

# Peripheral Blood CD34 Collection Triggers for Poorly Mobilized Patients

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# Background

- Mobilized hematopoietic progenitor cells (HPCs) are routinely used for autologous bone marrow transplantation in many hematologic and other malignancies.
- In 10 to 30% of patients, HPCs are not effectively mobilized into the peripheral blood.

# Background

- Risk factors associated with poor mobilization include:
  - Age
  - Prior chemotherapy
  - Prolonged disease
  - Extensive radiotherapy to marrow bearing tissues
- These patients may never achieve peak peripheral blood CD34 (PBCD34) counts above 20.

# Background

- The optimal PB CD34 count to trigger collection has not been well defined for this group of poor mobilizers.
- We conducted a retrospective review, in order to define a trigger for collection based on PB CD34 count.

# Methods

- This study was approved by the Institutional Review Board for human research subjects.
- Retrospective medical record review:
  - from 2007 to 2010
  - patients who underwent HPC mobilization
  - all patients were undergoing autologous stem cell collection
    - for future autologous transplant following high dose chemotherapy
  - diseases including: multiple myeloma, lymphoma and leukemia

# Methods

- At our institution, for patients who are poor mobilizers, apheresis collection may start with PB CD34 counts lower than 20.
- Patients underwent stem cell mobilization with different strategies including G-CSF only, chemotherapy plus G-CSF, as well as G-CSF plus Plerixafor.
- Daily pre-apheresis PB CD34 and product CD34 counts were measured by flow cytometry.

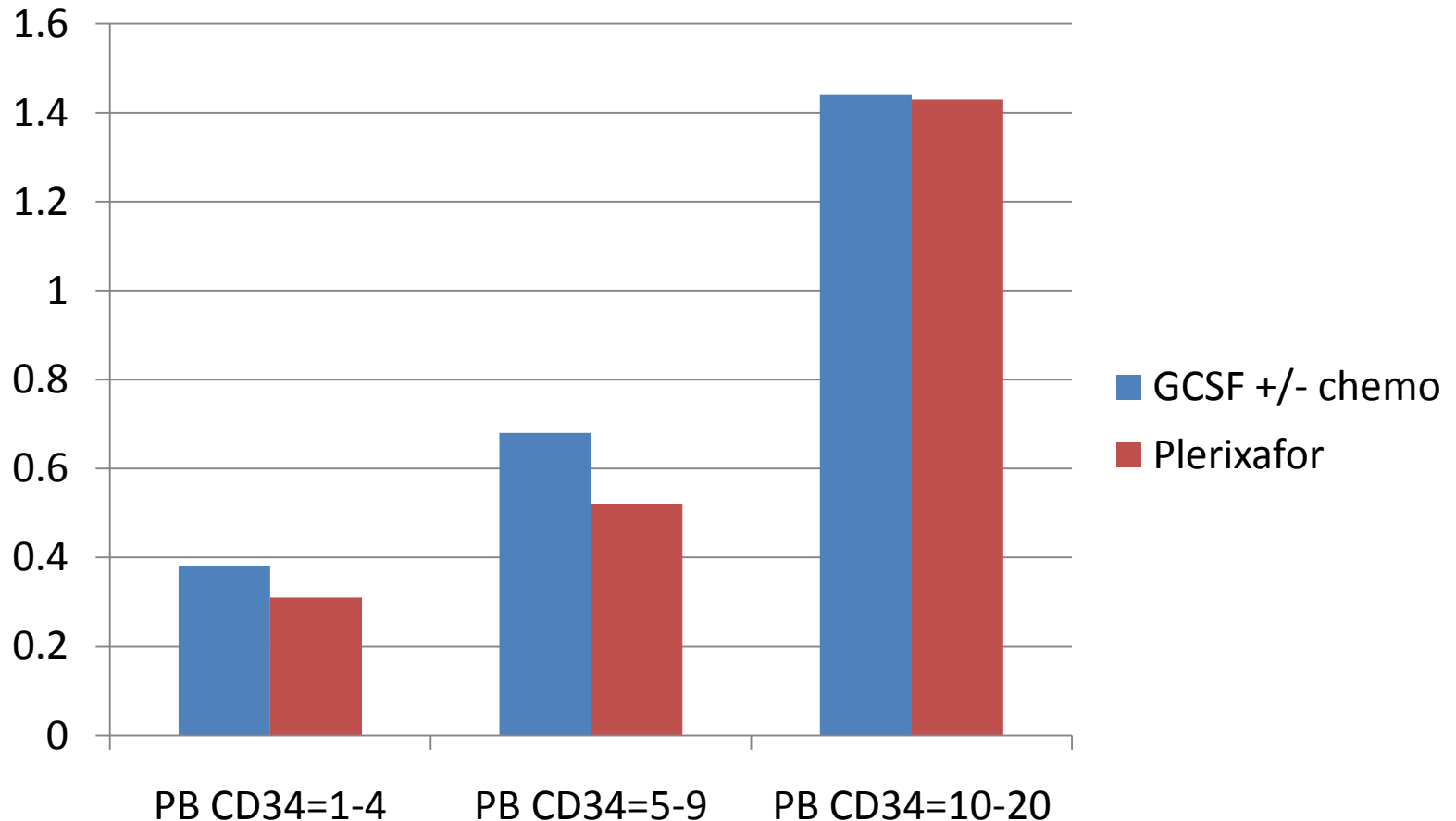
# Methods

- Standard apheresis collections on the Cobe Spectra or Optia were performed.
- 3-5 blood volumes (12-18L) were processed for stem cell collection.
- All apheresis collections with a pre-apheresis PB CD34 of 20 or less are included in this study.

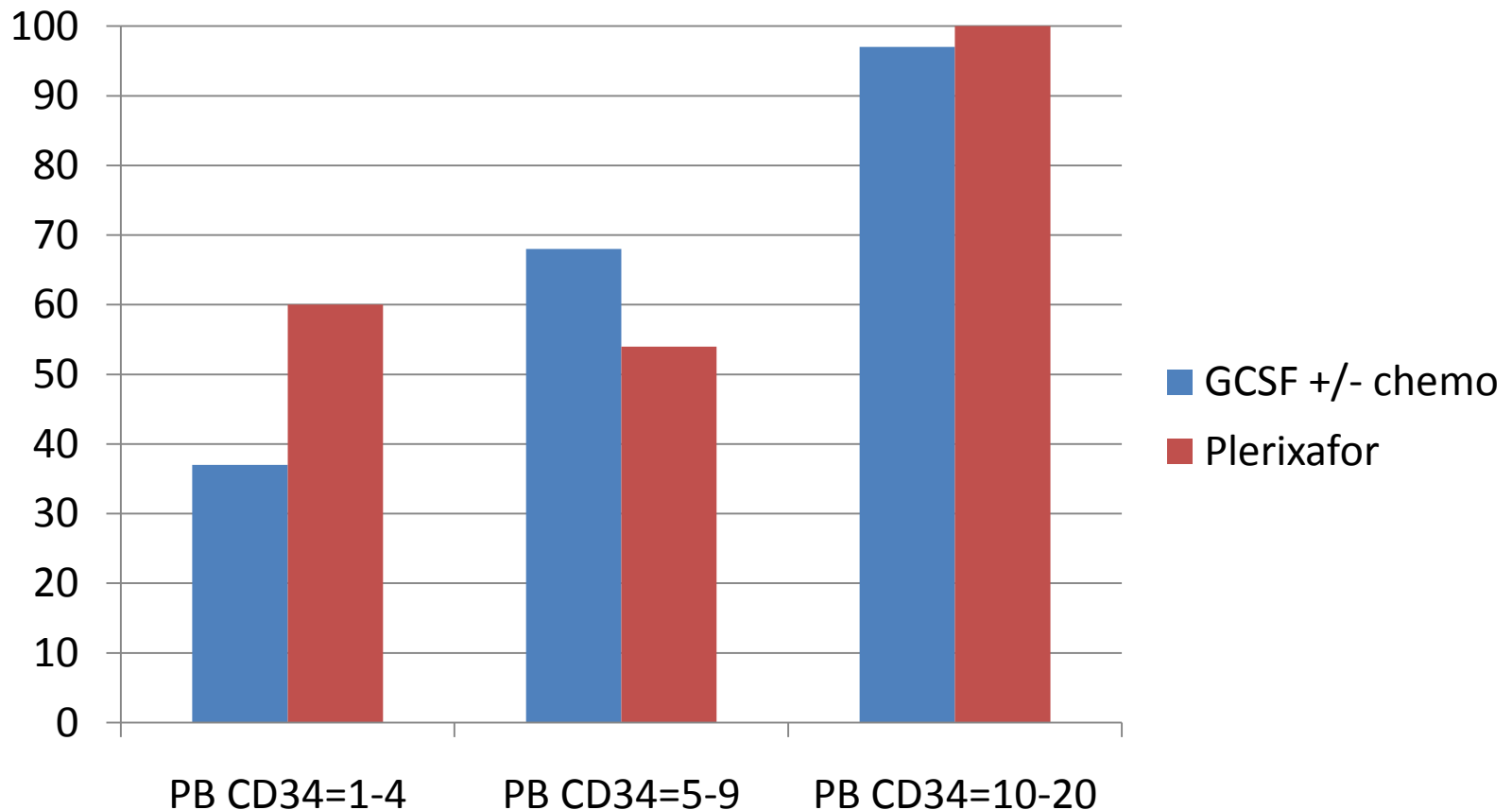
# Results

Number of Collections GCSF +/- chemo	PBCD34 Median (Min-Max)	Apheresis Product, 10 <sup>6</sup> CD34/recipient kg weight, Median (Min-Max)	% to Achieve $\geq 0.5 \times 10^6$ CD34/recipient kg weight
46	3 (1-4)	0.38 (0.05-1.5)	37%
120	7 (5-9)	0.68 (0.05-1.52)	68%
316	14 (10-20)	1.44 (0.19-5.76)	97%
Plerixafor mobilization			
5	3 (2-4)	0.31 (0.12-0.64)	60%
26	6.5 (5-9)	0.52 (0.25-1.47)	54%
40	15 (10-20)	1.43 (0.35-2.55)	100%

# Median Apheresis Product Yield ( $10^6$ CD34/recipient kg weight)



# Percent of collections to yield $0.5 \times 10^6$ CD34/recipient kg weight



# Conclusions

- For patients who are poor mobilizers, a lower PBCD 34 count, such as 10, may be used as an effective trigger to start apheresis collection.
  - PB CD34 counts below 10 may yield a significant amount ( $0.5 \times 10^6$  CD34/kg) of stem cells at least 50% of the time, especially in patients who have received Plerixafor.

Thank You

Questions?