

Reduction in Blood Transfusions and Length of Stay following the Introduction of an Enhanced Recovery Programme

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Introduction

The multi-disciplinary Enhanced Recovery After Surgery (ERAS) program for joint arthroplasty was launched in The Royal Glamorgan Hospital, Cwm Taf University Health Board in 2011. One of the main outcome measures of ERAS is early patient recovery and discharge from hospital, allowing patients to return to their normal activities more quickly.³

Peri-operative blood transfusions carry significant risk to the patient both acutely and with regards to outcome. It also carries significant financial cost and resource allocation for the health board. Acute complications of blood transfusion are rare, but can be life threatening.¹ In addition, it has been shown that mortality rates are higher in those patients who receive a transfusion during total joint arthroplasty.²

Comprehensive pre-assessment allows the detection and correction of underlying anaemia which should optimise patients haemoglobin prior to surgery. In addition the administration of tranexamic acid at the time of surgery can reduce surgical blood loss.

Hypothesis

Since the introduction of our standardised ERAS program for joint arthroplasty, there has been a reduction in:

1. Length of post-operative hospital stay
2. Rate of blood transfusions

Method

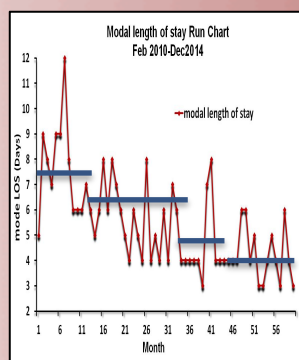
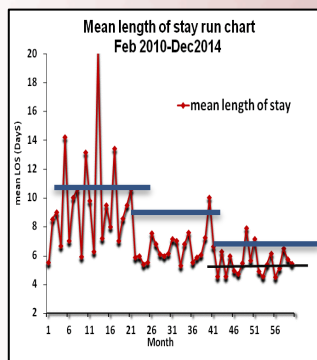
Retrospective analysis of all primary hip replacements that were undertaken at The Royal Glamorgan Hospital, Cwm Taf University Health Board from 2010 to 2014.

Areas for analysis were:

1. Length of post-operative hospital stay
2. Rate of blood transfusions

Results-Length of Stay

Data was analysed from 923 patients who underwent a primary hip arthroplasty between 2010 and 2014.



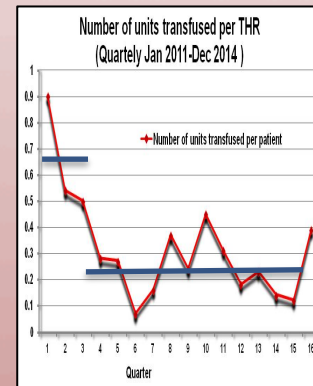
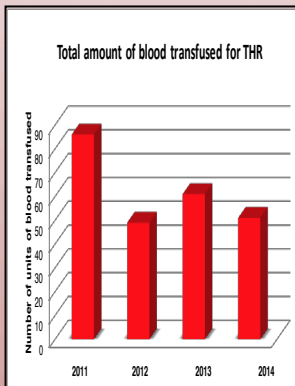
Mean length of stay decreased from 9.5 to 4.5 a saving of 5 bed days per patient.

Modal length of stay decreased from an average of 9.1 to 4.2 in the same time period.

200 hip replacements were performed in 2014 giving an estimated 1000 bed days saving when compared with 2010.

Results-Rate of Blood Transfusions

The rate of blood transfusion in patients who underwent a primary hip arthroplasty (THR) has reduced since 2011. Data was unavailable for 2010. 19% of patients undergoing a primary arthroplasty received a blood transfusion in 2011, compared to 6% in 2014.



The reduction in transfusion rate per patient from 0.9 units in the first quarter of 2011 to a mean of 0.23 units for 2014, has a potential saving of over 130 units of blood per year.

Discussion

The benefits of implementing a Multidisciplinary ERAS program are well established. Our program began in 2011. Since its introduction, the gradual adoption and refinement of the program has led to a stepwise and sustained reduction in length of stay. Mirroring this improved quality of care has been the reduction in blood replacement requirements during and after surgery.

A number of aspects of the ERAS program are likely to have contributed to the decrease in blood product requirements:

- Treatment of pre-operative anaemia diagnosed in pre-assessment
- Routine administration of intra-operative tranexamic acid
- Reduction of intravenous crystalloid administration peri-operatively
- Reduction of surgical drain use

Further analysis of the data will be required to deduce the impact of each intervention.

Patients having an improved recovery and shorter post-operative stay has meant there has been a reduction in bed-days following joint surgery. The ERAS program is one of the factors that has contributed to the increase in joint arthroplasties carried out within the Cwm Taf University Health Board. Hip and knee joint arthroplasties have increased from 483 in 2011, to 829 in 2014.

Conclusion

Since the introduction of our ERAS program for joint replacement surgery, there has been a decrease in length of post-operative hospital stay which is a core outcome measure in ERAS.

Any reduction in transfusion rate is an additional benefit, which will in turn reduce the risk of morbidity and mortality for the patient².

References

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2. Hart et al. Blood Transfusion in Primary Total Hip and Knee Arthroplasty. *J Bone Joint Surg Am*. 2014 96 (23): 1945-1951
3. Enhanced Recovery After Surgery. 1000 Lives Wales. Available online: <http://www.1000livesplus.wales.nhs.uk/eras>
4. Enhanced Recovery Care Pathway *NHS Improving Quality* 2013