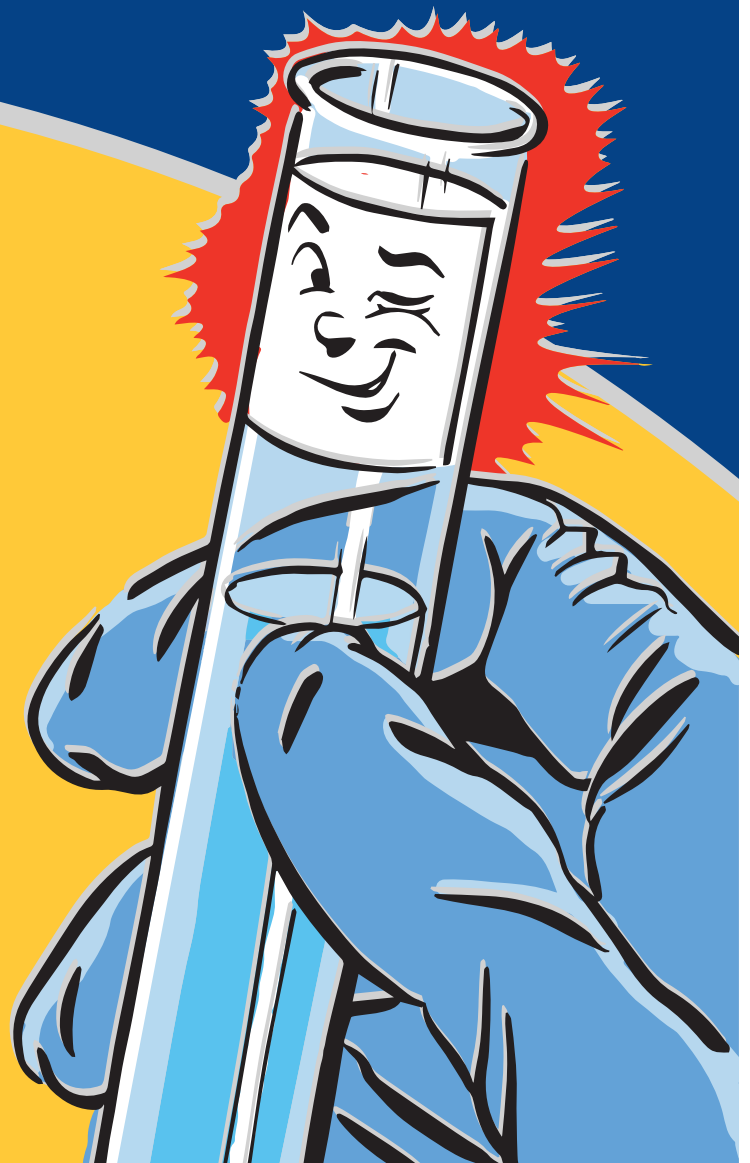


 **BRADY**® presents

EVOLVE YOUR LAB IN 4 STEPS

**TAKE SAMPLE
MANAGEMENT
FROM GOOD
TO GREAT**



EBOOK CONTENTS

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**IN TODAY'S LABORATORIES,
CHANGE IS ALL AROUND YOU.**



BUT IS YOUR LABORATORY CHANGING ENOUGH TO KEEP UP?

The 21st century has brought unprecedented medical advances, and those advances are continually changing the way we diagnose, treat and cure disease.

But change does not come without its challenges. For laboratories, the rising tide of samples has put increased scrutiny on the way you identify, track and report samples.

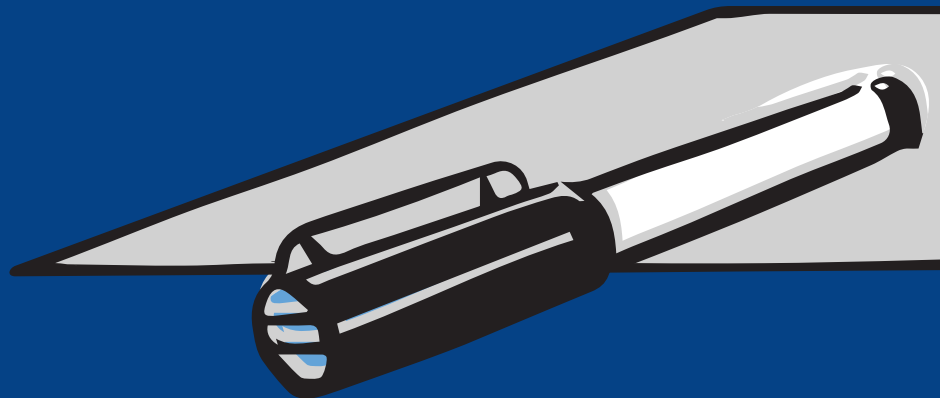


**THE STAKES HAVE BEEN RAISED—AND YOUR
LAB'S CURRENT METHODS OF SAMPLE
MANAGEMENT MAY NO LONGER BE ADEQUATE.**

THE WAKE-UP CALL:

85%

**MORE THAN 85% OF LABORATORIES
IN THE U.S. ARE STILL RELYING ON
SHARPIES OR EXCEL SPREADSHEETS
FOR SAMPLE MANAGEMENT.¹**



IT'S TIME TO RETHINK THE WAY YOU HANDLE YOUR SAMPLES.



Like most labs, sample identification protocol is probably not at the top of your priority list.

You have other important things to worry about, and let's face it: budgets are tight, time is limited and you need to be flawless. Frankly, your current systems for identifying and tracking samples seem to be working just fine, right?

Turns out, "just fine" may no longer be good enough.

WE'RE RAISING THE RED FLAG.



We recently surveyed 350 scientists about their sample management processes. Nearly 60% of them reported having occasionally lost samples due to label failure, and almost half of those reported the loss impacted more than 2% of their samples.

As the number of samples grows, even marginal errors will bring significant repercussions to the future of your lab.



**TODAY—MORE THAN EVER BEFORE—SAMPLE
MANAGEMENT DESERVES YOUR ATTENTION.**

But just don't take our word for it.
Check out these three reasons why.

#1.

**THE BENCHMARKS
HAVE RISEN.**



**OF INSPECTED CLINICAL LABS WERE CITED FOR NOT
HAVING AN ADEQUATE QUALITY MANAGEMENT PLAN.**

The College of American Pathologists (CAP) cited 1.3% of the clinical labs it inspected for not having an adequate quality management plan.² The citations prompted CAP and other regulatory bodies to initiate a critical review of sample management procedures in the laboratory.

Needless to say, they found room for improvement.

Numerous regulators, funders and accrediting agencies have since heightened their policies on sample management. The new regulations are centered on one primary goal: **help your lab mitigate or eliminate sample loss.**

HERE ARE A FEW OF THE REGULATORY BODIES THAT HAVE RECENTLY ADDED SAMPLE-HANDLING POLICIES.

REGULATORY AGENCY	POLICY
The Joint Commission	National Patient Safety Goals (NPSG 01.01.01)
College of American Pathologists	Quality Management Plan
Clinical & Laboratory Standards Institute (CLIA)	AUTO12-A
Centers for Disease Control (CDC)	Laboratory Medicine Best Practices
National Cancer Institute (NCI)	Best Practices for Biospecimen Resources (Identification B.6.2)

#2. COLLABORATION IS KING.



As if the new regulations are not influential enough, there is another trend that is also transforming the way you manage your samples: collaboration. Research and clinical institutions are now joining together to achieve common goals, and cross-lab sample sharing is becoming the established norm.

READY OR NOT, COLLABORATION IS HERE.

So, what does this mean for you? It means that identifying, managing and analyzing data is no longer confined to the walls of your laboratory.



True collaboration will necessitate a movement towards universal, automated sample handling and tracking—and it will push any laboratory still relying on permanent markers and spreadsheets completely out of the picture.

You don't want to be one of them.

#3. THE REAL COST OF SAMPLE LOSS.



The third and final reason for prioritizing sample management is arguably the most important: **your existing processes are prone to errors.**

Here are a couple of examples:

IN PATIENT CARE, SPECIMEN IDENTIFICATION ERRORS ARE WIDELY REPORTED TO OCCUR AT A RATE OF 0.1% TO 5%. THAT'S 1 ERROR IN EVERY 1,000 LABELED SPECIMENS.³

1.2%

THE MISLABELING RATE AMONG BLOOD BANKS IS REPORTED AT A RATE OF 1.2%.⁴

THE NUMBERS MAY SEEM MARGINAL, BUT EVEN A SINGLE SAMPLE LOSS CAN HAVE SIGNIFICANT CONSEQUENCES FOR YOUR LAB.



SOME SAMPLE ERRORS ARE MERELY AN INCONVENIENCE. OTHERS CAN BE DEVASTATING.



In a research environment, sample loss can postpone or halt drug development and production.



In an academic laboratory, it can impair—or even void—your findings.



In an industrial biotechnology or pharmaceutical setting, it can compromise your quality control, data integrity, or drug safety. It also opens the door for the possibility of intellectual property loss.



IN ANY OF THESE SITUATIONS, A SINGLE SAMPLE LOSS CAN MEAN CRITICAL DATA OR INFORMATION WILL HAVE TO BE REPRODUCED—PUTTING MILLIONS OF DOLLARS AT RISK.

**IN PATIENT CARE,
TOLERANCE FOR LOSS
IS UNDERSTANDABLY
THE LOWEST.**



**OF DIAGNOSES ARE MADE BASED ON
LAB RESULTS. WHEN SAMPLE ERRORS
COMPROMISE THE ACCURACY OF
THOSE RESULTS, THE CONSEQUENCES
CAN BE SEVERE.**

Aside from the serious financial implications, errors can lead to patient anxiety, delays in diagnosis, or—in the worst cases—misdiagnosis and fatalities.

An accurate, reliable sample identification and tracking system is fundamentally important to the success of your lab. **There is no room for error.**

LET'S DO A QUICK RECAP.

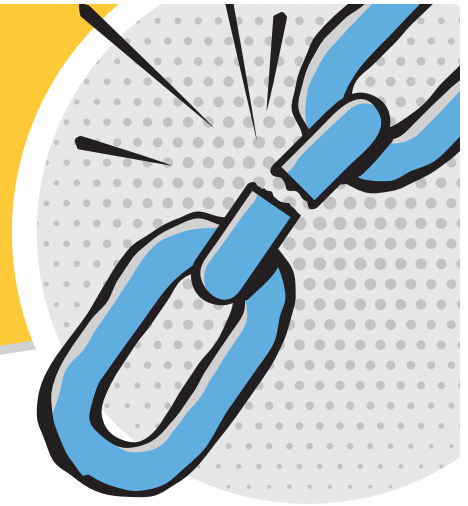


Thus far, this eBook has given you three reasons why sample management needs to be a priority in your lab:

- 1 THE BENCHMARKS HAVE RISEN.**
New policies are in place for identifying and tracking samples.
- 2 COLLABORATION IS KING.**
Your lab needs to be prepared to interact and share samples across a universal platform.
- 3 SAMPLE LOSS IS COSTLIER THAN YOU THINK.**
Manual sample management is prone to errors, which can result in devastating consequences for your staff, your patients, and your bottom line. In a clinical setting, the cost associated with one lost patient sample became a point of focus beginning as early as 2005 when the average cost of a lost sample was calculated at \$712.⁵

Next up: Taking the first step to better sample management.

THE FIRST STEP: FIND YOUR WEAKEST LINK.



WHERE IS YOUR WORKFLOW THE MOST VULNERABLE?

Below is a quick snapshot of a typical workflow, along with the key areas of risk associated with each phase.

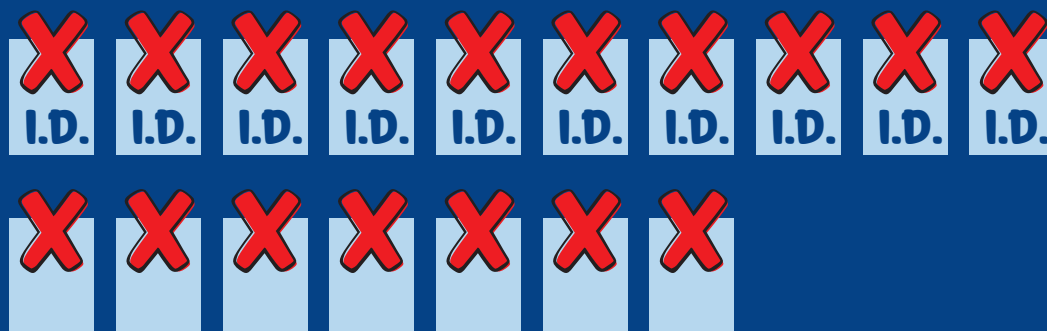
PHASE	WORKFLOW STEP	KEY AREAS OF RISK
Pre-Analysis	<ul style="list-style-type: none">• Determine tests and samples required• Sample preparation and labeling• Transportation of samples to the lab	Identification labeling error
Analysis	<ul style="list-style-type: none">• Tests and/or experiments• Obtain and analyze results	Data/sample alignment
Post-Analysis	<ul style="list-style-type: none">• Generate reports• Sample storage or disposal	Label failure

YOUR WEAKEST POINTS ARE LIKELY IN THE PRE-ANALYSIS PHASE, WHEN THE SAMPLE IS IDENTIFIED AND LABELED.



According to a study from the UCLA Medical Center, 50% of specimen errors are due to mislabeling.⁶

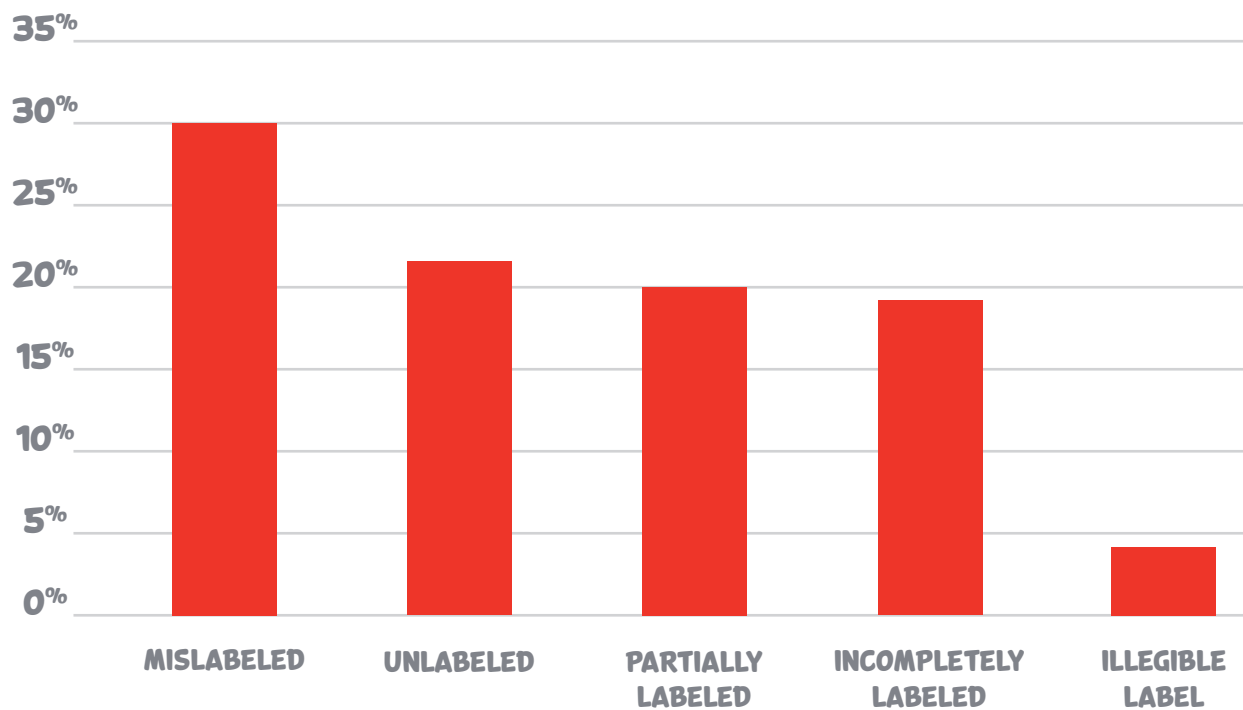
A 2008 review of more than 3.3 million specimen labels found similar results: 10 out of 17 errors were related to patient identification.³



MOST COMMON PRE-ANALYSIS LABELING ERRORS



Frequency of labeling error types



LOOK OUT FOR PESKY POST-ANALYSIS VULNERABILITIES, TOO.

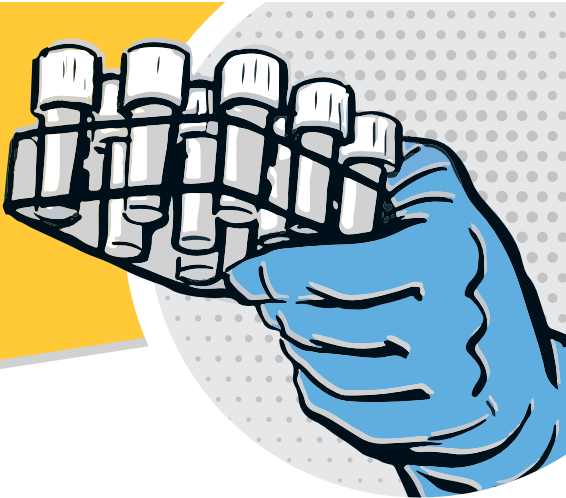
Beyond mislabeling, the biggest opportunity for risk is typically in the post-analysis phase.

**NEARLY 25%
OF OUR SURVEY
RESPONDENTS
REPORTED
HAVING A LABEL
FALL OFF DURING
PROCESSING.**

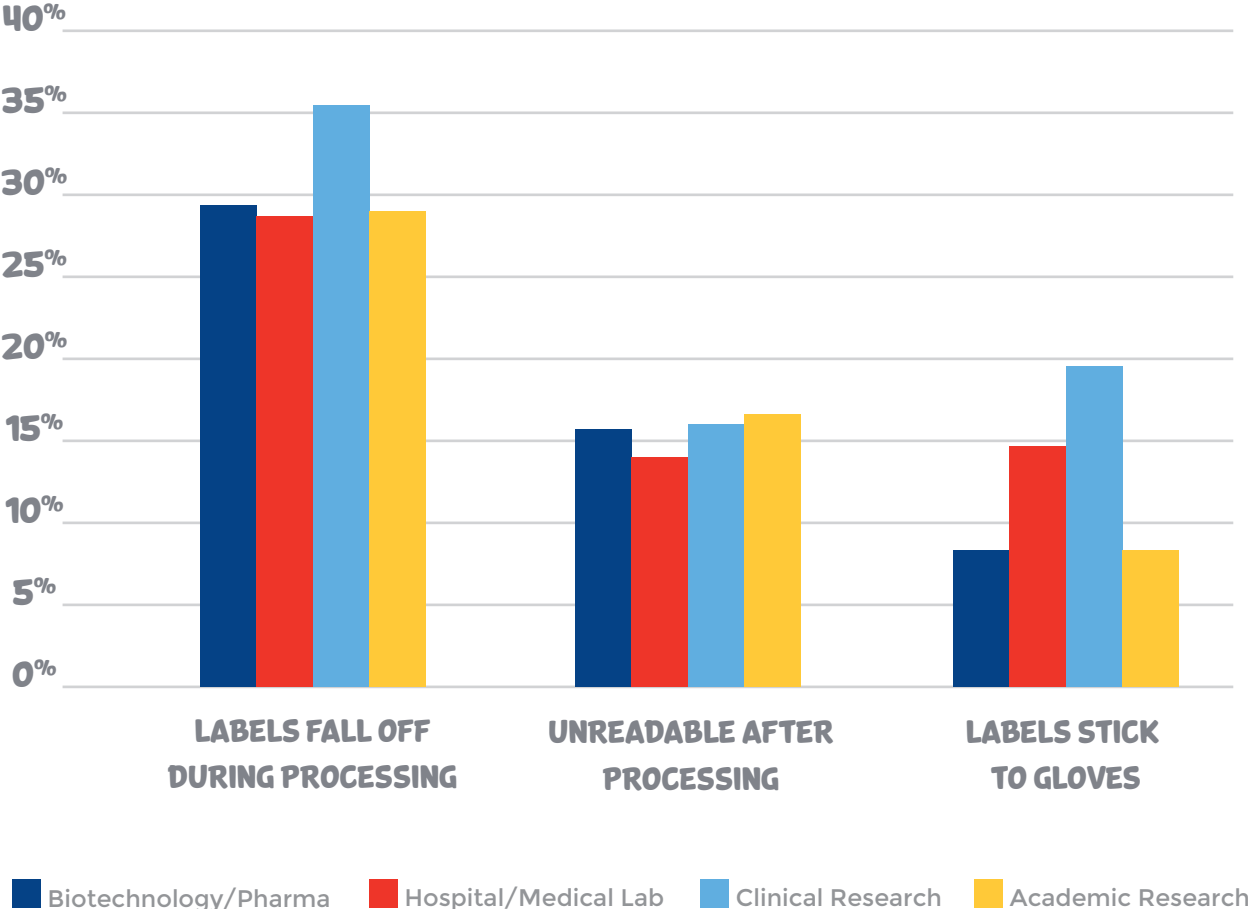
25%



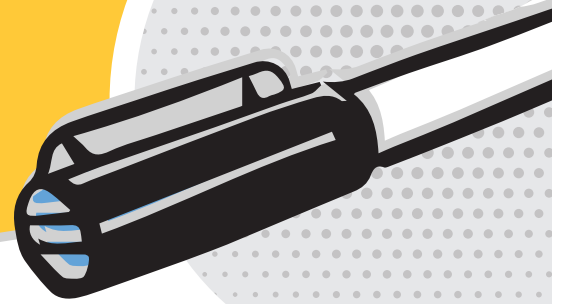
YOUR NEED TO PICK THE RIGHT LABEL IS CRITICAL



Most Common Types of Label Failure



STEP 2: ELIMINATE HANDWRITTEN LABELS.



The variability of handwriting is one of the biggest known risks in sample identification. Yet the majority of labs still report using semi-automated or non-automated processes that include handwritten labels.

If your lab is one of them, it's time to switch to machine-printed identification.

You can eliminate most errors by implementing a standardized barcoding system at the point of sample acquisition. This can be part of a larger LIMS or a simple stand-alone barcoding system. In either case, you will see substantial positive change.

Eliminating handwritten labels is one of the most dramatic improvements you can do for your lab.



HANDWRITTEN SPECIMEN LABELS HAVE BEEN REPEATEDLY SHOWN TO HAVE THE HIGHEST FAILURE RATES.⁷

STEP 3: USE THE MOST DURABLE LABELS FOR YOUR ENVIRONMENT

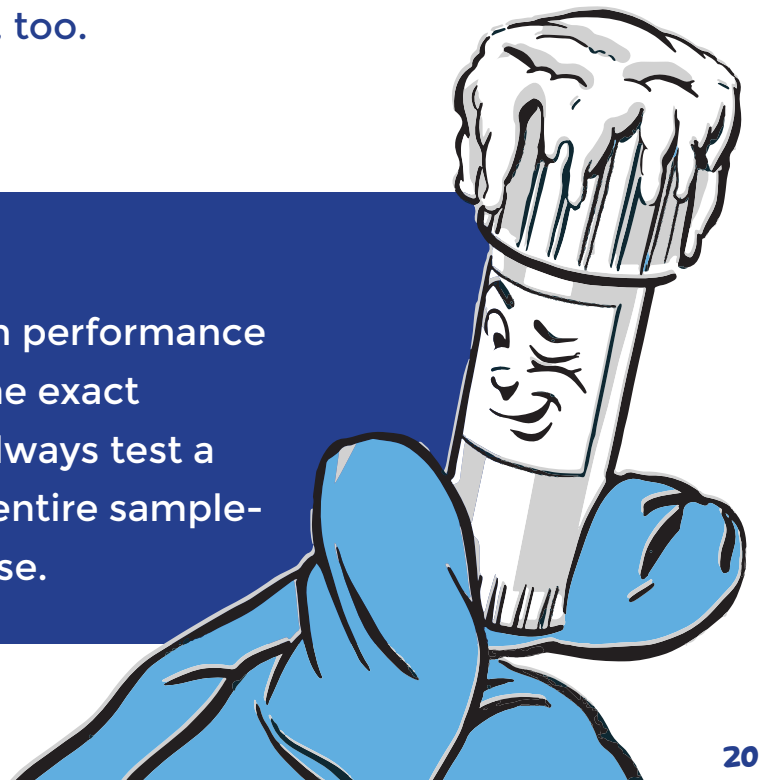


To eliminate label failure, be sure to use durable labels that have been tested for your environment.

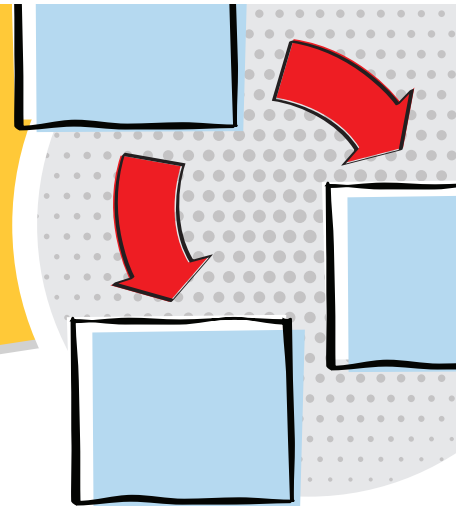
If your samples are exposed to temperature extremes, staining procedures and long-term storage, your labels should be proven to withstand those environments, too.

DO YOUR OWN TESTING!

Label manufacturers publish performance data, but it may not be to the exact specifications of your lab. Always test a new material through your entire sample-handling workflow before use.



STEP 4: OPTIMIZE YOUR WORKFLOW.



For maximum accuracy and efficiency, look for additional opportunities to improve your workflow.



TRANSITION TO AUTOMATED TRACKING.

Start by introducing printed labels with barcodes and 2D codes, then work towards implementing a full tracking protocol, complete with inventory management and workflow tracking.



IMPLEMENT LEAN IMPROVEMENT TECHNIQUES.

Developed by Japanese manufacturers, lean improvement methods provide a framework for further boosting efficiency and accuracy in your lab.



CREATE A CULTURE OF CONTINUOUS IMPROVEMENT.

Educate and train your staff to look for opportunities to improve your workflow. Then, put action plans in place to achieve your goals.

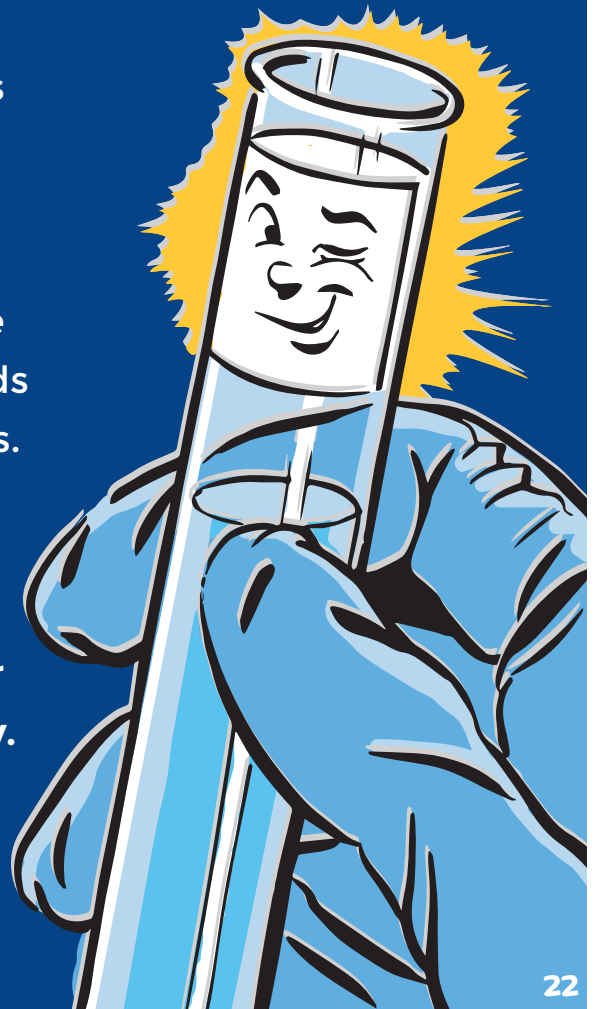
PREPARE YOUR LAB FOR A SUCCESSFUL TOMORROW.

Without question, the 21st century promises to bring dramatic changes. Changes to science, changes to medicine, and changes to your laboratory.

Sample management is just one facet of change that will impact your lab, but it is a pivotal one. And it is one that deserves your attention.

We encourage you and your staff to take the steps today to embrace new methods for identifying and tracking your samples.

With a few simple workflow changes, **you can reduce errors, boost sample certainty, and preserve and protect your samples for future studies and discovery.**



INTERESTED IN LEARNING MORE?



Check out our “Error Reduction” whitepaper, an in-depth report on industry trends, challenges and best practices for sample labeling and tracking.



**DOWNLOAD A FREE COPY OF THE
WHITEPAPER NOW AT:
WWW.BRADYID.COM/LAB**

SOURCES

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- ⁴ Erin Grimm, Richard C. Friedberg, David S. Wilkinson, James P. AuBuchon, Rhona J. Souers, and Christopher M. Lehman (2010) Blood Bank Safety Practices: Mislabeled Samples and Wrong Blood in Tube—A Q-Probes Analysis of 122 Clinical Laboratories. Archives of Pathology & Laboratory Medicine: August 2010, Vol. 134, No. 8, pp. 1108-1115.
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- ⁷ www.cmmc.org/cmmclab/sample-labeling.html