Patient-Experience Based Medical Training (PMT)

Lev Neymotin, PhD
N5Digital, Inc.

Executive Summary
This white paper proposes the implementation of **Patient-Experience Based Medical Training (PMT)** — a training paradigm in which healthcare providers and decision-makers undergo safe, immersive simulations of patient conditions to experience first-hand the physical limitations, discomfort, and risks associated with diseases or injuries they treat.

The central premise: **technical skill alone is insufficient for optimal patient care**. A provider's perception of urgency, treatment choice, and willingness to adopt new technology is significantly influenced by personal empathy grounded in lived experience.

Using **DupuyFix™**, a robotic precision injection system for treating Dupuytren's contracture, this paper illustrates how PMT can transform clinical decision-making. We propose that by "living" a condition through **close-to-real-life simulation**, practitioners and administrators will:

- Reduce harmful treatment delays.
- Adopt technologies that minimize patient suffering.
- Reconsider scheduling and procedural policies to prioritize patient quality of life.

The paper concludes with broad recommendations for PMT across medical specialties and includes **Appendix A**, a complete DupuyFix™-based PMT training module.

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1. Ideology and Need for PMT
Contemporary medical education emphasizes anatomy, diagnostics, and procedural competence. While empathy is acknowledged as essential, its cultivation remains largely theoretical — learned through conversation, observation, or brief standardized patient encounters.
However, **lack of physically grounded empathy manifests in three critical ways**:

1. **Underestimation of urgency** — Without feeling the constant impact of a condition, providers may not appreciate the harm of delaying treatment.
2. **Procedural inertia** — Providers often resist new methods or devices if the current approach is "good enough" for them, even if it causes avoidable patient discomfort.
3. **Systemic detachment** — Administrators and regulators make decisions without understanding the real-world implications for patients living with a condition.

PMT addresses this gap by creating immersive, reversible, safe simulations that replicate functional limitations, environmental constraints, and even controlled discomfort.

2. The DupuyFix™ Case Study

2.1 Dupuytren's Contracture Overview

Dupuytren's contracture is a progressive condition causing thickening and shortening of palmar fascia, leading to finger flexion deformities. It interferes with basic daily activities — from dressing to gripping objects — and can cause significant psychosocial distress.

2.2 Current Treatment Challenges

Collagenase injections are an FDA-approved, minimally invasive option. However, manual delivery is prone to depth and lateral placement errors, leading to complications such as skin tears, nerve damage, and tendon rupture. These risks contribute to underuse of the therapy and unnecessary treatment delays.

2.3 The Patient-Experience Gap

During discussions on DupuyFix™, it became evident that many providers do not prioritize the **patient's lived experience** in decision-making. Factors such as preserving manual skill prestige, avoiding retraining, or maintaining current billing patterns often outweighed patient comfort and recovery speed.

2.4 PMT Simulation for Dupuytren's

The proposed Dupuytren's PMT module (Appendix A) immerses participants in **12–48 hours of functional impairment simulation**, restricting finger extension, grip strength, and dexterity. Task challenges reveal the cumulative burden of the condition, fostering urgency for early, precise intervention and making the benefits of DupuyFix™ tangible.

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3. Extending PMT to Other Fields

3.1 Procedural Specialties

- **Orthopedic Surgery**: Simulated joint immobilization to experience pre- and post-surgical mobility loss.
- **Ophthalmology**: Temporary partial vision occlusion to mimic cataract or glaucoma symptoms.
- **ENT**: Nasal airflow restriction devices to simulate chronic sinus or sleep apnea breathing difficulty.

3.2 Emergency and Acute Care

- **ER Teams**: Simulated traumatic injury with mobility/sensory restrictions to experience patient vulnerability.
- **EMTs**: Ride in patient position during high-speed transport for sensory realism.

3.3 Primary Care and Chronic Disease

- **Diabetes**: CGM alarms mimicking hypoglycemic episodes.
- **COPD/Asthma**: Breathing apparatus with mild airflow restriction during daily tasks.

3.4 Palliative and End-of-Life Care

- **Chronic Pain**: Low-grade, persistent nerve stimulation with occasional pain spikes.
- **Dependency Simulation**: Restricted mobility to experience reliance on assistance.

3.5 Administrators, Regulators, and Payers

- Simulate progressive impairment during forced scheduling delays.
- Experience "insurance denial" processes while symptomatic to understand systemic burden.

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4. Development Plan for PMT Modules

Phase 1 – Prototype Design

- Identify priority conditions across specialties.

- Develop safe, reversible, adjustable simulations.
- Integrate VR/AR overlays for symptom amplification.

Phase 2 – Training Rollout

- Partner with medical schools, residency programs, and CME providers.
- Include simulation in onboarding for administrators in healthcare organizations.

Phase 3 – Evaluation and Accreditation

- Measure impact on treatment urgency, technology adoption, and patient satisfaction.
- Seek formal accreditation as a CME requirement for targeted specialties.

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5. Conclusions

PMT bridges a critical gap between clinical knowledge and human-centered care. The **DupuyFix™ module** demonstrates how firsthand experience can accelerate adoption of safer, more precise technologies and reduce treatment delays.

Embedding PMT into professional education can yield systemic gains in **patient outcomes, empathy, and technology integration**.

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6. Recommendations

1. Pilot the DupuyFix™ PMT module with hand surgery training programs.
2. Form an interdisciplinary PMT design consortium, including simulation engineers and patient advocates.
3. Integrate PMT into CME and residency curricula.
4. Secure insurer and public health funding, positioning PMT as both a quality-of-care and cost-reduction initiative.

Appendix A — Patient-Experience Based Medical Training (PMT) Module: DupuyFix™

A.1 Objective

Immerse participants in a safe, realistic simulation of Dupuytren's contracture to improve empathy, urgency perception, and willingness to adopt patient-friendly technologies.

A.2 Target Audience

- Surgeons, proceduralists, primary care providers
- ER and urgent care staff
- Nurses, OTs, rehabilitation specialists
- Administrators, payers, and regulators

A.3 Simulation Components

- **Hand Restriction Orthotic:** Limits MCP/PIP extension in ring and little fingers (30°, 60°, 90°).
- **Grip Reduction Inserts:** Impair grasping and object manipulation.
- **Finger Stiffness Bands:** Simulate cord tension.
- **Optional Discomfort Simulation:** Mild nerve stimulation for low-grade pain.

A.4 Functional Challenges

- Dressing, writing, typing
- Using utensils, holding cups
- Handling coins, keys, tools
- Public scenarios: transit, shopping

A.5 Training Structure

1. **Briefing**: Condition overview, treatment delays, DupuyFix™ advantages.

2. **Impairment Period**: 12–48 hours of continuous simulation.
3. **Task Trials**: Timed fine-motor challenges.
4. **Debrief**: Reflection and discussion on urgency and technology adoption.

A.6 Learning Objectives

Participants will:

- Describe patient limitations in first-person terms.
- Justify reduced treatment delays.
- Articulate DupuyFix™'s benefits in safety and comfort.

A.7 Metrics

- **Empathy Shift Score** (pre/post).
- **Urgency Index** changes in scheduling preferences.
- **Technology Adoption Likelihood**.

A.8 Scalability

This framework can be adapted to simulate vision impairment, respiratory distress, or mobility loss for other specialties.