Current problems in hospital blood bank audit

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Agenda

- Audit
- Quality assurance
- Pre-examination, examination and post-examination stages
- **Pre-ANALYTIC PHASE (taking samples)**
- **ANALYTIC PHASE(Pre-transfusion testing)**
- **POST-ANALYTIC PHASE**

The audit

- The organization of an action
- The audit is an arrangement of evaluation and measurement
- Quality Assurance continuous improvement

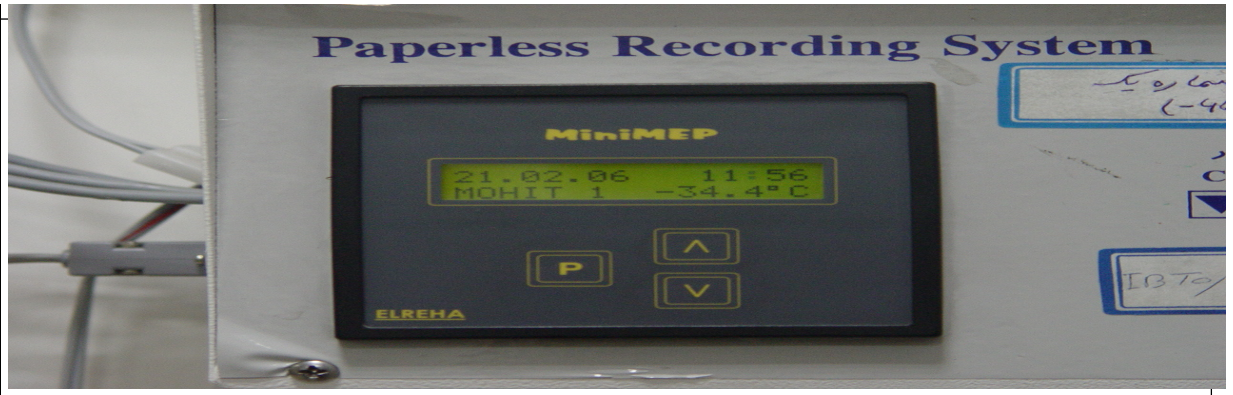
Quality Assurance

- Well-built SOPs
- Well trained personnel who carefully obey to SOPs
- Wide-ranging guidelines

- Evaluation of organization and management
- Accommodation and environment
- personnel
- Equipment
- External Services: Supplies & Reagents
- process Control
- Identification of deviations and Adverse Effects
- performance Improvement
- Records, Document Control, and Internal Audit.

The most common problem

- The blood bank refrigerator is an essential piece of equipment in the immunohematology department and provides safe and convenient storage of whole blood, blood components (e.g.blood cells, plasma), and reagents.
- Blood bank refrigerators ensure freshness and integrity of blood and blood components.

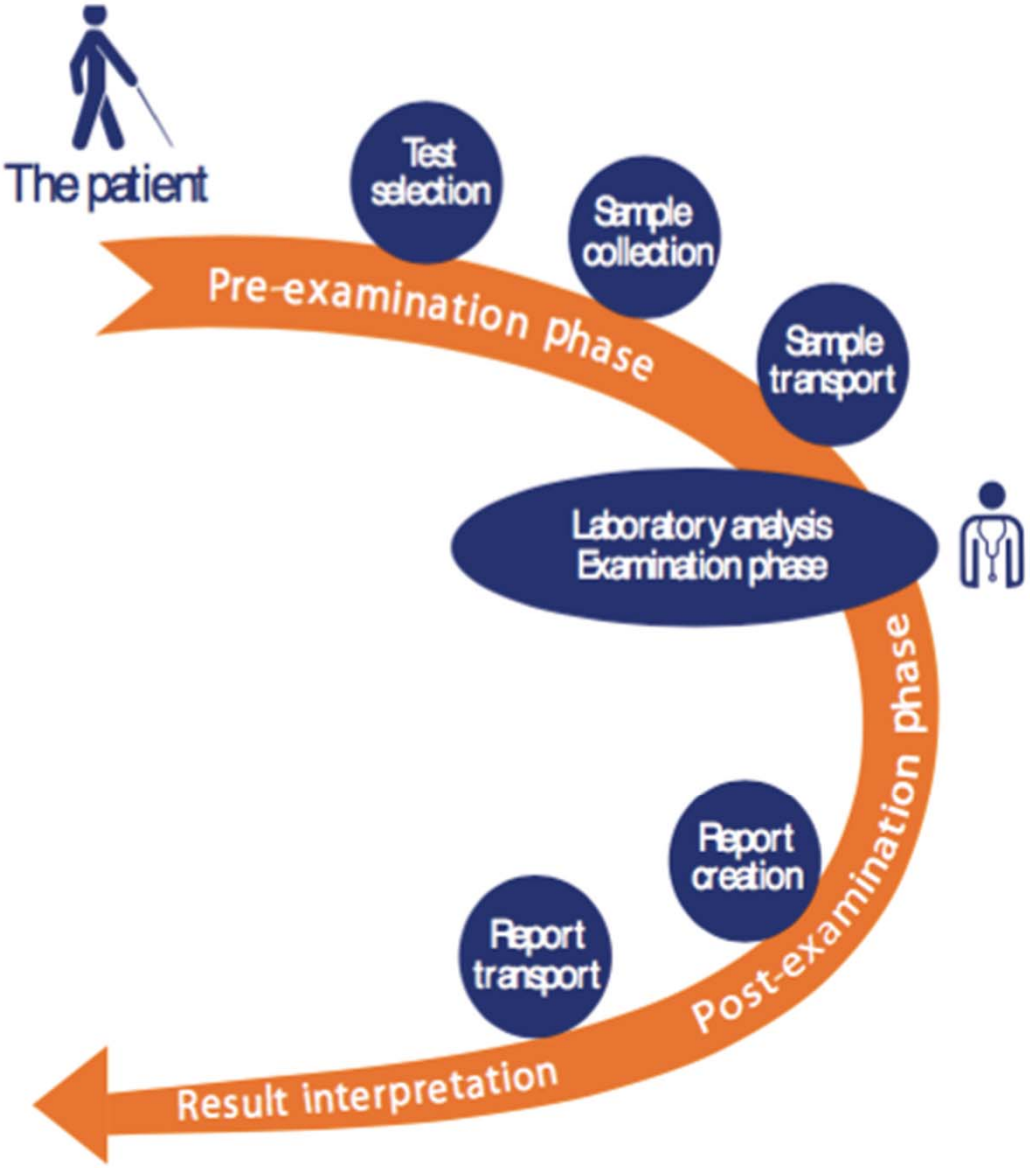


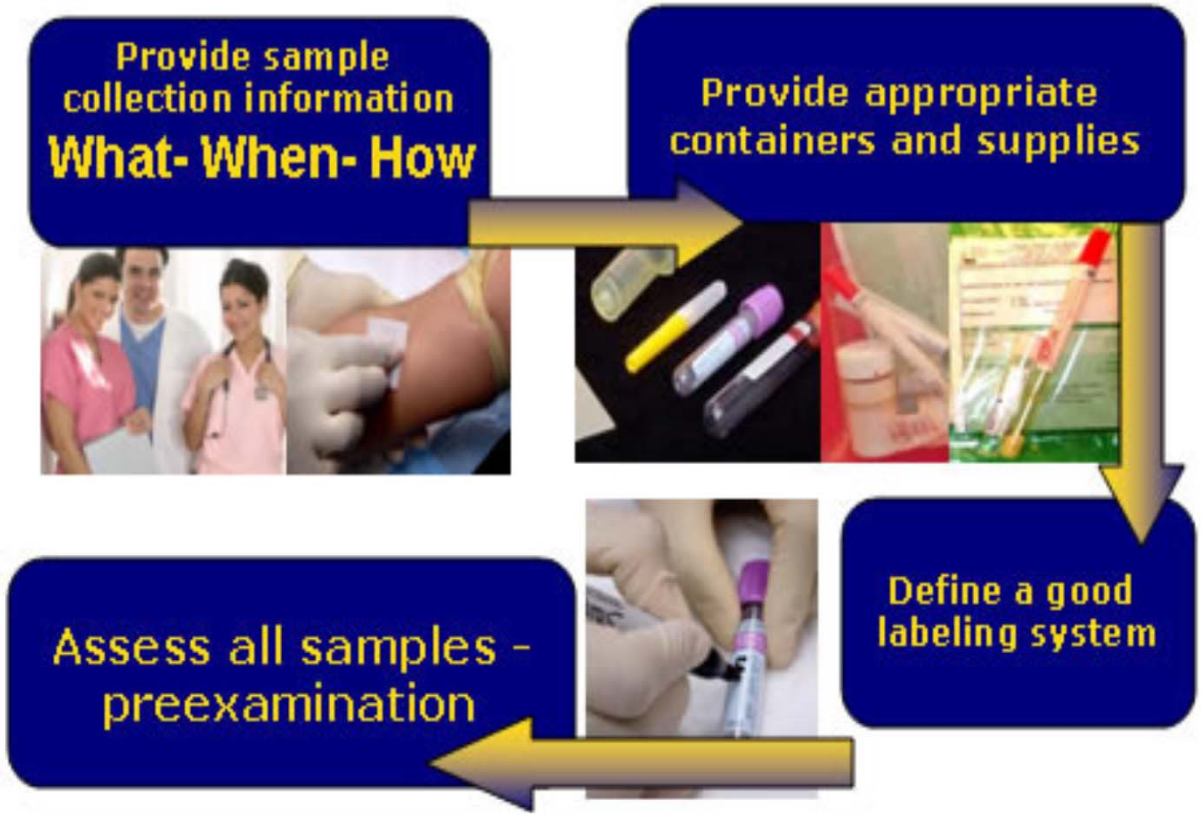
- Refrigerator is installed in setting of use.
- Line power is plugged in.
- When refrigerator reaches desired temperature, it is safe to use.
  - Laboratory technician should continuously monitor the temperature of the refrigerator. The technician should also check backup power systems periodically.

The most common problem

The most common problems involve the temperature-alarm system and the monitoring of refrigerator temperature.

The alarm should be tested at monthly intervals to ensure proper operation. Because backup power sources have been known to fail, written instructions should be readily available to explain how to determine the cause of any temperature problem and how to handle temporary and prolonged power failures.


The patient
Test selection
Sample collection
Sample transport
Pre-examination phase
Laboratory analysis
Examination phase
Report creation
Report transport
Post-examination phase
Result interpretation


Provide sample collection information
What- When- How
Provide appropriate containers and supplies
Define a good labeling system
Assess all samples - preexamination

- The first step in the process of obtaining the sample is the request for testing.
- The laboratory must make available a test request form that specifies all the information that will be needed for proper handling and reporting.
- Essential information for the test request form includes:
- • patient identification;
- • tests requested;
- • time and date of the sample collection;
- • source of the sample, when appropriate;
- • clinical data, when indicated;
- • contact information for the health care provider requesting the test.

Field Data Collection Form

General patient information
Name:
Address:
Country:
County:
City/town/village:

Tracking record number
Date of Birth (dd/mm/yyyy):
Sex: M [ ] F [ ]
Nationality:
Occupation:

Date of onset of illness (dd/mm/yyyy):

Clinical specimens

Unique ID No.	Type	Date of collection	Clinical diagnosis	Health status when specimens collected	Remarks

Post-mortem specimens

Date of death(dd/mm/yyyy): ___/___/___

Name of person completing form:_____
Institutional affiliation: _____
Contact details: _____
Date(dd/mm/yyyy): ___/____/____

Sample collection requirements

- Sample collection and preservation will vary, depending on the test and the type of sample to be collected. The laboratory must carefully define a sample collection process for all tests it performs. The following should be considered when preparing instructions:
- • **Patient preparation**—Some tests require that the patient be fasting. There may also be special timing issues for tests such as blood glucose, drug levels, and hormone tests.
- • **Patient identification**—The person collecting the sample must accurately identify the patient. This might be done by questioning the patient, by questioning an accompanying family member, or by the use of an identifying wrist band or other device.
- • **Type of sample required**—Blood tests might require serum, plasma, or whole blood. Other tests might require urine or saliva. Microbiology testing deals with a variety of sample types, so specific information as to what is required for the test is needed.
- • **Type of container**—The container for the sample is often very important, as it will affect volume and any needed additives such as anti-coagulants and preservatives. If the container does not control volume, for example as with Vacutainer® tubes, this will need to be clearly specified. Some microbiology samples will require specific transport media to preserve microorganisms.
- • **Sample labeling**—All requirements for labeling of the sample at the time of collection will need to be explained in detail in the instructions for collection.
- **Special handling**—Some samples may require special handling, such as immediate refrigeration, protection from light, or prompt delivery to the laboratory. Any important **safety precautions** should be explained.

Sample labeling

- Each sample should be clearly labeled with:
- • the patient's first and last name;
- • a unique identification number – this might be a hospital number or a
- number assigned by the laboratory;
- Sample Management
- • the test that has been requested;
- • the time and date of collection;
- • the initials of the person collecting the sample.

potential outcomes of collection errors

- Proper sample collection is an important element for good laboratory practice.
- Improper collection of samples can lead to poor outcomes, such as:
- • delays in reporting test results
- • unnecessary re-draws/re-tests
- • decreased customer satisfaction
- • increased costs
- • incorrect diagnosis / treatment
- • injury
- • death.

Verification of quality

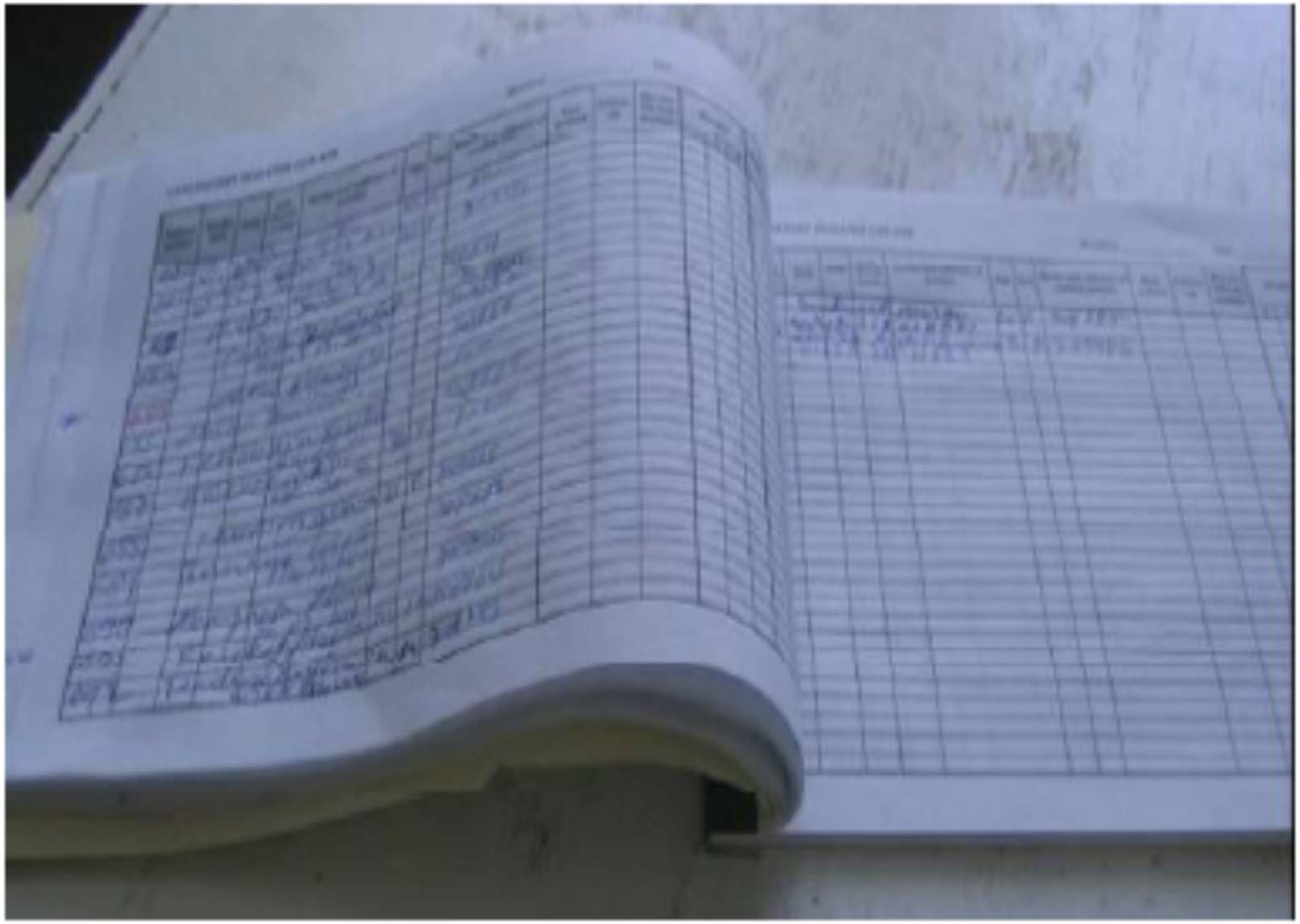
- Once a sample enters the laboratory, there are a number of steps needed prior to testing. These pre-examination steps include:
- • verifying the sample is properly labelled
- adequate in quantity
- in good condition
- appropriate for the test requested. The test request must be complete and include all necessary information;
- • recording sample information into a register or log;
- • enforcing procedures for handling sub-optimum samples, including sample rejection, when necessary.

Rejection of samples

- The laboratory should establish rejection criteria and follow them closely. It is sometimes difficult to reject a sample, but remember that a poor sample will not allow for accurate results. It is the responsibility of the laboratory to enforce its policies on sample rejection so that patient care is not compromised.
- Management should regularly review the number of rejected samples and reasons for rejections, conduct training on sample collection, and revise written procedures for sample management as needed.
- The following are examples of samples that should be rejected:
- • unlabeled sample;
- • broken or leaking tube/container;
- • insufficient patient information;
- • sample label and patient name on the test request form do not match;
- • hemolyzed sample (depending on test requested);
- • non-fasting samples, for tests that require fasting;
- • sample collected in wrong tube/container; for example, using the wrong
- preservative or non-sterile container;
- • inadequate volume for the quantity of preservative;
- • insufficient quantity for the test requested;
- • prolonged transport time, or other poor handling during transport.

- The laboratory should keep a register (log) of all incoming samples. A master register may be kept, or each specialty laboratory may keep its own sample register.
- Assign the sample a laboratory identification number – write the number on the sample and the requisition form. If computers are used for reports, enter the information into the computer.

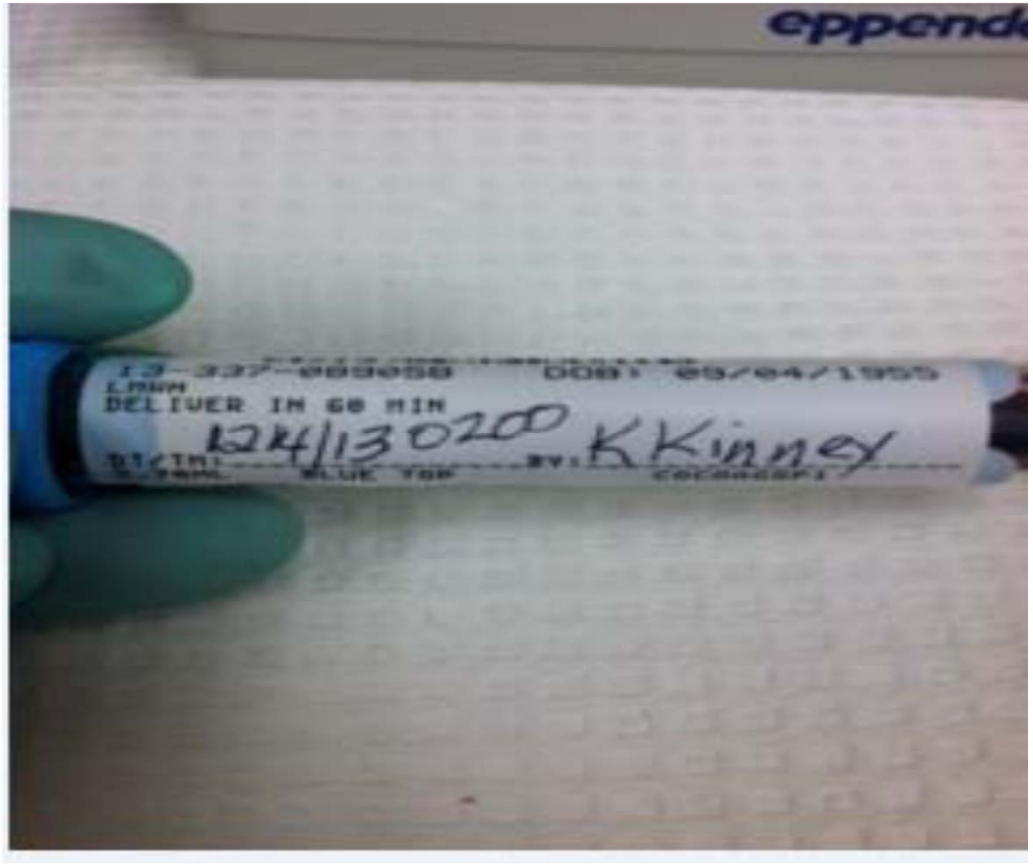
- The register should include:
- • date and time of collection;
- • date and time the sample was received in laboratory;
- • sample type;
- • patient name and demographics, as required;
- • laboratory assigned identification (e.g., number ;(2009_06_01_276)
- • tests to be performed.



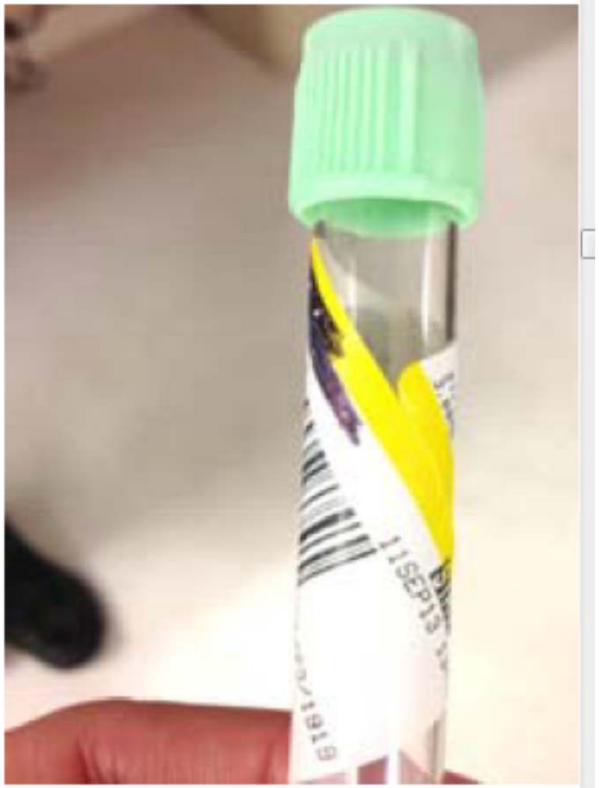
Handle all samples as if infectious

Guidelines for Specimen Identification and Labeling for Power Chart and Lifepoint Users

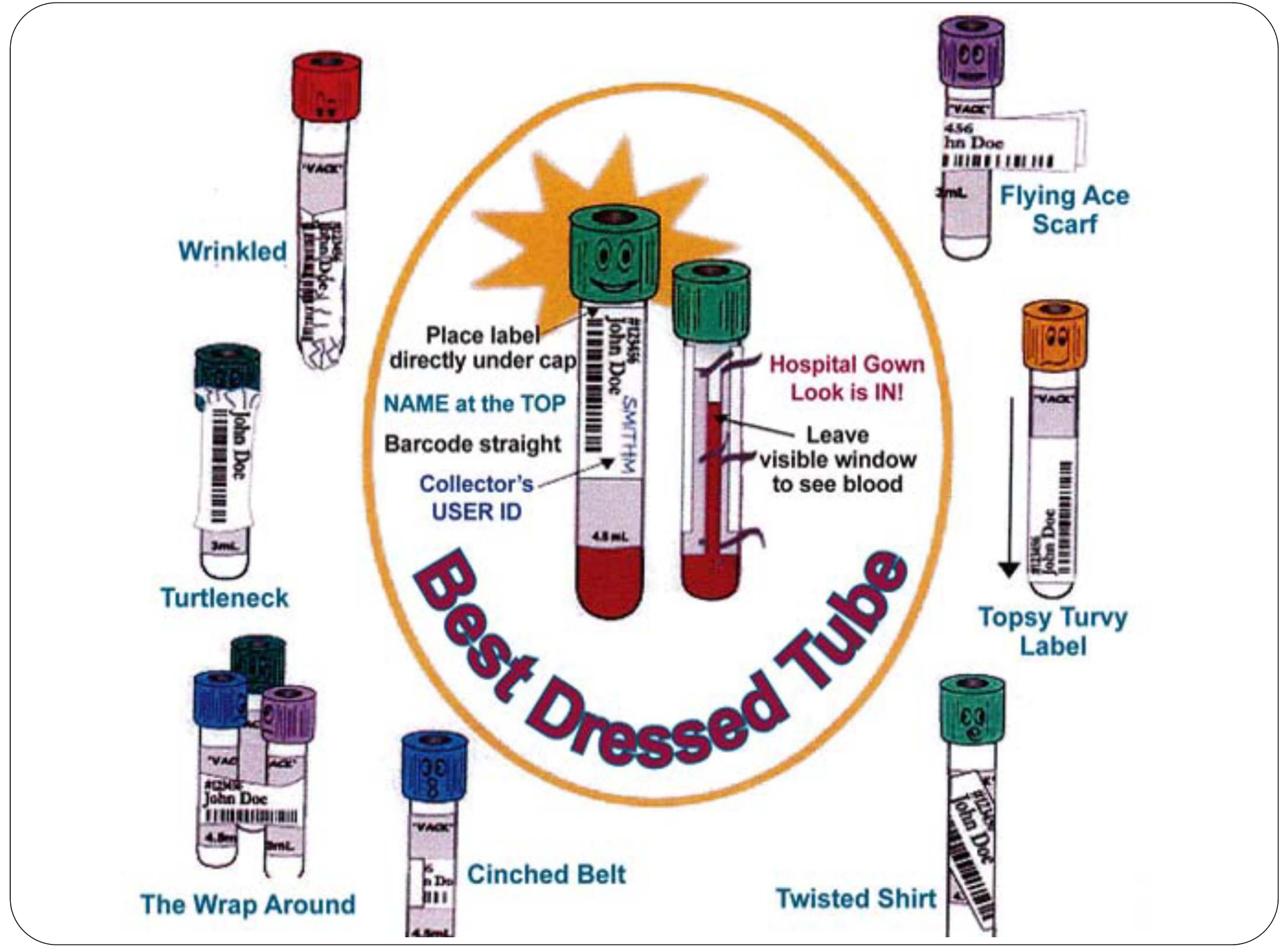
- **General Information**
- Positive patient identification is the first and one of the most important steps in assuring accuracy of patient care delivery.
- ☐☐ Whenever possible, identifying the patient prior to obtaining a specimen for clinical testing should include
- asking "What is your name?" rather than, "Are you…?" Verification information, such as Medical Record Number, Social Security Number, or birth date should follow. When a wristband is worn, this information should match the information on the labeled specimen.
- ☐☐ Labeling of the specimen should occur in the presence of the patient. This allows a double check of
- patient information on the wristband, the specimen label, and the requisition/chart. This also prevents mislabeling with another patient's specimen labels.
- ☐☐ Any specimen requiring testing performed by the Blood Bank/Transfusion Service, MUST have the identification of the person who collected & labeled the specimen plus the I.D. of a witness.


eppend
DELIVER IN 60 MIN
12/4/13 0200
K Kinney


epp
04DEC13 0401
Polanco, Walter
DEKR U6763-P




LIPASE

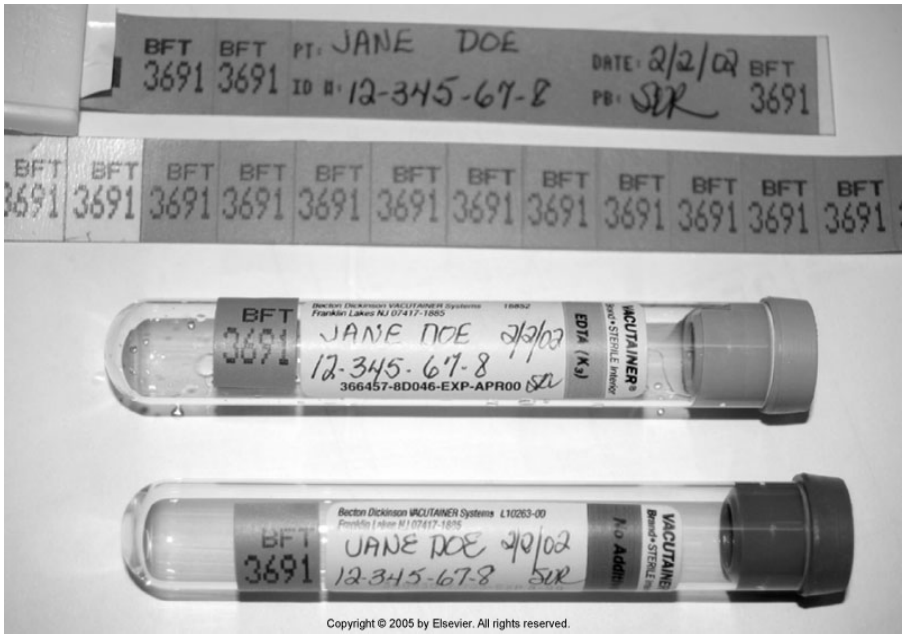

Wrinkled
Turtleneck
The Wrap Around
Cinched Belt
Twisted Shirt
Topsy Turvy Label
Flying Ace Scarf
Place label directly under cap
NAME at the TOP
Barcode straight
Collector's USER ID
Hospital Gown Look is IN!
Leave visible window to see blood
Best Dressed Tube

Patient Identification

http://www.usatoday.com/tech/news/techinnovations/2006-07-17-chips-everywhere_x.htm

- Must confirm recipient's ID from bracelet ON the patient
  - Full patient name and hospital number
  - Name of physician

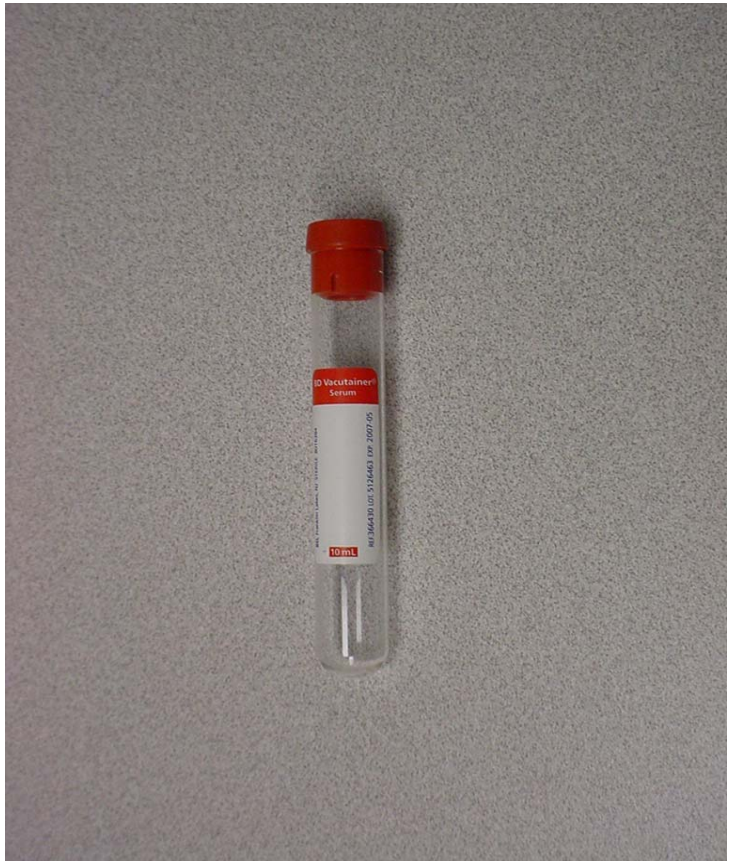
Sample Identification



- The sample should also have the full patient name, hospital number, and physician
- Date and time of collection, phlebotomist's initials
- All of this should be on the request form and the sample

Specimen Tubes

Pink Top - EDTA



Red Top – no additives

Getting the history

- Look at recipient's records for any prior unexpected antibodies
- Previous transfusion reactions

ANALYTIC PHASE

- All analytic testing relies on good serologic technique. Adherence to validated procedures is essential.
- Techniques and reagents used as part of an investigation protocol must be used as directed in the manufacturer's packages inserts or they require sufficient validation and appropriate controls to ensure valid test results.

Serological Testing

- 3 tests:
  - ABO/Rh
  - Antibody detection/identification
  - Crossmatch

When anomalous ABO groups are encountered laboratory protocols should support investigation of the following findings.

Missing agglutinins in reverse grouping:

obtain the patient's history, and review for information which may explain missing agglutinin (e.g. age, immunodeficiency)

repeat the reverse group, increasing the sensitivity of the test, consider the use of tube techniques, lower incubation temperature, increased plasma:cell ratio and enzyme-treated red cells

Unexpected additional reactions in the reverse group:

investigate the presence of allo- or autoantibodies active at temperatures below 37°C

consider repeating the reverse group at 37°C

consider repeating the reverse group using cells negative for any identified alloantibody.

- Genotyping is useful in resolving grouping problems, particularly weak and partial D types . Genotyping alone must not be used to determine the ABO group for use in selection of blood for transfusion. Where the patient ABO group cannot confidently be assigned by serology, group O (high-titre negative) blood must be selected

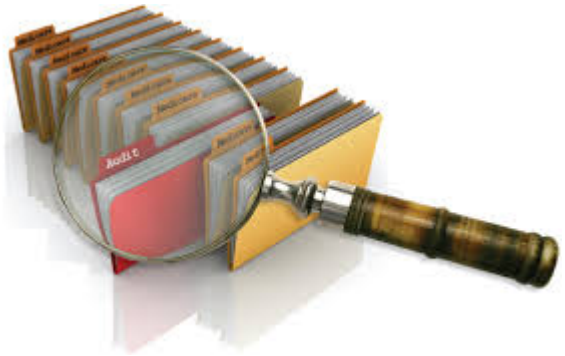
PROBLEM SOLVING PROTOCOLS

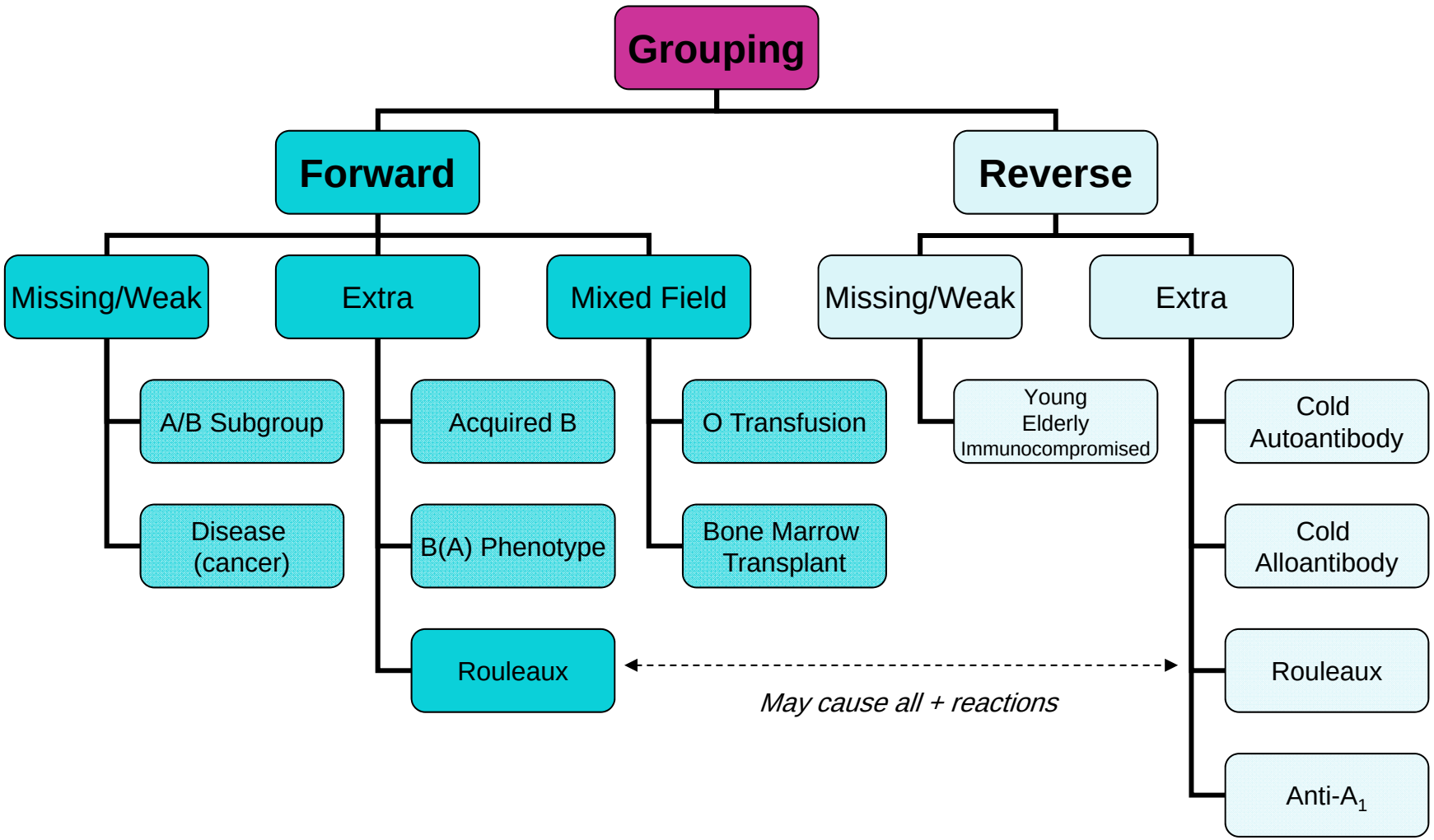
These protocols must be reasonably standardized

to minimize human error and ensure optimal efficiency and safety. As more detailed investigation is undertaken,

some flexibility in the protocols may be required to allow for appropriate procedures, based on the clinical,

serologic and historical information.




Grouping
Forward
Reverse
Missing/Weak
Extra
Mixed Field
Missing/Weak
Extra
A/B Subgroup
Disease (cancer)
Acquired B
B(A) Phenotype
Rouleaux
O Transfusion
Bone Marrow Transplant
Young
Elderly
Immunocompromised
Cold Autoantibody
Cold Alloantibody
Rouleaux
Anti-A1
May cause all + reactions

POSTANALYTIC PHASE

- The key processes in the postanalytic phase of pretransfusion testing include the issue of crossmatched donor units, any additional processing required, transport and administration of the units and documentation of testing and transfusion. Any discrepancies detected in these processes must be investigated.
- Unequivocal patient identification is required for transfusion. If there is any doubt as to the link between the patient and donor units, the discrepancy must be investigated and resolved prior to transfusion.
- Patient records must be reviewed to ensure that accurate information is recorded.

Emergence


Emergency
Protocols

AUDIT IN TEHRAN'S HOSPITAL

blood bank	Improvement
Refrigerator	88.9%
Freezer	61%
Shaker incubator	50%
Calibration	61%

Audit in hospital blood banks

	1385	1394
Cross match	44.4%	100%
Ab-screening	5.5%	22.2%

Blood grouping	Percentage change
Slide to tube test	44.4%
Tube to slide test	11.1%
Tube to tube (without change)	27.8%
Slide to slide (without change)	16.7%

Summary

- Pre-analytic phase
- Analytic phase
- Post-analytic phase
- Personnel(education, SOP , competency)
- Solving problems Protocols
- Emergency


Thank you for your attention