStatement	Self-reported meds; include adherence if avail
Orders/Results	OBR/OBX	DiagnosticReport + Observation	LOINC for test codes; UCUM for units.
Vitals	OBX (numeric)	Observation (category=vital-signs)	Map LOINC: BP 85354■9, HR 8867■4, SpO2
Conditions	DG1	Condition.code	Use ICD■10■CM for billing; SNOMED for clin
Procedures	PR1	Procedure.code	SNOMED/ICD■10■PCS; include performer.
Immunization	RXA	Immunization	CVX for vaccine code; MVX for manufacturer.
Scheduling	—	Appointment	Slot, Schedule, and Participant references.
Provider	—	Practitioner / Organization	NPI as identifier; Org OIDs where applicable.
Payer	—	Coverage	Subscriber/beneficiary; plan IDs; relationships.
Billing	—	Claim / ExplanationOfBenefit	X12 837/835 mapping; adjudication items.

## Profiles & Terminology

- Adopt US Core profiles where applicable (US Core Patient, Encounter, Observation, Condition, CareTeam, etc.).
- Use standard code systems: LOINC (labs/vitals), SNOMED CT (clinical), RxNorm (medications), UCUM (units), CVX/MVX (immunizations).
- Set meta.profile on resources to indicate conformance to chosen profiles.
- Validate resources with FHIR validator in CI; reject non-conformant payloads in integration layers.

## Example: Vital Signs Observation (JSON)

```
{
  "resourceType": "Observation",
  "status": "final",
  "category": [
    {
      "coding": [
        {
```

```

        "system": "http://terminology.hl7.org/CodeSystem/observation-category",
        "code": "vital-signs"
      }
    ]
  },
  "code": {
    "coding": [
      {
        "system": "http://loinc.org",
        "code": "8867-4",
        "display": "Heart rate"
      }
    ]
  },
  "subject": {
    "reference": "Patient/123"
  },
  "encounter": {
    "reference": "Encounter/789"
  },
  "effectiveDateTime": "2025-01-01T10:15:00Z",
  "valueQuantity": {
    "value": 72,
    "unit": "beats/minute",
    "system": "http://unitsofmeasure.org",
    "code": "/min"
  }
}

```

## Example: MedicationRequest (JSON)

```

{
  "resourceType": "MedicationRequest",
  "status": "active",
  "intent": "order",
  "medicationCodeableConcept": {
    "coding": [
      {
        "system": "http://www.nlm.nih.gov/research/umls/rxnorm",
        "code": "860975",
        "display": "amoxicillin 500 MG Oral Capsule"
      }
    ]
  },
  "subject": {
    "reference": "Patient/123"
  },
  "authoredOn": "2025-01-01",
  "dosageInstruction": [
    {
      "text": "500 mg by mouth every 8 hours for 7 days"
    }
  ],
  "dispenseRequest": {
    "quantity": {
      "value": 21,
      "unit": "capsule"
    }
  }
}

```

```
}  
}  
}
```

## HL7 v2 to FHIR Hints

- ADT^A01/A08: map PID + PV1 to Patient/Encounter; preserve identifiers and patient class.
- ORU^R01: map OBR/OBX to DiagnosticReport + Observations; maintain groupings by placer/filler order numbers.
- ORM: map to ServiceRequest/Task; communicate order lifecycle via status.

Normalize units to UCUM; convert localized codes to standard terminologies where possible.

## API & Security Considerations

- OAuth2/OIDC for user and system-to-system auth; SMART-on-FHIR where appropriate.
- TLS 1.2+; JWT access tokens; scopes limiting read/write of specific resources.
- AuditEvent resources for access logs; Provenance for data origin tracking.
- Batch/Transaction bundles for grouped operations; Conditional create/update to avoid duplicates.