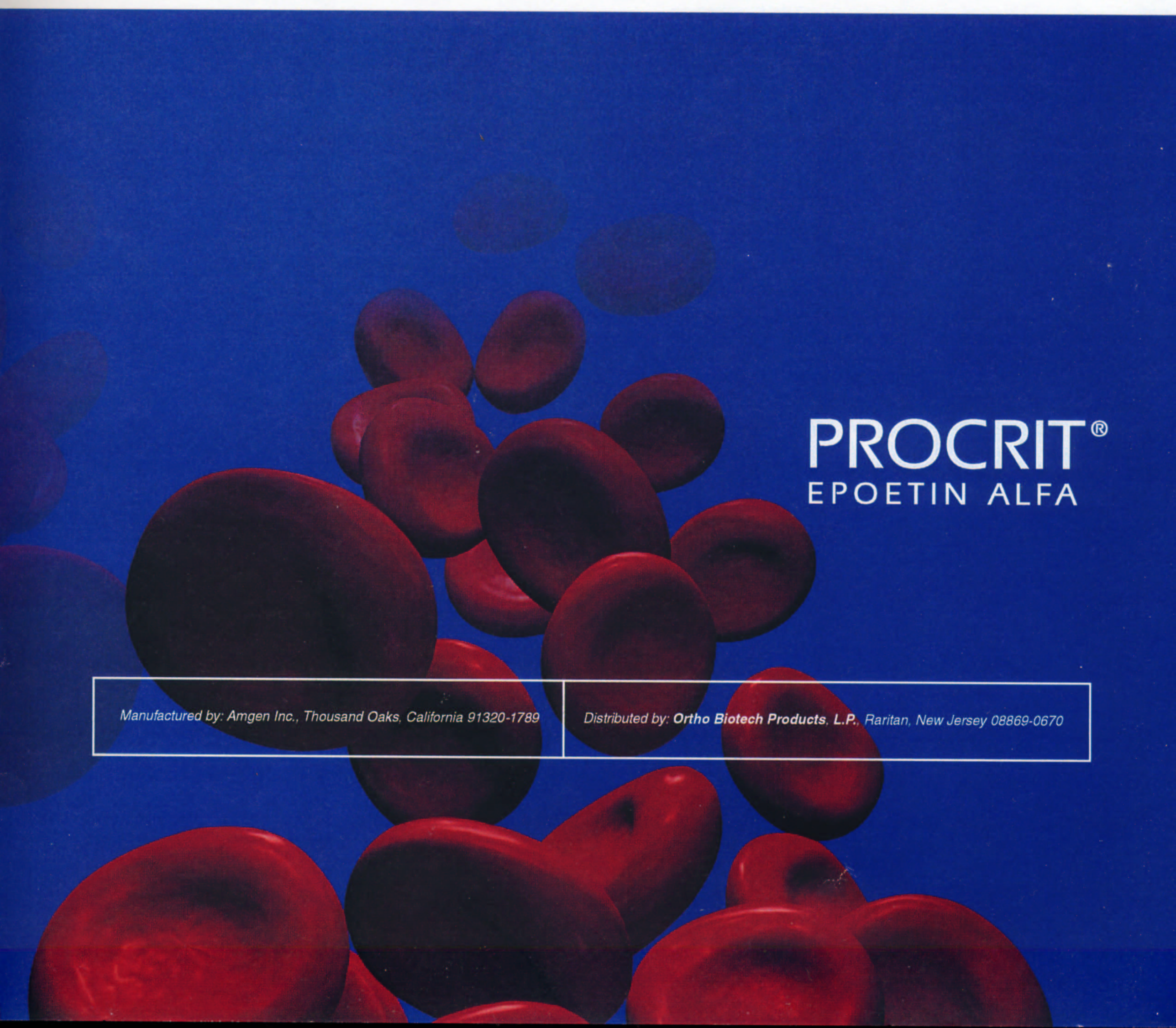
Critical Decisions

CD-ROM **Sales Guide**



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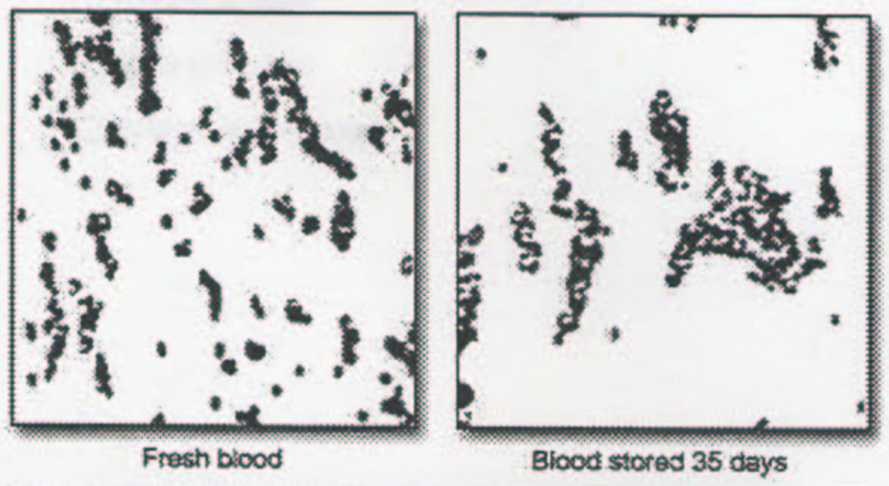
STORAGE CHANGES BLOOD

Storage Changes Blood
Additional Consequences of Blood Storage

- Storage of RBCs may significantly impair the viability of transfused red blood cells[1]
- The transfusion of stored red blood cells may increase aggregability in vivo.[2]

Micrographs of RBC Aggregates[2]

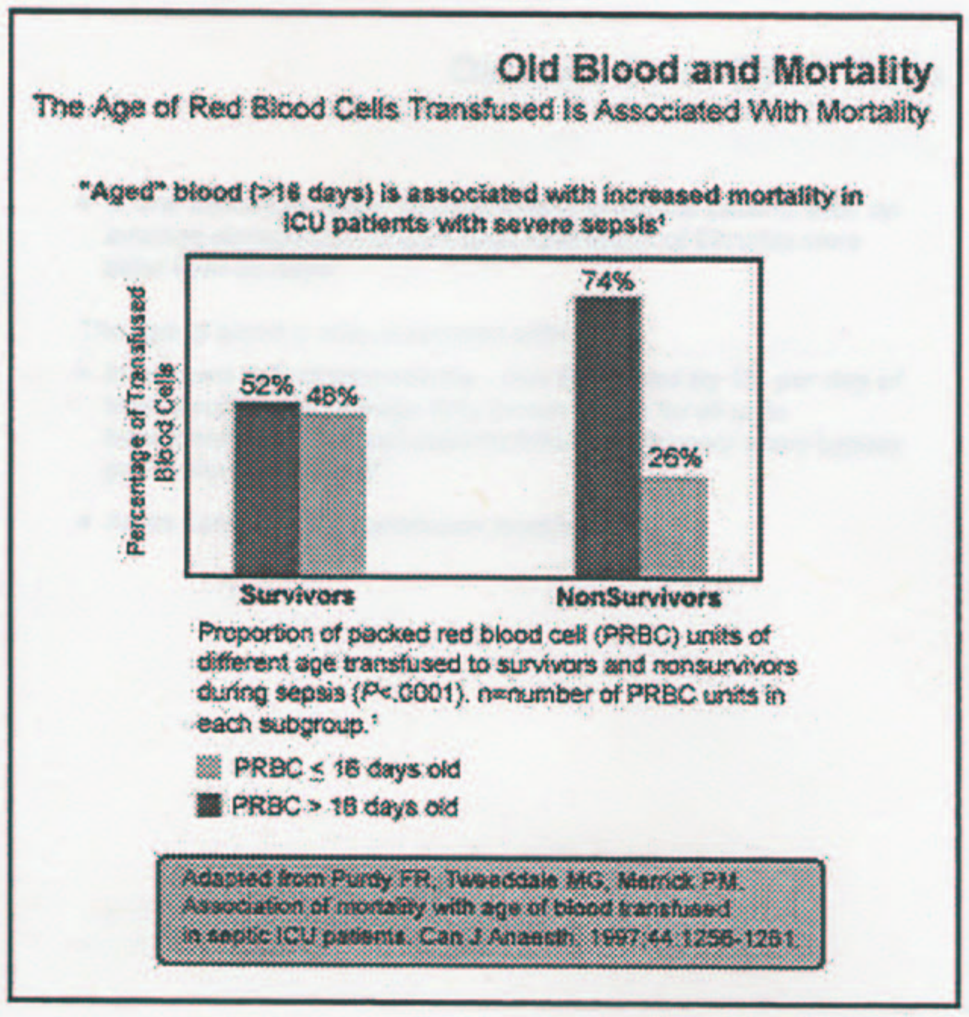


Fresh blood | Blood stored 35 days

Reproduced with permission from: Hovav et al. *Transfusion*. 1999;39:277-281.

These photographs show RBCs under a microscope. Note that the stored cells (right) aggregate (clump) together more closely, which can impair blood flow and lead to a variety of serious clinical consequences.

OLD BLOOD AND MORTALITY



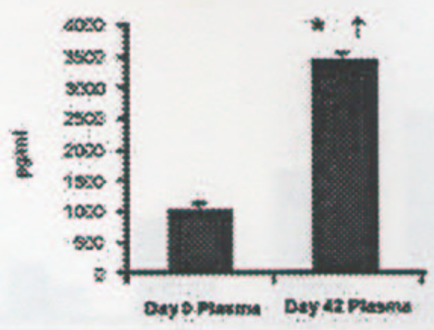
These bar charts show ICU patients with severe sepsis. Survivors received a significantly smaller proportion of "old" blood than nonsurvivors.

ADDITIONAL TRANSFUSION RISKS

Transfusion Risks
Transfusion Risks (Continued)

- **The release of inflammatory cytokines**. Plasma from PRBCs stored for 42 days* selectively primes neurotrophils (PMN) to release interleukin-8 (IL-8) and secretory phospholipase A_2, which may be one of the mechanisms responsible for the development of MOF[3]

PMN IL-8 Release



Healthy donor PMNs were incubated with 20% PRBC plasma in RPMI for 24 hours and the release of IL-8 was measured. Day 0 plasma did not stimulate IL-8 release, whereas plasma from Day 42 PRBC stimulated significant IL-8 release, *P< .05 from Day 0 and †P< .05 from RPMI.

*PRBCs stored for 42 days are considered transfusable under American Association of Blood Banks guidelines.

Transfusion Risks
Transfusion Risks (Continued)

- **Transfusion-related acute lung injury** (TRALI)[1]
- More frequent **opportunistic infections** in HIV-infected patients[2]
- A **higher incidence of serious bacterial infection and pneumonia** in transfused patients undergoing hip fracture repair[2]
- Volume overload[4]

PRESENTATION NOTES:

Inflammatory cytokines, such as interleukin-8 (IL-8) and secretory phospholipase A_2 ($sPLA_2$), are proteins that regulate the intensity and duration of the immune response to foreign invaders. An overabundance of cytokines will affect blood circulation and may injure healthy tissue, leading to MOF. **Neutrophils** are mature white blood cells that break down and eat bacteria, cellular debris, and solid particles. **Neutrophil priming** is a process in which neutrophils are prepared to respond to a stimulus.