



23 September 2014

The Use of Heyrex to monitor recovery from Orthopaedic procedures.

Introduction and Assessment

The following report investigates the effectiveness of the Heyrex system for monitoring a canine patients' recovery from various procedures over a number of months by Affiliated Animal Care, Virginia Beach, USA.

The data collected through the use of the Heyrex system is from actual patients of surgery or procedures, mostly orthopaedic (84%), undertaken in the main by Dr Tony Puglisi, at Virginia Beach Veterinary Referral Center. Dr Puglisi has subsequently reviewed the value of the data and the Heyrex system for his practice using a sample of the dogs monitored and summarizes the same in this report.

Affiliated Animal Care (AAC) has used approximately 95 Heyrex with an initial trial and more regular use starting in March 2014.

Monitoring Process

Monitoring of each patient commenced on the day of the procedure. In ten (10) of the cases reported monitoring is on-going. The other nine (9) continued until the surgeon was satisfied that further monitoring was not required, at which point the monitor was returned to the veterinary hospital.

The length of time that Heyrex monitoring was required varied from patient to patient depending on the nature of the procedure and each individual patients' recovery period. Of those cases where monitoring has finished the average period was approximately two months with one ending after only five weeks and another that continued up to four months. 60% (6) of those with on-going monitoring have reached at least six months already.

The data reported in this report covers a range of patient ages and breeds.

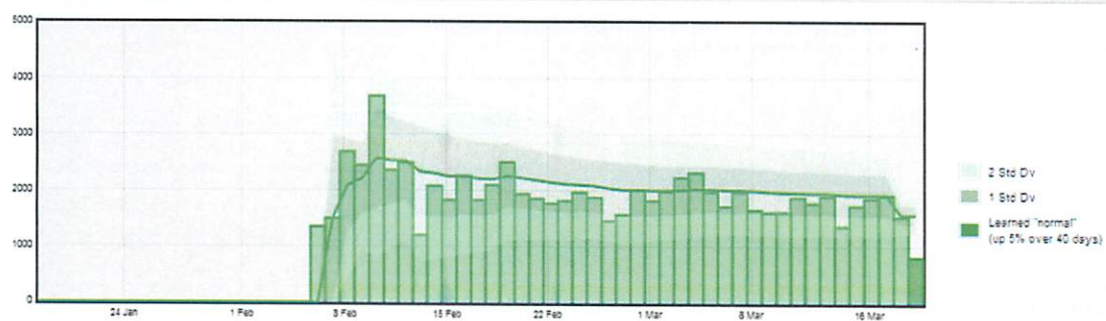
Sample of Monitored Animals included in this review

Patient ID	Breed	DOB	Monitoring Time (mos);Sx/Problem
IM	Yorkshire Terrier	Jan 2010	1.5; Right Cruciate Sx
GM	Mixed	May 2013	1.5*; Right Total Hip Replacement
RE	American Staffordshire	March 2009	2; Left TPLO
AM	German Shepherd	Nov 2003	2; Right TPLO
RT	Labrador Retriever	Aug 2003	2; Right TPLO
CR	Bichon Frise	Feb 2012	2; Patella Lux
JD	Golden Retriever	June 2004	3; Right TPLO
HG	Dachshund Mini	Jan 2014	3*; T-L Disc Herniation
ABW	Labrador Retriever	July 2011	3; Left Total Hip Replacement
DR	Rottweiler	Sept 2006	3; Bilateral Elbow Dysplasia
SA	Mastif	Nov 2006	4*; ADR (Ain't doing right)
CH	Labrador Retriever	Nov 2013	4; Abdominal Exploratory
SO	Dachshund Mini	Dec 2010	4*; T-L Disc Herniation
MB	Bichon Frise	Nov 2003	6*; R Cruciate & Patella Lux
LS	Golden Retriever	Jan 2006	6*; L TPLO
ID	Bluetick Coonhound	Dec 2007	6*; Bilateral TPLO & Patella Lux
CN	Labrador Retriever	Oct 2012	6*; Hip Dysplasia
SR	Basset Hound	May 2006	6*; T-L Disc Herniation
SP	Boston Terrier	Dec 2003	6*; Progressive Blindness

* Denotes monitoring on-going

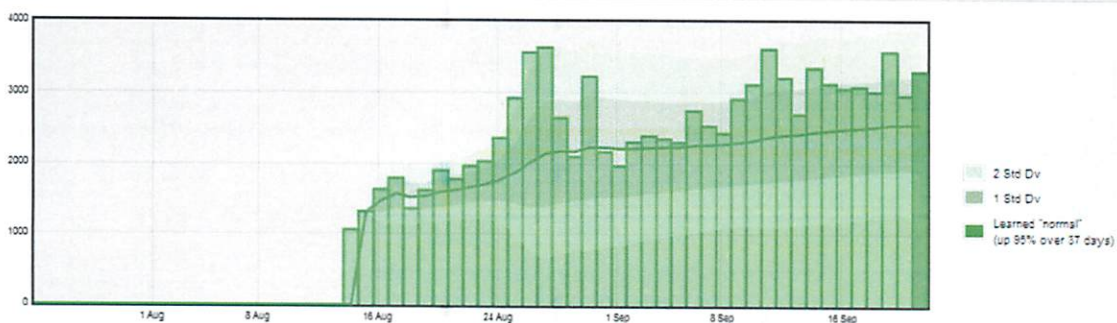
Patient IM

TOTAL ACTIVITY: Wednesday 06th February 2013 - Tuesday 19th March 2013



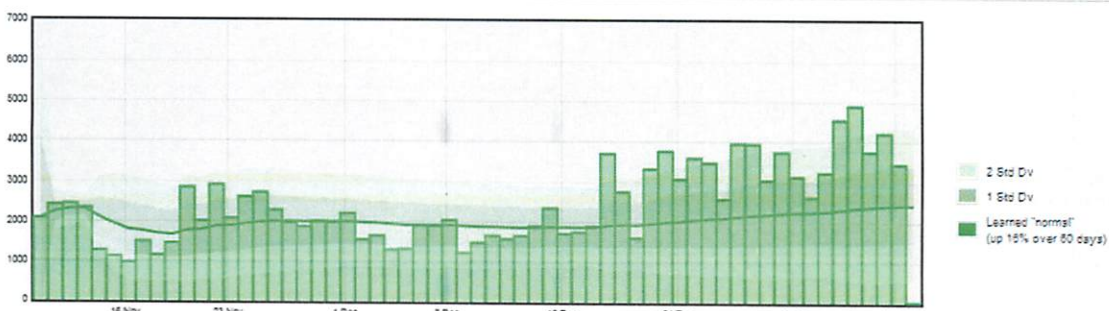
Patient GM

TOTAL ACTIVITY: Thursday 14th August 2014 - Sunday 21st September 2014



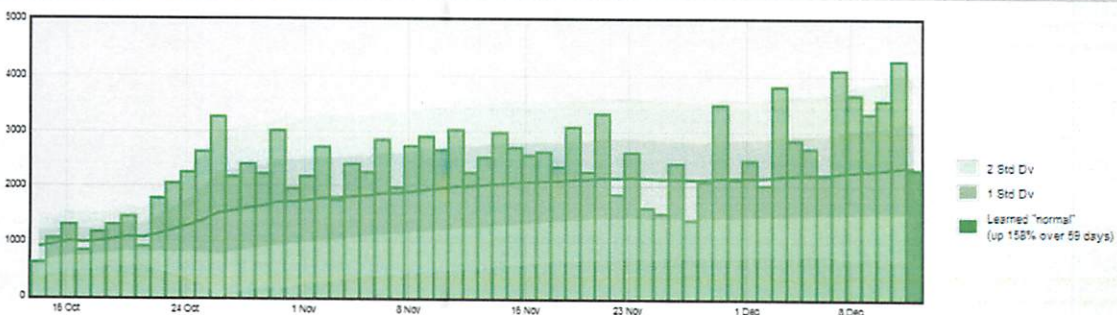
Patient RE

TOTAL ACTIVITY: Saturday 10th November 2012 - Wednesday 06th January 2013



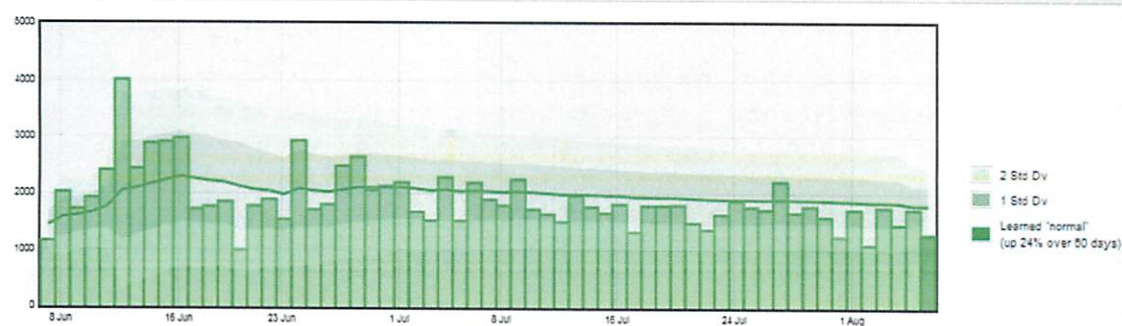
Patient AM

TOTAL ACTIVITY: Sunday 14th October 2012 - Wednesday 12th December 2012



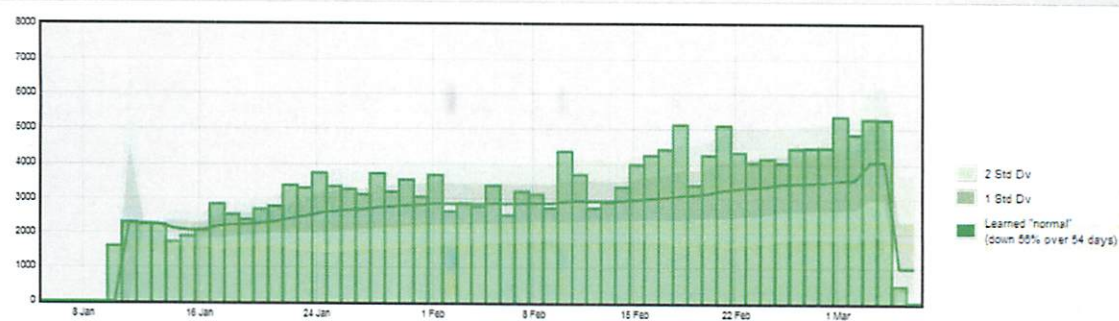
Patient RT

TOTAL ACTIVITY: Saturday 07th June 2014 - Wednesday 06th August 2014



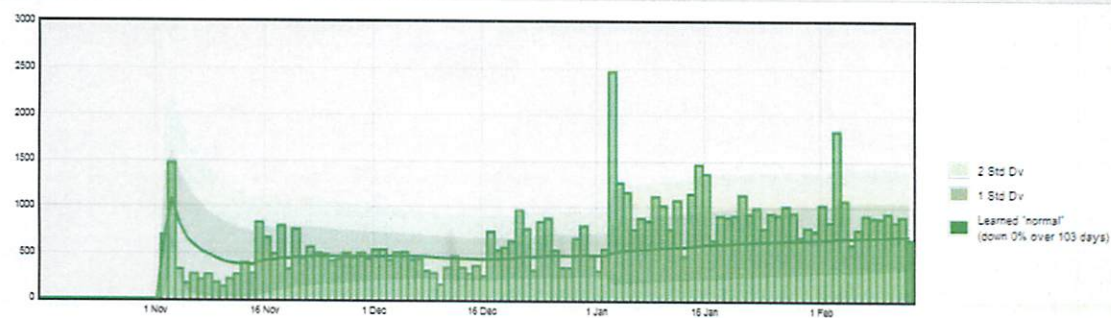
Patient CR

TOTAL ACTIVITY: Thursday 10th January 2013 - Wednesday 06th March 2013



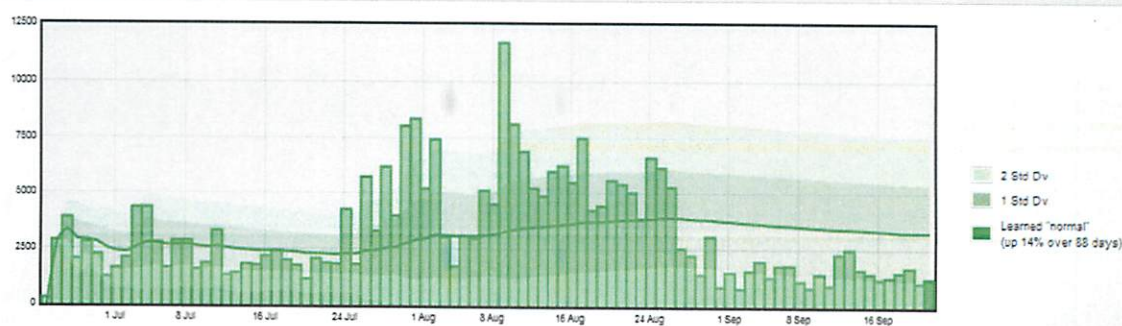
Patient JD

TOTAL ACTIVITY: Thursday 01st November 2012 - Wednesday 13th February 2013



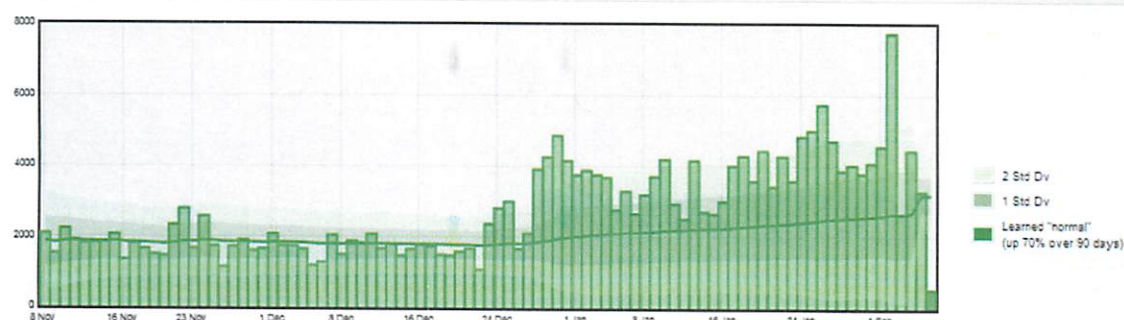
Patient HG

TOTAL ACTIVITY: Tuesday 24th June 2014 - Sunday 21st September 2014



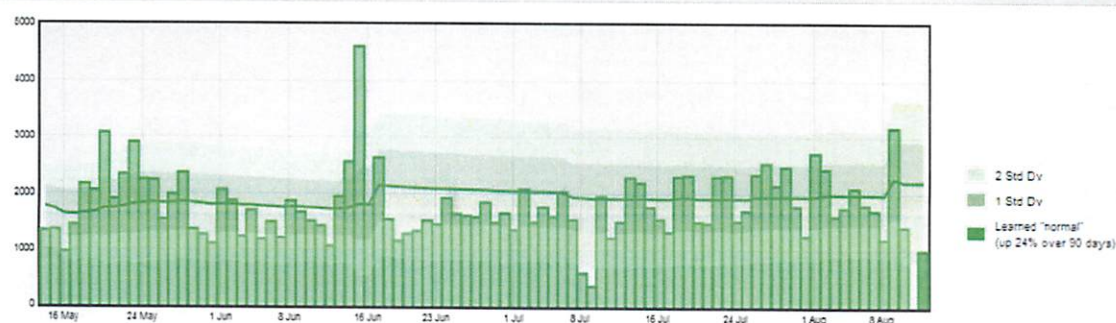
Patient ABW

TOTAL ACTIVITY: Thursday 06th November 2012 - Wednesday 06th February 2013



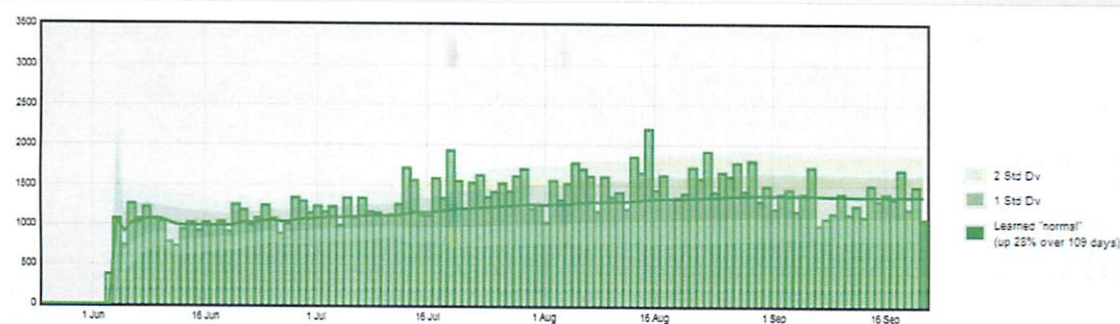
Patient DR

TOTAL ACTIVITY: Wednesday 14th May 2014 - Tuesday 12th August 2014



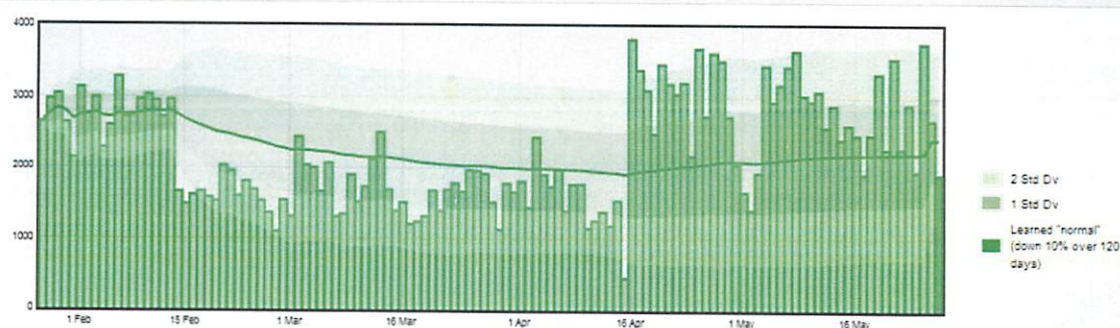
Patient SA

TOTAL ACTIVITY: Tuesday 03rd June 2014 - Sunday 21st September 2014



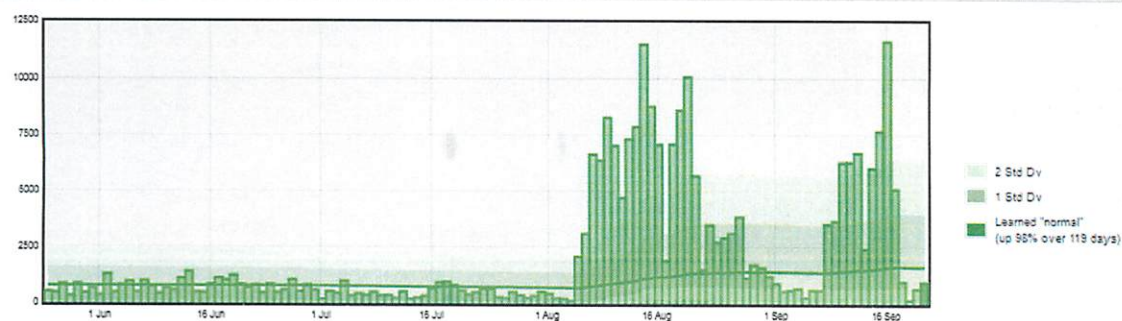
Patient CH

TOTAL ACTIVITY: Monday 27th January 2014 - Tuesday 27th May 2014



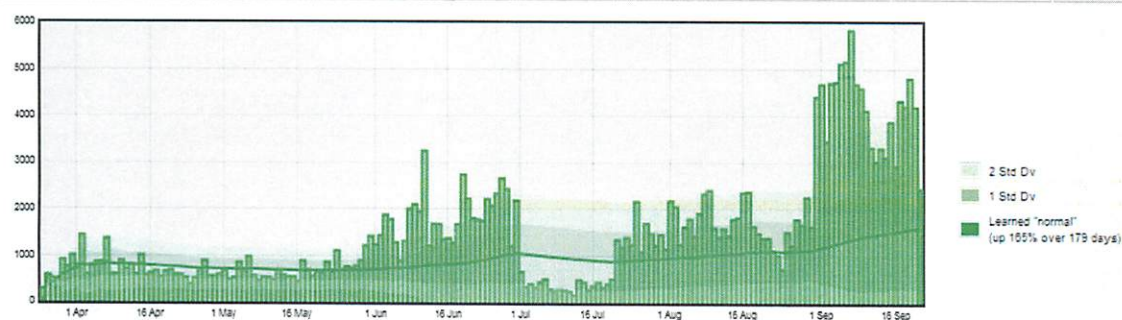
Patient SO

TOTAL ACTIVITY: Sunday, 25th March 2014 - Sunday, 21st September 2014



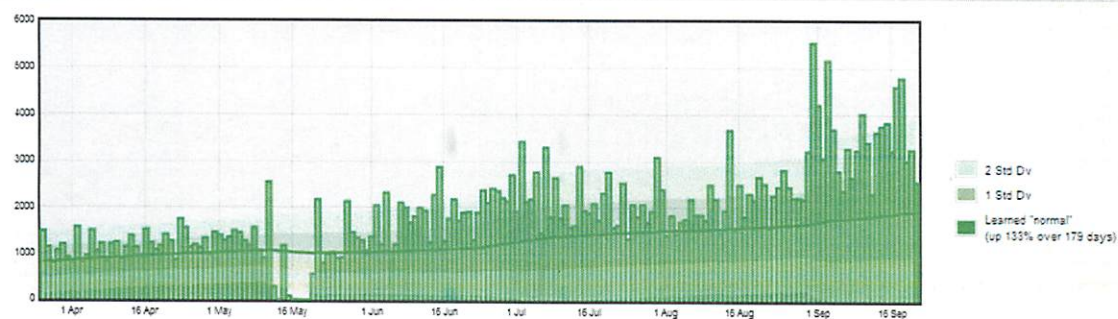
Patient MB

TOTAL ACTIVITY: Tuesday, 25th March 2014 - Sunday, 21st September 2014



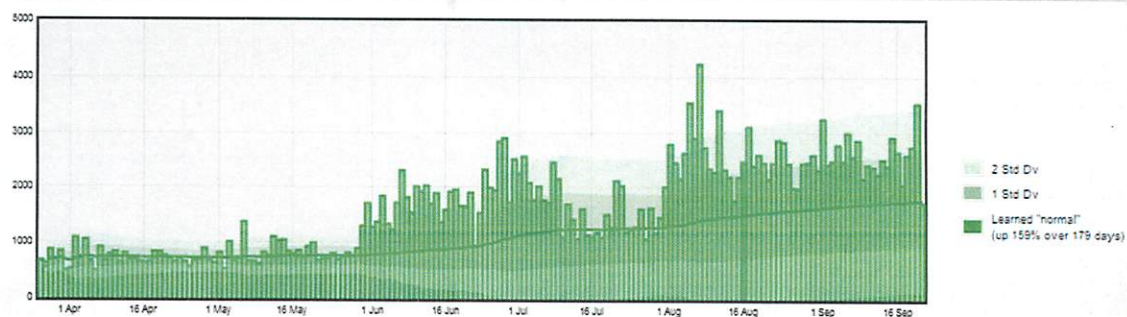
Patient LS

TOTAL ACTIVITY: Wednesday, 26th March 2014 - Sunday, 21st September 2014



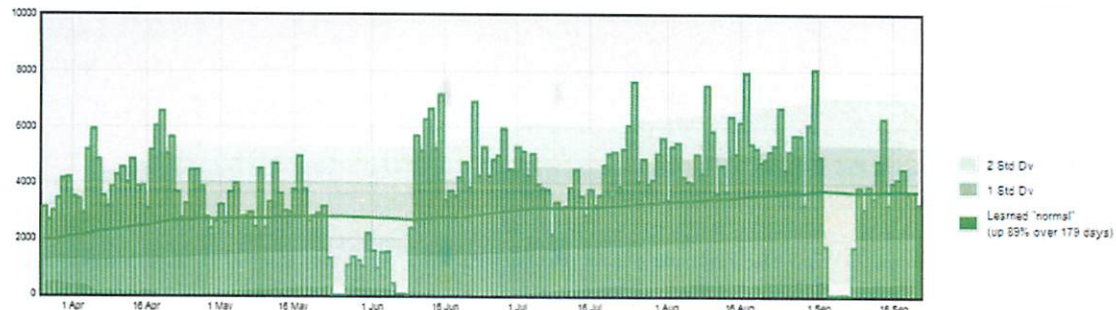
Patient ID

TOTAL ACTIVITY: Wednesday, 26th March 2014 - Sunday, 21st September 2014



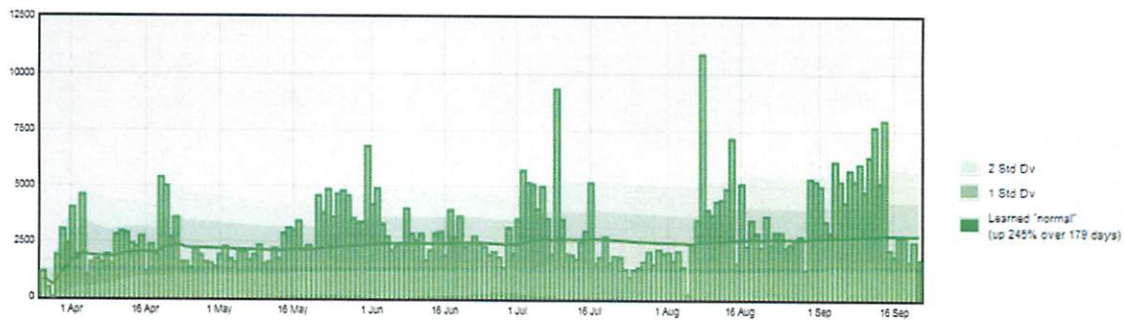
Patient CN

TOTAL ACTIVITY: Wednesday 26th March 2014 - Sunday 21st September 2014



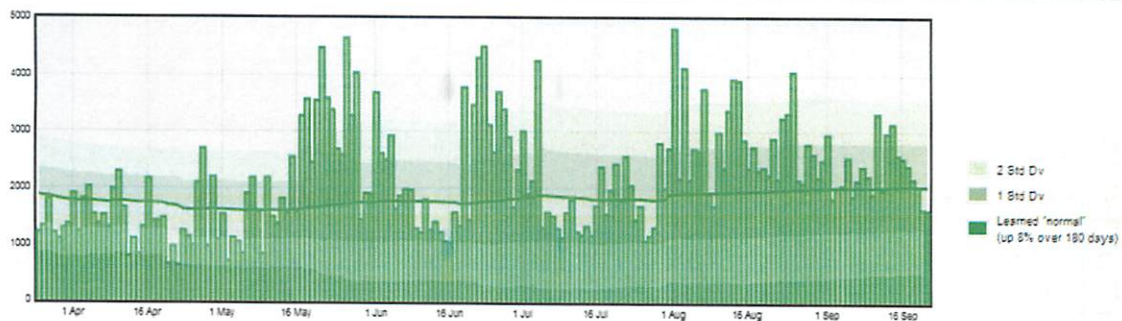
Patient SR

TOTAL ACTIVITY: Wednesday 26th March 2014 - Sunday 21st September 2014



Patient SP

TOTAL ACTIVITY: Tuesday 25th March 2014 - Sunday 21st September 2014



Comment

Of the 19 patients included in this report 84% (16) showed an overall increase in activity from the start to the end of monitoring (or, in the case of those with ongoing monitoring, to the point where this report was compiled).

The remaining 16% (3) are all cases where monitoring has finished and although the overall trend in each of these cases is a decrease in activity it can be explained as an artificial decrease generated by the circumstances of the monitoring as outlined below.

Patient ID showed an initial increase in activity for a couple of days which was then followed by a sharp decrease and then a gradual increase in activity again which meant that the overall trend showed no change in their activity levels.

Patient CR showed an increase in activity across the monitoring period until the last day when there is a sudden decrease in activity. This was due to the monitor being removed from the patient so it was not recording activity, however the monitoring was not ended in the system until later and this had an adverse effect on the overall trend reported. All subsequent patients had monitoring ended in the system at the time the monitor was removed.

Patient CH showed an initial increase in activity which was followed by an extended period of inactivity. This was due to a follow up procedure being required which meant the patient needed longer to recover and had to be kept confined for a period of time. There is an increase in activity at the end of the monitoring however the patients activity levels did not quite return to the same levels as prior to the secondary procedure.

53% (10) of the patients included in this report show evidence that they were confined for a period of time after the procedure. This period of confinement varied in length depending on the specific requirements for each patient. The shortest period of confinement is one week (patient AM), the longest period of confinement is about ten weeks (patient SO).

21% (4) of the patients included in this report show evidence of either a setback in recovery or the occurrence of a secondary procedure. This is evidenced by a period of decreased activity preceded and followed by an increase in activity.

11% (2) of the patients in this report show evidence of the monitor being removed from the patient for a period of time at least once throughout the course of the monitoring.

Conclusions

- The data collected by the Heyrex system and evidenced for the 19 patients included in this review demonstrates that Heyrex is a very useful tool for monitoring a patients' recovery from surgery.

- The main benefits of monitoring for orthopaedic surgeons are a) improvement in mobility post surgery and b) compliance of cage rest instructions.
- The remote monitoring by Heyrex has enabled AAC to monitor recuperation to a degree not possible when just relying on owner observation or infrequent follow up veterinary appointments.
- AAC has seen a reduction in repeat operations due to non-compliance with cage rest and convalescence instruction.
- AAC considers that it will see even better post operative management through the use of the new Cage Rest Module.
- The accuracy of the data provided is very high and reflects what we have viewed in the hospital environment and has been endorsed as a true record of the patient's activity in the home environment.
- Pet owners have responded overall positively to the use of Heyrex as part of the post surgical process. As expected, some patients have reacted with some doubt as to the value of the technology, but have subsequently come to appreciate it when provided with their own login to track progress.
- AAC intends to continue using Heyrex on an ongoing basis.

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