Sample Labeling

OZUMBA PETRONILLA JEAN

(H3A Biorepository PI Committee)

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Outline

- Introduction
- Labeling Methods
- Advantages & Disadvantages
- Choosing Labels
- Creating & Using Labels
- Future options
- Conclusion

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Introduction

- Correct labeling of specimens is vital for translational or clinical studies, linking clinical data with bio specimens.
- While patient privacy must be protected, confusing or inadequate labeling can potentially result in the study of wrong bio specimens with detrimental effects to the accuracy of published findings or a requirement for invaluable bio specimens to be discarded.

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Specimen Labeling Guide

- Every individual tube, container, specimen must be labeled/correctly.
- Label elements must be clearly defined
- Use a minimum of 2 unique identifiers to track specimen
- Link to parent sample.
- Ample space for elements
- Validate labels to ensure quality given anticipated environment

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Labeling Methods

Hand written label

- Cryogenic labels
- Cryomarkers
- Waterproof/solvent markers

Electronic label

- Cryogenic labels (Word & Laser/inkjet)
- Barcode labels

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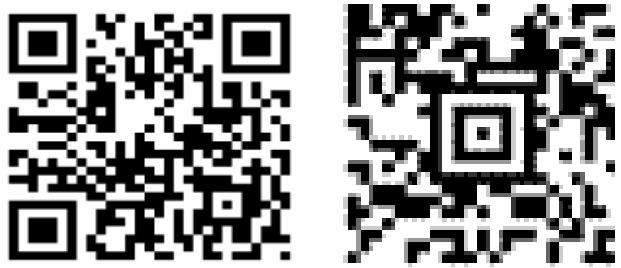
Barcode Types?

- Linear, one-dimensional (1D) barcodes are based on bars and spaces, such as on Universal Product Code (UPC);

- Newer, two-dimensional (2D) barcodes are based on "dot" locations within a matrix, such as data matrix and Aztec codes;



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Handwritten vs. Electronic

Hand written label

- ❑ > Hands on time
- ❑ > Risk of errors
- ❑ Quality varies

- ❑Cheap
- ❑Easily accessible
- ❑ < resources

Electronic label

- ❑More expensive
- ❑Less accessible
- ❑Requires > resources

- ❑< Hands on time
- ❑< Risk of errors
- ❑Standard quality

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Choosing Labels

Expertise

Costs

Hardware

Compatibility

Software

Environmental Conditions

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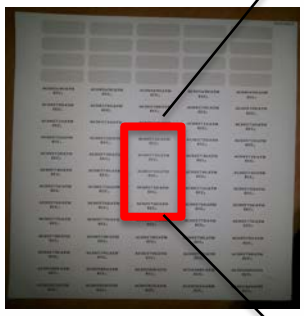
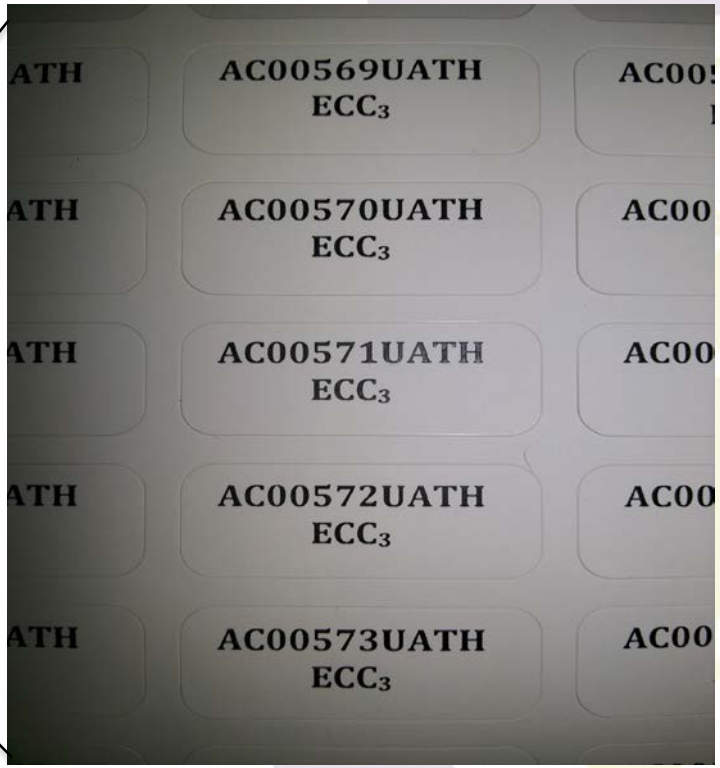
Creating Labels I:

1. Consult package insert for template
2. Design/configure Label
3. Save Label
4. Print test page
5. Adjust as required
6. Print labels





E.g. Cryotags (Cryobaby)

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Creating Labels II:

- Design label within software .
- Select samples to print labels for (usually via search option).
- Select desired label configuration from list.
- Print desired # labels per sample.

E.g. Laboratory Information Management System (LIMS)

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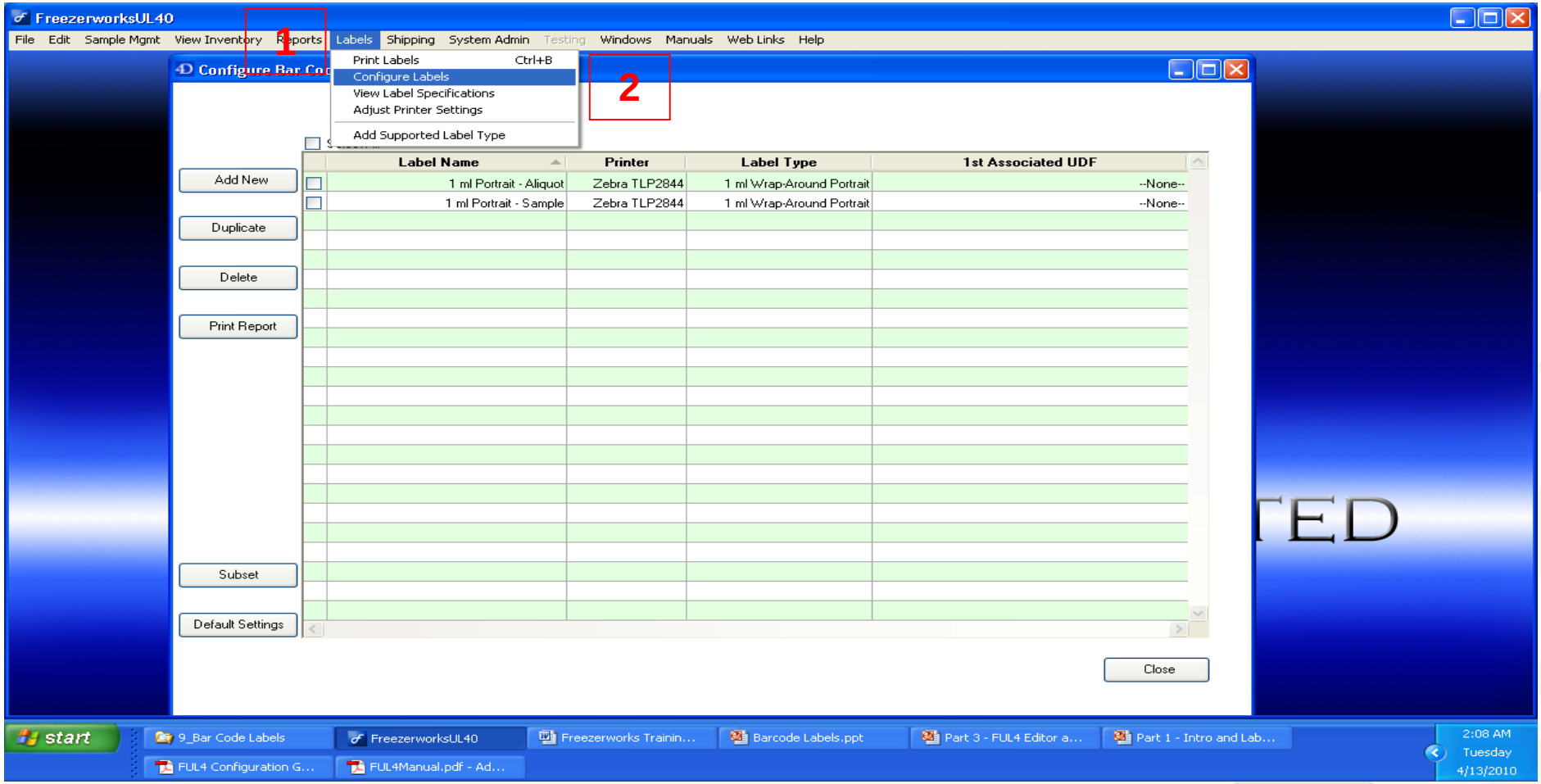
Configuring Labels In Freezerworks: I



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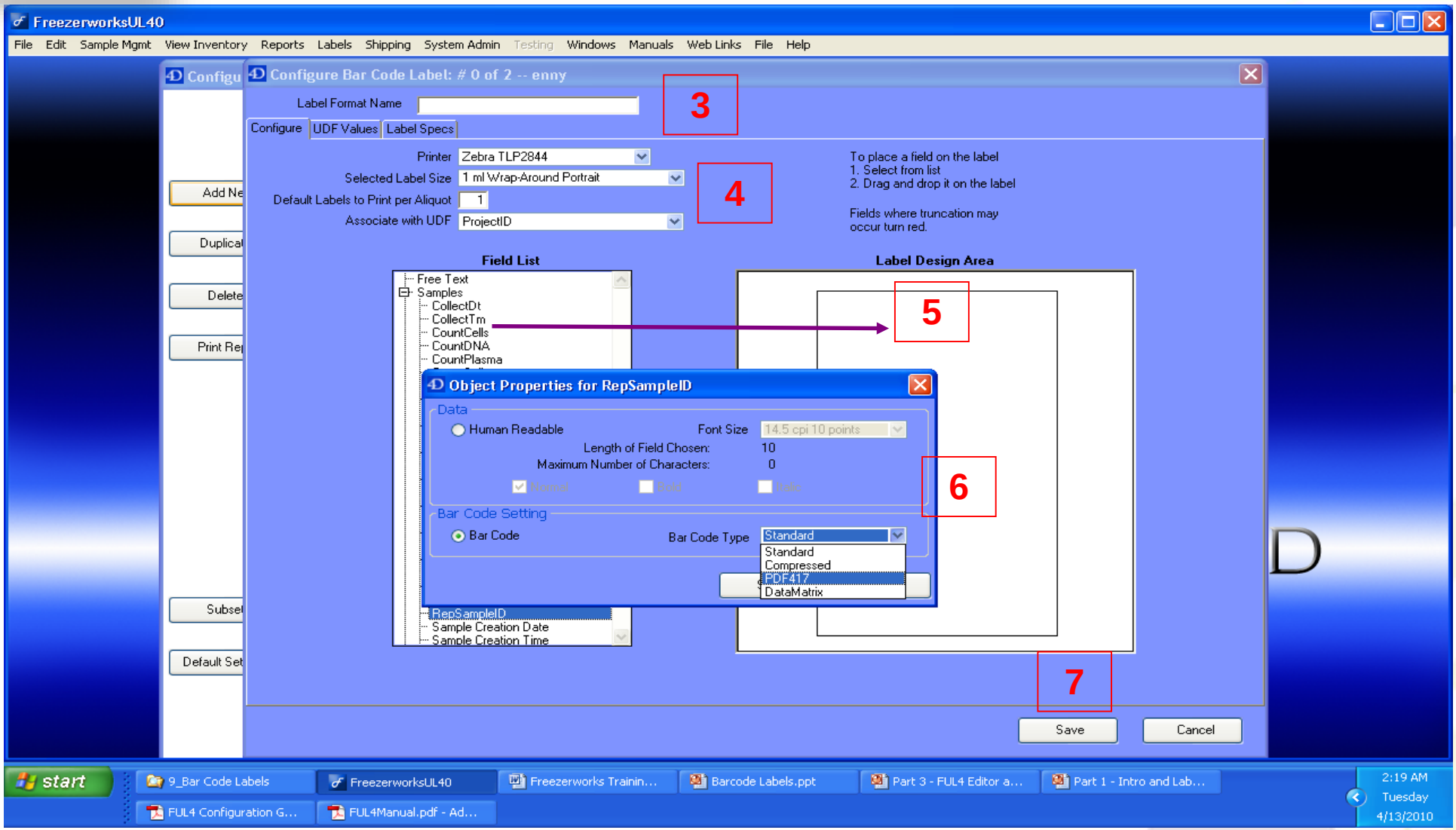
Configuring Labels In Freezerworks: II



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Applying Labels

- Arrange samples & labels in same order
- Crosscheck ID against parent tube
- Neatly & carefully apply
- Minimize bubbles
- Do not allow to hang off tube
- Do not cover elements of label
- Adhere firmly to tube

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Sample Labeling – Current Practice

- Handwritten label using markers??
- Use of Cryogenic labels??
- Use of Barcode Labels??

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Future Option- Sample Barcode Labels-I

General Principles:

- Standardized barcoding system that is administered centrally
  - Unique sample identification
  - Tracking option
- Flexibility to accommodate research sites at different levels of IT support / sophistication.
- Incorporates the Standard Pre-analytical code (SPREC) for bio specimens in addition to unique identifiers.
- QC

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Future Option- Sample Barcode Labels-II

- Unique Site Identification
- Unique Sample Identification
- Quick reference for area of origin (East Africa, West Africa etc.)
- Pre-analytical sample information (SPREC coding)
- 1D/2D Scannable barcode
- Important to include human-readable indications of contents.
- Label with at least 2 human-readable forms of identification on them

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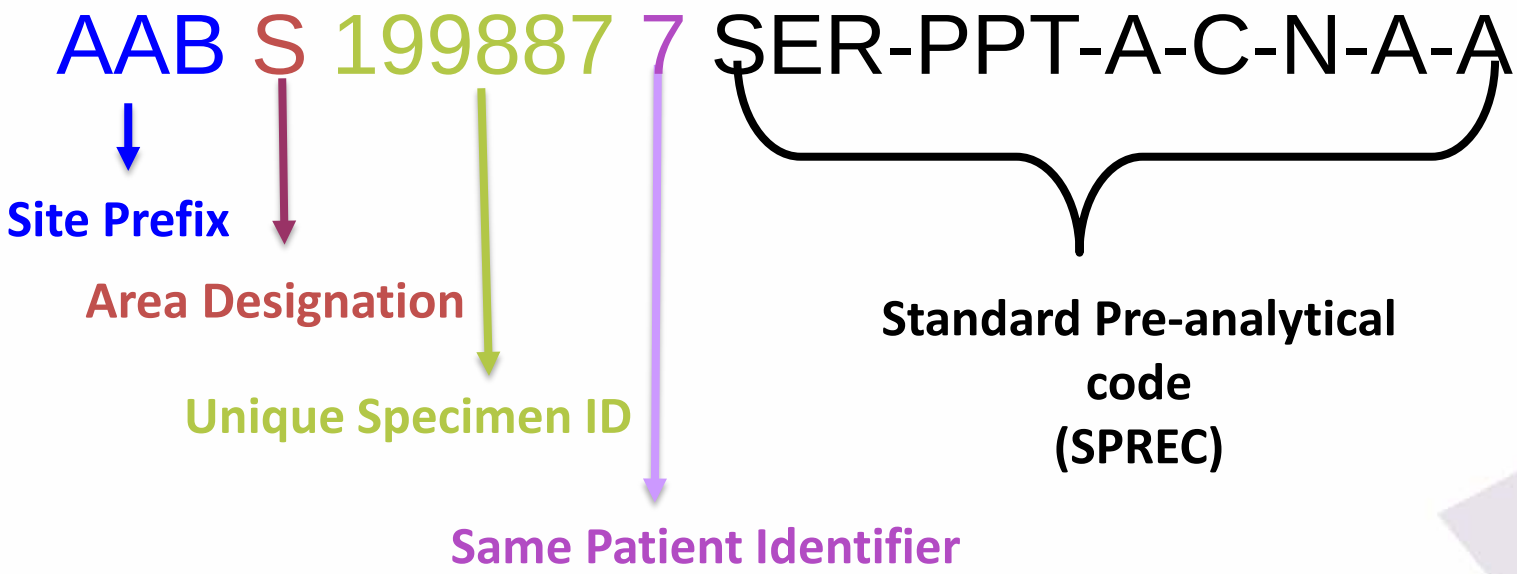
Future Option- Sample Barcode Labels-III



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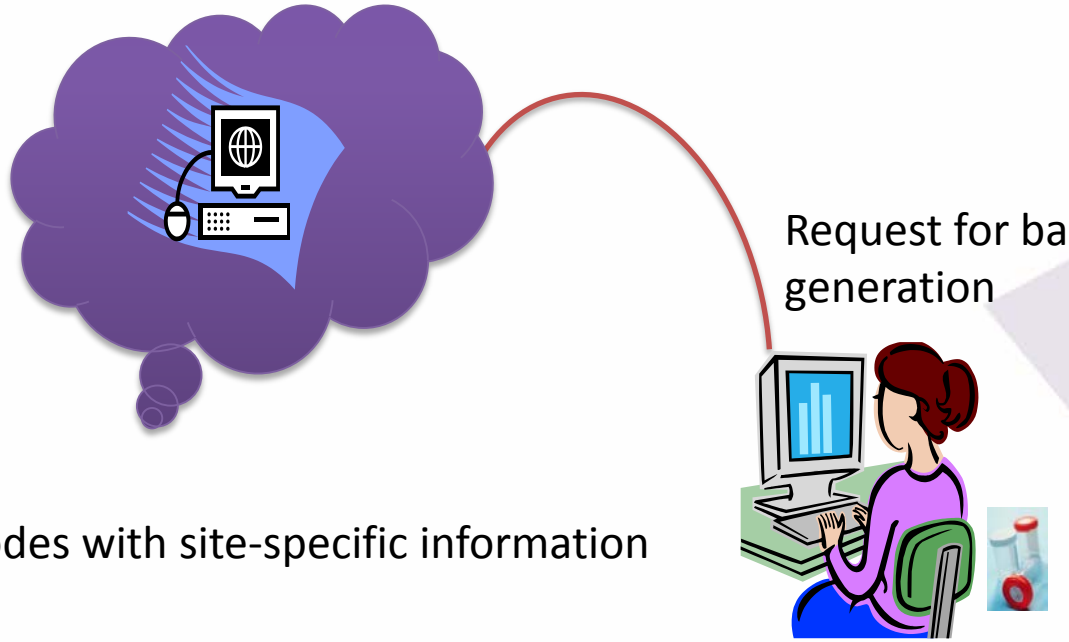
Barcode Generation?

- Onsite barcode generation
- Online, Cloud-based engine for barcode generation & distribution



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In Conclusion

- The concept is to establish consistency in label content, format etc.
- Use of barcoding system has been identified as best practice for reducing specimen identification errors (CDC, 2011)
- Adoption of this standard by all, will contribute to a reduction in specimen labeling errors.

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