

COULTER®

Clinical Applications



| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| PO2 | 31.0 | VM_ | |
| CL | 11.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

ANEMIA AND IMMUNODIAGNOSTICS

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| | | |
|--------|-------|-----|
| Result | Flags | Pre |
| 141.0 | VM | |

| ID muestra | Pos / Cass | Fecha | Hora | Modo asp | Estado | Instrumento | Nombre lista | Tiempo |
|---------------|------------|--------|------------|----------|---------|----------------|--------------|----------|
| CBC(+Dif+Ret) | | 000608 | 06/05/2004 | 17:33:38 | Automát | No coincidenci | Instrument 1 | 37G56FB8 |
| Sólo Retic | | | | | | | | |

- Parámetros
 Demográficos
 Datos de CBC
 Datos Dif
 Datos Retic

| | | | |
|------|------|------|-----|
| WBC | 6.0 | | |
| NE % | 64.6 | NE # | 3.9 |
| LY % | 26.8 | LY # | 1.6 |
| MO % | 6.6 | MO # | 0.4 |
| EO % | 1.7 | EO # | 0.1 |
| BA % | 0.3 | BA # | 0.0 |

| | | | |
|--------|-----|--------|-----|
| % ERBL | 0.0 | # ERBL | 0.0 |
|--------|-----|--------|-----|

| | | | | | |
|------|------|-------|---------|------|---|
| RBC | 4.84 | RET % | 0.32 | L | |
| HGB | 12.4 | L | RET # | 15.7 | L |
| HCT | 37.5 | L | MRV | 92.4 | L |
| MCV | 77.6 | L | IRF | 0.23 | |
| MCH | 25.7 | aL | @ MSCV | 79.5 | |
| MCHC | 33.1 | | @ HLR % | 0.07 | L |
| RDW | 15.5 | H | @ HLR # | 3.6 | L |

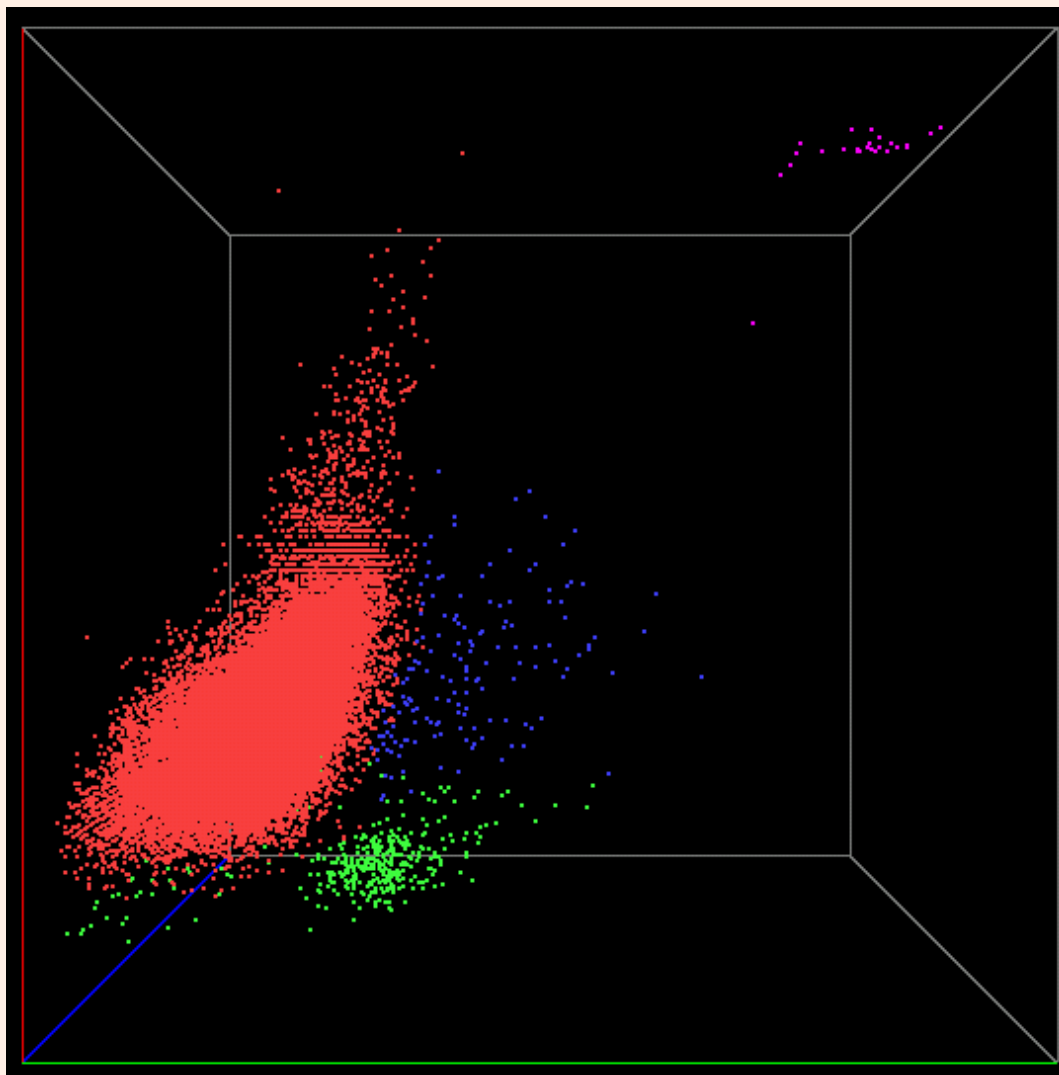
| | | | |
|-----|------|-------|-------|
| PLT | 237 | @ TCT | 0.242 |
| MPV | 10.2 | @ ADP | 16.5 |

Sospecha / Definitivo

| |
|------------|
| Hipocromía |
|------------|

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HNA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| WBC | 31.0 | VM_ | |
| PLT | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K



| RET % | RET # | MRV | IRF | MSCV | HLR % | HLR # |
|-------|-------|-------|-----|-------|-------|-------|
| 0.325 | 15.71 | 92.41 | 0.2 | 79.53 | 0.074 | 3.6 |

(MRV normal range: 112-118 fl) actual erythropoiesis

Slight hypochromic red cells

Microcytic red cells



| | Result | Flags | P |
|-----|--------|-------|---|
| HA | 141.0 | VM | |
| HGB | 5.20 | JM | |
| HCT | 31.0 | VM | |
| MCV | 111 | VM | |
| MCH | 129.0 | JM | |

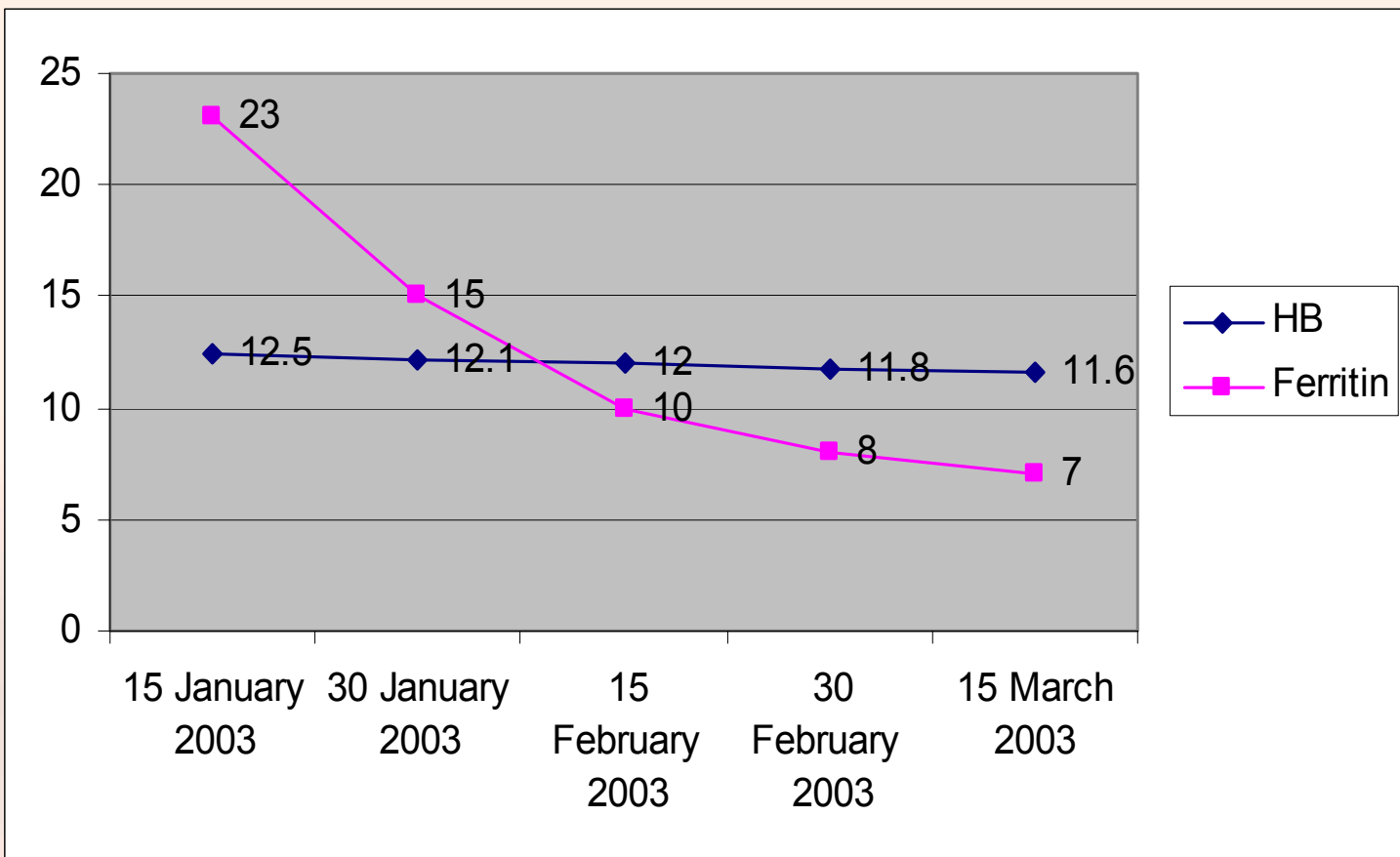
Values : K

Ferritin: 10.2 ng/mL

Evolution of a latent Iron deficiency to Anemia of Iron def.

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| WBC | 31.0 | VM_ | |
| PLT | 111.0 | VM_ | |
| ALC | 129.0 | JM_ | |

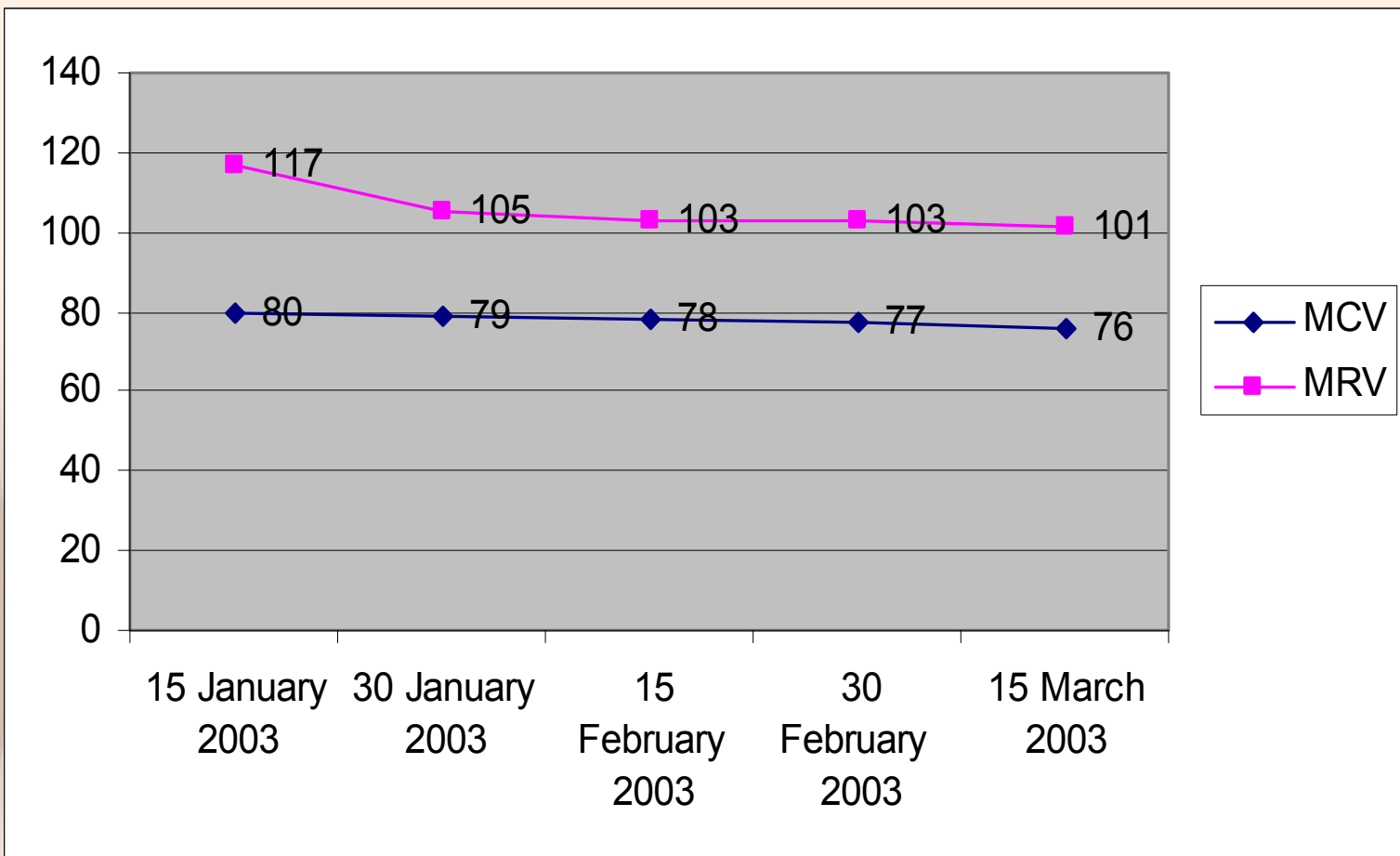
Values : K



Evolution of a latent Iron deficiency to Anemia of Iron def.

| | Result | Flags | Pre |
|------|--------|-------|-----|
| HbA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| HbO2 | 31.0 | VM_ | |
| CL | 111.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K



| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.21 | JM_ | |
| RDW | 31.0 | VM_ | |
| PLT | 277 | VM_ | |
| MCV | 129.0 | JM_ | |

| | LATENT IRON DEFICIENCY | NO LATENT IRON DEF | LATENT ID vs NON LATENT |
|---------------------------|------------------------|--------------------|-------------------------|
| | AVERAGE | AVERAGE | T-TEST (p) |
| Haemoglobin (g/dL) | 12.4 | 12.5 | 0.0165 |
| RDW (%) | 14.3 | 13.7 | 0.0076 |
| MCV (fL) | 87.2 | 89.8 | 0.0118 |
| MCH (pg) | 29.2 | 30.1 | 0.0113 |
| PLT (10 ³ /μL) | 284 | 257 | 0.1665 |
| RDW / MCV | 1.24 | 1.16 | 0.0756 |
| MCV x MCH | 10.8 | 11.3 | 0.0014 |
| MCV x MCH | 25.5 | 27.1 | 0.0133 |
| MCV x MCH x (1/RDW) | 7.58 | 8.28 | 0.0001 |

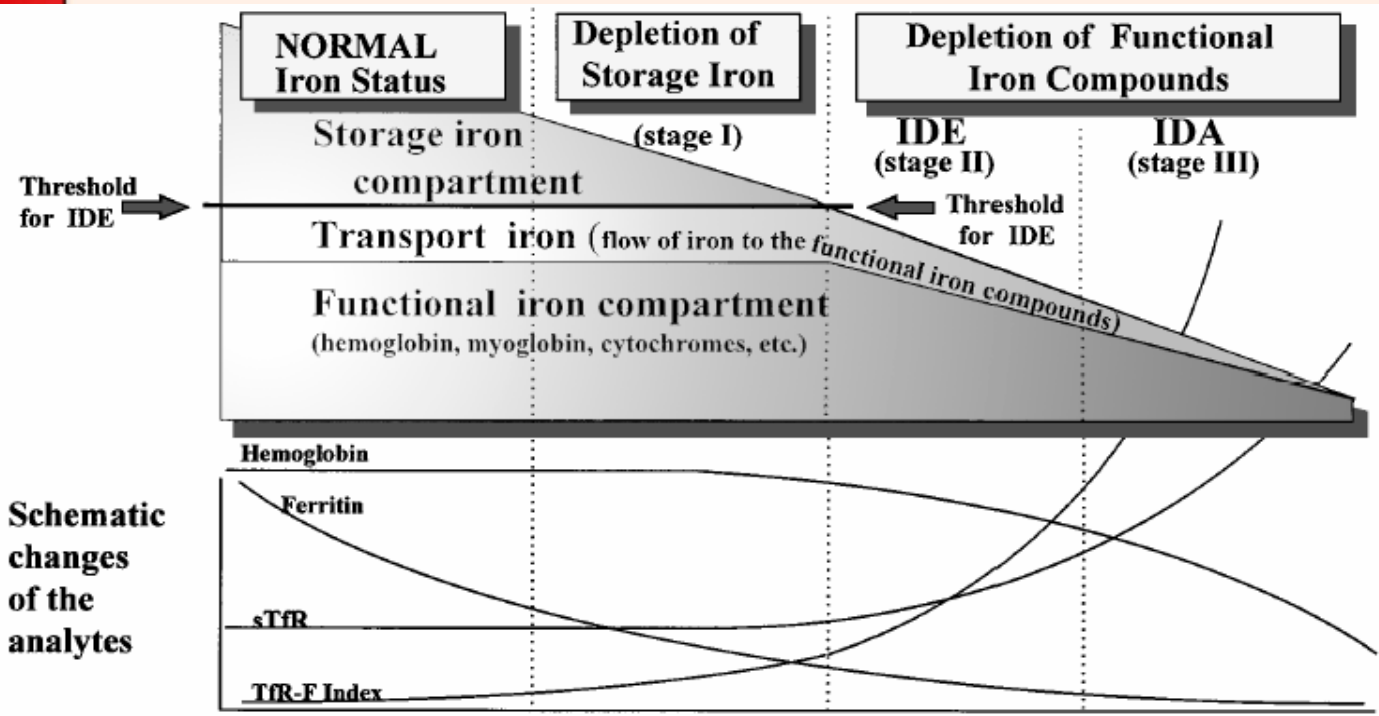
REMINDER: ROC

| Result | Flags | Pre |
|--------|-------|-----|
| 141.0 | VM_ | |
| 31.0 | VM_ | |
| 117.0 | VM_ | |

| | ROC | CURVE | ANALYSIS | |
|---------------------------|-----------------------|--------------------|--------------------|-------------------------|
| | Cut-off | Sensitivity | Specificity | Area Under Curve |
| HEMOGLOBIN | <12.42 g/dL | 63% | 65,50% | 0.644 |
| RDW | >14.03 | 63% | 70% | 0.683 |
| MCV | <87.65 fL | 59,30% | 70% | 0.635 |
| MCH | <29.61 | 59,30% | 65,50% | 0.633 |
| PLT | >257.4 | 51,80% | 58,20% | 0.508 |
| MRV/MCV | >1.21 | 70,40% | 60% | 0.689 |
| Hb X MCV | <11.43 | 92,60% | 39,10% | 0.667 |
| MCV X MCH | <26.49 | 63% | 60% | 0.630 |
| HB X MCV X (1/RDW) | <7.91 | 66,70% | 70% | 0.686 |

| Result | Flags |
|--------|-------|
| 141.0 | VM |
| 31.0 | VM |
| 117.0 | VM |
| 129.0 | M |

Values : K



Schematic changes of the analytes

Typical laboratory profile

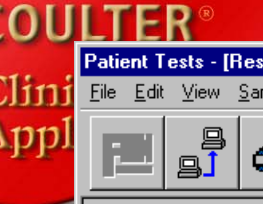
| | | | |
|---|--|---|--|
| Ferritin 22-203 µg/L sTfR 1.15 - 2.75 mg/L TfR-F Index 0.63 - 1.8 Hb (women) 117-153 g/L Hb (men) 128-168 g/L | Ferritin <22 µg/L TfR-F Index >1.8 sTfR <2.75 mg/L Hb (women) >117 g/L Hb (men) >128 g/L | sTfR > 2.75 mg/L Ferritin < 22 µg/L TfR-F Index > 2.2 Hb (women) > 117 g/L Hb (men) > 128 g/L | sTfR > 3.6 mg/L Ferritin < 22 µg/L Hb (women) < 117 g/L Hb (men) < 128 g/L TfR-F Index > 2.8 |
|---|--|---|--|

Our population

| | | | | |
|---------------|--------------|--------------|---------------|-----------|
| Total (n= 65) | n=40 (61.5%) | n= 8 (12.3%) | n= 17 (26.2%) | n= 0 (0%) |
| Men (n= 22) | n=19 (86.4%) | n= 3 (13.6%) | n= 0 (0%) | n= 0 (0%) |
| Women (n=43) | n=21 (48.8%) | n= 5 (11.6%) | n= 17 (39.5%) | n= 0 (0%) |

Serum Transferrin Receptor and Transferrin Receptor-Ferritin Index Identify Healthy Subjects With Subclinical Iron Deficits.

Pauli Suominen, Kari Punnonen, Allan Rajamaäki, and Kerttu Irjala
 Blood, Vol 92, No 8 (October 15), 1998: pp 2934-2939



Patient Tests - [Results & Graphics]

File Edit View Sample Apertures Window Help



Patient ID

WBC 13.0 H

NE % 93.4 aH

LY % 5.0 aL

MO % 1.2 L

EO % 0.2 aL

BA % 0.2

NE # 12.2 aH

LY # 0.7 aL

MO # 0.2 L

EO # 0.0 L

BA # 0.0

RBC 3.05 aL

HGB 9.4 aL

HCT 27.5 aL

MCV 90.2

MCH 31.0

MCHC 34.3

RDW 14.3

RET % 1.46

RET # 44.5 L

@ MRV 116.8

@ MSCV 105.0

@ IRF 0.42 H

@ HLR % 0.57

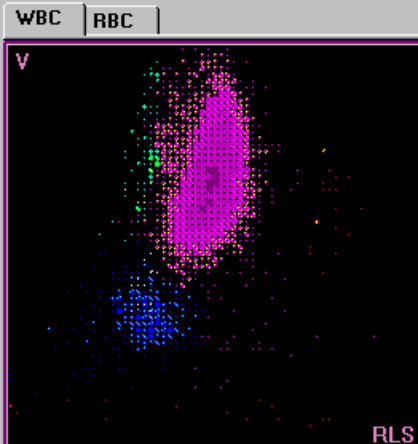
@ HLR # .0173

PLT 441

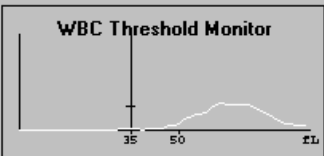
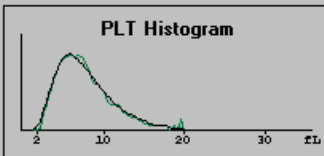
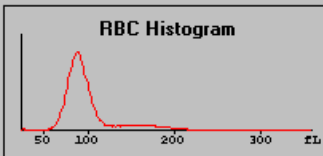
MPV 7.9

@ PDW 15.9

Navigation: All



Suspect / Definitive
Anemia
Imm. NE 1
Imm. NE 2
Lymphopenia #
Lymphopenia %
Neutrophilia #
Neutrophilia %



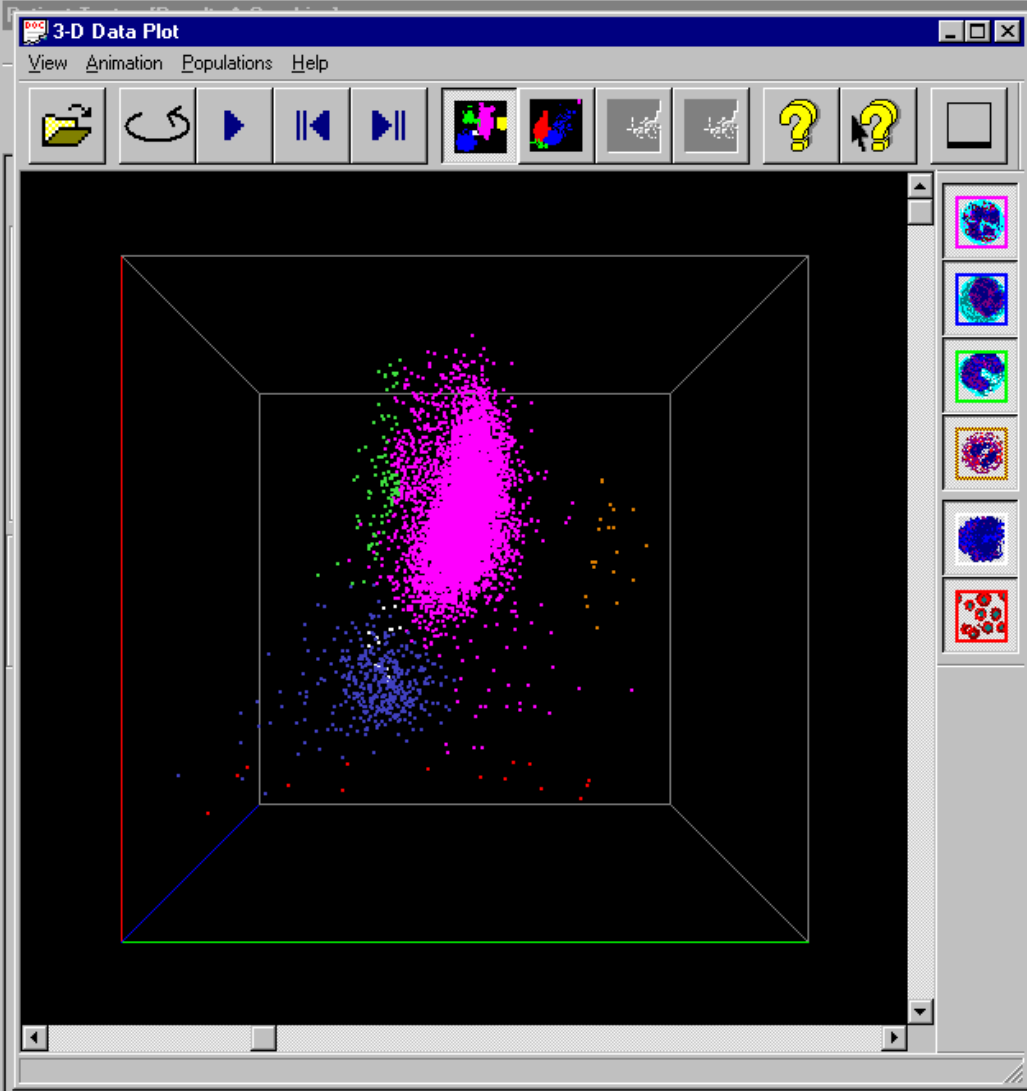
| | Sample ID | Cass / Pos | Date | Time | Asp Mode | Status | Instrument |
|-------------------|-----------|------------|---------|----------|----------|-----------|--------------|
| CBC(+Diff,+Retic) | 503886 | | 2/04/02 | 13:00:54 | Manual | Completed | Instrument 1 |
| Retic Only | | | | | | | |
| CD 4 | | | | | | | |
| CD 8 | | | | | | | |

@ For Research Use Only. Not For Use in Diagnostic Procedures. 2/04/02 15:59

Last Message: Instrument dual-port RAM memory test passed. DO NOT RESET INSTRUMENT.

 AUTO ANALYSIS
 Barcode:

lin
app
:20
Re
NA 14
002 3
CL 1
ALC 15
Values



Navigation: All

WBC RBC

RLS

Suspect / Definitive

- Anemia
- Imm. NE 1
- Imm. NE 2
- Lymphopenia #
- Lymphopenia %
- Neutrophilia #
- Neutrophilia %

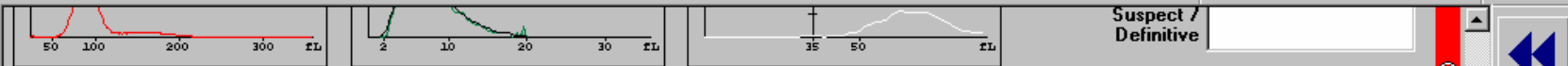
Instrument

Instrument 1

© For Research Use Only. Not For Use in Diagnostic Procedures. 2/04/02 16:00

AUTO ANALYSIS

Toolbar with icons for printer, sample, apertures, window, help, and other functions.



| | Sample ID | Cass / Pos | Date | Time | Asp Mode | Status | Instrument | Listname | Elapsed Time |
|--------------------------|-----------|------------|---------|----------|----------|-----------|--------------|----------|--------------|
| CBC(+Diff,+Retic) | 503886 | | 2/04/02 | 13:00:54 | Manual | Completed | Instrument 1 | 01E42D79 | |
| Retic Only | | | | | | | | | |
| CD 4 | | | | | | | | | |
| CD 8 | | | | | | | | | |

WBC Differential Population Data

| Sample ID | Cass/Pos | Date | Time | Asp Mode | Status | Instrument | Temp | Setting |
|-----------|----------|---------|----------|----------|-----------|--------------|-------|---------|
| 503886 | | 2/04/02 | 13:00:54 | Manual | Completed | Instrument 1 | 76.12 | Low |

| | NE | | LY | | MO | | EO | | Count | Actual | Low | High |
|---|------|-------|------|-------|------|-------|------|-------|-----------|----------|-------|------|
| | MEAN | SD | MEAN | SD | MEAN | SD | MEAN | SD | Displayed | Analyzed | Total | |
| V | 173 | 27.33 | 86 | 14.51 | 188 | 26.78 | 154 | 21.30 | 8141 | 8141 | 8192 | |
| C | 144 | 9.89 | 116 | 17.22 | 124 | 5.62 | 151 | 4.54 | | | | |
| S | 126 | 11.78 | 84 | 17.17 | 86 | 6.90 | 201 | 8.04 | 4.4 | 4.3 | 5.4 | |

Reticulocyte Population Data

| Sample ID | Cass/Pos | Date | Time | Asp Mode | Status | Instrument | Temp | Setting |
|-----------|----------|---------|----------|----------|-----------|--------------|-------|---------|
| 503886 | | 2/04/02 | 13:00:54 | Manual | Completed | Instrument 1 | 76.12 | Low |

| | Retic | | Non-Retic | | Count | Actual | Low | High |
|---|-------|-------|-----------|-------|-----------|----------|-------|------|
| | MEAN | SD | MEAN | SD | Displayed | Analyzed | Total | |
| V | 58 | 25.62 | 52 | 11.64 | 31987 | 32111 | 32767 | |
| C | 131 | 20.99 | 68 | 11.90 | | | | |
| S | 105 | 40.83 | 81 | 28.73 | 14.9 | 16.4 | 26.2 | |

Bottom toolbar with icons for Start, Status Application, Quality Assurance, Patient Tests, and AUTO ANALYSIS.

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| CO2 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

| | | | | | | |
|------|-------|----|-------|----|----|------|
| | | | | | | |
| 1250 | 3'097 | 11 | 113.6 | 95 | 75 | 11.6 |

| |
|------|
| |
| 20.7 |

| | | |
|-----|-----|--|
| | | |
| 3.3 | 265 | |

| |
|--|
| |
| |

| | |
|------|-------|
| | |
| 1.72 | 1'800 |

ANEMIA OF CHRONIC DISEASE

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| CO2 | 31.0 | VM_ | |
| CL | 11.0 | VM_ | |
| ALC | 129.0 | JM_ | |

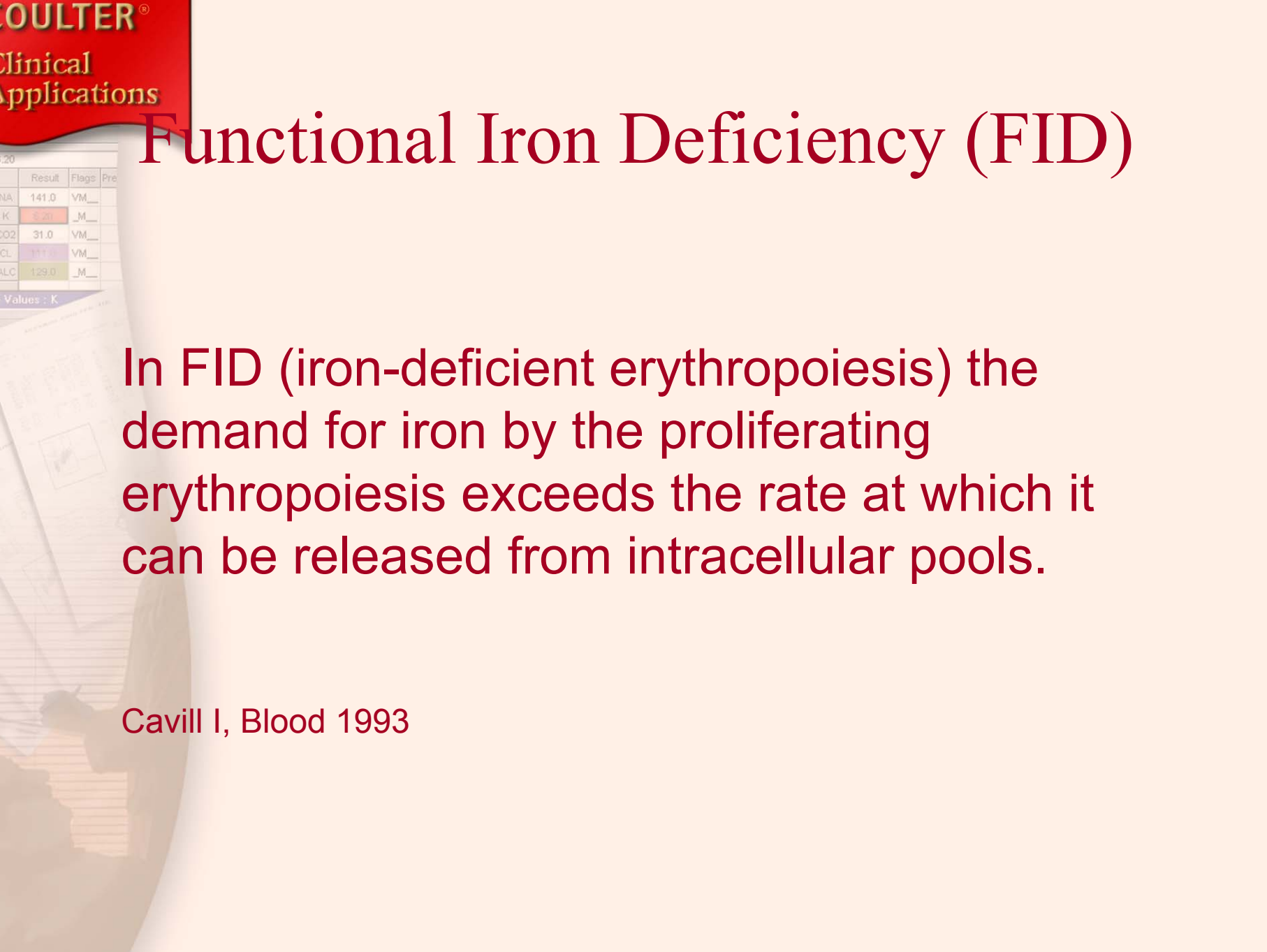
Values : K

Table 2. Differentiation between the anemia of chronic disease and iron-deficiency anemia by laboratory measures of iron status.

| Laboratory Measure | Anemia of Chronic Disease | Iron-Deficiency Anemia |
|------------------------------------|----------------------------------|-------------------------------|
| Plasma iron concentration | Reduced to normal | Reduced |
| Plasma transferrin concentration | Reduced to normal | Increased |
| Transferrin saturation | Reduced to normal | Reduced |
| Plasma ferritin | Normal to increased | Reduced |
| Plasma Transferrin Receptor | Normal | Increased |
| Transferrin receptor/ log ferritin | Low (<1)* | high (>4) |

Bold letters indicate the condition which is observed more frequently.

Functional Iron Deficiency (FID)



Background image showing a laboratory report and a globe. The report includes a table with columns for 'Result', 'Flags', and 'Pre'. The table contains the following data:

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | 5.20 | _M_ | |
| PO2 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | _M_ | |

Values : K

In FID (iron-deficient erythropoiesis) the demand for iron by the proliferating erythropoiesis exceeds the rate at which it can be released from intracellular pools.

Cavill I, Blood 1993

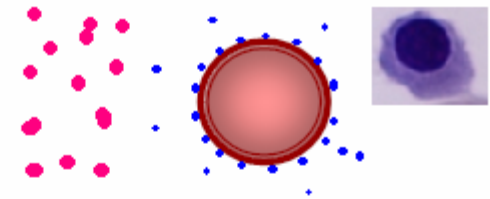
| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM | |
| K | 5.20 | JM | |
| 002 | 31.0 | VM | |
| CL | 117.0 | VM | |
| ALC | 129.0 | JM | |

Values : K

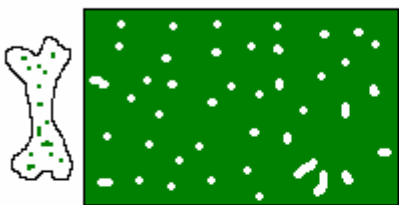
Iron



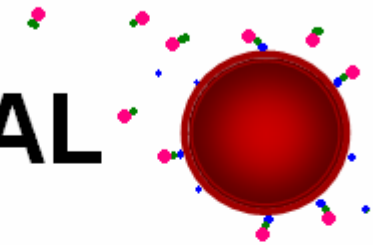
LID Hgb N
IDA Hgb L



n



NORMAL

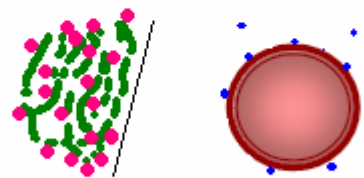


● Iron ● Transferrin receptor ● Transferrin

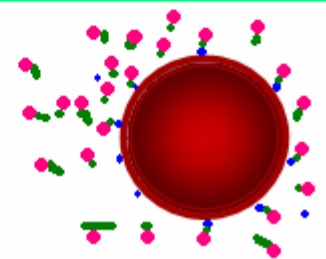
Iron deposits



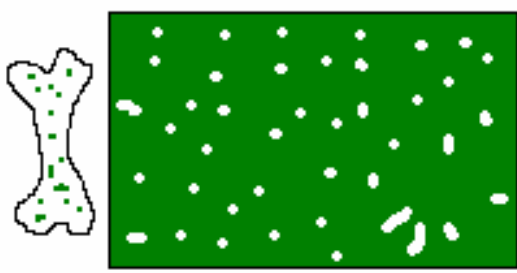
FID



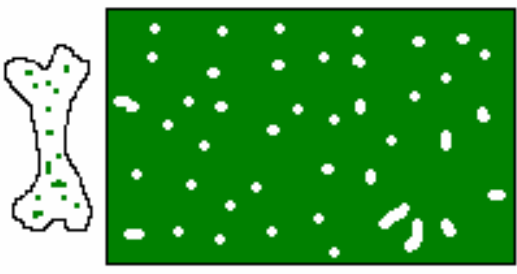
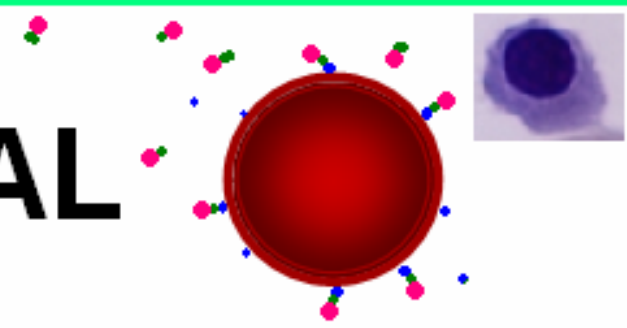
HEMOCHROMATOSIS



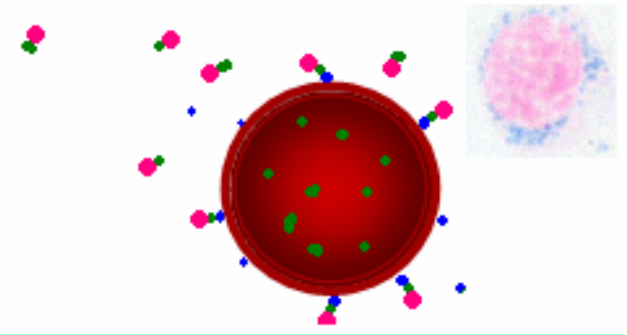
| | Result | Flags | Pre |
|----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | | M | |



NORMAL



MDS



| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM | |
| K | 3.20 | JM | |
| CO2 | 31.0 | VM | |
| CL | 111 | VM | |
| ALC | 129.0 | JM | |

Values : K

Iron Absorption



Hem: grupo hemo; HO: hemoxidasa; FR: ferritorreductasa; Ft: ferritina; Tf: transferrina; Fp: ferroportina; Hf: hefestina; Cp: ceruloplasmina

TREATMENT

**Iron Dosage schedule (mg/month)
according to methods TfS and Ferritin
(Dutch Kidney Foundation)**

| Ferritin µg/L | <100 | 100-500 | 500-800 | >800 |
|----------------------|----------------|----------------|----------------|----------------|
| TfS < 20% | 400 | 400 | 100 | none |
| TfS > 20% | 400 | 100 | none | none |

MAXIMA

| Ferritin µg/L | <100 | 100-500 | 500-800 | >800 |
|---------------|------|---------|---------|-------|
| TfS < 20% | 4,8% | 28,5% | 16,4% | 4,1% |
| TfS > 20% | 1,4% | 12,3% | 16,2% | 16,2% |

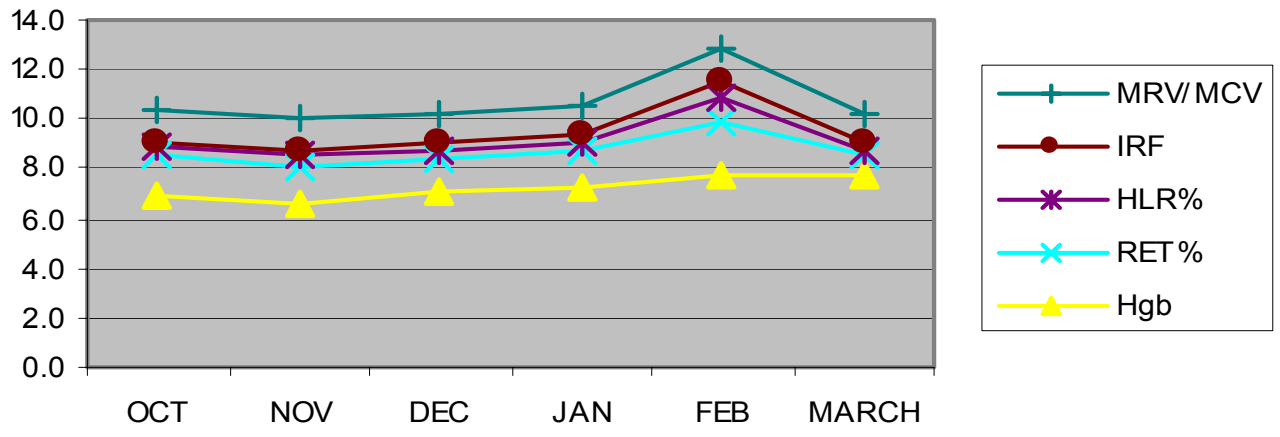
ZARAGOZA

| Ferritin µg/L | <100 | 100-500 | 500-800 | >800 |
|---------------|------|---------|---------|------|
| TfS < 20% | 2.6% | 5.1% | 4.3% | 0.9% |
| TfS > 20% | 3.8% | 61.3% | 18.7% | 3.4% |

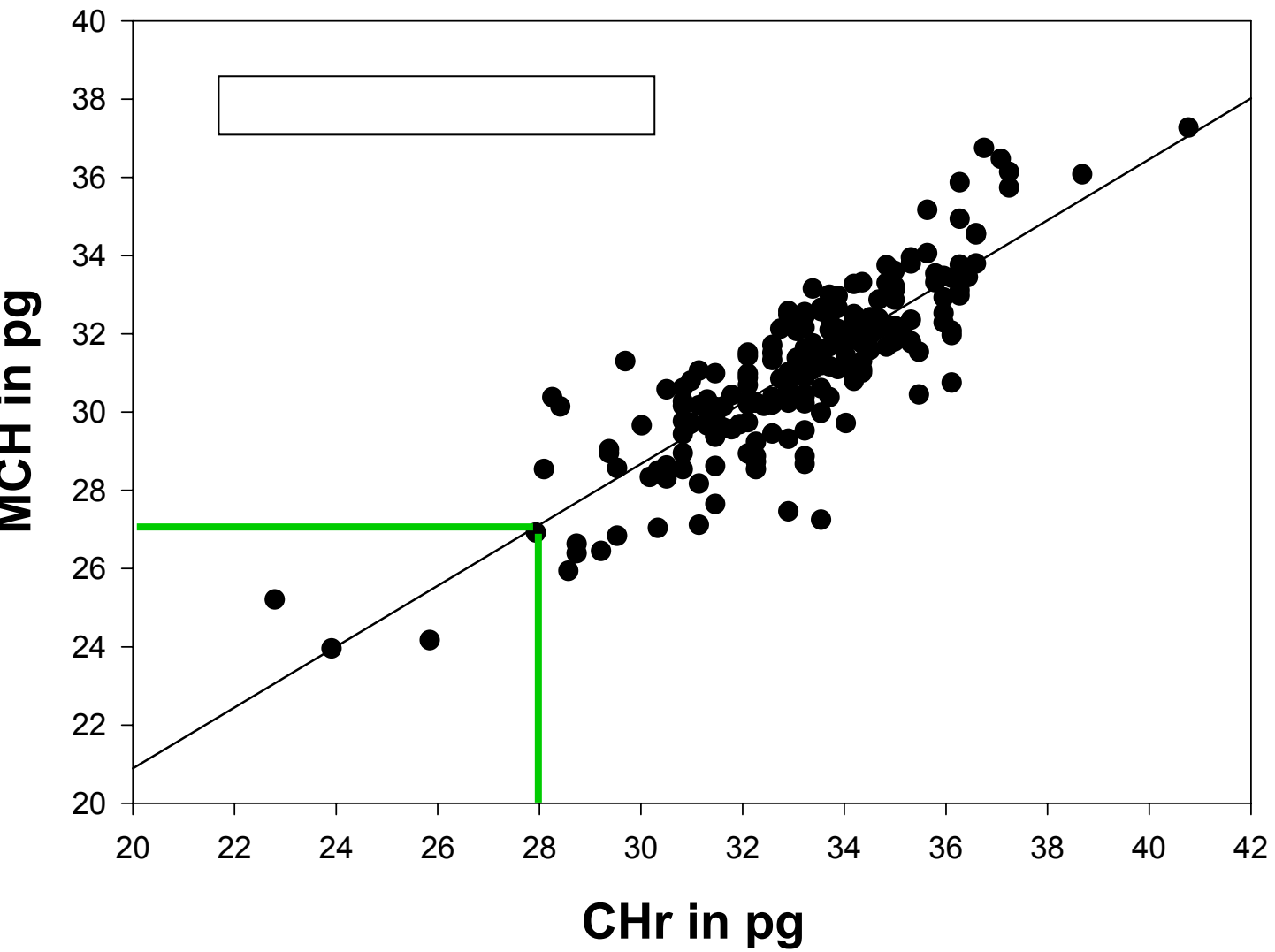
MAASTRICHT

| Ferritin | <100 | 100-500 | 500-800 | >800 |
|----------|------|---------|---------|------|
| TfS < 20 | 6.2% | 31.0% | 4.6% | 1.2% |
| TfS > 20 | 4.3% | 40.9% | 8.4% | 3.4% |

EVOLUTION OF ANEMIA OF PATIENTS WITH RENAL FAILURE AND EPO



| 5 | OCT | NOV | DEC | JAN | FEB | MARCH |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Venofer | 100.0 | 100.0 | 800.0 | 200.0 | 100.0 | 200.0 |
| EPO | 32000.0 | 32000.0 | 48000.0 | 48000.0 | 48000.0 | 48000.0 |
| Hgb | 6.9 | 6.6 | 7.1 | 7.3 | 7.8 | 7.8 |
| RET % | 1.6 | 1.5 | 1.3 | 1.4 | 2.1 | 0.8 |
| HLR% | 0.36 | 0.39 | 0.36 | 0.38 | 1.09 | 0.22 |
| IRF | 0.23 | 0.26 | 0.28 | 0.27 | 0.53 | 0.29 |
| MRV/MCV | 1.23 | 1.22 | 1.20 | 1.27 | 1.35 | 1.12 |
| MRV | 115.31 | 115.55 | 115.47 | 118.42 | 125.71 | 103.32 |
| MCV | 94.00 | 94.40 | 96.00 | 93.60 | 93.00 | 92.50 |
| RSf | 10.84 | 10.91 | 11.09 | 11.08 | 11.69 | 9.56 |
| Tr.Sat | 18.60 | 21.00 | 28.00 | 25.30 | 19.20 | 14.90 |
| CRP | 20.00 | 0.00 | 0.00 | 2.00 | 2.00 | 40.00 |
| Ferritin | 368.00 | 363.00 | 408.00 | 334.00 | 466.00 | 465.00 |
| dR In(MR) | 20.43 | 20.22 | 18.47 | 23.52 | 30.14 | 11.06 |



ISLH 2004
(Barcelona)

Studie 1

Danise P; Salerno

LH750 vs Advia 120
(n=229)

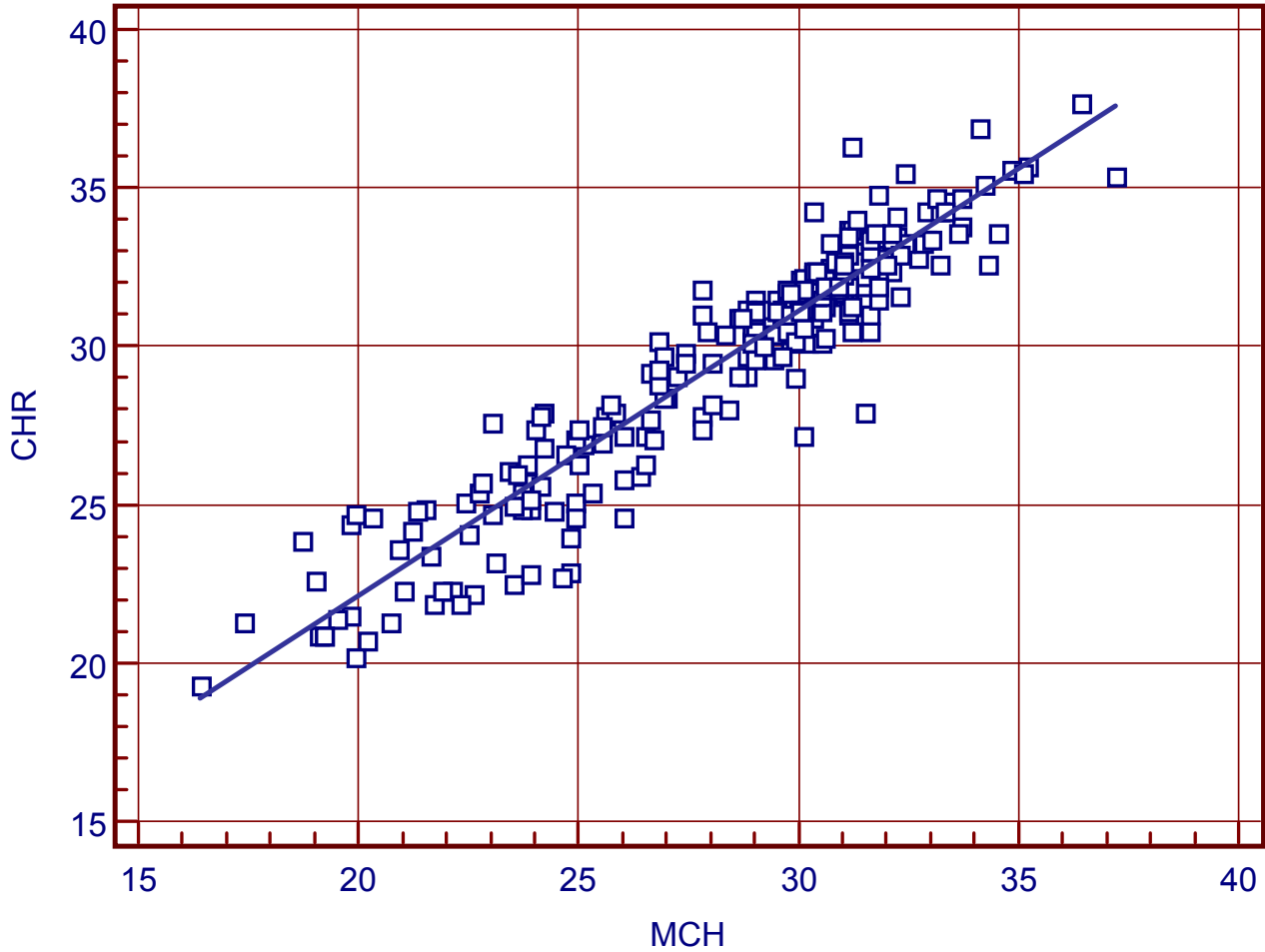
MCH vs CHr (norm)
 $r = 0,94$
MCH vs CHr (Anär)
 $r = 0,84$

Cut off for
CHr ≤ 28 pg
MCH = 27,5 pg

Study 2: Dr De Jong; NL 2004

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| ANA | 141.0 | VM_ | |
| K | 5.20 | _M_ | |
| CO2 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | _M_ | |

Values : K



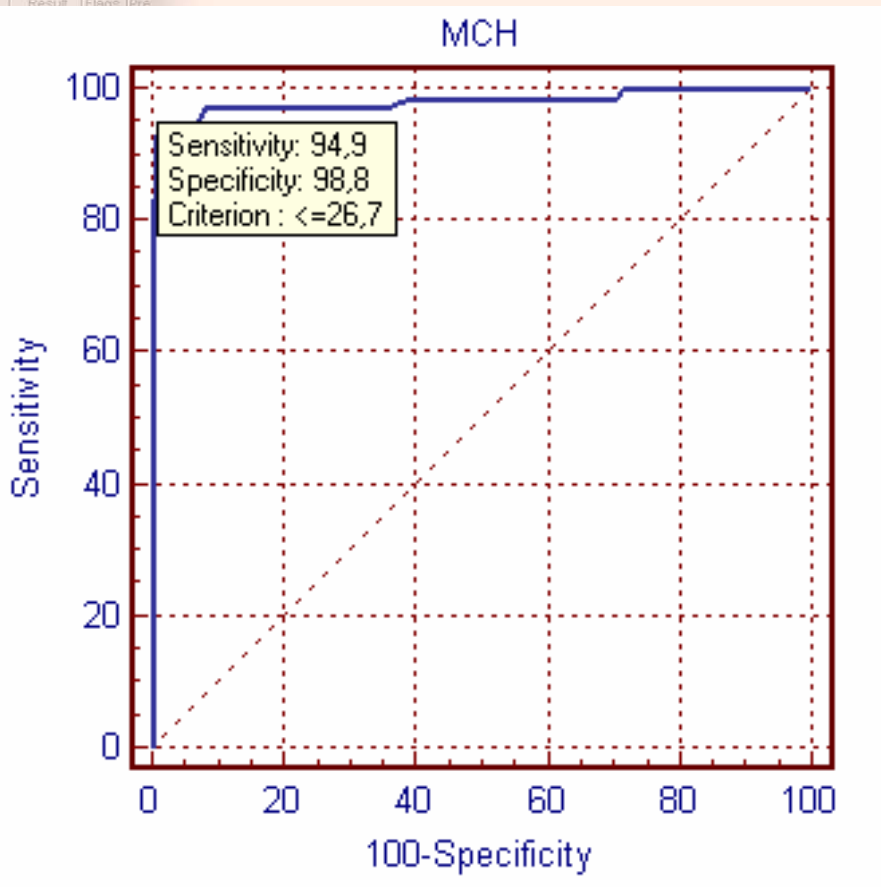
Variable Y : CHR
Variable X : MCH

Sample size = 247

Correlation coefficient $r = 0,9464$ $P < 0,0001$

95% Confidence interval for $r = 0.9317$ to 0.9581

ROC CURVE selecting positives cases for CHr (CHr < 28) using MCH



VARIABLE = MCH

**CLASSIFICATION VARIABLE
CHR_LOW=1**

**POSITIVE GROUP
CHR_LOW=1 = 1
Sample size = 78**

**NEGATIVE GROUP
CHR_LOW=1 = 0
Sample size = 169**

Disease prevalence unknown.

Area under the ROC curve = 0,983

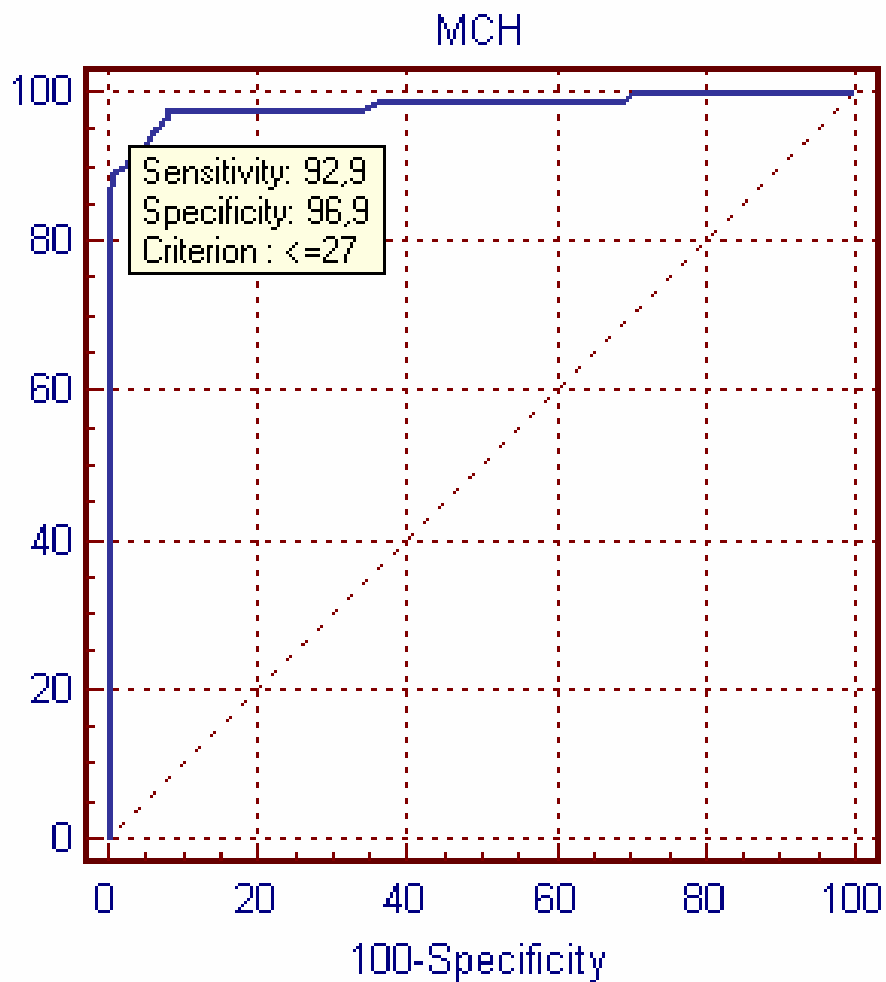
Standard error = 0,007

95% Confidence interval = 0,958 to 0,995

ROC CURVE selecting positives cases for CHr (CHr < 28) using MCH

| Criterion | Sens. (95% C.I.) | Spec. (95% C.I.) | +LR | -LR |
|-----------|---------------------|---------------------|--------|------|
| < 16,4 | 0,0 (0,0- 4,7) | 100,0 (97,8-100,0) | | 1,00 |
| <=25,6 | 83,3 (73,2- 90,8) | 100,0 (97,8-100,0) | | 0,17 |
| <=25,7 | 83,3 (73,2- 90,8) | 99,4 (96,7- 99,9) | 140,83 | 0,17 |
| <=26,5 | 92,3 (84,0- 97,1) | 99,4 (96,7- 99,9) | 156,00 | 0,08 |
| <=26,6 | 93,6 (85,7- 97,9) | 98,8 (95,8- 99,8) | 79,08 | 0,06 |
| <=26,7 * | 94,9 (87,4- 98,6) | 98,8 (95,8- 99,8) | 80,17 | 0,05 |
| <=27,4 | 94,9 (87,4- 98,6) | 92,9 (87,9- 96,3) | 13,36 | 0,06 |
| <=27,8 | 97,4 (91,0- 99,6) | 91,7 (86,5- 95,4) | 11,76 | 0,03 |
| <=30 | 97,4 (91,0- 99,6) | 63,9 (56,2- 71,1) | 2,70 | 0,04 |
| <=30,1 | 98,7 (93,0- 99,8) | 60,9 (53,2- 68,3) | 2,53 | 0,02 |
| <=31,4 | 98,7 (93,0- 99,8) | 29,6 (22,8- 37,1) | 1,40 | 0,04 |
| <=31,5 | 100,0 (95,3-100,0) | 28,4 (21,7- 35,8) | 1,40 | 0,00 |
| <=37,2 | 100,0 (95,3-100,0) | 0,0 (0,0- 2,2) | 1,00 | |

ROC CURVE selecting positives cases for CHr (CHr < 29) using MCH



VARIABLE = MCH

CLASSIFICATION VARIABLE
CHr_low_29_1

POSITIVE GROUP
CHr_low_29_1 = 1
Sample size = 84

NEGATIVE GROUP
CHr_low_29_1 = 0
Sample size = 163

Disease prevalence unknown.

Area under the ROC curve = 0,983
Standard error = 0,007
95% Confidence interval = 0,958 to 0,995

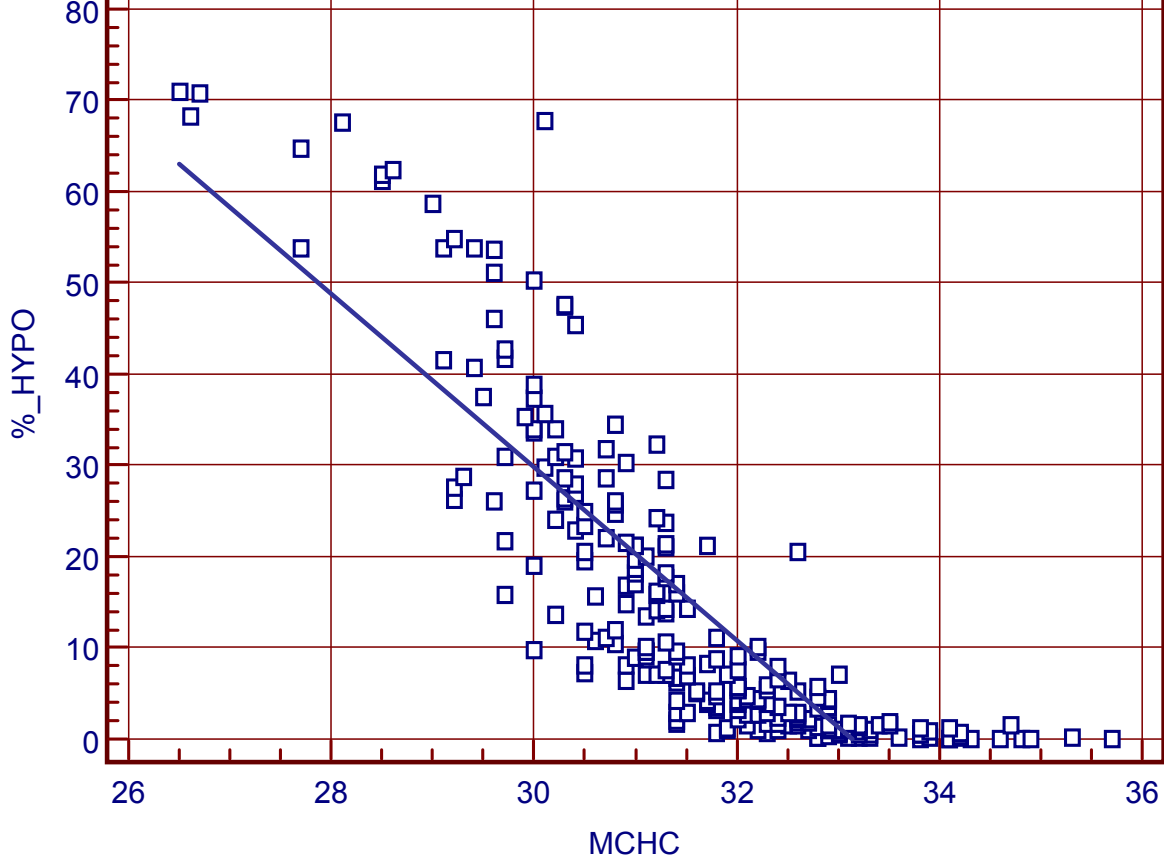
ROC CURVE selecting positives cases for CHr (CHr < 29) using MCH

| Criterion | Sens. (95% C.I.) | Spec. (95% C.I.) | +LR | -LR |
|-----------|---------------------|---------------------|--------|------|
| < 16,4 | 0,0 (0,0- 4,3) | 100,0 (97,7-100,0) | | 1,00 |
| <=26,5 | 86,9 (77,8- 93,3) | 100,0 (97,7-100,0) | | 0,13 |
| <=26,6 | 88,1 (79,2- 94,1) | 99,4 (96,6- 99,9) | 143,60 | 0,12 |
| <=26,7 | 89,3 (80,6- 95,0) | 99,4 (96,6- 99,9) | 145,54 | 0,11 |
| <=26,8 | 90,5 (82,1- 95,8) | 97,5 (93,8- 99,3) | 36,87 | 0,10 |
| <=26,9 | 91,7 (83,6- 96,6) | 96,9 (93,0- 99,0) | 29,88 | 0,09 |
| <=27 * | 92,9 (85,1- 97,3) | 96,9 (93,0- 99,0) | 30,27 | 0,07 |
| <=27,4 | 92,9 (85,1- 97,3) | 95,1 (90,6- 97,9) | 18,92 | 0,08 |
| <=27,8 | 95,2 (88,2- 98,7) | 93,9 (89,0- 97,0) | 15,52 | 0,05 |
| <=27,9 | 95,2 (88,2- 98,7) | 93,3 (88,2- 96,6) | 14,11 | 0,05 |
| <=28 | 96,4 (89,9- 99,2) | 92,6 (87,5- 96,1) | 13,10 | 0,04 |
| <=28,3 | 96,4 (89,9- 99,2) | 92,0 (86,7- 95,7) | 12,09 | 0,04 |
| <=28,4 | 97,6 (91,6- 99,6) | 92,0 (86,7- 95,7) | 12,24 | 0,03 |
| <=30 | 97,6 (91,6- 99,6) | 66,3 (58,4- 73,5) | 2,89 | 0,04 |
| <=30,1 | 98,8 (93,5- 99,8) | 63,2 (55,3- 70,6) | 2,68 | 0,02 |
| <=31,4 | 98,8 (93,5- 99,8) | 30,7 (23,7- 38,4) | 1,43 | 0,04 |
| <=31,5 | 100,0 (95,7-100,0) | 29,4 (22,6- 37,1) | 1,42 | 0,00 |
| <=37,2 | 100,0 (95,7-100,0) | 0,0 (0,0- 2,3) | 1,00 | |

7:20

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| 002 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K



Variable Y : %_HYPO

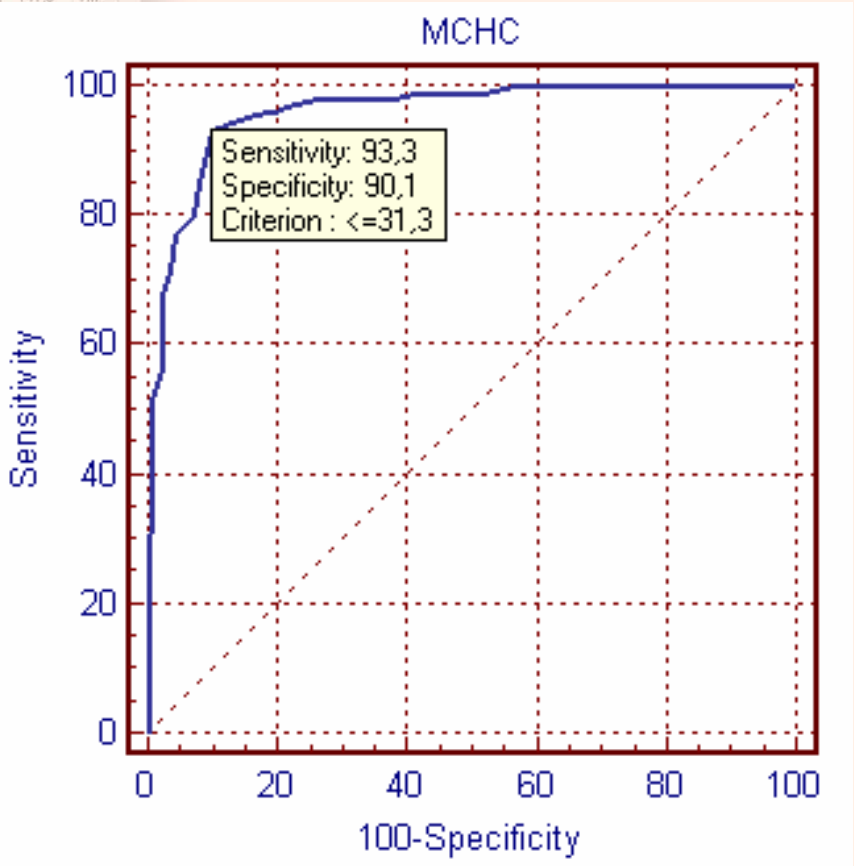
Variable X : MCHC

Sample size = 247

Correlation coefficient $r = -0,8492$ $P < 0,0001$

95% Confidence interval for $r = -0,8807$ to $-0,8103$

ROC CURVE selecting positives cases for hypo% (hypo% > 10%) using MCHC



VARIABLE = MCHC

**CLASSIFICATION VARIABLE
HYPO%_HIGH=1**

**POSITIVE GROUP
HYPO%_HIGH=1 = 1
Sample size = 105**

**NEGATIVE GROUP
HYPO%_HIGH=1 = 0
Sample size = 142**

Disease prevalence unknown.

**Area under the ROC curve = 0,962
Standard error = 0,012
95% Confidence interval = 0,930 to 0,982**

ROC CURVE selecting positives cases for hypo% (hypo% > 10%) using MCHC

| Criterion | Sens. (95% C.I.) | Spec. (95% C.I.) | +LR | -LR |
|-----------|---------------------|---------------------|-------|------|
| < 26,5 | 0,0 (0,0- 3,5) | 100,0 (97,4-100,0) | | 1,00 |
| <=29,9 | 27,6 (19,3- 37,2) | 100,0 (97,4-100,0) | | 0,72 |
| <=30 | 34,3 (25,3- 44,2) | 99,3 (96,1- 99,9) | 48,69 | 0,66 |
| <=30,4 | 51,4 (41,5- 61,3) | 99,3 (96,1- 99,9) | 73,03 | 0,49 |
| <=30,5 | 56,2 (46,2- 65,9) | 97,9 (93,9- 99,5) | 26,60 | 0,45 |
| <=30,8 | 67,6 (57,8- 76,4) | 97,9 (93,9- 99,5) | 32,01 | 0,33 |
| <=30,9 | 71,4 (61,8- 79,8) | 96,5 (92,0- 98,8) | 20,29 | 0,30 |
| <=31 | 77,1 (67,9- 84,8) | 95,8 (91,0- 98,4) | 18,26 | 0,24 |
| <=31,1 | 80,0 (71,1- 87,2) | 93,0 (87,4- 96,6) | 11,36 | 0,22 |
| <=31,2 | 84,8 (76,4- 91,0) | 92,3 (86,6- 96,1) | 10,94 | 0,17 |
| <=31,3 * | 93,3 (86,7- 97,3) | 90,1 (84,0- 94,5) | 9,47 | 0,07 |
| <=31,4 | 95,2 (89,2- 98,4) | 84,5 (77,5- 90,0) | 6,15 | 0,06 |
| <=31,5 | 96,2 (90,5- 98,9) | 81,7 (74,3- 87,7) | 5,25 | 0,05 |
| <=31,6 | 96,2 (90,5- 98,9) | 80,3 (72,8- 86,5) | 4,88 | 0,05 |
| <=31,7 | 97,1 (91,9- 99,4) | 78,2 (70,5- 84,7) | 4,45 | 0,04 |
| <=31,8 | 98,1 (93,3- 99,7) | 73,9 (65,9- 80,9) | 3,76 | 0,03 |
| <=32,1 | 98,1 (93,3- 99,7) | 62,0 (53,5- 70,0) | 2,58 | 0,03 |
| <=32,2 | 99,0 (94,8- 99,8) | 58,5 (49,9- 66,7) | 2,38 | 0,02 |
| <=32,5 | 99,0 (94,8- 99,8) | 47,9 (39,4- 56,4) | 1,90 | 0,02 |
| <=32,6 | 100,0 (96,5-100,0) | 43,0 (34,7- 51,5) | 1,75 | 0,00 |
| <=35,7 | 100,0 (96,5-100,0) | 0,0 (0,0- 2,6) | 1,00 | |

MCV in patients with TfS <20% that respond to Iron and EPO (MCV) to the no responders (2MCV)

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| 002 | 31.0 | VM_ | |
| CL | 11.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

T-Test

Sample 1
Variable: 2MCV
Select:

Sample 2
Variable: MCV
Select:

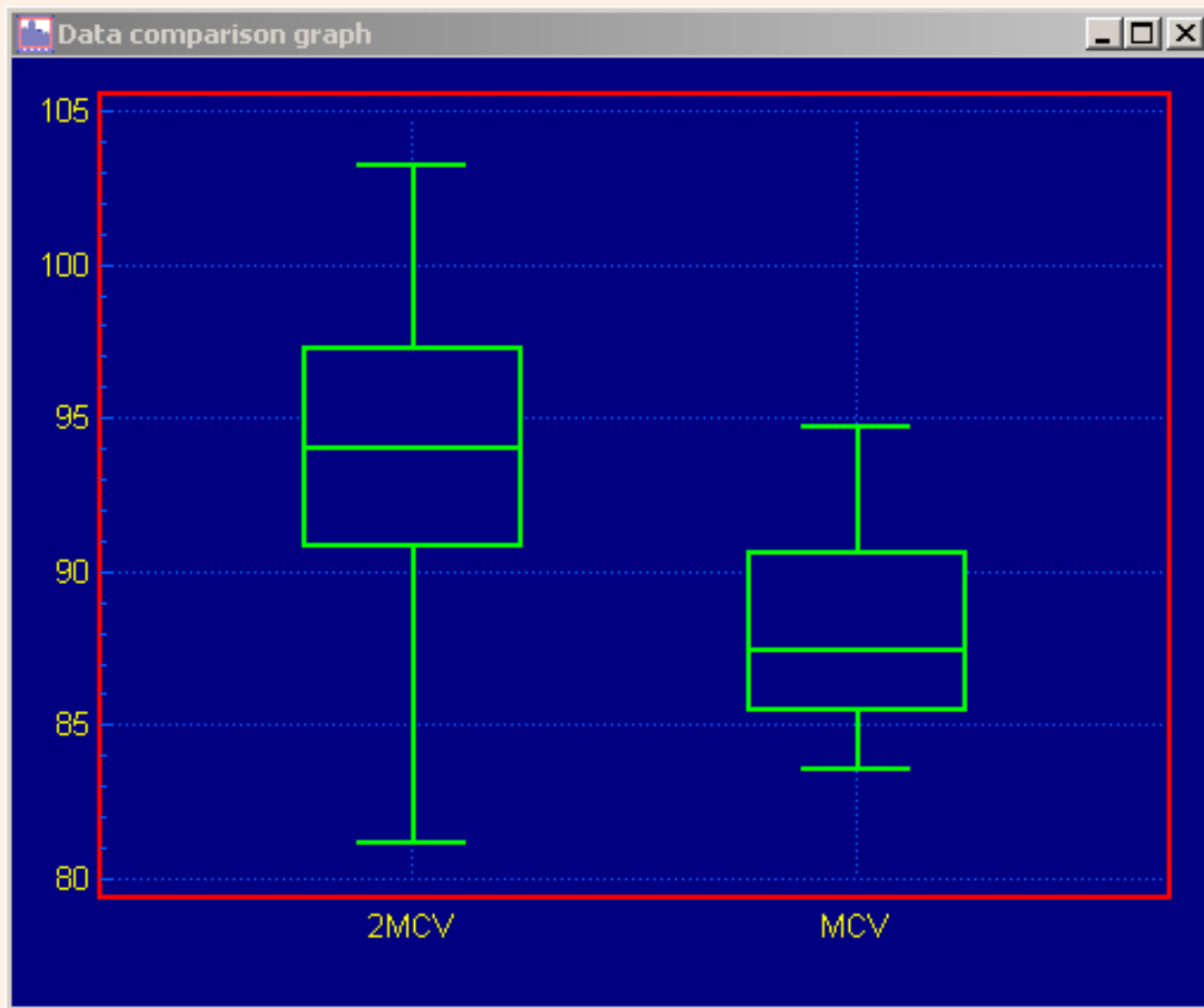
Mean sample 1 : 93.8850 SD: 4.4059 (n=127)
Mean sample 2 : 88.2250 SD: 3.5983 (n=12)
Difference : -5.6600
95% CI : -8.2556 to -3.0645
t=4.312 DF=137 P = 0.0000

Paired Unpaired

MCV in patients with TfS <20% that respond to Iron and EPO (MCV) to the no responders (2MCV)

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| PO2 | 31.0 | VM_ | |
| CL | 11.1 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K



MCV in patients with TfS <20% that respond to Iron and EPO (1MCV) to the no responders (2MCV)

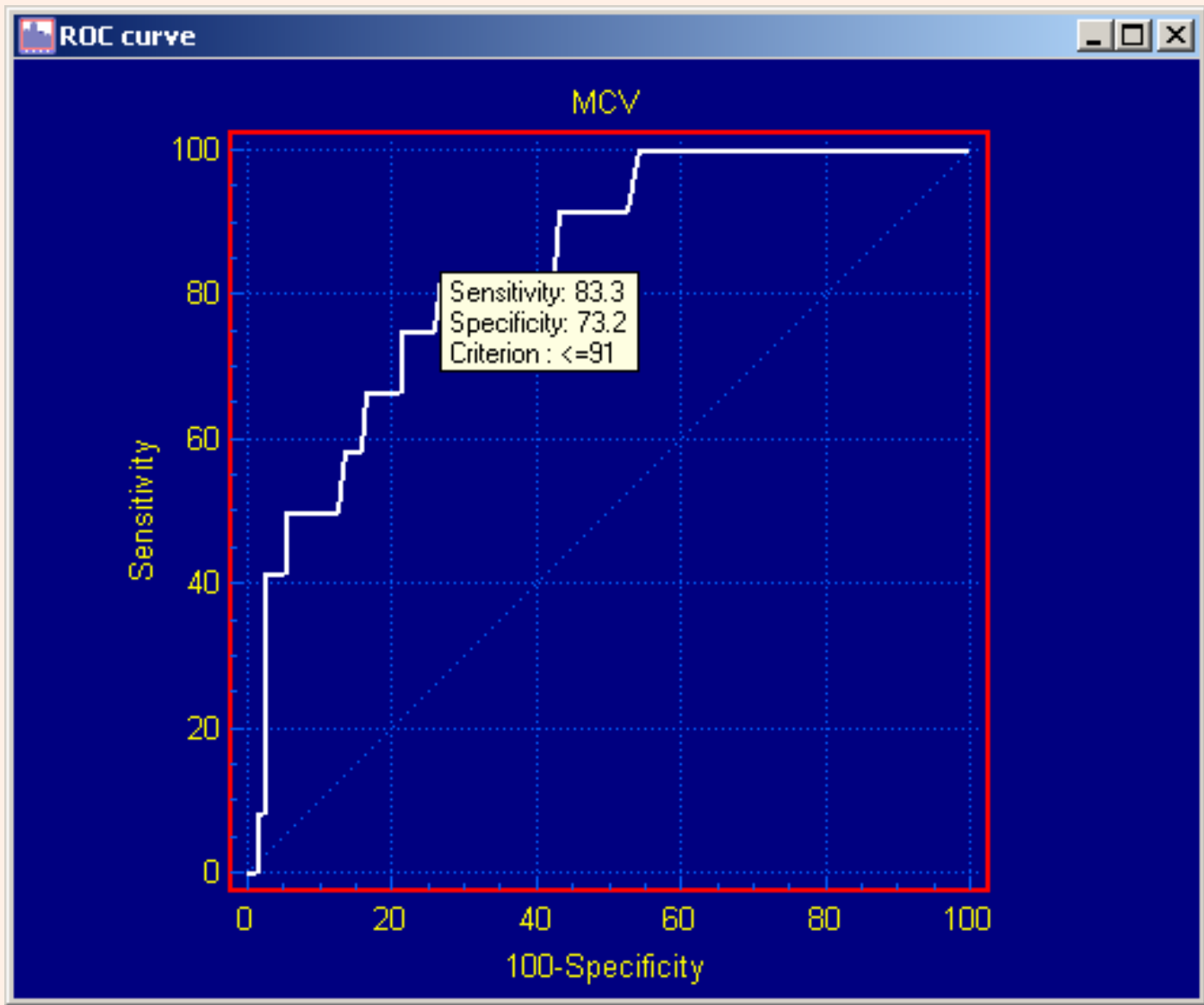
| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 3.2 | JM_ | |
| HGB | 31.0 | VM_ | |
| HCT | 11.1 | VM_ | |
| PLC | 129.0 | JM_ | |

Values : K

Cut Off

Proposed to differentiate responders

MCV <= 91



MCV in patients with ITIS <20% that respond to iron and EPO (MCV) to the no responders (2MCV)

ROC curve

| | | | | |
|--------|--------------------|--------------------|------|------|
| <=87 | 50.0 (21.2- 78.8) | 92.1 (86.0- 96.2) | 6.35 | 0.54 |
| <=87.9 | 50.0 (21.2- 78.8) | 91.3 (85.0- 95.6) | 5.77 | 0.55 |
| <=88.1 | 50.0 (21.2- 78.8) | 89.8 (83.1- 94.4) | 4.89 | 0.56 |
| <=88.3 | 50.0 (21.2- 78.8) | 88.2 (81.3- 93.2) | 4.23 | 0.57 |
| <=88.5 | 50.0 (21.2- 78.8) | 87.4 (80.3- 92.6) | 3.97 | 0.57 |
| <=88.6 | 58.3 (27.8- 84.7) | 86.6 (79.4- 92.0) | 4.36 | 0.48 |
| <=88.7 | 58.3 (27.8- 84.7) | 85.8 (78.5- 91.4) | 4.12 | 0.49 |
| <=88.8 | 58.3 (27.8- 84.7) | 85.0 (77.6- 90.7) | 3.90 | 0.49 |
| <=89 | 58.3 (27.8- 84.7) | 84.3 (76.7- 90.1) | 3.70 | 0.49 |
| <=89.3 | 66.7 (34.9- 89.9) | 83.5 (75.8- 89.5) | 4.03 | 0.40 |
| <=89.5 | 66.7 (34.9- 89.9) | 81.9 (74.1- 88.2) | 3.68 | 0.41 |
| <=89.9 | 66.7 (34.9- 89.9) | 81.1 (73.2- 87.5) | 3.53 | 0.41 |
| <=90 | 66.7 (34.9- 89.9) | 79.5 (71.5- 86.2) | 3.26 | 0.42 |
| <=90.2 | 66.7 (34.9- 89.9) | 78.7 (70.6- 85.5) | 3.14 | 0.42 |
| <=90.3 | 75.0 (42.8- 94.2) | 78.7 (70.6- 85.5) | 3.53 | 0.32 |
| <=90.4 | 75.0 (42.8- 94.2) | 77.2 (68.9- 84.1) | 3.28 | 0.32 |
| <=90.7 | 75.0 (42.8- 94.2) | 75.6 (67.2- 82.8) | 3.07 | 0.33 |
| <=90.8 | 75.0 (42.8- 94.2) | 74.8 (66.3- 82.1) | 2.98 | 0.33 |
| <=90.9 | 75.0 (42.8- 94.2) | 74.0 (65.5- 81.4) | 2.89 | 0.34 |
| <=91 * | 83.3 (51.6- 97.4) | 73.2 (64.6- 80.7) | 3.11 | 0.23 |
| <=91.1 | 83.3 (51.6- 97.4) | 71.7 (63.0- 79.3) | 2.94 | 0.23 |
| <=91.4 | 83.3 (51.6- 97.4) | 70.9 (62.1- 78.6) | 2.86 | 0.24 |
| <=91.6 | 83.3 (51.6- 97.4) | 70.1 (61.3- 77.9) | 2.79 | 0.24 |
| <=91.8 | 83.3 (51.6- 97.4) | 68.5 (59.7- 76.5) | 2.65 | 0.24 |
| <=91.9 | 83.3 (51.6- 97.4) | 67.7 (58.8- 75.7) | 2.58 | 0.25 |
| <=92.1 | 83.3 (51.6- 97.4) | 64.6 (55.6- 72.8) | 2.35 | 0.26 |
| <=92.2 | 83.3 (51.6- 97.4) | 63.8 (54.8- 72.1) | 2.30 | 0.26 |
| <=92.5 | 83.3 (51.6- 97.4) | 63.0 (54.0- 71.4) | 2.25 | 0.26 |
| <=92.8 | 83.3 (51.6- 97.4) | 62.2 (53.2- 70.7) | 2.20 | 0.27 |
| <=92.9 | 83.3 (51.6- 97.4) | 60.6 (51.6- 69.2) | 2.12 | 0.27 |
| <=93 | 83.3 (51.6- 97.4) | 59.1 (50.0- 67.7) | 2.04 | 0.28 |
| <=93.2 | 83.3 (51.6- 97.4) | 58.3 (49.2- 67.0) | 2.00 | 0.29 |
| <=93.3 | 83.3 (51.6- 97.4) | 57.5 (48.4- 66.2) | 1.96 | 0.29 |
| <=93.4 | 91.7 (61.5- 98.6) | 56.7 (47.6- 65.5) | 2.12 | 0.15 |
| <=93.5 | 91.7 (61.5- 98.6) | 55.9 (46.8- 64.7) | 2.08 | 0.15 |
| <=93.8 | 91.7 (61.5- 98.6) | 54.3 (45.3- 63.2) | 2.01 | 0.15 |
| <=93.9 | 91.7 (61.5- 98.6) | 53.5 (44.5- 62.4) | 1.97 | 0.16 |
| <=94 | 91.7 (61.5- 98.6) | 50.4 (41.4- 59.4) | 1.85 | 0.17 |
| <=94.1 | 91.7 (61.5- 98.6) | 49.6 (40.6- 58.6) | 1.82 | 0.17 |
| <=94.3 | 91.7 (61.5- 98.6) | 48.8 (39.9- 57.8) | 1.79 | 0.17 |
| <=94.5 | 91.7 (61.5- 98.6) | 48.0 (39.1- 57.1) | 1.76 | 0.17 |
| <=94.6 | 91.7 (61.5- 98.6) | 47.2 (38.3- 56.3) | 1.74 | 0.18 |

2nd Cut Off

Proposed to differentiate responders

MCV<=94.8

Sensibility 100%

Spcecificity

45.7%

69 FP in 139

But 58 without

MRV in patients with TfS <20% that respond to Iron and EPO (MRV...) to the no responders (2MRV...)

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | 31.0 | JM_ | |
| 002 | 31.0 | VM_ | |
| CL | 112.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

T-Test

Sample 1

Variable: MRV

Select:

Sample 2

Variable: 2MRV

Select:

Mean sample 1 : 112.9133 SD: 8.6580 (n=12)
Mean sample 2 : 125.1221 SD: 9.9261 (n=127)
Difference : 12.2088
95% CI : 6.3385 to 18.0790
t=-4.112 DF=137 P = 0.0001

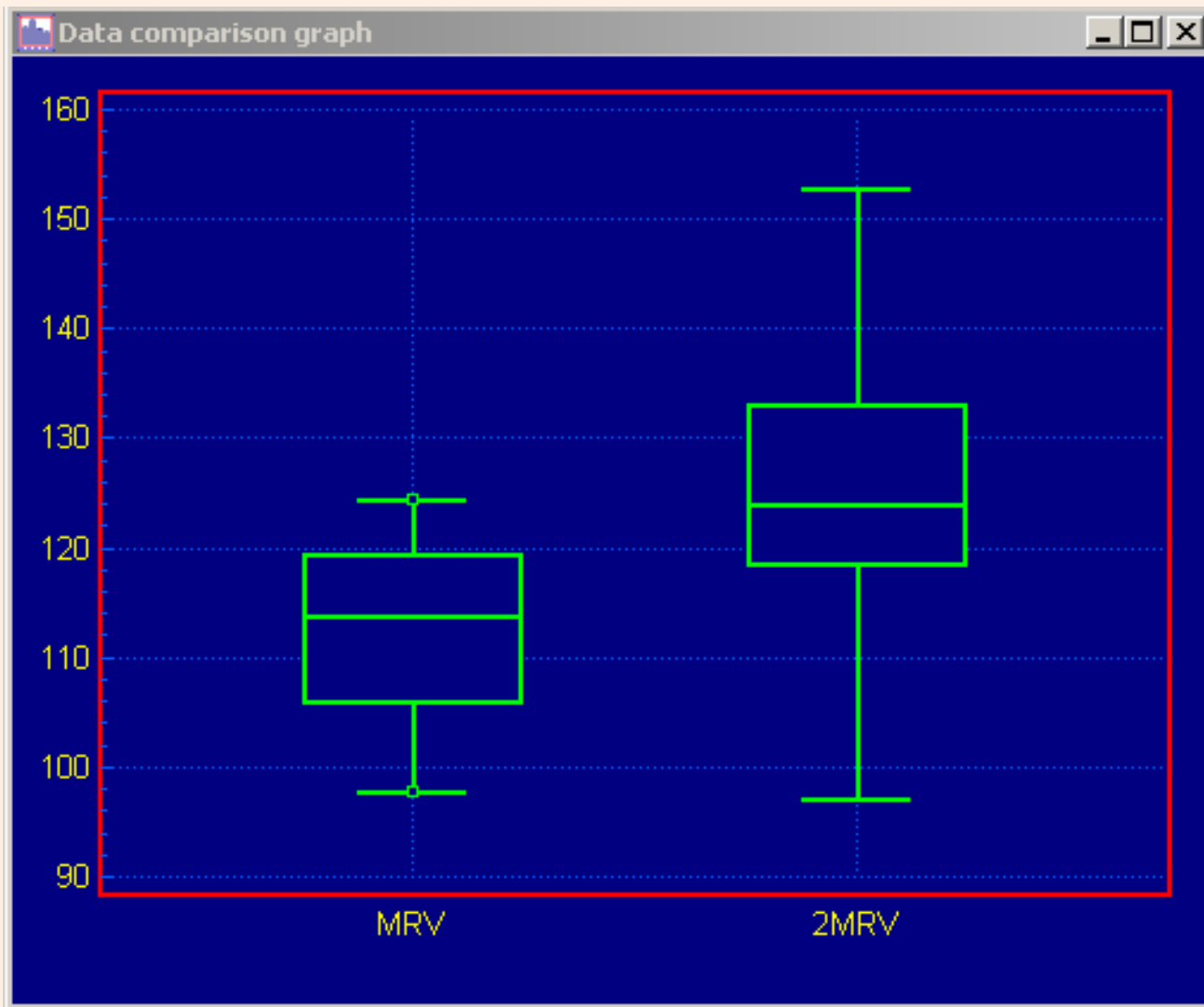
Paired Unpaired

Help Test Exit

MRV in patients with TfS <20% that respond to Iron and EPO (MRV...) to the no responders (2MRV...)

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| ANA | 141.0 | VM_ | |
| K | 5.21 | JM_ | |
| PO2 | 31.0 | VM_ | |
| CL | 111.0 | VM_ | |
| ALC | 129.0 | JM_ | |

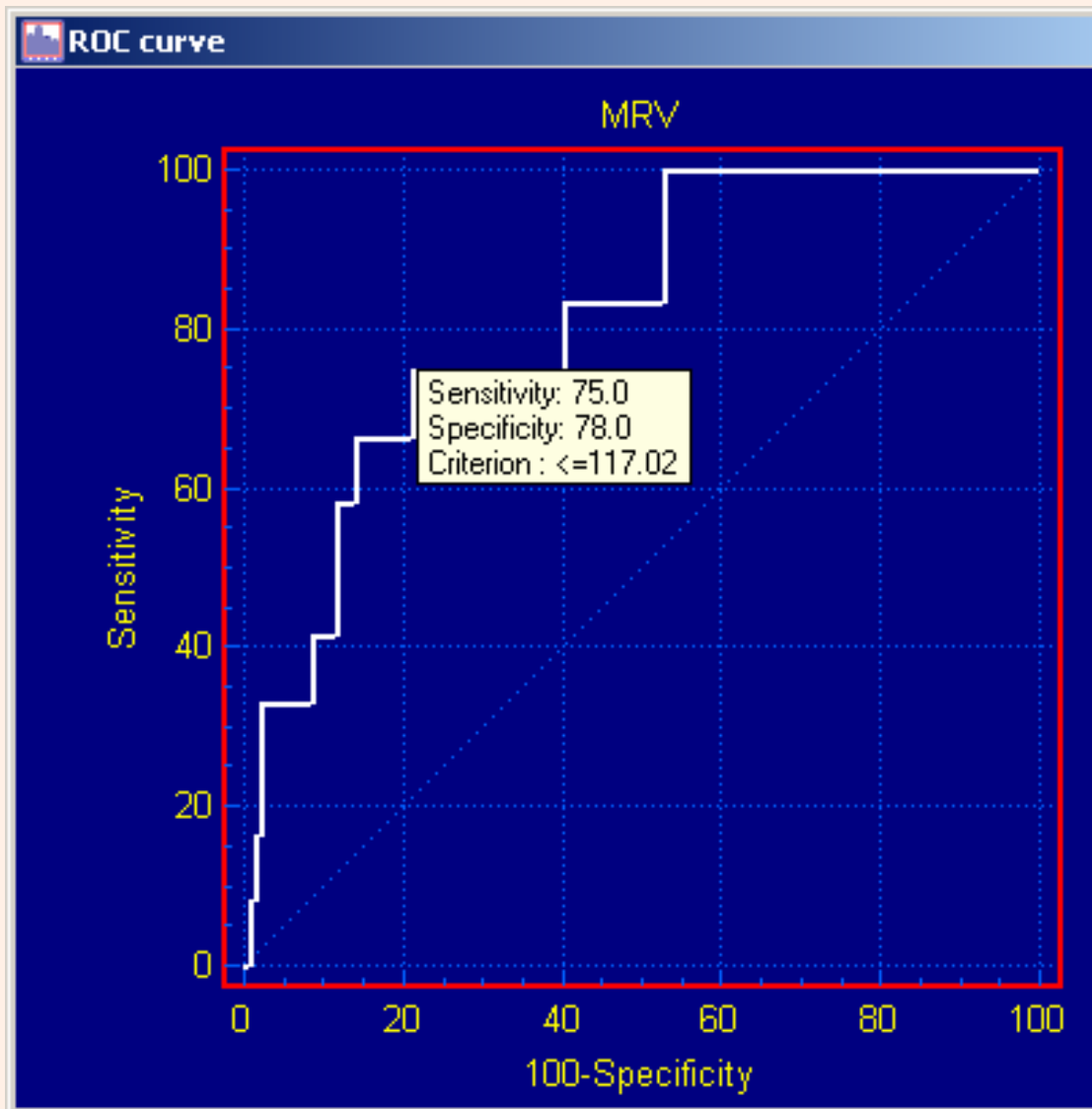
Values : K



MRV in patients with TfS <20% that respond to Iron and EPO (MRV...) to the no responders (2MRV...)

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| ANA | 141.0 | VM_ | |
| K | 5.21 | JM_ | |
| 002 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K



| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM_ | |
| K | 5.20 | _M_ | |
| JO2 | 31.0 | VM_ | |
| CL | 11.7 | VM_ | |
| ALC | 129.0 | _M_ | |

Values : K

Parameters from Coulter that predicts the response to the therapy and predicts hemochromatosis

Averages for Responders and non responders looking for parameters that works in the global database

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| NA | 141.0 | VM | |
| 02 | 31.0 | VM | |
| CL | 117.0 | VM | |
| ALC | 129.0 | VM | |

| | Epo/week | Venofer/w | Tf Sat % | Iron | Ferritin | Ferritin/Iron |
|-----------------------|-----------------|--------------|--------------|-------------|---------------|---------------|
| Non responders | 12730,39 | 66,46 | 20,99 | 9,14 | 565,79 | 65,70 |
| Responders | 14107,14 | 78,00 | 17,00 | 7,45 | 634,55 | 96,56 |

| | | | | | | | | | Gen S specifiek | |
|-----------------------|-------------|---------------|-------------|-----------------|-------------|-------------|---------------|-------------|-----------------|--|
| | Hgb | Delta Hb% | MCH | MCH (Hgb gr/dL) | RET% | RET# | MRV | IRF | Maf(Hb) | |
| Non responders | 7,58 | -1,34% | 1,94 | 31,16 | 1,70 | 0,07 | 126,73 | 0,45 | 7,26 | |
| Responders | 6,71 | 14,65% | 1,94 | 31,29 | 2,31 | 0,08 | 125,16 | 0,44 | 6,46 | |

| | ADVIA 120 specifiek | | | | | XE 2100 specifiek | | | |
|-----------------------|---------------------|-------------|-------------|-------------|--------------|-------------------|--------------|-------------|--|
| | MCVr | %HYPO | CHr | dCH | CHr pg | RET# | RET-He | Delta He | |
| Non responders | 115,52 | 3,67 | 2,06 | 0,11 | 33,02 | 429,73 | 33,53 | 2,39 | |
| Responders | 116,26 | 4,26 | 2,06 | 0,10 | 33,12 | 500,36 | 33,46 | 2,13 | |

Overige bepalingen

| | CRP | serumijzer | ferritine | Delta Ferritin | Delta Ferritin% | %transfer | kreatinine |
|-----------------------|--------------|-------------|---------------|----------------|-----------------|--------------|---------------|
| Non responders | 12,55 | 9,14 | 565,79 | 2,80 | 10% | 21,05 | 848,96 |
| Responders | 18,68 | 7,45 | 634,55 | -95,58 | -13% | 17,00 | 839,61 |

Wilcoxon test

Sample 1

Variable: EPO_RESPOND

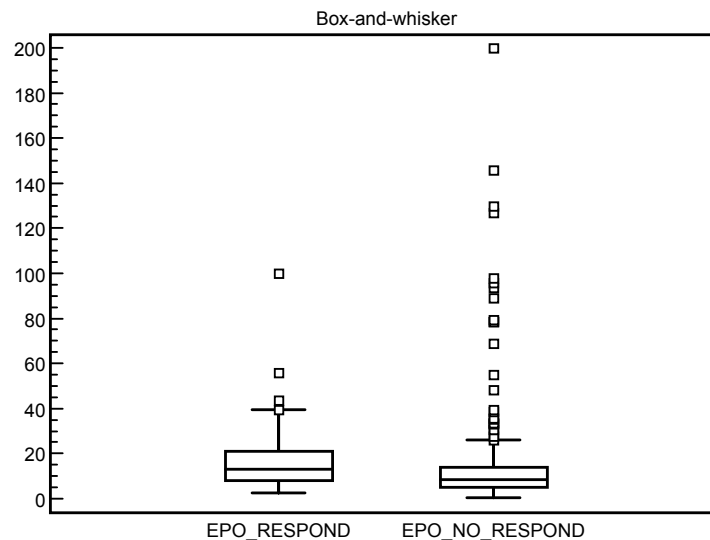
Select:

Sample 2

Variable: EPO_NO_RESPOND

Select:

Average rank of first group = 147,9091 (n=22)
Average rank of second group = 115,4766 (n=214)
Large sample test statistic Z = 2,121791
Two-tailed probability P = 0,0339



Wilcoxon test

Sample 1

Variable: EPO_DOSES_NR

Select:

Sample 2

Variable: EPO_DOSES_R

Select:

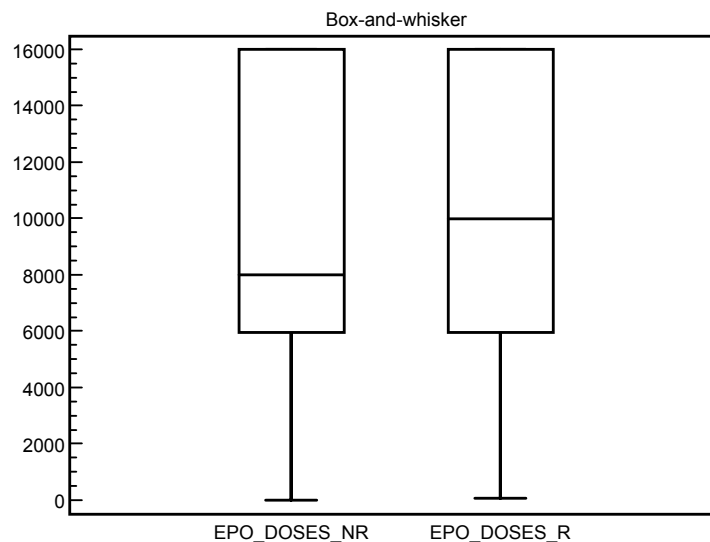
Average rank of first group = 117,2991 (n=214)
Average rank of second group = 130,1818 (n=22)
Large sample test statistic Z = 0,842813
Two-tailed probability P = 0,3993

Paired Unpaired

Help

Test

Exit



OU
Clini
Appl

NKF K/DOQI GUIDELINES



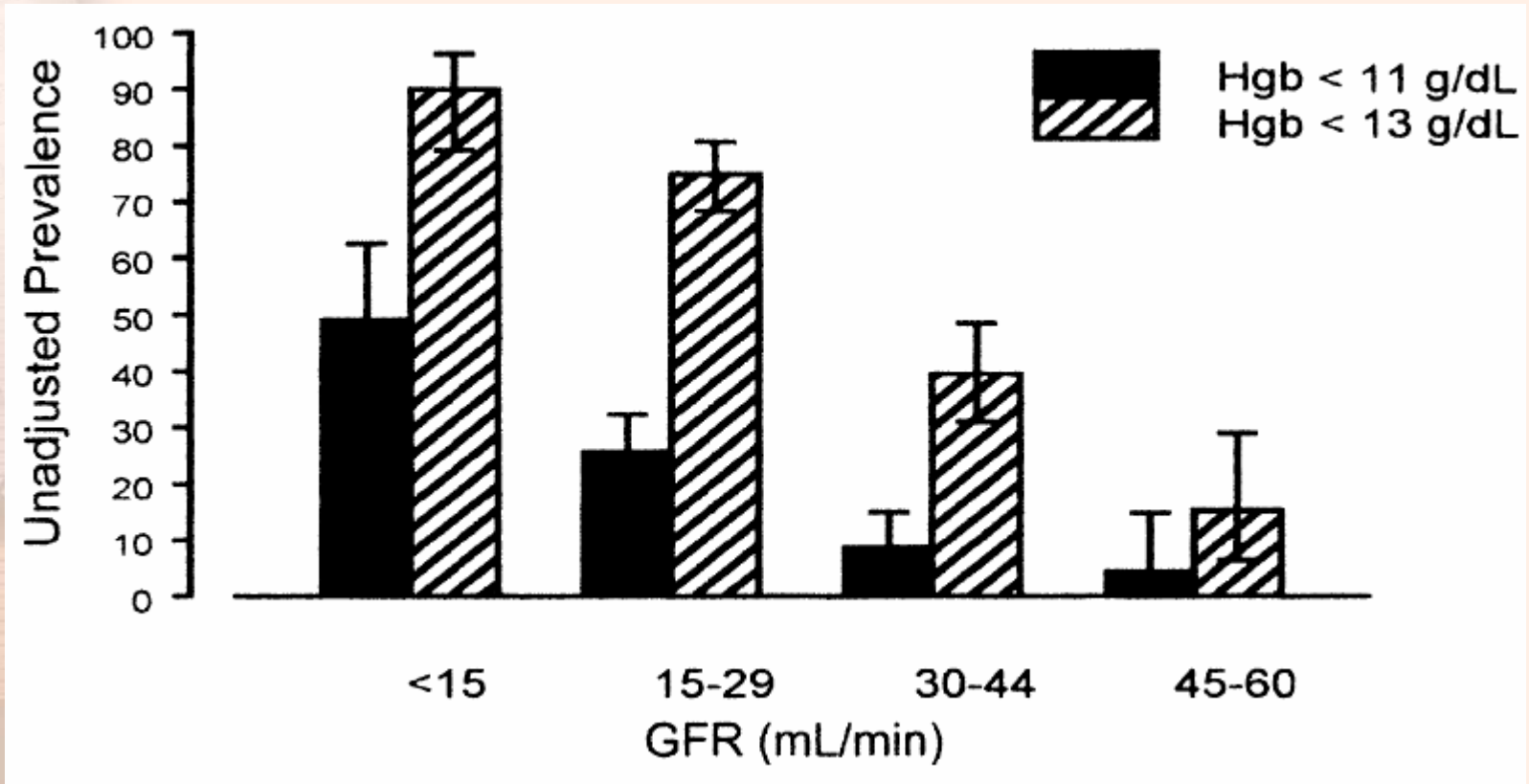
Executive Summaries of 2000 Updates | Anemia | Hemodialysis | Peritoneal Dialysis
Vascular Access | Nutrition | Chronic Kidney Disease | History of DOQI

Res

| | | |
|-----|-------|----|
| NA | 141.0 | VM |
| K | 5.5 | VM |
| 02 | 31.0 | VM |
| CL | 117.0 | VM |
| ALC | 129.0 | VM |

Values : K

K/DOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification, and Stratification



OU
Clini
appl

NKF K/DOQI GUIDELINES



Executive Summaries of 2000 Updates | Anemia | Hemodialysis | Peritoneal Dialysis
Vascular Access | Nutrition | Chronic Kidney Disease | History of DOQI

| | |
|-----|----------|
| Res | |
| NA | 141.0 VM |
| K | 5.2 |
| CO2 | 31.0 VM |
| CL | 117.0 VM |
| ALC | 129.0 |

Values : K

K/DOQI Clinical Practice Guidelines for Chronic Kidney Disease: Evaluation, Classification, and Stratification

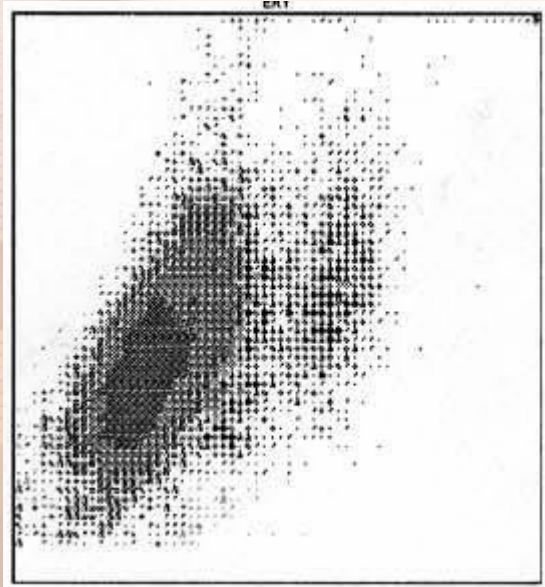
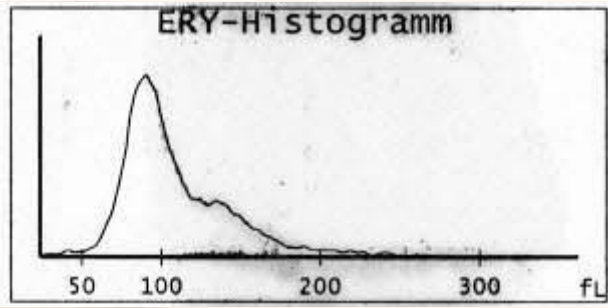
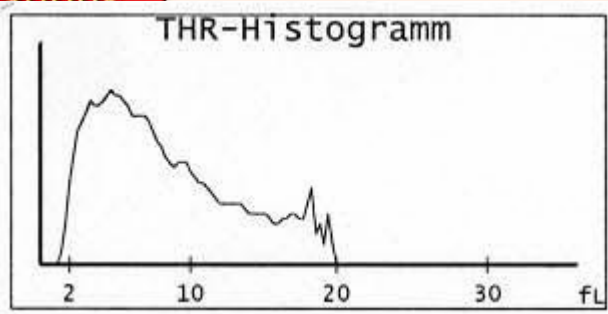
Table 78. Erythropoietin Level and Kidney Function

| Author, Year | No. of Subjects | Applicability | GFR Range | Results* | Quality |
|------------------------------|-----------------|---------------|---------------------------|----------|---------|
| Besarab, ³¹⁰ 1987 | 65 | ↑↑ | ND | ↔ | ○ |
| Urabe, ²⁹³ 1987 | 17 | ↑ | S _α 7-15 mg/dL | ↔ | ○ |

* ↔ = GFR *not* associated with erythropoietin.

| | Result |
|-----|--------|
| NA | 141.0 |
| K | 5.2 |
| MO2 | 31.0 |
| CL | 11.0 |
| ALC | 129.0 |

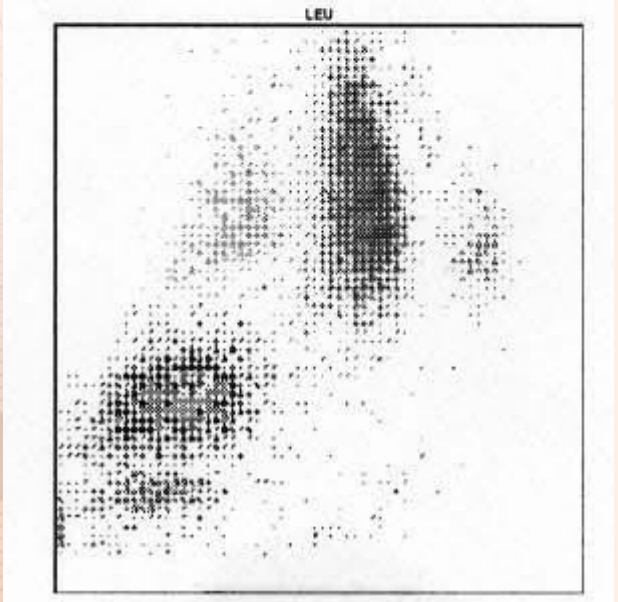
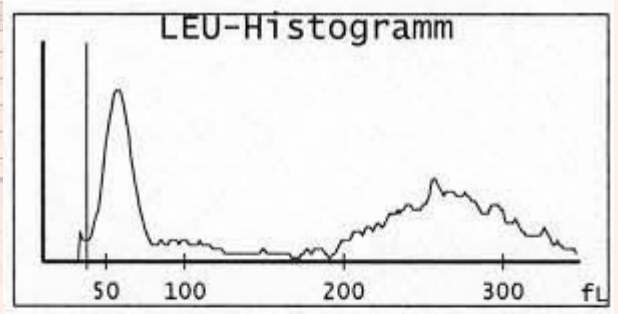
Values : K



| | | | |
|---------|-------|----|---------------------|
| ERT | 2.94 | aL | 10 ⁶ /μL |
| HGB | 9.9 | aL | g/dL |
| HKT | 29.1 | aL | % |
| MCV | 99.0 | aH | fL |
| MCH | 33.8 | aH | pg |
| MCHC | 34.1 | | g/dL |
| EVB | 26.5 | aH | % |
| THR | 62 | aL | 10 ³ /μL |
| MTV | 9.2 | | fL |
| @ TKT | 0.057 | | % |
| @ TVB | 19.2 | | |
| RET % | 6.98 | aH | % |
| RET # | .2055 | aH | 10 ⁶ /μL |
| IRF | 0.50 | aH | |
| MRV | 124.4 | H | fL |
| @ MSCV | 98.5 | | fL |
| @ HLR % | 3.49 | aH | % |
| @ HLP # | 1028 | aH | 10 ⁶ /μL |

| | Result | Flags |
|-----|--------|-------|
| NA | 141.0 | VM |
| K | 5.2 | JM |
| MO2 | 31.0 | VM |
| CL | 11.0 | VM |
| ALC | 129.0 | JM |

Values : K



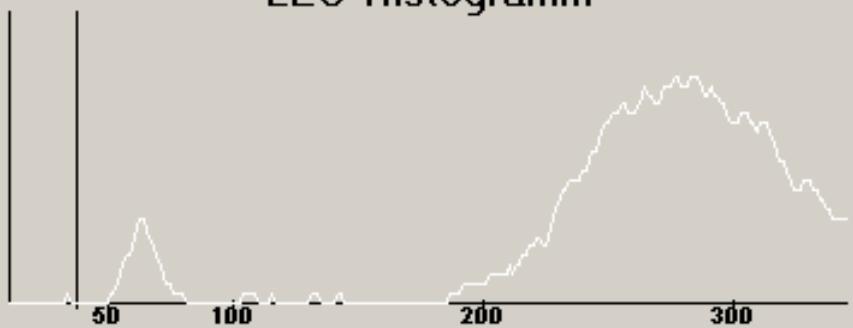
| | | | |
|--------|------|-----|---------------------|
| LEU | 3.6 | aL | 10 ³ /μL |
| NE % | 66.2 | | % |
| LY % | 23.8 | | % |
| MO % | 7.3 | | % |
| EO % | 2.5 | | % |
| BA % | 0.2 | | % |
| NRBC % | 5.6 | R H | % |
| ○ # | 2.4 | | 10 ³ /μL |
| LY # | 0.9 | aL | 10 ³ /μL |
| MO # | 0.3 | L | 10 ³ /μL |
| EO # | 0.1 | aL | 10 ³ /μL |
| BA # | 0.0 | | 10 ³ /μL |
| NRBC # | 0.2 | RaH | 10 ³ /μL |

Morphologisch
 Unreif.Gran. 2
 Atyp LY

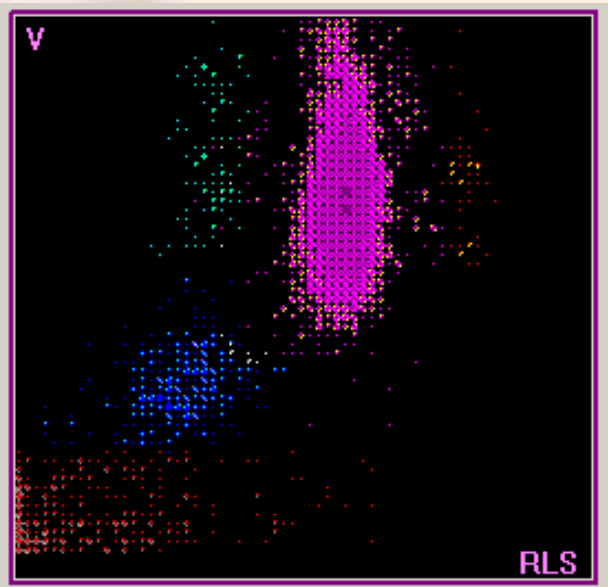
Megaloblastic NE

1:20
Result Flags Pre

LEU-Histogramm



| | | |
|--------|------|----|
| LEU | 12.4 | aH |
| NE % | 92.6 | aH |
| LY % | 5.2 | aL |
| MO % | 1.4 | aL |
| EO % | 0.7 | |
| BA % | 0.1 | |
| NRBC % | 0.0 | |



| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| PO2 | 31.0 | VM_ | |
| CL | 11.7 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

Vit-B12 deficiency anemia
with anti Intrinsic Factor antibodies

Patiententests - [Ergebnisse & Grafiken]

Steuerung: **Alle**

Patienten-ID: Nachname: Vorname: Sequenz-Nr.:

| Proben-ID: | Kass/Pos: | Datum | Zeit | Ans.-Modus | Status | Gerät | Listmode Name | Verstrich. Zeit |
|-----------------------------------|-----------|------------|----------|------------|-------------|--------------|---------------|-----------------|
| KBB(+Diff,+Retik.) 3877400 | | 19.02.2003 | 14:59:34 | Manuell | Keine Über. | Instrument 1 | 37F2JA93 | |
| Nur Retikulozyten | | | | | | | | |

Parameter: Demograph. Daten | KBB-Daten | Diff-Daten | Retikulozytendaten

LEU 5.4

NE % 65.0 **NE #** 3.5

LY % 27.9 **LY #** 1.5

MO % 6.6 **MO #** 0.4

EO % 0.2 **L** **EO #** 0.0

BA % 0.3 **BA #** 0.0

NRBC % 0.0 **NRBC #** 0.0

ERY 4.01 **L** **RET %**

HGB 14.0 **RET #**

HKT 42.9 **MRV**

MCV 107.0 **H** **IRF**

MCH 35.0 **H** **@ MSCV**

MCHC 32.7 **L** **@ HLR %**

EVb 15.0 **@ HLR #**

THR 170 **@ TKT** 0.133

MTV 7.8 **@ TVB** 16.9

Morph. / Definitiv

@ Nur für Forschungszwecke. Nicht zum Einsatz bei Diagn.-Verfahren. 19.02.2003 16:36

Bediener: **SER** Prozeß: **AUTOMAT. ANALYSE** Standardmodus: **KD** Selektivität:

Barcode: Vorverdünnung (KBB): Faktor: **1** **0**

COULTER®
Clinical Applications

BECKMAN CHEM. IN ANAEMIAS

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HbA | 141.0 | VM_ | |
| Hb | 15.2 | JM_ | |
| Hct | 31.0 | VM_ | |
| CL | 111.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K



Access® 2 Immunoassay System

- Serum Iron *
- Folate *
- Transferrin *
- Cobalamin * (Vit B12)
- Ferritin *
- EPO anti -IF
- sTfR
- TIBC
- RBC Ferritin *



Access® Immunoassay System



SYNCHRON LX®20



SYNCHRON LX®20 PRO



IMMAGE®



*** SYNCHRON LX®i 725**

Anemia Workup

Serum iron

Total Iron Binding Capacity

Unsaturated Iron Binding
capacity

Transferrin saturation

Haptoglobin

Ferritin

Transferrin

Vitamin B12

Ferritin

Folate

RBC Folate

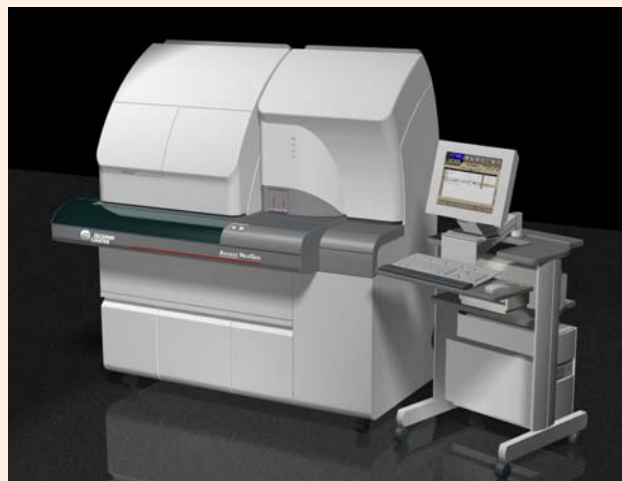
Intrinsic Factor Antibodies

Erythropoietin

Soluble Transferrin Receptor



DxC 800



LX 800

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| MO2 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

Ferritin

- Major iron storage protein
- Decreased levels usually associated with inadequate iron intake or increased blood loss
 - Best screen - iron stores depleted before anemia develops
 - Important to differentiate iron deficiency from other anemias - iron supplements harmful if not needed
- Increased levels in iron overload, acute phase reactant

FOLIC ACID

FOLIC ACID DEFICIENCY CONSIDERATIONS

IN THE MEGALOBLASTIC ANEMIA CAUSED BY FOLATE DEFICIENCY, SERUM FOLATE LEVELS ARE REDUCED, BUT A LOW LEVEL MAY REFLECT REDUCED ORAL INTAKE IN THE FEW DAYS PRECEDING THE TEST

THE RED CELL FOLIC ACID LEVEL IS A MORE ACURATE REFLECTION OF TISSUE FOLATE BECAUSE IS NOT AFECTED BY RECENT DIETARY INTAKE OR DRUGS.

IN COBALAMIN DEFICIENCY THE RED CELL FOLATE MAY BE LOW BUT SERUM FOLATE IS NORMAL OR ELEVATED

THUS BOTH MEASUREMENTS ARE REQUIRED TO ASSESS TISSUE FOLATE LEVELS

Williams et al. 2001

FOLIC ACID

FOLIC ACID DEFICIENCY CONSIDERATIONS FOR THE TREATMENT


BECAUSE THE POSSIBLE DEVELOPMENT OF NEUROLOGIC COMPLICATIONS, UNTRETTED PATIENTS WITH COBALAMIN DEFICIENCY, IT IS IMPORTANT TO EVALUATE ALL PATIENTS WITH MACROCITIC ANEMIA FOR BOTH COBALAMIN AND FOLIC ACID DEFICIENCY.

FOLIC ACID DEFICIENCY RESPONDS TO PHYSIOLOGICAL DOSES OF FOLIC ACID 200 ug/day.

Williams et al. 2001

RBC Folate

- Separate assay requiring whole blood specimen (heparin or EDTA)
 - Must determine hematocrit
- Uses same reagent and calibrator set as serum folate, but must be calibrated separately - RBC Folate Calibrator card
- Pretreatment required
 - Requires Red Blood Cell Lysing Reagent, which is sold separately
 - Proper technique is essential
- Result is manually calculated



| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 3.2 | JM_ | |
| HGB | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

COBALAMIN- B12

COBALAMIN DEFICIENCY CONSIDERATIONS

SERUM COBALAMIN LEVELS MAY BE LOW, **WITH NORMAL TISSUE LEVELS** IN VEGETARIANS, OLDER PERSONS, PREGNANCY AND FOLATE DEFICIENCY.

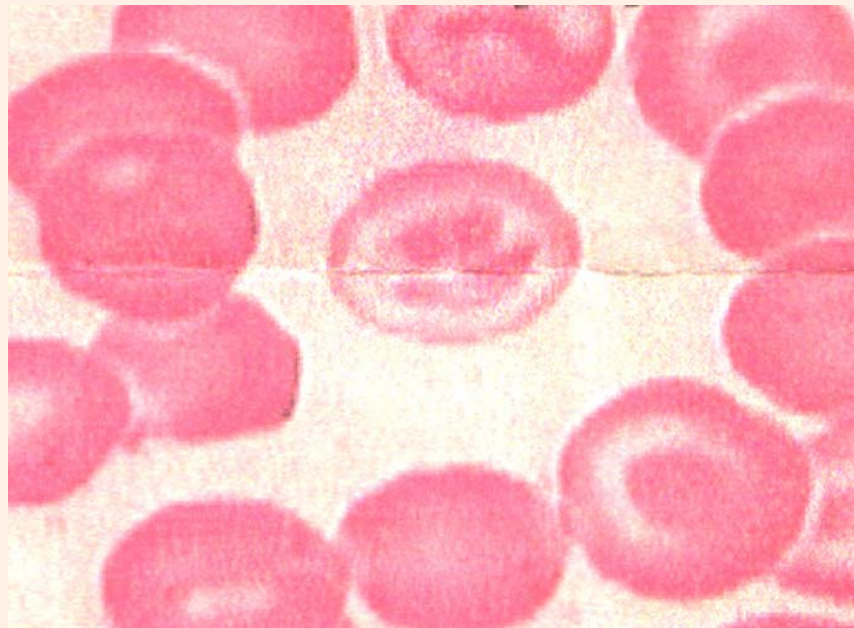
METHYLMALONIC ACIDURIA AND ELEVATED LEVELS OF METHYLMALONIC ACID IN SERUM ARE RELIABLE INDICATORS OF TISSUE COBALAMIN DEFICIENCY. THEY ARE THE EARLIEST CHANGES AND PRECEDE ANEMIA OR MORPHOLOGIC BLOOD CELL CHANGES .

Williams et al. 2001

| | Result | Flags | Pre |
|-----|--------|-------|-----|
| HA | 141.0 | VM_ | |
| K | 5.20 | JM_ | |
| PO2 | 31.0 | VM_ | |
| CL | 117.0 | VM_ | |
| ALC | 129.0 | JM_ | |

Values : K

Thank you for your attention



Happy Red cell