The HTM Operating Manual

Uptime, accountability, and the engineering discipline behind a hospital that never stops

BiomedRx — First Edition — July 2026

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Contents

Foreword

A hospital is a building full of machines that stand between a patient and a bad outcome. Health-technology management is the quiet profession that keeps those machines honest — calibrated, powered, documented, and ready — usually without anyone in the clinical corridors ever thinking about it. That invisibility is the goal. When the biomed department is doing its job, nothing happens.

This manual is written for the people who own that invisibility: HTM directors, clinical engineers, and the field technicians who carry the toolbag. BiomedRx built its practice in Los Angeles and across the Western United States on a single reframing — that we do not sell repairs, we sell operational readiness. Everything here flows from that idea.

Read it once end to end, then leave it on the bench. The Field Checklists at the close of each chapter are meant to be photocopied, argued with, and adapted to your own facility and your own accreditor.

Chapter 1 — Uptime Is the Deliverable

Equipment does not fail politely. It drifts, degrades, and picks the worst possible moment to remind everyone that maintenance is patient safety, not paperwork. The central discipline of HTM is to measure yourself in downtime avoided rather than tickets closed. A ticket queue tells you how busy you were; an uptime record tells you how much clinical capacity you protected.

That reframing changes how you prioritize. Two work orders can look identical on a screen and be worlds apart in impact — one is a spare monitor in a storeroom, the other is the only anesthesia machine in a same-day surgery suite with a full schedule. The mature program triages by clinical and revenue impact, not by the order requests arrived.

It also changes how you sell and structure service. Response time is not a courtesy; it is the product. Build it explicitly into every agreement, because the value of a scanner returned to service on Friday afternoon instead of Monday morning is measured in cases performed and diagnoses delivered.

Field Checklist

- ■ Track downtime avoided, not just tickets closed
- ■ Triage every work order by clinical and schedule impact
- ■ Write response-time commitments into every service agreement

Chapter 2 — Reading the Code: NFPA 99 in 2026

As of 2026, the 2024 edition of NFPA 99, *Health Care Facilities Code*, remains the current edition and the FDA-recognized consensus standard for health care facilities and appliances — covering installation, inspection, maintenance, and testing. If your documentation is aligned to an older edition, that is the first thing a thoughtful survey preparation will correct. The 2024 edition also requires

medical gas and vacuum systems to provide an auxiliary connection on the patient side of the source valve for a temporary or supplemental supply — a detail worth confirming during any piped-gas work.

Meanwhile, the 2027 edition is in development, with proposals under review that add a dedicated cybersecurity chapter and expanded vendor and contractor security-management requirements. This is the direction of travel for the whole field: connected devices are now part of the safety envelope, and the code is catching up to that reality.

The practical posture for an HTM team in 2026 is dual: keep every testing and isolated-power record current against the enforced 2024 edition, while beginning to inventory network-connected devices and vendor relationships in anticipation of the cybersecurity framework coming in 2027. Preparing early is cheaper than scrambling later.

Field Checklist

- Confirm all documentation references the enforced 2024 NFPA 99 edition
- Verify auxiliary medical-gas connections where the 2024 code applies
- Begin a network-connected-device inventory ahead of the 2027 cybersecurity chapter

Chapter 3 — Isolated Power and the Wet-Location Problem

Isolated power systems and their line isolation monitors exist for one reason: to keep a first fault from becoming a shock hazard in the operating room, the ICU, and other wet or critical procedure locations. They are among the least glamorous and most consequential systems a biomed touches. An LIM that has drifted, or a hazard-current reading nobody trended, is a silent liability.

Annual recertification to the NFPA 99 standard is the baseline, but the discipline is in the trend line. A total hazard current that has crept upward over three years is telling you something about the connected load and the wiring long before it trips an alarm. Record the numbers, plot them, and treat a rising trend as a work order in itself rather than waiting for a threshold to be crossed.

Wet-location documentation is an area where accreditors and code developers continue to sharpen expectations. The safe assumption is that you will be asked not just whether a room is designated wet or dry, but who made that determination, on what basis, and where the record lives. Make sure the answer exists before the surveyor asks.

Field Checklist

- Recertify isolated power systems and LIMs annually to NFPA 99
- Trend total hazard current over time, not just at the threshold
- Keep the wet-location risk-assessment record findable and dated

Chapter 4 — Preventive Maintenance That Actually Prevents

A PM program is only as good as its intervals and its honesty. Manufacturer-recommended intervals are the starting point, but a mature program adjusts cadence to real failure data, device criticality, and the environment the equipment actually lives in. A pump in a busy ED and the same pump in a quiet clinic do not wear at the same rate.

The failure mode to guard against is the "PM sticker" mentality — where the goal quietly becomes a current sticker rather than a functioning device. Real preventive maintenance catches the tired membrane, the fraying strain-relief, and the calibration drift before any of them becomes a clinical event. That means test to specification and record the result, not merely confirm the device powers on.

PM also protects capital. Equipment that is maintained to spec lasts longer, holds resale and trade-in value, and defers the replacement conversation — which matters enormously to any facility watching its capital budget. A disciplined PM program is a total-cost-of-ownership strategy wearing a compliance uniform.

Field Checklist

- Set PM cadence by criticality and real failure data, not habit
- Test to specification and record the measured result
- Report deferred and extended equipment life to capital planning

Chapter 5 — The Surveyor-Ready Binder

Accreditors in 2026 keep converging on one message: show us the outcome, not just the binder. It is no longer enough to have a policy; you must be able to demonstrate, with data and disciplined records, that equipment is safe, tested, and ready. The department that can export a clean, complete history on demand is the department that survives a survey calmly.

Design the record for the reader. A surveyor should be able to pick any device off the floor, find its record in seconds, and see a coherent story: acquisition, incoming inspection, PM history with measured results, repair events, and current status. Photos and, where applicable, video of service events turn a claim into evidence.

The failure here is almost never the work — it is the documentation of the work. Techs who fix things brilliantly but log them thinly leave the department exposed. Make thorough, contemporaneous documentation a non-negotiable part of the job, not an afterthought squeezed in at the end of the week.

Field Checklist

- Ensure any device's full history exports on demand
- Attach photos or video to significant service events
- Make contemporaneous documentation a completion requirement

Chapter 6 — RAPID, Breakthrough Devices, and Faster On-Boarding

In April 2026 the FDA and CMS jointly launched the Regulatory Alignment for Predictable and Immediate Device (RAPID) pathway, running FDA market-authorization and Medicare coverage decisions in parallel for designated Breakthrough devices. For HTM departments, the headline is speed: new technology can arrive on the floor faster than the traditional cadence trained anyone to expect.

Faster arrival compresses the on-boarding window. Incoming inspection, safety testing, network and cybersecurity review, staff in-service training, and integration into the CMMS all have to happen on a shorter clock. The departments that handle this well have a standing on-boarding checklist ready before the device ships, not a scramble assembled after it lands on the dock.

It also changes documentation expectations. As breakthrough devices move through coverage-with-evidence-development arrangements, surveyors and administrators will increasingly ask HTM to show that new technology was commissioned correctly and is being maintained to spec. Build the on-boarding record with that scrutiny in mind from day one.

Field Checklist

- Maintain a standing new-device on-boarding checklist
- Include cybersecurity and network review in commissioning
- Document breakthrough-device commissioning for later scrutiny

Chapter 7 — Building and Keeping a Biomed Team

The scarcest resource in HTM is not parts or tools — it is competent, clinically aware technicians who answer the phone and can be trusted with a down device in a live clinical space. A durable department is built on recruiting, developing, and retaining those people, and that work is never finished.

Development is a retention strategy. Cross-training across modalities, sponsoring certifications, and giving technicians ownership of trend data and capital recommendations turns a job into a career. People stay where they are growing and where their judgment is respected. A department that treats techs as interchangeable ticket-closers will keep losing its best ones to the ones that don't.

Coverage, competence, parts, and documentation are the four pillars. Coverage means someone answers; competence means they can fix it; parts means they have what it needs; documentation means you can prove it was done right. Miss any one and uptime suffers. Build all four deliberately, and the market rewards the department that is boringly reliable.

Field Checklist

- Cross-train technicians across modalities
- Sponsor certifications and give techs ownership of data
- Audit the four pillars — coverage, competence, parts, documentation

Conclusion: The Discipline of Boring Excellence

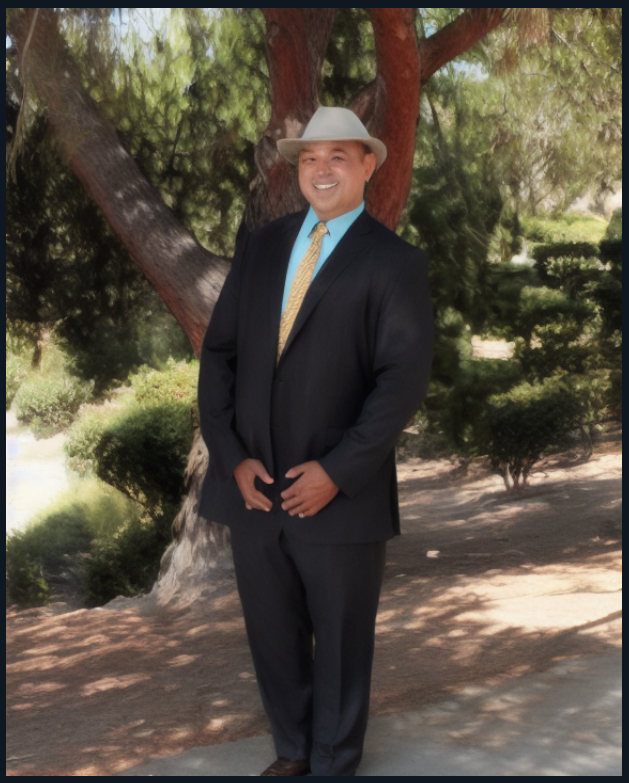
The best HTM programs are boring. Nothing dramatic happens because the dramatic things were prevented three visits ago. The PM that catches a failing membrane, the trend line that flags a rising hazard current, the sticker that is current when the surveyor walks in — none of these make headlines, and that is exactly the point.

Regulators in 2026 are converging from every direction on the same demand: demonstrate the outcome, not just the intention. The NFPA 99 line, the RAPID pathway, and the cybersecurity provisions arriving in the 2027 code all reward the department that can prove, with data and

disciplined records, that its equipment is safe and ready. Build that boring machine, document relentlessly, trend before you fail — and boring excellence becomes a genuine competitive advantage.

References

1. NFPA 99, *Health Care Facilities Code* — 2024 edition (current); 2027 edition in development (National Fire Protection Association). 2. FDA-recognized consensus standards database (U.S. Food and Drug Administration). 3. FDA + CMS Regulatory Alignment for Predictable and Immediate Device (RAPID) pathway, announced April 2026. 4. The Joint Commission, Environment of Care and consolidated physical-environment requirements, 2026 accreditation manuals. 5. AAMI and manufacturer service literature for device-specific maintenance intervals.



ABOUT THE FOUNDER

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Devin Lockett is the founder and entrepreneur behind this title and the wider BiomedRx family of companies—spanning healthcare technology, wellness, media, and community initiatives. He builds brands focused on quality, service, and independent ownership. Connect and follow his work across the network.