The background of the slide is a microscopic view of numerous red blood cells. They are biconcave discs, appearing as reddish-orange spheres with darker centers, set against a dark, almost black background. The cells are scattered throughout the frame, with some in sharp focus and others blurred in the foreground and background.

# The Basic Principles & Interpretation of Automated Full Blood Count

Dr Kyaw Zin Maw  
MBBS, MRCP(London), FRCPath(UK)  
Consultant Haematologist (MMPGA)  
August 1<sup>st</sup>, 2020

## INTRODUCTION

CASE SCENARIO 1

CASE SCENARIO 2

CASE SCENARIO 3

CASE SCENARIO 4

CASE SCENARIO 5

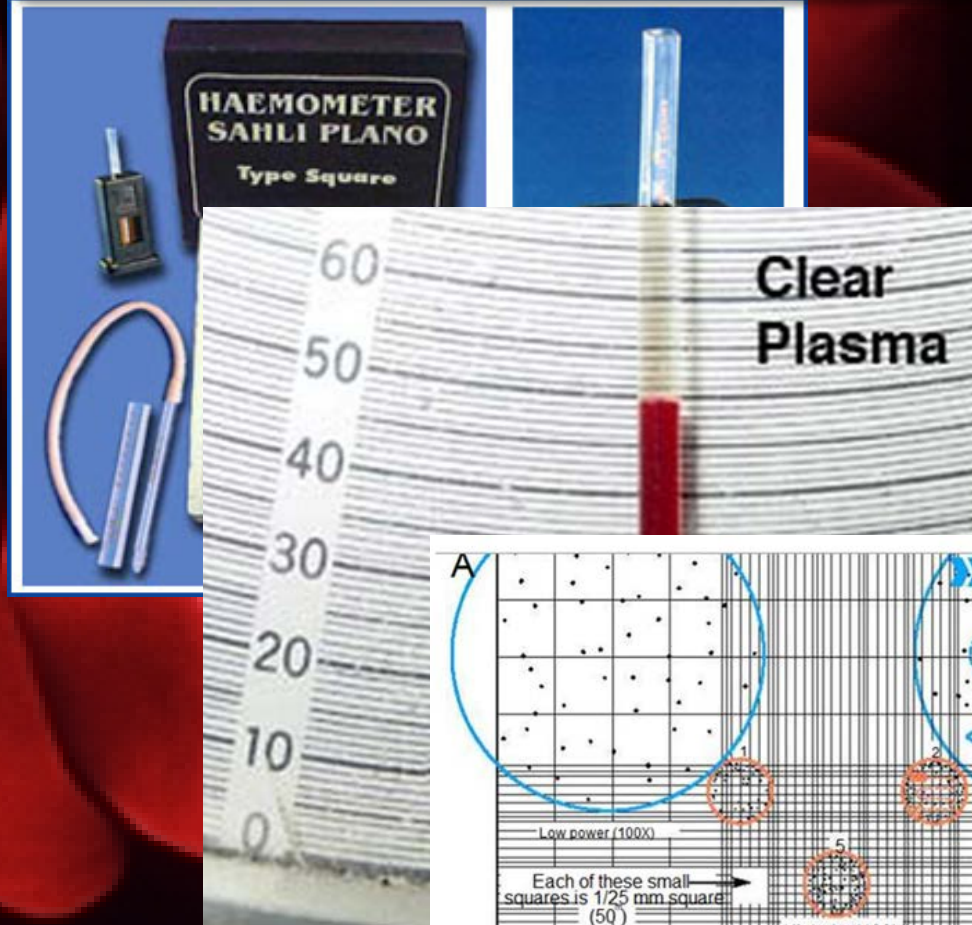
CASE SCENARIO 6

CASE SCENARIO 7

CASE SCENARIO 8-10

CONCLUSION

## Old Methods of FBC



## INTRODUCTION

## CASE SCENARIO 1

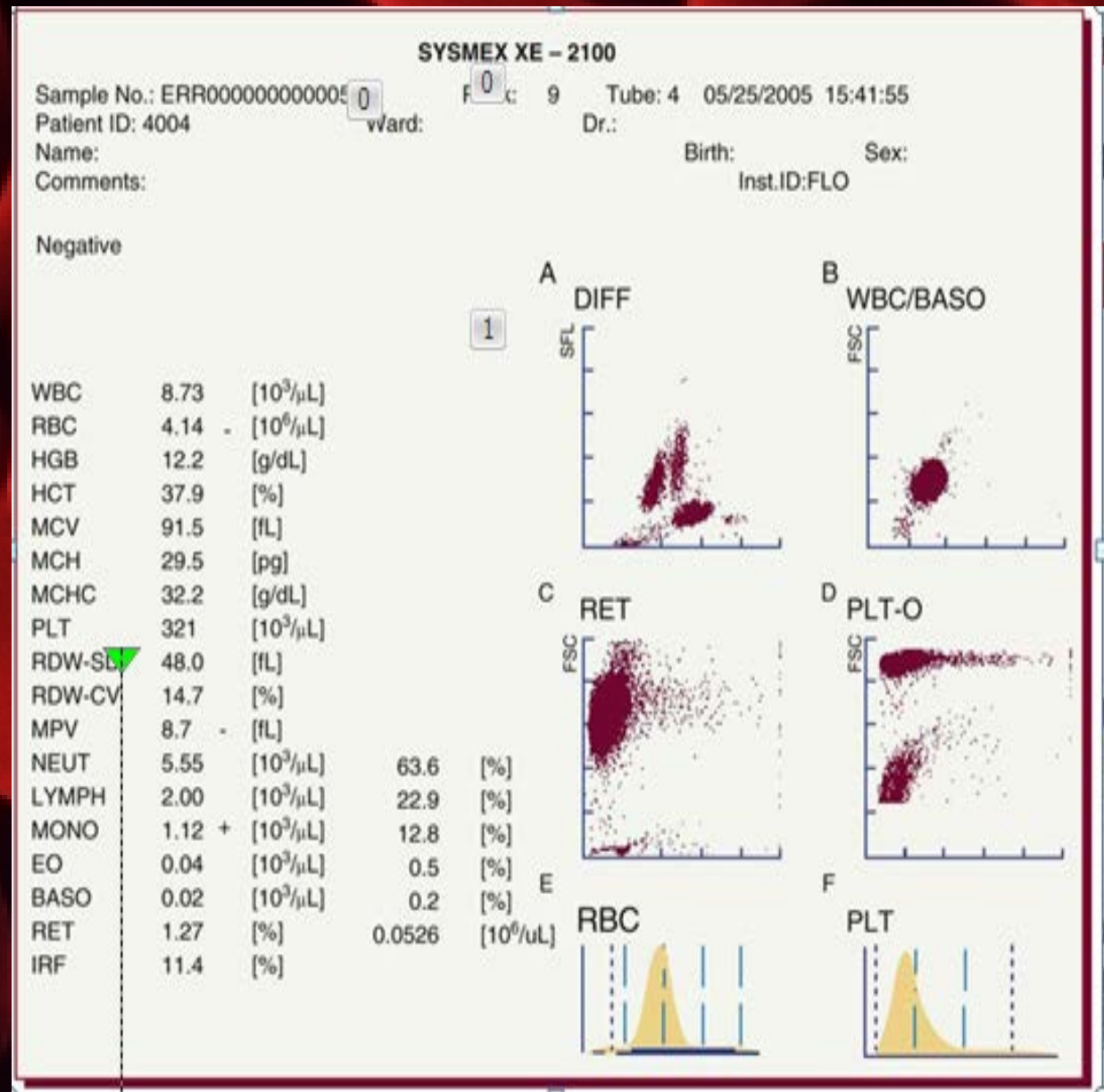
## CASE SCENARIO 2

## CASE SCENARIO 3

## CASE SCENARIO 4 -10

## CONCLUSION

# Automated Complete Blood Count



## INTRODUCTION

## CASE SCENARIO 1

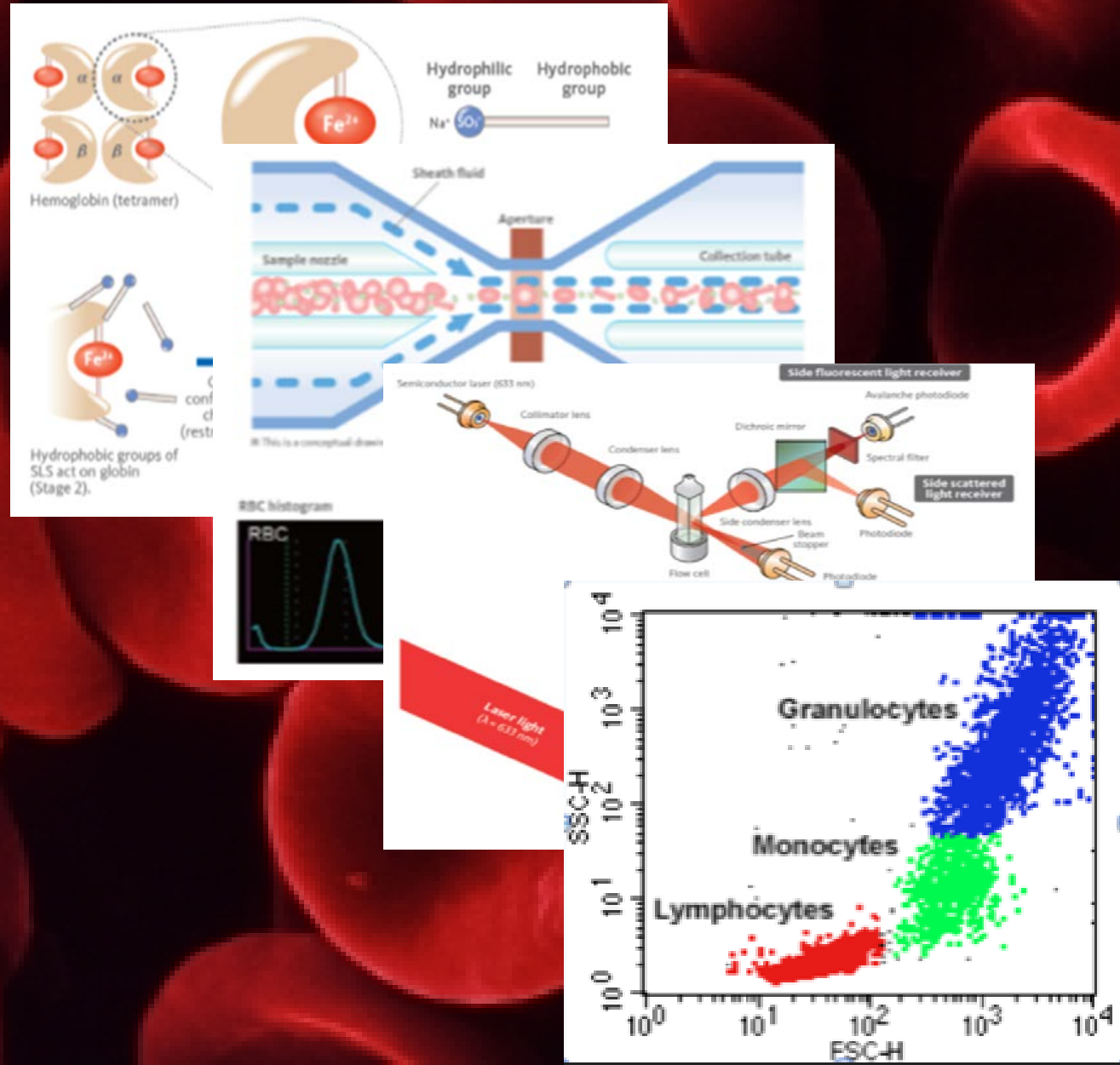
## CASE SCENARIO 2

## CASE SCENARIO 3

## CASE SCENARIO 4 -10

## CONCLUSION

# Automated Complete Blood Count





# INTRODUCTION

CASE SCENARIO 1

CASE SCENARIO 2

CASE SCENARIO 3

CASE SCENARIO 4-10

CONCLUSION



XN-L SML

Sample No.: 4  
Patient ID: 170210745  
Name: [REDACTED]  
Diff. Morph. Count

Ward:  
Doctor: SELF  
Age: 31 Sex: Male

28/02/2017  
09:17:37  
XN-450^11173

|        |                               | Reference Interval                   |                   |
|--------|-------------------------------|--------------------------------------|-------------------|
| WBC    | 19.78 + [10 <sup>3</sup> /uL] | ( 4.00 - 10.50)                      |                   |
| NEUT   | 50.9 * [%]                    | ( 40.0 - 75.0)                       | ( 1.50 - 6.60)    |
| LYMPH  | 38.5 * [%]                    | ( 20.0 - 50.0)                       | ( 1.50 - 3.50)    |
| MONO   | 5.0 * [%]                     | ( 2.0 - 10.0)                        | ( 0.00 - 1.00)    |
| EO     | 0.6 * [%]                     | ( 1.0 - 6.0)                         | ( 0.00 - 0.70)    |
| BASO   | 5.0 * [%]                     | ( 0.0 - 1.0)                         | ( 0.00 - 0.10)    |
| IG     | 0.3 * [%]                     | ( 0.00 - 7.00)                       | ( 0.0 - 72.0)     |
| RBC    | 4.00 * [10 <sup>6</sup> /uL]  | ( 4.70 - 6.00)                       |                   |
| HGB    | 7.9 - [g/dL]                  | ( 13.5 - 18.0)                       |                   |
| HCT    | 24.4 * [%]                    | ( 42.0 - 52.0)                       |                   |
| MCV    | 61.0 * [fL]                   | ( 78.0 - 100.0)                      |                   |
| MCH    | 19.8 * [pg]                   | ( 27.0 - 31.0)                       |                   |
| MCHC   | 32.4 * [g/dL]                 | ( 32.0 - 36.0)                       |                   |
| RDW-SD | 62.1 * [fL]                   | ( 36.4 - 46.3)                       |                   |
| RDW-CV | 29.0 * [%]                    | ( 11.5 - 14.0)                       |                   |
| PLT    | 238 * [10 <sup>3</sup> /uL]   | ( 150 - 450)                         |                   |
| PDW    | ---- [fL]                     | ( 8.0 - 18.0)                        |                   |
| MPV    | ---- [fL]                     | ( 6.0 - 9.5)                         |                   |
| P-LCR  | ---- [%]                      | ( 13.0 - 43.0)                       |                   |
| PCT    | ---- [%]                      | ( 0.20 - 0.50)                       |                   |
| RET    | [%]                           | [10 <sup>6</sup> /uL] ( 0.40 - 1.00) | (0.0000 - 0.9999) |
| IRF    | [%]                           | ( 0.0 - 100.0)                       |                   |
| LFR    | [%]                           | ( 0.0 - 100.0)                       |                   |
| MFR    | [%]                           | ( 0.0 - 100.0)                       |                   |
| HFR    | [%]                           | ( 0.0 - 100.0)                       |                   |
| RET-He | [pg]                          | ( 0.0 - 99.9)                        |                   |
| IPF    | [%]                           | [10 <sup>3</sup> /uL] ( 0.0 - 99.9)  | ( 0.0 - 999.9)    |

WBC IP Message

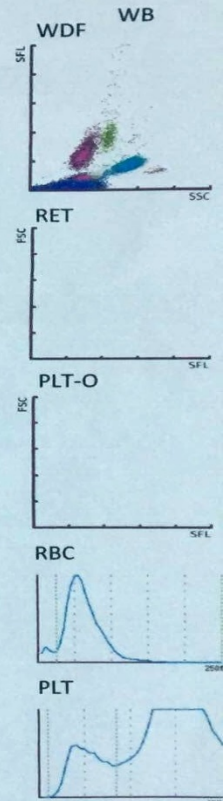
WBC Abn Scattergram  
Lymphocytosis  
Basophilia  
Leukocytosis  
Blasts/Abn Lympho?  
NRBC?

RBC IP Message

RBC Abn Distribution  
Anisocytosis  
Microcytosis  
Anemia  
Fragments?

PLT IP Message

PLT Abn Distribution



## Blood Film Report

**RBC:** anisopoikilocytosis with hypochromia, microcytes  
elliptical cells+, target cells+, fragmented cells+, nucleated RBC+20/100 WBCs

**WBC:** leucocytosis with normal differential count

**PLT :** normal, clumps+

PROFESSOR AYE AYE MYINT  
M.B., B.S., D.P (YGN)  
Ph.D (London), Ph.D (HON) (YGN)  
Consultant Pathologist  
28/11/2017 09:17:37 1/1

## INTRODUCTION

Auto CP

Work Up



|        |                           |             |
|--------|---------------------------|-------------|
| Hb     | 100 [g/L]                 | [130-180]   |
| MCV    | 82 [fL]                   | [78-100]    |
| Hct    | 32.4[%]                   | [42-52]     |
| RBC    | 3.7[10 <sup>6</sup> /uL]  | [4.5-5.8]   |
| MCH    | 26 [pg]                   | [27-33]     |
| MCHC   | 36.8[g/dL]                | [33-36]     |
| RDW-SD | 42 [fL]                   | [36.4-46.3] |
| RDW-CV | 13.6[%]                   | [11.6-14.0] |
| NRBC   | -                         |             |
| RET    | 108 [x10 <sup>6</sup> /L] | [40-100]    |
| RET-He | 33 [pg]                   | [28-36]     |
| IRF    | 13.4[%]                   | [1.6-12.1]  |

## CASE SCENARIO 1

## CASE SCENARIO 2

## CASE SCENARIO 3

## CASE SCENARIO 4

## CONCLUSION

**MCH = Average Hb concentration of the average cell  
(Hb / RBC)**

**MCHC = Average Hb concentration of a given red cell volume  
(Hb / Hct)**

*MCH (Mean Corpuscular Haemoglobin)*

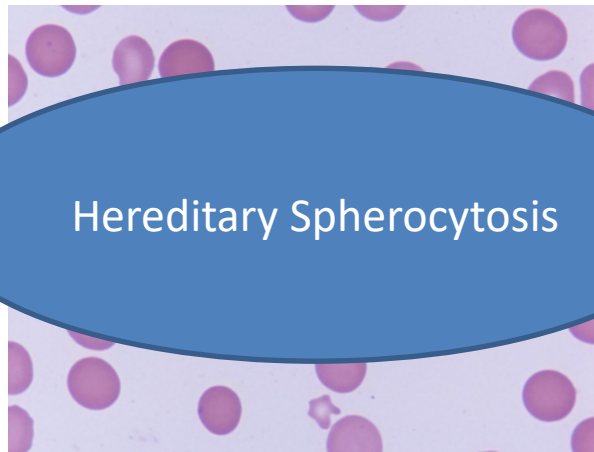
*MCHC (Mean Corpuscular Haemoglobin Concentration)*

## INTRODUCTION

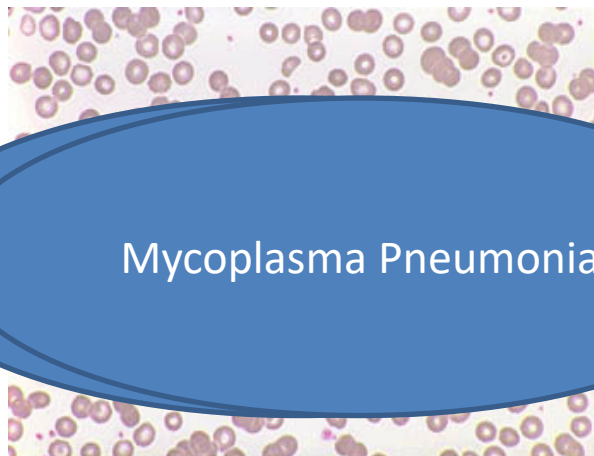
### CASE SCENERIO 1

Auto CP

Work Up



|      |                          |           |
|------|--------------------------|-----------|
| Hb   | 100 [g/L]                | [130-180] |
| MCV  | 82 [fL]                  | [78-100]  |
| Hct  | 32.4[%]                  | [42-52]   |
| RBC  | 3.7[10 <sup>6</sup> /uL] | [4.5-5.8] |
| MCH  | 26 [pg]                  | [27-33]   |
| MCHC | 36.8[g/dL]               | [33-36]   |



CASE SCENERIO 2

CASE SCENERIO 3

CASE SCENERIO 4 -10

CONCLUSION

## INTRODUCTION

### CASE SCENERIO 1.1

Auto CP



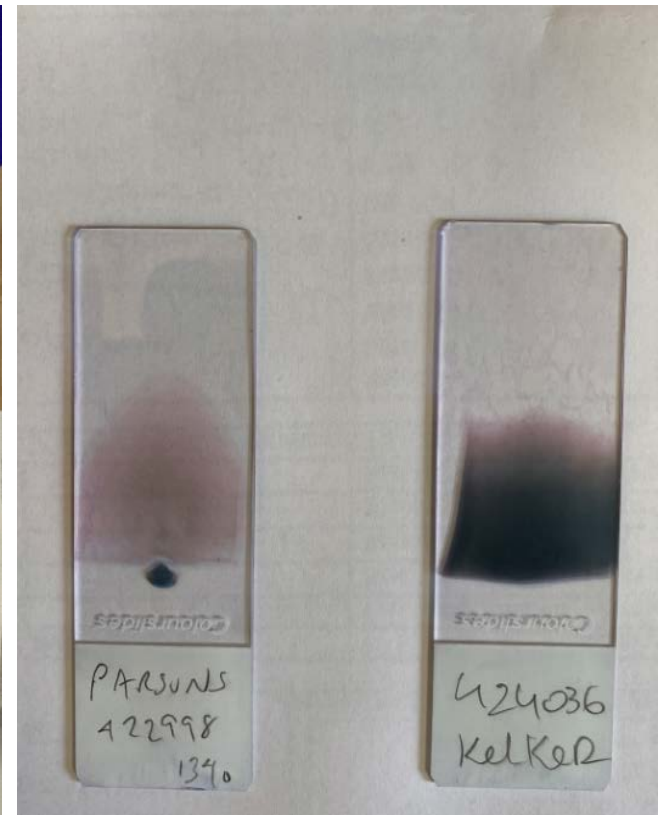
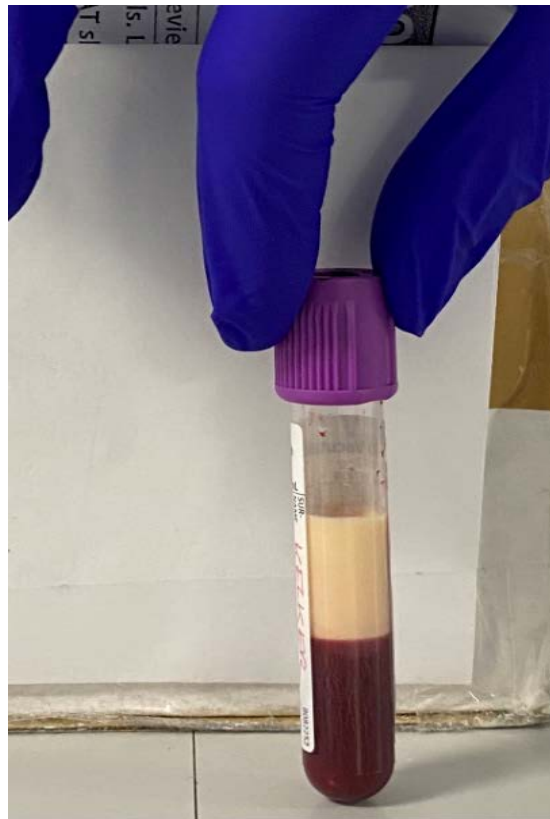
|      |                          |           |
|------|--------------------------|-----------|
| Hb   | 150 [g/L]                | [130-180] |
| MCV  | 83.3 [fL]                | [78-100]  |
| Hct  | 43.8 [%]                 | [42-52]   |
| RBC  | 5.1[10 <sup>6</sup> /uL] | [4.5-5.8] |
| MCH  | 29.7 [pg]                | [27-33]   |
| MCHC | 48.1 [g/dL]              | [33-36]   |

### CASE SCENERIO 2

### CASE SCENERIO 3

### CASE SCENERIO 4

## CONCLUSION





INTRODUCTION

CASE SCENERIO 1

Auto CP

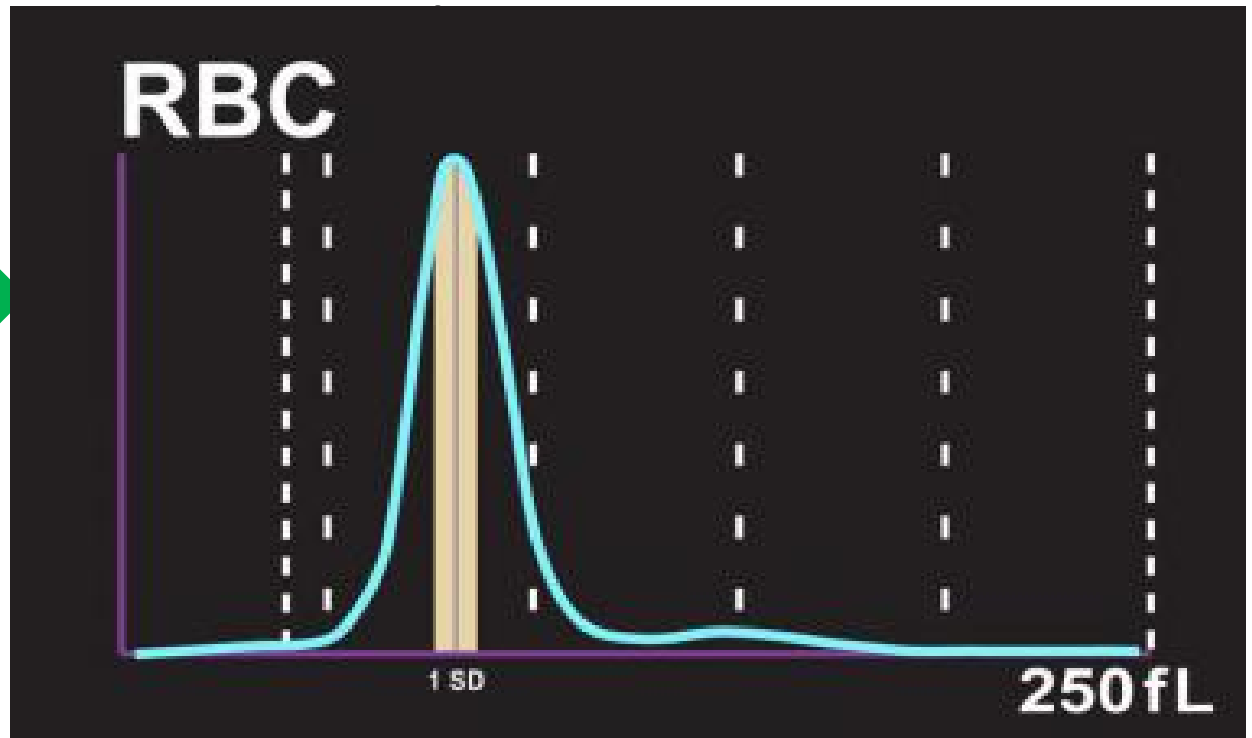
Work Up

CASE SCENERIO 2

CASE SCENERIO 3

CASE SCENERIO 4 -10

CONCLUSION



- RDW-SD – Red Cell Distribution Width - Standard Deviation**
- Actual measurement of the width of the RBC size distribution histogram
  - 20% height level of the histogram

- RDW-CV – Red Cell Distribution Width – Coefficient of Variation**
- Calculated from standard deviation and MCV
  - $\text{RDW-CV}(\%) = \frac{1 \text{ SD of RBC volume}}{\text{MCV}} \times 100\%$
  - Can be effected by MCV

INTRODUCTION

CASE SCENERIO 1

CASE SCENERIO 2

Auto CP

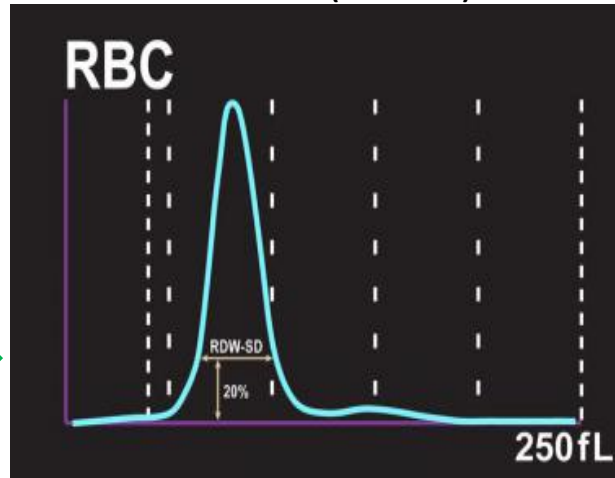
Work Up

CASE SCENERIO 3

CASE SCENERIO 4

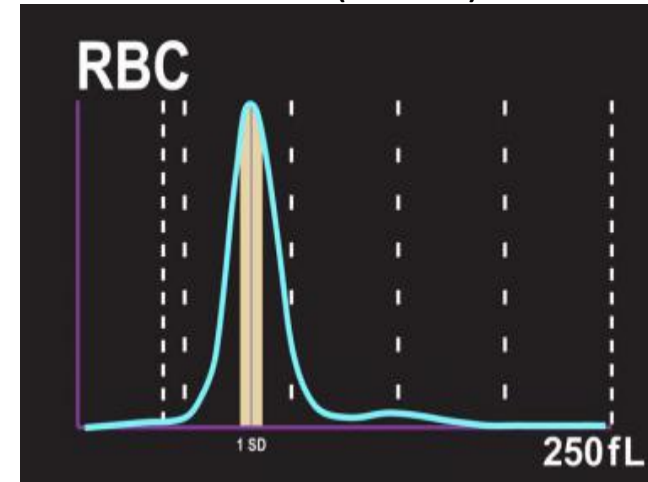
CONCLUSION

**RDW-SD (38.2fL)**



Difference at 20% Height level

**RDW-CV (12.8%)**



1SD/MCV x 100%

**RDW – Reflects Variation in RBC size and volume  
(Anisocytosis)**

**Elevated RDW – Early nutritional deficiency  
(Iron, B12, Folate)**

- Fragmentation
- Agglutination
- Dimorphic population
- Marked anisocytosis

MCV

**Normal RDW – Mild or no anisocytosis  
(Uncomplicated heterozygous thalassaemia)**

## INTRODUCTION

### CASE SCENERIO 1

### CASCENERIO 2

Auto CP

Work Up

|        |                           |             |        |
|--------|---------------------------|-------------|--------|
| Hb     | 112 [g/L]                 | [130-180]   | - 112  |
| MCV    | 68 [fL]                   | [78-100]    | - 72   |
| Hct    | 32.4[%]                   | [42-52]     | - 30.2 |
| RBC    | 4.8[10 <sup>6</sup> /uL]  | [4.5-5.8]   | - 3.3  |
| MCH    | 25 [pg]                   | [27-33]     | - 26   |
| MCHC   | 28.8[g/dL]                | [33-36]     | - 26.8 |
| RDW-SD | 40 [fL]                   | [36.4-46.3] | - 48.4 |
| RDW-CV | 13 [%]                    | [11.6-14.0] | - 17.6 |
| NRBC   | -                         |             |        |
| RET    | 108 [x10 <sup>6</sup> /L] | [40-100]    | - 50   |
| RET-He | 33 [pg]                   | [28-36]     | - 25   |
| IRF    | 13.4[%]                   | [1.6-12.1]  | - 6.5  |

Uncomplicated  
heterozygous  
thalassaemia

Iron deficiency  
anaemia

### CASE SCENERIO 3

### CASE SCENERIO 4 -10

## CONCLUSION

## INTRODUCTION

## CASE SCENERIO 1

## CASE SCENERIO 2

Auto CP

Work Up



|        |                           |             |        |
|--------|---------------------------|-------------|--------|
| Hb     | 102 [g/L]                 | [130-180]   | - 102  |
| MCV    | 68 [fL]                   | [78-100]    | - 72   |
| Hct    | 32.4[%]                   | [42-52]     | - 30.2 |
| RBC    | 4.8[10 <sup>6</sup> /uL]  | [4.5-5.8]   | - 3.8  |
| MCH    | 25 [pg]                   | [27-33]     | - 26   |
| MCHC   | 28.8[g/dL]                | [33-36]     | - 26.8 |
| RDW-SD | 42 [fL]                   | [36.4-46.3] | - 48.4 |
| RDW-CV | 17.6[%]                   | [11.6-14.0] | - 17.6 |
| NRBC   | -                         |             |        |
| RET    | 108 [x10 <sup>6</sup> /L] | [40-100]    | - 50   |
| RET-He | 33 [pg]                   | [28-36]     | - 25   |
| IRF    | 13.4[%]                   | [1.6-12.1]  | - 6.5  |

### RDW Index (RDWI):

$MCV \times RDW-CV / RBC$

>220 Iron deficiency anaemia

<220 Thalassaemia trait

## CASE SCENERIO 3

## CASE SCENERIO 4 -10

## CONCLUSION



## INTRODUCTION

## CASE SCENERIO 1

## CASE SCENERIO 2

Auto CP

Work Up

RDW

- Iron deficiency anaemia
- Sickle cell- $\beta$  thalassaemia

- Early haematinic deficiency
- Dimorphic anaemia
- Myelodysplasia
- Sickle cell disease
- Chronic liver disease

- B12/Folate deficiency
- Haemolytic anaemia
- Myelodysplasia
- Cytotoxic chemotherapy
- Chronic liver disease

- Anaemia of chronic disease
- Heterozygous thalassaemia
- Haemoglobin E trait

- Anaemia of chronic disease
- Acute blood loss
- Acute haemolysis
- Renal anaemia

- Aplastic anaemia
- Cytotoxic chemotherapy
- Chronic liver disease
- Antiviral therapy
- Alcohol

MCV

## CASE SCENERIO 3

## CASE SCENERIO 4 -10

## CONCLUSION

## INTRODUCTION

### CASE SCENERIO 1

### CASE SCENERIO 2


Auto CP

Work Up

### CASE SCENERIO 3

### CASE SCENERIO 4-10

## CONCLUSION



|        |                          |             |       |
|--------|--------------------------|-------------|-------|
| Hb     | 102 [g/L]                | [130-180]   |       |
| MCV    | 83 [fL]                  | [78-100]    |       |
| Hct    | 32.4[%]                  | [42-52]     |       |
| RBC    | 3.2[10 <sup>6</sup> /uL] | [4.5-5.8]   |       |
| MCH    | 26 [pg]                  | [27-33]     |       |
| MCHC   | 28.8[g/L]                | [33-36]     |       |
| RDW-SD | 45 [fL]                  | [36.4-46.3] |       |
| RDW-CV | 14.6[%]                  | [11.6-14.0] |       |
| NRBC   | -                        |             |       |
| RET    | 65 [x10 <sup>6</sup> /L] | [40-100]    |       |
| RET-He | 23 [pg]                  | [28-36]     | ≈ CHr |
| IRF    | 3.8 [%]                  | [1.6-12.1]  |       |

RET – Reticulocyte Count

RET-He – Reticulocyte Haemoglobin Equivalent

CHr - Mean Reticulocyte Haemoglobin Content

IRF - Immature Reticulocyte Fraction

INTRODUCTION

CASE SCENERIO 1

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Auto CP

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CASE SCENERIO 4 -10

CONCLUSION

### **Reticulocyte Count:-**

- Absolute Reticulocyte Count
- General - ↓ in production problem
  - ↑ in increased destruction
- Results varies (e.g, stress marrow)
- Reticulocyte Production Index (RPI) / Corrected Reticulocyte Percentage – more reliable



- Acute Blood Loss
- Acute Haemolysis
- Marrow response to therapy

- Marrow Failure / Infiltration
- Haematinic deficiency
- Post chemo/radiation

INTRODUCTION

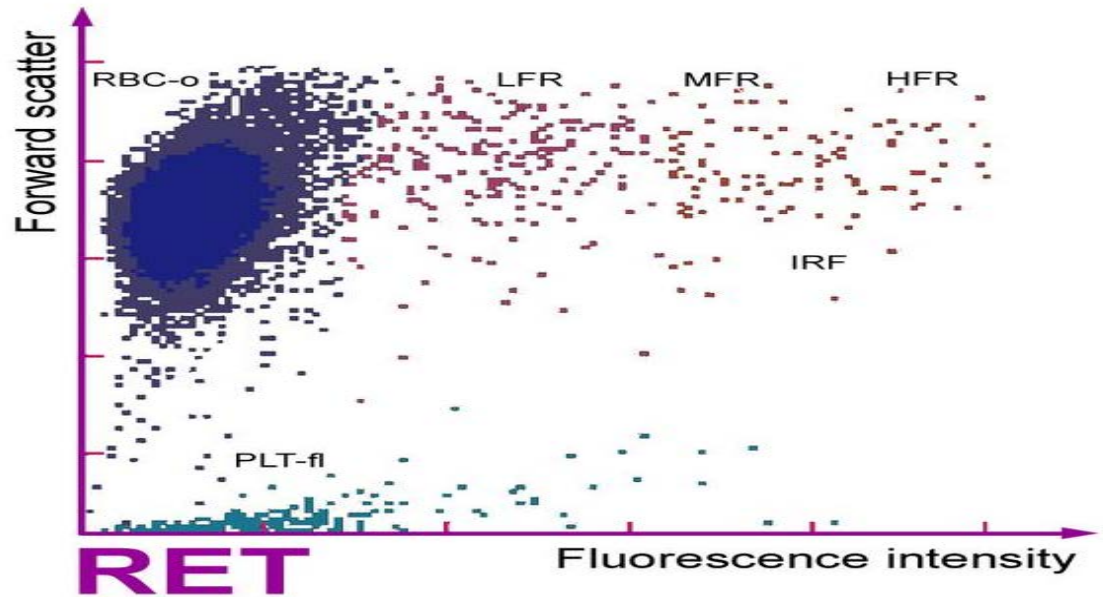
CASE SCENERIO 1

CASE SCENERIO 2

CASE SCENERIO 3

Auto CP

Work Up



**Immature Reticulocyte Fraction (IRF):-**

- Quantitative measurement of RNA content of reticulocyte
- (Low +) Middle + High-florescence reticulocytes
- Useful assessment for evaluation of marrow recovery and to assess for effective erythropoiesis:
  - e.g - Post iv iron therapy
  - EPO response assessment

CASE SCENERIO 4 -10

CONCLUSION



INTRODUCTION

CASE SCENERIO 1

CASE SCENERIO 2

CASE SCENERIO 3

Auto CP

Work Up

|        |                          |             |
|--------|--------------------------|-------------|
| Hb     | 102 [g/L]                | [130-180]   |
| MCV    | 83 [fL]                  | [78-100]    |
| Hct    | 32.4[%]                  | [42-52]     |
| RBC    | 3.2[10 <sup>6</sup> /uL] | [4.5-5.8]   |
| MCH    | 26 [pg]                  | [27-33]     |
| MCHC   | 28.8[g/dL]               | [33-36]     |
| RDW-SD | 45 [fL]                  | [36.4-46.3] |
| RDW-CV | 14.6[%]                  | [11.6-14.0] |
| NRBC   | -                        |             |
| RET    | 65 [x10 <sup>6</sup> /L] | [40-100]    |
| RET-He | 23 [pg]                  | [28-36]     |
| IRF    | 3.8 [%]                  | [1.6-12.1]  |

↔ CHr

Ferritin 230  
Transferrin saturation 10%

Functional Iron Deficiency

CASE SCENERIO 4-10

CONCLUSION

## INTRODUCTION

### CASE SCENERIO 1

### CASE SCENERIO 2

### CASE SCENERIO 3

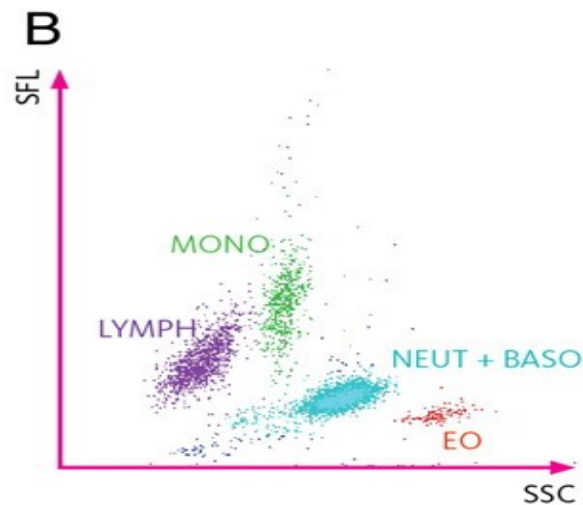
Auto CP

Work Up

### CASE SCENERIO 4

## CONCLUSION

|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 125 [g/L]                 | [130-180]   |
| MCV      | 97 [fL]                   | [78-100]    |
| Hct      | 32.4[%]                   | [42-52]     |
| WBC      | 22.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 18.6[10 <sup>6</sup> /uL] | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.6[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.9[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 0.8[10 <sup>6</sup> /uL]  | [0.05-0.10] |
| Platelet | 450[10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 8.7[fL]                   | [7.8-9.2]   |



INTRODUCTION

CASE SCENERIO 1

CASE SCENERIO 2

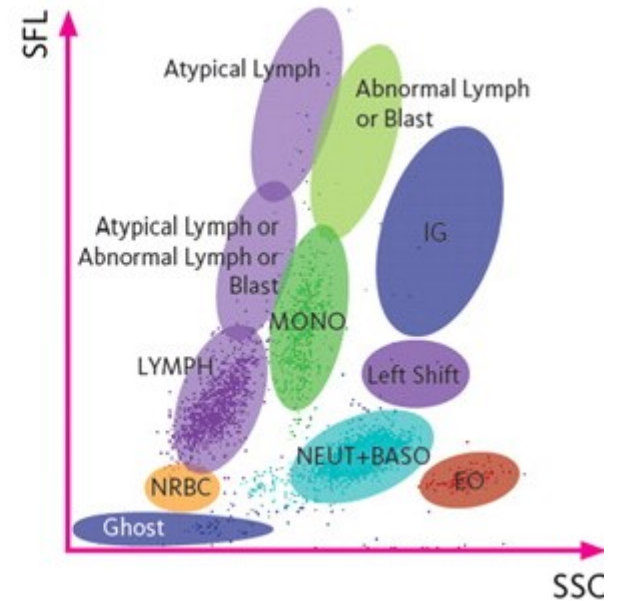
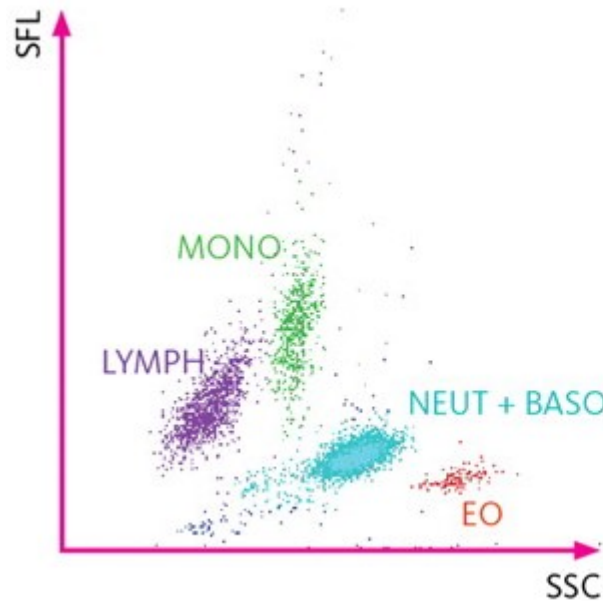
CASE SCENERIO 3

CASE SCENERIO 4

Auto CP

Work Up

CONCLUSION



|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 125 [g/L]                 | [130-180]   |
| MCV      | 97 [fL]                   | [78-100]    |
| Hct      | 32.4[%]                   | [42-52]     |
| WBC      | 22.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 18.6[10 <sup>6</sup> /uL] | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.6[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.9[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 0.8[10 <sup>6</sup> /uL]  | [0.05-0.10] |
| Platelet | 450[10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 8.7[fL]                   | [7.8-9.2]   |

## INTRODUCTION

### CASE SCENERIO 1

### CASE SCENERIO 2

### CASE SCENERIO 3

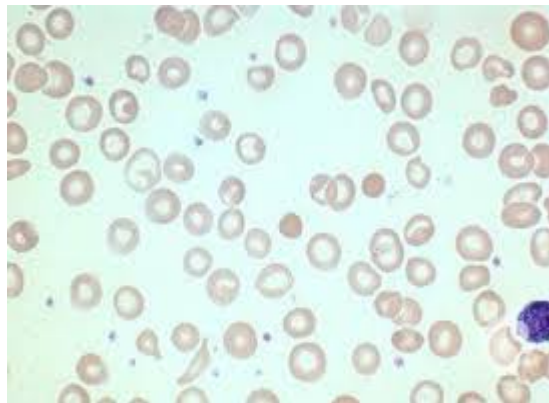
### CASE SCENERIO 5

Auto CP

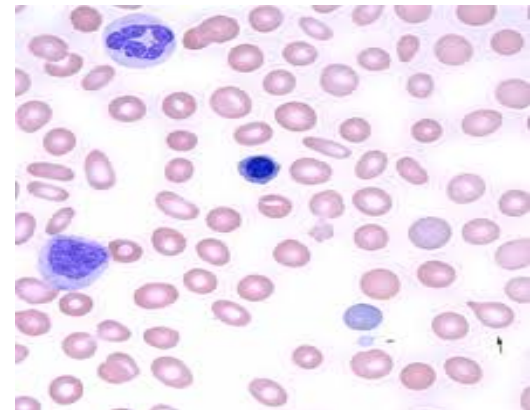
Work Up



|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 86 [g/L]                  | [130-180]   |
| MCV      | 75 [fL]                   | [78-100]    |
| Hct      | 24.4[%]                   | [42-52]     |
| WBC      | 14.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 8.6[10 <sup>6</sup> /uL]  | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.1[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.1[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 0.1[10 <sup>6</sup> /uL]  | [0.05-0.10] |
| Platelet | 480[10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 8.7[fL]                   | [7.8-9.2]   |



Iron deficiency anaemia



Myelofibrosis

## CONCLUSION



## INTRODUCTION

### CASE SCENERIO 1

### CASE SCENERIO 2

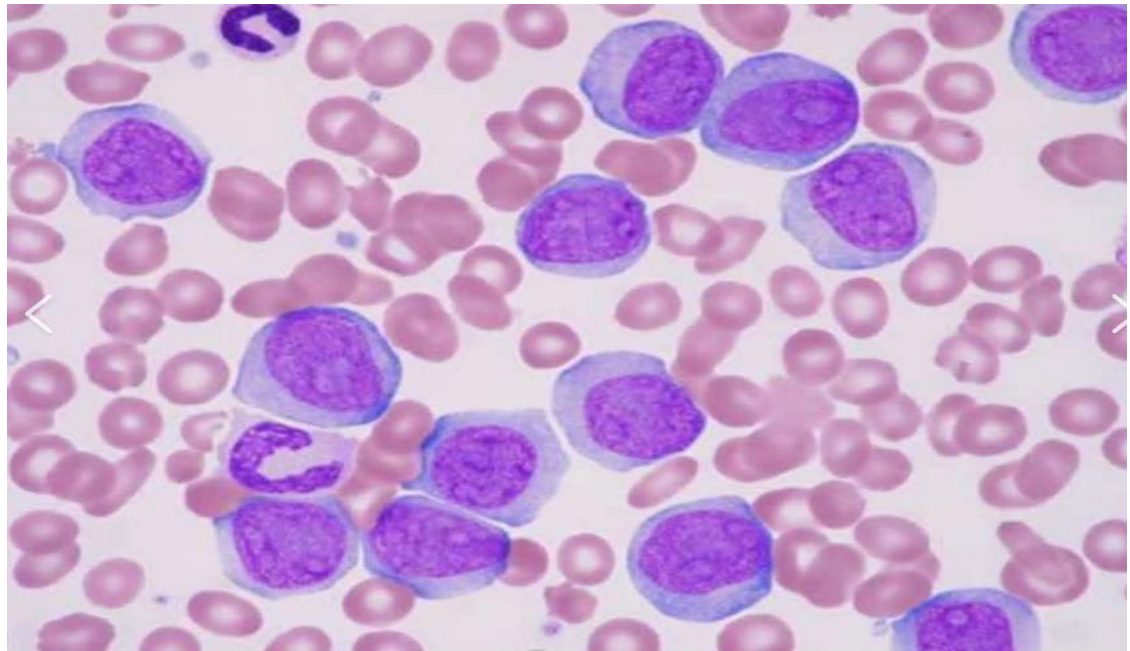
### CASE SCENERIO 3

### CASE SCENERIO 6

Auto CP



|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 86 [g/L]                  | [130-180]   |
| MCV      | 90 [fL]                   | [78-100]    |
| Hct      | 24.4[%]                   | [42-52]     |
| WBC      | 14.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 1.6[10 <sup>6</sup> /uL]  | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.1[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.1[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 10.6[10 <sup>6</sup> /uL] | [0.05-0.10] |
| Platelet | 78 [10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 8.7[fL]                   | [7.8-9.2]   |



## CONCLUSION

## INTRODUCTION

### CASE SCENERIO 1

### CASE SCENERIO 2

### CASE SCENERIO 3

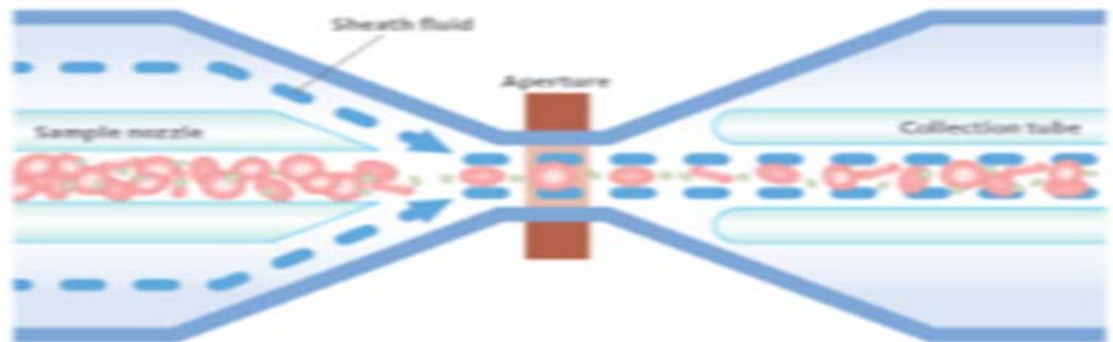
### CASE SCENERIO 7

Auto CP

Work Up

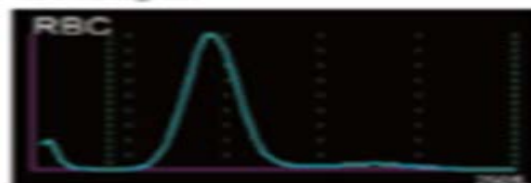
## CONCLUSION

|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 125 [g/L]                 | [130-180]   |
| MCV      | 97 [fL]                   | [78-100]    |
| Hct      | 32.4[%]                   | [42-52]     |
| WBC      | 22.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 18.6[10 <sup>6</sup> /uL] | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.6[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.9[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 0.8[10 <sup>6</sup> /uL]  | [0.05-0.10] |
| Platelet | 35 [10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 8.5 [fL]                  | [7.8-9.2]   |

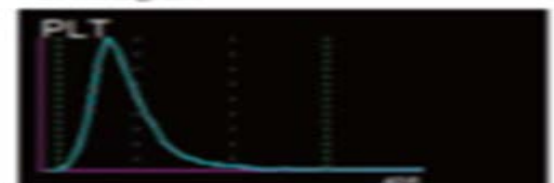


© This is a conceptual drawing.

RBC histogram



PLT histogram



## INTRODUCTION

### CASE SCENERIO 1

### CASE SCENERIO 2

### CASE SCENERIO 3

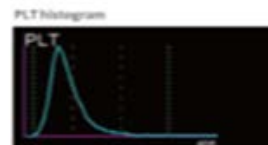
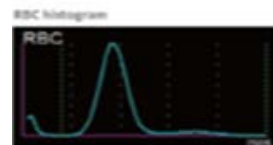
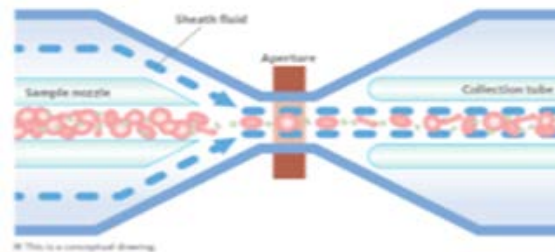
### CASE SCENERIO 8

Auto CP

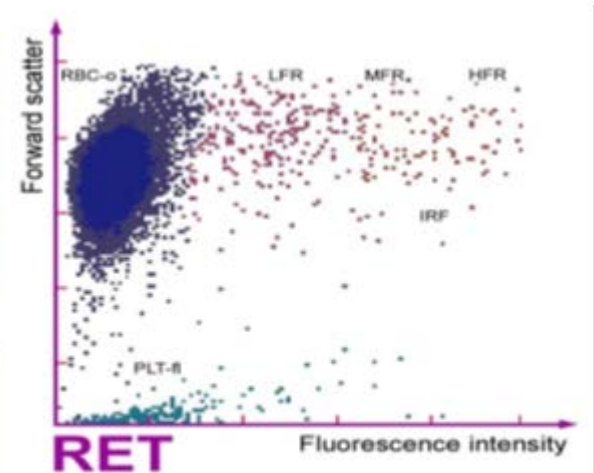
Work Up

## CONCLUSION

|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 125 [g/L]                 | [130-180]   |
| MCV      | 97 [fL]                   | [78-100]    |
| Hct      | 32.4[%]                   | [42-52]     |
| WBC      | 10.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 6.6[10 <sup>6</sup> /uL]  | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.2[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.0[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 0.7[10 <sup>6</sup> /uL]  | [0.05-0.10] |
| Platelet | 35 [10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 11.8 [fL]                 |             |



Impedence count



Optical count

INTRODUCTION

CASE SCENERIO 1

CASE SCENERIO 2

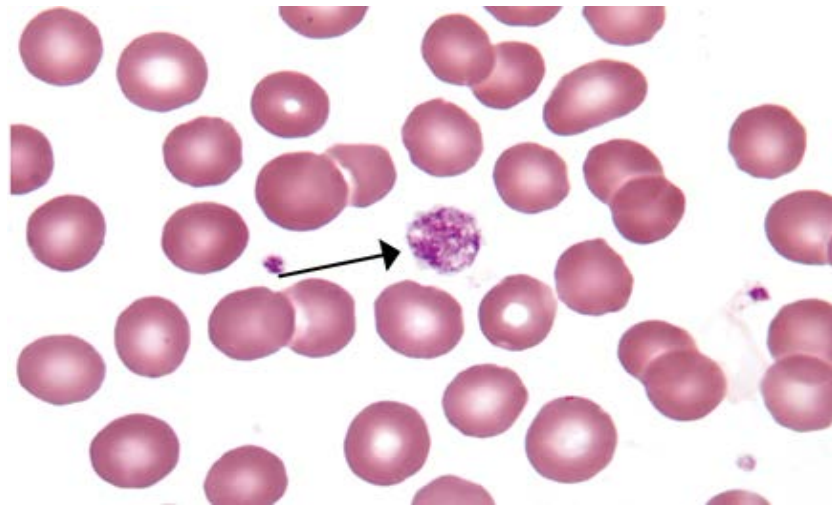
CASE SCENERIO 3

CASE SCENERIO 9

Auto CP

Work Up

|          |                           |             |
|----------|---------------------------|-------------|
| Hb       | 125 [g/L]                 | [130-180]   |
| MCV      | 97 [fL]                   | [78-100]    |
| Hct      | 32.4[%]                   | [42-52]     |
| WBC      | 10.8[10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 6.6[10 <sup>6</sup> /uL]  | [1.50-6.60] |
| Lym      | 2.1[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.2[10 <sup>6</sup> /uL]  | [0.00-0.50] |
| Baso     | 0.0[10 <sup>6</sup> /uL]  | [0.00-0.08] |
| Mono     | 0.7[10 <sup>6</sup> /uL]  | [0.05-0.10] |
| Platelet | 35 [10 <sup>6</sup> /uL]  | [150-450]   |
| MPV      | 11.8 [fL]                 | [7.8-9.2]   |



Peripheral destruction

CONCLUSION



INTRODUCTION

CASE SCENERIO 1

CASE SCENERIO 2

CASE SCENERIO 3

CASE SCENERIO 10

Auto CP

Work Up



|          |                             |             |
|----------|-----------------------------|-------------|
| Hb       | 43.3 [g/L]                  | [130-180]   |
| MCV      | 93.4 [fL]                   | [78-100]    |
| Hct      | 28 [%]                      | [42-52]     |
| WBC      | 721.x [10 <sup>6</sup> /uL] | [4.0-10.50] |
| Neu      | 4.24[10 <sup>6</sup> /uL]   | [1.50-6.60] |
| Lym      | 676.x[10 <sup>6</sup> /uL]  | [1.50-3.50] |
| Eosin    | 0.00[10 <sup>6</sup> /uL]   | [0.00-0.50] |
| Baso     | 0.00[10 <sup>6</sup> /uL]   | [0.00-0.08] |
| Mono     | 40.7[10 <sup>6</sup> /uL]   | [0.05-0.10] |
| Platelet | 133 [10 <sup>6</sup> /uL]   | [150-450]   |
| MPV      | 6.7[fL]                     | [7.8-9.2]   |

**Any Comment?**

CONCLUSION

INTRODUCTION

CASE SCENERIO 1

CASE SCENERIO 2

CASE SCENERIO 3

CASE SCENERIO 4

## SUMMARY:

1. Many information can be available from modern automated blood count report.
2. Each blood cells parameter is valuable in the approach of blood cells abnormality.
3. Correct diagnosis can be reached through the parallel information.
4. Understanding of laboratory principles and factors affecting the AUTOMATED results.
5. Importance of Quality Control System
6. One more important thing in the approach of anaemia

→ **Blood Film Morphology**

CONCLUSION

A microscopic view of numerous red blood cells, which are biconcave discs, against a dark background. The cells are illuminated from the side, creating a bright rim and a darker center, giving them a three-dimensional appearance. They are scattered across the frame, with some in sharp focus and others blurred in the background.

**Thank You !!!**