Improve Emergency Department Lab Draw Specimen Integrity – Change Project

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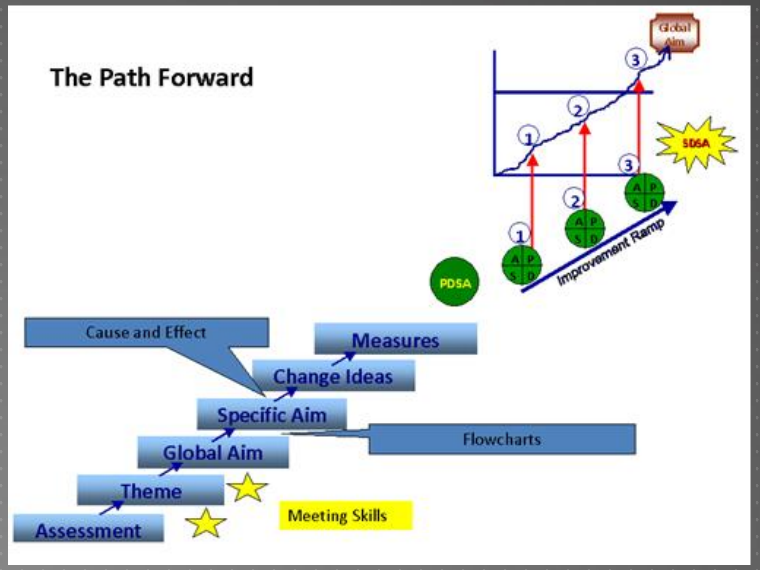
GLOBAL AIM

- To improve the integrity of the CBC and Chemistry blood draws in the geriatric population greater than 65 years of age in the main emergency department.

- Dartmouth QI Microsystems Model



Reference: *Dartmouth Instituted For Health Policy and Clinical Practice: (2010)* www.clinicalmicrosystem.org

Assessment - 5 P's

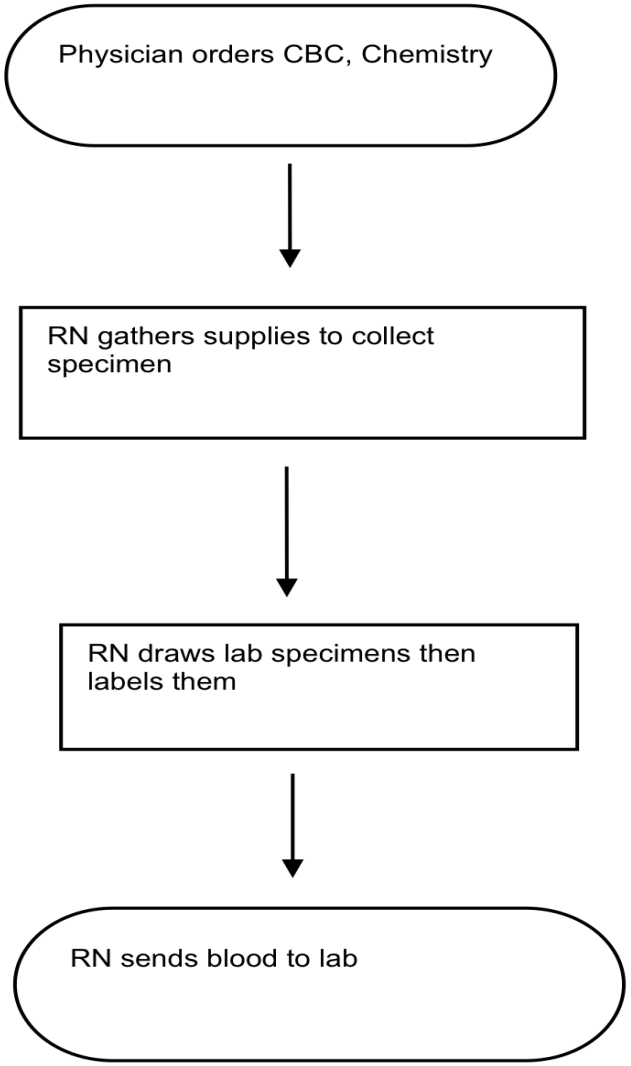
- **Purpose:** *Improve acceptable lab draws in elderly patients in the main emergency department*
- **Patient:** *Elderly patients > 65 years old*
- **Professional:** *Registered Nurses, physician, lab supervisor, lab technologists*
- **Processes:** *Inappropriate or insufficient specimen lab draws for CBC and Chemistries*
- **Patterns:** *Physician order – RN draw – RN handling of specimens – RN sending specimen to lab*

Plan – P
Do – D
Study – S
Act – A

SIGNIFICANCE

- Volume for 2014 in main ED: 69,322 pts/yr
- Volume of elderly 65 & > : 17,355/ yr
  - 25% of patients in main ED in 2014 are 65 y/o or greater
- Labs: total in 2014 – 112,392 specimens/yr
- Labs: total for 2014 - 65 y/o or greater – 7, 476 specimens/yr
  - 6.7 % of total lab draws on elderly patients 65 y/o and greater

Macro Flow Chart



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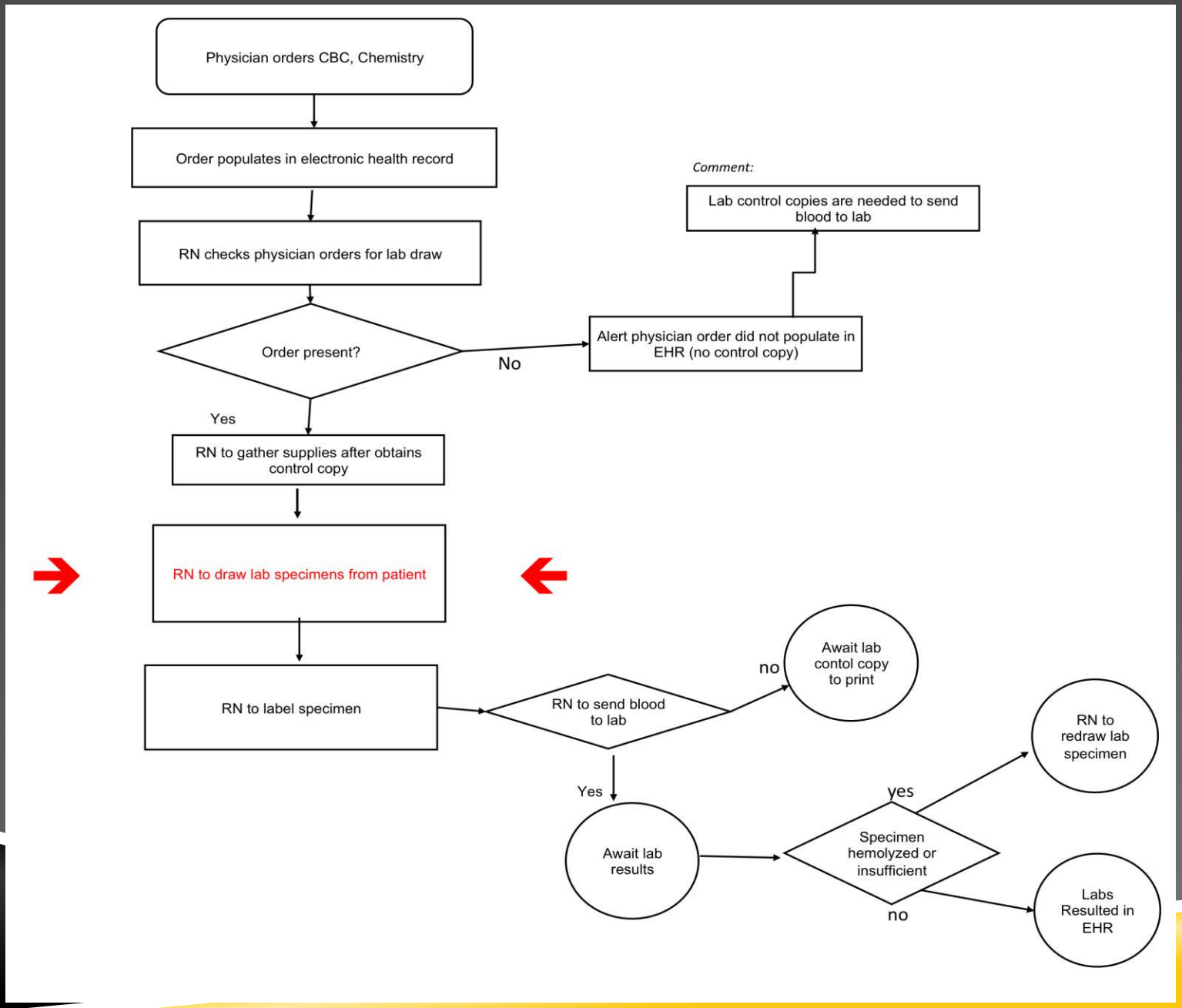

Micro Flow Chart

Plan – P
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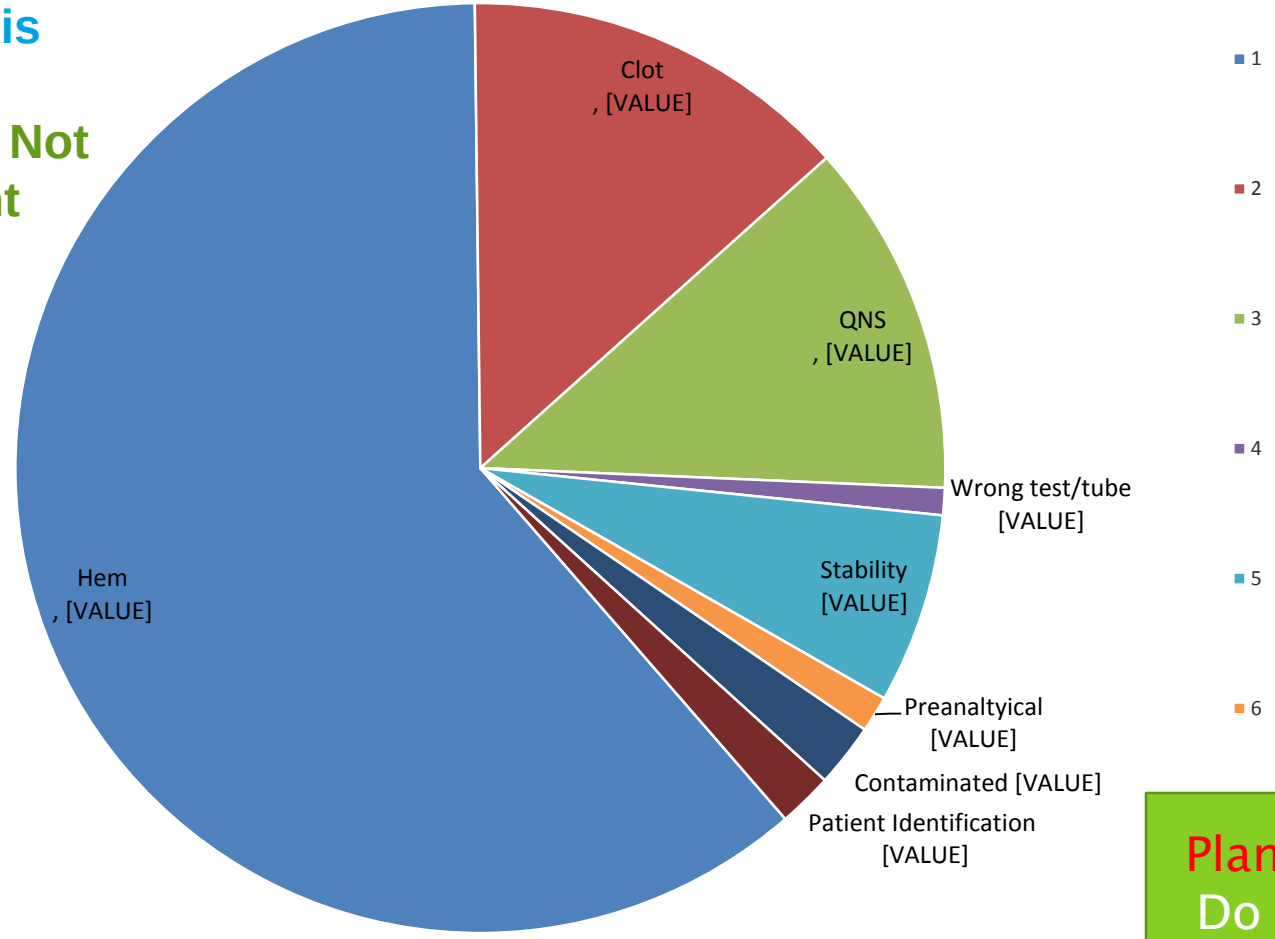
Data: Reason for Recollect

Top 3 Reasons

- **Hemolysis**
- **Clot**
- **Quantity Not Sufficient**



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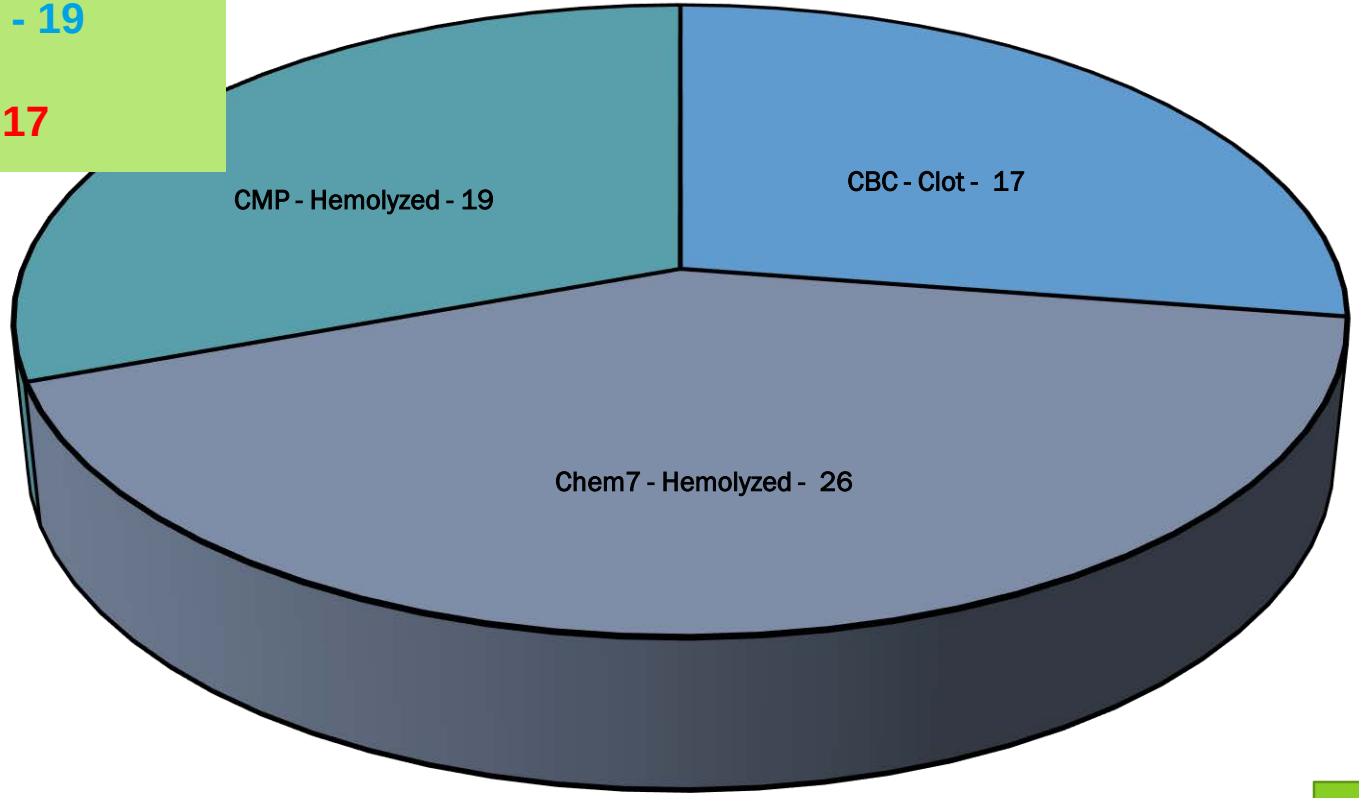
January 2015 ED Lab Credited Specimens

Age Range >65 years old

Top 3 Recollects

- Hemolyzed
  - Chem 7 - 26
  - CMP - 19
- Clot
  - CBC - 17



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COST INEFFECTIVENESS SNAPSHOT: JANUARY, 2015

- Cost per test for Chem-7 – ($11.14)
  - **Equates to $579**
    - Total - all redraws
    - Excluding: cost of disposal of specimens/personnel cost of performing test
- Cost per CBC test – ($9.48)
  - **Equates to $322**
    - Total - all redraws
    - Excluding: cost of disposal of specimens/personnel cost of performing test
- Also increases turnaround time in ED and Length of Stay

Plan – P
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CURRENT ERROR RATE COMPARED TO NATIONAL REDRAW RATES

Met lab manager/ED NM/Assistant NM - Main ED data

- Redraw rate in main ED for Jan, 2015
  - 3.7% for all patients
  - **12.7% for patients >** 65 years old
- Previous studies report ED redraw rates
  - Nationally are between 6% to 19%

Plan – P
Do – D
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WHAT IS AN ATTAINABLE GOAL?

- Goal < 2%
  - Based on the American Society for Clinical Pathology for hemolysis rates among laboratory blood samples (Heyer et al., 2012)

Plan – P
Do – D
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Act – A

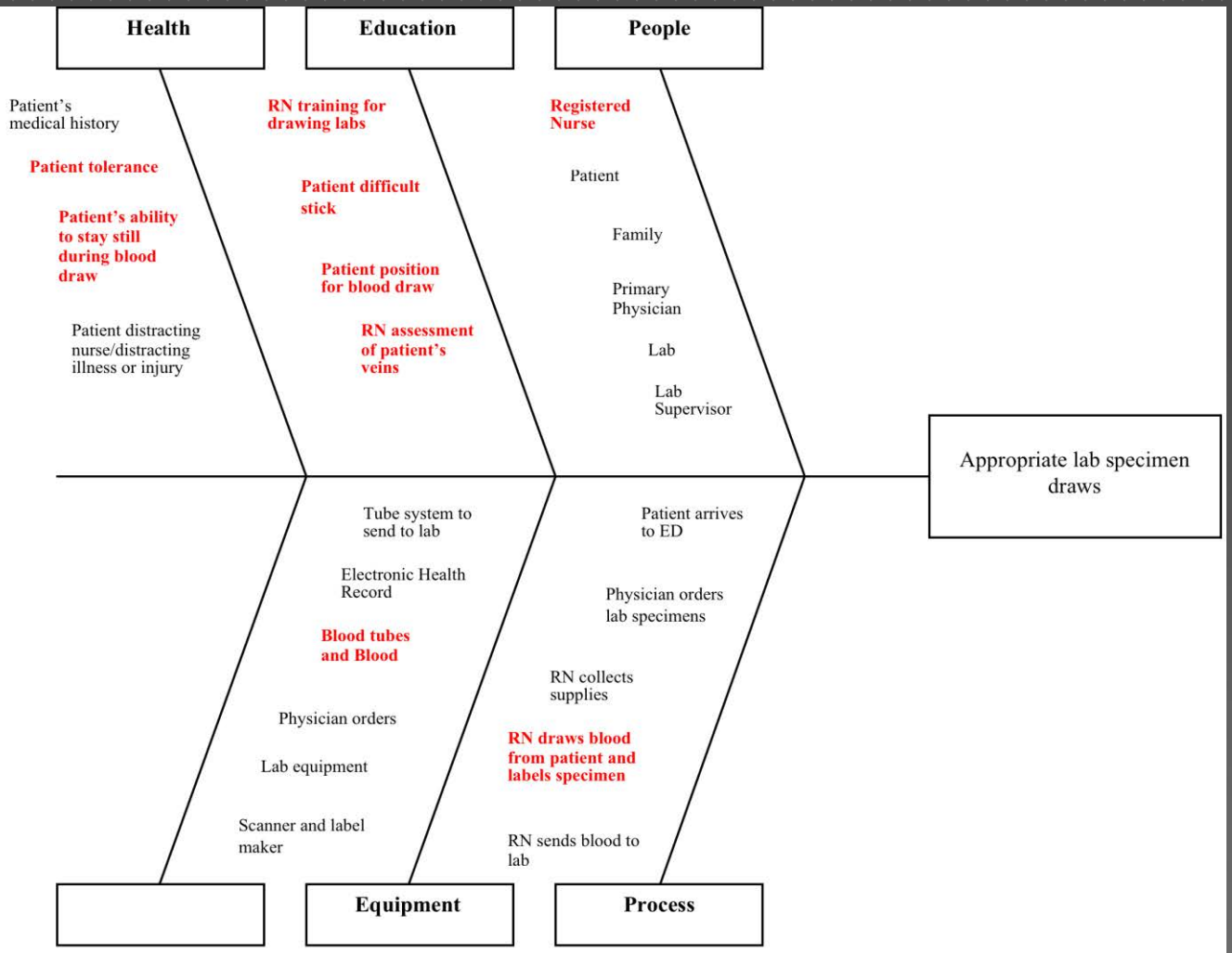
Global Aim:

To improve the integrity of the CBC and Chemistry blood draws in the geriatric population greater than 65 years of age in the main emergency department.

Specific Aim:

Improve ED lab specimen integrity with decrease of hemolyzed or clotted blood specimens below 2% among the 65 y/o and > population over 6 months.

Plan – P
Do – D
Study – S
Act – A



Fishbone Diagram

RN DATA COLLECTION

- Did the nurse draw blood for labs when they started the IV or was it from a separate straight needle stick?
- What gauge was the IV if they drew it from the IV?
- If the nurse drew from IV, did they draw blood from syringe or from in line connector straight to blood tubes?
- What order did they put the blood in the blood tubes?

Plan – P
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IMPLEMENT SMALL TEST OF CHANGE

- Nurses draw blood with straight needle stick instead of draw from IV line in rooms P32 to P42 for all patients > 65 y/o on 3/26 and 3/27/15

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PDSA (PILOT --- SMALL SCALE TEST)

- **Plan**
  - Met nurse manager, assistant nurse manager, charge nurses, team leaders
  - Educated nurses
  - Purple side in identified rooms for pilot test (NO blood drawn from IVs for patients >65 years old (in rooms P32-P42) on 3/26 and 3/27)
    - Blood to be drawn via straight needle stick only
- **Do** – Pilot test carried out on 3/26 and 3/27
  - 3/26 – 0 hemolyzed or clotted specimens in test group compared to 3 in other areas
  - 3/27 – 1hemolyzed or clotted specimen in test group compared to 2 in other areas

Study: Outcomes

- Pilot outcome with limited measurability
  - Need to increase number of days
- Pilot test results on 3/26 and 3/27
  - 3/26
    - 0 hemolyzed/clotted specimens in test group out of 12 total specimens drawn compared to 3 hemolyzed/clotted specimens out of 36 total drawn in other areas; (0% compared to 8.3%)
  - 3/27
    - 1hemolyzed/clotted specimen in test group out of 19 total specimens drawn compared to 2 hemolyzed/clotted specimens out of 31 total drawn in other areas – (5.3% compared to 6.5%)
- Bottom Line Message: With straight needle sticks, hemolyzed and clotted specimens are decreased in the subgroup chosen versus drawing specimens from IV line

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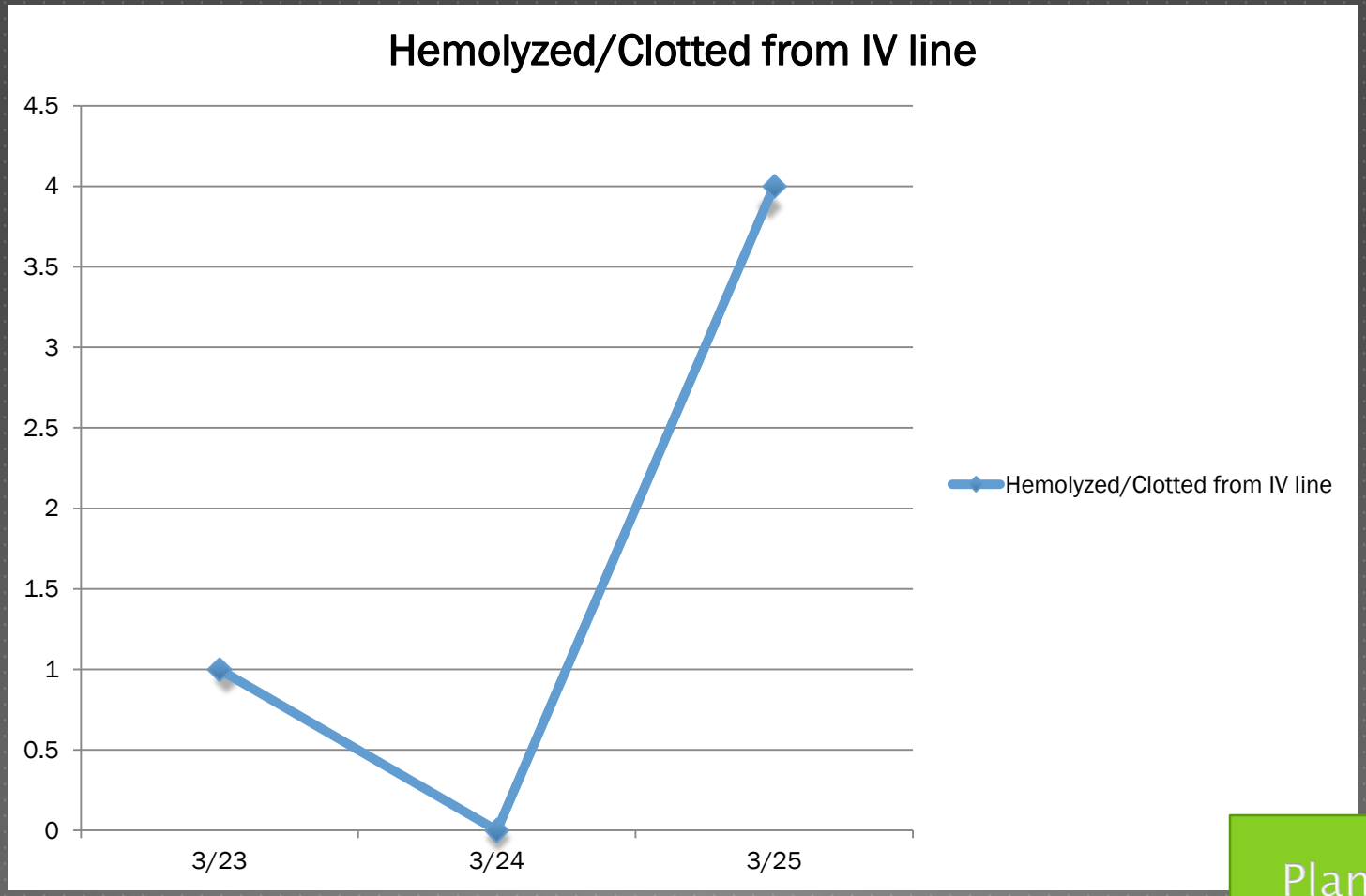

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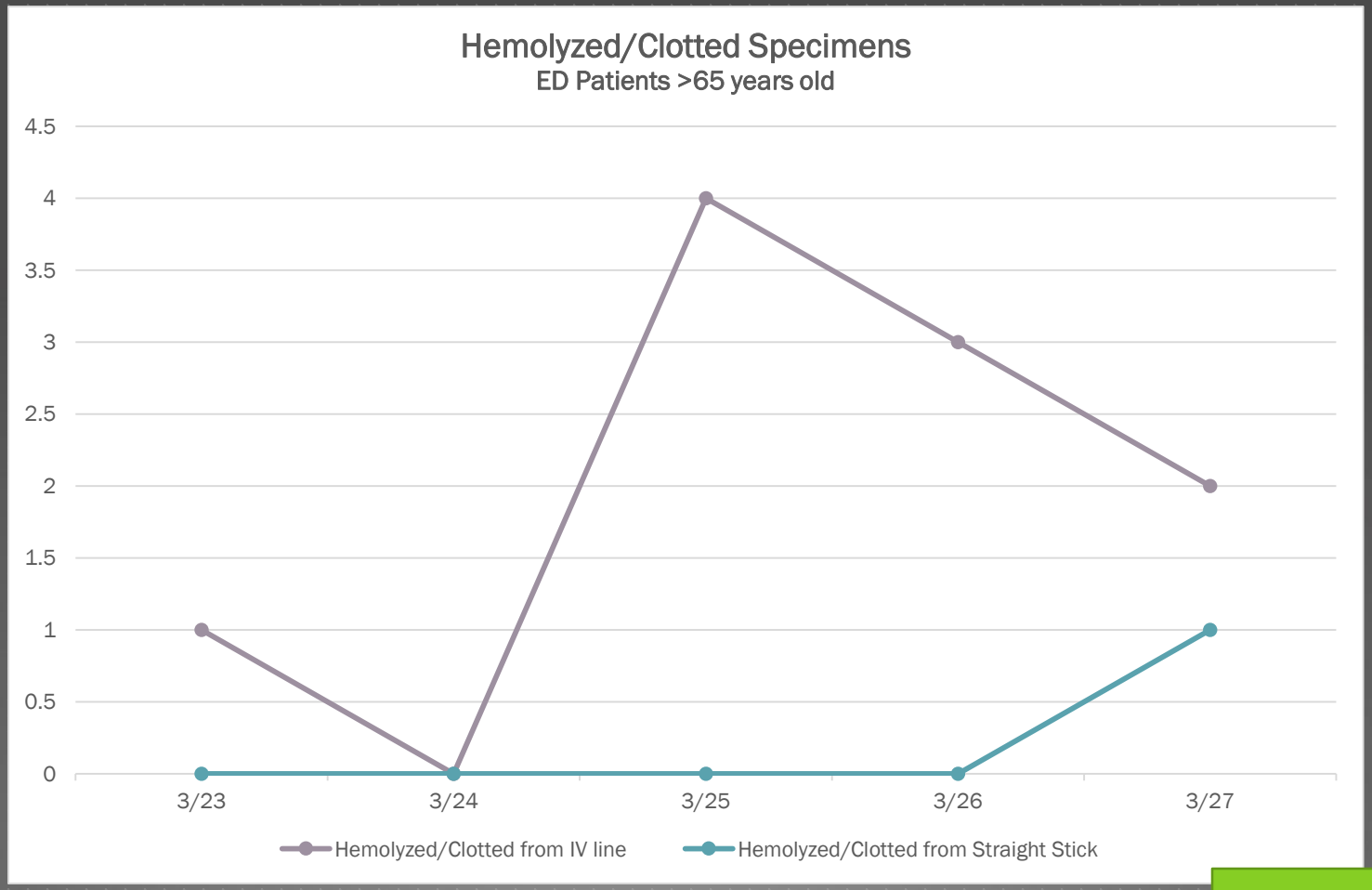

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ACTION PLANS

- Expand sample size of study with longer time period to truly test if drawing blood using straight stick is more reliable
- Continue to educate RNs about effective ways to draw blood in the elderly population

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ACT: STANDARDIZE

- Need more data to confirm if changing practice truly makes a difference
  - Increase next PDSA to one to two month time frame
- Standardize
  - Order of draw in blood specimens obtained, as well as standardize process for drawing blood in patients >65 years old

Plan – P
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Reference: *Center for Phlebotomy Education, Inc.* (2016)

REFERENCES

- *Center for Phlebotomy Education, Inc.* (2016). http://www.phlebotomy.com/product/8500.cpe
- *Dartmouth Instituted For Health Policy and Clinical Practice:* (2010). www.clinicalmicrosystem.org
- Heyer, N. J., Derzon, J. H., Winges, L., Shaw, C., Mass, D., Snyder, Liebow, E. B. (2012). Effectiveness of practices to reduce blood sample hemolysis in EDs: A laboratory medicine best practices systematic review and meta-analysis. *Chemical Biochemistry*, *45*(13-14), 1012-1032.