

INTRODUCTION

- Serial monitoring of plasma cytomegalovirus (CMV) viral load (VL) with intervals of <5 days may result in unnecessary budgets without changes in treatment, morbidity, and mortality

AIMS

- To reduce plasma CMV VL testing performed at intervals of <5 days after protocol implementation

METHODS

- A quasi-experimental pre-post intervention study in a university hospital in Thailand
- Inclusion: patients aged ≥18 years old who required plasma CMV VL testing
- In 2021, the inpatient electronic pop-up and telephone interview and feedback were used to limit unnecessary plasma CMV VL testing
- The rate of plasma CMV VL testing being performed with intervals of <5 days was compared before and after protocol implementation using the Poisson regression model
- The cost-effectiveness of plasma CMV VL testing after protocol implementation was studied

RESULTS

- After protocol implementation, there was a significant decrease in the rate of plasma CMV VL test requests with intervals of <5 days from 11.8% to 6.2%
- After telephone interviews, the rate of plasma CMV VL test requests decreased further to 4.7%
- There were no statistically significant differences in the incidence of CMV viremia, plasma CMV VL >1,000 IU/mL, CMV syndrome, and CMV disease after protocol implementation (p=0.733, 0.505, 1.000, and 0.827, respectively)

Table 1. Baseline characteristics of patients requiring plasma CMV VL testing

	Pre-intervention (N=904)	Post-intervention (N=1024)	p-value
Age (years) [median (IQR)]	55 (40-66)	58 (43-69)	0.003
Male gender [n (%)]	441 (48.8)	456 (44.5)	0.056
Outpatient [n (%)]	392 (43.4)	432 (42.2)	0.603
General ward [n (%)]	367 (40.6)	361 (35.3)	0.016
Intensive care unit [n (%)]	145 (16.4)	231 (22.6)	<0.001
SOT [n (%)]	301 (33.3)	256 (25.0)	<0.001
Kidney	275 (30.4)	245 (23.9)	
Liver	20 (2.2)	2 (0.2)	
Heart	7 (0.8)	11 (1.1)	
HSCT [n (%)]	40 (4.4)	38 (3.7)	0.427
Autoimmune diseases [n (%)]	237 (26.2)	269 (26.3)	0.979
Leukemia [n (%)]	63 (7.0)	52 (5.1)	0.080
Lymphoma [n (%)]	47 (5.2)	59 (5.8)	0.589
Solid malignancy [n (%)]	39 (4.3)	20 (2.0)	0.003
HIV [n (%)]	41 (4.5)	26 (2.5)	0.017
COVID-19 [n (%)]	0 (0.0)	162 (15.8)	<0.001

Table 2. Incidences of plasma CMV VL testing performed in intervals of <5 days

Plasma CMV VL testing performed in intervals <5 days [n (%)]	Pre-intervention (N=2,800)	Post-intervention (N=2,945)	Incidence rate ratio (95% CI)	p-value
Electronic pop-up	329 (11.8)	185 (6.2)	0.50 (0.41-0.59)	<0.001
Electronic pop-up and telephone interview and feedback	329 (11.8)	138 (4.7)	0.37 (0.30-0.45)	<0.001

Table 3. Costs of plasma CMV VL testing, anti-CMV drug, bronchoscopy, and gastrointestinal endoscopy

	Pre-intervention (N=2,800, Thai Baht)	Post-intervention (N=2,945, Thai Baht)	p-value
Overall plasma CMV VL testing	6,987,000	7,339,200	0.190
Plasma CMV VL testing in intervals of < 5 days	822,500	345,000	<0.001
Anti-CMV drugs	12,327,436	7,860,187	0.001
Bronchoscopy	170,100	136,600	0.215
Gastrointestinal endoscopy	149,688	188,788	0.815

1 USD equals 37.3 Thai Baht on 22 Sep 2022

CONCLUSIONS

- A diagnostic stewardship program is useful to limit plasma CMV VL testing at appropriate intervals and reduce unnecessary cost
- The testing limitation does not increase incidences of CMV viremia or disease
- An electronic hard stop alert as a part of computerized provider order entry should be developed and studied

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REFERENCES

- Kraft CS, et al. Clin Infect Dis. 2012;54:1793-1797.
- Tremblay MA, et al. J Virol Methods. 2015;225:1-3.
- Lodding IP, et al. EBioMedicine. 2015;2:699-705.
- Bieniek R, et al. LabMedicine. 2011;42:339-343.