



# BK Virus Infection in Kidney Transplant Recipients: A Single Centre Experience

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## Introduction

The incidence of BK viraemia following kidney transplant is estimated to be around 13%<sup>1</sup>. However, the incidence on BK viraemia and BKV nephropathy (BKVN) in the local setting is unclear.

## Objective

To define the characteristics and outcome of BK viraemia and BKVN among kidney transplant recipients in Hospital Kuala Lumpur.

## Methods

All kidney transplants performed in year 2014-2020 and currently under HKL follow up were included. Demographic data, immunosuppressant characteristics, eGFR, and BKVN status were extracted. Mean values were calculated where applicable; two way repeated measures ANOVA test was used to analyzed eGFR decline.

## Result

121 subjects were included for analysis, and 17 patients (8.2%) developed BK viraemia during a mean follow up of 52.6±27.9 months. The demographic data is shown in Table 1.

Table 1	
Mean Age: 47.1 (SD ±11.0)	
<b>Demographic N (%)</b>	
<b>Gender</b>	
Male	10 (58.9)
Female	7 (41.1)
<b>Race</b>	
Malay	9 (52.9)
Chinese	6 (35.3)
Indian	2 (11.7)
<b>Living Donor</b> 12 (70.6)	
<b>Deceased Donor</b> 5 (29.4)	
<b>ABO-compatible</b> 12 (70.6)	
<b>ABO-incompatible</b> 5 (29.4)	
<b>HLA Mismatches</b>	
1MM	1 (5.9)
2MM	1 (5.9)
3MM	2 (11.8)
4MM	7 (41.2)
5MM	5 (29.4)
6MM	1 (5.9)
<b>Induction Agent</b>	
Basiliximab	14 (82.3)
Thymoglobulin	3 (17.7)
<b>Prior Rejection Episode within 6 months</b>	
Yes	6 (35.3)
No	11 (64.7)
<b>Immunosuppressants</b>	
Steroid+MPA+Tac	16 (94.1)
Steroid+EVR+Tac	1 (5.9)

Table 1- Demographic data and important baseline results

The mean time of development of BK viraemia was 16.5 ± 6.8 weeks after transplant. The management strategies of BK viraemia are shown in Figure 1.

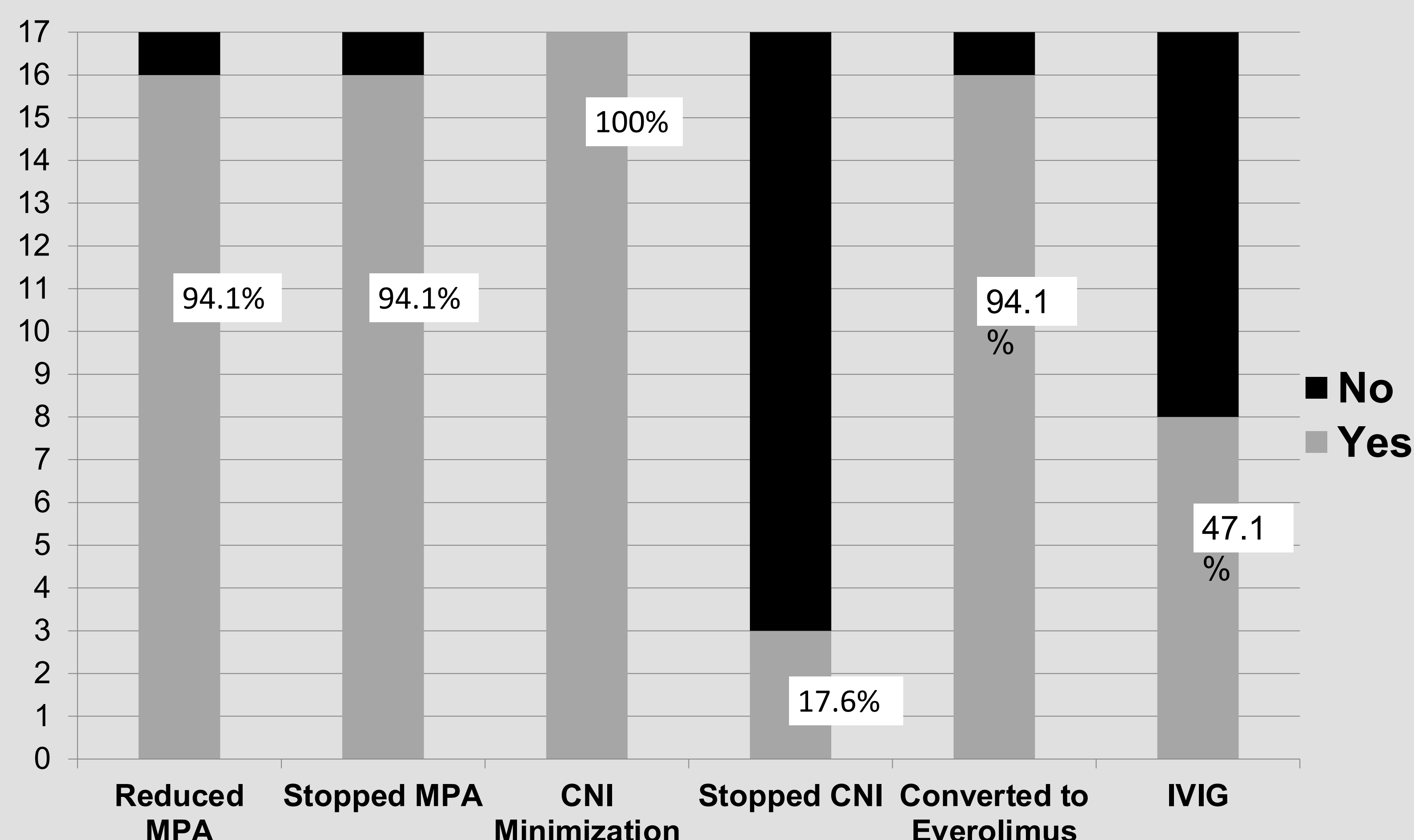


Figure 1- Management Strategies of BK Viraemia

The outcomes of BK viraemia are shown in Figure 2.

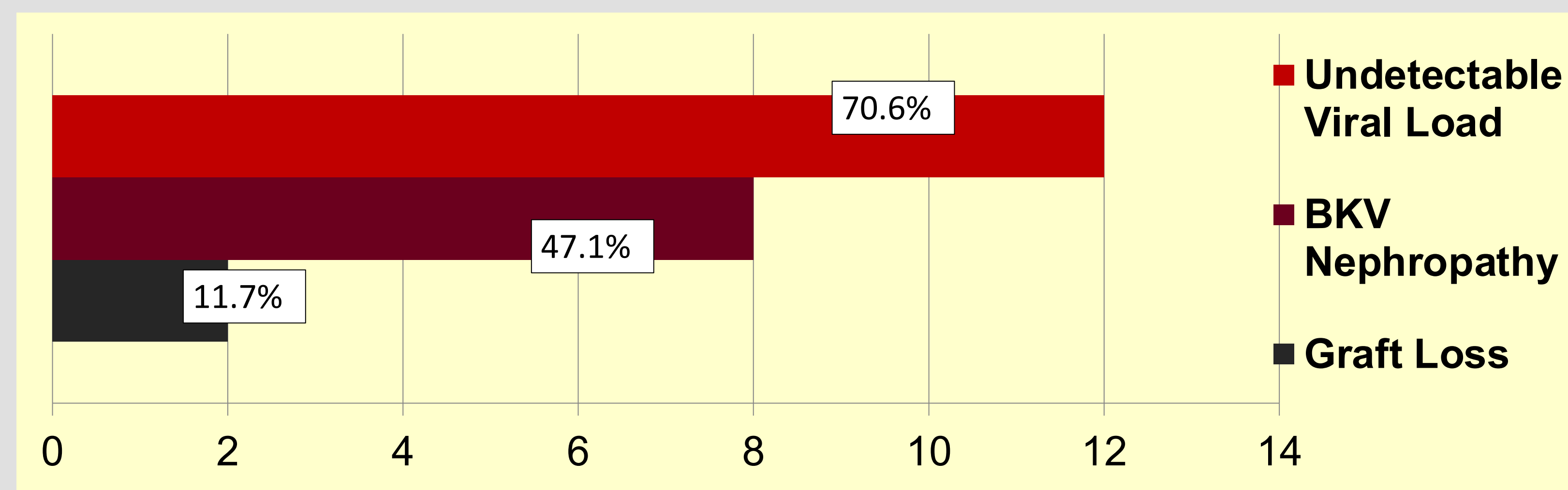
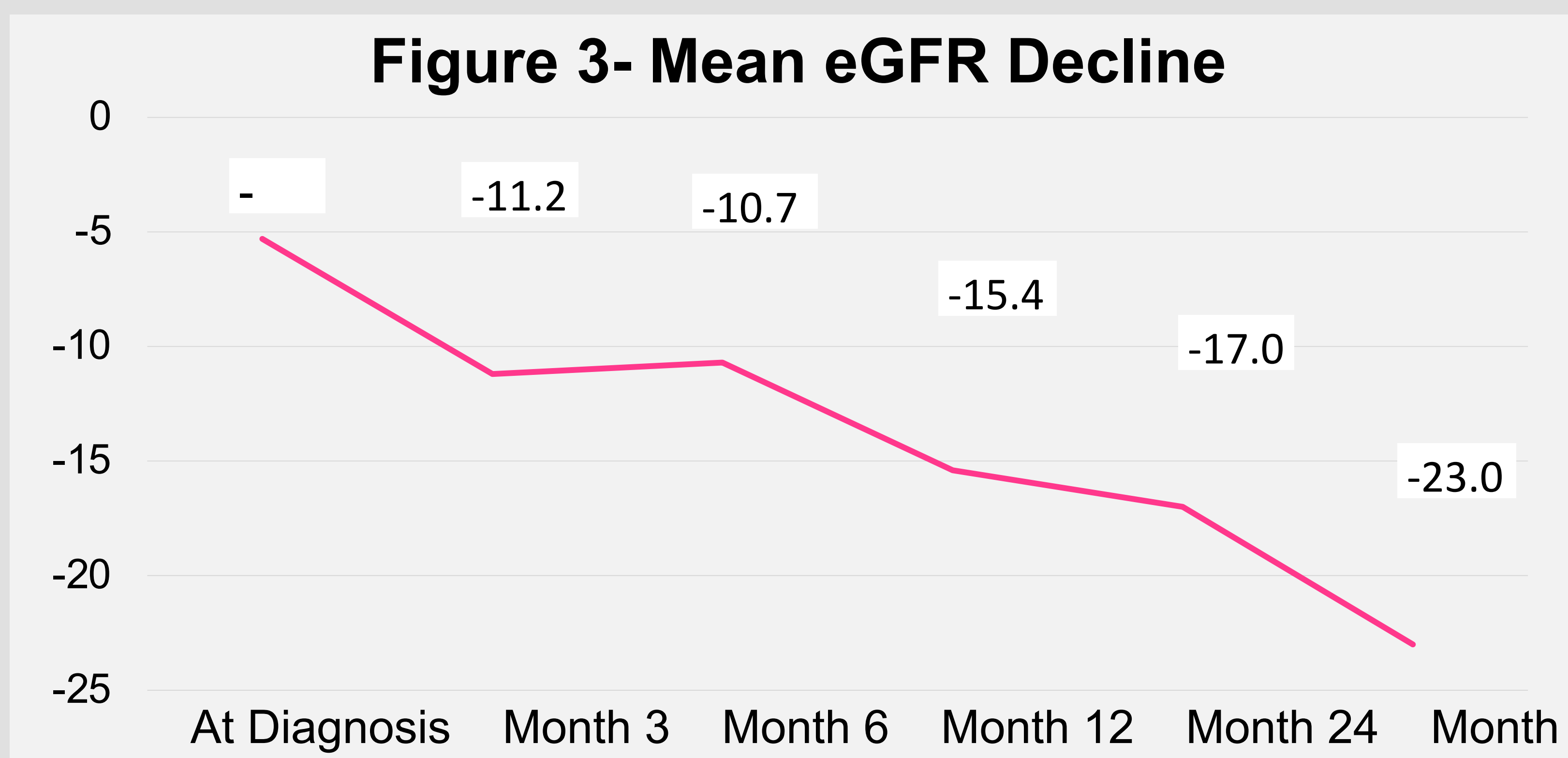


Figure 2- Outcomes of BK Viraemia. For those who achieved undetectable viral load, the mean time to negative viral load was 14.7 months (SD ±9.7)

Mean decline of eGFR was 5.3 (SD±5.6) at diagnosis, 11.2 (SD±9.9) at 3 months, 10.7 (SD±9.9) at 6 months, 15.4 (SD±11.7) at 12 months, 17.0 (SD±13.5) at 24 months, and 23.0 (SD±19.0) at 60 months. These eGFR declines were statistically significant (p=0.03). See Figure 3.



All 17 patients were alive during the mean follow up period of 52.6±27.9 months

## Discussion

The incidence of BK viraemia in our cohort was 8.2%. The sample size is too small to generate data on risk factors but it is possible that higher number of mismatches, recent rejection episodes and higher intensity of immunosuppressants pose higher risk of BK viraemia. In our cohort, almost almost half of those with BK viraemia developed BKVN. At mean follow up duration of 52.6 months, 11.8% of these patients lost their grafts. With regards to management, reduction of the intensity of immunosuppressants is the first approach followed by conversion to mTORi while IVIG is used in those with BKVN. BK viraemia also takes long time to clear, and has significant impact on graft function and survival.

## Conclusion

The incidence of BK viraemia in our cohort was 8.2% and almost half of them developed BKVN. At mean follow up duration of 52.6 months, 11.8% of these patients lost their grafts.

## References

1. Daniel L. Bohl and Daniel C. Brennan. BK Virus Nephropathy and Kidney Transplantation. CJASN July 2007, 2 (Supplement 1) S36-S46.