# IRT Cut-off Levels Related to Age of Sampling

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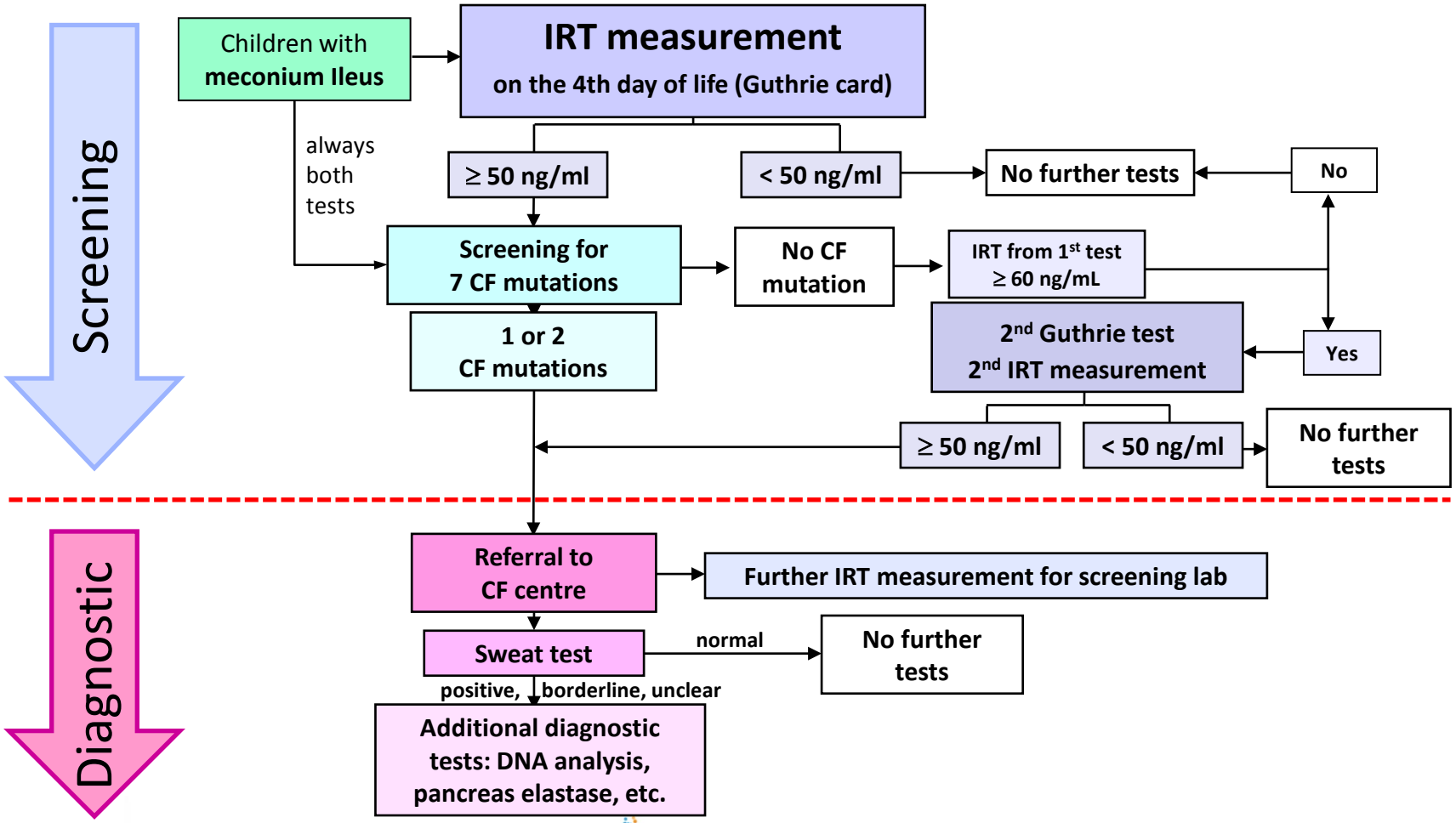
# Background

- Swiss CF-NBS protocol:
  - IRT/DNA/(2nd IRT)
- 2nd IRT collected at various ages

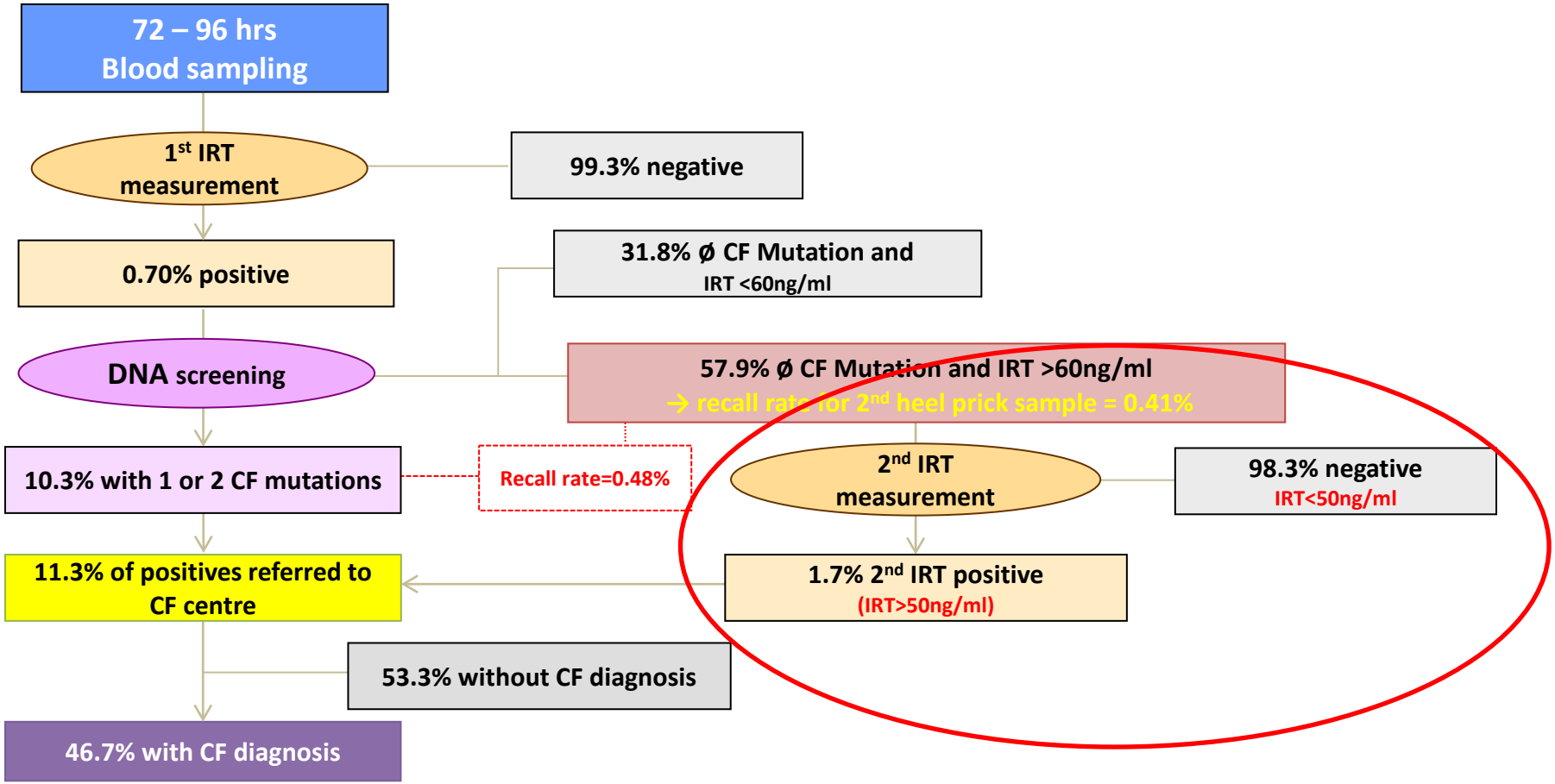
Aim of the study:

*Cut-off to be used for 2nd IRT*

# Swiss CF-NBS algorithm



# Neonatal Screening



# Data Description

- 867 second IRT sampling
  - 1st IRT >60 ng/ml / No “Swiss” mutations
- 55% girls / 45% boys
- GA range: 36 – 43 weeks (at birth)
- BW range: 2200 – 5120 g
- Age range: 11 – 55 days (2nd sample)
- IRT range: 7.6 – 49.8 ng/ml (2nd sample)

# Data Description

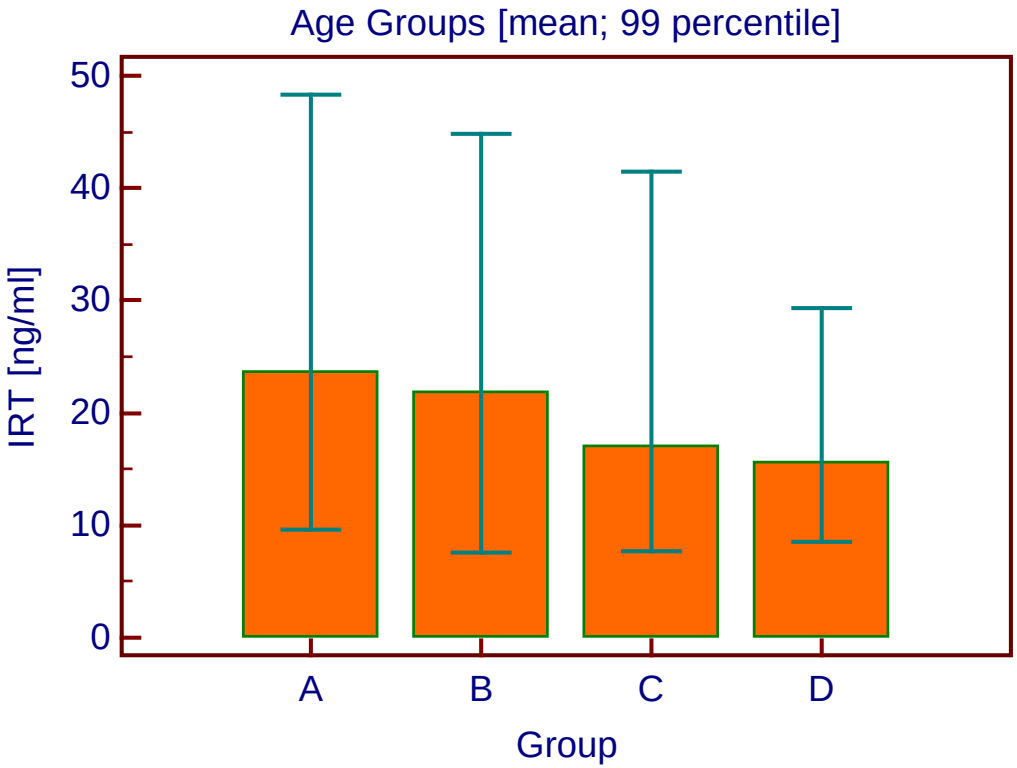
N = 867 (♀ = 477 ♂ = 390)

| NBS Sample | Girls | Boys | p |
|---|---|---|---|
| IRT ng/ml | 83.6 (59 – 357) | 89.0 (60 – 376) | ns |

| Control sample | Girls | Boys | p |
|---|---|---|---|
| Age days | 20.4 | 22.3 | ns |
| BW g (birth) | 3244 | 3441 | 0.0004 |
| GA weeks (birth) | 39.6 | 39.6 | ns |
| IRT ng/ml | 24.2 | 22.2 | ns |

# Grouped results

- Results were grouped according age at control sampling:
  - Group A: 11 – 21 days
  - Group B: 22 – 28 days
  - Group C: 29 – 35 days
  - Group D: => 36 days

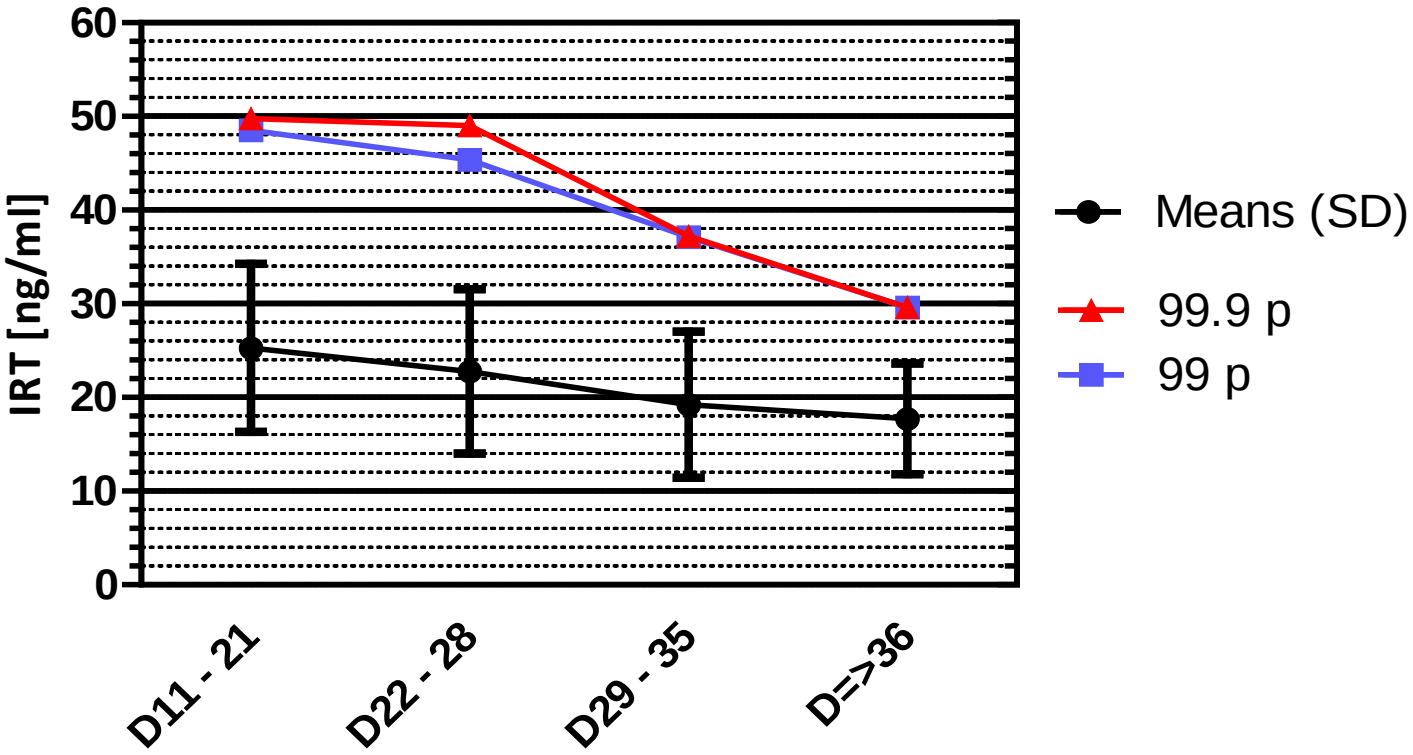


# Results

| Group | Mean | SD | 99.9 percentile | n |
|---|---|---|---|---|
| A | 25.23 | 8.99 | 49.8 | 426 |
| B | 22.79 | 8.78 | 49.0 | 261 |
| C | 19.24 | 7.80 | 37.2 | 111 |
| D | 17.74 | 5.91 | 29.6 | 44 |

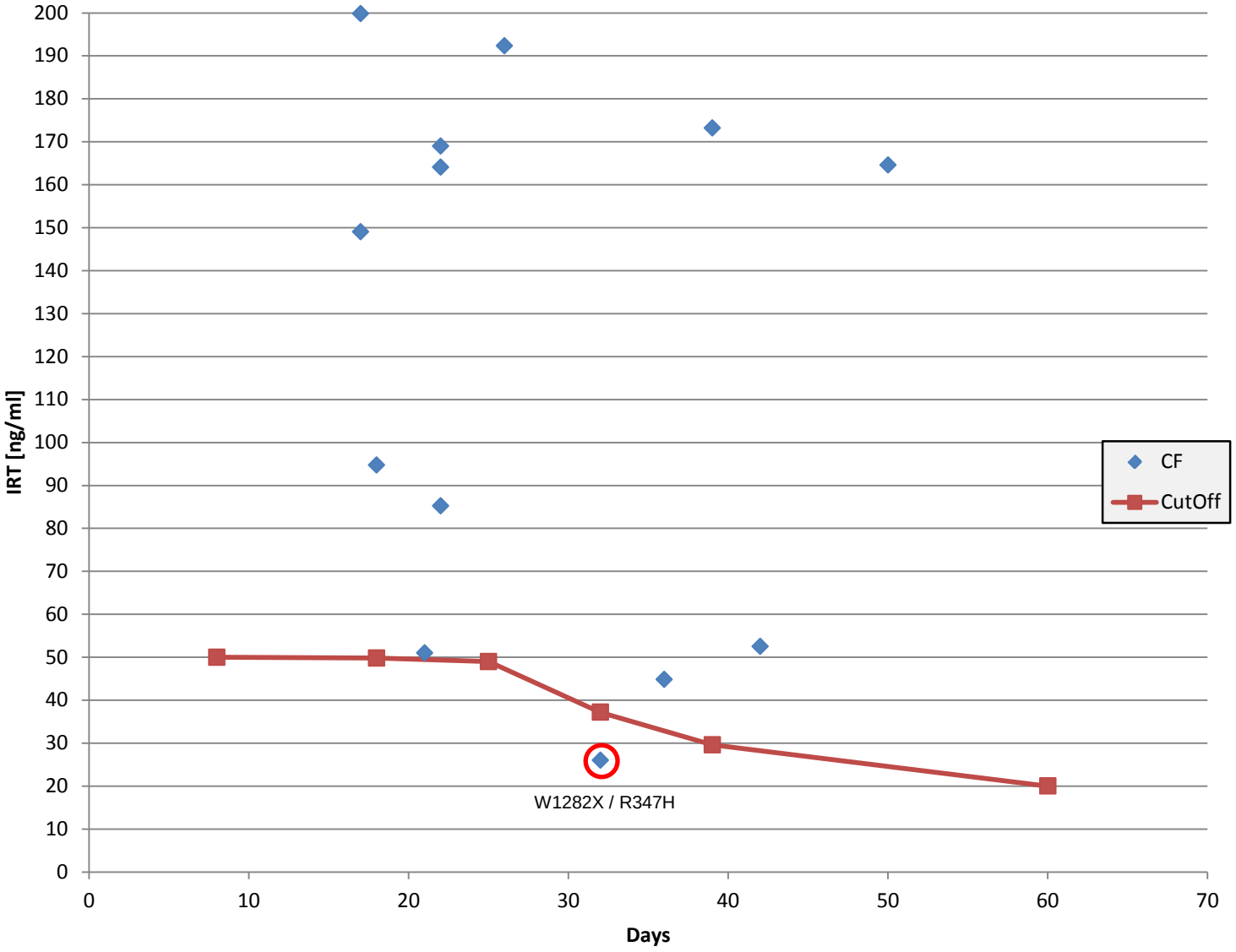
| 1way ANOVA<br>Tabular results | |
|---|---|
| | |
| Table Analyzed | Grouped |
| | |
| Kruskal-Wallis test | |
| P value | < 0.0001 |
| Exact or approximate P value? | Gaussian Approximation |
| P value summary | *** |
| Do the medians vary signif. (P < 0.05) | Yes |
| Number of groups | 4 |
| Kruskal-Wallis statistic | 61.60 |

# Means and percentiles

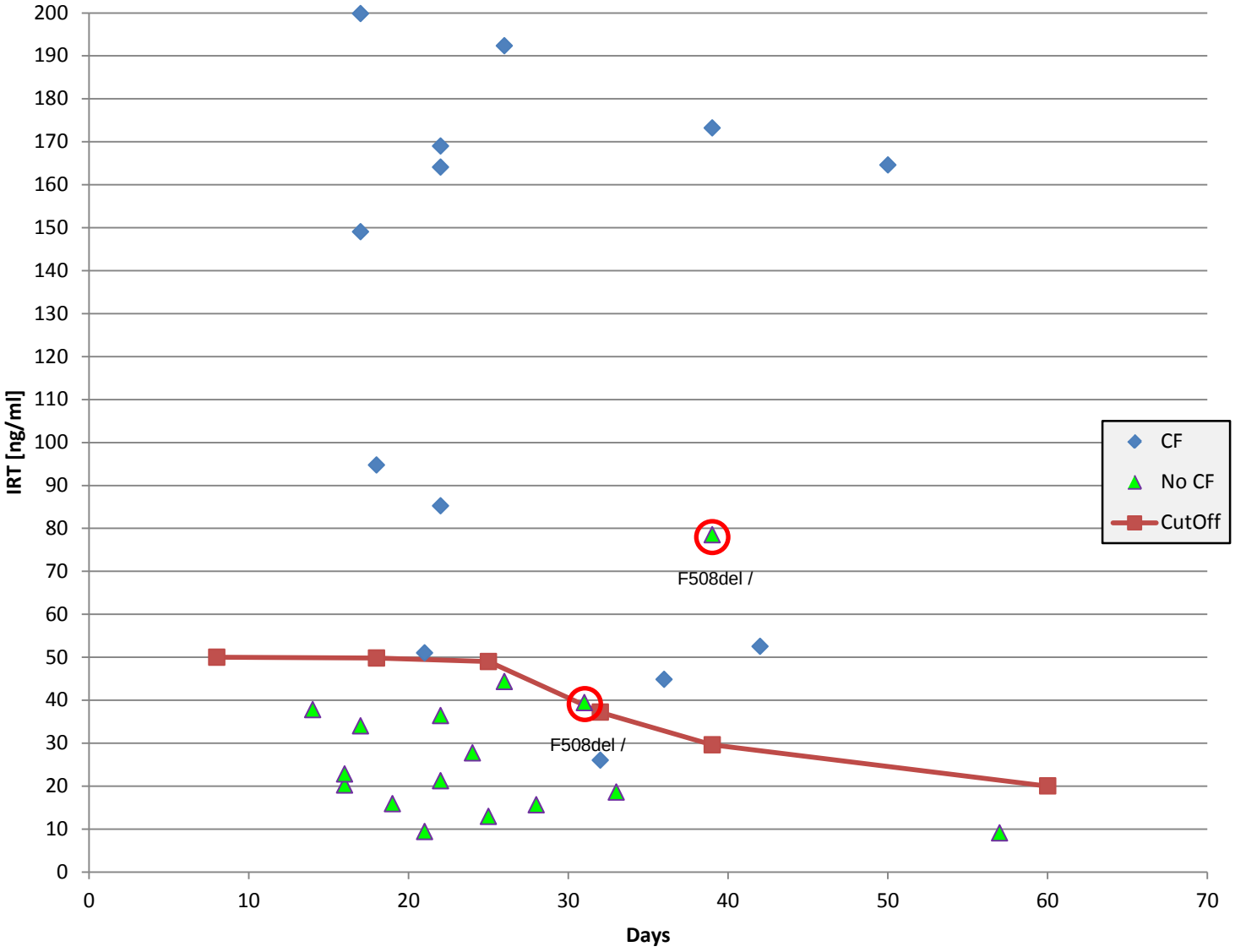


# 2nd IRT values of Screening Positive cases in relation to the 99.9 Percentile cut-off

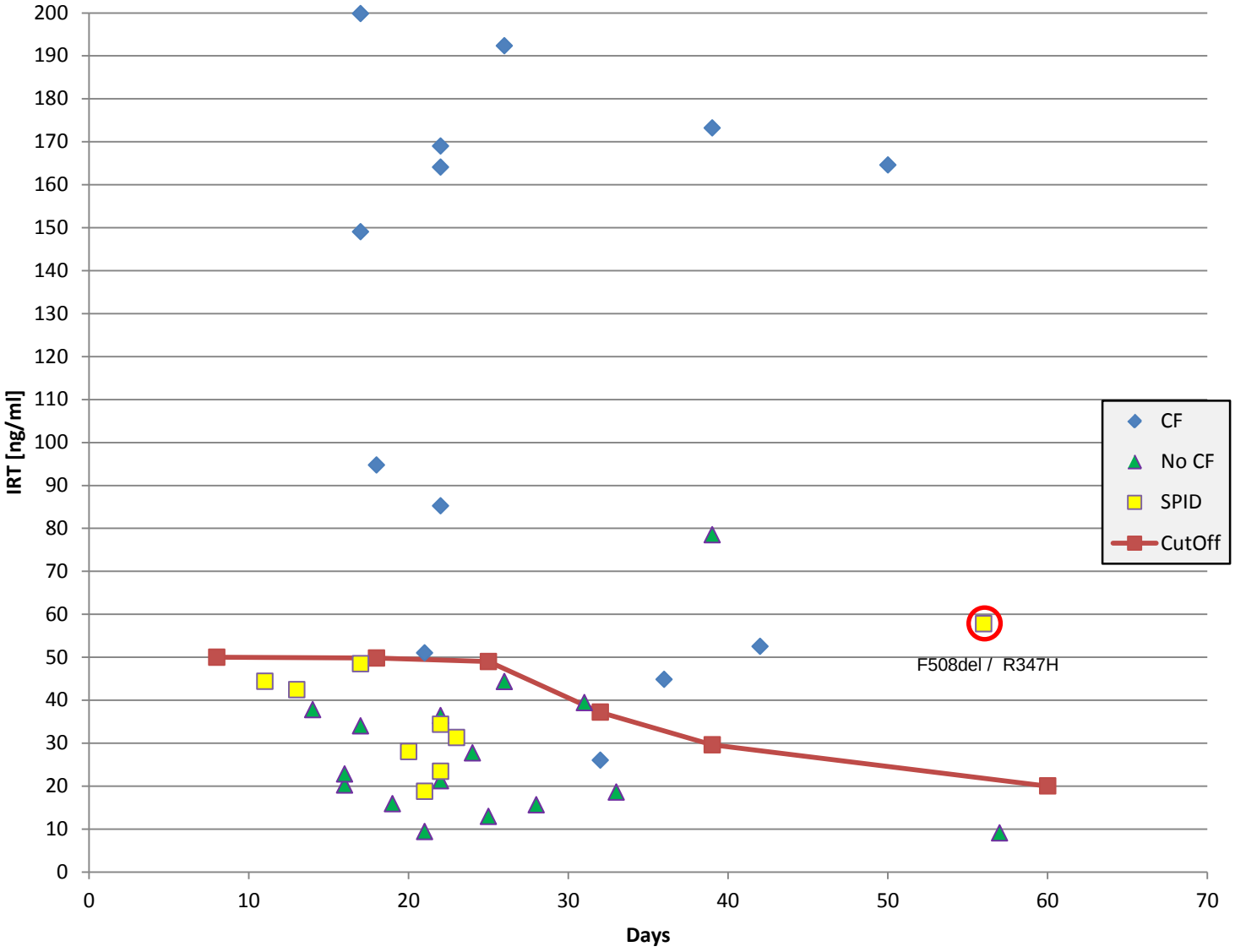
SCR positive
2 CFTR
2nd Sample



SCR positive
1 CFTR
2nd Sample



SCR positive
1/2 CFTR
2nd Sample



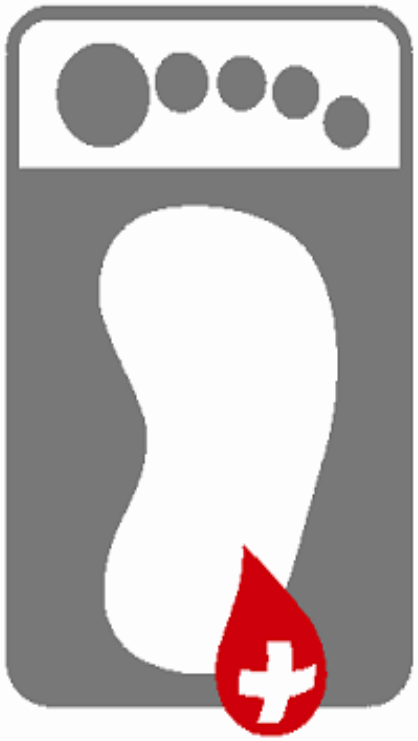
# Conclusions

- IRT levels in the first two months of life decrease significantly.
- Using a fixed cut-off IRT value for classification of results of 2nd sampling specimen without considering the age at sampling, might lead to misinterpretation.
- Use of the data presented here, can help in avoiding this problem.

# Conclusions

- A 2nd second IRT sample, taken at the time when sweat testing failed or is not possible, can already help in substantiating a suspicion of CF.

# Children´s Hospital Zürich



# Neugeborenen Screening
# Dépistage Néonatal
# Screening Neonatale
# Screening dal Novnaschì