Background
- Using the BCSI pH1000 of Blood Cell Storage Inc. (BCSI) the pH in platelet concentrates (PCs) can be measured via a special port containing optical sensing technology.
- The pH can be determined in a sterile way at any moment without sampling of the PC.

Purpose
- To study PCs for pH during storage until moment of transfusion or expiration date.
- To study user friendliness of the BCSI pH1000

Methods
- PCs were prepared in BCSI containers containing the special port for pH measurement.
- Prepared from five buffy coats and plasma at day 1, which is the day after collection of the whole blood.
- Platelet count was determined for each PC.
- PCs were delivered to two Dutch hospitals:
  - Medical Spectrum Twente in Enschede
  - Isala Clinics in Zwolle
- The pH (22°C) was followed daily from day two on until transfusion or expiration date at the:
  - Blood bank: department of distribution (three locations)
  - Hospital: laboratory for blood transfusion (two locations)
- All five BCSI pH1000 users were asked for satisfaction.

Results

Figure 1: pH during storage

- Figure 1 shows all individual pH values (orange) during storage. The mean ± SD is shown in red. The pH remained above 7.0.
- Figures 2 and 3 show that the pH depends on the platelet count of the PC.

User friendliness
- All users found the BCSI pH1000 user friendly with respect to handling and pH measurement.
- Performance of the daily control and maintenance.
- At the distribution departments the pH measurement has been experienced as additional value for monitoring quality of PCs.
- In the hospital laboratories for blood transfusion awareness of pH as a useful quality indicator can be further improved by training and advice.

Conclusion
- During storage for seven days the pH of all PCs remained above 7.
- The pH (22°C) depended on the platelet count in the PC.
- The BCSI pH1000 was found to be user friendly.
- The BCSI pH1000 makes 100% quality control possible from 24 hours after preparation until moment of transfusion on a fast and non-invasive way.