

Proceedings of the 45th Annual National Conference of the American Association of Zoo



October 4th – 8th

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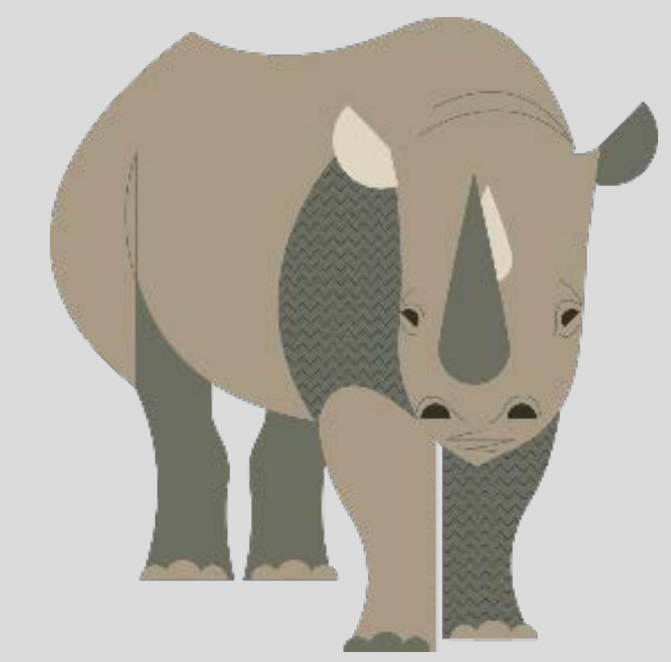
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Adapting Large Volume Phlebotomy to Denver Zoo's Black Rhinoceros

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The Background

- Denver Zoo's Veterinary team and Pachyderm team have been working together for the past year to combat iron storage disease in Rudisha, our 24-year-old black rhinoceros
- Through routine blood draws, we discovered an increase in Rudy's iron levels in July 2017
- Large volume phlebotomy was used after the issue could not be resolved with diet changes alone
- Goals:
 - Voluntarily collect 2-3 L of blood within 1 month
 - Collect and save the blood for plasma banking

Training Methods

- Rudy's voluntary routine blood draw behavior was solid, but needed to be revamped into a phlebotomy behavior by:
 - Standing steady for long durations
 - Desensitization to equipment/noises
 - Desensitization to larger needle size
- Training sessions occurred twice a week on average
- Training Successes (after 7 months):
 - Increased session duration from 3 min. to 17 min.
 - Increased collection volume from 5 mls to 750 mls
 - Increased needle size from a 21 gauge to a 16 gauge

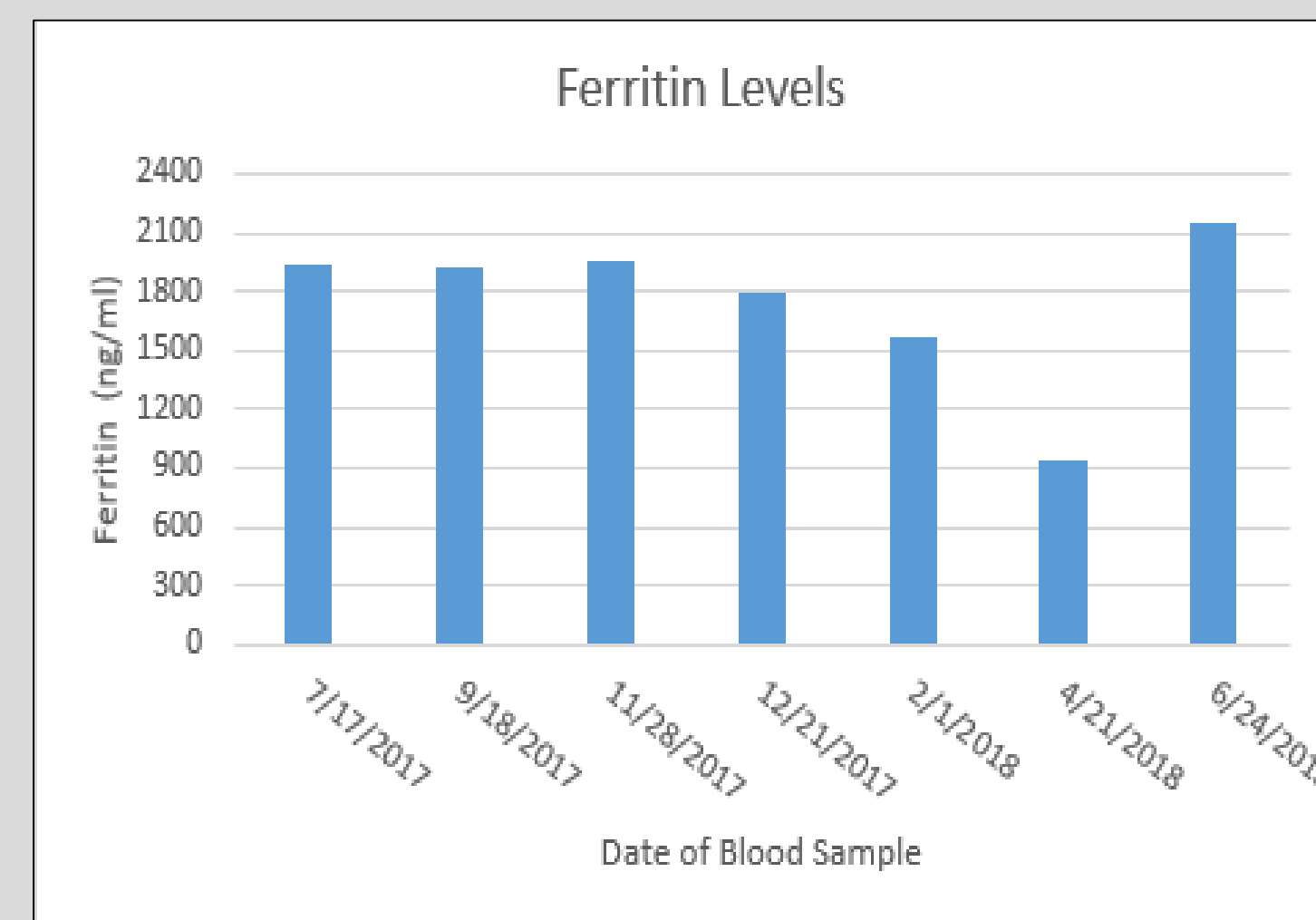


Discussion

- After seeing a decrease in Rudy's iron levels, we decided to collect only 1 L every other month for maintenance
- Rudy's iron spiked after decreasing the phlebotomy from 3 L to 1 L, instead of staying at a steady rate as we had hoped
- This spike could also be correlated to increasing grass intake from his exhibit yard in the early summer months, which tested high in iron content in a study done by nutritionists at the zoo



Results



- From July 2017 to April 2018 Rudy's ferritin levels gradually decreased by 1008 ng/ml
- From April 2018 to June 2018 his ferritin levels increased by 1,213 ng/ml (228%)

Conclusions

- Although there have been challenges along the way, each session has allowed us to:
 - Strengthen our knowledge of large volume phlebotomy
 - Refine our methods to increase our chance of success
 - Build strong relationships within our animal care teams
 - Contribute to black rhino research and plasma banking
- The teams will continue to work together to collect 3 L every other month and continue to monitor Rudy's iron levels