

How To Map An AI Clinical Pathway (Step-by-step Guide)

The purpose here is to understand how patients currently move through the care process and where AI may add value. We need to understand:

- What is the current standard of care?
- Where in the patient journey could AI be introduced?
- What is the rationale for change (e.g. delays, workforce, quality variation)?

Understand and visualise the clinical workflow by working through this step-by-step process:.

1: Specify intended use

Clearly define what the AI is supposed to do and who it is for.

- Primary function:
 - Diagnosis
 - Triage/Prioritisation
 - Detection/Screening
 - Measurement/Quantification
 - Report automation/summarisation
- Primary users: who interprets/uses the AI?
 - Radiologist
 - Reporting clinician (non-radiologist)
 - Referrer/GP
 - Operations/IT staff
- Setting:
 - Outpatient
 - Inpatient/AE
 - Community imaging centre
- Level of oversight:
 - Independent use
 - Second-reader support
 - Triage tool only (not shown to clinician unless flagged)

2: Define the target population and clinical scope

Clarify who the AI is meant to help and what conditions it should address.

- Patient population: Adults/Paeds/Elderly/Specific comorbidities?
- Condition focus: Tumours, infections, cardiac signs, trauma, or general triage?
- Prevalence/incidence: Local data on how often relevant conditions appear in imaging.

- Inclusion/exclusion criteria: Views/sequences accepted, image quality,

3: Identify stakeholders and pathway impact

Understand who will be affected and how.

- Operational implications:
 - What is the current turnover time?
 - How long is the backlog?
 - Breach timelines - urgent referrals
- Clinical implication of false positives/negatives: What happens if the AI overcalls or misses a finding?
 - Are certain conditions missed
- Pathway friction: Regulatory issues

4: Define the intended impact / outcome

Describe what success looks like.

- Clinical goals: Improved detection, reduced reporting errors, early identification, post-examination planning.
- Operational goals: Faster turnaround, fewer backlogs, better resource allocation, examination time, reimbursement, early discharge - more beds available, less hospitalisations.
- Measurable outcomes: Sensitivity, specificity, time to report, number of escalations avoided.

5: Review published evidence

Ensure alignment between proposed use and existing validation data.

- Has the AI been tested in similar settings/populations?
- Any peer-reviewed studies or white papers available?
- Does performance data reflect your patient population and use case?
- Any evidence of regulatory clearance or real-world deployment?

6. Activity Mapping of the AI Solution setting

Swim lane Diagram:
Mapping a clinical AI pathway



