QA & Automation Strategy Document - UpHill

Version: 1.0

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1. Purpose & Scope

This document defines the **Draft a high-level** QA and Automation strategy to strengthen UpHill's capability **to catch, report and prevent issues early** while enabling engineers to ship safe, high quality code at speed for two high impact areas: Patients Journeys View and Localization.

2. Core Testing Principles & Methodologies

Principle	Why It Matters	Applied Practices	
Shift-Left & Continuous Testing	Bugs are cheaper to fix when found early.	Unit + API tests run on every commit; E2E smoke suite on every PR.	
Agile / Devops	Testing must match sprint cadence and CI/CD flow.	Definition of Done includes automated tests & 100% review of test results.	
Test Pyramid	Balance fast feedback with realistic coverage.	Unit > API > Contract > E2E/UX.	
Risk-Based &	Focus effort where patient safety & Features labelled P0-P2; P0 automatician productivity are most affected.		
Context-Driven &	Healthcare workflows are complex and dynamic.	Weekly exploratory charters per feature flag.	
Accessibility & Localization First	Legal compliance (WCAG 2.2) & multilingual support are core product promises.	aXe automated checks; i18n string linting.	
Security & Privacy by Design	Patient data requires GDPR & HIPAA safeguards.	Static analysis in pipeline; OWASP ZAP nightly.	
Observability &	Data-driven	Metrics pipeline (Grafana +	

Feedback Loops improvement is key.	Prometheus) feeds QA dashboards.
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3. Tooling & Framework Selection

Test Layer	Tool / Framework	Rationale
Unit	HIDST I ROOCT LOSTING LINCOPV	Ubiquitous in React ecosystem; fast; hooks aware.
	Supertest (Node) Rest	Hits real controllers/service layers with in-memory DB; verifies routing, auth, and happy/error paths at millisecond speed.
1	Cypress Component Testing + Storybook in CI	Detects regressions in shared UI widgets; snapshot diffs guard against unintended UI drift while remaining faster than full E2E
E2E / UX	Cypress + Cucumber (Gherkin)	Team already familiar; automatic waiting, network stubbing, video & trace; parallelizable in CI.
HACCASSINITION	cypress-axe + axe-linter GitHub Action	Inline a11y assertions in E2E flows.
III oca i i zation	i18next-lint & Cypress-tagged scenarios	Detect missing keys; verify dynamic language switch.

4. Proposed Test Architecture & Project Structure

```
repo-root/
                                  # application code
- src/
 - tests/
    - unit/
- api/
    - contracts/
- e2e/
        journeys/
localization/
                             # Patients Journeys flows
     - fixtures/
                                # test data
     - support/
        commands.ts # custom Cypress commands pageObjects/ # POMs for maintainability
                                 # POMs for maintainability
     - reports/
   .github/workflows/
   └ ci.yml
                                 # pipeline definition
  - README.md
```

- Modular structure allows isolated test logic.
- Test data management centralized under /test-data.
- Gherkin BDD tests used for future non-technical stakeholder visibility.

5. Integration with CI/CD Pipelines

Use GitHub Actions to:

- Run Cypress tests on push/PR to main or develop.
- Generate and publish Allure reports.
- Notify team via Slack/Teams on test failures.

Pipeline steps:

- Checkout code
- 2. Install dependencies
- 3. Start app or use staging URL
- 4. Run Cypress headless
- 5. Upload report artifacts

Stage	Action	
Pre-merge (PR)	Lint → Unit & Contract tests, Quick E2E Smoke, Publish coverage + a11y reports.	
Nightly	Full regression (@regression & @l10n) → Visual diff check + OWASP ZAP security scan;	
Release	Triggered on main => tag repeat smoke in staging → deploy via GitHub Actions to AWS Amplify.	
Rollback / Hotfix	Automated canary + feature-flag toggles → Smoke verifies fix before full traffic shift.	

6. Test Automation Prioritization Strategy

1. PO - Patient Safety & Core Workflows

- Search by patient name
- Filter by communication status
- Language toggle PT/EN with content refresh
- o Offline search error message

2. P1 - Regression of Shared Components

 \circ Table sorting, pagination, tooltips

3. P2 - Edge & Negative Cases

 Special-character names, large datasets, accessibility focus order

Scoring model combines **Business Impact (0-5)** × **Failure Likelihood (0-5)**. Anything ≥ 15 automated in sprint, else queued ("impact × probability" used in risk analysis (Risk-Based Testing / Risk Matrix)).

7. Key Performance Indicators (KPIs)

KPI	Target	Insight
Automated Coverage (E2E+API)	≥ 70 % critical paths	Confidence in releases
Defect Escape Rate	≤ 2 % post-production	Test effectiveness
Mean Time to Detect (MTTD)	IZ 30 MIN (NPOGI) I	Monitoring & alerting quality
Mean Time to Resolve (MTTR)	< 1 day P0	Release agility
Pipeline Duration	≤ 10 min PR checks	Developer feedback loop
Flaky Test Rate	≤ 2 %	Suite reliability
Accessibility Score (Lighthouse)	≥ 95 across languages	Inclusivity compliance
Core Web Vitals (LCP, TTI)	Green (< 2.5 s)	Performance health

8. Governance & Continuous Improvement

- **Definition of Done** augmented with test & coverage criteria.
- Quarterly Test Strategy Review to adapt tooling, architecture, and metrics.
- Flaky Test Triage Board with ownership rotation.
- Root-Cause Analysis for escaped defects; preventive actions logged.

9. Next Steps

- 1. Socialise strategy in team kick-off and capture feedback.
- 2. Bootstrap repository structure & CI pipeline skeleton.
- 3. Author P0 Cypress scenarios and integrate with Cypress Dashboard.
- 4. Set up KPI dashboards and alert channels.

10. Considerations

Considering that during the challenge I was unable to access the test environment at URL:

https://uphillhealth.com/uphillchallenge/desk?routePackageId=ROUTE_PACKAGE_AS_ CHALLENGE&page=0&tab=2&phasesIds=*

I created the tests and the QA bug report based solely on the images contained in the document.

After logging into the site, using the credentials below:

• Username: candidate5@uphillhealth.com

• Password: Uphill385njbg

I am getting the following error at the URL: https://www.uphillhealth.com/uphillchallenge/desk

