# La Tortuga Digital Intake App — Verification & Validation Plan (VVP)

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## 1. Purpose

To confirm that the La Tortuga Digital Intake App meets all functional and non-functional requirements defined in the PRD/SDS, protects patient privacy and data integrity, and performs reliably in offline, low-resource environments.

## 2. Scope

Covers Android tablet app (medical + dental intake modules), Firebase backend and dashboard, offline data storage and synchronization, and all security and compliance measures.

## 3. Verification (Engineering-Level Testing)

Unit Tests – Ensure each component behaves as designed. Responsible: Developers. Tools: Jest, React Testing Library. Acceptance: ≥90% pass rate.  
  
Integration Tests – Confirm modules interact correctly (e.g., sync manager ↔ Firebase). Responsible: Dev Team. Tools: Firebase Emulator Suite. Acceptance: No data loss, <2s sync lag.  
  
Offline/Online Transition – Verify stability switching states. Responsible: QA + Field Lead. Tools: Real tablet test. Acceptance: All records retained after reconnect.  
  
Security Tests – Validate encryption and auth rules. Responsible: Security Analyst. Tools: Firebase Rules Tester. Acceptance: All unauthorized access blocked.  
  
Performance Tests – Ensure quick load and sync times. Responsible: QA. Tools: Android Profiler. Acceptance: <5s load per screen.  
  
Localization – Confirm bilingual UI accuracy. Responsible: Translator + QA. Tools: Manual review. Acceptance: All fields correctly translated.

## 4. Validation (Clinical / End-User Testing)

Clinical Intake Simulation – 3 nurses + 1 dentist complete mock intakes for 10 patients each. Expected: Data accuracy ≥99% vs paper.  
  
Low-Connectivity Field Test – Operate offline for 8 hrs, sync later. Expected: All records uploaded correctly.  
  
User Acceptance Testing (UAT) – Full flow from login → summary → dashboard. Expected: No blocking defects.  
  
Dashboard Validation – Compare Firebase totals with dashboard output. Expected: <1% discrepancy.  
  
Tablet Usability Review – Evaluate glove touch, stylus precision. Expected: ≥80% satisfaction.

## 5. Data Validation Rules

• Required fields cannot be empty.  
• Pain scale limited to 0–10.  
• Date format ISO 8601 (YYYY-MM-DD).  
• Sync conflict resolved by latest timestamp.  
• Anonymized data only in exports.

## 6. Test Environment Setup

• 3 tablets using staging Firebase environment (la-tortuga-staging)  
• Firebase Emulator for automated tests  
• Secure Wi-Fi for controlled sync testing

## 7. Documentation & Evidence

• Test cases and results logged in Asana or TestRail.  
• UAT sign-off sheet signed by Joellen (Clinical Lead).  
• Screenshots, logs, and issue reports stored in GitHub /qa-results/.

## 8. Acceptance & Exit Criteria

✅ All functional tests pass (no Severity 1 defects).  
✅ Security penetration tests passed.  
✅ All UAT participants sign validation form.  
✅ Dashboard matches backend data (±1%).  
✅ App used successfully for ≥25 real intakes during pilot.

## 9. Post-Validation Actions

• Capture lessons learned into Release 1.1 backlog.  
• Freeze validated build and tag as v1.0-release.  
• Move to Deployment & Training Phase.